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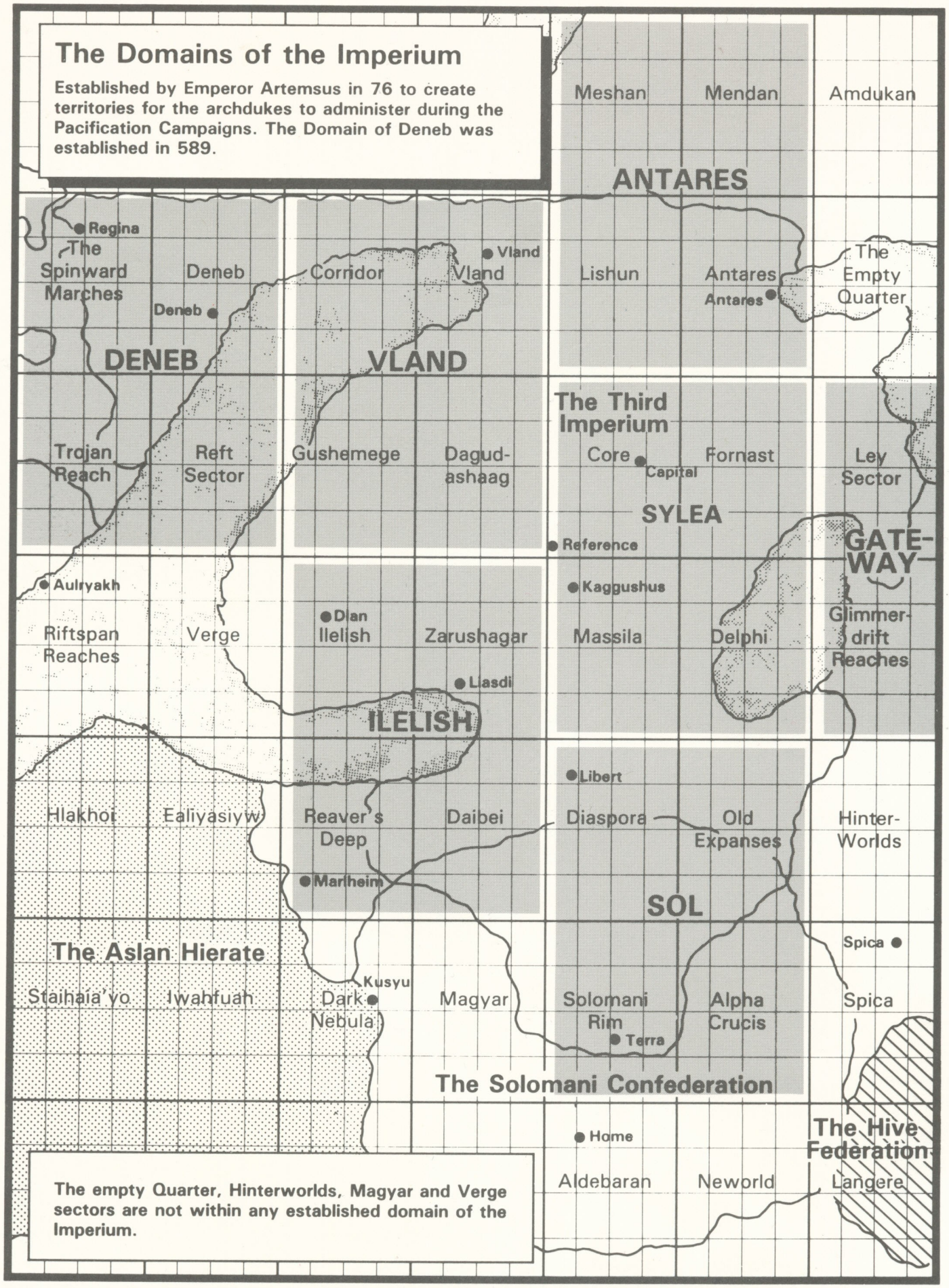
MEGATRAVELLER™

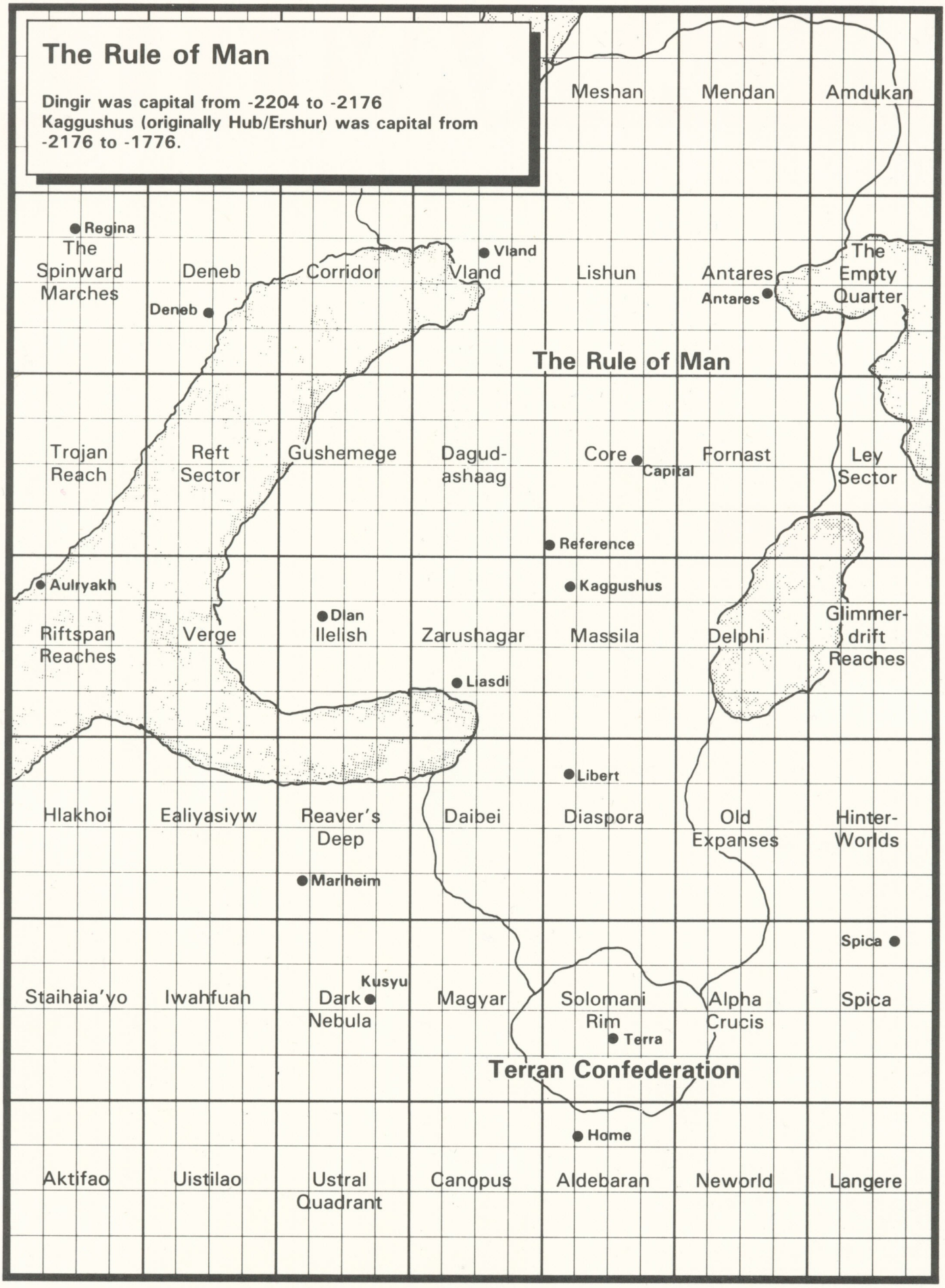
REFEREE'S MANUAL

Marc W. Miller

Science-Fiction Adventure in the Shattered Imperium

GDW


The Domains of the Imperium
Established by Emperor Artemsus in 76 to create territories for the archdukes to administer during the Pacification Campaigns. The Domain of Deneb was established in 589.
Meshan
Mendan
Amdukan
ANTARES
Regina
The Spinward Marches
Deneb
Deneb
Corridor
Vland
Vland
Lishun
Antares
Antares
The Empty Quarter
DENEB
VLAND
The Third Imperium
Trojan Reach
Reft Sector
Gushemege
Dagud-ashaag
Core
Capital
Fornast
Ley Sector
SYLEA
Reference
GATE-WAY
Aulryakh
Kaggushus
Dian
Ilelish
Riftspan Reaches
Verge
Zarushagar
Massila
Delphi
Glimmer-drift Reaches
Liasdi
ILELISH
Libert
Hlakhoi
Ealiyasiyw
Reaver's Deep
Daibei
Diaspora
Old Expanses
Hinter-Worlds
Marlheim
SOL
The Aslan Hierate
Spica
Kusyu
Staihaia'yo
Iwahfuah
Dark Nebula
Magyar
Solomani Rim
Terra
Alpha Crucis
Spica
The Solomani Confederation
Home
The Hive Federation
Aldebaran
Neworld
Langere
The empty Quarter, Hinterworlds, Magyar and Verge sectors are not within any established domain of the Imperium.


The Rule of Man
Dingir was capital from -2204 to -2176
Kaggushus (originally Hub/Ershur) was capital from -2176 to -1776.
Meshan
Mendan
Amdukan
Regina
The Spinward Marches
Deneb
Deneb
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Marlheim
Spica
Staihaia'yo
Iwahfuah
Kusyu
Dark Nebula
Magyar
Solomani Rim
Terra
Alpha Crucis
Spica
Terran Confederation
Home
Aktifao
Uistilao
Ustral Quadrant
Canopus
Aldebaran
Neworld
Langere

Marc W. Miller

MEGATRAVELLER™

REFEREE'S MANUAL

Science-Fiction Role-Playing
in the Shattered Imperium

Edited by Joe D. Fugate, Sr. and Gary L. Thomas

GAME DESIGNERS' WORKSHOP

MegaTraveller is the current edition of the rules for the **Traveller** science-fiction role-playing system. **MegaTraveller** incorporates rules changes, revisions and additions which have been made over the years in order to maintain it as a leading state-of-the-art rules system.

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MegaTraveller
Referee's Manual

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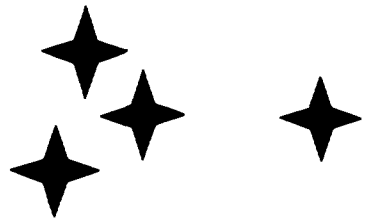
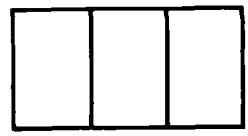
FACTIONS OF THE REBELLION

Antares
Archduke Brzk of Antares has declared his sectors independent and aligned with the Julian Protectorate.

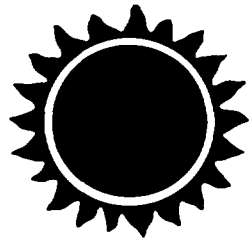


Aslan Aorlakht
Landless Aslan *Aorlakht* (New Lords) have invaded in search of developed worlds to conquer.

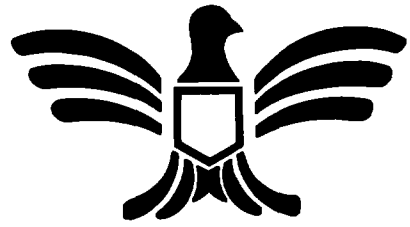


Daibei
Daibei sector, ordered by Lucan to commit its fleet against Ilelish, has declared its independence

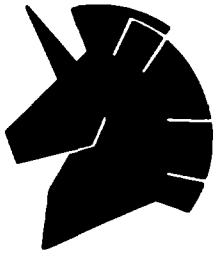
Dulinor
Dulinor, the Emperor's assassin, has retreated to Ilelish to rally forces for his own drive for the throne



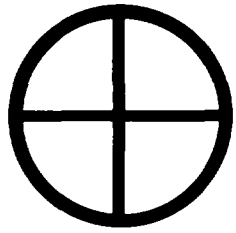
Lucan's Imperium
Lucan, controlling the Imperial bureaucracy, has drained border sectors of their fleets to crush Dulinor



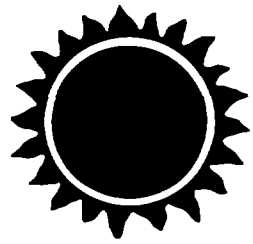
Margaret
Margaret, supported by moderates in the Moot, has established a base of power in her own Massilia sector



Norris
Norris, recently appointed Archduke of the Domain of Deneb, maintains his loyalty to the Imperium

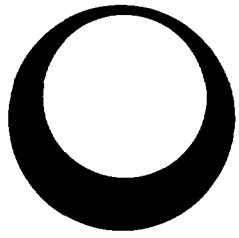


Solomani
With the collapse of the Imperium, the Solomani have become the largest human empire in existence

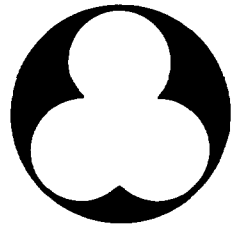


Strephon's Imperium
Strephon, claiming his double was the one murdered, has established a base of power in Gushemege.

Vargr
Vargr raiding bands, both private and government, have invaded coreward sectors of the Imperial border.



Vland
Vilani megacorporations have joined forces to reestablish the Ziru Sirka, the Vilani Grand Empire of Stars



Zhodane
The Zhodani Consulate has seemed content to let events gradually dismember its only real rival

"The fact that the Imperium was the largest, the strongest, the single most dominant force in interstellar politics for more than a thousand years misled even its most vocal detractors. Critics talked about change rather than revolution. Dissidents talked about escape rather than change.

"Five hundred years of stable interstellar government produced an understandable complacency on the part of every member of the Imperial nobility. Every noble had a vested interest in maintaining the status quo; that was the source of their power and their fortunes.

"Imperial succession had been a smooth process for centuries. When Dulinor's bullets killed not only the emperor but also his immediate heirs, they created a turmoil that would ripple throughout the galaxy. Every noble could be counted on to support the obvious choice; but when there is no obvious choice, each noble supports a successor based on his own conscience, and there are as many consciences as there are souls in the universe."

"Honor and enlightened self-interest held the Imperium together. Nobles could be depended on to decide for the status quo. But what decisions could they make when there was no clear status quo?

"The Imperial court supported Lucan. More sensitive nobles, believing the charges that Lucan had killed his own brother in order to become the leading contender for the throne, chose to support the less controversial Margaret. Nobles in Ilelish supported Dulinor. Solomani nobles decided the time was ripe to support their homeland. Nobles on the fringes found their territories were not a priority when compared with the factional infighting; they were soon forced to abandon the Imperium in order to survive. Others found they preferred to be big fish in little ponds rather than small fish in an Imperial ocean.

"The very forces that pulled the stable Imperium together now pulled the shattered Imperium apart."

—Norris Aella Aledon, *The Last Days of the Imperium,* Imperial Books (Regina: 1144).

MEGATRAVELLER

The *Referee's Manual* provides science-fiction role-playing rules aimed primarily at the **Traveller** referee. It assumes that the reader is familiar with the *Players' Manual* and the basic concepts presented there. If you have not read the *Players' Manual*, do so before going any further in this book. Traditionally, the *referee* is the one member of the group who knows the rules the best. Indeed, the rest of the group doesn't even have to know the rules to play, but the session is enhanced if everyone knows something about the game. And as the term *referee* implies, a referee serves as an "impartial expert" for dealing with new situations the rules may not cover; after all, no set of rules can totally define every minute aspect of the imaginary universe. Since this book is primarily addressed to the referee, when we use the pronoun "you," we are talking directly to the referee.

REFEREE RESPONSIBILITIES

Your purpose as a referee is to present obstacles for players to overcome as they go about seeking their goals, not to constantly make trouble for them. This is a very subtle distinction and one which many beginners have trouble with.

Attributes of a Good Referee: Other than the right attitude, what characteristics must a good referee have?

First of all, imagination. Without an imaginative referee, the game is merely rolling dice and reading tables.

Second, the ability to improvise. Situations will arise where you must make up something on the spot, such as the cargo of a randomly encountered starship or the personality of a patron. The necessity to improvise can be minimized through planning, but it cannot be eliminated entirely

Third, a sense of proportion is required Rewards should be proportionate to the risk. A common way beginning referees maintain player interest is to hand out massive sums of money for the most insignificant actions. The players rapidly accumulate enormous wealth and rapidly overwhelm Traveller's carefully balanced economic system. The players cease to find the game a challenge and become bored. If you try to get tough later, players will demand to know why they are not paid as much anymore and will become dissatisfied Either way, the game is a loser.

Lastly, it is important for you to be organized. Nothing slows a game down more than a referee who must rummage through a briefcase filled with hundreds of random-sized sheets of paper, searching for the details of a particular world or installation. The exact system of organization is not important, use whatever you feel like (manila folders, index card files, ring notebooks, home computers, and so on) as long as you can rapidly retrieve information from it

Preliminary Steps: Once you have become familiar with the background of the **Traveller** universe, accumulated a group of players, and created characters, then what?

You still have a few duties to perform before the first adventure. In all likelihood, the players will be dumped into the middle of a new situation. If the adventure were "real life," the people involved would know what they had done with their lives up until that time, they would know where they were and how they got there, and they might have a familiarity with the geography of the region

It is necessary for you to divide the information about the universe into four parts for the player characters·

- Information known by virtue of what they are (how to behave in polite society, data about a planet if the character has Navigation skill, etc.),
- Information found with little or no cost (data obtained from a library, from asking around at bars, hotel lobbies, and so on, or obtained by direct observation of some event or condition).
- Information found only with great effort or risk (the theft of one or more documents, the bribery of some official, etc.).
- Information ordinarily unavailable no matter what (perhaps the fact that the information contained in the library is false with regard to the planet mentioned above, referee's background details of a situation, etc.).

Tasks are a convenient way to make the characters work for their answers. Feel free to modify the results of task mishaps if you do not like the way they turned out. Change a death result to a severely wounded result if you feel a character has behaved heroically and deserves a second chance, or kill off a character who has done something incredibly dumb but lucked out on the die roll. Be fair in doing this, however, and try not to be too heavy-handed Most players feel better if their character is done in by a die roll rather than by a heartless referee

Non-Player Characters: There are four types of non-player characters spear carriers, informants, patrons, and trouble-makers

Spear carriers (called extras in the movies) serve to provide atmosphere, needed skills, or cannon fodder (in case you want to demonstrate to the players what great danger they are in but do not want to do in one of the players).

Informants serve to give the players information and are ideal for giving the players data without just speaking to them directly. Informants may be experts (such as a university professor or scholar), passengers or crew of a starship, or people casually met in the course of seeking rumors or employment

A *patron* is a non-player character who has a job offer for one or more of the players The patron provides some of the information the players will need to carry out the job (rarely will all information be provided; the players must find some things out for themselves), and he will offer a reward of some sort.

Trouble-makers are specifically intended to cause problems for the characters. Trouble-makers include police, customs, tax and immigration officials, other government red-tapers, thugs, ruffians, hijackers, thieves, con-men, religious fanatics, and so on. The presence of trouble-makers may or may not be immediately obvious to the players.

Many NPCs must have as detailed a character development as player characters do, and they should be given a great deal of careful attention if they are intended to stay around for a while NPCs are often needed on the spur of the moment; the chapter about encounters provides a system for quick NPC generation to aid in developing fleshed-out NPCs on a moment's notice

The use of non-player characters is one of the most important things for a referee to learn. Non-player characters are the inhabitants of the universe Through non-player characters, you can give the players rumors, hints, threats, help them out of tight spots, lure them into tight spots, get them back on the track, lure them away from their objective, and generally help or hinder the characters as much as necessary. Non-player characters provide a major link between player characters and the referee and offer you a chance to get in on the role-playing fun.

ADMINISTERING ADVENTURES

Traveller scenarios come in many sizes and types In ascending order by size, they are called patron encounters, casual encounters, amber zones, short adventures, adventures, and campaigns. Size also has a direct bearing on the completeness of detail and on the complexity of the situation. Each type of scenario has its own special appeal.

Patron Encounters: The smallest, easiest encounter is with a patron, who will provide purpose and possibly limited funds

One method of administering a patron encounter is to write a short paragraph for the players to read which briefly details the information which is available to them Such information includes the location, a description of the patron, the task to be assigned, and the remuneration to be paid to the players. In addition, several details should be included to establish some opinions in the minds of the characters.

Rumors encountered in the course of adventures may add to what the players know about their patron and the situation In some cases, a rumor may be treated as an absent patron, leading the characters off on a search of their own.

Casual Encounters: Somewhat more detailed than the patron encounter is the casual encounter A patron appears but is more fully detailed and described than is the above patron. This description often helps the adventurers determine the attitudes or opinions of the patron, which help to guide their decisions You will already have established a single purpose, mission, or task for the patron, and you will present it to the players

The players must decide whether to accept the assignment and then set about planning a course of action. Because the casual encounter patron is more clearly defined, you may be called upon to role-play the patron (taking care not to take over the action or to provide too much guidance)

Amber Zones: An amber zone is a travel zone code promulgated by the Travellers' Aid Society to ward off individuals from dangerous worlds. This same name has been assumed for situations which present a danger to characters and to warn them to use caution An amber zone situation need not take place on an amber zone world These situations present a problem or predicament to the players and usually include a general outline for you to follow when refereeing the situation. You must provide deck plans or maps where called for, and you must be prepared to deal with problems with background or reactions when it becomes necessary

Short Adventures: Complete situations presented to the players for their response are often short adventures. Such short adventures include relatively complete maps or deck plans, plus descriptions, detailed situations, animal encounter tables, other necessary information, and an overview to explain the situation to you. Short adventures are restricted only in their length and often are confined to a single building, starport, or incident which must be dealt with by the players.

Short adventures focus mainly on a single interesting situation and provide relatively detailed background and data on that specific item

Adventures: Large, detailed scenarios which deal completely with a single topic are called adventures Although similar in nature to a short adventure, the larger adventure provides pre-generated NPCs, details of starships to be encountered, background or library data, and other materials to flesh out the local portion of the universe All of this embellishment is in addition to the basic situation which is to be dealt with. It serves to make the environment more realistic, more challenging, and more informative. In the course of dealing with the basic idea of the adventure, the players also deal with the background that makes the universe in this situation seem more real.

Adventures are also long enough and complex enough that the players will encounter several situations, often only different aspects of the same basic premise, while they play.

Campaigns: The campaign is a combination of all of the above types of situations into one continuous, intermeshing role-playing life The background for a campaign remains constant and consistent, while individual adventures, short adventures, amber zones, casual encounters, and patron encounters unfold within it. The fact that the campaign maintains a constant background means that players who learn some fact about the universe in one adventure can often depend on that fact and use it later in another adventure.

Campaigns are almost always dependent on continuing characters Once a character is generated, he continues (at least until death or retirement) to adventure within the same framework of history and background while gradually building up his knowledge and skills.

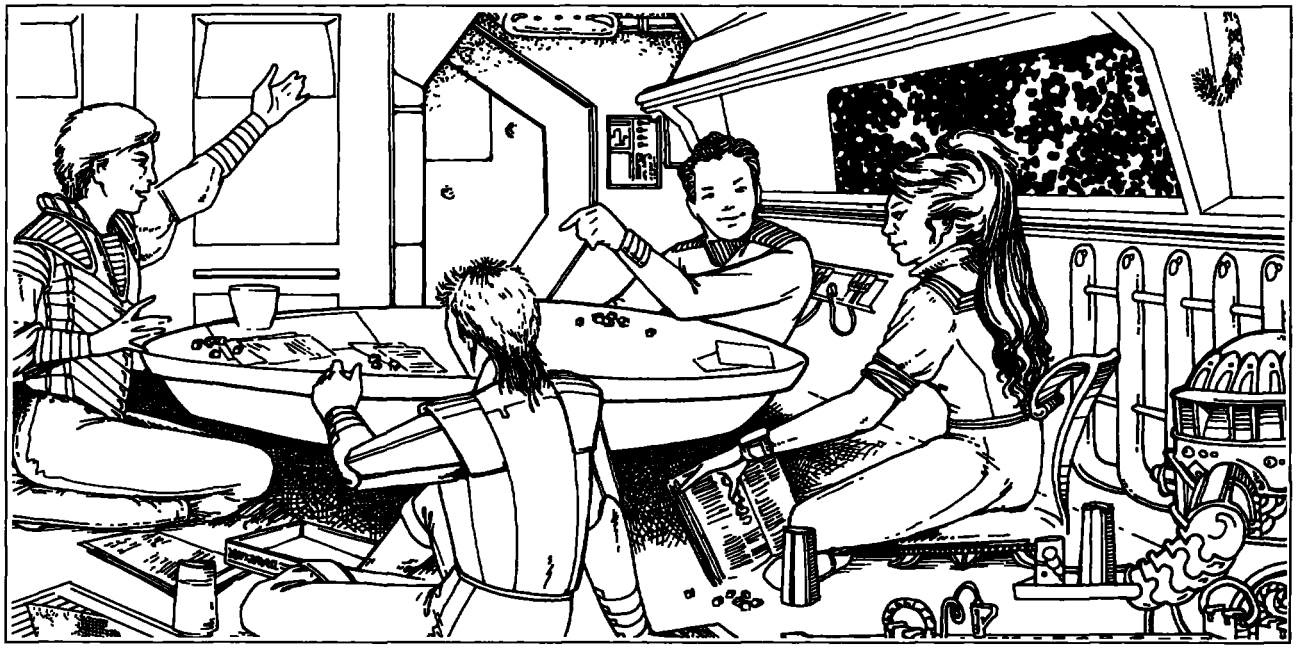
STARFARERS

Humanity calls its region of the galaxy by a variety of names, all of which amount to the same idea: Charted Space This is an area roughly 500 parsecs across within which are concentrated more than a thousand starfaring races on, or regularly visiting, more than 80,000 worlds. Expeditions toward the galactic core have explored (and settled parts of) a narrow corridor some 30 parsecs wide and more than 7000 parsecs long Expeditions toward the galactic rim have reached nearly 3000 parsecs toward intergalactic space. Lateral expeditions have reached kiloparsecs in each direction.

The results have always been the same·

First, there is life everywhere Worlds naturally spawn their own life forms, and many produce intelligent species.

Second, nowhere beyond Charted Space has intelligence produced the jump drive that makes interstellar travel possible. Worlds are full of life; space is empty



CONDUCT OF THE ADVENTURING SESSION

Sessions should be conducted in some relatively quiet, comfortable place where there is room for you to lay your materials out of the direct vision of the players, but close enough for conversation If the quarters are too close, it may be necessary for you to use a screen of some sort (a passable screen can be made by taping sheets of cardboard together, accordion-style) to prevent the players from reading your information sheets

Beginning: During the first adventuring session of a campaign or at the beginning of a scenario, take a moment out to determine a little background data. Why are the characters where they are, and why are they together? Working out this background data will help the players get into their roles.

When the players' initial actions are made clear to you (don't be afraid to ask questions), figure out what will happen to them as a result of those actions If, for example, the group wishes to adjourn to a library to search for information, you should consider where they are and how long the trip will take If they are hundreds of kilometers from a settlement, it may take some time just to get to the library. If they are in a hotel lobby and there is a computer terminal ten meters away which hooks into a planetwide information grid, only a few seconds will pass

You, as the referee, must decide what information the group can find out, how long it will take them, and what kinds of tasks they can use to see if they can find the information they want. You must reveal the information the players have discovered (which may or may not be totally accurate) and tell them any other details they may have noticed (like the fact that someone is following them as they leave the library).

Many times it will be useful to think of a situation in present-day terms, scaled down a little. For example, for a starport think of an airport or seaport. For a world think instead of a continent The use of analogies will help you to resolve most situations easily.

Game Time: The passage of game time is of great importance. Player characters' actions (often done by using tasks) take time. One of the most important parts of being a good referee is keeping proper track of the passage of game time.

One of the greatest tools available to you is the ability to make players waste game time on tasks which do not further the adventure especially if the group is working against a specific deadline. By simply causing the players to become side-tracked, you can upset their schedule and force them to revise their intricately planned schemes.

You should watch out, however, for situations which take almost no game time but take a great deal of real time. For instance, if a player wants to know certain details of a door he is about to go through he might ask "How big is it?" On being told, he might ask "Is it shut or open? Can I see anything through it or is the area beyond it dark?" All of this information could be gained in a few seconds of observation; it is the artificial nature of the game that makes it take so long. Do not count this against the passage of game time.

In addition, time may pass just because of necessity. Characters must eat and sleep Characters who are sick or injured may require medical care. Starships, vehicles, and robots must all be maintained at regular intervals or they will deteriorate.

Other Influences: The actions of forces in the universe other than the players should not be neglected and must be constantly on your mind as you referee the session. For example, a group of characters might run afoul of the law while completing a job, or they might anger some local criminal organization If you decide that something of this nature has happened, you must also decide what action (if any) the offended party (or parties) will take, how long before that action is put into motion, and what effect the action will have on the players. Sometimes it will be necessary for you to keep track of several such "plots" at once while the players continue blissfully unaware of the events developing behind the scenes.

As the session continues, the players will often engage in discussions of varying lengths. Encourage the conversations to stay on track (don't let them stray to outside events such as a replay of last night's football game or a blow-by-blow of a similar situation in another game), but otherwise let them run their course.

As these discussions take place, you should consider what is really happening to the characters and how long it takes in game terms. If the characters begin a loud argument in the middle of a restaurant, for instance, the restaurant owner will interrupt them and ask them to leave. If the adventurers are having the argument in the privacy of their own spaceship, however, you need only figure out how much game time the discussion takes and let it run its course.

The End of the Session: It may not be possible to resolve a particular scenario in one session When a stopping point is reached (usually some temporary lull in the action when the players are guaranteed safety for the next few minutes of game time), make written notes of the situation. The session can then be picked up where it stopped during the next session even if considerable time passes

When the players have accomplished their goal, the scenario is over. If this scenario is part of an ongoing campaign, you must determine whether the players receive the reward they were promised (this should usually be the case, but having a patron skip out without paying is a useful plot device).

Obnoxious or obstreperous player behavior should not be tolerated. A word or two of warning may be adequate, but a continually disruptive player should be ejected from the group. You, as the referee, owe this to yourself and to the other players. By the same token, you have a duty to the players to remain calm and collected. Losing your temper is no fun for anybody involved. As time passes, you will gain experience, and the sessions will run smoother.

In a way, **Traveller** is a contest between the referee and the players since the referee represents to the players all the nasty things the universe can be. As such, you may be tempted to view the players as "the enemy" and to thwart their every move, taking every opportunity to make things tough on them Obviously, this can make even the most enthusiastic player sullen and suspicious, and it spoils all the entertainment value of **Traveller**.

Your fun when acting as referee is different from a player's fun While players plot and scheme on the basis of (often) incomplete data, you see all and know all Observing the reactions of different people to the same problem, or watching an intricate plan unfold (and often take some quite unexpected turns) are **Traveller**'s rewards for you as referee.

AN ADVENTURE GUIDE

Traveller adventures span the entire range of experience that can be expected in the universe of the far future The potential for adventure is endless, depending as it does on the situation and on the characters themselves.

An adventure need not be of one type; often mixing several types together results in more excitement. The types of adventures include: the chase/pursuit, the assault/rescue, discovery/exploration, enrichment, the enigma/mystery, and novelty.

The *chase/pursuit* may involve characters on either side of the situation, and it is possible for events to turn the tables on the players, converting the pursuers to the pursued on a moment's notice

Assault/rescue usually involves force or violence in overwhelming enemy characters or the forces of nature in order to obtain some goal. Characters may be on either side of the assault/rescue.

THE FIRST STARFARERS

We place the age of the universe at more than fifteen billion years.

The oldest stars in Charted Space are dim red dwarfs some ten billion years old

Intelligent life first appeared in Charted Space more than two billion years ago

Intelligent life first began sublight travel between the stars more than a billion years ago. Short-lived beings found sublight travel tedious and frustrating and contented themselves with confinement to a few star systems. Longer lived races ranged far and wide using generation ships, cold sleep, and even electronic personality transfers.

The first jump drive was an unrealized dream until only 300,000 years ago. By a fluke of evolution, a single supergenius was born to the pastoral Droyne, and under his leadership this ancient race travelled extensively throughout a region nearly 1000 parsecs across. The race worked wonders throughout Charted Space and then destroyed themselves in a wide-ranging war that shattered worlds and destroyed civilizations

Today, the Droyne live in independent communities on many separate worlds. They avoid entanglements and political disputes; they live peacefully with their neighbors; and their hand-built jump drives are the best that can be found anywhere.

Discovery/exploration puts the characters into an unknown situation where they must find information about their environment either to ensure their own survival or as part of some interest they have.

Enrichment makes economic, social, intellectual, or other improvement the primary goal Such adventures are mercenary (although not necessarily military) in nature.

The *enigma/mystery* presents a situation for characters to solve It may be a simple murder mystery with clues all around, or it may be a puzzling alien structure about which the group is curious.

Novelty adventures place the characters in interesting situations and allow them to deal with them A visit to an interstellar casino for a round of gambling could be a novelty to some characters

Catalysts serve to spark an adventure by providing interest and direction. They include danger (which forces action through threats), opportunity (which forces action through a promise of reward), and puzzles (which prompt action through curiosity). By assembling these aspects of adventures together, you can produce interesting and ever-changing adventures for the players.

TRAVELLER CAMPAIGNS

Traveller campaigns can be a simple string of adventures and encounters, set against the background of a pregenerated sector in which the adventurers fly from world to world, engaging in trade and speculation, seeking and finding patrons, taking on and solving problems, and generally wandering about the universe.

With a small bit of effort on your part, however, a campaign can be structured to be much, much more. There are several seeds to a good campaign: the basics, the gimmick, the pull, the push, and (optionally) the enigma.

The Basics: Maybe the thought of the basics is obvious, but it often gets overlooked At a minimum, the basics should address the subsector maps, interstellar governments, and local technological levels. As needed, you may add more basics to the campaign, including animal encounter tables, local organizations of importance, world and local laws, history, and other foundations. But there is more than just the basics to the good campaign.

The Gimmick: Any campaign needs gimmicks to appeal to the players. Early on they have no idea what is of importance in a grand sense, and they tend to be self-centered Gimmicks are designed to appeal to the players, enabling them to search for obviously valuable items while they also learn about their universe.

In **Traveller** gimmicks rank above money or ordinary ships, they represent some advantage, such as high technology or special talents. The Psionic Institute is an example of such a gimmick sought early on by most characters. It meets one definition of a gimmick. an advantage the player has over most people. Gimmicks are things which cannot be bought; they must be earned through hard work, clever planning, and good fortune. Keep in mind that gimmicks are things that are acquired early by the players which then serve the person (and the group) for the rest of the campaign

The Pull: The pull is a simple name for a goal that attracts adventurers much like a magnet attracts iron. It can be as simple as a fabled mineral deposit on a distant world or as complex as a secret formula that will keep the sun from going nova.

Pulls need thought and often must be tailored to players. When one is an anthropologist interested in primitive cultures, the pull can be the secret of some race on a far-off world.

Often, campaigns can do with two pulls. One may be major and the other minor—one important and the other dormant until needed. Shifting emphasis can make the campaign realistic.

The Push: The push is the opposite of the pull—something players do not especially like, but it keeps cropping up anyway. It can be simple like law officers, or complex like a nefarious group or race intent on conquering the universe. As with pulls, there can be multiple pushes, some large and some small

Pushes can come into play when the referee wants to push someone. If the group is wasting time, then over the hill come barbarians that have been following the group, and everyone knows they are bloodthirsty killers. The group moves on.

The Enigma: There is always something the players do not understand. The enigma is, on a large scale, the secret of the universe; on a smaller scale, it is a secret worth knowing. Early in a campaign, players may not know what the enigma is. Later, when presented with clues, they may realize there is a puzzle, but they'll have no idea of its solution. Still later, they may have all of the information and need to find an analyst to decode it. With the secret at their disposal, they will need to decide how to use this information. Doling out the clues and information slowly can make the campaign an intense, interesting cliffhanger until the very end.

CHARTS

The Referee's Guide contains many additional **Traveller** rules. To make learning and using these rules as fast and easy as possible, many are in visual form using charts. Instead of wading through rules, just follow the paragraphs. For any step, the instructions, tables, and any supporting text are in the same place. No page-flipping or hunting for associated data is needed

All chart pages share the following features:

- Each starts with a box labeled 1. For reference purposes, paragraphs are numbered
- When a chart is long enough to need another page, the next page immediately follows the first.
- Each chart page contains the name of the chart, so you always know which chart you are on.
- Each chart paragraph represents a step in a given rules process; each paragraph states what you are to do at that point.
- If a table or chart is needed, it is in the box when and where you need it.
- Sometimes, in order to save space, a chart may branch or loop back over some previous steps These are indicated by labeled paragraphs (such as "Do Another Animal.")
- Text describing helpful information that is not essential is in italics.

Because many rules are in chart form, text in the chapter only introduces the chapter's concepts and defines terms. Once familiar with the charts, you should be able to work from the chart and only refer to the text when you have forgotten what something means.

RESOLVING TASKS

The Universal Task Profile (UTP) provides you with a simple (but still comprehensive) method of codifying tasks So how does the UTP system work?

A UTP answers these questions about a task.

- How hard is the task?
- What skills and characteristics are crucial to this task?
- How long does this task typically take?
- Does this task involve any special risks?

The UTP provides a list of answers to these questions. A task uses the predefined answers in response to questions

The predefined answers are specified in real-world terms Even if you don't know the task system, you can quickly understand a task defined by a Universal Task Profile.

WHAT DOES A UTP LOOK LIKE?

The UTP always follows the same format. For example·

To locate the source of the strange hum:
Routine, Recon, Int, 1 min (hazardous, unskilled OK).
Referee: Any **Major** or **Destroyed** mishaps automatically become **Minor** mishaps

The UTP is always separated from the surrounding text by a blank line both above and below

HOW HARD IS THE TASK?

When setting the difficulty, select from four difficulty levels

Simple: Success is highly likely. Roll 3+ on 2D to succeed

Routine: Success is likely. Roll 7+ on 2D to succeed

Difficult: Success is unlikely Roll 11+ on 2D to succeed.

Formidable: Success is rare. Roll 15+ on 2D to succeed; success is only possible with DMs.

Note that the 2D roll for each level is easy to remember because it is 4 more than the prior level. If a 2 is rolled, a *fumble* occurs and the task attempt fails no matter what.

WHAT IS CRUCIAL TO THE SUCCESS?

When crucial skills and characteristics are chosen as task modifiers (DMs), a task uses related skills (like Pilot and Ship's Boat), or one skill and one characteristic

A skill level must be added directly as a DM on the task roll. Characteristics are *always* divided by 5 (drop fractions) when used in tasks Never add characteristics directly.

HOW LONG DOES THIS TASK TAKE?

The time increment on a task profile is 10 percent of the typical task duration A roll of 3 dice (whose average result is 10) determines how many increments the task takes. The increment is always *one-tenth* of the typical task duration

If the duration of the task doesn't matter, the task is *Instant* and that's that. No time roll is made.

If the duration *always* takes the same time, the task is *Absolute* No time roll is made.

The duration of an attempt equals the increment times 3D (after any DMs are applied). The minimum is 3 increments

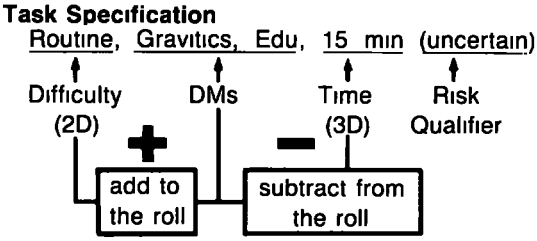
DOES THIS TASK INVOLVE ANY SPECIAL RISKS?

The standard task assumes a normal amount of risk. Other levels of risk are possible

UNIVERSAL TASK PROFILE FORMAT

Task Phrase
To diagnose damage done to an air/raft

Task Specification
Routine, Gravitics, Edu, 15 min (uncertain)



Safe: With *safe* tasks if a mishap occurs, it is never damaging

Hazardous: With *hazardous* tasks, there is a high likelihood of a serious mishap if the task fails

Fateful: With *fateful* tasks, a mishap is guaranteed if the task fails Don't confuse this with hazardous, which indicates the *severity of mishap.* "To avoid a mishap" situations are good examples of fateful tasks because if they fail, the mishap has not been avoided.

Uncertain: With *uncertain* tasks, the result of the attempt is largely opinion or cannot be confirmed. Those individuals associated with the task have some idea of how successful the task attempt was, however, they are not certain of the outcome

Sensor readings, interchanges between characters (including any task which might require a reaction roll), psionics, computer programming, repairs, and research are all good candidates for uncertain tasks.

Unskilled OK: When a task states *unskilled OK*, the specified skills are useful, but not required There is no penalty for not having the specified skills

Confrontation: When two opposing sides are working at cross-purposes, the task becomes a *confrontation*

HASTY OR CAUTIOUS TASKS

The standard task attempt assumes the character is taking a reasonable amount of care while performing the indicated task The player can change this amount of care

Hasty: When a player is in a hurry, he can specify that he would prefer a *hasty* task. The time required is shorter, but the task becomes harder. The task DMs are doubled before subtracting them from the time roll, the task difficulty increases one level

Cautious: When it is more important to reduce danger than to finish quickly, a player can specify a *cautious* task

A determination roll is required first. If successful, the task is cautious If unsuccessful, the task is increased in difficulty one level

In a cautious task, the time roll is doubled before subtracting DMs, the task difficulty decreases one level

TASKS THAT FAIL

The details of handling failed tasks are the realm of the referee and are covered more fully in this *Referee's Manual.*

Referee's Guide to Tasks

Most actions that characters in **Traveller** will try to undertake can be reduced to a series of simple tasks. These tasks, expressed in terms of their difficulty and the skills and characteristics that will affect their outcome, provide the players with a consistent, readily understood statement of what is expected of them, and they provide the referee with simple yet challenging situations.

The Universal Task Profile (UTP) provides players and referees with a simple (but still comprehensive) method of codifying tasks To set up a UTP for a task, simply answer these questions·

- How hard is the task?
- What skills and characteristics are crucial to the success of this task?
- How long does this task typically take?
- Does this task involve any special risks?

The task profile provides a list of ready-made answers to all of these questions. To define a UTP for the task, select one of the predefined answers for each question. The predefined answers are specified in real-world terms. Even a player who doesn't know the UTP system can quickly understand a task defined by a Universal Task Profile.

WHAT DOES A TASK LOOK LIKE?

When the UTP is presented in an adventure, it always looks like the following·

To locate the source of the strange hum·
Routine, Recon, Int, 1 min (hazardous, unskilled OK)
Referee. Any Major or Destroyed mishaps automatically become Minor mishaps.

Note the UTP stands out in this body of text It is easy to find, this is done deliberately Nothing is more frustrating while playing an adventure than trying to locate a die roll that is buried in a solid page of text

Follow the format religiously: inconsistencies are confusing. To summarize, the format is.

1. Initial blank line.
2 A indented one-line statement (beginning with "To") specifying what the task is
3 The task profile on its own line in the order of the following list:
   A Difficulty,
   B DMs,
   C Time
   D (Risk qualifiers).

Each entry on the UTP line is separated by commas, and risk qualifiers are always in parentheses

If the time is omitted, the task is automatically Instant.

4. The optional Referee paragraph If it exists, always start the Referee paragraph with the word "Referee" indented. Do not embed any blank lines in the Referee paragraphs
5 Final blank line Signal the end of the entire UTP and the referee paragraph (if any) by a blank line.

HOW HARD IS THE TASK?

When setting task difficulty, select from the following predefined levels·

Simple: Success is highly likely. Roll 3+ on 2D to succeed.
Routine: Success is likely Roll 7+ on 2D to succeed
Difficult: Success is unlikely. Roll 11+ on 2D to succeed.
Formidable: Success is rare. Roll 15+ on 2D to succeed; success is only possible with DMs.
Impossible: Success cannot be achieved. Roll 19+ on 2D to succeed, success is possible only with DMs. More reasonably, success is possible only if some situation or information changes the difficulty level from Impossible to Formidable or less.

Note that the 2D roll for each level is easy to remember because it is 4 more than the prior level: 3-7-11-15-19.

If the roll is ever a natural 2 (regardless of DMs), a *fumble* occurs and the task attempt fails

WHAT IS CRUCIAL TO SUCCESS?

When selecting the crucial skills and characteristics as task modifiers (DMs), try to select two related skills (such as Pilot and Ship's Boat), or as an alternative, select one skill and one characteristic. If you are tempted to select more than two skills or characteristics, alter the difficulty level rather than increase the number of DMs. Long lists of DMs are cumbersome and slow down a session

If it seems that two DMs are just not enough, try defining two separate tasks for the situation instead of one.

Skills: Skill levels are always added directly as a DM on the task roll

Characteristics: Characteristics are always, always divided by 5 (drop fractions) when used in tasks. Never add

characteristics directly

Exceptional Success: If the player's task roll exceeds what is needed for success by 2+ (including DMs), then the character has achieved *exceptional success.*

For example, a player is rolling on a Difficult task and has a total DM of +3. Since the player needs 11+ to succeed on a Difficult task, if he manages to roll 13 or better (including his DM of +3, so his actual roll only needs to be 10 or better), he will have achieved exceptional success. Some tasks (such as combat) may state additional benefits for achieving exceptional success.

Exceptional Failure: If the player's task roll fails, and is less than what is needed by 2 or more, then *exceptional failure* has occurred. Following the same example above, the player needs 11+ to succeed on the difficult task If the player fails, and his final roll (including his DM of +3) was 9 or less (an actual roll of 6 or less, since he has a DM of +3), then exceptional failure will have occurred.

HOW LONG DOES THIS TASK TAKE?

Estimate how long the task typically takes using whatever time increment is most convenient Approximations are fine.

Divide the time estimate by 10 for use in the UTP A roll of 3D (whose average result is 10) is used to determine how many of these time increments the task actually takes Remember the UTP time increment is always one-tenth of the total estimated task duration.

If the time duration of the task doesn't matter, declare the task to be Instant and that's that. No time roll is made.

Some tasks may state Absolute in addition to a period of time; in this case the task always takes the stated amount of time; no time roll is made.

Duration: The actual duration of a task attempt equals the increment time times 3D (after any DMs are applied) The minimum time is 3 increments (because the minimum roll on 3D is 3).

DOES THIS TASK INVOLVE ANY SPECIAL RISKS?

The basic task assumes the task requires the specified skills to avoid an increase in difficulty. The task outcome is certain, and the task involves a mild risk of mishap Other types of risks are possible:

Safe: With some tasks, if a mishap occurs, it is never damaging: such tasks are *safe*. On a safe task, if a fumble occurs, the mishap type is always Superficial (no roll is needed on the Mishap Table).

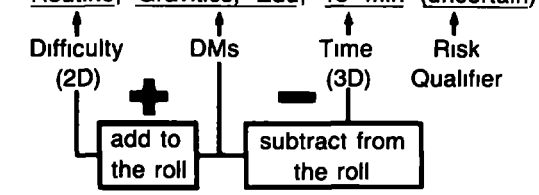
Hazardous: Some tasks are extremely dangerous with a high likelihood of a serious mishap if the task fails. such tasks are *hazardous*. On a hazardous task, a 2D mishap occurs on exceptional failure. A fumble mishap on a hazardous task is a 3D mishap. Thus, as one would expect, hazardous tasks run a much higher risk of mishap if they fail

Fateful: For some tasks, a mishap is guaranteed if the task fails (don't confuse this with hazardous, which indicates the severity of mishap): when this is the case, the task is *fateful* "To avoid a mishap" situations are good examples of fateful tasks because if they fail, the mishap has not been avoided

On a fateful task, if failure occurs, roll 2D on the Mishap Table. Mishaps are guaranteed if a fateful task fails If the task is listed as fateful and hazardous, roll 3D on the Mishap Table instead of rolling 2D If the task is listed as fateful (but not hazardous), implement a Superficial mishap no mishap roll is required.

UNIVERSAL TASK PROFILE FORMAT

Task Phrase
To diagnose damage done to an air/raft
Task Specification
Routine, Gravitics, Edu, 15 min (uncertain)



Uncertain: If the result of a task attempt is largely "opinion" or if, because of the nature of the task, immediate feedback on how successful the task has been is not possible, then declare the task to be *uncertain* With an uncertain task, those associated with the task have some idea of how successful the task attempt was, but they are not certain of the outcome

Sensor readings, interchanges between characters (including tasks that may require a reaction roll), psionics, computer programming, repairs, and research may be uncertain tasks

Both the player and referee roll for the attempt The referee's roll is hidden from the player and modifies the player's roll.

- If both fail, the result is *no truth*. The player is misled about the success of the task attempt. Erroneous information is given.
- If one succeeds and one fails, the result is *some truth*. Some valid information is given. The player may fail the attempt and still get information, although he cannot know for sure
- If both succeed, the result is *total truth* Totally valid information is given, although the player may still not believe it

A character may know whether he has succeeded. If the player achieves exceptional success, the referee may elect to tell the player the result of the hidden roll The referee must decide if this is warranted, however, sometimes it is not.

Unskilled OK: If the specified skills are not essential to a successful task attempt, then the task is *unskilled OK*

Confrontation: If two sides are working to counter the success of each other in some way (such as in a debate, or in hand-to-hand combat), the task is a single confrontation task.

One side is designated as the offender and the other is the defender. The offender applies his expertise in the task's listed skills and characteristics as + DMs, while the defender applies his as −DMs on the task The offender is trying to make the task succeed, but the defender is trying to make the task fail Many confrontation tasks list the particular DMs for the offender and defender, as shown in this task example

To get NPCs to go along with a counter-intuitive attack plan: Difficult, Off = Leader, Persuasion, Def = Tactics, Recon.

If the task does not differentiate attacker and defender DMs, they apply equally to both. If the offender succeeds, the defender fails; if the offender achieves success, the defender

MISHAP TABLE

Die Roll	*Result*
2	Reroll
3+	Superficial (1D)
7+	Minor (2D)
11+	Major (3D)
15+	Destroyed (4D)

Note this table has the same 3-7-11-15 die roll sequence as the Task difficulty This makes the Mishap Table easy to remember.

Explanation of Mishap Table results:

Superficial (1D): Impose superficial damage on some device/vehicle involved in the task and/or 1D wounds to the character.

Minor (2D): As above, except impose minor damage and/or 2D wounds.

Major (3D): As above, except impose major damage and/or 3D wounds.

Destroyed (4D): As above, except impose destroyed damage and/or 4D wounds.

A specific mishap is preferred to these general results: where possible, spell out specific mishaps in the Referee paragraph If mishap results seem inappropriate, retroactively declare the task to have been a safe task, and implement a Superficial mishap

must roll 2D on the Mishap Table.

HASTY OR CAUTIOUS TASKS

The standard task attempt (in the absence of any other specification by the player) assumes that the character is taking a reasonable amount of care while performing the task This is the normal task attempt

Hasty: When a player is in a hurry, he can specify a *hasty* task The time required tends to be shorter, but the task becomes harder. Task DMs are doubled before subtracting them from the time roll, and the task difficulty increases one level. Hasty attempts tend to take less time, but they are harder.

Cautious: When it is more important to reduce danger than to finish quickly, a player can specify a *cautious* task. The opposite of a hasty attempt, a cautious attempt provides a way to reduce the risk of failure when attempting a task at the expense of time and perhaps an increase in difficulty

Before a player may try a cautious attempt, he must first make a determination roll: if successful, he may continue with the cautious attempt. If he fails to stay determined, the task increases in difficulty by one level

If the determination roll was successful, the player may perform a cautious attempt To perform the cautious attempt, decrease the task difficulty by one level and double the 3D time roll before subtracting the DMs from it (a cautious attempt may take more time).

WHAT HAPPENS WHEN A TASK ATTEMPT FAILS?

When a task attempt fails, the character may retry the task without penalty if exceptional failure has not occurred However, if exceptional failure has occurred, the character must stay determined to retry the task without penalty. Staying determined is a special task with its own UTP

To stay determined:
Difficult, Det
Referee· Endurance and Intelligence combined represent a character's Determination (or force of will)

- If the character is successful at staying determined, the character can retry the failed task with no penalty
- If the character fails to stay determined, the task difficulty increases *one* level A Formidable task increased in difficulty becomes impossible—that is, failure is permanent— no more retries are possible until circumstances change enough to allow a new UTP to be defined for the task

Jack-of-all-trades skill provides one free retry per level of skill (representing the character's resourcefulness)

Automatic Failure: If the task roll is exactly 2 (disregarding DMs), a fumble mishap occurs On a hazardous task, a mishap occurs on exceptional failure. On a fateful task, a mishap always occurs when the task does not succeed (whenever any level of failure occurs)

MISHAPS

If a mishap occurs, roll 2D on the Mishap Table If the task is hazardous and a fumble mishap occurs, roll 3D on the Mishap Table.

On any failed fateful task, roll 2D on the Mishap Table. If the task is fateful and hazardous then roll 3D on the Mishap Table

GENERAL DAMAGE AND REPAIR

Whenever an object (device or vehicle) is damaged in the absence of detailed rules for diagnosis and repair, use the following procedure

1 Diagnose the problem The standard diagnosis task is Routine (uncertain), the referee must determine the applicable skill DMs and time

2 Once the player's diagnosis task roll is successful, establish a UTP for performing the repairs based on the damage level, as per the General Damage and Repair Table below Repairs in the shop can be made without a successful diagnosis at an additional cost multiplier of 1D (just replace the entire assembly if it can't be determined what's wrong).

WORKING WITH TASKS

As you work with the task system, here are a few pointers·

- Don't overdo predefined tasks. Many of the published tasks are suggestions, not absolute requirements
- A Destroyed mishap can only occur from a fumble on a hazardous task or from failure on a fateful, hazardous task.
- Task subdivision invites mishaps
- Don't implement mishaps if they seem out of place.
- Don't bother rolling for time unless it is important
- Use tasks with a difficulty level of Simple to see how long something will take.
- The goal is always to keep the game moving, don't become a slave to the rules.

- When establishing the difficulty level of a task, assume a skill level of zero in the crucial skill Then if the character doesn't have the crucial skill, raise the established task difficulty one level (see DM notes, below).
- The task system is intended to provide instant "substance" to a situation without getting bogged down in game rules. Use only as much of a task as seems appropriate

NOTES ABOUT DMS

These pointers will help you as you use tasks and work with the DMs on tasks.

- If the character does not have the crucial skill, increase the task difficulty one level.
- Occasionally, the character's Experience (Intelligence – 5 plus Education – 5) may be substituted for the lacking crucial skill.
- When the DMs are listed with commas, the sum of all available values may be used.
- When the DMs are joined by "or" only the highest value present may be used.
- When "average of" is stated, the average of the indicated values may be used (counting nonpresent skills as zero and reducing the average accordingly).
- DMs shown with a minus sign are detriments; they work against success (subtract from the task attempt rather than adding) and increase the task duration (add to the time roll rather than subtracting)
- Special case DMs are enclosed in brackets [], see the Referee paragraph for instructions.
- In any case, the absolute maximum net DM is plus or minus 8.

COMPUTER AUGMENTATION

Certain computerized devices have the ability to augment a character's chance of success when that character is in the process of attempting a technical task. This way, if a task lists Education as a characteristic or is obviously highly technical, the character can temporarily gain an additional +1 DM by using *computer augmentation*.

For example, using a hand computer with a technical database, a character can look up the operational details of his air/raft and gain a +1 when performing repairs.

However, a character with *no skill at all* can also use computer augmentation to gain a temporary Technical skill level-0 with the appropriate computerized device.

To gain a temporary skill level-0 through computer augmentation·

Formidable, Int, Edu, 1 hour.

Referee· Success at this task gives a skill level-0 for the next series of task rolls on a certain task using the temporary skill level-0. This task is not possible if the skill being sought is nontechnical in nature or if the task is uncertain.

EFFECTS OF TECH LEVEL ON SKILL LEVEL

No one would dispute that a doctor at Tech Code Industrial (Tech Level 4 to 5) would have difficulties using Tech Level 15 medical instruments. A doctor from a High Stellar (Tech 14 to 16) world would have trouble with Tech Level 5 instruments.

Simulating such Tech Level effects on a characters *effective* skill level is easy if the character's homeworld Tech Code is known. For each Tech Level above the highest Tech Level represented by the Tech Code, subtract one from the character's skill level.

For example, a character who has a skill level of Pilot-3. The character is from an Average Stellar world (Tech Level 11 to 13) but wants to pilot a Tech Level 15 starship. Tech Level 15 is two Tech Levels above the highest Tech Level represented by Average Stellar (Tech Level 13). Thus, the character whas an effective skill level of Pilot-1 when piloting a Tech Level 15 starship.

To simulate the effect of skill level when working with lower tech items, subtract one from the character's skill level for each *Tech Code* below the character's homeworld Tech Code. If our character above with wants to pilot a Tech Level 9 starship he would do so with a skill of Pilot-2. Since Tech Level 9 is Early Stellar (Tech Level 9 to 10), it is one Tech Code below Average Stellar, so our character's Pilot skill level is only one less

Skill level can never be reduced below 1 by these effects.

GENERAL DAMAGE AND REPAIR TABLE

Damage	*Operate*	*Task*	*Shop Repair Cost*
Superficial	Yes	Simple	1D% of new price
Minor	No	Routine	1D% × 1D% of new price
Major	No	Difficult	2D × 5% of new price
Destroyed	No	Formidable	2D × 2D × 5% of new price

For Repairs in the Field, increase the task difficulty one level

For Lack of Proper Tools, increase the task difficulty one level

For Lack of Spare Parts, increase the task difficulty one level.

All of the above difficulty increases are cumulative.

The "field" is any location without shop facilities of an adequate Tech Level.

If the party performs the repairs themselves (as is almost always the case in the field), the cost of labor is saved. Labor is 50 percent of the repair cost.

For repairs in the field, the cost of repairs is paid once the party returns to "civilization."

Superficial damage affects appearance but not function or operation. An object may take any number of Superficial damage mishaps without impairing its operation.

Unrepaired damage levels above **Superficial** are added together. Two **Minor** damage mishaps become **Major** damage; **Minor** and **Major** damage combined become **Destroyed.**

Destroyed mishaps are possible only on hazardous tasks or through cumulative mishaps on standard tasks.

If an object has **Major** damage that was repaired in the field (not yet taken into the shop), any task using that object is automatically Hazardous (high risk of another breakdown). This lasts until the original **Major** damage is totally repaired in the shop.

Generating Star Systems and Worlds

The Scout Service has long had the responsibility for the survey and mapping of the star systems of the Imperium. In the execution of their duties, the Scouts have established a standard format for referring to worlds. This format—the Universal World Profile (UWP)—provides essential information necessary for the identification of the characteristics, benefits, and hazards of specific worlds

Although the Scouts' interest extends to all of the planets and satellites of the system most trade, commerce, and travel deals with the main world in a star system. The mainworld is the single most important world in a system In most cases, the remainder of any system is essentially an undeveloped frontier.

The Basic Mainworld Generation Flowchart covers the procedures of system generation. The UWP code charts define the meanings of the codes produced by Basic Mainworld Generation.

IMPORTANT CONCEPTS AND DEFINITIONS

The Basic Mainworld Generation Flowchart introduces several important concepts and terms concerning star systems in **Traveller**.

Basic and Enhanced Generation: There are two distinct approaches to star system generation. Basic Mainworld Generation allows the referee to focus on just the main world in the system in the interest of saving time. Extended System Generation allows the referee to create an entire star system detailing the system's star(s), planets, gas giants, moons, and planetoid belts.

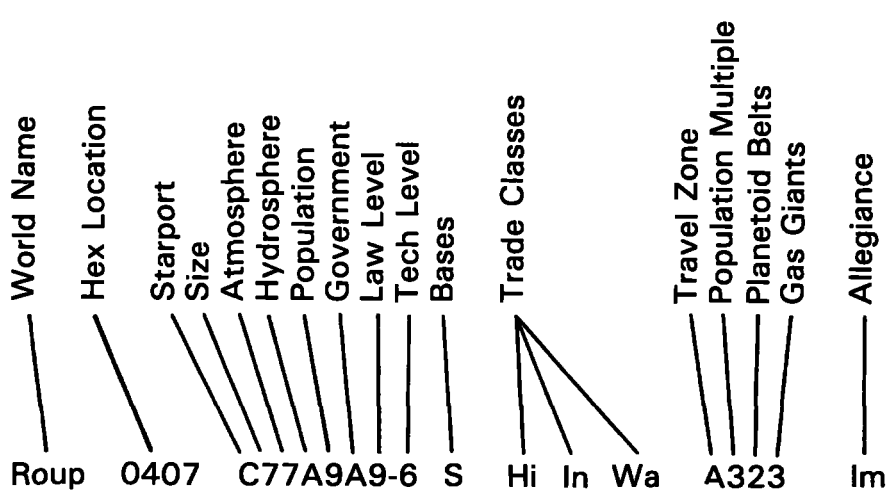
Extended System Generation is designed to pick up where the basic procedure leaves off Thus, extended generation allows you to put off completely detailing a star system until later, or it allows you to produce detailed star systems from existing **Traveller** star maps with a minimum of difficulty.

While the expanded method produces the most realistic adventure settings, it also requires a tremendous time commitment to generate all of a star system, complete with every attendant planet and satellite.

Universal World Profile (UWP): Traveller makes use of a series of letters and numbers called the Universal World Profile (UWP) to code the qualities and characteristics of a world. The codes for the UWP are explained in the World Data tables.

Sectors and Subsectors: The **Traveller** universe is grossly mapped into sectors, each measuring 32 parsecs by 40 parsecs. Each sector is further divided into sixteen subsectors,

UNIVERSAL WORLD PROFILE



each being an area of hexagonal cells measuring eight hexes by 10 hexes Each hex covers one parsec (3.26 light years). A subsector provides enough world and system data for an extended **Traveller** adventure; a sector is large enough to support an extended **Traveller** campaign.

Mapping subsectors consists of two sequences: *star mapping* and *mainworld creation*. When using a published **Traveller** subsector or sector map, the star mapping has already been done for you.

The Subsector Grid in this book is intended to be photocopied by the referee and filled in as worlds are generated. Additional copies can be made as mapping continues to other subsectors.

The System Hex Format Table shows the coding and placement of information about worlds within a subsector. This format allows players to note the information that would normally be available to them.

The Basic Mainworld Generation Flowchart provides the steps you must follow to map a subsector and to generate data about the system's mainworld.

Star System Presence: The presence of a star system depends on a system density determined by the referee. The System Presence Table indicates various levels of probability for star systems. Once a system is determined to exist, its presence should be marked on the subsector grid map

Starport Type: Many worlds have starports, and their presence is essential to interstellar trade and commerce. The various starport types provide a variety of facilities for use by space vessels

Each system must be checked for its mainworld starport type; mark the system with the starport letter on the subsector map. Various starport probabilities exists depending on how well travelled a subsector is

Backwater: A backwater is an untravelled interstellar outback. Exploration has not found resources or novelties that would make this area an important trade route, and it has been bypassed by major trading companies Examples: Reaver's Deep, and many client state regions outside the Imperium.

Frontier: A frontier is a region on the borders of settlement and exploitation Examples: Spinward Marches, Antares, Diaspora

Mature· A mature region is a well-travelled region which has a history of civilization and well-established trade Examples: Vland, Core.

Clustered: A clustered region is a well-travelled region, but some areas are bypassed which concentrates and intensifies the travel through certain key worlds. Examples: Old Expanses, Solomani Rim.

Bases: Stellar systems may have bases for military forces, the Navy, the Scouts, or for other arms of interstellar government. If a base is present, it should be marked in the hex You may elect to include other types of bases, perhaps army bases, merchant exploration or trade bases, and defense establishments.

You may decide to make the base a naval depot to support large-scale naval activities, but there should be no more than one naval depot per sector

You may also impose a Scout way station at selected worlds along communication routes.

Scout way stations are never co-located with naval depots

These bases serve as points for veterans to renew acquaintances, to find potential patrons, and to scrounge or buy surplus equipment of use to them

Gas Giants: A star system may have one or more gas giant planets. A gas giant is a large planet composed primarily of gaseous hydrogen and hydrogen compounds (similar to Jupiter or Saturn) Such planets may or may not have a solid core.

The most notable use for gas giants is in refuelling of spacecraft. The hydrogen atmosphere of gas giants may be skimmed by ships in order to fill their tanks and later use the material as fuel for their jump drives and powerplants This eliminates fuel cost for the vessel and increases profit It also allows refueling at systems that do not have starports The system's hex is marked with the gas giant symbol if a gas giant is present.

Gas giants are generally divided into two sizes large and small.

Large gas giants range in size from 60,000 kilometers in radius to perhaps 120,000 kilometers in radius Small gas giants range from about 20,000 kilometers in radius to just under 60,000 kilometers in radius.

System Name: Each system is generally named for the primary world within the parsec.

Travel Zones: Most worlds are assumed to be civilized or at least amenable to travellers and visitors Some, however, are caught in the throes of war, plagued by disease, or are simply not ready for interstellar visitors Such worlds are classified by travel zones to denote such status.

In most cases, you should indicate travel zones based on the information available. Three such zone types exist· green, amber, and red.

Green travel zones indicate that no special hazards exist to

SUBSECTORS WITHIN A SECTOR

A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

Although subsectors are named, they are routinely referred to by their letters from the above chart.

travellers. Any unmarked world is a green travel zone by default

Amber travel zones indicate that travellers should exercise caution when visiting such worlds. The amber code may mean that the citizens of the world are xenophobic, that the political situation is chaotic, or that some other danger exists within the system.

Red travel zones usually indicate that a major danger exists within the system. This danger may be disease and the world may be quarantined. The system may be involved in a war, and surface or space battles may be probable. Red travel zones are also used to show a government edict prohibiting entry to the system or world. This may be to protect a local civilization which is still developing and not yet ready for interstellar contacts or to protect valuable resources until the government can mine them.

You, as the referee, should establish the reason for an amber or red travel zone.

Communications Routes: Within the subsector, local governments will have established communications or trade routes connecting some (but not all) worlds. These routes serve as a conduit for messages between businesses and between governments as well as between people. They also serve as the basic routes that both liners and large freighters travel

You should examine the subsector map and connect key worlds with communications routes. Typically, express boat communications routes connect, or pass within, three hexes of worlds with type A or B starports.

If the subsector is an isolated community, the routes may not leave the map; if it is part of a larger confederation or empire, the routes will probably leave the edges to join with other parts of the sector.

Communications routes should be carefully drawn so as to avoid making all parts of the subsector accessible; a subsector should reserve some areas as backwaters for exploration and adventure. Communications routes are drawn as single lines connecting hexes on the subsector grid.

The star map, once generated, shows the distribution of star systems in space and shows their relationships to each other in terms of relative distance and commercial spacelane connections.

MAINWORLD CREATION

The term *world* refers to the various bodies that are contained in a stellar system; it encompasses planets, satellites, and asteroid belts. For example, the single most important world in a system may not be a planet; it could be a satellite of a gas giant or a planetoid within an asteroid belt.

This world creation process applies only to the single most important world in a star system; to generate additional details of the star system, see Extended System Generation.

The main world within a system is the single most important planet or satellite in the system· most often the world with the greatest population, the dominant local government type, and the star system's starport.

In addition to the information generated here, each mainworld should be allocated at least one page (and preferably several) in a central notebook maintained by the referee. As characteristics are generated, they should be recorded along with the name of the world and its location (generally its subsector and hex number). Record any other data which may be pertinent; the types of terrain present on the planetary surface, unique encounter tables (prescribed by the section on animal encounters), data on flora and fauna, industrial or agricultural capacity, social structure and government, or possibly actual maps of the planetary surface.

The specific procedures for generating the main world are given on the Basic Mainworld Generation Flowchart

EXTENDED SYSTEM GENERATION

Use the Extended System Generation when you wish to completely detail a star system's entire complement of planets and satellites.

System Nature: Star systems may be solitary, having one central star, or multiple, having two or more stars In an extreme situation, the star system may be quadruple, with two widely separated binary systems, each effectively a distinct system.

Primary Star Type: Star types range through a variety of spectral types using the codes O B A F G K M. These letters indicate in descending order the temperature of the stars. (A mnemonic for remembering this sequence is "Oh, Be A Fine Girl, Kiss Me.")

Spectral types O and B are extremely rare and will not normally be encountered. You may establish an O or B type star when and where necessary (although there should not be more than one or two type O or B stars in a sector)

Spectral Decimal Classification: The spectral type for stars is usually further specified by a decimal classification (using the digits 0 to 9) Thus a type F1 star is one-tenth of the way between F and G while a type F9 is nine-tenths of the way to G All stars are treated this way with the exception of type O, which ranges from 5 to 9 only, and dwarf stars, which do not have decimal classifications.

Companion Orbit: A result of *Close* indicates that the companion star is effectively touching the primary star; its orbit is so very close to the primary that it has practically no effect on orbits of planets. Other results on the column indicate the planetary orbit which the companion star occupies. If the planetary orbit for a companion is coded as within the sphere of the primary star on the table of zones, then the companion orbit is changed to close.

Far indicates that the companion star is outside the realm of the primary star's system.

Maximum Orbits: Orbits for planets, gas giants, and planetoid belts are available around the primary star and certain eligible companion stars The maximum orbits table indicates the highest numbered orbit available for the star.

Zones: The orbits around a star are classified as inside star, unavailable, inner, habitable, and outer The table of zones indicates (for each star type and size) the orbit number and its zone classification.

- Inside star orbits are physically inside the sphere of the star. They cannot be occupied by planets.
- Unavailable orbits are subject to intense heat from the star: a planet in such an orbit would be converted to vapor and dissipated. Such orbits cannot be occupied by planets
- Inner zone orbits expose worlds to relatively large amounts

of radiation, and such worlds are hot and inhospitable.

- Habitable zone orbits are in a temperate region where stellar radiation is neither too much nor too little If other factors are right, life may exist on worlds in this region.
- Outer zone orbits do not provide enough radiation for worlds, and they are cold and inhospitable.

Empty Orbits: Some orbits may be empty because of ancient collisions or through other effects of worlds and stars.

Empty orbits have no planets in them (although a companion star already placed in one remains there) Empty orbits are usually indicated as empty when describing a system, if only to show that no oversight was made in listing contents.

Planetoids: Planetoid belts (or asteroid belts) are accumulations of small chunks of rock or ice not large enough to be called planets. In basic system generation, a world size (Zero) is used to designate an asteroid belt For the purposes of distinction, the term "asteroid belt" describes a planetoid belt which is also the mainworld in a system, "planetoid belt" refers to any other group of planetoids in a system

Asteroid and planetoid belts hold between 1000 and 10,000 asteroids or planetoids each Asteroids and planetoids are generally under 200 kilometers in diameter.

Placing Known Components: Once the components of the system are determined, they must be placed within the system. The flowchart calls for component placement among the available orbits to be done randomly

To perform the random selection of an orbit, assign equal probability to each available orbit, and roll one die If there are six or fewer candidate orbits, one number is assigned to each orbit; extra or unused numbers indicate a reroll is required.

If there are more than six candidate orbits, divide the orbits evenly into two, three, or more groups (each of six or fewer candidate orbits), and roll a die to first determine which group the known component should be placed in Then, the actual choice within the group may be randomly made using another die roll.

Planet Generation: Planets outside the habitable zone are produced in a fashion very similar to those in the habitable zone, but various modifications are included for orbital position and other details

Satellites: For the purposes of this system, satellites produced are at least 200 kilometers in diameter; potentially any planet may have one or more satellites (captured planetoids) less than 200 kilometers in diameter.

Subordinate Government: Subordinate governments reflect the small, relatively powerless governments which can exist off the mainworld. Nevertheless, such subordinate governments may wield great power on their own territory.

Subordinate Facility: Possible subordinate facilities include farming, mining, colony, research laboratory, and military base.

Farming indicates that the world supports agriculture and is exploited to produce farm products.

Mining indicates the world or satellite has recoverable ores and is being exploited for industrial reasons

Colony indicates that a settlement has been established on the world or satellite. A colony may represent any of several types of establishment, including a model or demonstration settlement, a penal or deportation colony, or simply a group intent on settling and exploiting new territory.

Research Laboratory indicates that a scientific establishment has been located on the world or satellite. A research lab may be operated under the control of the government, or it may be privately operated

Military Base indicates that the world or satellite has a military force stationed on it. The military force is generally non-naval: it is an army or marine troop establishment. Often, a military

WORLD NAMING CONVENTIONS

A system carries two names: the name of its star and the name of its mainworld Of the two, the mainworld name is more important and is more frequently encountered.

The other worlds within a system carry their own names, but they are just as often referred to in terms of their position with relation to their star.

Conventions: The current Imperial world naming conventions were established during the Rule of Man, when Second Imperium scout ships thoroughly mapped the star systems and planets of the conquered First Imperium. Since the Second Imperium was directly formed from the Terran Confederation Navy, it seemed only natural that Terran conventions should be used.

Planets were identified by Greek letters, with the innermost planet labelled Alpha.

Satellites were identified by Anglic letters, with the innermost satellite identified as Ay.

For example, Terra is commonly known as Terra. It is also technically Sol Delta (Sol's orbit zero is empty). Luna, as Terra's only satellite, is Sol Delta Ay.

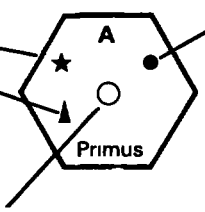
No.	*Greek*	*Anglic*
0	Alpha	Ay
1	Beta	Bee
2	Gamma	See
3	Delta	Dee
4	Epsilon	Ee
5	Zeta	Eff
6	Eta	Gee
7	Theta	Aitch
8	Iota	Eye
9	Kappa	Jay
10	Lambda	Kay
11	Mu	Ell
12	Nu	Em
13	Xi	En
14	Omicron	Oh
15	Pi	Pee
16	Rho	Cue
17	Sigma	Are
18	Tau	Ess
19	Upsilon	Tee
20	Phi	You
21	Chi	Vee
22	Psi	Double-You
23	Omega	Eks
24	—	Wye
25	—	Zee

MAPPING SUBSECTORS

STARPORT

A Best
B Better
C Good
D Poor
E Rudimentary
X None

BASES
★ Naval Base
▲ Scout Base
△ Way Station
■ Naval Depot

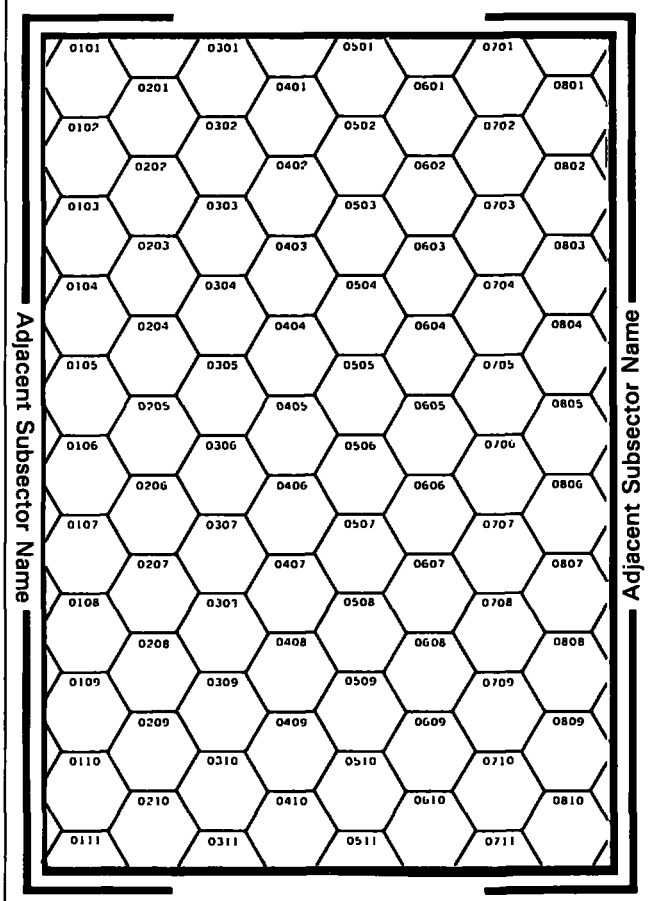


GAS GIANT
● If Present

WORLD TYPE
○ Desert and Vaccuum Worlds
● Most Worlds
Asteroid Belt

WORLD NAME
Primus-For most worlds
PRIMUS-If High Population World

STANDARD SUBSECTOR GRID



base can be noted with the symbol *M* in the base column of the statistics for the system, as well as with a comment in the remarks area. If, however, Naval or Scout bases are already present on the world, then no symbol for the military base should be used, and it should be noted in the remarks instead.

Scout and Naval Base Components: Both Scout bases and Naval bases are always assumed to have components at the major starport (the starport on the main world) in the system. However, you may elect to establish components of Scout or Naval bases throughout the system. The chart explains how to do this.

Spaceport: The major traffic center in the system is the starport; all others are called spaceports. While it is possible for spaceports to accept starships, they are called (if only for convenience and for terminology) spaceports.

Naming System Bodies: In any system, the name used for identification is the name of the mainworld.

MAINWORLD DETERMINATION AFTER THE FACT

If desired, you can generate the entire star system first by using extended star system generation, and then determine the mainworld.

When this approach is used, the mainworld is the world in the system which has the greatest population. If more than one world has the same population, then select the world which is in the habitable zone, or failing that, which is the closest to the central star.

The mainworld need not be a planet; it can be a satellite or an asteroid belt, or a small world. It may not, however, be a ring.

The mainworld need not orbit the central star in the system; it may be in orbit around the binary companion, or it may orbit a gas giant or other world

Atmosphere: The atmosphere code represents the breathing environment encountered on the world. Some atmospheres require specific personal equipment for survival and protection.

Vacuum or Trace Atmosphere: The atmosphere has a pressure of less than 0.1 atmospheres, which requires the use of a vacc suit.

Very Thin Atmosphere: The atmosphere has a pressure of 0 1 to 0.42 atmospheres, which requires the use of a compressor to ensure sufficient oxygen.

Tainted Atmosphere: The atmosphere contains an unusual taint such as such as disease, a hazardous gas mix, pollutants, or sulfur compounds which requires the use of a filter mask. Tainted, very thin atmospheres require a combination respirator/filter mask for survival.

Thin Atmosphere: The atmosphere has a pressure of 0 43 to 0.70 atmospheres. The atmosphere is a standard oxygen/nitrogen mix, which is breathable without assistance.

Standard Atmosphere: The atmosphere has a pressure of 0 71 to 1 49 atmospheres. The atmosphere is a standard oxygen/nitrogen mix, which is breathable without assistance.

Dense Atmosphere: The atmosphere has a pressure of 1.50 to 2.49 atmospheres The atmosphere is a standard oxygen/nitrogen mix, which is breathable without assistance.

Exotic Atmosphere: An unusual gas mix which requires the use of oxygen tanks, but protective suits are not needed.

Corrosive Atmosphere: A concentrated gas mix or unusual

temperature creates a corrosive environment, which requires the use of a protective suit or vacc suit.

Insidious Atmosphere: The atmosphere is similar to a corrosive atmosphere, but extreme conditions cause the corrosive effects to defeat any protective measures in 2 to 12 hours.

Dense, High Atmosphere: Pressure at or below sea level is too great to support life but is breathable at higher altitudes.

Ellipsoid: The world's surface is ellipsoidal, not spherical Because the atmosphere remains spherical, surface atmospheric pressure ranges from very high at the middle to very low at the ends Breathable bands may exist at some point within the range of pressure.

Thin, Low Atmosphere: The world is large and massive, with a thin atmosphere which settles to the lowest levels of the terrain. The atmosphere is unbreathable at most altitudes except the very low ones (as in depressions or deep valleys)

Hydrosphere: For normal worlds, the hydrosphere will be water; on other worlds (with exotic, corrosive, or insidious atmospheres), it may be other liquids or fluids such as ammonia.

Some worlds with vacuum atmospheres may have hydrographic percentages greater than 0 the world has ice caps present; the water will not be free-standing liquid. A Desert World may have up to 4% free-standing water and still be considered a Desert World. Conversely, a Water World may have a 95% hydrosphere and still be considered a Water World.

Population Density: The following population densities are from 20th century Earth. Earth has a population of three billion (Population Level 9), with five persons per square mile or 16 persons per square mile of land area. Europe is populated at about 151 persons per square mile, the equivalent of Population Level 10. The Netherlands contain 1500 persons per square mile, or about Population Level 11. Hong Kong has 10,000 persons per square mile, about Population Level 12.

Government: Government types indicate the general type of authority; each listed type provides a guide to the referee for administering encounters on the world. The Planetary Government table describes characteristics of each government type. Balkanization is a special result which indicates that there is no world government; instead several rival territorial governments exist. In such cases, you should generate the specific qualities of each territory on the planet separately.

Law Level: Law Level is an indication of the relative oppressiveness of the world The digit is classified on the Law Level table to show prohibitions against weapons. It also influences the difficulty of the task used to avoid being harassed or arrested by local authorities (see the Encounters chapter).

The Law Level defines local restrictions on possession and use of weapons by individuals. The referee (or players) may find combinations of features which may seem contradictory or unreasonable. Common sense should rule. In such cases strive to generate a rationale which explains the situation.

Technological Level: The degree of technological expertise, and thus the capabilities of local industry, depends greatly on the basic characteristics of a world. World Technological Levels may vary from zero to 20, more commonly ranging from 4 to 10. Higher numbers indicate greater capability.

The Tech Level of a world determines the type, quality, and sophistication of the products commonly available on a world in urban areas or near the starport. Large areas of the world away from the starport or away from large population centers may be one or even two Tech Levels lower.

Local citizenry will usually not be armed with weapons of a type which cannot be produced locally, but law enforcers or the military may be

Tech Level also indicates the general ability of local technology to repair or maintain items which have failed or malfunctioned.

Trade Classifications: Trade classifications are covered in more detail in the Trade and Commerce chapter

Finally, you should always feel free to create worlds which have been deliberately (rather than randomly) generated.

THE REGINA SYSTEM

Worlds in the Regina system are named for a variety of topics. Most planets orbiting Lusor (the primary star, and dwarf companion Speck) are named for persons and places associated with St. Regina Planets orbiting Darida (Lusor's far companion) are named in the Vilani language.

Although Regina boasts the highest population in the system, its companion satellites of Harcourt and Brumaire have been colonized, and the other satellites have been settled.

Orbit	*Name*	*UWP*	*Remarks*
Primary	Lusor	F7 V	DM companion
0	Clement	Y100000-0	
1	Ausun	Y300169-9	
2	Burgund	Small GG	
3	Cent	Y400367-9	
7	Thermidor	Y560000-0	
3	Olybnus	F75022A-9	
25	Alise	Y20016C-9	
4	Assiniboia	Large GG	
3	Redes	F595269-9	Farming
6	Printemps	F20036C-A N	
7	Brumaire	F564669-9	Farming Colony
30	Harcourt	H43556C-A M	Research Lab Military Base Colony.
55	Regina	A788899-C	A Rich Subsector Capital.
Companion	Darida	M6 V	
0	Augur	YS00000-0	
1	Kirunda	Y210000-0	
8	Irkirka	YS00000-0	
11	Arkurer	HS00137-9	
13	Irgurkar	Y10046A-A	
2	Elazair	Small GG	
3	Lashir	YS00000-0	
8	Diuur Imar	G200269-9	
9	Shamardae	Y500000-0	
20	Arapan	Y200000-0	
50	Edaku	Y210000-0	
125	Gagamshir	F534328-A M	Military Base.

UNIVERSAL WORLD PROFILE TABLES 1

WORLD SIZE

Code	General Description	Minimum Diameter	Maximum Diameter
R	Asteroid/Planetoid Ring	Multiple Bodies	Under 1 km
S	Very Small (400 km)	200 km	799 km
0	Asteroid/Planetoid Belt	Multiple Bodies	Under 200 km
1	Small (1,600 km)	800 km	2,399 km
2	Small (Luna, 3200 km)	2,400 km	3,999 km
3	Small (Mercury, 4800 km)	4,000 km	5,599 km
4	Small (Mars, 6400 km)	5,600 km	7,199 km
5	Medium (8000 km)	7,200 km	8,799 km
6	Medium (9600 km)	8,800 km	10,399 km
7	Medium (11,200 km)	10,400 km	11,999 km
8	Large (Terra, 12,800 km)	12,000 km	13,599 km
9	Large (14,400 km)	13,600 km	15,199 km
A	Large (16,000 km)	15,200 km	16,799 km
SGG	Small Gas Giant		
LGG	Large Gas Giant		

R: A Ring orbits a world.
S: A small body orbits a world or star.
0: A planetoid or asteroid orbits a star.

WORLD ATMOSPHERE

Code	General Description	Minimum Pressure	Maximum Pressure
0	Vacuum	—	0 00
1	Vacuum (trace)	0 001	0 09
2	Vacuum (very thin tainted)	0 10	0 42
3	Vacuum (very thin)	0 10	0 42
4	Thin (tainted)	0 43	0 70
5	Thin	0 43	0 70
6	Standard	0 71	1 49
7	Standard (tainted)	0.71	1 49
8	Dense	1.50	2 49
9	Dense (tainted)	1.50	2.49
A	Exotic	varies	varies
B	Exotic (corrosive)	varies	varies
C	Exotic (insidious)	varies	varies
D	Exotic (dense, high)	varies	varies
E	Exotic (ellipsoid)	varies	varies
F	Exotic (thin, low)	varies	varies

Vacuum requires a vacc suit. Tainted requires a filter mask Very thin requires a respirator Very thin tainted requires a combination respirator/filter mask.

WORLD HYDROGRAPHICS

Code	General Description		Minimum %	Maximum %
0	Desert World	(0%)	0%	4%
1	Dry World	(10%)	5%	14%
2	Dry World	(20%)	15%	24%
3	Wet World	(30%)	25%	34%
4	Wet World	(40%)	35%	44%
5	Wet World	(50%)	45%	54%
6	Wet World	(60%)	55%	64%
7	Wet World	(70%)	65%	74%
8	Wet World	(80%)	75%	84%
9	Wet World	(90%)	85%	94%
A	Water World	(100%)	95%	100%

WORLD POPULATION

Code	General Description	Minimum Population	Maximum Population
0	Low (less than ten)	0	9
1	Low (tens)	10	99
2	Low (hundreds)	100	999
3	Low (thousands)	1000	9999
4	Mod (ten thousands)	10,000	99,999
5	Mod (hundred thousands)	100,000	999,999
6	Mod (millions)	1,000,000	9,999,999
7	Mod (ten millions)	10,000,000	99,999,999
8	Mod (hundred millions)	100,000,000	999,999,999
9	High (billions)	1,000,000,000	9,999,999,999
A	High (ten billions)	10,000,000,000	99,999,999,999

WORLD GOVERNMENT

Code	General Description
0	**No Government Structure.** In many cases, family bonds predominate
1	**Company/Corporation.** Government by a company managerial elite, citizens are company employees
2	**Participating Democracy.** Government by advice and consent of the citizen
3	**Self-Perpetuating Oligarchy.** Government by a restricted minority, with little or no input from the masses
4	**Representative Democracy.** Government by elected representatives
5	**Feudal Technocracy.** Government by specific individuals for those who agree to be ruled Relationships are based on the performance of technical activities which are mutually beneficial
6	**Captive Government/Colony.** Government by a leadership answerable to an outside group, a colony or conquered area
7	**Balkanization.** No central ruling authority exists, rival governments compete for control
8	**Civil Service Bureaucracy.** Government by agencies employing individuals selected for their expertise
9	**Impersonal Bureaucracy.** Government by agencies which are insulated from the governed
A	**Charismatic Dictator.**Government by a single leader enjoying the confidence of the citizens
B	**Non-Charismatic Leader.** A previous charismatic dictator has been replaced by a leader through normal channels
C	**Charismatic Oligarchy.** Government by a select group, organization, or class enjoying overwhelming confidence of the citizenry.
D	**Religious Dictatorship.** Government by a religious minority which has little regard for the needs of the citizenry
E	**Religious Autocracy.** Government by a single religious leader having absolute power over the citizenry
F	**Totalitarian Oligarchy.** Government by an all-powerful minority which maintains absolute control through widespread coercion and oppression

WORLD LAW LEVEL

Code	General Description
0	No law (no prohibitions)
1	Low law (body pistols, explosives, poison gas prohibited).
2	Low law (portable energy weapons prohibited)
3	Low law (machineguns, automatic rifles prohibited)
4	Moderate law (light assault weapons prohibited)
5	Moderate law (personal concealable weapons prohibited).
6	Moderate law (all firearms except firearms prohibited)
7	Moderate law (shotguns prohibited)
8	High law (blade weapons controlled, no open display)
9	High law (weapon possession outside the home prohibited).
A	Extreme law (weapon possession prohibited)
B	Extreme law (rigid control of civilian movement)
C	Extreme law (unrestricted invasion of privacy)
D	Extreme law (paramilitary law enforcement)
E	Extreme law (full-fledged police state).
F	Extreme law (all facets of daily life rigidly controlled)
G	Extreme law (severe punishment for petty infractions)
H	Extreme law (legalized oppressive practices)
J	Extreme law (routinely oppressive and restrictive)
K	Extreme law (excessively oppressive and restrictive)
L	Extreme law (totally oppressive and restrictive)

UNIVERSAL WORLD PROFILE TABLES 2

TECHNOLOGY LEVEL

Code	General Description	Approximate Historical Equivalent
0	Pre-Industrial (primitive)	stone age
1	Pre-Industrial (bronze, iron)	middle ages
2	Pre-Industrial (printing press)	circa 1600
3	Pre-Industrial (basic science)	circa 1800
4	Industrial (int. combustion)	circa 1900
5	Industrial (mass production)	circa 1930
6	Pre-Stellar (nuclear power)	circa 1950
7	Pre-Stellar (mini electronics)	circa 1970
8	Pre-Stellar (superconductors)	circa 1990
9	Early Stellar (fusion power)	circa 2010
A	Early Stellar (jump drive)	circa 2100
B	Average Stellar (large starships)	
C	Average Stellar (sophisticated robots)	
D	Average Stellar (holo data storage)	the Imperium
E	High Stellar (anti-grav cities)	
F	High Stellar (anagathics)	
G	High Stellar (global terraforming)	
H	Extreme Stellar	
J	Extreme Stellar	
K	Extreme Stellar	
L	Extreme Stellar	the Ancients

STARPORTS

Type	Quality	Shipyards	Repair	Fuel
A	Excellent	Starships	Overhaul	Refined
B	Good	Spacecraft	Overhaul	Refined
C	Routine	—	Major Damage	Unrefined
D	Poor	—	Minor Damage	Unrefined
E	Frontier			
X	None			

Starports are established primarily to foster interstellar trade and commerce

SPACEPORTS

Type	Quality	Shipyards	Repair	Fuel
F	Good	—	Minor Damage	Unrefined
G	Poor	—	Superficial	Unrefined
H	Primitive			
Y	None			

Spaceports are established primarily to foster in-system travel.

WORLD HORIZONS

Radius		Range to Horizon
800	(1)	Very Long
1600	(2)	Distant
2400	(3)	Distant
3200	(4)	Distant
4000	(5)	Distant
4800	(6)	Distant
5600	(7)	Very Distant
6400	(8)	Very Distant
7200	(9)	Very Distant
8000	(A)	Very Distant

ATMOSPHERE PENETRATION MODIFIERS

Atmosphere Type	Penetration Modifiers
Vacuum	+3 bands
Trace	+2 bands
Very Thin	+1 band
Thin	No change
Standard	No change
Dense	No change
Exotic	−1 band
Corrosive	−1 band
Insidious	−1 band
Dense High	−1 band
Ellipsoid	No change
Thin Low	No change

WORLD GRAVITY TABLE

Surface Gravity	√ of G Factor	Jump/ Throw
0.01	0 10	1000%
0.05	0.22	450%
0 10	0.32	300%
0.20	0.45	225%
0.30	0 55	180%
0.40	0 63	160%
0.50	0.71	140%
0.60	0.77	130%
0.70	0.84	120%
0.80	0.89	110%
0.90	0 95	105%
1.00	1.00	100%
1.10	1.05	95%
1.20	1.10	90%
1.30	1 14	88%
1.40	1 18	85%
1 50	1.22	82%
1.60	1 26	80%
1 70	1.30	77%
1.80	1.34	75%
1 90	1.38	73%
2.00	1 41	71%
2.10	1 45	69%
2.20	1.48	67%
2 30	1.52	66%
2 40	1.55	65%
2.50	1 58	63%
2.60	1.61	62%
2.70	1 64	61%
2 80	1 67	60%
2.90	1.70	59%
3.00	1 73	58%

WORLD PHYSICAL DATA

UWP	Code Size	Digit Size	Code Atmosphere	Digit Atmosphere	Code Hydrographics	Digit Hydrographics
0	Asteroid	Asteroid Belt	Vacuum	Vacuum	Desert	0% water
1	Small	1600 km	Vacuum	Vacuum (trace)	Dry World	10% water
2	Small	3200 km	Vacuum	Very Thin (tainted)	Dry World	20% water
3	Small	4800 km	Vacuum	Very Thin	Dry World	30% water
4	Small	6400 km	Thin	Thin (tainted)	Wet World	40% water
5	Medium	8000 km	Thin	Thin	Wet World	50% water
6	Medium	9600 km	Standard	Standard	Wet World	60% water
7	Medium	11200 km	Standard	Standard (tainted)	Wet World	70% water
8	Large	12800 km	Dense	Dense	Wet World	80% water
9	Large	14400 km	Dense	Dense (tainted)	Wet World	90% water
A	Large	16000 km	Exotic	Exotic	Water World	100% water
B			Exotic	Corrosive		
C			Exotic	Insidious		
D			Exotic	Dense (high)		
E			Exotic	Ellipsoid		
F			Exotic	Thin (low)		

This table shows the UWP digit for the physical data for worlds, and provides both the code meaning from the *Players' Manual* and the UWP digit meaning from the world generation systems in the *Referee's Manual*.

BASIC MAINWORLD GENERATION 1

1 System Presence

For all hexes within a subsector, determine which hexes have a system present based on the referee-mandated stellar density

SYSTEM DENSITY

Density	*Density Percentage*	*Throw per subsector hex*
Rift	4%	12+ on 2D
Sparse	16%	6+ on 1D
Scattered	33%	5+ on 1D
Standard	50%	4+ on 1D
Dense	66%	3+ on 1D

2 System Details

For each system, generate the details of the mainworld

3 Mainworld Starport

Roll 2D to determine the mainworld starport type based on how well-travelled this particular subsector is

STARPORT TYPE

Die	*Backwater*	*Standard*	*Mature*	*Cluster*
2	A	A	A	A
3	A	A	A	A
4	B	A	A	A
5	B	B	B	A
6	C	B	B	B
7	C	C	C	B
8	C	C	C	C
9	D	D	D	C
10	E	E	E	D
11	E	E	E	E
12	X	X	E	X

The referee must select the nature of the mainworld system and then roll on the appropriate column

Backwater is out of the mainstream of interstellar culture and communication.

Standard is the expected norm.

Mature is an older, more established system.

Cluster has many worlds close together

4 World Size

Throw 2D−2 for World Size.

5 Atmosphere

Throw 2D−7+Size for Atmosphere

If World Size is 0, then Atmosphere is 0

6 Hydrographics

Throw 2D−7+World Size for Hydrographics.

If World Size is 1 or less, Hydrographics is 0.

If Atmosphere is 1 or less, or A or more, apply DM−4

7 Population

Throw 2D−2 for Population.

8 Government

Throw 2D−7+Population for Government

9 Law Level

Throw 2D−7+Government for Law Level

10 Technology Level

Roll 1D and add the technology DMs for all possible characteristics of the mainworld in order to determine its Technology Level.

TECHNOLOGY DIE MODIFIERS

Level	*Starport*	*World Size*	*Atmosphere*	*Hydrographics*	*Population*	*Government*
0		+2	+1	—	—	+1
1		+2	+1	—	+1	—
2		+1	+1	—	+1	—
3		+1	+1	—	+1	—
4		+1	—	—	+1	—
5		—	—	—	+1	+1
6		—	—	—	—	—
7		—	—	—	—	—
8		—	—	—	—	—
9		—	—	+1	+2	—
A	+6	—	+1	+2	+4	—
B	+4		+1			—
C	+2		+1			—
D	—		+1			−2
E	—		+1			—
F			+1			—
X	−4					

Determine all possible die modifiers from this table, and apply them to a throw of 1D. The result is the mainworld's Technology Level. Treat adjusted die rolls of less than zero as zero.

The maximum possible adjusted roll for Tech Level is 20 (Starport A, World Size 1, Atmosphere 3, Population A, Government 5); the minimum possible is 0.

11 Scout and Naval Bases

Determine the types of bases in the system

Imperial **Naval bases** support the operations of interstellar naval units. Imperial **Scout bases** support the operations of the Imperial Interstellar Scout Service

Non-Imperial **military bases** undertake some or all of the functions of Imperial Naval and Scout bases.

BASE PRESENCE

Starport	*Imperial Naval Base*	*Imperial Scout Base*	*Non-Imperial Military Base*
A	8+ on 2D	10+ on 2D	10+ on 2D
B	8+ on 2D	9+ on 2D	9+ on 2D
C	—	8+ on 2D	8+ on 2D
D	—	7+ on 2D	—

Bases are not present at type E and X starports.

Codes: Use the following letter codes to denote bases:

N. Imperial Naval Base.

S. Imperial Scout Base

A. Imperial Naval Base and Scout Base both present

B. Imperial Naval Base and Scout Way Station both present (a Way Station is an extensive Scout base)

M. Non-Imperial Military Base.

12 Trade Classifications

Analyze all characteristics of the mainworld and determine its trade classifications

TRADE CLASSIFICATIONS

Code	Size	Atmosphere	Hydrographics	Population	Government	Law Level	Code Definition
Ag	—	4-9	4-8	5-7	—	—	Agricultural
As	0	0	0	—	—	—	Asteroid
Ba	—	—	—	0	0	0	Barren
De	—	2+	0	—	—	—	Desert
Fl	A+	1+	—	—	—	—	Fluid
Hi	—	—	—	9+	—	—	High Population
Ic	—	0-1	1+	—	—	—	Ice-Capped
In	—	2-4,7,9	—	9+	—	—	Industrial
Lo	—	—	—	3−	—	—	Low Population
Na	—	0-3	0-3	6+	—	—	Nonagricultural
Ni	—	—	—	0-6	—	—	Nonindustrial
Po	—	2-5	0-3	—	—	—	Poor
Ri	—	6,8	—	6-8	4-9	—	Rich
Va	—	0	—	—	—	—	Vacuum
Wa	—	—	A	—	—	—	Water World

Determine all possible trade classifications from this table However, an Asteroid Belt (As) is automatically a Vacuum World, and need not have the Va code Asian worlds are Rich (Ri) without regard to Government type. A Vargr world is disqualified from the Rich classification if it is Government type 7

13 Supplemental Remarks

Determine if the mainworld merits any supplemental remarks Supplemental remarks are imposed by the referee after considering the general circumstances of the world. Supplemental remarks include·

An. Ancients' Site. A high-tech remnant of the now-vanished Ancients

Cp. Subsector Capital. The capital of the local region.

Cx. Sector or Regional Capital. The capital of the local sector

Ex. Exile Camp. A dumping ground for political dissidents

Mr. Military Rule. A world under overall control of the local military (regardless of government type)

Pr. Prison Camp. A prison for criminals.

Rs. Research Station. An experimental facility.

Xb. Xboat Station. An Imperial facility for rapid message transmission.

14 Population Multiplier

Determine the population multiplier for the mainworld.

Roll 1D and determine if the result is odd or even.

If *even*, roll 1D−1 for a result from 0 to 4 Ignore and reroll a result of 5.

If *odd*, roll 1D+4 for a result from 5 to 9. Ignore and reroll a result of 10

15 Gas Giants

Roll 5+ on 2D to determine if gas giants exist in the system.

If gas giants exist, determine how many from the Gas Giant Quantity table

GAS GIANT QUANTITY

Die	Quantity
2	1
3	1
4	2
5	2
6	3
7	3
8	4
9	4
10	4
11	5
12	5

16 Planetoid Belts

Roll 8+ on 2D to determine if planetoid belts exist in the system.

If planetoid belts exist, determine how many from the Planetoid Belt Quantity table

PLANETOID BELT QUANTITY

Die	Quantity
2	1
3	1
4	1
5	1
6	1
7	1
8	2
9	2
10	2
11	2
12	2
13	3

17 Travel Zones

Determine if the world presents any dangers or apparent dangers to travellers. Travel zones are imposed by the referee after considering the general circumstances of the world There are three travel zone codes·

Green. No danger Green travel zones are not usually stated

Amber. Caution Circumstances dictate caution because of local, natural, or social conditions

Red. Danger. Access to the world is prohibited

Class X starports are almost always red zones Amber and red zones are also imposed by the referee

The combination of high Government and Law Level also produces the following travel zones

TRAVEL ZONE MATRIX

Govt Type	Law Level G	H	J	K	L
A	—	—	—	—	A
B	—	—	—	A	A
C	—	—	A	A	A
D	—	A	A	A	R
E	—	A	A	R	R
F	A	A	R	R	R

A: Amber Zone **R:** Red Zone.

18 Allegiance

Designate the allegiance of the world Most worlds are Imperial. Worlds outside the Imperium may have a variety of allegiances These include, but are not limited to·

As. Asian. Dominated by one or more Asian clans

Im. Imperial. A member of the Imperium May be loyal to any one of a number of factions within the Imperium

Va. Vargr. Populated by a Vargr majority population

Zh. Zhodani. A member of the human Zhodani Consulate

EXTENDED SYSTEM GENERATION 1

1 System Presence

For all hexes within a subsector, determine which hexes have a system present, based on the referee-mandated stellar density

This system may be a mainworld already generated by Basic Mainworld Generation.

Allegiance: An allegiance may have been specified for the system by previous mapping data or by the referee. If there is no allegiance for the system, the referee must determine it.

SYSTEM DENSITY

Density		*Throw per subsector hex*
Rift	(4%)	12+ on 2D
Sparse	(16%)	6+ on 1D
Scattered	(33%)	5+ on 1D
Standard	(50%)	4+ on 1D
Dense	(66%)	3+ on 1D

2 System Details

For each system present, generate the details of the entire system

3 System Nature

Roll 2D to determine the nature of the star system

SYSTEM NATURE

Die	Nature
2	Solo
3	Solo
4	Solo
5	Solo
6	Solo
7	Solo
8	Binary
9	Binary
10	Binary
11	Binary
12	Trinary

Solo has one star Binary has two stars Trinary has three stars

Later developments may return to this table to create a quadruple system Use DM -1 when returning to this table for a far companion

4 Primary Star Type and Size.

Roll 2D to determine the primary star type, then roll 2D for the star's size

PRIMARY STAR TYPE AND SIZE

Die	*Type*	*Size*
2	A	II
3	M	III
4	M	IV
5	M	V
6	M	V
7	M	V
8	K	V
9	G	V
10	F	V
11	F	VI
12	F	D

DMs For Type and Size: If a mainworld has already been created, and mainworld Atmosphere 4-9 or Population 8+, DM+4

Type O and B stars, and size Ia and Ib stars, are extremely rare, the referee should establish when they occur (but never more than one or two per sector)

5 Decimal Classification

Determine the specific decimal classification of the star (ranging from 0 to 9).

1 Roll 1D and determine if the result is even or odd

2 If even, roll 1D-1 for a result of 0 to 4 Ignore and reroll a result of 5

3 If odd, roll 1D+4 for a result of 5 to 9 Ignore and reroll a result of 10.

4 Add the single digit produced to the star type letter For example, if the digit produced was 3, and the star type generated was G, the star type becomes G3

5. Star types K5 to M9 are not available with star size IV· change star size to V.

6 Star types B0 to F4 are not available with star size VI change star size to V.

6 Companion Star Type and Size

If the system nature was binary or trinary, roll 2D to determine the companion star type; then roll 2D for the star's size

COMPANION STAR TYPE AND SIZE

Die	*Type*	*Size*
2	A	II
3	F	III
4	F	IV
5	G	V
6	G	V
7	K	V
8	K	V
9	M	V
10	M	V
11	M	VI
12	M	D

DM For Type: Use the previous throw for primary star type as a +DM

DM For Size: Use the previous throw for primary star size as a +DM

Decimal Classification: Determine the decimal classification for the companion star using the procedure in step 5.

7 Companion Orbit

Roll 2D to determine the orbit of the companion star

COMPANION ORBIT

Die	*Orbit*
2	Close
3	Close
4	1
5	2
6	3
7	4+1D
8	5+1D
9	6+1D
10	7+1D
11	8+1D
12	Far

DMs: For the first companion star, use this table as presented For a second companion star, use DM +4 for the companion of a star that is itself a far companion, use DM-4

8 Far Companion?

If the companion orbit is far, go to step 9

Otherwise, go to step 11

9 Far Orbit

Far indicates that the star is outside the realm of the primary star's system Orbit distance is 1D x1000 AU

10 Additional Stars

If a companion is far, it may itself have a companion. Proceed to step 3 and determine if the far companion is not a solo star and then return here If the far companion is itself a binary, go to step 6 to determine the binary companion's characteristics

11 Maximum Orbits

Throw 2D for the maximum number of orbits around the primary star

Throw 2D for the maximum number of orbits around the far companion star (if any)

DMs (for both rolls): If star size III, DM+4, if star size Ia, Ib, or II, DM+8 If star type M, DM-4; if star type K, DM-2

12 Available Orbits

Determine what orbits are available for the placement of planets

AVAILABLE ORBITS

B Orbit	*Between B and A*	*Beyond B*	*B Itself*
0	—	2+	—
1	0	3+	0
2	0-1	4+	0-1
3	0-1	5+	0-1
4	0-2	6+	0-2
5	0-2	7+	0-2
6	0-3	8+	0-3
7	0-3	9+	0-3
8	0-4	10+	0-4
9	0-4	11+	0-4
10	0-5	12+	0-5
11	0-5	13+	0-5
12	0-6	14+	0-6

A is the primary star B is the companion star This table shows the orbits which are *available* for worlds to be placed Between A and B, Beyond B, and Around B Itself

13 Orbit Zones

The tables show the conditions in the orbits around stars

- \- Inside the sphere of the star No worlds in this zone
- — Unavailable (planet would be vaporized) No worlds in this zone
- I Inner Zone (hot and inhospitable) Worlds may be in this zone
- H Habitable Zone (life may exist) Worlds may be in this zone
- O Outer Zone (cold and inhospitable) Worlds may be in this zone

Select the table for the star size and determine the zones for the orbits around the star

14 Orbit Zones for Star Size Ia

Orbit	B0	B5	A0	A5	F0	F5	G0	G5	K0	K5	M0	M5	M9
1	—	—	-	-	-	-	-	-	-	-	-	-	-
2	—	—	—	—	-	-	-	-	-	-	-	-	-
3	—	—	—	—	—	—	-	-	-	-	-	-	-
4	—	—	—	—	—	—	—	-	-	-	-	-	-
5	—	—	—	—	—	—	—	—	-	-	-	-	-
6	—	—	—	—	I	I	—	—	—	—	-	-	-
7	—	I	I	I	I	I	I	I	I	I	I	-	-
8	I	I	I	I	I	I	I	I	I	I	I	I	I
9	I	I	I	I	I	I	I	I	I	I	I	I	I
10	I	I	I	I	I	I	I	I	I	I	I	I	I
11	I	I	I	I	I	H	I	I	I	I	I	I	I
12	I	H	H	H	H	O	H	H	H	H	H	H	H
13	H	O	O	O	O	O	O	O	O	O	O	O	O
14	O	O	O	O	O	O	O	O	O	O	O	O	O

15 Orbit Zones for Star Size Ib

Orbit	B0	B5	A0	A5	F0	F5	G0	G5	K0	K5	M0	M5	M9
1	—	—	—	—	—	—	—	-	-	-	-	-	-
2	—	—	—	—	—	—	—	—	-	-	-	-	-
3	—	—	—	—	—	—	—	—	-	-	-	-	-
4	—	—	—	—	—	I	I	—	—	-	-	-	-
5	—	—	I	I	I	I	I	I	I	—	-	-	-
6	—	I	I	I	I	I	I	I	I	I	I	-	-
7	—	I	I	I	I	I	I	I	I	I	I	I	-
8	I	I	I	I	I	I	I	I	I	I	I	I	I
9	I	I	I	I	I	I	I	I	I	I	I	I	I
10	I	I	I	H	H	H	H	H	H	I	I	I	I
11	I	H	H	O	O	O	O	O	O	O	O	H	H
12	I	O	O	O	O	O	O	O	O	O	O	H	H
13	H	O	O	O	O	O	O	O	O	O	O	O	O
14	O	O	O	O	O	O	O	O	O	O	O	O	O

16 Orbit Zones for Star Size II

Orbit	B0	B5	A0	A5	F0	F5	G0	G5	K0	K5	M0	M5	M9
1	—	—	—	—	—	—	—	—	—	-	-	-	-
2	—	—	—	I	I	I	I	I	I	—	-	-	-
3	—	—	I	I	I	I	I	I	I	I	-	-	-
4	—	—	I	I	I	I	I	I	I	I	I	-	-
5	—	I	I	I	I	I	I	I	I	I	I	-	-
6	—	I	I	I	I	I	I	I	I	I	I	I	I
7	I	I	I	I	I	I	I	I	I	I	I	I	I
8	I	I	I	H	H	H	H	H	I	I	I	I	I
9	I	I	H	O	O	O	O	O	H	H	I	I	I
10	I	I	O	O	O	O	O	O	O	O	H	I	I
11	I	H	O	O	O	O	O	O	O	O	O	H	H
12	H	O	O	O	O	O	O	O	O	O	O	O	O
13	O	O	O	O	O	O	O	O	O	O	O	O	O

17 Orbit Zones for Star Size III

Orbit	B0	B5	A0	A5	F0	F5	G0	G5	K0	K5	M0	M5	M9
1	—	—	I	I	I	I	I	I	I	I	—	-	-
2	—	—	I	I	I	I	I	I	I	I	I	-	-
3	—	—	I	I	I	I	I	I	I	I	I	-	-
4	—	I	I	I	I	I	I	I	I	I	I	I	-
5	—	I	I	I	I	I	I	I	I	I	I	I	I
6	—	I	I	I	H	H	H	I	I	I	I	I	I
7	I	I	I	H	O	O	O	H	H	I	I	I	I
8	I	I	H	O	O	O	O	O	O	H	H	I	I
9	I	I	O	O	O	O	O	O	O	O	O	H	H
10	I	H	O	O	O	O	O	O	O	O	O	O	O
11	I	O	O	O	O	O	O	O	O	O	O	O	O
12	H	O	O	O	O	O	O	O	O	O	O	O	O
13	O	O	O	O	O	O	O	O	O	O	O	O	O

18 Orbit Zones for Star Type IV

Orbit	B0	B5	A0	A5	F0	F5	G0	G5	K0
0	—	—	—	I	I	I	I	I	I
1	—	—	I	I	I	I	I	I	I
2	—	—	I	I	I	I	I	I	I
3	—	I	I	I	I	I	I	I	I
4	—	I	I	I	I	I	I	I	H
5	—	I	I	I	I	H	H	H	O
6	—	I	I	H	H	O	O	O	O
7	I	I	H	O	O	O	O	O	O
8	I	I	O	O	O	O	O	O	O
9	I	H	O	O	O	O	O	O	O
10	I	O	O	O	O	O	O	O	O
11	I	O	O	O	O	O	O	O	O
12	H	O	O	O	O	O	O	O	O
13	O	O	O	O	O	O	O	O	O

19 Orbit Zones for Star Size V

Orbit	B0	B5	A0	A5	F0	F5	G0	G5	K0	K5	M0	M5	M9
0	—	—	I	I	I	I	I	I	I	H	H	O	O
1	—	—	I	I	I	I	I	I	I	O	O	O	O
2	—	—	I	I	I	I	I	H	H	O	O	O	O
3	—	—	I	I	I	I	H	O	O	O	O	O	O
4	—	I	I	I	I	H	O	O	O	O	O	O	O
5	—	I	I	I	H	O	O	O	O	O	O	O	O
6	I	I	I	H	O	O	O	O	O	O	O	O	O
7	I	I	H	O	O	O	O	O	O	O	O	O	O
8	I	I	O	O	O	O	O	O	O	O	O	O	O
9	I	H	O	O	O	O	O	O	O	O	O	O	O
10	I	O	O	O	O	O	O	O	O	O	O	O	O
11	I	O	O	O	O	O	O	O	O	O	O	O	O
12	H	O	O	O	O	O	O	O	O	O	O	O	O
13	O	O	O	O	O	O	O	O	O	O	O	O	O

20 Orbit Zones for Star Size VI

Orbit	F5	G0	G5	K0	K5	M0	M5	M9
0	I	I	I	I	O	O	O	O
1	I	I	H	H	O	O	O	O
2	I	H	O	O	O	O	O	O
3	H	O	O	O	O	O	O	O
4	O	O	O	O	O	O	O	O

21 Orbit Zones for Star Size D

Orbit	DB	DA	DF	DG	DK	DM
0	H	O	O	O	O	O
1	O	O	O	O	O	O
2	O	O	O	O	O	O
3	O	O	O	O	O	O

22 Empty Orbits

Roll 5+ on 2D to determine if gas giants exist in the system

If gas giants exist, determine how many from the Gas Giant Quantity table

GAS GIANT QUANTITY

Die	*Quantity*
2	1
3	1
4	2
5	2
6	3
7	3
8	4
9	4
10	4
11	5
12	5

The number of gas giants may already be known from the mainworld data; if so, skip this step

23 Planetoid Belts

Roll 8+ on 2D to determine if planetoid belts exist in the system

If planetoid belts exist, determine how many from the Planetoid Belt Quantity table

PLANETOID BELT QUANTITY

Die	*Quantity*
2	1
3	1
4	1
5	1
6	1
7	1
8	2
9	2
10	2
11	2
12	2
13	3

The number of planetoid belts may already be known from the mainworld data, if so, skip this step

24 Empty Orbits

Determine if any empty orbits are present in the star system

1. Roll 5+ on 1D to determine if any empty orbits exist in the system DM+1 if star type A or B

2 If empty orbits exist, roll 1D on the table to determine how many empty orbits exist DM+ if star type A or B.

EMPTY ORBITS

Die	*Quantity*
1	1
2	1
3	2
4	3
5	3
6	3

3 Roll 2D-2 (for a result from 0 to 10) to determine each empty orbit number If the roll does not fall in the range of possible orbits, or if it duplicates an already determined empty orbit, reroll

25 Captured Planets

Determine if the system has any captured planets in unusual orbits

1 Roll 5+ on 1D to determine if captured planets exist in the system DM+1 if star type A or B

2 If a captured planet exists, consult the table for the number present

CAPTURED PLANETS

Die	*Quantity*
1	1
2	1
3	2
4	2
5	3
6	3

3 For each captured planet, roll 2D (for a range between 2 and 12) to determine which orbit to use as a baseline Then roll 2D-7 and multiply by 10% (for a range between -50% to +50%) for the positive or negative deviation of the orbit from the baseline. Record the resulting orbit as a decimal number. Baseline orbit 5+40% is recorded as orbit 5 4; Baseline orbit 2-20% is recorded as orbit 1.8

26 Place Gas Giants

Gas giants are placed randomly in available orbits within certain restrictions Throw 2D-3+habitable orbit number for the orbit for a gas giant Reroll duplicate orbits When no other orbits are available, gas giants may be placed in the inner zone

27 Planetoid Belts

Planetoid belts are placed randomly in available orbits, with certain preferences. If a gas giant is available, place a planetoid belt in the next orbit in from the gas giant For example, if a gas giant is in orbit 8, place the planetoid belt in orbit 7 (if that is an available, nonempty orbit)

28 Place Mainworld

Place the mainworld randomly, with these restrictions.

1 If the world is World Size 1 or greater and Atmosphere is 4 to 9, place the world in the habitable zone

2 If a gas giant is already in the habitable zone orbit, place the mainworld as a satellite of the gas giant

29 Other Worlds

Generate all other worlds for the system, beginning with the lowest numbered orbit. All available orbits around a star should be filled before continuing to the next star

30 World Size

Determine each World Size

Gas Giants: If the world is a gas giant, roll 1D On a result of 1, 2, or 3, the planet is a Small Gas Giant, on a result of 4, 5, or 6, the planet is a Large Gas Giant No other attributes are generated for gas giants Once size has been generated, proceed to the next orbit.

Worlds: Roll 2D-2 for World Size If orbit 0, DM-5; if orbit 1, DM-4, if orbit 2, DM-2 If star type M, DM-2 for all orbits

Treat less than 1 as S (for very small world), used in place of size 0 (planetoid belt or mainworld asteroid belt).

31 Atmosphere

Roll 2D-7+Size for Atmosphere If inner zone, DM-2 If outer zone, DM-4. If World Size 0, Atmosphere is 0 If the world is at least 2 orbits beyond the habitable zone, roll 2D for 12 exactly if the roll succeeds, Atmosphere is A

32 Hydrographics

Roll 2D-7+Size for Hydrographics If inner zone, Hydrographics is 0 If outer zone, DM-2. If World Size 0 or S, Hydrographics is 0 If Atmosphere 0, 1, or A+, DM-2

33 Population

Roll 2D-2 for Population If inner zone, DM-5. If outer zone, DM-3.

34 Satellites

For each world, determine if it has satellites

World Size S or 0: None.
World Size 1 to A: 1D-3.
Small GG: 2D-4.
Large GG: 2D

35 Satellite Size

For each satellite, determine its Size

For Large GG: Roll 2D-4.
For Small GG: Roll 2D-6.
For Worlds: Roll 1D-World Size

If the result is exactly 0, the satellite is a ring. use Size R.

If the result is less than 0, use Size S

36 Satellite Orbit

Consult the table for the orbit number If the satellite is a ring, roll 1D Otherwise, roll 2D to determine which column to roll on on 2-7, the satellite is Close, on 8-12, the satellite is Far On a result of 12 (if the planet is a gas giant), then the satellite is Extreme

SATELLITE ORBIT NUMBERS

Die	*Ring*	*Close*	*Far*	*Extreme*
1	1	—	—	—
2	1	3	15	75
3	1	4	20	100
4	2	5	25	125
5	2	6	30	150
6	3	7	35	175
7		8	40	200
8		9	45	225
9		10	50	250
10		11	55	275
11		12	60	300
12		13	65	325

Orbit distance is in radii of the central planet Two satellites cannot occupy the same orbit reroll if this occurs

37 Satellite Atmosphere

Roll 2D-7+Satellite Size for Atmosphere If inner zone, DM-4 If outer zone, DM-4. If Size R, S, or 1, Atmosphere is 0.

If satellite is at least 2 orbits beyond the habitable zone, roll 2D for 12 exactly if the roll succeeds, satellite Atmosphere A

38 Satellite Hydrosphere

Roll 2D-7+Size for Hydrographics If inner zone, Hydrographics is 0 If outer zone, DM-4 If Size R or S, Hydrographics is 0 If Atmosphere is 0, 1, or A+ DM-4

39 Satellite Population.

Roll 2D-2 for Population. If inner zone, DM-5 If outer zone, DM-4 If Size 0-4, DM-2 If Size R, Population is 0 If Atmosphere is not 5, 6, or 8, DM-2

40 Social Data

Determine social data (Population, Government, Law Level, Technology Level, and Bases) for all worlds and satellites

41 Subordinate Government

Roll 1D for subordinate government

SUBORDINATE GOVERNMENT

Die	*Code*	*Description*
1	0	No government
2	1	Company
3	2	Participating Democracy
4	3	Self-Perpetuating Democracy
5+	6	Captive Government

DMs: If mainworld Government 6, DM+subordinate Population If mainworld Government 7+ DM-1 If Population 0, then Government 0

42 Subordinate Law Level

Roll 1D-3+mainworld Law Level If Government 0, then Law Level 0

43 Facilities

Note all facilities which are possible on planets and satellites These notes do not apply to the mainworld

Farming (Fa): If in habitable zone, Atmosphere 4-9, Hydrographics 4-8, Population 2+

Mining (Mi): If mainworld has trade class Industrial, subordinate Population 2+

Colony (Co): If subordinate world Government 6 and Population 5+

Research Lab (Re): Mainworld must have Tech Level 9+ and Population 1+ Roll 11+ on 2D for a research lab to be present, DM+2 if mainworld Tech Level 10+

Military Base (Mi): Mainworld must have Population 8+ and cannot be trade classification Poor Roll 12+ on 2D for a military base to be present; DM+1 if mainworld Population 8+, DM+ if subordinate world Atmosphere is the same as mainworld Atmosphere

Naval Base (Nv): A naval base will be present if the mainworld has a naval base and subordinate Population is 3+

Scout Base (Sc): A scout base will be present if the mainworld has a scout base and subordinate population is 2+

44 Subordinate Tech Level

Subordinate Tech Level equals mainworld Tech Level minus 1. If a military base, naval base, or research lab is present on the subordinate world, use the mainworld Tech Level

45 Subordinate Spaceport

Roll 1D for the subordinate spaceport

SUBORDINATE SPACEPORT

Die	*Code*	*Description*
1	Y	No spaceport
2	Y	No spaceport
3	H	Primitive facilities
4	G	Poor quality
5	G	Poor quality
6	F	Good quality.

DMs: If subordinate Population 6+, DM+2 If subordinate Population 1, DM-2 If subordinate Population 0, DM-3.

46 Orbital Distances

The Orbital Distances Table is used to convert between orbit numbers, AUs, and kilometers

SUBORDINATE SPACEPORT

Orbit	*AUs*	*Million Kilometers*
0	0 2	29 9
1	0 4	59 8
2	0 7	104 7
3	1 0	149 6
4	1.6	239 3
5	2 8	418 9
6	5 2	777 9
7	10 0	1495 9
8	19 6	2932
9	38 8	5804.
10	77 2	11,548.
11	154 0	23,038
12	307 6	46,016
13	614 8	91,972
14	1229 2	183,885
15	2548 0	367,711
16	4915.6	735,363.
17	9830 8	1,470,666
18	19,661 2	2,941,274
19	39,322 0	5,882,488.

Animals

Animals in any ecological system interact with each other by forming food chains, obeying instincts, defending territory, and generally living out their lives. When adventurers enter such an ecological system, they will naturally encounter the animals of the system.

The referee should create one set of unique encounter tables for each world the players may travel to This set should consist of one table for each terrain type found on the world

Once a set of tables has been created, it is used with the encounter procedure (covered in the chapter on encounters) to determine if and when animals are encountered. Although the precise nature of animals may change (and may prove to be quite alien), **Traveller** assumes most will conform to four categories based on their position in the food chain: herbivore, omnivore, carnivore, and scavenger.

The Animal Tables chart covers the steps for generating Animal Encounter Tables

IMPORTANT CONCEPTS AND DEFINITIONS

The Animal Tables chart introduces many important concepts and terms concerning animals.

Animal Encounter Table Format: Two formats are typically used for animal tables: a one-die table and a two-dice table.

A two-dice table is more complex and works best for a table that is frequently used; use a one-die table when the situation does not merit such a detailed representation. The suggested format indicates a predetermined sequence of animal categories that is preferable for most cases.

Events: When the encounter table calls for events, insert an event from those described in these rules, or generate additional events appropriate to the situation

Animal Types and Quantity: The animal types table indicates the types of animals which occur within the animal categories. Sometimes an animal type is followed by a die roll in parentheses. This roll represents the number of animals to list for this entry in the animal table. If no roll is listed, the animal quantity is automatically one.

Special Attributes: Although the animals which adventurers will encounter tend to be walkers, some may be flyers, swimmers, amphibians, or even triphibians·

Flyers: These are animals capable of flying through the use of wings, levitating gas sacs, or other mechanisms.

Swimmers· These are animals that live in liquid and swim through the use of fins, flippers, jets, or other mechanisms.

Amphibians: These are animals that live in liquid but are capable of emerging onto land.

Triphibians: These are animals that live in liquid but are capable of walking on land and of flying in the air.

Certain entries on the table are followed by a parenthetical DM which must be applied to the Animal Size throw; its general effect is to make flyers smaller and swimmers larger.

Animal Size: Animal size is expressed in kilograms and may be taken as a general indication of size in relation to human beings (humans are approximately 100 kilograms). All sizes may be construed to cover a range of plus or minus 20 percent.

Animal Hits: The hits column indicates the number of hits an animal can take. When an animal has received wounds equaling or exceeding the first number, the animal is unconscious. When it has received wounds equaling or exceeding the second number, it is dead.

If an animal receives wounds equal to twice its hits, it is destroyed and has lost any food or pelt value

Animal Wounds: The wounds column indicates the general effect of size on an animal's ability to cause damage when it hits. The formula is noted and applied to the effects of the animal's weapons when they are determined.

If, for example, the animal has a thrasher as its weapon, the weapons list (in the *Player's Manual*) states that a thrasher inflicts 2 hits of damage A wound alteration of -1D-3 indicates that the referee should roll 1D-3 and subtract the result from 2 to determine the actual number of hits inflicted If the wound alteration is +2D, then the thrasher will inflict two +2D hits. If the wound alteration is × 2D, then the thrasher will inflict 2 × 2D hits. A roll of 0 or less equals 1, an animal always has the ability to do some damage

Thus, for two animals armed with the same weapon, the larger generally inflicts a heavier wound.

Animal Weaponry: Animals naturally have weapons which enable them to attack and defend. Entries such as teeth + 1 indicate a direct DM to the combat task using the weapon, making it more effective. The specific weapons are covered in the *Players' Manual.*

In some cases, unusual weaponry is described as a certain weapon type: for example, "as pike" or "as body pistol " The combat effect is descriptive of the result rather than of the strict process.

Animal Armor: Some animals possess armor protecting them from attacks by other animals. Only the general effectiveness of the armor is indicated, not its specific construction. Entries such as battle + 4 indicate an addition to the armor value, making the armor more effective.

Animal Characteristics: Because animals have predispositions to attack or to flee, these details are noted on the animal encounter table entry. Three codes are used· A, F, and S. Each is followed by a number which indicates the dice throw involved.

A indicates attack predisposition A7 indicates the animal will attack on a 2D throw of 7+. Special cases also exist, and they are indicated by a lower case letter following the A. See the flowchart for details.

F indicates predisposition to flee. F7 indicates the animal will flee on a throw of 7+. Special cases are indicated by a lower case letter following the F (see the flowchart).

S indicates speed. S0 indicates that the animal is immobile. S1 indicates normal or ordinary speed; S2 indicates double speed; S3 indicates triple speed; S4 indicates quadruple speed.

Referee's Additions: You may want to invent new animal characteristics. Larger or smaller animals may be invented; other animal weaponry and armor types may be invented, with or without DMs, such as cloth-1 (cloth minus 1), ablat+1, foil, stinger-1, and so on.

ANIMAL MOTIVATIONS

Animals may be provided with more complex motivations than the simple dice rolls for attack and flight.

Carnivores base their decisions on the size of the party and size of the individuals in the party

Large herbivores will be less likely to flee than small ones, instead they tend to ignore a party unless it approaches too close Humans may resemble a carnivore's natural prey or a herbivore's natural predator.

Any animal may attack if the party threatens its young, nest, territory, or meal. Any animal may flee if startled or if the party appears sufficiently threatening; even the most vicious carnivore is reluctant to risk its life for a meal.

Other responses are possible beyond attack or flight. A carnivore may stalk a party, hoping to attack an isolated member An armored animal may curl up into a ball or retract its extremities into its shell. Animals may find certain parts of the group's equipment attractive. They may fasten themselves to the outside of an ATV or try to eat clothing. There may be responses analogous to that of the skunk or the opossum An animal may be friendly or want to play; it might even mistake a party for members of the opposite sex.

COMMON SENSE

Airless worlds will almost never have any life of consequence on them; if they do, animal life will still tend to follow the same broad guidelines given above Still, flyers and liquid breathers should be nonexistent.

Always be prepared to alter or restrain prescribed procedures if you feel they contravene logic or reason.

Greater Complexities: Events may be used to trigger rolls on special encounter tables; for example, if an event describes a forest clearing, a special table may be made up to handle encounters in that clearing. An event may be made specifically applicable to an adventure in which a party is involved; for example, if a party is prospecting the location of a mineral outcropping this could be an event Events may trigger small adventures that are separate from the main adventure; for example, an event could involve the party in the exploration of a cave previously mapped by the referee.

ANIMAL TYPES

Animals can be described by the ecological niche they occupy. The following broad categories describe effectively all animal types.

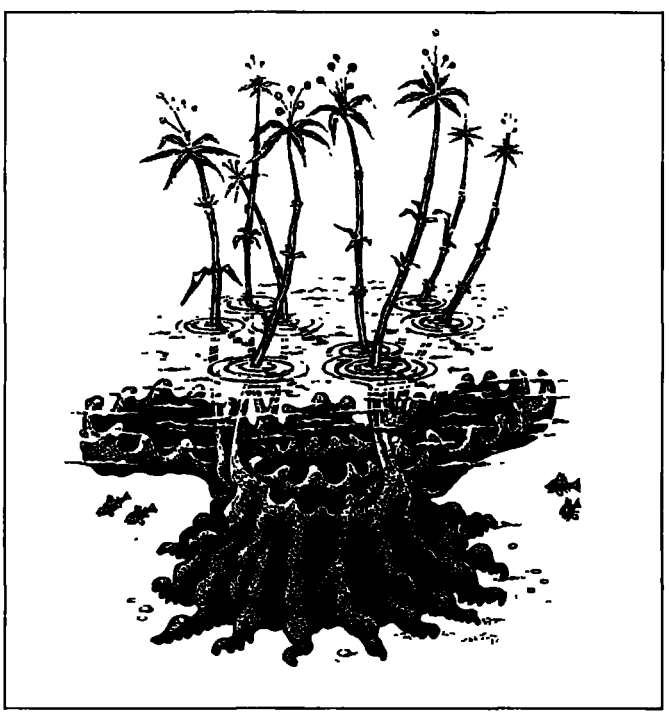
Herbivores: Animals which eat unresisting food are generally classed as herbivores. While this is usually means plant eaters, the definition here includes the eating of unresisting animals as well. Herbivores are of three types:

Grazers: Animals which devote most of their time to eating. They may be solitary or grouped in herds Their primary defense is flight, although such action may result in stampedes which could endanger adventurers who get in their path. When forced to fight, they will fight fiercely until killed or routed. Typical Terran grazers are the antelope and the moose. The whale (which scoops krill from the sea as it swims through it) is also a grazer.

Intermittents: Herbivores which do not devote full time to eating. They tend to be solitary. Intermittents usually "freeze" when an encounter occurs, fleeing if attacked by a larger animal. Sometimes an intermittent will attack in order to protect territory or young. Typical Terran intermittents are the chipmunk and the elephant.

Filters: Herbivores which pass the environment through their bodies. Unlike grazers, which move to eat food, filters move a flow of water or air through themselves in order to gain food. Generally, filters suck, trip, push, or pull anything (even animals) at close range into a digestive sac. A filter can absorb an animal up to twice its own weight. Filters are solitary and generally slow-moving if they move at all. Terran filters are generally aquatic, such as the barnacle.

Filters attack differently than other animals. They inflict automatic wounds of 1D per each 150 kilograms of animal mass (wound alteration is ignored). They attack through reflex.



To free one's self from an attacking filter:
Routine, Str, 6 sec (hazardous).

Referee: This task represents a prompt struggle by an adventurer; success secures an escape Up to four other characters may assist and thus may add their strength as a DM to the character's. This task is hazardous. if any mishap occurs, one of the characters who was aiding in the escape has also been caught If no other characters were helping, ignore any mishaps

Omnivores: Animals which eat food without regard to its resistance. The bear, which will eat fruits and berries as readily as it will hunt for animals, is an omnivore. Omnivores are of three types. gatherers, hunters, and eaters.

Gatherers: Animals which display a greater tendency toward herbivorous behavior. In most respects they are similar to herbivore intermittents. Typical Terran gatherers are the raccoon and the chimpanzee.

Hunters: Animals which display a greater tendency toward carnivorous behavior. In most respects, they are similar to small or inefficient carnivore chasers. Typical Terran hunters are bears or humans.

Eaters: The true omnivore (in the sense that it will eat anything and everything) does not distinguish its food and consumes all that it confronts. Eaters present considerable danger since they do not avoid anything when encountered. A typical Terran eater is the army ant (when an entire swarm is considered to be one organism).

Carnivores: Animals which prey on other animals by attacking and killing them in the face of resistance are carnivores. Carnivores are of five types.

Pouncers: Animals which kill their prey by attacking from hiding or by stalking and springing are pouncers. Because of the difficulty of coordinating such attacks, pouncers are usually solitary animals. In an encounter, pouncers which have achieved surprise have succeeded in their basic aim and will attack regardless of range. If they do not have surprise, they will sometimes still attack. They will flee if they themselves are surprised. Typical Terran pouncers are cats.

Chasers: Animals which kill their prey by attacking after a chase are termed chasers They tend to be pack animals. Typical Terran chasers are wolves.

Trappers: Animals which passively allow their prey to enter a created trap wherein they are killed and eaten. Trappers tend to be solitary and slow but will attack any animal which enters their trap. Usually, a trap will not wound or damage the trapped individual, but will tend to hold the one trapped in order for the trapper to attack. A typical Terran trapper is the spider.

Generally, any character who is surprised by a trapper at close or short range is trapped.

To escape a trapper's trap:
Difficult, Str, 6 sec (hazardous).

Referee: This task represents a prompt struggle by an adventurer; success secures an escape. Up to four other characters may assist and thus may add their strength as a DM as well. This task is hazardous: if any mishap occurs, one of the characters who was aiding in the escape has also been caught. If no other characters were helping, ignore any mishaps.

Sirens: Distinct from the trapper, which creates a trap for its prey, a siren also creates a lure to draw prey to the trap. The trap is treated in much the same manner as that of the trapper, but the lure entails additional consideration.

In most cases, the lure will be specific to some animal but will be unnoticed by humans. In rare cases (throw 11+), the lure will be universal, perhaps a smell or scent, or a mirage or a beautiful configuration, which will attract characters into a vulnerable position. Very rarely, the lure will be psionic in nature. Typical Terran sirens are the angler fish (its mouth is the trap) and the venus fly trap.

Killers: Certain carnivores devote much attention to killing, apparently for the act itself, in a kind of blood lust. Killers' reason (such as territorial defense) is replaced by a raw killing instinct. Attacks by killers are fierce and violent. Killers generally disregard the defender's size as a factor. A typical Terran killer is the shark.

Scavengers: Animals which share or steal the prey of others or that take the remains of kills are classed as scavengers. Scavengers are of four types.

Intimidators: These are scavengers which establish their claim to food by frightening or threatening other animals. Their standard procedure is to approach a kill and force other animals away by appearing to be a threat. A typical Terran intimidator is the jackal.

Hijackers: These are scavengers which establish their claim to food by simply taking it. They rely on their superior strength or size to allow them to hijack food because the other animals present cannot effectively object. A typical Terran hijacker is the lion or the Tyrannosaurus Rex.

Carrion-Eaters: These are scavengers which take dead meat when it becomes available (often waiting patiently for all other threats to disperse before beginning) A typical Terran carrion-eater is the buzzard.

Reducers: These are scavengers which act constantly on all available food. They reduce the remains of food after all other scavengers are finished with it by consuming bone and other leavings. Terran reducers are all microscopic, such as bacteria.

EVENTS

In addition to animals, the referee may include one or more events in the encounter tables An event may be almost anything. an unusual animal, an interesting terrain feature, the weather, even a natural disaster. An event's purpose is to add interest, atmosphere, and perhaps a bit of danger to the adventurers' travels

Events should be specifically tailored to the terrain in which they occur and should make allowances for the nature of the party, its weapons, and its vehicles. A number of sample events are given below. In order to present as many ideas as possible, the descriptions of individual events are short; a referee's complete description of an event may require more information.

Animals

An event is a convenient form to use in describing an unusual animal, the animal's statistics, in standard format, may follow the description, or the event may describe unusual behavior by an animal found elsewhere on the table. An event may also describe the animal's lair or spoor, rather than the animal itself.

Some catagories of animal events are:

Circling Flyers: A number of flyers spot the party and circle above their heads. After about 10 minutes the party will be attacked by chasers. The animals are symbiotic: the flyers spot prey for the chasers and are allowed to share in the feast.

Poisonous Pests: While the party was stopped, tiny (one gram) creatures have crawled into concealed places within the party's equipment (packs, boots, etc.) They are poisonous, and they attack when encountered (when a character reaches into his pack, puts on his boots, etc).

To avoid an attack by hidden poisonous pests
Routine, Dex, Int (fateful).

Stampede: A herd of grazers, frightened by carnivores, stampedes into the party. They can be turned by loud noises (gunshots, explosions) or laser bolts. Otherwise, they will run straight through the party.

To turn a stampeding herd of grazers:
Difficult, Equestrian, Int (hazardous).

Plants

Although plants generally remain just part of the scenery, some may be interesting or dangerous enough to qualify as events.

Animated Vines: Ordinary looking vines grab and hold individuals in a constricting grip, inflicting 1D damage to Str/Dex/End per minute. Release requires cutting off the vines.

To free one's self from animated vines:
Routine, Blade, Str (hazardous).

Referee: This task represents a prompt struggle by an adventurer; success secures an escape. Up to four other characters may assist, and they may add their Strength and Blade skill as a DM as well. This task is hazardous: if any mishap occurs, one of the characters who was aiding in the escape has also been caught. If no other characters were helping, ignore any mishaps.

Hallucinogenic Pollen: The party comes upon a field of flowers. The air is filled with their pollen, which will cause strong hallucinations if breathed. The hallucinations, which are threatening in nature, will continue for about 20 minutes after the party leaves the field

Tanglewood: The entire floor of the forest is covered with a low network of sticky, flexible roots. Running is impossible, and walking is difficult. Reduce speed to one-quarter

Wirebushes: The party comes to an area filled with low bushes whose branches are very tough. Bypassing the area with a vehicle will add 1D × 5 kilometers to the travel distance.

To avoid a mishap when driving through wirebushes:
Routine, Vehicle, Dex (hazardous).

Referee: Make this task Routine if the characters' vehicle has tracks. Wheeled vehicles simply roll for a mishap if they attempt to enter an area of wirebushes.

If a mishap occurs, one possibility is that the vehicle has become entangled. If so, the referee must define a task for the characters' to free their vehicle

WEATHER

Various types of weather may endanger a party or impede its progress.

Cold Snap: The ambient temperature falls rapidly Individuals must obtain shelter or lose two points of Endurance per hour

Dense Fog: The party encounters a low area filled with a dense fog Visibility is reduced to a medium range, and full-speed vehicle travel without sensors becomes hazardous.

Rainstorm: A sudden rainstorm reduces visibility and turns the ground to thick mud. Ground travel is slowed to quarter speed for the day

Sandstorm: High winds fill the air with abrasive sand particles. Progress is impossible for 12 hours. Individuals will be buried, and windscreens on vehicles below tech level 12 will be abraded into translucence

Tornado: A tornado is heading toward the party. If it achieves surprise, or if the party does not act to avoid its path once it is sighted, it will destroy their vehicle and inflict 3D damage to the Str/Dex/End of each member in the group

NATURAL DISASTERS

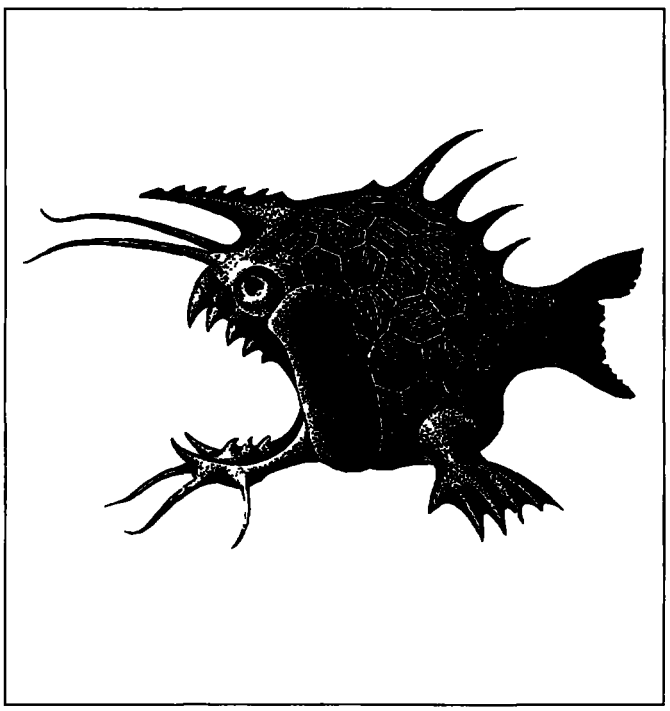
Local phenomena may also provide interesting events

Avalanche: Throw 8+ for a loud noise (vehicle, conversation, etc.) to precipitate an avalanche

To avoid damage from an avalanche
Difficult, Vehicle or Str, Dex (fateful, hazardous).

Referee: This task works equally well for characters on foot or riding in a vehicle.

Prairie Fire: A line of fire can be seen on the horizon The fire is 20 kilometers across and must be detoured. Animals



PRODUCING ANIMAL ENCOUNTER TABLES 1

1 World Size and Atmosphere

Using information about the world for which the animal encounter table is being produced, determine the World Size and Atmosphere

BASIC WORLD DATA

UWP	*World Size*	*Atmosphere*
0	Asteroid	Vacuum
1	Small	Vacuum
2	Small	Vacuum
3	Small	Vacuum
4	Small	Thin
5	Medium	Thin
6	Medium	Standard
7	Medium	Standard
8	Large	Dense
9	Large	Dense
A+	Large	Exotic

These characteristics correspond to the World Size and Atmosphere codes given in the *Players' Manual*

2 Terrain Types

Determine the terrain types present on the world For each terrain type, generate an animal encounter table.

3 Animal Type and Weight DM

Determine the animal type and weight DMs from the Animal Type and Weight DM Table. These DMs show propensity for the animal to be larger or smaller based on the terrain type they inhabit

ANIMAL TYPE AND WEIGHT DMS

Terrain	*Terrain Equivalent*	*Type DM*	*Wt DM*
Clear	Road, Open	+3	—
Prairie	Plain, Steppe	+4	—
Rough	Hills, Foothills	—	—
Broken	Badlands	−3	−3
Mountain	Alpine	—	—
Forest	Woods	−4	−4
Jungle	Rainforest	−3	−2
River	Stream, Creek	+1	+1
Swamp	Bog	−2	+4
Marsh	Wetland	—	−1
Desert	Dunes	+3	−3
Beach	Shore, Sea Edge	+3	+2
Surface	Ocean, Sea	+2	+3
Shallows	Ocean, Sea	+2	+2
Depths	Ocean, Sea	−4	—
Bottom	Ocean, Sea	−2	—
Sea Cave	Sea Cavern	−2	—
Sargasso	Seaweed	−4	−2
Ruins	Old City	−3	—
Cave	Cavern	−4	+1
Chasm	Crevasse, Abyss	−1	−3
Crater	Hollow	—	−1

4 Select Animal Table Format

Select a 1D or 2D format for the animal encounter table to be produced

ANIMAL ENCOUNTER TABLE FORMATS

1 Die Table			2 Dice Table		
Die		*Category*	*Die*		*Category*
1	S	Scavenger	2	S	Scavenger
2	H	Herbivore	3	O	Omnivore
3	H	Herbivore	4	S	Scavenger
4	H	Herbivore	5	O	Omnivore
5	O	Omnivore	6	H	Herbivore
6	C	Carnivore	7	H	Herbivore
			8	H	Herbivore
			9	C	Carnivore
			10	E	Event
			11	C	Carnivore
			12	C	Carnivore

5 Animal Type and Quantity

For each entry line in the Animal Encounter table being produced, determine the animal type and quantity and note it on the table

ANIMAL TYPE AND QUANTITY

Die	*Herbivore*	*Omnivore*	*Carnivore*	*Scavenger*
0	Filter (1D)	Gatherer	Siren	Carrion-Eater (1D)
1	Filter	Gatherer	Pouncer	Carrion-Eater (2D)
2	Filter	Eater	Siren	Reducer (1D)
3	Intermittent	Gatherer	Pouncer	Hijacker (1D)
4	Intermittent	Eater (2D)	Killer (1D)	Carrion-Eater (2D)
5	Intermittent	Gatherer	Trapper	Intimidator (1D)
6	Intermittent	Hunter	Pouncer	Reducer
7	Grazer	Hunter (1D)	Chaser	Carrion-Eater (1D)
8	Grazer (1D)	Hunter	Chaser (3D)	Reducer
9	Grazer (2D)	Gatherer	Chaser	Hijacker
10	Grazer (3D)	Eater (1D)	Killer	Intimidator
11	Grazer (2D)	Hunter (1D)	Chaser (2D)	Reducer (1D)
12	Grazer (4D)	Gatherer	Siren	Hijacker
13	Grazer (5D)	Gatherer	Chaser (1D)	Intimidator (1D)

Use the animal type DM from step 3 on the die roll on this table

The animal quantity is assumed to be 1 unless an instruction is in parentheses then roll the dice shown for the animal quantity.

6 Special Attributes

Determine if any animal entries in the table have special attributes

SPECIAL ATTRIBUTE TABLE

Die	*Beach*	*Marsh*	*River*	*Sea*	*Swamp*	*Other*
2	S+1	S−6	S+1	S+2	S−3	—
3	A+2	A+2	A+1	S+2	A+1	—
4	A+2	A+1	—	S+2	A+1	—
5	—	—	—	A+2	—	—
6	—	—	—	A	—	—
7	—	—	—	S+1	—	—
8	—	—	—	S−1	—	—
9	—	—	—	T−7	—	—
10	—	—	—	T−6	—	F−6
11	F−6	F−6	F−6	F−6	F−6	F−6
12	F−5	F−5	F−5	F−5	F−5	F−3

Use this table according to the terrain type of the encounter table Apply the following DMs on this table If World Size Large, DM-1, if World Size medium, DM+1; if World Size Small or Asteroid, DM +2 If Atmosphere Thin, DM-1; if Atmosphere Dense or Exotic, DM+2.

Results: If S, animal is Swimmer If A, animal is Amphibian. If F, animal is Flyer If T, animal is Triphibian.

The number on this table is a further animal weight DM, in addition to the animal weight DM from step 3.

7 Animal Weight Effects

Roll 2D once for animal weight effects animal mass in kilograms, hits, wounds modifier (which modifies weapons hits)

ANIMAL WEIGHT EFFECTS

Die	Wt	Hits	Wound	Wound Modifier
1	1	1	0	-1D-3
2	3	1	1	-1D-3
3	6	1D	1	-1
4	12	1D	2	—
5	25	1D	3	—
6	50	1D	1D+0	—
7	100	1D	1D+1	—
8	200	2D	1D+1	+1
9	400	2D	1D+1	+1D-3
10	800	2D	1D+3	+1D+0
11	1600	3D	1D+3	+2D+0
12	3200	3D	1D+4	+3D+0
13	(+6)			
14	6000	3D	2D+0	×1D+0
15	12000	3D	2D+2	×1D+0
16	24000	4D	3D+0	×1D+1
17	30000	5D	3D+0	×2D+0
18	36000	5D	3D+3	×2D+0
19	40000	5D	3D+6	×2D+2
20	44000	6D	3D+6	×3D+0

DMs: Apply any weight DM from the kind of terrain or special attribute If World Size Small or asteroid, DM+1 If World Size Large, DM-1

A result of (+6) requires a reroll with a DM+6; continue to reroll without a DM if (+6) is rolled

8 Animal Weaponry

Determine the weaponry for each individual animal

ANIMAL WEAPONRY

Die	Weapons	Hits
1	horns and hooves	2
2	horns	2
3	hooves and teeth	2
4	hooves	2
5	horns and teeth	2
6	thrasher	2
7	claws and teeth	2
8	teeth	2
9	claws	2
10	claws	2
11	thrasher	2
12	claws and teeth	2
13	claws+1	2
14	stinger	3
15	claws+1 and teeth+1	2
16	teeth+1	2
17	as blade	2
18	as pike	2
19	as broadsword	3
20	as body pistol	3

DMs: If carnivore, DM+8 If omnivore, DM+4 If herbivore, DM-3.

9 Animal Armor

Determine what armor, if any, each individual animal has

ANIMAL ARMOR

Die	Armor
1	(+6)
2	—
3	—
4	jack
5	—
6	—
7	—
8	—
9	—
10	jack
11	—
12	(+6)
13	mesh+1
14	cloth+1
15	mesh
16	cloth
17	combat+4
18	reflec
19	ablat
20	battle

DMs: If carnivore, DM-1 If herbivore, DM+2 If scavenger, DM+1.

A result of (+6) requires a reroll with a DM+6, continue to reroll without a DM if (+6) is rolled

10 Animal Behavior

Determine the precise range of animal behaviors and reactions that are possible

ANIMAL BEHAVIORS

Type	To Flee	To Attack	Typical Speed
Herbivore			
Filter	1D+2(3-8)	if possible	1D-5(0-1; min 0)
Intermittent	1D+3(4-9)	1D+3(4-9)	1D-4(1-2; min 1)
Grazer	1D-1(0-5)	1D+2(3-8)	1D-2(2-4; min 2)
To Attack	To Flee	Typical Speed	
Omnivore			
Gatherer	1D+3(4-9)	1D+2(3-8)	1D-3(1-3, min 1)
Hunter	1D+0(1-6)	1D+2(3-8)	1D-4(1-2; min 1)
Eater	1D+0(1-6)	1D+3(4-9)	1D-3(1-3; min 1)
Carnivore			
Pouncer	if surprise	if surprised	1D-4(1-2; min 1)
Chaser	if more	1D+3(4-9)	1D-2(2-4; min 2)
Trapper	if surprise	1D+2(3-8)	1D-5(0-1; min 0)
Siren	if surprise	1D+3(4-9)	1D-4(0-2, min 0)
Killer	1D+0(1-6)	1D+3(4-9)	1D-3(1-3, min 1)
Scavenger			
Hijacker	1D+1(2-7)	1D+2(3-8)	1D-4(1-2; min 1)
Intimidator	1D+2(3-8)	1D+1(2-7)	1D-4(1-2; min 1)
Carrion-eater	1D+3(4-9)	1D+2(3-8)	1D-3(1-3; min 1)
Reducer	1D+3(4-9)	1D+2(3-8)	1D-4(1-2; min 1)

For herbivores (unlike most other animals) consult their flee characteristic before they consult their attack characteristic

Each roll is a single digit and should follow the letter A (for attack), F (for Flee), or S (for Speed).

In some cases, animals will behave according to the situation. These special cases are·

If Possible· A filter will attack if it possibly can Use the code Ap.

If Surprise: The animal will attack if it has surprise. Use the code As.

If Surprised. The animal will flee if it is surprised (as soon as it becomes aware that the other side had surprise). Use the code Fs.

If More: The animal will attack if there are more if it than there are potential prey. Use a code Am

Continue generating entries for the animal table by doing another animal Once an animal table for this type of terrain is completed, do another animal encounter table.

which are fleeing from the fire will ignore the party unless their escape path is blocked Detour will add 2D × 10 kilometers to the travel distance. Roll for three animal encounters during that time.

Seismic Quake: A seismic disturbance shakes the ground.

To avoid damage from a seismic quake:
Simple, Vehicle or Str, Dex (fateful)
Referee: This task applies to characters riding in a ground vehicle. For characters on foot, make this task Routine.

Volcano: A nearby volcano errupts, and the party must flee or be overcome by poisonous gases. After the erruption, ash and lava flow have sealed the mountain pass, preventing forward progress

Terrain Features

Adventurers may encounter variations in local terrain too small to show up on planetary maps.

Bad Water: Local water is contaminated with heavy metal concentrations. Bathing in or drinking the water will cause illness for one to six days.

Broken Ground: The terrain becomes very rough; an ATV must slow to quarter-speed or any travel tasks become hazardous.

Crevasse: A deep crevasse blocks the group's forward progress, and the party must travel 2D × 5 kilometers to detour around it

Ford: Sandbars in the river create a shallow area, allowing vehicles to cross

Oasis: The party approaches an oasis with a pool of water surrounded by heavy vegetation. Throw 8+ for the water to be drinkable. If it is not, moisture may still be recovered from reservoirs inside one species of plants.

Radiation Area: An area in the forest is devoid of life, and a radiation sensor shows very high levels of radiation near the center Individuals who spend more than 10 minutes in the area will suffer from radiation sickness, taking 1 point of damage to Str/Dex/End every day for the next two weeks for every 10 minutes spent in the area For instance, a character who spends an hour in the area will take 6 points of damage each day for the next two weeks.

Sun Crystals: At about midday, light from the sun strikes crystaline outcroppings, is concentrated and converged by them, and flashed about as a powerful energy bolt.

To avoid being hit by a sun crystal energy bolt:
Routine, Survival, Dex (fateful).
Referee: If a mishap occurs, roll for wounds as a laser carbine hit; reflec protects.

Curiosities

Some events may have no importance whatsoever and merely provide atmosphere to an adventure.

Jungle Drums: Distant drums are heard at night; periodically they fall silent and are answered from another direction. If the party investigates, they may be able to discover that these are the mating calls of a large omnivore.

Marsh Gas: Moving lights are seen in the distance, and they are apparently following the party. They may temporarily be mistaken for the running lights of an air/raft

Mirage: An oasis appears on the horizon, but it dissolves into nothing as it is approached by the group. This continues until nightfall

Statues: The party finds a large stone statue half buried; the torso is human but the head is that of a local carnivore. Natives of the area, if consulted, will state that such finds are common and will give varying opinions of their origin and present significance

Vacuum Worlds

Encounter tables for Vacuum Worlds (or for any world without life) must be largely composed of events.

Dust Pool: Microfine dust fills a crater. If any character walks through the pool, or drives a vehicle through, roll the following task:

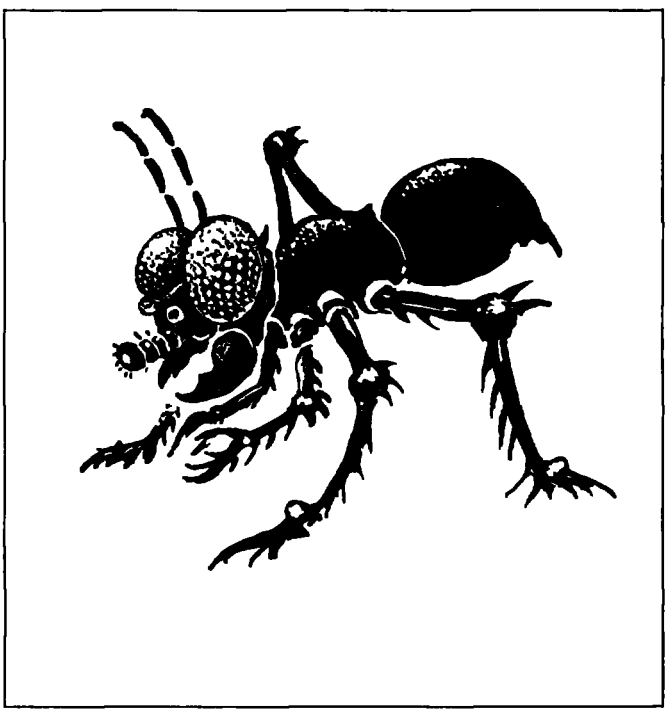
To avoid a malfunction caused by excessive dust:
Difficult, Vacc Suit or Vehicle, Dex (fateful)

Magnetic Anomaly: A large underground metal deposit deflects compass readings by as much as 60 degrees. Travellers who do not notice this will be steered off of their course.

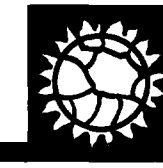
Pressure Tent: The party comes upon a small inflatable shelter. There is breathable air inside but no heat or light, for the shelter's power pack has run down. If anyone undertakes a lengthy search, the owner's body may be found under a rockslide several hundred meters away.

Solar Storm: Increased solar activity makes routine radio communication Formidable for 1D days.

Tracks: ATV tracks cross the party's path. If the party follows them in the right direction, they will be led eventually to civilization



Encounters



Through encounters in **Traveller**, player characters meet and interact with non-player characters (NPCs), events, animals, and other interesting phenomena. The direction and the tone of an adventure depends in a large measure on the types of individuals encountered by the adventurers as they travel about.

Encounters occur in three basic settings urban, wilderness, and space; the specific types of encounters vary, depending on the setting. You, as the referee, must evaluate the players' activities, select one of the three settings to use, and determine when an encounter occurs. When an encounter does occur, the appropriate details must be generated, and you present the encounter to the players. As the encounter progresses, you must build on the situation, present any appropriate reactions, and administer any activity that may be called for.

Encounters with non-player characters serve as your vehicle for direction and input during adventures. The proper presentation of non-player characters can provide players with transportation, information, or other assistance given that the NPCs' reactions are appropriate. NPCs can also use violence (or the threat of violence) to redirect activity toward more reasonable goals.

Encounter Flowchart: Established encounter tables serve as a prod to the referee's imagination and aid in the efficient management of an adventure. The encounter tables are presented in standard flowchart form.

IMPORTANT CONCEPTS AND DEFINITIONS

The encounter flowchart contains many important concepts and terms, which are described here in the text.

Time Periods: Depending on what is appropriate to the moment, you must select a certain time period in order to aid in keeping an accurate record of the passage of game time. The flowchart lists several recommended time periods to use You should make it a practice to inform your players of the current time period in effect, and they should have a say in which time period you are currently using.

The current time period being used has a great effect on the relevancy of the time increment used on tasks. For example, if time passage is being marked in days and if a certain task has a basic time increment of 5 seconds, the duration of the task has little effect on the passage of time. On the other hand, if a task has a basic time increment of 2 days, the final duration of the task can have a dramatic effect on the passage of time.

As shown on the flowchart, the time period being used has an effect on the frequency and number of encounters that occur.

Ordinary (Nonrandom) Encounters: Many encounters are dictated by the adventurers' activity and cannot be generated randomly. Adventurers meet ordinary people in the course of ordinary activity. In many cases, adventurers actually ignore the persons (and are themselves little noticed) and concentrate on their current activity instead. Personal reactions are rarely of importance, and the encountered individual merely performs his or her duties. For example, an encounter with a store clerk in the course of buying equipment is rarely of importance, and the process usually continues without trouble. Ordinary encounters occur as called for by the situation and at your discretion as referee.

At times, you may use an otherwise ordinary encounter to further the events of the adventure In such cases, the en*counter is no longer ordinary; it is instead a predetermined* encounter.

Clerks: The most common form of an ordinary encounter is meeting a clerk. When an adventurer enters a store to buy equipment, a shop to procure repairs, or a restaurant to buy a meal, meeting a clerk is an ordinary encounter. There should be no problem in achieving the stated goal, and the clerk or waiter will perform the job adequately, if not perfectly. It is not necessary for you to know the UPP of the clerk or even to deal with the clerk at any great length.

Employees and Hirelings: One form of an ordinary encounter is the employment interview, where the adventurers are the potential employers When travellers themselves need employees (for any purpose, from bodyguards to crewmembers), they must find them in the course of their various activities.

Advertising, visiting local union hiring halls, or actively spreading the word at local establishments are all possibilities for the location of potential hirelings. You, in response to this activity, must then generate several non-player characters and present them as applicants for employment. The interview consists of a conversation interpersonal task (using Interview skill), in which the players try to determine the character's UPP and skill levels.

The player characters then decide whether to hire or not based on the information determined in the interviews Of course, applicants will be limited (perhaps 1D; one to six applicants per week), and the adventurers cannot be too choosy.

Random Encounters: As they travel about in any populated setting, adventurers have random encounters with a wide variety of individuals or groups. Such individuals are themselves performing various tasks which may complement, supplement,

oppose, or be irrelevant to the goals of the adventurers. Some random encounters are mandated by the adventure at hand: see Predetermined Encounters, below

The list provided is only an example, and other lists may be generated for specific adventures or situations. For example, if the adventuring group is on a world embroiled in civil war, the random encounter list might be full of troops, refugees, guerrillas, war profiteers, petty warlords, and members of various factions.

Rumors: Information is a valuable commodity to travellers, and rumors are the source of much useful information. The term *rumor* is a catchword covering a wide variety of presentations of information. Rumors may be newspaper or broadcast information; they may be conversations overheard on public transport or in local eating establishments; they may be bits and pieces brought together by the listener. In any case, the idea of the rumor allows the player characters to learn of new, exciting, and potentially rewarding (or potentially deadly) situations. In many **Traveller** situations, a rumor is simply information leading to a patron, a job, or a potential treasure; in **Traveller** adventures or campaigns, rumors serve to educate and direct the player characters toward the essential basis of the adventure

Rumors are faceless. The player character's own decision to act on a rumor makes him or her responsible for the results. There is no one to pin the blame on if the rumor proves false.

Rumors are untraceable. No one can definitely point to the source of a rumor and state that it originally began there. Rumors are, in effect, absent patrons, providing information that allows player characters to act, and having once acted, to win or lose on their own merits.

Rumors are valuable, and once player characters know of their potential, they will seek them out. Ultimately, all available rumors should be given to the player characters, but they should be doled out slowly in order to insure each rumor is dealt with and understood (if possible).

Legal Encounters: The law level of each world determines the degree of permissiveness or oppression which prevails. In addition to stating what weaponry is or is not allowed, the Law Level addresses the problem of harassment by local enforcers or police. Permissive worlds allow individuals to settle their own differences and to protect themselves. The likelihood of the local police bothering anyone is remote. On oppressive worlds, the local enforcers are charged with great responsibility and spend much of their time protecting local law and order. As a result, they are much more likely to stop and question strangers, which often reduces this procedure to a simple form of harassment.

Patrons: The key to adventure in **Traveller** is the patron. When a band of adventurers meets an appropriate patron, they have a person who can give them direction in their activities and who can reward them for success. The patron is the single most important non-player character possible.

A patron will, if he or she decides to hire a band of adventurers, specify a task or deed to be performed and then finance reasonable expenses for the pursuit of that task. Some tasks are ordinary in nature, such as employment as armed guards or escorts; other tasks may include the location and procurement of items of great value.

Generally, a patron's agreement with a band of adventurers will specify that the patron will receive the item he or she is seeking, and all other goods or items acquired will belong to the adventurers Other possible agreements may call for the adventurers to receive shares in the total profit of the venture, from which their current salaries will be deducted

Two patron lists are provided on the flowchart; in the case of a specific adventure or campaign, you may want to create a special patron list which will more closely reflect the situation in the game For example, if the current adventure centers on exploration and survey of a poorly charted subsector, then the range of patrons might include merchants eager for trade franchises or news of new markets, mercenaries looking for new wars to fight, smugglers in search of goods, and government officials attempting to restrain access to the new area.

Animal Encounters: The animal life to be encountered on various alien worlds may pose dangers to the adventurers, and animal encounter tables based on world type and terrain type are used to determine what kinds of animals may be met and how they will react. Animal encounter tables are produced using the generation procedure shown in the chapter on Animals.

Animal encounters can occur while the band is travelling or while the band is halted (for rest, exercise, encampment, or whatever) In addition, specific encounters at specific locations are always possible. For example, you may already have populated a location (perhaps a ruin) with specific animals

Special Effects: Animal encounters constitute the only general possible access that characters have to food, furs, or other valuable items. Guides may be hired or present for the purpose of assisting in the location of specific animals, thereby contributing DMs to a task to locate a specific type of animal. Animals are usually edible (throw 5+ to be edible, DM −3 if the atmosphere is tainted) provided the planetary atmosphere is between 2 and 9 and the animal does not have a poison weapon. Otherwise, the animal is inedible. From 5% to 30% (throw one die times 5%) of an animal's weight will be edible meat. A person requires one kilogram of meat per day when living off the hunt.

You may elect to describe animals in order to allow a better image in the adventurers' minds. The basic system may be used without this aspect, but descriptions such as lion-like, amoeboid, canine, or others may prove useful.

Starship Encounters: As the players travel through space, especially when in orbit around a populated, high tech world, they will encounter other space vessels. The specific types of ships encountered are listed in the *Imperial Encyclopedia*. However, the flowchart lists these various missions which spacegoing vessels may be engaged in:

Business: The vessel is travelling on some form of business, perhaps adventurers working for a patron or bureaucrats on business.

Charter: The vessel has been chartered for some special purpose (a group of adventurers on a safari, a religious group on a sojourn, or whatever)

Communication: The vessel is carrying information, typically express boat information.

Courier: The vessel is carrying goods and/or personnel Courier missions may be interpreted as a form of errand-running.

Distress: The vessel is in danger The distress call may be legitimate or a decoy to lure the player's ship to a pirate vessel.

Escort: The vessel accompanies other ones to protect them.

Maneuvers: The vessel is engaged in military excercises

Patrol: The vessel is checking the vicinity to ensure all is well.

Piracy: The vessel is illegally preying on other starships with the goal of taking hostages or stealing cargo.

Pleasure Tour: Travel is for passenger enjoyment.

Privateering The vessel is engaged in "legalized" piracy via a letter of marque

Prospecting: The vessel is scanning asteroids or desolate planets for minerals.

Research: The vessel is involved in scientific research.

Smuggling: The vessel is carrying illegal goods and/or wanted passengers. Such missions portray themselves as transport missions to avoid betraying their true nature.

Survey The vessel is conducting a slow examination of a system to determine new data or to correlate old data.

Trade: The vessel is carrying speculative cargo.

Transfer: The vessel is on its way to its next mission.

Transport: The vessel is carrying goods and passengers.

Predetermined Encounters: In the course of an adventure, certain encounters cannot be random; they form an integral part of the adventure plot line. Predetermined encounters are generated by the referee ahead of time.

Predetermined encounters may include interviews with witnesses, discussions with police or private investigators, observations of likely suspects, conversations with data librarians, observations of guards at the kidnappers' hideout, and rescue of the daughter herself. No table of random personalities can provide these individuals; the referee must produce them in anticipation of the player characters' actions.

Many pregenerated adventures provide the predetermined encounters and NPCs necessary for running the adventure. Because provision is made for predetermined encounters as a part of the normal encounter process, predetermined encounters can be disguised as another type of encounter, which makes the game more fun for all since the players will never be sure when an encounter is a preplanned.

NON-PLAYER CHARACTERS

Player characters will encounter people not manipulated by another player These may be thugs or assailants, potential hirelings or patrons Their skills and abilities must be determined by you. You may use the Quick NPC procedure to end up with an NPC in a hurry or character generation to create a full-fledged character. Most new **Traveller** players spend time generating characters. You can save these characters for future use as non-player characters.

Loyalty and Dedication: Usually, non-player characters will be dependable and loyal; but a seemingly loyal non-player character may have foul play at heart.

Use the uncertain portion of interpersonal tasks to determine an NPCs loyalty, with the level of truth representing the level of loyalty. Continued loyalty is dependent on the quality of treatment and level of skill of their employing player characters.

Attitude: Non-player characters' attitudes will indicate their basic stance. If players wish to deal with any NPC at length, you should use the interpersonal task procedure.

REFEREE'S RESPONSIBILITIES

In administering any encounter, you must be responsible for the details of the situation

Presenting Encounters Effectively: Each encounter can be defined by these questions: Who or What? How Many? Why? How? When? Where?

Who or What?: Detail the identity of the encountered individuals (Who? for intelligent beings; What? for animals). For individuals, know the UPP plus any skills, weapons, and other data, which can be generated on the spot by using the Quick NPC procedure, by deriving from pregenerated lists or tables, or simply by faking, depending on how important it is. For animals, you should know the details of the animal (from Animals) including Hit Value, Weaponry, Wounds Caused, Armor, and Reactions. The data can be taken from animal encounter tables or just improvised on the spot.

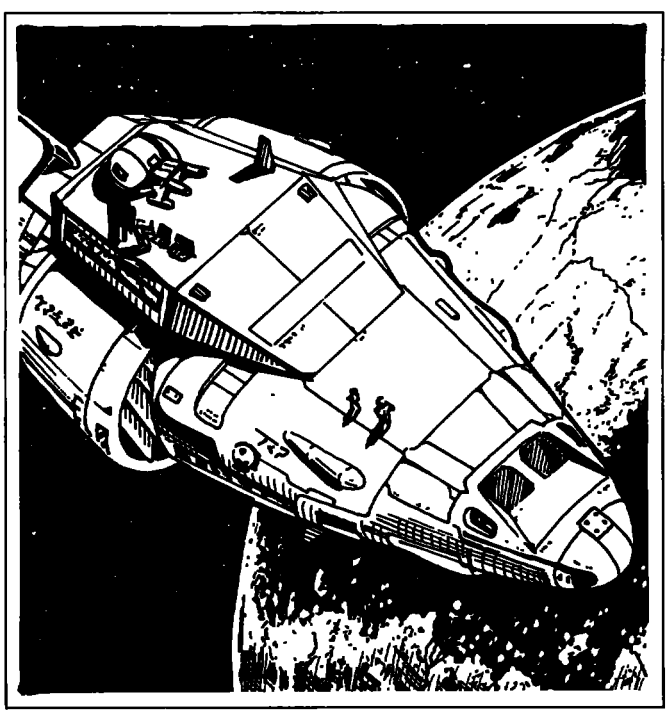
How Many?: Determine the number of encountered individuals or animals. In some cases, an encounter table may indicate a precise number, or a die roll may be called for.

Why?: You should determine a reasonable motivation for the encounter. Motives may range from rowdiness to robbery to protection of territory; for animals, motives may involve food, fear, bad temper, or protection of young.

How?: Determine the details of the encounter, including the specifics of the situation Is transport available, and how is each side organized or arranged when they meet?

When?: The precise time should be determined, which in turn affects lighting, weather, and other conditions.

Where?: You should determine the specifics of terrain, including terrain type (generally already known), the details of possible cover and concealment, and any other pertinent facts. Do not present all of this information to the players in one lump. They should be told only what they can see or otherwise determine. As the encounter progresses, unfold more details.



1 Appropriate Time Period

The referee must select the most appropriate time period at this point in the adventure The table shows commonly used time periods.

ENCOUNTER TIME PERIODS

Description	Duration
Combat Round	6 seconds
Ten Cbt Rds	1 minute
Short Interval	10 minutes
Hour	1 hour
Quarter Day	6 hours
Full Day	24 hours
Week	7 days
Month	30 days
Year	365 days

The Quarter Day is a particularly convenient way to measure time during an adventure when the players are busy with a lot of detailed activities The Quarter Day divides a day into four uniform time segments morning, afternoon, evening, and night.

2 Number of Encounters

Determine the number of encounters that occur during the time period

ENCOUNTER QUANTITY

Time Period	*No of Encounters*
Combat Round	optional
Ten Cbt Rds	optional
Short Interval	optional
Hour	1 encounter on 11+
Quarter Day	1 encounter on 7+
Full Day	1D important encounters
Week	1D memorable encounters
Month	2D memorable encounters
Year	3D memorable encounters

Note: Important encounters have application to any current activities Memorable encounters are important encounters that will be remembered when character look back on their activities.

3 Encounter Setting

The referee must select (based on the environment) whether the setting is urban, wilderness, or space

When multiple encounters occur, the referee must determine how much of the time period is spent in each encounter

Encounters can generally be categorized as Urban, Wilderness, or Space Encounters

4a Urban Encounters

Determine the specific type of encounter by rolling 2D.

URBAN ENCOUNTER TYPES

Die	*Type*
2	Rumor
3	Random
4	Animal
5	Predetermined
6	Rumor
7	Random
8	Rumor
9	Predetermined
10	Patron
11	Random
12	Rumor
13	Legal

DMs: If Low Law (1-3), DM+1 If Mod Law (4-7), DM+2 If High Law (8-9), DM+3 If Ext Law (A+), DM+4.

4b Wilderness Encounters

Determine the specific type of encounter by rolling 2D.

WILDERNESS ENCOUNTERS

Die	*Type*
2	Animal
3	Animal
4	Animal
5	Predetermined
6	Animal
7	Animal
8	Animal
9	Predetermined
10	Rumor
11	Random
12	Patron
13	Legal

DMs: If Low Pop (0-3), DM+1. If Mod Pop (4-8), DM+2. If High Pop (9+), DM+3

4c Space Encounters

Determine the specific type of encounter by rolling 2D

SPACE ENCOUNTERS

Die	*Type*
2	No encounter
3	No encounter
4	No encounter
5	Predetermined
6	Merchant
7	Merchant
8	Merchant
9	Predetermined
10	Civilian
11	Non-starship
12	Naval/Scout/Xboat
13	Naval/Scout/Xboat

DMs: If Starport A or B, DM+1 If Starport E, DM-1 If Starport X, DM-5. If Scout Base, DM+2. If Naval Base, DM +2, If High Pop (9+), DM+1.

Go to the Space Encounters chart (In the *Imperial Encyclopedia*).

5 Rumors

Provide an item of information from a newspaper, broadcast, or overheard conversation. Information may be·

- True Information.
- False Information.
- Misleading Information
- Irrelevant Information
- Background Information
- Potential Clue

Rumors may include:

- Leads to potential jobs or patrons.
- Locations of potentially valuable finds
- or discoveries
- Warnings about hazards.
- Education about the universe.

6 Patron Encounters

Generate a patron encounter If the course of the adventure calls for a patron, the referee may devise a specific encounter Otherwise, the Patron Encounter Tables may be used.

Go to the Patron Encounter Tables.

6a Patron Encounters

Select one of the two patron lists below Roll 1D twice and consult the list

PATRON LIST 1		PATRON LIST 2	
Die	*Patron*	*Die*	*Patron*
11	Arsonist	11	Naval Officer
12	Cutthroat	12	Scout Official
13	Assassin	13	Marine Officer
14	Hijacker	14	Hunter
15	Smuggler	15	Port Warden
16	Terrorist	16	Naval Officer
21	Crewmember	21	Reporter
22	Peasant	22	Technician
23	Rumor	23	Doctor
24	Clerk	24	Rogue
25	Soldier	25	Noble
26	Shopkeeper	26	Govt Official
31	Shipowner	31	Barbarian
32	Tourist	32	Scout Pilot
33	Merchant	33	Pirate
34	Police	34	Researcher
35	Scout	35	Writer
36	Rumor	36	Professor
41	Diplomat	41	Crime Leader
42	Courier	42	Scientist
43	Spy	43	Belter
44	Scholar	44	Architect
45	Governor	45	Steward
46	Administrator	46	Financier
51	Mercenary	51	Navigator
52	Naval Officer	52	Swindler
53	Marine Officer	53	Broker
54	Scout	54	Arms Broker
55	Army Officer	55	Doctor
56	Mercenary	56	Pilot
61	Noble	61	Merchant
62	Playboy	62	Rogue
63	Avenger	63	Embezzler
64	Emigre	64	Belter
65	Speculator	65	Bureaucrat
66	Rumor	66	Diplomat

DMs on List 1:

On 1st die roll

If character is merchant, DM-1

If noble (Soc B+), DM+1

On 2nd die roll

If character is rogue or diplomat, DM-1

If marine or army, DM+1

DMs on List 2:

On 1st die roll·

If character is navy, DM-1

If merchant, DM+1

On 2nd die roll

If character has Streetwise, DM-1

If Admin, DM+1.

Unless players are actively seeking a patron, most patron encounters should be ignored or converted to other types of encounters

6b Patron Mission

The following are a list of suggestions for a patron's mission

- Transport Self
- Transport Others
- Transport Cargo
- Pick Up Others.
- Pick Up Cargo
- Vehicle Crew
- Capture Animal
- Rescue Another
- Find Lost Cargo
- Find Lost Person
- Surveillance.
- Infiltration
- Act as Agent
- Guard Self
- Guard Others.
- Guard Place
- Guard Cargo.
- Guard Vehicle
- Provide Opinion
- Investigate Mystery
- Join Expedition
- Smuggling
- Sabotage.
- Kidnap Another
- Kill Another
- Steal Cargo
- Destroy Cargo.
- Steal Vehicle
- Harrass Others.
- Frame Others
- Coerce Others.
- Perform Repairs
- Aid in Speculation
- Perform Military Action.
- Find Place
- Act as Guides
- Provide Expert Skill
- Manage Assets.

7 Predetermined Encounter

A predetermined encounter is any predefined encounter that the adventure states must occur as a part of accomplishing the goal of the adventure.

Properly done, the players may not be able to distinguish a predetermined encounter from a purely random one.

Implement A Predetermined Encounter.

8 Legal Encounter

The characters are stopped by local law enforcers.

Reasons for a legal encounter include. ID check, questioning about a local event, or a broken local law.

9 Random Encounters

Random encounters are situations which provide diversion and excitement.

Die + **RANDOM ENCOUNTERS**

Die	Qty	Type	Remarks
11	1D	Peasants	−3
12	2D	Peasants	−2
13	2D	Workers	−1
14	3D	Rowdies	L
15	2D	Thugs	L
16	4D	Riotous Mob	−1
21	2D	Soldiers	+1 LG
22	2D	Soldiers	LGAV
23	1D	Police Patrol	+1 GA
24	2D	Marines	LGA
25	3D	Security Troops	+1 GA
26	2D	Soldiers	LGA
31	1D	Adventurers	+2 GA
32	2D	Noble	LGAV
33	2D	Hunters	+1 LG
34	2D	Tourists	+2
35	1D	Researchers	+3V
36	1D	Police Patrol	VG
41	1D	Fugitives	V
42	2D	Fugitives	G
43	3D	Fugitives	G
44	2D	Vigilantes	G
45	3D	Bandits	L
46	3D	Brigand Ambush	LGA
51	1D	Merchants	+1 LA
52	2D	Traders	GV
53	2D	Religious Group	
54	1D	Beggars	L
55	5D	Pilgrims	A
56	3D	Guards	A
61	1D	Media Crew	LV
62	2D	Students	
63	1D	Athletes	
64		Event. Witness Accident.	
65		Event· Trash Dump	
66		Event Local Shop	

Note: Unless otherwise stated, each individual has a small blade weapon, no armor, and is on foot

L: Leader present (typically has the best equipment for the tech level)

G: Has guns of proper tech level.

A: Has armor of proper tech level

V: Has a vehicle of proper tech level (possibly riding animals).

+N: or −N: Increase or decrease the group's equipment tech level by that number Robots may be among a group's number if the group is tech level 12+

10 Animal Encounter

One or more animals have been encountered

Use an established or pre-generated animal encounter table for the current terrain type.

If a table is not available, generate such a table

10a Animal Encounters

Roll 2D on the animal encounter table appropriate to the terrain.

10b Animal Quantity

If the quantity column shows a die roll, roll for the number of animals

10c Animal Reactions

Roll for animal reactions. Determine if the animal attacks or flees before reporting the encounter to the characters

In some cases, animals will react in special ways

Ap: The animal attacks if possible.

As: The animal will attack if it has surprise

Am: The animal will attack if it outnumbers its potential prey.

Fs: The animal will flee if it is surprised.

10d Encounter Range

Roll 2D for encounter range

ENCOUNTER RANGE

Die	*Range*
1-	Short
2	Close
3	Short
4	Medium
5	Short
6	Medium
7	Medium
8	Long
9	Medium
10	Very Long
11	Long
12	Very Long
13+	Very Long

Terrain DMs for Encounter Range: Apply the following DMs to the roll for encounter range based on the current terrain type.

Clear, Road, Open	+3
Plain, Prairie, Steppes	+3
Rough, Hills, Foothills	+2
Broken, Highlands	+2
Mountain, Alpine	+3
Forest, Woods	+1
Jungle, Rainforest	0
River, Stream, Creek	+1
Swamp, Bog, Marsh	-4
Desert, Dune, Sand Sea	+4
Maritime Surface	+2
Maritime Subsurface	-1
Arctic	-4
City, Building Interior	-5
Cave	-5

10e Special Animal Cases

If the animal is a filter or a trapper, the attack is handled differently.

Filters

Filters inflict automatic wounds of 1D per 150 kilograms of filter animal mass attacking. They attack by reflex If a character is caught in a filter, use the following:

To free oneself from an attacking filter Routine, Str, 6 sec (hazardous).

Referee: This task represents a prompt struggle by the adventurer Success secures an escape Up to four others may assist and add their strength to the task If any mishap occurs, one of the assistors is also caught.

Trappers

A character surprised by a trapper at close or short range is trapped

To escape a trapper's trap:
Difficult, Str, 6 sec (hazardous)

Referee: This task represents a prompt struggle by the adventurer Success secures an escape. Up to four others may assist and add their strength to the task If any mishap occurs, one of the assistors is also caught.

11 NPC Attitude

Determine the attitude of the non-player character. Roll 2D for NPC attitude (only if at short range or less)

NPC ATTITUDE

Die	*Attitude*
4-	Rude
5-7	Neutral
8+	Polite

DMs: Extreme Law, DM-2

11a Quick NPC Physical Stats

Roll 2D on the table below for basic NPC physical characteristics.

QUICK NPC PHYSICAL

Die	*Physical*	*Life Force*	*Hits*
2	333	9	2/2
3	474	15	3/3
4	744	15	3/3
5	447	15	3/3
6	774	18	3/4
7	777	21	3/5
8	77A	24	4/5
9	7AA	27	4/6
10	AA7	27	4/6
11	AAA	30	4/7
12	CCC	36	5/8

11b Quick NPC Mental Stats

Roll 2D on the table below for basic NPC mental characteristics

QUICK NPC MENTAL

Die	*Mental*
2	33
3	55
4	66
5	47
6	74
7	77
8	99
9	7A
10	A7
11	AA
12	CC

11c Quick NPC Social Stat

Roll 2D for the NPC Social Standing

11d Quick NPC Age

Roll 2D for the NPC's age

QUICK NPC AGE

Die	*Age*
2	18
3	22
4	28
5	30
6	34
7	38
8	40
9	44
10	52
11	60
12	66

11e Quick NPC Skills

Compute the NPC's significant skills level based on the formula below. Create an appropriate mix of skills.

$$\text{Significant Skills Level} = \text{Age} - 10 + 1D \text{ (round up)}$$

For example, if the result is 5, the NPC may have one skill-5, or one skill-3 and one skill-2, or five skill-1. Any combination is possible if the combination does not exceed the significant skill level

If another quick NPC is required, cycle through the chart again.

Interpersonal Tasks

As the characters move about and encounter others, they must by necessity deal with those around them in order to achieve their goals. Few real life encounters involve threats and gun play; neither should violence be the only option in **Traveller**. In fact, true to the real world, violence in **Traveller** can be deadly; talking out your differences is preferable. Suddenly, Liason skill may be more important to saving the characters' necks than Laser Rifle skill

Just as the combat rules describe tasks to use when fighting, this chapter provides rules and predefined tasks for playing out interpersonal encounters These tasks also give the players a chance to exercise their characters' hard earned noncombat skills as they attempt to gain the cooperation of others.

DEALING WITH PEOPLE

Interpersonal tasks are simple, everyday activities that are frequently used when dealing with other people. Their purpose is to gain an advantage, whether social, physical, or financial.

Persuasion skill can always be used as an applicable skill in an interpersonal task (regardless of the specified skills for the task, and in addition to the specified skills) unless the task specifically excludes it.

Reactions: An interpersonal task attempts to achieve a positive reaction from the person it is directed at. Even when the initial reaction is not positive, it is possible to keep trying in hopes of a better subsequent reaction.

On the first attempt of an interpersonal task, consult the Initial Reaction table. If the initial reaction is not satisfactory and retrying the interpersonal task is allowed and attempted, then consult the subsequent reaction table for all later attempts which are made.

Estimating Others' Characteristics: When meeting and dealing with other characters (especially NPCs), characters must often estimate the UPP characteristics of the individuals they meet. Characters can use tasks to perform this estimation.

To estimate a physical characteristic:
Routine, Medical, Int (uncertain).
Referee: Roll one task for each physical characteristic (Str, Dex, End). If the result of the uncertain task is: **No Truth:** Misrepresent the physical characteristic by 2D-7. **Some Truth:** Misrepresent the physical characteristic by 1D-3. **Total Truth:** Provide the correct physical characteristic value.

To estimate a mental characteristic:
Routine, Int, Edu (uncertain).
Referee: Roll one task for each mental characteristic (Int, Edu) If the result of the uncertain task is: **No Truth:** Misrepresent the mental characteristic by a 2D-7. **Some Truth:** Misrepresent the mental characteristic by 1D-3. **Total Truth:** Provide the correct mental characteristic value.

To estimate Social Standing:
Routine, Liason or Streetwise or Bribery, Int (uncertain).
Referee: If the result of the uncertain task is: **No Truth:** Misrepresent Social Standing by 2D-7. **Some Truth:** Misrepresent Social Standing by 1D-3. **Total Truth:** Provide the correct Social Standing value.

To estimate any UPP characteristic:
Routine, Interview, Edu, 5 min (uncertain).
Referee: Roll one task for each UPP characteristic (Str, Dex, End, Int, Edu, Soc, Lif, Det, Exp). If the result of the uncertain task is: **No Truth:** Misrepresent the characteristic by 2D-7. **Some Truth:** Misrepresent the characteristic by 1D-3. **Total Truth:** Provide the correct value.

Characters can also estimate secondary characteristics. An estimate of Lif provides a check on the accuracy of the estimate of its components (Str, Dex, End); an estimate of Det provides a check on the estimate of End and Int; an estimate of Exp provides a check on the estimate of Int and Edu.

Determining the Skills of Others: As with characteristics, when meeting and dealing with other characters (especially NPCs), the referee may not simply read the character's skills to the players. The players must roll tasks to estimate another character's skills and skill levels:

To estimate a skill level by observation:
Difficult, [skill], Edu, 5 min (unskilled OK, uncertain).
Referee: The skill in brackets is the skill being estimated. If the character attempting the task also has the skill in question, he can use it as a DM while attempting to determine if another character also has the skill. If the result of the uncertain task is: **No Truth:** Misrepresent the skill level by 2D-7 (but treat a result of less than 0 as no skill). **Some Truth:** Misrepresent the skill level by 1D-3 (but treat a result of less than 0 as no skill). **Total Truth:** Specify what the true skill level is for that character.

Interpersonal Conversation

Conversation between individuals is a primary way of gather

ing information and assistance. Any time the players want to talk to an NPC at length in a casual setting with the goal of learning some valuable piece of information, use the Conversation task.

To gain useful information from a conversation:
Routine, Carousing, skill (confrontation, uncertain).
Referee: The other unnamed skill is some skill which is appropriate to the conversation or setting (such as Streetwise, Admin, etc).

The referee should set a rather long time increment on this task; it takes a lot of conversation for a character to gain useful information. To deliberately pump for information, increase task difficulty.

Interpersonal Negotiation

Negotiation is an attempt to produce cooperation, whether in setting rules, contracts, or agreements

To negotiate with the aim of gaining cooperation:
Routine, Liaison, skill, (confrontation, uncertain).
Referee: The other unnamed skill is some skill appropriate to the negotiation (Admin, Trader, etc).

If the time increment doesn't seem to matter in the context of the current activities, ignore time.

Interpersonal Bribery

Bribery is an attempt to gain cooperation through the payment of money.
Bribery requires two steps: preparation and action.
When a preparation task fails (or is less than Total Truth, if an uncertain task), and the character insists on continuing, increase the difficulty of the subsequent task by one level

To evaluate an individual's susceptibility to bribery:
Impossible, Bribery, Soc (confrontation, uncertain, hazardous).
Referee: An uncooperative individual should not be bribed. This is a preparation task to determine if the individual is cooperative. This task assumes a Law Code of No Law; Low Law is Formidable, Mod Law is Difficult, High Law is Routine, Ext Law is Simple.

To bribe an individual:
Routine, Bribery, Soc (confrontation, uncertain, hazardous).
Referee: The character must make a cash offer based on the Social Standing of the individual being bribed: Soc^2 times 5. If the cash offer is inadequate, increase the task difficulty.

Initial Reaction: If a mishap occurs, the individual reports the character making the bribe to the authorities. Do not inform the players of the mishap until it is implemented.
Subsequent Reaction: For each bribery attempt that fails, double the minimum cash offer required. If the cash offer is more than double the minimum required, roll 2D on the Mishap Table: if a Major Mishap occurs, the individual reports the character making the bribe to the authorities.

Interpersonal Interrogation

Interrogation is an attempt to question an individual.

To gain useful information from an interrogation
Difficult, Interrogation, End, Int (confrontation, uncertain)
Referee: Only the defender can use End and Int as a DM. Up to three interrogators may participate at one time; they may combine their skill as a +DM, but the maximum DM limit is ±8.

If this task succeeds, the defender must roll on the mishap table. Those performing the interrogation select how many dice the defender must roll: 1D, 2D, or 3D. The damage is applied to physical characteristics At tech level 8+, up to half the damage may be applied to Int.

Interpersonal Impersonation

The referee may want to play out the first task in more detail.

To prepare a disguise for an impersonation:
Difficult, Disguise, Dex (uncertain).
Referee: This is a preparation task. Difficulty depends on who is being fooled. If those being fooled *know* the impersonated one personally, the task is Formidable. If the individuals being fooled *know of* the impersonated, the difficulty of the task is as stated. If the impersonation involves only an occupation (starship engineer, etc), the task becomes Routine.

INITIAL REACTION

Task Result	*Individual's Reaction*
Exceptional Success	Passively Cooperative
Success	Neutral
Failure	Passively Uncooperative
Exceptional Failure	Actively Uncooperative

SUBSEQUENT REACTIONS

Task Result	*Individual's Reaction*
Exceptional Success	+2 levels (more cooperative)
Success	+1 level (more cooperative)
Failure	No change
Exceptional Failure	-1 level (less cooperative)

CERTAINTY LEVELS

Certainty Level	*Effect on the Reaction*
Total Truth	NPC statements are objective.
Some Truth	NPC statements are opinion.
No Truth	NPC statements are exaggerated.

POSSIBLE NPC REACTIONS

Reaction	*Explanation*
Hostile/Flee	As stated (referee's choice).
Actively Uncoop	Rude; doesn't want involved
Passively Uncoop	Polite; doesn't want involved.
Neutral	Polite; provides no assistance.
Passively Coop	Polite; provides some assistance.
Actively Coop	Friendly; provides valuable assistance.
Totally Coop	As stated.

Trade and Commerce

Trade between planets depends on demand for goods at each end of the trading route. Because of the expense of interstellar transportation, most worlds strive to be self-supporting; they produce their own building materials, food, and necessities. But there are still a wide variety of trade goods that can and must be carried between the stars.

The trade and commerce flowcharts present the procedure for locating goods to be shipped and locating markets.

TRADE DEFINITIONS

Several terms and concepts are used on the trade and commerce flowcharts.

Lot: A lot is a single shipment of goods. A lot is identified by its displacement in tons (one ton equals 13.5 kiloliters). Each lot is a distinct shipment and may not be subdivided. A ship captain may accept or reject specific lots based on their best fit within the ship's cargo hold. A lot can be freight, cargo, or mail.

Freight: Freight is a lot owned by someone who either wishes to retain ownership of it or has contracted to sell the goods to someone and is shipping them to the buyer. An individual who is shipping his personal effects to a new home is shipping freight. A company which has sold an air/raft to a customer and is now shipping it to that customer is shipping freight.

The standard price for shipping freight is Cr1000 per ton. The payment covers shipment in the cargo hold from the current location to the starship's next port of call.

Mail: A lot of communications information being shipped under special contract for a postal or express service Postal services are operated by governments; express services are operated by private companies.

Mail is always of incidental size (never major- or minor-sized lots). To be allowed to carry mail, the ship must be armed, and the crew must include a gunner. Each mail lot always consists of at least one ton. Each ton of mail is shipped at a premium rate of Cr5000.

Cargo: Cargo consists of goods purchased by a speculator or merchant and carried on the speculation that they can be sold at the destination for a profit A merchant who buys laser rangefinders on an industrial world and ships them to another world in hopes of selling them for a profit is shipping cargo. A merchant who has empty cargo hold space and fills it with locally purchased goods rather than ship empty space is shipping cargo.

A speculator may buy goods and ship them· he considers the lot cargo, while the ship carrying the goods considers it freight. A starship captain may find insufficient freight available on a world: he may become a speculator and buy cargo in order to fill unused freight space. The prime law of cargo trade is an ancient one: buy low and sell high. Those who follow it make money, grow rich, and become successful; those who don't go bankrupt

Merchant: A merchant is an individual or company that operates a cargo-carrying starship Merchants may also be speculators.

Speculator: A speculator is an individual or company which buys goods in the expectation that they can be sold at a profit later (and usually on another world). A speculator does not necessarily operate a cargo-carrying starship; a speculator may ship its cargo as freight and pay standard freight rates in order to transport the goods to a profitable market

Sourceworld: A sourceworld is the world where goods originate. The UWP of the sourceworld is required before goods can be purchased, and it is necessary in order to determine the costs of the goods when engaging in speculative trade.

Marketworld: A marketworld is the world where goods are to be shipped; it is the market or destination for trade goods. The UWP of the marketworld is required before the goods can be sold, and it is necessary in order to determine the selling price of the goods when engaging in speculative trade.

Cost: Cost is the amount paid for a cargo at its sourceworld.

Price: Price is the amount a cargo is expected to sell for at its marketworld. It is possible to compute the base price of goods before arriving at a world simply by analyzing the marketworld's UWP. Careful merchants do this to predict the relative marketability of goods at various accessible worlds.

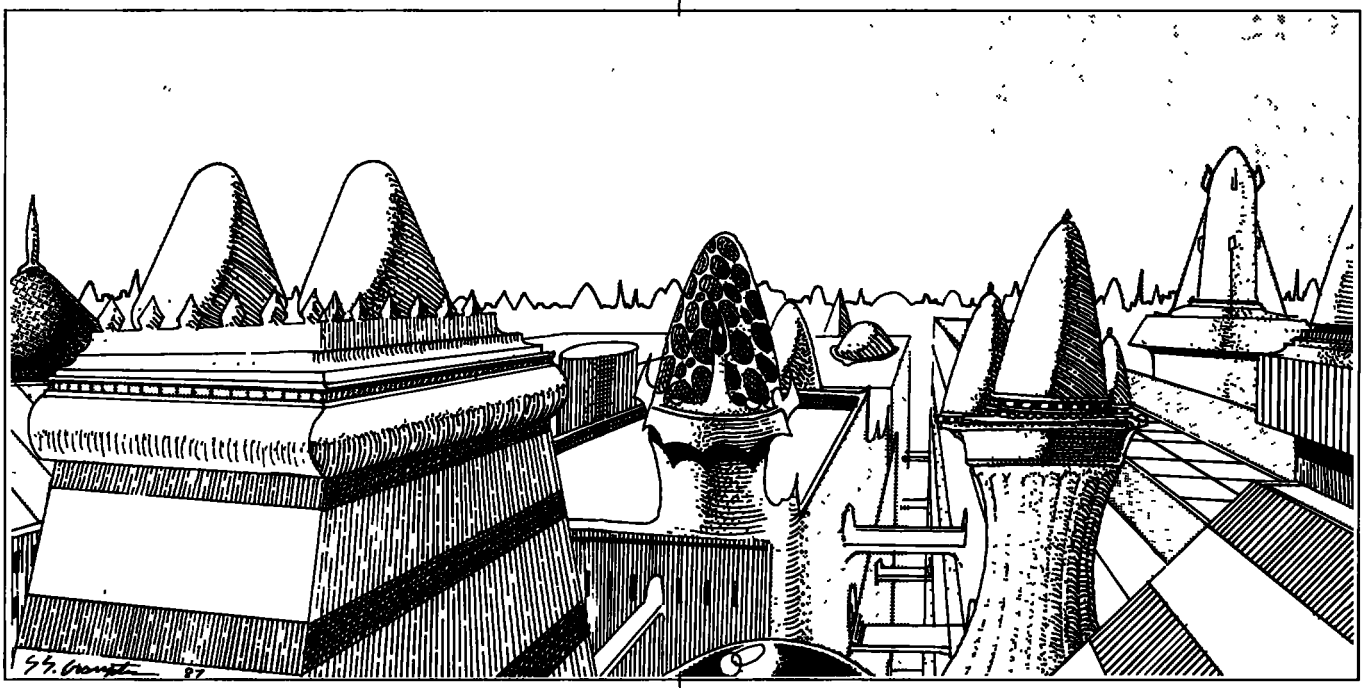
Price is an expected price, selling price is the actual price determined at the moment of sale

Selling Price: Selling price is the amount a cargo actually sells for at its marketworld through the use of the Actual Value Table. Selling price for goods varies as the actual market conditions fluctuate, and it is determined at the moment of sale using the Actual Value Table.

Delivery: A lot is delivered when it is off-loaded at a location comparable to the location where it was loaded. Goods taken in orbit at the sourceworld are delivered when off-loaded on the surface of the destination world This custom applies to both cargo and passengers.

CARGO IDENTIFICATION

A cargo can be identified by stating its sourceworld's Starport Type, Tech Level, Trade Classifications, and cost. Starport Type and Tech Level are derived directly from the sourceworld



UWP. All trade classifications possible are determined and then listed together (the determination of trade classifications is covered below). Cost is then determined using the cost system (cost is what the trader pays to buy trade goods; price is what the trader is paid when he or she sells the goods; the difference is gross profit). If the cargo is not of Imperial origin, it should be labeled as to origin.

For example, a cargo from Regina in the Spinward Marches could be identified as: A-A Ri Cr7000.

A cargo from Zivije in the Spinward Marches is identified as: C-B Hi Fl Cr8100.

A cargo from Chronor (a Zhodani world in the Spinward Marches) is identified as: B-C Na Ni Ic Cr8200 Zh.

Lower cost cargoes are always preferable because they allow more potential profit.

Estimating the Sales Price: Trader skill allows the partial prediction of the results of the Actual Value Table throws. Use of Trader skill allows one die on the Actual Value Table (the table uses two dice) to be thrown early, knowing one of the dice results beforehand allows a more accurate prediction of the sale price of goods. For example, the two dice throw can range from 2 to 12 and indicates actual values between 40 percent and 170 percent of base price. If one die is thrown early and it is a 6, then the character knows that the final actual value must range between 7 and 12 (or between 100 percent and 170 percent).

The trade and commerce flowcharts contain the exact procedure to use for estimating the sales price beforehand.

TYPES OF INTERSTELLAR TRADE GOODS

Interstellar trade goods may be many things, some of which are more probable than others. The flowcharts in this chapter provide a procedure for determining the precise nature of the goods in each cargo lot. The following are examples of possible trade goods:

Natural Resources: One of the basic trade goods in interstellar trade is natural resources. The exploration of space is driven in part by a search for essential basic raw materials in the hopes that they can be found and made available at competitive prices even after the cost of their transportation over interstellar distances. Such natural resources include unprocessed ores, raw crystals and gems, various compounds, plants, and animals.

Processed Resources: Once the basic raw resources have been collected, they need to be processed into refined raw materials and basic finished goods. Processed resources include processed ores (from which the basic contaminants have been removed), raw organics (harvested plant or animal materials usable as food or in further manufacturing processes), and processed compounds (raw materials typically not found in nature, such as industrial chemicals).

Manufactured Goods: Some manufactured goods may be produced in excess quantity and made available for export in order to help bring down the costs of overall production. Some goods are best processed or manufactured close to the source of raw materials; the finished product is then exported to other worlds. Manufactured goods include pharmaceuticals (both for the treatment of all manner of illness or disability, and those in special demand for their effects on healthy individuals, such as anagathics to increase the human lifespan), various consumables (spices, beverages, aromatics and perfumes, disposable goods), clothing, protective gear, and various durable goods (mechanical parts, weapons, tools, vehicles, electronic devices, furniture, appliances, computers, and robots).

Information: A perennial trade good is information. Books, tapes, and software all enjoy a continuing market as individuals pursue educations and find a need for basic materials.

Creative Works: The products of the artistic sense are always in demand as decoration and ornamentation for homes and businesses. Creative works include:

Art (paintings, sculpture, holographics, photographs);

TRADE CLASSIFICATIONS

Definitions of trade classifications are as follows:

Agricultural (Ag): Agricultural goods market well to Desert, Fluid Seas, Poor, Water Worlds, and Industrial Worlds. Agricultural Worlds are good markets for Industrial Worlds, Agricultural Worlds, Barren Worlds (for new plant and animal strains), and Rich Worlds.

Asteroid Belt (As): Asteroid Belt goods market well to Industrial, Nonagricultural, Vacuum Worlds, and Asteroid Belts Asteroid Belts are good markets for Agricultural, Industrial, Nonagricultural, and Vacuum Worlds

Barren World (Ba): Goods from Barren Worlds are raw materials mined or gathered by a ship crew. They are poor sources of cargoes and resources and cannot be markets.

Desert World (De): Desert World goods sell well to Desert and Nonagricultural Worlds. They are good markets for Agricultural, Desert, Industrial, Nonagricultural, and Rich Worlds

Fluid Oceans (Fl): Nonwater oceans may be sources of raw materials, and the World's products sell well on Industrial and Fluid Worlds. Worlds with fluid oceans are good markets for Fluid and Industrial Worlds

High Population (Hi): High Population World goods, because of the economy of scale for production, sell well on High Population, Low Population, and Rich Worlds. High Population Worlds are good markets for Agricultural, Industrial, High Population, and Rich Worlds.

Ice-Capped (Ic): Goods from Ice-capped Worlds sell well on Industrial Worlds, the worlds are poor markets.

Industrial (In): Industrial goods sell well on most worlds, and Industrial Worlds are good markets for most goods.

Low Population (Lo): Low Population World cargos sell well to Industrial and Rich Worlds. Low Population Worlds are rarely self-supporting, they are excellent markets for High Population and Agricultural Worlds.

Nonagricultural (NA): Nonagricultural Worlds are good sources for Asteroid Belts, and Nonagricultural, Desert, and Vacuum Worlds.

Nonindustrial (NI): Nonindustrial Worlds are markets for goods from Industrial Worlds They are sources of goods for Industrial Worlds; their goods sell poorly on Nonindustrial Worlds.

Poor (Po): Poor Worlds are markets for Industrial Worlds. They are not good sources of cargoes

Rich (Ri): Rich Worlds are good markets for Asteroid Belts, and Agricultural, High Population, Industrial, Low Population, Rich, and Water Worlds. They are good sources of cargos for Agricultural, Desert, Industrial, High Population, Rich, and Nonagricultural Worlds.

Vacuum World (Va): Vacuum Worlds are markets for goods from Asteroid Belts, and Industrial, Nonagricultural and Vacuum Worlds. They are good sources of cargoes for Asteroid Belts, Industrial Worlds, and Vacuum Worlds.

Water World (Wa): Water Worlds are good markets for Industrial and Water Worlds They are good sources of cargoes for Industrial, Rich, and Water Worlds.

Recordings (videos, audios, flat projections, movies, concerts, music).

Raw Scientific Data: Scientific inquiry depends on data for its continued existence. Raw scientific data from established research stations, data collection stations, or laboratories is marketable to research and development departments of various corporations and to research faculty at institutions of higher learning.

Social scientists also need raw materials for their researches. Historians need accounts of historical events; sociologists need data on alien or alternate societies, psychologists need data on individuals After a period of time, the information available on one world becomes picked over; social scientists begin to look to other worlds for new data.

Units of Exchange: Sometimes shipments between worlds consist of money itself

Interstellar trade eventually produces an inequity in the balance of payments for specific worlds, and to bring the economy back into equilibrium, a physical exchange of money is required.

Some worlds have their own currencies, and some of those are produced offplanet (at higher tech level worlds). Shipments of money for local use are thus periodically necessary.

Not only governments create and administer money. Some corporations may also create money for use within their organizations, especially when local governments are unable to maintain stable currencies.

Bureaucratic Records: Because there are interstellar governments, the products of a bureaucracy must be distributed through its area of authority. Such shipments include originals or reproducible masters of regulations, files of information about citizenry and companies, and reports.

Much of the information shipped between worlds is not sold; it is transported as cargo to archives or to other offices of the bureaucracy. But some of the information can be purchased and then shipped to other worlds where it can be sold to businesses or organizations which can use it For example, tax records might indicate likely customers for specific goods; reports might provide clues (after analysis) for prediction of future bureaucratic decisions.

Novelties: New products never before seen (or sometimes just never before marketed) are powerful commodities in the marketplace.

Some products are *exotics*· an exotic wood that adds interest as a decoration or flavor as when burned for cooking; an herb which provides a special flavorcing; an iridescent feather which becomes fashionable for a limited time; a pebble that makes gentle noises when heated

Others are just *cheap*· bright pebbles that respond to body heat; twisted metal puzzles that can be assembled more cheaply on a high population world where costs are lower; costume jewelry in alien styles.

Some are *prototypes*: when the inventive mind produces new ideas, they are translated into prototypes which can be shipped to other worlds and are there translated by manufacturing processes into row after row of finished goods.

Some are *uniques*: Uniques are specific items which cannot be duplicated or imitated due to their specific nature. They may be antiques, objects of art, specimens of alien culture,

memorabilia, souvenirs, archaeological specimens, or ancient artifacts.

Some novelties may be *fads*: they fade from fashionability after a few weeks or months.

Others become *staples*: society may produce customs which call for a specific novelty to be given as a gift of love, a token of respect or admiration, or perhaps as an obligatory room decoration.

Special Handling Characteristics: Several of the possible trade goods may require special handling by the cargo carrier. If a questionable cargo handling situation arises, you, as referee, should define an appropriate fateful "To avoid a mishap" task and make the players roll to prevent damage to their cargo. The types of special handling characteristics include:

Corrosive: This cargo is hazardous and needs special containers to prevent it from doing corrosive damage to the cargo vehicle, cargo handlers, and so on. If any of the cargo containers' sealed integrity is broken in transit, mishaps and damage will result.

Flammable: This cargo is flammable. If anything that could ignite the cargo enters the cargo hold (for example, sparks from an electrical short, a laser weapon fire exchange, and so on), the cargo will burst into flames. One obvious way to save the cargo is to immediately evacuate the cargo hold's atmosphere, placing it in a vacuum, which would effectively snuffing out the fire.

Explosive: This cargo is hazardous, and extreme heat or heavy shock may cause it to explode. Heat from a burning flammable cargo or a cargo hold hit during a starship battle are two examples of the types of conditions that could cause an explosive cargo to detonate. In some cases, a heavy jolt (for example, a jolt resulting from a rough landing) could cause an explosive cargo to detonate. Inertial compensators should minimize this problem, unless, of course, they are not working properly.

Radioactive: This cargo is hazardous and must be stored in special sealed and shielded containers. If the cargo container's sealed integrity is broken, radiation damage to nearby life forms is sure to result.

Perishable: This cargo requires a special environment to ensure it is properly preserved and kept during the journey to market. If the narrow environmental conditions vary to a significant degree from optimum, the quality of the cargo may be seriously damaged or destroyed. For example, if the cargo hold is hit during a starship battle, and explosive decompression occurs, the perishable cargo will be seriously damaged, at the very least.

Perishable cargos have an additional complication: they must get to market fast. A perishable cargo lot must be shipped the same day it is delivered for shipment.

Fragile: This cargo is delicate, and cannot stand rough handling or severe jolts. If a fragile cargo is damaged, its worth may be only slightly diminished, or it may be reduced to complete junk.

Living: Some cargo is listed as living. In effect, this cargo is an extreme case of both perishable and fragile. Life support, cages, and perhaps even special caretakers may need to be provided.

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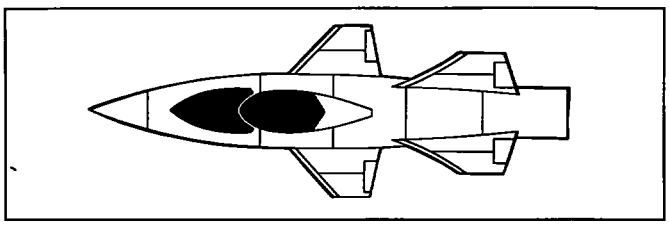


TRADE AND COMMERCE 1

1 Sourceworld Details

Determine sourceworld's Population and Tech Level

2 Destination World Details

The ship captain must select and designate a destination world within jump range Determine destination world's Population, Tech Level, and travel zone.

3 Shipments

Passengers are determined at step 4
Cargo and freight are both determined beginning at step 5.

4 Passengers

Determine how many passengers are available for the ship
Roll once on the High column, once on the Middle column, and once on the Low column

PASSENGER TABLE

World Digit	*Available at Sourceworld* High	Middle	Low
0	—	—	—
1	—	1D-2	2D-6
2	1D-1D	1D	2D
3	2D-2D	2D-1D	2D
4	2D-1D	2D-1D	3D-1D
5	2D-1D	3D-2D	3D-1D
6	3D-2D	3D-2D	3D
7	3D-2D	3D-1D	3D
8	3D-1D	3D-1D	4D
9	3D-1D	3D	5D
A	3D	4D	6D

DMs: If destination world Population 0-4, DM-3 If destination world Population 8+, DM+1
If any crewmember has **Steward** skill, apply it as a +DM on the roll for High passengers.
If any crewmember has **Admin** skill, apply it as a +DM on the roll for Middle passengers
If any crewmember has **Streetwise** skill, apply it as a +DM on the roll for Low passengers
DM+(sourceworld TL minus destination world TL)
If destination world is red zone, DM-12, and no Middle or Low Passengers.
If destination world is an amber zone, DM-6
Passengers may not exceed the passenger capacity of the ship.
This table may be consulted once per week
Income: Credit the ship with Cr10,000 per High passenger, Cr 8000 per Middle passenger, and Cr 1000 per Low passenger.

5 Freight and Cargo

Freight consists of paid shipments of goods Cargo is purchased at the sourceworld and sold at the destination world Determine the available lots from the table Roll once in the major column, once in the minor column, and once in the incidental column For each lot, determine its size by rolling the lot size

AVAILABLE LOTS

Pop Digit	*Available at Sourceworld* Major	Minor	Incidental
0	—	—	—
1	1D-4	1D-4	—
2	1D-2	1D-1	—
3	1D-1	1D	—
4	1D	1D+1	—
5	1D+1	1D+2	—
6	1D+2	1D+3	1D-3
7	1D+3	1D+4	1D-3
8	1D+4	1D+5	1D-2
9	1D+5	1D+6	1D-2
A	1D+6	1D+7	1D

Lot Size: *Major Cargos:* 1D+10 *Minor Cargos* 1D+ 5 *Incidental Cargos* 1D Lot size is stated in displacement tons. To convert to kiloliters, multiply by 13 5
DMs: If destination world Population 0-4, DM-3 If destination world Population 8+, DM+1 If any crewmember has **Liaison** skill, apply it as a +DM on the roll for minor cargos. DM+(sourceworld TL minus destination world TL) If destination world is red zone, there is no freight If destination world is an amber zone, there is no major freight. If the goods are freight (carried for a fee of Cr1000 per ton) and their identity does not matter, ignore further steps. The sum of cargo and freight cannot exceed the cargo hold capacity of the ship
This table shows the limit of freight available to a ship in a period of one week A crewmember with **Broker** skill may consult this table again once (to find last-minute cargo, but not freight)

6 Sourceworld Trade Classifications

Determine the trade classifications of the sourceworld

TRADE CLASSIFICATIONS

Code	*Size*	*Atmosphere*	*Hydrographic*	*Population*	*Government*	*Law Level*	*Code Definition*
Ag	—	4-9	4-8	5-7	—	—	Agricultural
As	0	0	0	—	—	—	Asteroid
Ba	—	—	—	0	0	0	Barren
De	—	2+	0	—	—	—	Desert
Fl	—	A+	1+	—	—	—	Fluid
Hi	—	—	—	9+	—	—	High Population
Ic	—	0-1	1+	—	—	—	Ice-Capped
In	—	2-4,7,9		9+	—	—	Industrial
Lo	—	—	—	3-	—	—	Low Population
Na	—	0-3	0-3	6+	—	—	Nonagricultural
Ni	—	—	—	0-6	—	—	Nonindustrial
Po	—	2-5	0-3	—	—	—	Poor
Ri	—	6,8	—	6-8	4-9	—	Rich
Va	—	0	—	—	—	—	Vacuum
Wa	—	—	A	—	—	—	Water World

Determine all possible trade classifications An Asteroid Belt (As) is automatically a Vacuum World, and does not have the Va code Asian worlds ignore Government type for Rich (Ri) Vargr worlds cannot be Rich if government type 7

7 Identify Cargo and Freight

Create a standard identifier for each shipment of cargo and freight
Freight: If the shipment is freight, its identity may not matter The referee may assume that freight is a standard, safe, nonperishable shipment properly packaged. Its tonnage is already known No further information is required
Cargo: If the shipment is cargo, it should be given a standard identifier, which consists of
1 Sourceworld Starport Type
2 Sourceworld Tech Level
3 All possible sourceworld trade classifications
4 Cost
5 Cargo origin (if not Imperial).
For example, a cargo from Regina in the Spinward Marches is identified as A-C Ri Cr7000
A cargo from Chronor (a Zhodani world) is identified as C-B Hi Fl Cr8100 Zh

8 Nature of Cargo

More information can be determined about cargo (and about freight, if desired)
Cargo and freight can be broadly classified as one of the following types
Natural Resources
Processed Resources
Manufactured Goods
Information
Novelties
For each shipment of cargo or freight, note the trade classifications in its identifier and consult tables 9a through 9f in order until one of the trade classifications in its identifier is matched. Roll on the first table that matches to determine the broad nature of the goods

9a Ag Goods

Any goods with Ag (Agricultural) in its identification may use this table

AGRICULTURAL GOODS

Die	*Trade Good Category*
2	Natural Resources
3	Natural Resources
4	Natural Resources (41-66)
5	Natural Resources (41-66)
6	Natural Resources (41-66)
7	Processed Resources (41-66)
8	Processed Resources (41-66)
9	Manufactured Goods
10	Information
11	Information
12	Novelties

DMs: If Government 9+, DM +1, If Law Level 9+, DM+1

9b Wa, Ri Goods

Any goods with Wa (Water World) or Ri (Rich World) may use this table.

WATER AND RICH WORLD GOODS

Die	*Trade Good Category*
2	Natural Resources
3	Natural Resources
4	Natural Resources
5	Natural Resources
6	Processed Resources
7	Processed Resources
8	Manufactured Goods
9	Information
10	Information
11	Information
12	Novelties

DMs: If Government 9+, DM +1 If Law Level 9+, DM+1 If Population 9+, DM+1

9c As, Va, De, Na Goods

Any goods identified as As (Asteroid Belt), Va (Vacuum), De (Desert), or Na (Nonagricultural) may use this table.

ASTEROID, VACUUM DESERT, OR NONAGRICULTURAL

Die	*Trade Good Category*
2	Natural Resources (11-36)
3	Natural Resources (11-36)
4	Natural Resources (11-36)
5	Natural Resources (11-36)
6	Natural Resources (11-36)
7	Processed Resources (11-36)
8	Manufactured Goods
9	Manufactured Goods
10	Information
11	Information
12	Novelties

DMs: If Government 9+, DM +1 If Law Level 9+, DM+1 If Population 9+, DM+1 If Barren World, DM-5.

9d Ni Goods

Any goods identified as Ni (Non-industrial) may use this table

NONINDUSTRIAL GOODS

Die	*Trade Good Category*
2	Natural Resources
3	Natural Resources
4	Natural Resources
5	Natural Resources
6	Natural Resources
7	Processed Resources
8	Manufactured Goods
9	Manufactured Goods
10	Information
11	Information
12	Novelties

DMs: If Government 9+, DM +1. If Law Level 9+, DM+1 If also Barren World, DM-5

9e In Goods

Any goods identified as In (Industrial) may use this table

INDUSTRIAL GOODS

Die	*Trade Good Category*
2	Natural Resources
3	Natural Resources
4	Processed Resources
5	Processed Resources
6	Manufactured Goods
7	Manufactured Goods
8	Manufactured Goods
9	Manufactured Goods
10	Information
11	Information
12	Novelties

DMs: If Government 9+, DM +1 If Law Level 9+, DM+1.

9f Ba, Fl, Hi, Ic, Lo, Po Goods

Any goods identified as Ba (Barren), Fl (Fluid Oceans), Hi (High Population), Ic (Ice-Capped), Lo (Low Population), or Po (Poor) may use this table

ALL OTHER GOODS

Die	*Trade Good Category*
2	Natural Resources
3	Natural Resources
4	Natural Resources
5	Information
6	Processed Resources
7	Processed Resources
8	Processed Resources
9	Manufactured Goods
10	Information
11	Information
12	Novelties

DMs: If Govt 9+, DM +1 If Law 9+, DM+1 If Pop 9+, DM+1 If Ba, DM-7.

9 Nature of Cargo and Freight

Determine the specific nature of the goods by consulting the appropriate table.

If Natural Resources, go to step 10a
If Processed Resources, go to 10b.
If Manufactured Goods, go to 10c.
If Information, go to 10d.
If Novelties, go to 10e

TRADE AND COMMERCE 3

10a Natural Resources

D+ D	Trade Good	Cor	Fla	Exp	Rad	Per
11	Ferrous Metal Ore	—	—	—	—	—
12	Ferrous Metal Ore	—	—	—	—	—
13	Ferrous Metal Ore	—	—	—	—	—
14	Nonmetal Ore	10+	—	12+	—	—
15	Nonmetal Ore	10+	—	12+	—	—
16	Radioactive Ore	—	—	—	6+	—
21	Radioactive Ore	—	—	—	6+	—
22	Nonferrous Ore	11+	—	11+	11+	—
23	Nonferrous Ore	11+	—	11+	11+	—
24	Raw Crystals	—	—	—	—	—
25	Raw Crystals	—	—	—	—	—
26	Raw Crystals	—	—	—	—	—
31	Raw Precious Gems	—	—	—	—	—
32	Nitrogen Compounds	10+	—	9+	—	—
33	Nitrogen Compounds	10+	—	9+	—	—
34	Raw Hydrocarbons	11+	9+	11+	—	—
35	Raw Hydrocarbons	11+	9+	11+	—	—
36	Raw Hydrocarbons	11+	9+	11+	—	—
41	Plants (wood)	11+	9+	—	—	11+
42	Plants (wood)	11+	9+	—	—	11+
43	Plants (bales)	11+	9+	—	—	10+
44	Plants (fibers)	11+	6+	—	—	9+
45	Plants (herbs)	11+	6+	—	12+	9+
46	Wild Plants (living)	11+	6+	12+	—	11+
51	Food Plants (living)	11+	11+	—	—	—
52	Food Plants (living)	11+	11+	—	—	—
53	Food Plants (living)	11+	11+	—	—	—
54	Food Plants (living)	11+	11+	—	—	—
55	Animals (living)	11+	—	—	—	—
56	Animals (living)	11+	—	—	—	—
61	Livestock (living)	11+	—	—	—	—
62	Livestock (living)	11+	—	—	—	—
63	Livestock (living)	11+	—	—	—	—
64	Livestock (living)	11+	—	—	—	—
65	Rare Plants (living))	11+	11+	—	—	—
66	Rare Animals (living)	11+	—	—	—	—

10b Processed Resources

D+ D	Trade Good	Cor	Fla	Exp	Rad	Per
11	Iron	—	—	—	—	—
12	Steel	—	—	—	—	—
13	Steel	—	—	—	—	—
14	Steel	—	—	—	—	—
15	Aluminum	—	—	—	—	—
16	Aluminum	—	—	—	6+	—
21	Copper	—	—	—	6+	—
22	Tin	—	—	—	11+	—
23	Zinc	—	—	—	11+	—
24	Special Alloys	12+	10+	—	—	—
25	Gold	—	—	—	—	—
26	Silver	—	—	—	—	—
31	Precious Metals	—	—	—	—	—
32	Nonmetals	11+	9+	10+	—	—
33	Crystals	—	—	—	—	—
34	Radioactives	—	—	—	5+	—
35	Rare Earths	11+	12+	12+	12+	—
36	Isotopes	—	—	—	3+	—
41	Grain	—	6+	4+	—	10+
42	Grain	—	6+	4+	—	10+
43	Vegetables	11+	9+	12+	—	8+
44	Fruit	11+	10+	12+	—	8+
45	Meat	12+	—	—	—	5+
46	Herbs	12+	9+	10+	—	10+
51	Plant Compounds	10+	9+	10+	—	11+
52	Animal Compounds	10+	9+	10+	—	11+
53	Petrochemicals	10+	7+	8+	—	—
54	Petrochemicals	10+	7+	8+	—	—
55	Textiles	—	9+	—	—	11+
56	Explosives	12+	10+	3+	—	10+
61	Polymers	—	9+	—	—	—
62	Polymers	—	9+	—	—	—
63	Fertilizers	10+	9+	9+	—	9+
64	Plants (lumber)	12+	6+	12+	—	9+
65	Plants (paper)	—	5+	—	—	12+
66	Plants (paper)	—	5+	—	—	12+

10c Manufactured Goods

D+ D	Trade Good	Cor	Fra	Exp	Rad	Per
11	Pharmaceuticals	11+	10+	—	—	9+
12	Pharmaceuticals	—	10+	—	—	9+
13	Preserved Foods	—	9+	—	—	9+
14	Spices	—	11+	—	—	10+
15	Spices	—	11+	—	—	10+
16	Gourmet Foods	—	11+	—	—	10+
21	Flavored Water	—	10+	—	—	12+
22	Alcoholic Beverages	—	8+	—	—	9+
23	Alcoholic Beverages	11+	8+	—	—	9+
24	Consumable Milks	—	10+	—	—	8+
25	Consumable Nectars	—	10+	—	—	10+
26	Consumable Syrups	—	11+	—	—	11+
31	Consumable Teas	—	11+	—	—	12+
32	Exotic Fluids	—	8+	—	—	9+
33	Aromatics	—	10+	9+	—	11+
34	Aromatics	—	10+	—	—	11+
35	Disposables	—	11+	—	—	—
36	Disposables	—	11+	—	—	—
41	Clothing	—	12+	—	—	—
42	Clothing	—	12+	—	—	—
43	Protective Gear	—	9+	—	—	—
44	Weapons	—	9+	—	—	—
45	Weapons	—	9+	11+	—	—
46	Weapons	—	9+	—	11+	—
51	Metal Parts	—	11+	—	—	—
52	Electronic Parts	—	10+	—	—	—
53	High Tech Parts	—	10+	—	—	—
54	Tools	—	11+	—	—	—
55	Tools	—	11+	—	—	—
56	Vehicles	—	12+	—	—	—
61	Entertainment Equip	—	10+	—	—	—
62	Computers	—	11+	—	—	—
63	Robots	—	11+	—	—	—
64	Robots	—	11+	—	—	—
65	Appliances	—	10+	—	—	—
66	Furniture	—	9+	—	—	—

10d Information

D+ D	Trade Good
11	Writings (paper)
12	Writings (data)
13	2D Still Pictures
14	2D Still Pictures
15	Computer Software
16	Computer Software
21	Robotic Software
22	Robotic Software
23	Starship Software
24	Starship Software
25	3D Still Pictures
26	3D Still Pictures
31	Sculpture
32	Paintings
33	Exotic Artforms
34	Audio Recordings
35	2D Video Recordings
36	3D Video Recordings
41	Raw Data (paper)
42	Raw Data (data)
43	Raw Data (data)
44	Currency (valuables)
45	Currency (valuables)
46	Currency (paper)
51	Currency (paper)
52	Currency (paper)
53	Currency (paper)
54	Records (paper)
55	Records (paper)
56	Records (paper)
61	Records (data)
62	Records (data)
63	Records (data)
64	Records (data)
65	Records (data)
66	Records (data)

10e Novelties

D+ D	Trade Good
11	New Natural Resources
12	New Process Resources
13	New Mfd Goods
14	New Mfd Goods
15	New Information
16	New Information
21	Uniques
22	Uniques
23	Uniques
24	Uniques
25	Uniques
26	Uniques
31	Uniques
32	Uniques
33	Artifacts
34	Artifacts
35	Antiques
36	Antiques
41	Antiques
42	Antiques
43	Original Information
44	Original Information
45	Original Information
46	Original Information
51	Original Information
52	Original Information
53	Original Information
54	Fad Information
55	Fad Information
56	Fad Information
61	Fad Mfd Goods
62	Fad Mfd Goods
63	Prototype Mfd Goods
64	Prototype Mfd Goods
65	Prototype Mfd Goods
66	Prototype Mfd Goods

1 Cargo Cost

Cargo cost is the amount of money that a shipment is sold to the speculator or starship captain for

Start with base cost of Cr4000 per ton.

2 Trade Cost Modifiers

Trade cost modifiers are determined from the sourceworld characteristics.

TRADE COST MODIFIERS

Code	*Trade Class*	*Cost Mod*
—	No Class	0
Ag	Agricultural	−1000
As	Asteroid Belt	−1000
Ba	Barren World	+1000
De	Desert World	+1000
Fl	Fluid Oceans	+1000
Hi	High Population	−1000
Ic	Ice-Capped	0
In	Industrial	−1000
Lo	Low Population	+1000
Na	Nonagricultural	+1000
Ni	Nonindustrial	+1000
Po	Poor	−1000
Ri	Rich	+1000
Va	Vacuum World	+1000
Wa	Water World	0

If As, ignore the effects of Va.

Total all modifiers and add to base cost.

Tech Level Modifier: Multiply sourceworld's tech level by Cr100 and add to base cost

3 Starport Cost Modifiers

The type of starport involved in the transaction influences the cost of the goods

Consult the Starport Effects Table using the sourceworld Starport Type.

STARPORT EFFECTS

Starport	*Cost Modifier*
A	−1000
B	0
C	+1000
D	+2000
E	+3000
X	+5000

Add sourceworld's Starport cost modifier to base cost.

4 Delivery

Normal delivery to the ship is four days. Add 10 percent to the final cost for each day of advance delivery to the ship

For example, instant (same day) delivery costs 40 percent extra.

5 Negotiation

This step is optional. Undertaking negotiation as a task is possible.

- Active Cooperation −2000
- Passive Cooperation −1000
- Neutral or less 0

1 Cargo Price

Cargo price is the amount of money that a buyer is expected (on the average) to pay for goods when delivered at a world Cargo price is applied to the Actual Value Table to determine the final price for which the goods are actually sold

Start with a base price of Cr5000

2 Cargo Price Modifiers

Total all intersections between sourceworld and destination world codes and multiply by Cr1000 Add to base price.

CARGO PRICE

Source Code	*Destination Code* —	*Ag*	*As*	*Ba*	*De*	*Fl*	*Hi*	*In*	*Lo*	*Na*	*Ni*	*Po*	*Ri*	*Va*	*Wa*
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ag	—	+1	+1	—	+1	—	+1	+1	+1	+1	—	—	+1	—	—
As	—	—	+1	—	—	—	—	+1	—	+1	—	—	+1	+1	—
Ba	—	+1	—	—	—	—	—	+1	—	—	—	—	—	—	—
De	—	—	—	—	+1	—	—	—	—	+1	—	—	—	—	—
Fl	—	—	—	—	—	+1	—	+1	—	—	—	—	—	—	—
Hi	—	—	—	—	—	—	+1	—	+1	—	—	—	+1	—	—
Ic	—	—	—	—	—	—	—	+1	—	—	—	—	—	—	—
In	—	+1	+1	—	+1	+1	+1	+1	—	—	+1	+1	+1	+1	+1
Lo	—	—	—	—	—	—	—	+1	—	—	—	—	+1	—	—
Na	—	—	+1	—	+1	—	—	—	—	—	—	—	—	+1	—
Ni	—	—	—	—	—	—	—	+1	—	—	-1	—	—	—	—
Po	—	—	—	—	—	—	—	—	—	—	—	-1	—	—	—
Ri	—	+1	—	—	+1	—	+1	+1	—	+1	—	—	+1	—	—
Va	—	—	+1	—	—	—	—	+1	—	—	—	—	—	+1	—
Wa	—	—	—	—	—	—	—	+1	—	—	—	—	+1	—	+1

If the destination world is Ba, goods may not be sold If the sourceworld is As, ignore its Va classification

3 Tech Level Effects

Subtract destination world Tech Level from sourceworld Tech Level and multiply by 10 percent. This value may be a positive or a negative number Multiply this value times the adjusted price

4 Brokers

One character may act as broker if he has Broker skill He applies his skill to the transaction and receives 5 percent (per skill level applied) of the final market price (of which half of that is spent as expenses for the transaction).

A broker may be hired at a starport to assist in the transaction.

BROKERS AVAILABLE

Starport	*Broker Available*
A	Broker-4 or less
B	Broker-3 or less
C	Broker-2 or less
D	Broker-1

A broker receives 5 percent of the final market price for each level of skill he applies to the Actual Value Table.

5 Alien Trade Effects

When a cargo has an alien source, there may be an effect on the price Determine the source of the goods (Imperial unless otherwise noted) and the market for the goods Consult the Alien Trade Effects table and apply any price alteration to the calculated price of the goods.

ALIEN TRADE EFFECTS

Buying Race	*Selling Race*							
	Aslan	*Droyne*	*Hiver*	*Imperial*	*K'kree*	*Solomani*	*Vargr*	*Zhodani*
Aslan	—	—	—	—	−2000	—	+1000	—
Droyne	—	—	—	—	—	—	—	+2000
Hiver	+1000	—	—	−2000	—	—	—	—
Imperial	—	—	—	—	—	—	—	−1000
K'kree	—	—	—	—	—	—	−2000	—
Solomani	—	—	+1000	−1000	—	—	—	—
Vargr	—	—	—	—	−4000	—	—	—
Zhodani	+1000	+1000	—	−2000	—	—	—	—

This table indicates the effects of local taste, prejudice, and novelty in the evaluation of goods by a market. For example, Zhodani goods are generally poorly received in Imperial markets and well-received in Droyne markets; Imperial goods are poorly received in Hiver, Solomani, and Zhodani markets.

6 Bribery

Characters may attempt bribery to gain a special merchant kickback. The modification to the Actual Value Table is +1/2 per Bribery level (round fractions down). Select any level, at a cost of 7 percent of the final market price per level used.

7 Actual Value

The actual value of a cargo (and thus the final market price paid for it) is determine only at the moment of sale using the Actual Value Table

ACTUAL VALUE TABLE

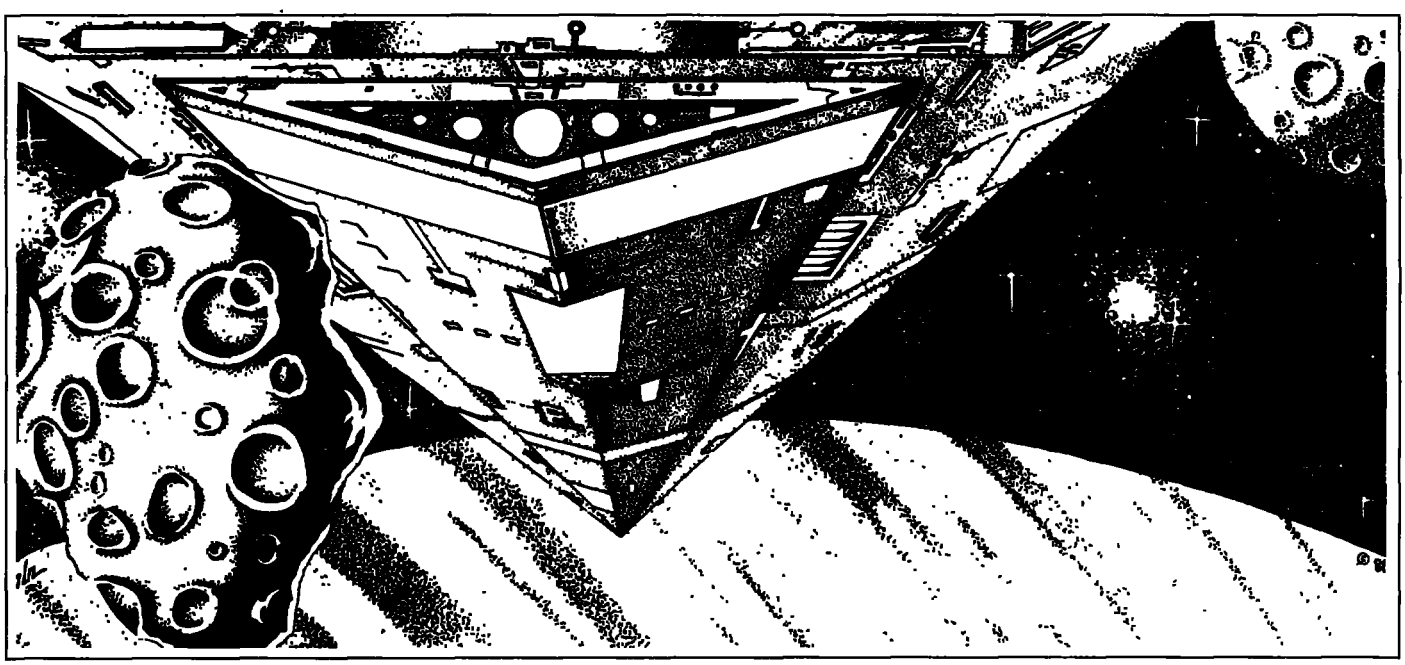
Roll	*Percentage*
2	40 percent
3	50 percent
4	70 percent
5	80 percent
6	90 percent
7	100 percent
8	110 percent
9	120 percent
10	130 percent
11	130 percent
12	170 percent
13	200 percent
14	300 percent
15	400 percent

Results of less than 2 are treated as 2; results of more than 15 are treated as 15.

DMs: + Broker skill +1/2 Bribery skill (round down) Maximum DM is +4

If the players rolled one die in advance (allowed for Trader skill), remember to use the prior roll on this table

Once goods are offered for sale and the Actual Value Table is consulted, the goods must be sold at the price indicated A sale may be stopped at any point before the final die is rolled on the table. If a sale is stopped, another sale cannot be attempted on the current world in the current week.



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MAPPING SUBSECTORS

STARPORT

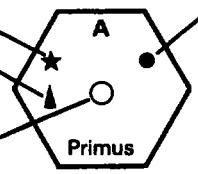
A	Best
B	Better
C	Good
D	Poor
E	Rudimentary
X	None

BASES

- ★ Naval Base
- ▲ Scout Base
- △ Way Station
- ■ Naval Depot

WORLD TYPE

- ○ Desert and Vaccuum Worlds
- ● Most Worlds
- Asteroid Belt



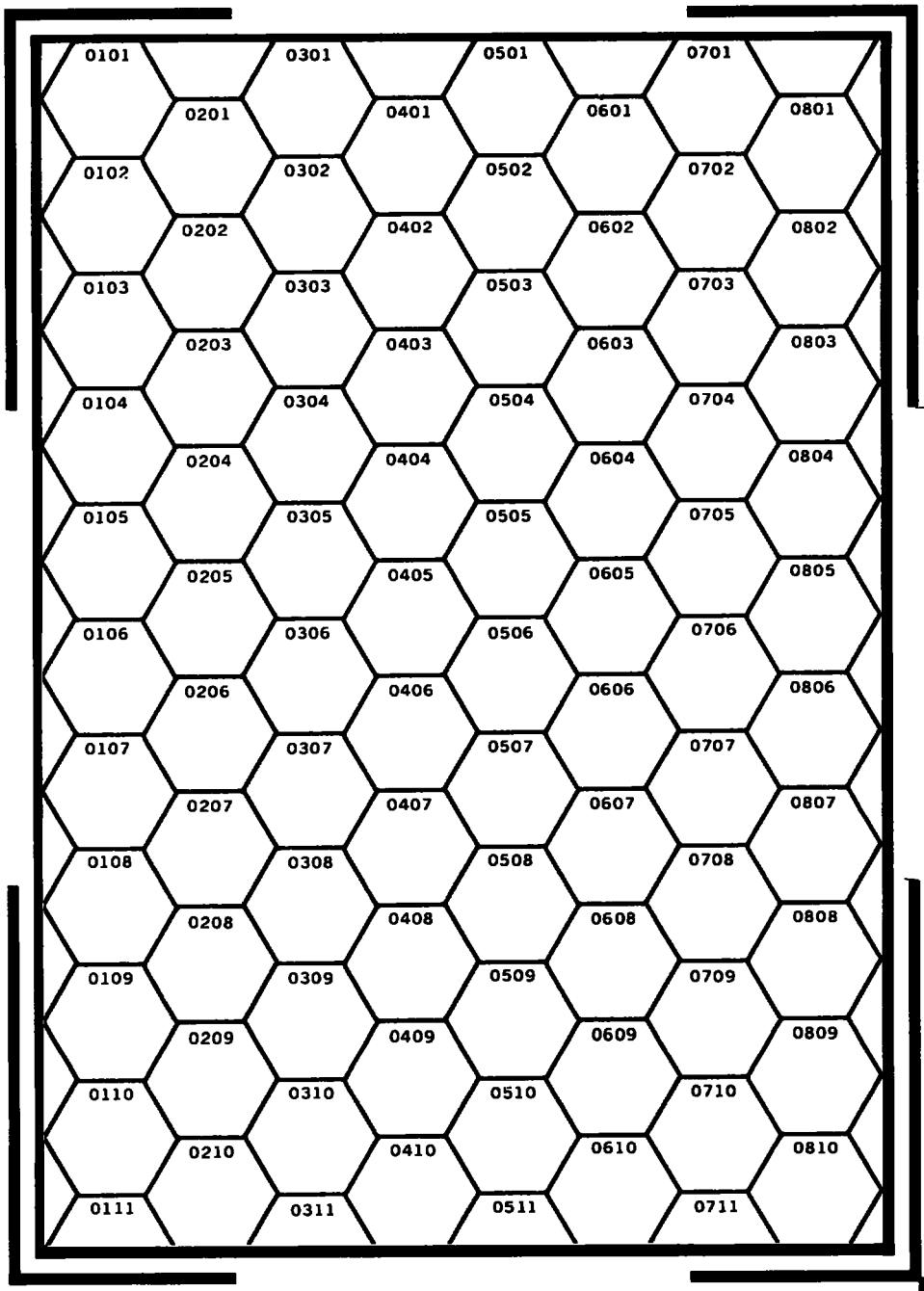
GAS GIANT

- ● If Present

WORLD NAME

Primus-For most worlds

PRIMUS-If High Population World



Craft Design

As the name **Traveller** implies, an important aspect of the game involves the players travelling from one place to another using some kind of transport. This section of the *Referee's Manual* provides the referee with a comprehensive craft design sequences to allow designing an wide variety of transport craft for the players to encounter and use in their adventures.

A craft crewmember (or even the commander) very rarely has a chance to design his own craft, and thus the design rules are not intended to give players this option. Instead, they are included as an aid to the referee in providing the widest possible variety of craft to add realism to the myriad of environments in the universe

Realistically, it is a tremendous burden on the referee to expect her to design all the equipment. Instead, the referee should delegate players to design several craft with specified parameters (tech level, price, etc.) and then file them away for future use.

OVERVIEW OF TECHNOLOGY

Traveller makes certain assumptions about the nature of future technological developments. In addition to the progressive refinement of existing equipment and methods, several areas of future technology have been postulated. **Traveller** bases its technology on a series of logically explainable developments even if they may be far beyond any present science.

The first major advance upon which **Traveller** technology is built is the commercially viable fusion reactor. A cheap, abundant, and long-lasting source of fusion power has some far-reaching effects on all areas of technology, and it tends to force all other means of power generation into the background.

About the only limit to the fusion power plant is its sheer size. Where portability becomes a significant factor, fuel cells or batteries become the power source of second choice. Above **Traveller**'s common Tech Levels (late Tech Level 16 and beyond), antimatter power generation moves to the forefront, and power generation makes yet another order-of-magnitude leap in output per unit of power plant volume. The staggering levels of energy available from antimatter annihilation allow manipulating the environment in near magical ways (by today's terms).

The second major breakthrough is artificial gravity. Created by manipulating sub-atomic forces, artificial gravity is not antigravity but is instead a unique force that acts upon the natural gravity field created by all matter. Artificial gravity can be made to either push or pull. Because of its nature, artificial gravity is not a very efficient means of locomotion in deep space where there are no strong gravity wells to push against

A third major breakthrough related to artificial gravity is damper technology. Nuclear dampers interfere with sub-atomic nuclear forces: when a nuclear warhead passes through a damper field, the warhead sheds neutrons at very low energies, which renders the warhead harmless after a very short exposure. Nuclear dampers can also work in reverse to prevent nuclear decay.

The fourth significant development came from the search for a starship maneuver drive that did not lose efficiency when away from a strong gravity well. Artificial gravity and damper technology led to yet another sub-atomic force-based technology. This new, artificially generated force pushes against a vessel's "thrust plates" themselves, which make true reactionless thrusters a reality for starship-sized vessels.

The fifth major area is meson technology Meson devices make use of the properties of the sub-atomic particle called the pi neutral meson. Mesons have short lives, which can be prolonged to precise durations by accelerating them to relativistic speeds. Because mesons do not interact with any other types of matter, they can pass through other matter without resistance.

Mesons are created by the collision of an electron and a positron in the converging beam created by two particle accelerators. In a meson gun, the mesons are manipulated to decay inside the target, where they release high energy and radiation. In a meson communicator, a much smaller meson package travels from the transmitter to the receiver, where a special meson screen causes the meson package to decay. The beam carries a signal by amplitude modulation.

DESIGNING A CRAFT

Before starting a craft design, certain items must be considered. What is the tech level of the design? What is its purpose? Does the design have a price limit? Are there specific attributes that must be incorporated into the craft's design?

When starting a design, assign four columns of space to the right two-thirds of the page, and label the four columns from left to right: power, volume, weight, and price

All three design sequences work in the same way· you must first select an empty chassis or hull and then install a power plant and a form of locomotion. After that, you can install various communication devices, sensors, weapons, screens, controls, computer, and crew accommodations to tailor the craft for a particular purpose.

The final design must not exceed the craft's chassis or hull volume, and it must not use more power than is available from the power plant. The locomotion must provide a craft with an acceptable performance. A finished design can involve a series

of reworkings and trade-offs on the road to a design that fits its intended purpose.

Once a prototype craft has been created, additional craft of the same design may be produced with a quantity discount of 80 percent of the full price.

The research and development craft design is an exception; it may have components in a single section that are one tech level beyond its current tech level limit. Such a craft is typically one-of-a-kind, and it may not benefit from a quantity discount.

DEFINITION OF COMMON TERMS

The following definitions apply to the transportation systems

Craft: Any transportation unit is a craft. Craft may be any size. Types of craft include vehicles, small craft, spaceships, starships, aircraft, and watercraft.

Aircraft: Any craft designed to fly in an atmosphere. Aircraft may be fixed wing, rotary wing (helicopter), or lighter-than-air craft.

Vehicle: Any craft with a volume of 270 kiloliters or less (20 tons displacement or less). Most vehicles are world surface transportation systems like groundcars, ATVs, or air/rafts.

Small Craft: Any craft with a volume of 270 to 1350 kiloliters (20 to 100 tons displacement). Small craft commonly travel in space.

Spaceships: Any craft with a volume of 1350 kiloliters or more (100 tons displacement or more) which is equipped with a maneuver drive, but not a jump drive.

Starships: Any spaceship equipped with a jump drive is a starship.

Vessel: Any craft with a volume of 1350 kiloliters or more (100 tons displacement or more). Vessels may be spaceships, starships, or other craft.

Watercraft: Any craft designed to operate in water. Watercraft may be small watercraft (boats), large watercraft (ships), or hovercraft.

The following terms are common to all craft types.

Tons Displacement: A widespread method of determining a space vessel's size is to give its volume in terms of the amount of liquid hydrogen it would displace (as if it were immersed in a vast sea of liquid hydrogen). Tons displacement is not to be confused with the craft's weight in metric tons (that is, its actual mass). A starship that displaces 100 tons may actually weigh over 1000 metric tons. A displacement ton is actually a measure of volume rather than weight; one displacement ton equals 13.5 kiloliters of volume.

Power: A craft's power needs are measured in megawatts. One megawatt equals 1000 kilowatts A term sometimes used to refer to the energy output of a space vehicle is an energy point (EP). One energy point equals 250 megawatts, or put another way, 4 energy points equal 1000 megawatts.

Volume: A craft's volume is the amount of space it takes up. Volume is measured in kiloliters, a kiloliter equals one cubic meter. Thus a cube that is one meter on a side has a volume of one kiloliter. A kiloliter contains 1000 liters; 13.5 kiloliters equals one ton of displacement.

Weight: A craft's weight is measured in metric tons. One metric ton equals 1000 kilograms.

Price: Price is usually expressed in credits (Cr). However, in the interest of saving space, some prices for very expensive items are expressed in megacredits (MCr). A megacredit equals 1,000,000 credits.

THE DESIGN FLOWCHARTS

Craft design is governed by the design flowcharts that follow. The central flowchart references several sub-flowcharts, each dealing with a specific aspect of craft design. Important concepts and definitions for each sub-flowchart section are presented below.

These charts and design rules produce vehicles, small craft, spaceships, and starships. They do not produce watercraft or aircraft (but they do produce flying anti-grav vessels).

HULL SECTION

All craft need some type of hull or chassis to which all other components are attached

Configuration: The following configurations are possible:

Open Frame: An open skeletal frame with no exterior covering.

Needle/Wedge: A long, pointed exterior with few square edges.

Cone: An oblong rounded exterior with few square edges.

Cylinder: An oblong rounded exterior with square-edged ends.

Box: A square-edged exterior with few rounded edges.

Sphere: A ball-shaped exterior.

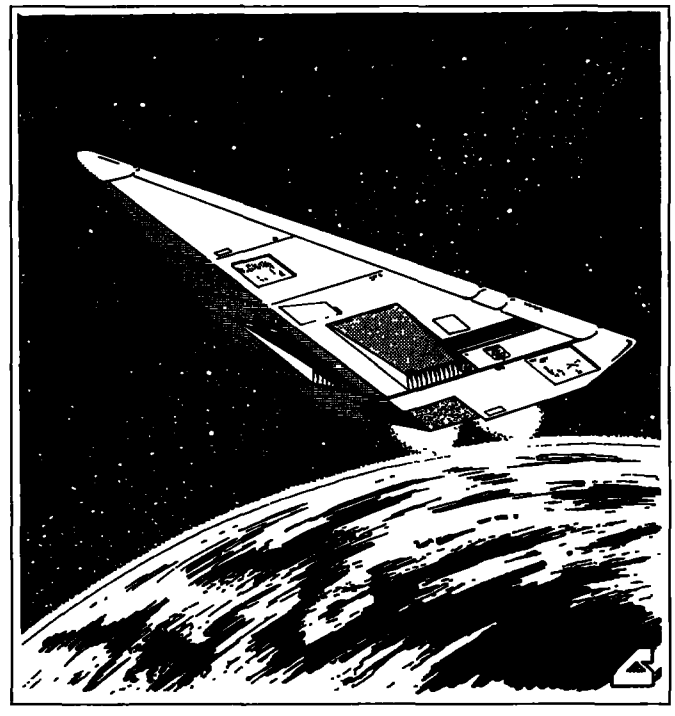
Dome/Disk: A half-sphere or flattened-sphere exterior.

Irregular Structure: A dispersed, modular exterior, which is not clearly definable as any one of the other possible configurations.

Planetoid: A metallic or rocky hollowed-out asteroid.

Buffered Planetoid: A metallic or rocky asteroid given an extra thick hull by hollowing out less of the interior.

Armor Type: Represents the type of material and method used in the hull construction.



Soft Steel: A soft ferrous metal hull.

Hard Steel: A harder ferrous alloy metal hull.

Composite Laminate: A composite metal-ceramic hull.

Light Weight Composite Laminate: A lightweight version of a composite metal-ceramic hull.

Crystaliron: A ferrous hull using metal with perfect crystal structure and carefully controlled impurities in order to gain maximum hardness and toughness.

Superdense: A hull that has had its molecular structure partially collapsed in a massive artificial gravity field (such as might be encountered in a white dwarf star), which increases its density and strength.

Bonded Superdense: Superdense armor with a small induced electronic current to strengthen the internal electron bonds which further increases the hull strength.

Coherent Superdense: Bonded superdense armor dynamically manipulated by input from the sensors and the computer so as to polarize the subatomic forces in the the hull molecules, thereby presenting maximum penetration resistance to the specific striking weapon.

Armor Factor: Represents the thickness of the hull. The added value of armor for a ship may not exceed the ship's technological level times five. In the case of planetoid hulls, an automatic hull armor factor is already present—the Tech Level armor restriction only applies to armor added to the hull of a planetoid.

Streamlining: Any ship of configuration one to six, regardless of streamlining, can land on a world with an atmosphere zero or one; for all other worlds, streamlining is required. Irregular structures and planetoids cannot land on any world.

POWER SUPPLY SECTION

All craft need some source of energy to supply power to the installed components.

Internal Combustion: The familiar hydrocarbon-burning reciprocal engine.

Turbine: A hydrocarbon burning rotary engine.

Nuclear Fission: The familiar nuclear fission power plant using radioactives as fuel.

Fuel Cell: Advanced hydrogen/oxygen fuel cell. The fuel consumption listed on the table assumes a closed hydrogen/open oxygen design. Such a fuel cell carries its own supply of hydrogen, but draws its supply of oxygen from the air. If the craft must operate in a hostile or vacuum atmosphere, oxygen must be provided as well. Multiply the fuel consumption rate in this case by 9 to account for the relative mass of oxygen molecules to hydrogen molecules.

Fuel cells produce pure water as a waste by-product. The amount of water produced is 9 times the fuel consumption rate on the table. High-tech fuel cell technology typically eliminates the waste water through an evaporation process, so the problem of what to do with the waste water can easily be ignored if desired.

Fusion: Cheap, efficient fusion reactor. However, by its very nature, a fusion reactor can only be made so small, even at higher Tech Levels. Below the minimum volume for a given Tech Level, fuel cells are the preferred choice.

Batteries: Battery technology makes great strides at higher Tech Levels, with sustained power output for a given volume and weight increasing dramatically. These "super batteries" are, however, quite expensive.

Batteries can be used either as the primary power source (at a greater cost and weight than fuel cells or fusion), or to supplement the normal power plant by allowing the craft to continue to function even though the regular power plant is not operating.

Solar Cells: Photoelectric cells that produce electrical energy from light. The thought of gaining free electrical power from light and never needing to refuel may at first seem to be the ideal solution to a craft's energy needs (as long as there is a source of light). However, the level of energy needed by most high-tech craft far outstrips the ability of solar cells to produce it. Cheap fusion power turns out to be the ideal solution—solar cells are only used for very specialized, low-power applications.

LOCOMOTION SECTION

All craft need some form of locomotion for travelling from place to place.

Two basic types of vehicle locomotion exist·

Contact-Based: Locomotion based on friction contact with a surface. This includes:

Legs: The craft uses flexible-limb legs to move about Most leg-based craft designs use 2 to 8 legs, with 4 legs being by far the most common. Occasionally designs use more than 8 legs. Legs are ideal for rough-terrain ground vehicles.

Wheels: The craft uses wheeled locomotion to move about. Wheels are most common in ground vehicle designs limited to urban areas or used indoors. Wheels do poorly in rough terrain.

Tracks: The craft moves about using tracked locomotion. Tracks provide a ground vehicle with a slightly better dexterity than do wheels. Tracks are better than wheels in rough terrain.

Thrust-Based: Locomotion based on noncontact thrusting of the craft. This includes:

Antigravity: The craft uses antigravity modules (or more simply, "grav modules") to move about. Three types of grav modules are available: Standard (relatively cheap, with adequate power to thrust ratio); Low Power Heavy (moderately priced, with good power to thrust ratio); and Low Power Light (expensive, with excellent power to thrust ratio).

Air Cushion: Air Cushion locomotion (also termed "AC") allows a craft to hover about one meter off the ground on a cushion of compressed air created by ducted fans. Unlike grav locomotion, AC locomotion cannot function in a vacuum. AC locomotion is second only to grav modules in mobility.

Two basic types of space-faring locomotion exist:

Maneuver Drive: Space-faring craft use grav modules or thruster technology for locomotion. This mode of locomotion is called a maneuver drive. Thruster drives require massive plates and vast quantities of energy. They cannot be installed in vehicles.

Jump Drive: Starships move across interstellar distances using jump drives. Jump drives are themselves a special high-yield power plant linked to an integral net in the craft's hull for initiating and maintaining the jump field. Because a jump drive is also a power plant, it must be allocated fuel separate

and distinct from the craft's power plant.

Jump distances are calculated in parsecs (3.27 light-years), which is the scale of a subsector mapping grid. Jump-1, for example, indicates the ability to jump one parsec, or one hex.

Jump numbers range from 1 to 6; higher jump numbers are not possible in ordinary usage, although misjumps can carry ships over greater distances. Any jump, regardless of number, takes approximately one week; ships in jumpspace are untouchable and cannot communicate with other ships or stations Although jumps are usually made at low velocities, the speed and direction which a ship held prior to jump is retained when it returns to normal space.

COMMUNICATIONS SECTION

Many craft can benefit by having some form of external communication device. By their nature, flying vehicles, small spacecraft, and starships require one or more communication devices for communication with traffic control authorities.

All of the communicator types, along with their advantages and disadvantages, are covered on the design flowchart.

See Starship Combat for details about using communicators.

SENSORS AND ELECTRONICS SECTION

Many craft can benefit from having sensors and sensor-related electronics installed By their nature, flying vehicles, small spacecraft, and starships cannot rely on just the operator's vision as their only source of sensory input.

All of the sensor types, along with their advantages and disadvantages, are covered on the design flowchart.

See Starship Combat for details about using sensors.

WEAPONS SECTION

If the craft is expected to be used in some offensive or defensive capacity, give serious consideration to installing weapons. The following terms and definitions apply to the weapons flowchart.

Hard Point: A hard point is a necessary measurement of hull pre-allocation to allow the mounting of very large weapons without affecting the structural integrity of the hull. Of the four weapon categories, only a gun mount does not require any hard points.

Weapon Mounts

Weapons fall into one of four categories based on their mountings:

Spinal Mount: A fixed-mount major starship weapon which provides for attacks of the greatest possible power. Because a starship's entire structure is built around a spinal mount (and hence the name), no starship may have more than one spinal mount.

Bay: Very large weapon mount able to move to point at the target. The most powerful type of moving weapon mount.

Turret: Moderate weapon mount able to move to point at the target. A reasonably powerful type of moving weapon mount.

Gun: Small weapon mount able to move to point at the target. Most typically installed in vehicles, a gun can be installed in a small moveable mount on a vehicle, also called a turret or a "gun turret" in these rules (this serves to differentiate these turrets from the larger hard point-based turret mount).

Weapon Types

Types of weapons include:

Lasers: Lasers fire a concentrated light energy in beams or pulses against enemy targets.

Energy Weapons (which include plasma guns and fusion guns): These weapons fire a highly energized beam of ionized gas at the target; with the fusion gun this gas actually proceeds to fusion.

Particle Accelerators: Particle accelerators charge and accelerate electrons or hydrogen nuclei to high velocities toward a target. Hits produce both surface damage and radiation effects

Meson Guns: These guns create high-energy mesons and direct them at a target. Mesons have short lives, which can be prolonged to precise durations by accelerating them to relativistic speeds. If the point of decay is manipulated to occur inside the target ship, the result is high energy explosions and radiation damage. Because of the nature of the meson, it can pass through armor and matter without resistance.

Missiles: Missiles are available in two types, nuclear and nonnuclear. Nuclear missiles produce surface damage and radiation effects, while nonnuclear missiles produce only surface damage.

A third type of missile is available at very high Tech Levels: the antimatter missile.

Sandcasters: Sandcasters project a granular agent which obstructs light; when they are fired, the agent interferes with incoming laser or energy weapon fire.

Repulsors: Repulsors are large, focused artificial-grav projectors. When directed at incoming missiles, they deflect them away from their target

Tractors: Tractors are large, focused artificial-grav attracters available at very high Tech Levels. When directed at other craft, they restrict their agility.

Disintegrators: Disintegrators disrupt the strong molecular attraction that holds matter together, causing an object's molecules to fly apart. Available at very high Tech Levels.

Jump Projectors: Jump projectors induce a jump field around the target, causing it to misjump. Available at very high Tech Levels.

Jump Damper: Jump dampers inhibit a target's ability to enter jumpspace. Available at very high Tech Levels.

The following are available as guns only.

Mortars: A mortar is a very low velocity slug thrower. Indirect fire only.

CPR Guns: CPR guns are chemically propelled round slug throwers.

Autocannon: An autocannon is a very rapid fire CPR gun.

Mass Driver Gun: A mass driver gun is an electronically propelled slug thrower. Available beginning at Tech Level 8.

SCREENS SECTION

If the craft is expected to be used where it could come under attack, give serious consideration to installing defensive screens.

The types of screens available include:

Meson Screens: Screens that project an interruption of the

strong nuclear force, which prematurely causes decay of incoming mesons

Nuclear Dampers: Screens that project a series of nodes and anti-nodes where the strong nuclear force is enhanced or degraded, rendering nuclear warheads ineffective.

Black Globe Generator: Projects a barrier which absorbs all energy and shunts it to onboard capacitors. The barrier prevents all transit across it, and a ship with its black globe on is restricted in its ability to maneuver, fire its weapons, or communicate. The field may be overloaded, which causes the failure of the storage capacitors and destruction of the ship

Proton Screens: Screens that render antimatter missiles ineffective Available at very high Tech Levels.

White Globe Generator: Projects a glowing white barrier which absorbs all weapon fire. Unlike the black globe, it does not restrict the ship with the white globe from seeing out or using any sensors. Available at very high Tech Levels.

CONTROLS AND BRIDGE SECTION

All craft need some sort of operator controls. At the Stellar tech code (Tech Level 9+), most, if not all craft include a computer as part of their onboard controls.

Life-Support and Sealed Environment: A craft may be closed to the outside by being sealed; a craft in vacuum, trace, exotic, corrosive, or insidious atmospheres must have life support Generally, a craft with life support must also be sealed. However, life support may be used in an unsealed craft as a substitute for oxygen tanks (although the crew must wear any required protective suits).

Grav Plates: Provides internal artificial gravity, such that "down" is always more or less constant no matter what the orientation of the craft. For the optimum in internal gravity consistency, also install inertial compensators.

Inertial Compensators: Inertial compensators, when installed, allow high-G maneuvers while interior G-fields remain normal Inertial compensators negate the effects of inertia, so the occupants of a moving craft have no sensation of motion.

Computer and Control Panels: A computer is required to aid the operator or operators in controlling the craft's functions. A computer multiplies the effects of the ship's installed control panels if the control panels are of the "linked" type.

Several types of control panels exist:

Mechanical: Basic gauges, dials, and mechanical controls.

Electronic: Electronic gauges and electromechanical controls.

Computer: Computerized controls with detailed and informative flat computer displays.

Dynamic: Dynamically reconfigurable flat 2D controls. The operator may reconfigure the controls in a moment's notice to fit preference or operating style. Limits the Tech Level reduction of a skill level to −1

Holographic: Dynamically reconfigurable contoured 3D controls with tactile feedback. The operator may reconfigure the controls similar to dynamic controls. Limits the Tech Level reduction of a skill level to −1

Panel Add-ons: Panel add-ons can be installed to augment a craft's control panel needs. The power and volume requirements of an add-on are usually superior to those of straight control panel units for a given CP value. A control panel add-on can always act as a direct replacement for weaker control panels. Do not install any more control panel add-ons than you expect to have crewmembers. Panel add-ons include:

Heads-Up Displays: Displays control panel information in pictorial form in the operator's field of view, which avoids the need for the operator to look at separate panel. The holographic version displays readings and output in a more informative 3D pictorial form

Large Holodisplay: A large holographic display/plotter unit for showing all manner of 3D tactical, trajectory, flight path, and sensor information, as well as displaying 3D communications and recordings.

ACCOMMODATIONS SECTION

All craft (other than drone vehicles) must provide accommodations for carried crew and passengers. This section includes the requirements for carrying subordinate craft.

Frozen Watch: Supplementary crew members may be carried in low berths; this frozen watch is then available to replace crew casualties incurred in combat.

Pilot Requirements: The frozen watch must contain at least half the total number of pilots required for the ship.

Multiple Frozen Watches: More than one frozen watch may be assigned to a ship. Each frozen watch must meet the requirement that it contain at least one crew section, and it must carry at least 50 percent of the ship's required pilots. Sufficient low berths must be installed to carry all frozen watch personnel.

Transfers To Other Ships: Frozen watch personnel may be transferred to other ships, but only between battles. A battle must end before frozen watch personnel can be transferred to other ships in order to crew them

Extended Accommodations: For starships, the ship's crew must have quarters allocated for them. Other types of accommodations include passenger (noncrew) accommodations, low berths, and emergency low berths.

Staterooms: Dual occupancy staterooms are computed at MCr0.25 and two tons per person. It is not necessary to purchase an entire stateroom just to accommodate an odd number of crewmembers, a half-stateroom or large triple-occupancy stateroom can be built.

Subordinate Craft (Ship's Vehicles): Whenever a ship carries other ships, small spacecraft, or vehicles as part of its complement of vessels, provision must be made for hangars and launch facilities for them.

Launch Facilities: Launch facilities must be provided for all ships and craft carried Such facilities are automatic with irregular structures (configuration 7), and all craft may be launched in one turn. Ordinary launch facilities allow one craft to be launched per turn. Launch tubes allow up to 40 craft to be launched per turn. Recovery is at the same rate.

FUEL AND MISCELLANEOUS SECTION

Most power supplies require some sort of fuel. This section also covers the allocation of cargo space and the like.

Fuel Tankage: All craft (except those powered exclusively by batteries or solar cells) must be fitted with fuel tanks. A 30-day supply is considered optimum.

Hydrogen is available for free in the atmospheres of gas giants (similar to Saturn or Jupiter) or from oceans of water. Taking such fuel from gas giants requires a craft with a

streamlined hull. Large ships carry streamlined fuel tankers, which can skim fuel and return it to the unstreamlined ship. Water may also be used to provide hydrogen; water is dipped by ships landing in the ocean and opening fuel cocks or by fuel shuttles. Skimmed or dipped fuel is unrefined, and may result in misjumps by jump-capable starships; purification plants can convert such fuel for safe use.

More fuel tankage may be allocated if desired to increase range (such as the number of jumps possible for starships) or endurance (in days of operation allowed before refueling).

Other Types of Fuel Tankage: Four varieties of fuel tankage are not integral to a ship: collapsible tanks, dismountable tanks, exterior dismountable tanks, and drop tanks. Each type is discussed on the design flowchart.

Cargo Space: Cargo space is allocated in kiloliters (or liters). Since all equipment includes a volume figure (see the *Imperial Encyclopedia)*, it is simple determine what will fit in a craft.

DESIGN-RELATED TOPICS

Developing a working knowledge of the topics and game rules in this section gives the designer more insight how his designs are used, which results in better craft designs.

SPARE SYSTEMS

Spare systems may be installed in a craft to take over in the event that the main unit is disabled.

These are backup devices and may not be in operation at the same time as the main device. The higher-output device is the mainstay; the backup device does not consume fuel or power while it is not in use. When the main device takes damage that reduces it below the level of the backup, the backup takes over. If the backup is then damaged, the main unit returns to action. Whichever unit has the highest current factor is the one in operation; when damage is received, it is applied to the unit in operation. Under no circumstances may a backup and main device be operating at the same time.

ENVIRONMENT NOTES

A craft suffering penetration is no longer sealed and is subject to explosive decompression in a vacuum or trace atmosphere, poisonous contamination in an exotic or corrosive atmosphere, or death of its occupants in an insidious atmosphere.

Air breathing engines may not be constructed for use on a world with an atmosphere type of vacuum, trace, exotic, corrosive, or insidious. They must have intake compressors to function on very thin atmosphere worlds. All pre-fusion engines, with the exception of rockets, are air breathers; a vehicle powered by batteries is not an air breather.

SPACE-FARING CRAFT

Space-faring craft are designed by individuals, corporations, or navies using their own specifications to produce the exact type of ship desired.

Design: A navy specification for a space-faring vessel can be produced in about eight weeks. Corporations and individuals must obtain the services of a naval architect (who charges 1 percent of the final ship cost); the architect can prepare final plans and specifications (from which the shipyard works) in about four weeks.

Availability: Starships (with jump drives) may be constructed at the shipyard of any class A starport; nonstarships (without jump drives) may be constructed at the shipyard of any class A or class B starport.

Tech Level: The Tech Level of the building shipyard determines the Tech Level of the ship being constructed (a class A starport on a Tech Level 14 world constructs a Tech Level 14 ship). Equipment and components of a starship may always be equal to or less than the ship's Tech Level

The Imperial Navy may procure ships of up to Tech Level 15, although it also procures vessels at Tech Levels 10 through 14. A subsector navy may procure ships at any shipyards within its borders. A planetary navy may procure ships at any shipyard within the borders of its subsector; alternatively, a planetary navy may construct ships on its planet, using local resources. A shipyard navy may construct ships on its planet using local resources, even if a shipyard is not present.

Construction Times: Ships of less than 60,000 kiloliters can be completed within 36 months by any competent shipyard. Ships over 60,000 kiloliters require from 24 to 60 months to complete based on conditions, volume of orders, and the degree of haste desired by the ordering government

Ship Classes: Once a ship is built, a certain familiarity with the requirements of construction is gained by the building crews, and a shipyard can produce ships more rapidly and with greater efficiency. Additional identical ships built following the initial ship in a class can be completed in 80 percent of the original time at 80 percent of the original construction cost.

Ships of a class are named to show this relationship. For example, the first ship in a series of small, swift escort vessels might be called the *Gazelle*, prompting the formation of the *Gazelle*-class of close escorts. Other ship names in the class could be *Reindeer, Pinto, Nulope, Shasii*, or any other name for a swift herbivore found on some world.

Military Craft: Starships and vessels may be fire support.

Naval Vessel Organization: Naval vessels operate in task forces or squadrons; each ship supplements the others.

A fleet plan must consider more than the individual ships. It must deal with the way ships interact with others.

Carried Squadrons: One technique is the construction of tenders or carriers—single large ships to carry well-armed smaller ships which actually fight. When the craft being carried are in the 10,000 ton range, and the large ship is 200,000 tons or more, the ship is called a tender or transport

The carried craft are not jump-capable, so the points of greatest danger to carried squadrons are immediately prior to jump (when craft or ships have been recalled) and after returning to normal space (when craft have not yet been launched).

The High Guard: Refuelling operations for a task force are another danger point, as forces which are both low on fuel and maneuvering in a gravity well are especially vulnerable. The high guard position, so named because the ship or ships involved are higher in the gravity well than their companions, are used to mount protective operations during refueling.

Planetoid Ships: The inexpensive nature of planetoid ships would appear to be their first attraction. Planetoids provide other benefits, including relatively inexpensive, although bulky, armor protection (especially for buffered planetoids).

0 - OVERALL CRAFT DESIGN

1 Craft Purpose

Determine the craft's purpose and the Technology Level at which it is constructed

2 Craft Size Category

Determine the craft's size category

Vehicle: Less than 20 tons displacement (less than 270 kiloliters volume). Vehicles are generally restricted to a world

Small Craft: Between 20 tons and 100 tons displacement (between 270 and 1350 kiloliters volume) Small craft are generally restricted to a planet or stellar system

Space Vessel: 100 tons or more (1350 kiloliters or more) Space vessels may be spaceships or starships

3 Design Craft By Section

For each listed section, proceed to that section chart and follow the steps there

A The following sections should be designed in the order shown

1 *Hull Section*
2 *Power Supply Section*
3. *Locomotion Section*

B The following sections may be designed in any order

4 *Communicators Section*
5 *Sensors and Electronics Section*
6 *Weapons Section*
7 *Screens Section*

C The following sections should be designed in the order shown

8 *Control and Bridge Section*
9 *Accommodations Section*
10 *Fuel and Miscellaneous Section.*

4 Evaluate Design

Proceed to the Design Evaluation Procedure On the basis of the evaluation, rework the design as necessary. When you are satisfied with the results, the design is completed

1 - BASIC HULL DESIGN 1

1 Determine Craft Hull

For simplicity, a vehicle's chassis, a small craft's hull, and a space vessel's hull are all called **hull** in this chart

2 Select Vehicle Chassis

If the craft is a vehicle, select the appropriate vehicle chassis from the Vehicle Chassis Table

VEHICLE CHASSIS TABLE

UCP	*Volume*	*Weight*	*Price*
0 007	0 10	0 010	400
0.019	0 25	0 025	850
0 037	0.50	0 075	1200
0 056	0.75	0.075	1400
0 074	1.00	0.100	1600
0 093	1 25	0 125	1800
0.111	1 50	0 150	2000
0.130	1 75	0 175	2200
0 185	2 50	0 250	2400
0 250	3.37	0.400	2600
0 050	6.75	0.700	2800
0 075	10 12	1 100	3000
1 000	13 50	1 500	3300
2 000	27 00	2.200	3700
3 000	40.50	2.800	4200
4 000	54.00	3.500	5800
5.000	67 50	4 000	6500
6 000	81 00	4 600	7500
7 000	94 50	5 200	8500
8 000	108 00	5 700	10000
9 000	121.50	6.300	13700
10 000	135.00	6 800	17400
11 000	148.50	7.300	21100
12.000	162 00	7 800	24800
13.000	175 50	8 400	28500
14.000	189 00	8 800	30300
15 000	202 50	9 300	33000
16 000	216 00	9 800	36700
17.000	229.50	10 300	38400
18 000	243 00	10 800	40100
19 000	256 50	11 300	42800
20.000	270 00	11 800	44550

3 Select Small Craft Hull

If the craft is a small craft, select the appropriate small craft hull from the Small Craft Hull Table

SMALL CRAFT HULL TABLE

UCP	*Volume*	*Weight*	*Price*
20 0	270	11 8	44 55
25 0	335	13 4	49 70
30 0	405	16 2	56 80
35 0	470	18.8	62 10
40 0	540	21 6	66.82
45.0	605	23 6	69 90
50.0	675	26 3	72 40
55 0	740	28 8	79 40
60 0	810	31 6	84 20
65 0	875	33 3	89 50
70 0	945	35 0	93 50
75 0	1010	36 4	100 00
80 0	1080	37 8	107 00
85 0	1150	38 5	114 00
90 0	1215	39 0	124 00
95 0	1285	39 5	127 00
100 0	1350	40.0	134.00

UCP is Universal Craft Profile displacement tonnage **Volume** is in kiloliters **Weight** is in metric tons **Price** is in credits for vehicles, and in megacredits for small craft and space vessels

To determine the values for a nonstandard hull size, extrapolate the values from the *closest* hull size using the following formula, **F = N/B**, to determine the modification factor F = the factor to apply to the base hull values; N = the desired nonstandard hull size, B = the closest standard hull size For example, if a 440 UCP hull size is desired, multiply the values for a 400 UCP hull by a factor of 1 1 (440/400).

4 Select Space Vessel Hull

If the craft is a starship or spacecraft, select the appropriate space vessel hull from the Space Vessel Hull Table

SPACE VESSEL HULL TABLE

UCP	*Volume*	*Weight*	*Price*
100	1350	40	0 134
200	2700	70	0 265
300	4050	100	0 400
400	5400	130	0 535
500	6750	160	0 665
600	8100	190	0 805
700	9450	220	0 935
800	10800	250	1 050
900	12150	280	1 200
1000	13500	310	1 350
2000	27000	600	2 700
3000	40500	900	4 000
4000	54000	1200	5 300
5000	67500	1500	6 700
6000	81000	1800	8 000
7000	94500	2100	9 400
8000	108000	2400	10 700
9000	121500	2700	12 100
10000	135000	3000	13 400
20000	270000	6000	15 600
30000	405000	8000	17 800
40000	540000	10000	20.100
50000	675000	11500	22 300
75000	1010000	15000	44 600
100000	1350000	18000	66 800
200000	2700000	29000	89.100
300000	4050000	38000	111 400
400000	5400000	46000	166.700
500000	6750000	54000	222 800
700000	9450000	67000	445 500
900000	12150000	79000	668.300
1000000	13500000	85000	891 000

5 Craft Configuration and Streamlining

Determine the craft's configuration. Apply the configuration weight and price modifiers to the hull figures. Determine the craft's type of streamlining; apply the streamlining modifier to hull price.

CONFIGURATION AND STREAMLINING

		Config		Streamlining Price Mod		
Type	*Configuration*	*Wt Mod*	*Price Mod*	*Unstream-lined*	*Stream-lined*	*Air-frame*
0	Open Frame	×0 5	×0 5	×1 0	NA	NA
1	Needle/Wedge	—	×1 2	NA	×1 0	×1 5
2	Cone	—	×1 1	NA	×1 0	×2 0
3	Cylinder	—	—	×1 0	×1 2	×3 0
4	Box	—	×0 6	×1 0	×1 5	NA
5	Sphere	×0.8	×1 5	NA	×1.0	NA
6	Dome/Disk	×0 9	×1 2	NA	×2 0	×3 0
7	Irregular	×0.9	×0 5	×1.0	NA	NA
8	Planetoid	NA	NA	×1.0	NA	NA
9	Buffered	NA	NA	×1 0	NA	NA

Note: NA means Not Available Vehicles and small craft may not use any planetoid configurations (configuration 8 and 9) A spacecraft must be at least *streamlined* if it is to undertake wilderness refueling **Unstreamlined:** No attempt has been made to streamline the hull Many protrusions and irregularities exist which significantly increase the vessel's drag, making it difficult or impossible to operate the craft in an atmosphere at a high rate of speed **Streamlined:** Various cowlings and farings have been added to the hull to streamline it for operation in an atmosphere, although the streamlining is less than that provided by an airframe **Airframe:** The hull has been designed for high performance in an atmosphere In order to achieve such performance, exterior design has been a priority.

6 Planetoid Configurations

Special conditions exist for planetoid configurations:

1 Planetoid hulls are generally free for the taking, but there is a transportation charge from the belt to the orbital shipyard Fusion tunneling is used to hollow out passages and compartments

2 A planetoid can use only 80 percent of its volume, the remainder is unusable and must be left in place to maintain structural integrity.

3 A buffered planetoid can use only 65 percent of its volume, the remainder is unusable and must be left in place to maintain structural integrity and to serve as armor

PLANETOID HULLS

Transport	*Tunneling*	*Planetoid Weight*	*Buffered Weight*
Cr10	Cr75	1 0	1.75

Prices shown are per kiloliter of hull

Armor Values: Planetoid is armor value 50 Buffered planetoid is armor value 56 Additional armor may be added to a planetoid subtract the planetoid's current armor value modifier (from the Armor Table) from the desired new armor value mass factor

7 Armor

Determine the armor type for the craft using the table below. Apply the weight and price modifiers to the hull weight and price

ARMOR TYPE TABLE

UCP	*TL*	*Type*	*Weight Modifier*	*Price Modifier*
A	5	Soft Steel	×1.25	×1 0
B	6	Hard Steel	×1.00	×1 0
C	7	Composite Laminate	×0.44	×1 8
D	9	Lt Wt Composite Laminate	×0 35	×1 6
E	10	Crystaliron	×0 31	×1.1
F	12	Superdense	×0 26	×1 0
G	14	Bonded Superdense	×0 14	×1 0
H	17	Coherent Superdense	×0 06	×1 3

Armor may not be selected above the prevailing Tech Level

8 Minimum Armor

Determine the minumum armor for the craft using the guidelines below

Vehicles: No minimum.
Spacecraft: Minimum 40
Starships: Minimum 40

Spacecraft and starships require a minimum armor value of 40 for protection against micrometeoroids and radiation

9 Armor

Select the armor protection using the table below

ARMOR TABLE

Armor	*Mod*	*Armor*	*Mod*
1	0 25	58	160
2	0 50	59	174
3	0 75	60	190
4	1 00	61	207
5	1 25	62	226
6	1 50	63	247
7	1 75	64	269
8	2 00	65	293
9	2 25	66	320
10	2 50	67	349
11	2 75	68	381
12	3 00	69	415
13	3 25	70	453
14	3 54	71	494
15	3 86	72	538
16	4 20	73	587
17	4 59	74	640
18	5 00	75	698
19	5 45	76	761
20	5 95	77	830
21	6 48	78	905
22	7 07	79	987
23	7 71	80	1080
24	8.41	81	1170
25	9 17	82	1280
26	10 0	83	1400
27	10 9	84	1520
28	11 9	85	1660
29	13 0	86	1810
30	14.1	87	1970
31	15 4	88	2150
32	16 8	89	2350
33	18 3	90	2560
34	20 0	91	2790
35	21.8	92	3040
36	23 8	93	3320
37	25 9	94	3620
38	28.3	95	3950
39	30 8	96	4310
40	**33.0**	97	4700
41	36 7	98	5120
42	40 0	99	5580
43	43 6	100	6090
44	47.6	101	6640
45	51 9	102	7240
46	56 6	103	7900
47	61 7	104	8610
48	67 3	105	9360
49	73.4	106	10200
50	80 0	107	11200
51	87 2	108	12200
52	95.1	110	14500
53	104 0	112	17200
54	113 0	114	20500
55	123 0	116	24400
56	135.0	118	29000
57	147 0	120	34400

10 Weight and Price

Armor factor from the Armor Table determines the protection the armor provides Multiply hull weight and price (already modified by the armor type weight and price modifiers) by the Armor Table modifier

11 Open Vehicle?

Determine if the vehicle is open-topped

If the vehicle has a chassis UCP of 0 2 or less, it cannot be enclosed; occupants must ride on its outside If the chassis UCP is more than 0 2, the vehicle is enclosed unless selected otherwise For open-topped, choose an open-top percentage between 5 percent and 20 percent

Reduce chassis weight and price by the selected percentage

12 Vehicle Cupola?

Determine if the vehicle has a **cupola** or **turret**

A **cupola** is a fixed extension of the hull A **turret** is a movable extension of the hull

Select the desired size of the extension (5 percent to 40 percent of the hull volume)

Increase hull volume, weight, and price by the selected percentage

A turret uses 0 01 megawatts of power (for movement) per kiloliter of turrent volume

More than one turret or cupola is possible as long as the combined total increase in hull volume is not more than 40 percent

Because a turret or cupola is typically such a large part of a vehicle, it is determined at the same time as the hull. Starships and spacecraft (on the other hand) determine turret design along with weaponry.

If you plan to mount a weapon on the vehicle, you should have some idea of the weapon volume needed—you might look ahead to the weapons design section and pick out a weapon at this time Then return here and design the cupola or turret

13 Hull Totals

Note the totals for
- Power
- Volume
- Weight
- Price

2 - POWER SUPPLY

1 Power Supply

Select a power supply combination for the craft from the list of various power plants below Install as many kiloliters as are necessary to achieve the desired power supply Power Out, Weight, and Price are expressed per kiloliter of volume

POWER PLANTS

TL	Description	Power Out	Weight	Price	Min Volume	Kl/Hour	Fuel Type
5	Internal Combustion	0 25	1	1000	0 005	0 030	Hydrocarbons
6	Improved Internal Combustion	0 40	1	2000	0 001	0 025	Hydrocarbons
6	Nuclear Fission	1 00	8	100000	5 000	0 002	Radioactives
7	Gas Turbine	0 60	1	5000	0 005	0 040	Hydrocarbons
8	MHD Turbine	0.80	1	10000	0 001	0 035	Hydrocarbons
9	Fusion	2 00	4	200000	10 000	0 003	Hydrogen
10	Fusion	2 00	4	200000	2 000	0 003	Hydrogen
11	Fusion	2 00	4	200000	1 000	0 003	Hydrogen
12	Fusion	2 00	4	200000	0 250	0 003	Hydrogen
13	Fusion	3 00	3	200000	0 150	0 005	Hydrogen
14	Fusion	3 00	3	200000	0 100	0 005	Hydrogen
15	Fusion	6 00	2	200000	0 090	0 009	Hydrogen
16	Fusion	7 00	1	200000	0 080	0 010	Hydrogen

TL	Description	Power Out	Weight	Price	Volume	Kl/Year	Fuel Type
17	Antimatter	500 00	6	500000	8 000	250.0	Antimatter
18	Antimatter	1000 00	5	500000	1 000	500.0	Antimatter
19	Antimatter	2500 00	4	500000	0 500	1250 0	Antimatter
20	Antimatter	15000 00	3	500000	0 100	7500 0	Antimatter
21	Antimatter	50000 00	2	500000	0 020	25000 0	Antimatter

Antimatter power output is the maximum that is possible without destroying the power plant. Fuel will last one year at maximum output, lower outputs make the fuel last correspondingly longer

STORAGE BATTERIES

TL	Storage	Price
5	0 0001	500
6	0 0002	425
7	0 0003	300
8	0.0004	325
9	0 0006	375
10	0 0008	525
11	0 0009	675
12	0 0010	850
13	0 0030	3000
14	0 0040	5000
15	0 0070	10000
16	0 0110	15000
17	0 0180	20000
18	0 0300	26000
19	0 0550	32000
20	0 1030	38000
21	0 1800	42000

Storage: Megawatt-hours stored in 0 001 kiloliter of battery

Price: Cr per 0 001 kiloliter of battery

Weight: 0 001 ton per kiloliter

Volume: 0 001 kiloliter per 0 001 tons

FUEL CELLS

Power Output	Volume	Weight	Price	Fuel Liters/ Hour
0 01	0 020	0 020	600	0.10
0 02	0 030	0 035	800	0 15
0 03	0 040	0 055	1000	0 20
0.04	0 050	0 075	1200	0 25
0 05	0 060	0 095	1400	0 30
0 07	0 080	0 130	1500	0.35
0 09	0 100	0 165	2000	0 40

Power Output: TL 13+, ×1 5, TL 15, ×3 0, TL 16, ×3 5

Weight: TL 13+, ×0 75, TL 15, ×0 50, TL 16, ×0 40

Minimum Tech Level for fuel cells is 10

SOLAR CELLS

TL	Output	Volume	Weight	Price
6	0 001	0 010	0 020	10000
7	0 002	0 010	0 018	8000
8	0 004	0 010	0 016	6000
9	0 012	0 010	0 014	5000
10	0 027	0 010	0 012	4000
11	0 045	0 010	0 010	3000
12+	0 081	0 010	0 008	2000

Solar Cell characteristics are stated per square meter.

To determine the maximum square meters of chassis surface area available for solar cells, take the square root of the chassis volume in kiloliters.

If you select a power plant that uses fuel, plan ahead on the amount of fuel volume that will be necessary in the hull A minimum of a thirty day supply is considered optimum, although some designs (especially at lower Tech Levels) will not allow this luxury.

2 Scale Efficiency

Very large or very small power plants have scale efficiency effects Apply any efficiency modification from the tables below

	Large Plants Efficiency Increase		Small Plants Efficiency Decrease	
Plant Type	Volume	Output Mod	Volume	Output Mod
Internal Combustion	11+	×1.5	0.10−	×0 33
Turbines	11+	×1 5	0 10−	×0 33
Fission	50+	×2 0	—	—
Fusion	6+	×1 5	0 75−	×0.67
Fusion	10+	×2 0	0 50−	×0.50
Fusion	14+	×3 0	0.25−	×0.25

Note: The plus sign after a plant volume means "or more," the minus sign after a plant volume means "or less "

3 Compute Power Plant Totals

Note totals for·
- Power Output
- Volume
- Weight
- Price

3 - LOCOMOTION 1

1 Locomotion Type

Decide on the type of locomotion the craft will have

Vehicles: Vehicles may use either thrust-based or contact-based locomotion

- Thrust-based locomotion uses an air cushion or grav modules for propulsion
- Contact-based propulsion uses wheels, tracks, or legs for propulsion

Both thrust-based and contact-based locomotion require suspensions; contact-based locomotion also requires a transmission

Small Craft and Spacecraft: Small craft and spacecraft require a maneuver drive

Starships: Starships require a jump drive (a jump drive defines a spacecraft as a starship) A starship must displace 100 tons in order to accommodate a jump drive Starships usually also have a maneuver drive

2 Jump Drive Capacity

Any spacecraft over 100 tons becomes a starship if it has a jump drive Select the maximum jump number desired

JUMP DRIVES

Tech Level	TL 9	TL 11	TL 12	TL 13	TL 14	TL 15
Maximum:	Jump1	Jump2	Jump3	Jump4	Jump5	Jump6

Jump number is the number of parsecs the starship can travel in one week's time

3 Jump Units Required

Determine the number of jump units required for the ship's hull size and the desired jump number

JUMP UNITS REQUIRED

Size	*Jump1*	*Jump2*	*Jump3*	*Jump4*	*Jump5*	*Jump6*
100	2	3	4	5	6	7
200	4	6	8	10	12	14
300	6	9	12	15	18	21
400	8	12	16	20	24	28
500	10	15	20	25	30	35
600	12	18	24	30	36	42
700	14	21	28	35	42	49
800	16	24	32	40	48	56
900	18	27	36	45	54	63
1000	20	30	40	50	60	70
2000	40	60	80	100	120	140
3000	60	90	120	150	180	210
4000	80	120	160	200	240	280
5000	100	150	200	250	300	350
6000	120	180	240	300	360	420
7000	140	210	280	350	420	490
8000	160	240	320	400	480	560
9000	180	270	360	450	540	630
10000	200	300	400	500	600	700
20000	400	600	800	1000	1200	1400
30000	600	900	1200	1500	1800	2100
40000	800	1200	1600	2000	2400	2800
50000	1000	1500	2000	2500	3000	3500
75000	1500	2250	3000	3750	4500	5250
100000	2000	3000	4000	5000	6000	7000
200000	4000	6000	8000	10000	12000	14000
300000	6000	9000	12000	15000	18000	21000
400000	8000	12000	16000	20000	24000	28000
500000	10000	15000	20000	25000	30000	35000
700000	14000	21000	28000	35000	42000	49000
900000	18000	27000	36000	45000	54000	63000
1000000	20000	30000	40000	50000	60000	70000

Each jump unit has a volume of 13 5 kiloliters, a weight of 27 0 tons, and a price of Cr3,000,000

4 Jump Fuel Volume

Allocate jump fuel volume in the hull The ship must have fuel tankage allocated for jump fuel to contain at least enough fuel for one jump of the highest capacity of the ship's jump drives Jump fuel is independent of power plant fuel

Fuel Volume at TL 9 to 16: ×5 (67 5 kiloliters per jump unit)
Fuel Volume at TL 17: ×4 (54 kiloliters per jump unit)
Fuel Volume at TL 18: ×3 (41 kiloliters per jump unit)
Fuel Volume at TL 19: ×2 (27 kiloliters per jump unit
Fuel Volume at TL 20: ×1 (14 kiloliters per jump unit)
Fuel Volume at TL 21: ×0 5 (7 kiloliters per jump unit)

Note the extreme fuel volume a jump drive requires a tech 9 to 16 jump drive requires **five times** that of the jump drive itself

5 Maneuver Drive

Determine the number of maneuver drive units for the ship's hull size and desired maneuver thrust in Gs

MANEUVER DRIVE UNITS REQUIRED

Hull	*Number of Maneuver Drive Units Required*					
Displ	*1G*	*2G*	*3G*	*4G*	*5G*	*6G*
20	0 4	1 0	1 6	2 2	2 8	3 4
25	0 5	1 3	2 0	2 8	3 5	4 3
30	0 6	1 5	2 4	3 3	4 2	5 1
35	0 7	1 8	2 8	3 9	4 9	6 0
40	0 8	2 0	3 2	4 4	5 6	6 8
45	0 9	2 3	3 6	5 0	6 3	7 7
50	1 0	2 5	4 0	5 5	7 0	8 5
55	1 1	2 8	4 4	6 1	7 7	9 4
60	1 2	3 0	4 8	6 6	8 4	10 2
65	1 3	3 3	5 2	7 2	9 1	11 1
70	1 4	3 5	5 6	7 7	9 8	11 9
75	1 5	3 8	6 0	8 3	10 5	12 8
80	1 6	4 0	6 4	8 8	11 2	13 6
85	1 7	4 3	6 8	9 4	11 9	14 5
90	1 8	4 5	7 2	9 9	12 6	15 3
100	2	5	8	11	14	17
200	4	10	16	22	28	34
300	6	15	24	33	42	51
400	8	20	32	44	56	68
500	10	25	40	55	70	85
600	12	30	48	66	84	102
700	14	35	56	77	98	119
800	16	40	64	88	112	136
900	18	45	72	99	126	153
1000	20	50	80	110	140	170
2000	40	100	160	220	280	340
3000	60	150	240	330	420	510
4000	80	200	320	440	560	680
5000	100	250	400	550	700	850
6000	120	300	480	660	840	1020
7000	140	350	560	770	980	1190
8000	160	400	640	880	1120	1360
9000	180	450	720	990	1260	1530
10000	200	500	800	1100	1400	1700
20000	400	1000	1600	2200	2800	3400
30000	600	1500	2400	3300	4200	5100
40000	800	2000	3200	4400	5600	6800
50000	1000	2500	4000	5500	7000	8500
75000	1500	3750	6000	8250	10500	12750
100000	2000	5000	8000	11000	14000	17000
200000	4000	10000	16000	22000	28000	34000
300000	6000	15000	24000	33000	42000	51000
400000	8000	20000	32000	44000	56000	68000
500000	10000	25000	40000	55000	70000	85000
700000	14000	35000	56000	77000	98000	119000
900000	18000	45000	72000	99000	126000	153000
1000000	20000	50000	80000	110000	140000	170000

TL	*Maneuver Drive Units*	*Power*	*Volume*	*Weight*	*Price*
9	One anti-grav unit	65 0	13 5	27 0	500000
11	One thruster unit	70 0	13 5	35 0	700000

Excess power from the power plant improves agility (computed in the design evaluation) Some starships have no maneuver drive

6 Thrust-Based Suspension

If the vehicle has a thrust-based locomotion system, it must have a thrust-based suspension system as well

THRUST-BASED SUSPENSIONS

TL	Type	Power	Per ton of thrust Volume	Weight	Price	Min Volume
7	Air Cushion	0 10	0 20	0 30	30000	0 010
9	Standard Grav	0 10	0 02	0 04	2000	0 020
10	Low Power H-Grav	0 02	0 05	0 03	25000	0 020
12	Low Power L-Grav	0 01	0 03	0 02	300000	0 003

Values shown are per ton of thrust Thrust must exceed the total weight of the vehicle

Minimum Value: Indicates the minimum volume for the suspensions Suspensions cannot be made any smaller than this figure

Thrust-based suspensions do not require a transmission

7 Contact-Based Suspension

If the vehicle has a contact-based locomotion system, it must have a contact-based suspension system as well

The suspension system may consist of wheels, tracks, or legs

CONTACT-BASED SUSPENSIONS

Type	Per kiloliter Power	Weight	Min Price
Wheels	0 02	0 5	250
Tracks	0 03	1 5	500
Each Leg	0 04	1 0	1500

Minimum Volume: The minimum percent of chassis volume required depends on the suspension system

For Wheels 1 5 percent

For Tracks 2 0 percent

For Legs: 5 percent per leg A minimum of two legs is required

Contact-based suspensions also require a transmission

Greater volume decreases ground pressure, which in turn increases off-road speed

8 Contact-Based Transmissions

Contact-based suspensions also require a transmission

CONTACT-BASED TRANSMISSIONS

TL	Type	Per Mw Power Plant Output Volume	Weight	Price
5	Tracks	5 0	5 0	5000
6	Tracks	2 0	2 0	2500
7+	Tracks	0 5	0 5	900
5	Wheels	3 0	3 0	3000
6	Wheels	1 0	1 0	1250
7+	Wheels	0.3	0 3	450
8	Leg	8 0	8 0	10000
9	Leg	2.0	2.0	2500
10+	Leg	0 4	0 4	675

Values shown are for all necessary tracks or wheels, and for each leg (minimum of two required)

Values shown are for one unit of transmission per megawatt of power plant output One unit is required for each megawatt of power plant output

9 Select Avionics

Avionics allows a thrust-powered vehicle to fly nap-of-the-earth (NOE) at fast speeds

AVIONICS

TL	Type	Volume	Weight	Power	Price	NOE
	No Avionics	—	—	—	—	40
8	TL 8 Avionics	0 4	0 2	0 05	10000	120
9	TL 9 Avionics	0 4	0 2	0 04	11000	130
10	TL 10 Avionics	0 3	0 15	0 04	12000	140
11	TL 11 Avionics	0 3	0 15	0 03	13000	150
12	TL 12 Avionics	0 2	0 1	0 03	14000	160
13	TL 13 Avionics	0 2	0 1	0 02	15000	170
14	TL 14 Avionics	0 1	0 05	0 02	16000	180
15	TL 15 Avionics	0 1	0 05	0 02	17000	190
16	TL 16 Avionics	0 05	0 03	0 03	18000	200
17	TL 17 Avionics	0 05	0 03	0 03	19000	250
18	TL 18 Avionics	0 02	0 02	0 04	20000	300
19	TL 19 Avionics	0 02	0 02	0 04	22000	350
20	TL 20 Avionics	0 01	0 01	0 05	24000	400
21	TL 21 Avionics	0 01	0 01	0 06	28000	450

10 Compute Locomotion Totals

Note totals for

Power Consumption

Volume

Weight

Price

4 - COMMUNICATORS

1 Select Communicators

Choose one or more communicators which suit the purpose
The following types of communicators are available
- Meson Communicators
- Radio Communicators
- Laser Communicators
- Maser (Microwave) Communicators

6 Compute Communicator Totals

Note totals for
- Power Consumption
- Volume
- Weight
- Price

2 Meson Communicators

Meson communicators can transmit through anything (planets, moons, or otherwise) They may not transmit through meson screens

MESON COMMUNICATORS

		Weight in tons by tech level												
Range	*Price*	*5*	*6*	*7*	*8*	*9*	*10*	*12*	*14*	*15*	*16*	*17*	*18*	*20*
Regional (500km)	250000	—	—	—	—	—	—	—		0 5	0.3	0 1	0.1	—
Continental (5000km)	1000000	—	—	—	—	—	—	—		2 0	1 5	1 0	0 5	0 1
Planetary (50000km)	2500000	—	—	—	—	—	—	—	—	30 0	16 0	9 0	5 0	2 0
Far Orbit (500000km)	5000000	—	—	—	—	—	—	—	—	150 0	80 0	45 0	25 0	15 0
System (1000 AU)	20000000	—	—	—	—	—	—	—	—	500 0	220 0	160 0	85 0	50 0

Power Requirement (Mw): Weight in tons/10 **Price:** If TL 15, ×4 If TL 16, ×2
Weight (tons): As shown above **Volume (kiloliters):** Same as weight in tons

3 Radio Communicators.

Radios are cheap, small and take little power They are very easy to locate and jam

RADIO COMMUNICATORS

		Weight in tons by tech level												
Range	*Price*	*5*	*6*	*7*	*8*	*9*	*10*	*12*	*14*	*15*	*16*	*17*	*18*	*20*
Distant (5km)	75	0 020	0 001	0 0001	0 0001	0 0001	0 0001	—	—	—	—	—	—	—
V Distant (50km)	250	0 070	0 007	0 0006	0 0005	0 0004	0 0002	0 0001	0 0001	—	—	—	—	—
Regional (500km)	500	0.150	0 015	0 0013	0 0012	0 0010	0 0007	0 0005	0 0003	0 0001	—	—	—	—
Continental (5000km)	5000	0 300	0 030	0 003	0 002	0 0015	0 0013	0 001	0 0007	0 0005	0 0003	0.0001	—	—
Planetary (50000km)	30000	0 700	0 070	0 007	0 006	0 004	0.002	0 0013	0 001	0 0007	0 0005	0 0001	—	—
Far Orbit (500,000km)	90000	—	0 150	0 015	0 013	0 012	0 010	0 007	0 005	0 002	0 0013	0 001	—	—
System (1000 AU)	150000	—	—	0 040	0 020	0 018	0.016	0 014	0 010	0 007	0 005	0 003	—	—

Power Requirement (Mw): Weight in tons **Price:** If TL 5, ×3 If TL 6, ×2
Weight (tons): As shown **Volume (kiloliters):** Weight in tons ×2

4 Laser Communicators.

Laser communicators require an unobstructed line of sight to the receiver, which makes them nearly impossible to detect While not subject to jamming, they are adversely affected by weather, smoke and anti-laser aerosols

LASER COMMUNICATORS

		Weight in tons by tech level												
Range	*Price*	*5*	*6*	*7*	*8*	*9*	*10*	*12*	*14*	*15*	*16*	*17*	*18*	*20*
Distant (5km)	1200	—	—	—	0 004	0 002	0 0015	0 001	0 001	—	—	—	—	—
V Distant (50km)	5000	—	—	—	0 016	0 008	0 006	0.004	0 002	0.001	—	—	—	—
Regional (500km)	11000	—	—	—	0.020	0 010	0 008	0.005	0 003	0 002	0 001	0 001	—	—
Continental (5000km)	21000	—	—	—	0 040	0 020	0 015	0.010	0 005	0 003	0 002	0 001	0 001	—
Planetary (50000km)	36000	—	—	—	0 070	0 035	0 025	0 018	0 009	0 005	0 004	0 003	0 002	0 001
Far Orbit (500,000km)	56000	—	—	—	0.110	0 055	0 040	0.028	0 014	0 007	0 006	0 005	0 003	0.002
System (1000 AU)	180000	—	—	—	—	0 120	0 070	0 050	0 030	0 015	0.010	0 010	0 007	0 005

Power Requirement (Mw): Weight in tons **Price:** If TL 8, ×2 **Weight (tons):** As shown **Volume (kiloliters):** Weight in tons ×2
Note: Operating on a world with a Thin or greater Atmosphere, the range of any laser communicator is limited to continental or less

5 Maser (Microwave) Communicators

Microwave communicators behave just like laser communicators except they are unaffected by atmospheric conditions

MASER COMMUNICATORS

		Weight in tons by tech level												
Range	*Price*	*5*	*6*	*7*	*8*	*9*	*10*	*12*	*14*	*15*	*16*	*17*	*18*	*20*
Distant (5km)	2400	—	—	—	0 008	0 004	0 003	0 002	0 001	0 001	—	—	—	—
V Distant (50km)	10000	—	—	—	0 032	0 016	0.010	0.008	0 004	0 002	0.002	0 001	——	—
Regional (500km)	22000	—	—	—	0 040	0 020	0 015	0 010	0.005	0 003	0 003	0.002	0 001	—
Continental (5000km)	42000	—	—	—	0 080	0 040	0 030	0 020	0.010	0 005	0 004	0 003	0 002	—
Planetary (50000km)	72000	—	—	—	0 140	0 070	0 060	0 035	0 018	0 009	0 007	0.005	0 003	0 002
Far Orbit (500,000km)	112000	—	—	—	0 220	0.110	0.075	0.055	0 028	0 014	0 010	0 007	0 005	0 003
System (1000 AU)	250000	—	—	—	—	0 250	0 200	0 130	0.060	0 045	0 040	0.025	0 013	0 007

Power Requirement (Mw): Weight in tons **Price:** If TL 8, ×2 **Weight (tons):** As shown **Volume (kiloliters):** Weight in tons ×2

5 - SENSORS AND ELECTRONICS 1

1 Select Sensors and Electronics

Choose one or more sensor installations or packages which suit the craft's purpose The following types are available

- Radio Jammers
- Radars
- Radar Jammers
- Electromagnetic Masking Packages
- Radar Direction Finders
- Ladars
- Laser Sensors
- Visible Light and IR Enhancements
- Densitometers
- Neutrino Sensors
- Neural Activity Sensors
- EMS Active Arrays
- EMS Passive Arrays
- EMS Jammers
- Miscellaneous Devices

5 Electromagnetic Masking

An Electromagnetic Masking Package (EMM) hides a craft's electromagnetic emissions in all bands (radio, IR, visible light, UV, Xray), thus rendering it invisible to passive EMS sensors

ELECTROMAGNETIC MASKING PKG

Per kiloliter of hull			
Power	*Volume*	*Weight*	*Price*
0 001	0 02	0 01	5000

An EMM package does not mask any active electromagnetic sensors or emissions An EMM package does not mask the craft's emissions when it uses active electromagnetic sensors It does not mask the craft from active sensor scans conducted by other craft

6 Radar Direction Finder

A radar direction finder enables the user to locate an enemy radar or radar jammer in operation

RADAR DIRECTION FINDERS

Weight in tons by tech level					
6	*7*	*8*	*9*	*10*	*12*
2 500	0 250	0 025	0 013	0 010	0 005

Power Requirement (Mw): Weight in tons **Price:** Weight ×Cr10,000,000. **Volume (kiloliters):** Weight in tons ×2.

2 Radio Jammers

A radio jammer renders an enemy's radio of equal or lesser ranges inoperative

RADIO JAMMERS

		Weight in tons by tech level												
Range	*Price*	*5*	*6*	*7*	*8*	*9*	*10*	*12*	*14*	*15*	*16*	*17*	*18*	*20*
Distant (5 km)	150	0 04	0 002	0 0002	0 0002	0 0002	0 0002	0 0001	—	—	—	—	—	—
V Distant (50 km)	500	0 14	0 014	0 0012	0 001	0 0008	0 0004	0 0002	0 0002	0 0001	—	—	—	—
Regional (500 km)	1000	0 3	0 03	0 0026	0 0024	0 002	0 0014	0 001	0 0006	0 0002	0 0001	—	—	—
Continental (5000 km)	10000	0 6	0 06	0 006	0 004	0 0026	0 002	0 002	0 0014	0 0014	0 0006	0 0002	0 0001	—
Planetary (50000 km)	60000	1 4	0 14	0 014	0 012	0 008	0 004	0 0026	0 002	0 0014	0 001	0 0002	0 0001	—
Far Orbit (500000 km)	180000	—	0 3	0 03	0 026	0 024	0 02	0 014	0 01	0 004	0 0026	0 002	—	—
System (1000 AU)	300000	—	—	0 08	0 04	0 036	0 032	0 028	0 02	0 014	0 01	0.006	—	—

Power Requirement (Mw): Weight in tons ×2 **Price:** If TL 5, ×3 If TL 6, ×2
Weight (tons): As shown **Volume (kiloliters):** Weight in tons ×4

3 Radars

If a radar is desired, select one from the table below

RADARS

	Weight in tons by TL			
Range	*6*	*7*	*8*	*9*
Distant (5 km)	0 25	0 025	0 003	0 001
V Distant (50 km)	1 50	0 150	0 015	0 008
Regional (500 km)	6 50	0 650	0 065	0 033
Continental (5000 km)	20 00	2 000	0 200	0 100
Planetary (50000 km)	—	5 000	0 500	0 250
Far Orbit (500000 km)	—	—	1 200	0 600

Power Requirement (Mw): Weight in tons **Weight:** As shown **Price:** Weight ×Cr1,000,000 All-weather Radar is weight ×Cr1,500,000 **Volume (kiloliters):** Weight in tons ×2

4 Radar Jammers

A radar jammer renders an enemy radar of equal or lesser range inoperative

RADAR JAMMERS

	Weight in tons by TL			
Range	*6*	*7*	*8*	*9*
Distant (5 km)	0 5	0.05	0 005	0 003
V. Distant (50 km)	3 0	0 30	0 030	0 015
Regional (500 km)	13 0	1 30	0.13	0 065
Continental (5000 km)	40 0	4 00	0 400	0 200
Planetary (50000 km)	—	10 00	1 000	0 500
Far Orbit (500000 km)	—	—	2 400	1 200

Power Requirement (Mw): Weight in tons **Weight:** As shown **Price:** Weight ×Cr15,000,000 **Volume (kiloliters):** Weight in tons ×2

7 Ladar

Ladar is a tight beam object tracing sensor It is very difficult for an enemy (other than the target) to pick up and virtually impossible to jam

LADARS

	Weight in tons by TL			
Range	*8*	*9*	*10*	*11*
Distant (5 km)	0.025	0.003	0 001	—
V Distant (50 km)	0 150	0 015	0 010	0 005
Regional (500 km)	0 650	0 065	0 016	0 008
Continental (5000 km)	2 000	0 200	0 020	0 010
Planetary (50000 km)	5 000	0.500	0 050	0 025
Far Orbit (500000 km)	—	1 200	0 120	0 050

Power Requirement (Mw): Weight in tons **Weight:** As shown **Price:** Weight ×Cr10,000,000 **Volume (kiloliters):** Wt in tons ×2

8 Laser Sensor

A laser sensor enables a craft to detect incoming laser or ladar beams

LASER SENSORS

TL	*Description*	*Power*	*Volume*	*Weight*	*Price*
8	1st Generation	0 002	0 30	0 30	25000
9	2nd Generation	0 001	0 25	0 25	30000
11	3rd Generation	0 001	0 15	0 20	35000

9 Visible Light and IR Enhancement Sensors

Visible light and IR enhancement sensors improve the ability to detect objects

SENSOR ENHANCEMENTS

TL	Description	Power	Volume	Weight	Price
5	Headlight	0 001	0.002	0 001	50
6	Active IR Sensor	0 003	0 010	0 005	1500
6	Passive IR Sensor	0.001	0 002	0 001	500
7	Light Amplification	0 001	0 002	0 001	500
8	Adv Active IR Sensor	0.001	0 002	0 001	20000
8	Image Enhancement	0.002	0.010	0 005	30000
9	Adv Image Enhance	0.001	0 002	0 001	30000
10	Synthetic Vision	0 001	0.002	0 001	30000

10 Densitometers (Grav Shielded)

Densitometers are classified as low penetration and high penetration. A densitometer with any penetration beyond surface can give a density map of an object's interior to the penetration depth shown.

LOW PENETRATION DENSITOMETERS

TL	Penetration	Power	Volume	Weight	Price
10*	Surface	0.002	0 02	0.001	10000
11*	Surface	0.001	0 01	0.001	10000
12	1 m	0 200	2 0	0 8	116000
13	50 m	0.100	1 0	0 4	145000
14	100 m	0 090	0 9	0 3	175000
15	250 m	0.080	0 3	0.1	205000
16	1 km	0.070	0.2	0.1	205000
18	25 km	0 060	0 1	0.1	205000
20	2500 km	0.050	0 1	0 1	205000

HIGH PENETRATION DENSITOMETERS

TL	Penetration	Power	Volume	Weight	Price
11	1 m	2 5	30 0	10	750000
12	50 m	1.0	15 0	5 0	900000
13	100 m	0.9	12 0	3 0	950000
14	250 m	0 5	9 0	2 0	1000000
15	1 km	0.4	7 0	1.5	1500000
16	25 km	0.3	4 0	1.0	1500000
18	2500 km	0 2	2 0	0.8	1500000
20	2500000 km	0 1	1 0	0 7	1500000

*Nondiscriminant direction sensor only Simply indicates the direction to the greatest mass, depending on the range setting

11 Neutrino Sensors

Neutrino sensors point to the direction of fission or fusion reactions.

NEUTRINO SENSORS

TL	Minimum Magnitude	Power	Volume	Weight	Price
10*	—	0 005	0 008	0 004	1000
11	1 Gw	0 500	1.0	0.450	60000
12	1 Mw	0.400	0 8	0 300	75000
13	100 kw	0 300	0 4	0 170	90000
14	10 kw	0 200	0 2	0 095	110000
16	1 kw	0 100	0 1	0 070	120000
18	1 kw	0.050	0.1	0 070	120000
20	1 kw	0.025	0 1	0.070	120000

*Nondiscriminant direction sensor only. Simply indicates the direction to the highest neutrino source, depending on the range setting

12 Neural Activity Sensors

Neural activity sensors detect and classify lifeforms according to their level of brain activity

NEURAL ACTIVITY SENSORS

TL	Maximum Range	Power	Volume	Weight	Price
13	Medium	0 004	0 002	0 005	20000
14	Long	0 005	0 002	0 005	20000
15	Very Long	0 006	0 002	0 005	20000
16	Distant	0 007	0 002	0 005	20000
18	Very Distant	0 009	0 002	0 004	25000
20	Regional	0 010	0 002	0 003	30000

13 Miscellaneous Sensors

Miscellaneous sensors assist in a variety of functions

MISCELLANEOUS SENSORS

TL	Description	Power	Volume	Weight	Price	Range
5	Pass Audio Sensor	0 001	0 002	0.001	200	Distant
5	Act Audio (Pinger)	0 005	0 040	0 020	5000	Distant
5	Environ Sensor	0 004	0 008	0 004	1500	—
6	Magnetic Sensor	0 001	0 002	0 001	1000	V Dist
6	Radiation	0 001	0 002	0.001	1200	V Dist

14 Miscellaneous Devices

If any of the following miscellaneous devices are desired, they may be installed in a craft

MISCELLANEOUS DEVICES

TL	Description	Power	Volume	Weight	Price
8	Robot Arm, V Lt	0 001	0 001	0 001	750
7	Robot Arm, Lt	0 002	0 005	0 005	500
6	Robotic Arm, Med	0 005	0 020	0 020	700
5	Robotic Arm, Hvy	0 010	0 050	0.050	1000
11	Robotic Tentacle	0 010	0 020	0 020	1200
7	Video Recorder	0 003	0.004	0 004	600
13	Holorecorder	0 010	0.015	0 015	2000
14	Holorecorder	0 008	0 006	0 006	4000
15	Holorecorder	0 005	0 003	0.003	5000

15 EMS Active Array

An EMS Active Sensor Array combines radar, all-weather radar, ladar, radar jammer, radio jammer, active IR, and image enhancement into one integrated and optimized sensor array.

EMS ACTIVE ARRAY

	Weight in Tons by Tech Level						
Range	*10*	*11*	*12*	*14*	*16*	*18*	*20*
Distant (5 km)	0 002	0 001	0 001	0.001	0 001	0.001	0 001
V. Distant (50 km)	0 010	0 008	0.006	0 005	0 004	0 003	0 002
Regional (500 km)	0 030	0 016	0.010	0.008	0 006	0 005	0 004
Continental (5000 km)	0.070	0.030	0 016	0 010	0 008	0 006	0 005
Planetary (50000 km)	0 130	0.060	0.025	0 014	0 012	0 008	0 006
Far Orbit (500000 km)	0 260	0 120	0 055	0 030	0 020	0 015	0 010

Power Requirement (Mw): Weight in tons ×10 **Price:** Weight ×Cr20,000,000 **Weight:** As shown **Volume (kiloliters):** Weight in tons ×2

16 EMS Passive Array

An EMS Passive Sensor Array combines laser sensor, radar direction finder, radio direction finder, radiation sensor, passive IR, light amplification, and image enhancement into one integrated and optimized sensor array

EMS PASSIVE ARRAY

	Weight in Tons by Tech Level							
Range	*10*	*11*	*12*	*13*	*14*	*16*	*18*	*20*
V Distant (50 km)	0 002	0 001	0.001	0.001	0 001	0 001	0 001	
Continental (5000 km)	0.014	0 009	0.007	0 005	0 004	0 003	0 002	
Interplanetary (1 AU)	0.070	0.025	0.015	0 009	0 007	0 005	0 004	
Substellar (100,000 AU)	0 130	0 060	0.025	0.015	0 012	0.009	0 006	
Interstellar (2 parsecs)	0 250	0 110	0.050	0 020	0 016	0 012	0 008	

Power Requirement (Mw): Weight in tons ×10 **Price:** Weight ×Cr20,000,000 **Weight:** As shown **Volume (kiloliters):** Weight in tons ×2

17 EMS Jammer

An EMS jammer renders an enemy's active EMS of equal or lesser range inoperative

An EMS jammer is available at the same ranges as Active EMS Arrays, but all values (power, volume, weight, and price) are doubled

18 Compute Sensor and Electronics Totals

Note totals for:

- Power Consumption
- Volume
- Weight
- Price

1 Compute Available Hardpoints

A hardpoint is an installation point for a weapon Large weapons may require more than one, hardpoints may have either fixed mounts or movable mounts installed Divide kiloliter volume of the craft by 1350 for the number of hardpoints it can have A craft always has a minimum of one hardpoint

Fixed Mounts: A fixed mount weapon cannot move to point at its target, the entire craft must change its orientation to point in the required direction Large fixed weapons are spinal mounts, their structure usually forms an integral part of the craft

Movable Mounts: A movable mount can be trained to point at its target Because of this attribute, a large craft will often mount many such movable mounts If the weapon is enclosed, the mount is called a turret A large turret (over 600 kiloliters) is called a bay An unenclosed (open) mount is called a pintle

2 Particle Accelerators (Spinal Mount)

If a particle accelerator spinal mount is desired, select it from this list

PARTICLE ACCELERATORS (SPINAL MOUNT)

UCP	TL	Power	Volume	Weight	MCr	Hard-points
A	8	125000	75000	18000	3500	55
B	9	125000	65000	16000	3000	50
C	10	125000	60000	15000	2400	45
D	11	150000	55000	14000	1500	40
E	12	150000	45000	11000	1200	35
F	13	150000	40000	10000	1200	30
G	14	175000	35000	9000	800	25
H	15	175000	35000	8500	500	25
J	10	200000	60000	15500	3000	50
K	11	200000	60000	14500	2000	45
L	12	200000	55000	13500	1600	40
M	13	225000	45000	10500	1200	35
N	14	225000	40000	9500	1000	30
P	15	225000	35000	8000	800	25
Q	12	250000	60000	14000	2000	45
R	13	250000	55000	13000	1500	40
S	14	250000	45000	10000	1200	35
T	15	250000	40000	9000	1000	30
U	16	275000	35000	8000	1000	25
V	17	275000	25000	6000	800	20
W	18	275000	20000	5000	600	15
Y	18	300000	15000	3500	800	10
Z	19	325000	15000	3000	600	10

3 Meson Gun Spinal Mount

If a meson gun spinal mount is desired, select it from this list

MESON GUNS (SPINAL MOUNT)

UCP	TL	Power	Volume	Weight	MCr	Hard-points
A	11	125000	65000	13000	10000	50
B	11	150000	110000	22000	12000	80
C	12	150000	25000	5000	3000	20
D	12	175000	65000	12500	5000	50
E	13	175000	15000	3000	800	10
F	13	200000	25000	45000	1000	20
G	14	200000	15000	3000	400	10
H	14	225000	25000	4500	600	20
J	15	225000	15000	3000	400	10
K	12	250000	110000	20000	10000	80
L	13	250000	65000	12500	3000	50
M	14	250000	55000	11000	800	40
N	15	250000	25000	4000	600	20
P	13	275000	110000	19000	5000	80
Q	14	275000	95000	19000	1000	70
R	15	275000	65000	12000	800	50
S	14	300000	110000	19000	2000	80
T	15	300000	95000	18000	1000	70
U	16	325000	110000	18500	2000	80
V	17	325000	95000	17500	1200	70
W	18	325000	65000	11500	1000	50
X	17	350000	110000	18000	2000	80
Y	18	350000	95000	17000	1200	70
Z	19	375000	65000	11000	800	50

4 Disintegrators (Spinal Mount)

If a disintegrator spinal mount is desired, select it from this list

DISINTEGRATOR SPINAL MOUNTS

UCP	TL	Power	Volume	Weight	MCr	Hard-points
A	17	500000	60000	13000	5000	45
B	18	550000	55000	12000	3500	40
C	19	550000	45000	10000	2400	35
D	20	575000	40000	8500	1500	30
E	21	575000	35000	7500	1200	25

5 Jump Projector (Spinal Mount)

If a jump projector spinal mount is desired, select it from this list

JUMP PROJECTOR (SPINAL MOUNT)

UCP	TL	Power	Volume	Wt	MCr	Hard-points
A	21	8000000	55000	15000	1000	40
B	21	9500000	95000	25000	1200	70

6 Bays

Parts of a craft may be designated as 100-ton or 50-ton bays

BAYS

Type	*Volume*	*Price*	*Hardpoints*
100 ton	1350	1000000	10
50 ton	675	500000	10

Bays may be used to hold weaponry, or they may be left empty and put to a variety of uses Cargo or freight can be carried in an empty bay up to the tonnage of the bay Craft can be carried in a bay at 50 percent wastage a 100-ton (1350 kiloliter) bay can hold a craft up to 675 kiloliters

7 100-Ton Bay Weaponry

One hundred-ton bays carry a variety of armaments Select the desired allocations

100-TON BAYS

					TL of the weapon													
TL	*Type*	*Power*	*Weight*	*MCr*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
7	Missile	5	50	20	7	7	8	8	9	9	A	A	B	B	C	C	D	D
8	Particle Accelerator	15000	75	35	6	6	7	7	8	8	9	9	A	A	B	B	C	C
10	Repulsor	2500	60	10	—	—	2	4	6	7	8	9	A	B	C	D	E	F
13	Meson Gun	50000	80	70	—	—	—	—	—	3	5	9	B	D	F	H	—	—
16	Tractors	50000	70	40	—	—	—	—	—	—	—	—	2	4	6	7	8	—
17	Disintegrator	65000	75	150	—	—	—	—	—	—	—	—	—	7	7	8	8	9
21	Jump Damper	200000	80	200	—	—	—	—	—	—	—	—	—	—	—	—	—	2

8 50-Ton Bay Weaponry

Fifty-ton bays carry smaller armaments than do 100-ton bays

50-TON BAYS

					TL of the weapon													
TL	*Type*	*Power*	*Weight*	*MCr*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*10*	*20*	*21*
10	Missile	5	25	12	—	—	7	7	8	8	9	9	A	A	B	B	C	C
10	Particle Accelerator	7500	40	20	—	—	3	3	4	4	5	5	6	6	7	7	8	8
10	Plasma Gun	2500	35	5	—	—	4	5	6	—	—	—	—	—	—	—	—	—
12	Fusion Gun	5000	35	8	—	—	—	—	—	7	8	9	A	B	C	D	E	F
14	Repulsor	1250	30	6	—	—	—	—	—	—	3	5	7	9	A	B	C	D
15	Meson Gun	25000	40	50	—	—	—	—	—	—	—	4	6	9	B	D	F	H
18	Disintegrator	32500	40	90	—	—	—	—	—	—	—	—	—	—	6	6	7	7
20	Tractors	25000	35	24	—	—	—	—	—	—	—	—	—	—	—	—	3	5
21	Jump Damper	100000	40	120	—	—	—	—	—	—	—	—	—	—	—	—	—	1

9 Turrets

Weaponry can be allocated to turrets. Each turret uses one hardpoint

When equipping turrets, the price is paid for the weapon (and sometimes more than one weapon can be placed in one turret) Turrets come with the weapons and are not purchased separately

The tables show the number of turret weapons required to achieve a specific UCP factor If more weapons than the maximum number shown in the tables (usually 30) are installed, organize them into several evenly divided batteries.

10 Missile Turrets

A missile turret has a volume of 13 5 kiloliters Each turret can have 1, 2, or 3 weapons (missile launchers) The price shown is for one weapon Total the weapons purchased and determine the UCP factor for the turret(s) For example, 10 turrets with 30 missile launchers (Tech Level 7) produces a UCP missile factor of 6.

MISSILE TURRETS

					UCP Factor									
TL	*Type*	*Power*	*Weight*	*Price*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*A*
7	Missile Turret- 7	1	3	750000	1	3	6	12	18	30	—	—	—	—
13	Missile Turret-13	1	2	750000	—	1	3	6	12	18	30	—	—	—
21	Missile Turret-21	1	1	750000	—	—	1	3	6	12	18	30	—	—

11 Laser Turrets

A laser turret has a volume of 13.5 kiloliters. Each turret can have 1, 2, or 3 weapons (beam laser or pulse laser, but not both) The price shown is for one weapon Total the weapons purchased and determine the UCP factor for the turret(s). For example, 1 turret with 3 beam lasers (Tech Level 16) produces a UCP laser factor of 5

BEAM LASER TURRETS

					UCP Factor									
TL	*Type*	*Power*	*Weight*	*Price*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*A*
7	BLaser Turret- 7	250	5	1000000	1	2	3	6	10	15	21	30	—	—
13	BLaser Turret-13	250	4	1000000	—	1	2	3	6	10	15	21	30	—
16	BLaser Turret-16	250	3	1000000	—	—	1	2	3	6	10	15	21	30

PULSE LASER TURRET

					UCP Factor									
TL	*Type*	*Power*	*Weight*	*Price*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*A*
7	PLaser Turret- 7	250	5	500000	1	3	6	10	21	30	—	—	—	—
13	PLaser Turret-13	250	4	500000	—	1	3	6	10	21	30	—	—	—
16	PLaser Turret-16	250	3	500000	—	—	1	3	6	10	21	30	—	—

12 Particle Accelerator Turrets

Each turret can have only 1 weapon (particle accelerator) The price shown is for one weapon Total the weapons purchased and determine the UCP factor for the turret(s) For example, 8 turrets with 8 particle accelerators (Tech Level 14) produce a UCP particle accelerator factor of 5 Particle accelerator volume depends on Tech Level· at TL 14, volume is 67 5, at TL 15, volume is 40.5; at TL 16, volume is 27 0; at TL 18, volume is 13.5

PARTICLE ACCELERATOR TURRETS

					UCP Factor									
TL	*Type*	*Power*	*Weight*	*Price*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*A*
14	PA Turret-14	1250	25	4000000	1	2	4	6	8	10	—	—	—	—
15	PA Turret-15	1250	12	3000000	—	1	2	4	6	8	10	—	—	
16	PA Turret-16	1250	9	3000000	—	—	1	2	4	6	8	10	—	—
18	PA Turret-18	1250	6	3000000	—	—	—	1	2	4	6	8	10	—

13 Plasma Gun Turrets

Each turret has a volume of 27 kiloliters Each turret can have one or two weapons (plasma guns) The price shown is for one weapon Total the weapons purchased and determine the UCP factor for the turret(s) For example, 4 turrets with 4 plasma guns (Tech Level 11) produce a UCP plasma gun factor of 3

PLASMA GUN TURRETS

					UCP Factor									
TL	*Type*	*Power*	*Weight*	*Price*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*A*
10	PG Turret-10	250	5	1500000	1	4	10	16	20	—	—	—	—	—
11	PG Turret-11	250	4	1500000	—	1	4	10	16	20	—	—	—	—
12	PG Turret-12	250	3	1500000	—	—	1	4	10	16	20	—	—	—
16	PG Turret-16	250	2	1500000	—	—	—	1	4	10	16	20	—	—

14 Fusion Gun Turrets

Each turret has a volume of 27 kiloliters Each turret can have one or two weapons (fusion guns) The price shown is for one weapon Total the weapons purchased and determine the UCP factor for the turret(s) For example, 1 turret with 1 fusion gun (Tech Level 17) produces a UCP fusion gun factor of 3

FUSION GUN TURRETS

					UCP Factor									
TL	*Type*	*Power*	*Weight*	*Price*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*A*
12	Fusion Turret-12	500	5	2000000	—	—	—	1	4	10	16	20	—	—
14	Fusion Turret-14	500	4	2000000	—	—	—	—	1	4	10	16	20	—
17	Fusion Turret-17	500	3	2000000	—	—	—	—	—	1	4	10	16	20

15 Sandcaster Turrets

Each turret has a volume of 13 5 kiloliters Each turret can have 1, 2, or 3 weapons (sandcasters) The price shown is for one weapon. Total the weapons purchased and determine the UCP factor for the turret(s) For example, 4 turrets with 8 sandcasters (Tech Level 10) produce a UCP sandcaster factor of 6.

SANDCASTER TURRETS

					UCP Factor									
TL	*Type*	*Power*	*Weight*	*Price*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*A*
7	Sand Turret- 7	1	4	250000	1	3	6	8	10	20	30	—	—	—
8	Sand Turret- 8	1	3	250000	—	1	3	6	8	10	20	30	—	—
10	Sand Turret-10	1	2	250000	—	—	1	3	6	8	10	20	30	—
16	Sand Turret-16	1	1	250000	—	—	—	1	3	6	8	10	20	30

16 Disintegrator Turrets

Each turret has a volume of 27 kiloliters Each turret can have 1 or 2 weapons (disintegrators) The price shown is for one weapon Total the weapons purchased and determine the UCP factor for the turret(s) For example, 5 turrets with 10 disintegrators (Tech Level 18) produces a UCP disintegrator factor of 3

DISINTEGRATOR TURRETS

					UCP Factor									
TL	*Type*	*Power*	*Weight*	*Price*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*A*
18	Disint Turret-18	4000	6	5000000	1	4	10	16	20	—	—	—	—	—

17 Rate of Fire

Determine rate of fire for hardpoint based weapons from the table below Rate of fire applies in personal combat, not in space combat Each space combat round is 20 minutes of elapsed time, rate of fire is inconsequential in this case

RATE OF FIRE

Weapon Type	*ROF*
Spinal Mounts	1
Missile Bays	2
All Other Bays	20
Missile Turrets	1
Sandcaster Turrets	6
All Other Turrets	30

ROF is expressed in shots per minute

18 Magazine Requirements

Missiles have ammunition storage requirements Volume required is indicated in the table below

MISSILE STORAGE

Type	*Volume*	*Weight*	*Price*
Standard HE	0.1	0 05	20000
Nuclear	0 1	0 07	150000
Antimatter	0 1	0 09	200000

Each weapon in a turret holds one missile 100-ton bays can hold 100 missiles, 50-ton bays can hold 50 missiles

The craft should have enough missiles for at least one round of fire from all missile batteries One round of fire from a missile battery is called a battery-round

Magazines: Additional missile storage can be allocated by designating otherwise empty bays Missile storage should be allocated in battery-rounds For example, the battery-round for one 3-launcher turret is 3 missiles, the battery-round for one 100-ton missile bay is 50 (100 missiles divided by ROF of 2) missiles A 100-ton bay used as an ammunition magazine can hold up to 13500 missiles

19 Guns

Weapons which do not depend on hardpoints for mounting are called guns.

The weapons in the tables which follow are guns Any number may be installed (subject only to normal power, volume, weight, and price limitations)

Because of their limited range, guns are best suited to vehicles or for use as ground defense weapons on larger craft.

With the limited power output of most vehicles, many of the remaining weapons are best-suited for use as turret-mounted vehicle weapons

20 Mortars

A mortar is an indirect fire explosive thrower. Mortars must be fired on a world surface The weapon may be vehicle mounted or towed (if towed, it needs a carriage) Set-up time increment shown is in seconds; double the time to set up a towed weapon.

MORTARS

Bore (cm)	Volume	Weight	Price	Set-up	Ind Fire Range	Sig	ROF by Tech Level 5	6	7	8	10	12	14	16	18	20
6	0.11	0 11	1400	5	V Long (4)	M	39	42	45	45	45	45	45	45	45	45
8	0.17	0 17	2600	10	V. Long (5)	M	27	30	33	36	42	45	45	45	45	45
10	0.30	0 30	4200	15	Distant (6)	M	18	21	24	27	33	39	45	45	45	45
12	0.53	0 53	6000	20	Distant (7)	M	12	15	18	21	27	33	39	45	45	45
14	0.83	0 83	8000	30	Distant (8)	M	6	6	6	10	14	18	22	26	30	30
16	1 13	1 13	12000	30	Distant (9)	H	4	6	6	6	10	14	18	22	26	30
18	1 88	1 88	16000	40	Distant (9)	H	2	4	4	6	6	10	14	18	22	26
20	2 75	2 75	20000	40	Distant (10)	H	2	2	2	4	6	6	10	14	18	22
22	3 75	3 75	24000	50	Distant (10)	H	1	2	2	2	4	4	6	10	14	18
24	4 75	4 75	28000	50	Distant (11)	H	1	1	1	2	2	4	4	6	10	14
30	7 50	7 50	40000	60	Distant (11)	H	½	½	1	1	2	2	4	4	6	10

Mortar Carriage: *Weight* Weapon Weight times 0 25. *Price:* Weapon Price times 0.10

MORTAR AMMUNITION

Bore (cm)	Vol	Wt	HE Pen	HE Dgr	HE Cr	HE Dmg	KEAP Pen	KEAP Cr	KEAP Dmg	HEAP Pen	HEAP Cr	HEAP Dmg	Illum Rad	Illum Cr	Incend Cr	Chem Cr	Chaff Cr	CBM Cr
6	0 006	0 003	9	10	9	10	16	9/10	8/9	18	15	8	30	20	9	20	20	30
8	0 014	0 007	14	20	21	12	22	20./25	9/10	28	30	9	50	40	21	40	40	60
10	0 030	0 015	16	20	45	14	25	45/50	10/12	34	65	10	65	90	45	90	90	135
12	0 040	0 020	18	25	60	16	27	60/65	12/14	38	90	12	75	120	60	120	120	180
14	0 052	0 026	20	30	78	18	29	75/85	14/16	41	110	14	80	160	78	160	160	230
16	0.070	0 035	22	30	105	20	31	105/115	16/18	43	160	16	90	210	105	210	210	315
18	0 090	0 045	24	35	135	24	33	135/150	18/22	45	200	18	95	270	135	270	270	405
20	0.120	0 060	26	40	180	28	34	180/200	20/25	47	270	20	100	360	180	360	360	540
22	0.156	0.078	28	40	234	30	37	235/200	22/27	49	350	22	105	470	234	470	470	700
24	0 190	0 095	30	45	285	34	39	285/315	24/29	51	430	24	110	570	285	570	570	855
30	0 420	0.240	32	50	720	38	41	720/790	28/33	53	1080	28	115	1440	720	1440	1440	2160

Modifications:

HE Pen TL Mod: +1 for every two Tech Levels over 5 (penetrations shown assume Tech Level 5)

HE Danger Space Mod: +10 meters for every 3 Tech Levels over 5

KEAP Pen TL Mod: +1 for every 3 Tech Levels over 5, the second price and damage on KEAP is for KEAPER

HEAP Pen TL Mod: TL 7-8, Pen +5 TL 9-10, Pen+10 TL 11-12, Pen +12 TL 13+, Pen +14.

Illum Radius: +5 meters for each Tech Level over 5 (radii shown assume Tech Level 5).

21 Low Velocity (Howitzer) CPR Rounds

A howitzer is a low velocity explosive thrower It may be either indirect fire or direct fire, but not both, designate the weapon as direct or indirect when designing it The weapon may be vehicle mounted or towed (if towed, it needs a carriage) Set-up time increment shown is in seconds, double the time to set up a towed weapon

HOWITZERS

Bore (cm)	Volume	Weight	Price	Set-up	Ind Fire Range		Sig	ROF by Tech Level 5	6	7	8	10	12	14	16	18	20
2	0 05	0 05	2000	10	—		M	30	30	30	30	30	30	30	30	30	30
4	0 08	0 08	6000	20	V Long	(2)	M	30	30	30	30	30	30	30	30	30	30
6	0 24	0 24	14000	30	Distant	(6)	M	26	28	30	30	30	30	30	30	30	30
8	0 33	0 33	26000	40	Distant	(10)	M	18	20	22	24	28	30	30	30	30	30
10	0 60	0 60	42000	60	Distant	(13)	M	12	14	16	18	22	26	30	30	30	30
12	1 05	1 05	60000	70	Distant	(13)	M	8	10	12	16	18	22	26	30	30	30
14	1 65	1 65	80000	80	Distant	(15)	M	6	6	6	10	14	18	22	26	30	30
16	2 25	2 25	120000	90	Distant	(17)	H	4	6	6	6	10	14	18	22	26	30
18	3 75	3 75	160000	100	Distant	(18)	H	4	6	6	6	10	14	18	22	26	26
20	5 50	5 50	200000	110	Distant	(19)	H	2	2	2	4	6	6	10	14	18	22
22	7 50	7 50	240000	120	Distant	(20)	H	1	2	2	2	4	4	6	10	14	18
24	9 50	9 50	280000	130	Distant	(21)	H	1	1	1	2	2	4	4	6	10	14
30	15 00	15 00	400000	140	Distant	(22)	H	½	½	1	1	2	2	4	4	6	10

Howitzer Carriage: *Weight* Weapon weight times 2 5 *Price* Weapon price times 0 25

HOWITZER AMMUNITION

Bore (cm)	Vol	Wt	HE Pen	HE Dgr	HE Cr	HE Dmg	KEAP Pen	KEAP Cr	KEAP Dmg	HEAP Pen	HEAP Cr	HEAP Dmg	Flechette Dgr	Flechette Cr	Flechette Dmg	Illum Illum	Illum Cr	Incend Cr
2	0 001	0 001	1	—	—	6	3/4	1/1	4/5	—	—	4	50	5	2	—	—	1
4	0 002	0 002	5	—	—	8	8/4	4/5	6/7	6	6	6	50	20	2	10	10	4
6	0 006	0 006	9	10	12	10	16/4	12/13	8/9	18	18	8	50	60	2	30	25	12
8	0 014	0 014	14	20	28	12	22/4	28/30	9/10	28	42	9	50	140	2	50	60	28
10	0 030	0 030	16	20	60	14	25/4	60/65	10/12	34	90	10	50	300	3	65	120	60
12	0 040	0 040	18	25	80	16	27/4	80/90	12/14	38	120	12	50	400	3	75	160	80
14	0 052	0 052	20	30	100	18	29/4	100/115	14/16	41	150	14	50	500	3	80	200	100
16	0 070	0 070	22	30	140	20	31/3	140/155	16/18	43	210	16	50	700	4	90	280	140
18	0 090	0 090	24	35	180	24	33/3	180/200	18/22	45	270	18	50	900	4	95	360	180
20	0 120	0 120	26	40	240	28	35/3	240/265	20/25	47	360	20	50	1200	4	100	480	240
22	0 156	0 156	28	40	310	30	37/3	310/345	22/27	49	465	22	50	1550	5	105	620	310
24	0 190	0 190	30	45	380	34	39/3	380/420	24/29	51	570	24	50	1900	5	110	760	380
30	0.420	0 420	32	50	840	38	41/3	840/925	28/33	53	1260	28	50	4200	6	115	1680	840

Modifications:

HE Pen TL Mod: +1 for every two Tech Levels over 5
HE Danger Space Mod: +10 meters for every 3 Tech Levels over 5
KEAP Pen TL Mod: +1 for every 3 Tech Levels over 5, the second price and damage on KEAP is for KEAPER
HEAP Pen TL Mod: TL 7-8, Pen +5 TL 9-10, Pen+10 TL 11-12, Pen +12 TL 13+, Pen +14
Illum Radius: +5 meters for each Tech Level over 5
Flechette: Penetration is equal to HE penetration for the same size round

Specialized Rounds: The cost of an illumination round is used as the basis for the cost of other specialized rounds Chemical rounds cost double, chaff rounds cost double, CBM rounds cost triple

22 High Velocity Gun CPR Rounds

A high velocity CPR gun is a high velocity explosive thrower It may be either indirect fire or direct fire, but not both, designate the weapon as direct or indirect when designing it The weapon may be vehicle-mounted or towed (if towed, it needs a carriage) Set-up time increment shown is in seconds, double the time to set up a towed weapon

HIGH VELOCITY GUNS

Bore (cm)	Volume	Weight	Price	Set-up	Ind Fire Range	Sig	ROF by Tech Level 5	6	7	8	10	12	14	16	18	20
2	0 10	0 10	4000	10	V Long (2)	M	15	15	15	15	15	15	15	15	15	15
4	0 16	0 16	12000	20	Distant (5)	M	15	15	15	15	15	15	15	15	15	15
6	0 42	0 42	28000	30	Distant (10)	M	13	14	15	15	15	15	15	15	15	15
8	0 66	0 66	52000	60	Distant (16)	M	9	10	11	12	14	15	15	15	15	15
10	1 2	1 2	84000	70	Distant (22)	M	4	5	6	7	9	11	13	15	15	15
12	2 1	2 1	120000	70	Distant (22)	M	4	5	6	7	9	11	13	15	15	15
14	3 3	3 3	160000	80	Distant (24)	M	3	3	3	5	7	9	11	13	15	15
16	4 5	4 5	240000	90	Distant (28)	H	2	3	3	3	5	7	9	11	13	15
18	7 5	7 5	320000	100	Distant (32)	H	1	2	2	3	3	5	7	9	11	13
20	11 0	11 0	400000	110	Distant (36)	H	1	1	1	3	3	3	5	7	9	11
22	15.0	15 0	480000	120	Distant (45)	H	½	1	1	1	2	2	3	5	7	9
24	19.0	19 0	560000	130	Distant (90)	H	½	½	½	1	1	2	2	3	5	7
30	30.0	30 0	800000	140	V Distant (70)	H	¼	¼	½	½	1	1	2	2	3	5

Hi Vel Gun Carriage: *Weight* Weapon weight times 2 5 *Price:* Weapon price times 0 25

HIGH VELOCITY GUN AMMUNITION

Bore (cm)	Vol	Wt	HE Pen	HE Dgr	HE Cr	HE Dmg	KEAP Pen	KEAP Cr	KEAP Dmg	HEAP Pen	HEAP Cr	HEAP Dmg	Flechette Dgr	Flechette Cr	Flechette Dmg	Illum Illum	Illum Cr	Incend Cr
2	0 001	0 001	1	—	2	6	8	2/2	4/5	—	—	4	150	8	2	—	3	2
4	0 002	0 002	5	—	8	8	14	8/9	6/7	—	—	6	150	40	2	10	15	8
6	0.006	0 006	9	10	25	10	22	25/26	8/9	10	35	8	150	120	2	30	50	25
8	0.014	0 014	14	20	55	12	28	55/60	9/10	21	85	9	150	280	2	50	110	55
10	0.030	0 030	16	20	120	14	31	120/130	10/12	28	180	10	150	600	3	65	240	120
12	0.040	0 040	18	25	160	16	33	160/175	12/14	32	240	12	150	800	3	75	320	160
14	0.052	0 052	20	30	210	18	35	210/230	14/16	36	310	14	150	1040	3	80	415	210
16	0 070	0 070	22	30	280	20	37	280/310	16/18	40	420	16	150	1400	4	90	560	280
18	0 090	0 090	24	35	360	24	39	360/395	18/22	42	540	18	150	1800	4	95	720	360
20	0 120	0 120	26	40	480	28	41	480/530	20/25	44	720	20	150	2400	4	100	960	480
22	0 156	0 156	28	40	625	30	43	625/685	22/27	46	935	22	150	3120	5	105	1250	625
24	0 190	0 190	30	45	760	34	45	760/835	24/29	48	1140	24	150	3800	5	110	1520	760
30	0 420	0 420	32	50	1680	38	47	1680/1850	28/33	50	2520	28	150	8400	6	115	3360	1680

Modifications:

HE Pen TL Mod: +1 for every two Tech Levels over 5
HE Danger Space Mod: +10 meters for every 3 Tech Levels over 5
KEAP Pen TL Mod: +1 for every 3 Tech Levels over 5, the second price and damage on KEAP is for KEAPER
HEAP Pen TL Mod: TL 7-8, Pen +5 TL 9-10, Pen+10 TL 11-12, Pen +12 TL 13+, Pen +14
Illum Radius: +5 meters for each Tech Level over 5
Flechette: Penetration is equal to HE penetration for the same size round

Specialized Rounds: The cost of an illumination round is used as the basis for the cost of other specialized rounds Chemical rounds cost double; chaff rounds cost double, CBM rounds cost triple

23 High Velocity Autocannon

An AutoCannon is a high velocity, high rate of fire slug thrower It fires direct fire only The weapon may be vehicle mounted, or towed (if towed, it needs a carriage, use the Hi Vel CPR Gun carriage) Set-up time increment shown is in seconds; double the time to set up a towed weapon The AutoCannon uses Hi Vel CPR Gun ammunition

HIGH VELOCITY AUTOCANNON

TL	Bore (cm)	Pwr	Vol	Weight	Price	Set-up	Ind Fire Range	Sig	ROF
5	4	—	0.38	0 38	17500	20	Distant (5)	H	1500
6	6	—	1 0	1 0	40000	30	Distant (10)	H	930
7	8	—	1 6	1 6	75000	40	Distant (16)	H	550
8	10	001	3.2	3.2	130000	60	Distant (20)	H	540
9	12	.001	5 7	5 7	185000	70	Distant (22)	H	350
10	14	002	8 9	8 9	250000	80	Distant (24)	H	300
11	16	002	12.2	12 2	375000	90	Distant (28)	H	185
12	18	003	20.3	20 3	495000	100	Distant (32)	H	165
13	20	003	29.7	29 7	620000	110	Distant (36)	H	80
14	22	004	40 5	40 5	745000	120	Distant (45)	H	80
15	24	004	51 3	51 3	870000	130	Distant (60)	H	50
18	30	.005	81 0	81 0	1240000	140	V Distant (60)	H	50

24 Mass Driver Guns

A mass driver gun is a high velocity slug thrower It may fire in both direct and indirect fire The weapon must be vehicle-mounted Set-up time increment shown is in seconds

MASS DRIVER GUNS

TL	Bore Cm	Pwr	Vol	Weight	Price	Set-up	Indirect Fire Range
8	2	0 2	0.12	0 12	112000	10	Distant (5)
8	4	1 0	0 19	0 19	119000	20	Distant (10)
8	6	3 0	0 50	0 50	150000	30	Distant (16)
9	10	15 0	1 40	1 40	240000	60	Distant (22)
9	12	20 0	2 50	2 50	350000	70	Distant (24)
9	14	26 0	4.00	4 00	500000	80	Distant (28)
9	16	35.0	5 40	5 40	640000	90	Distant (32)
10	18	45 0	9 00	9 00	1000000	100	Distant (36)
10	20	60 0	13.20	13 20	1420000	110	Distant (45)
10	22	78 0	18 00	18 00	1900000	120	Distant (60)
10	24	95 0	22 80	22 80	2380000	130	V Distant (70)

Mass drivers use ammunition with the characteristics of Mortar ammunition, but they perform as Hi Vel CPR gun ammo

Base Rate of Fire for Mass Driver Guns is 1 Rate of Fire may be increased by increasing power output Doubling power doubles rate of fire The limit to increased rate of fire is the square of the gun's Tech Level (the limit at TL 8 is 64, the limit at TL 15 is 225)

Signature for all mass driver guns on the table is L

25 Beam Laser Guns

A beam laser gun is an energy projector It can fire direct fire only and must be vehicle-mounted. The set-up time increment is Instant

BEAM LASER GUNS

TL	Pwr	Vol	Weight	Price	Pen	Dmg	Range
8	0 5	0 03	0 03	2000	5/2	4	Distant (2 5)
8	1 0	0 07	0 07	4000	10/2	5	Distant (5 0)
8	5 0	0 33	0.33	20000	28/3	10	V Distant (25)
8	10 0	0 66	0.66	40000	36/3	20	V Distant (50)
8	25.0	1 70	1 70	100000	47/4	50	Regional (125)
8	50.0	3 30	3 30	200000	55/4	100	Regional (250)
13	0 5	0 03	0.03	2000	6/2	5	Distant (2 5)
13	5 0	0 33	0.33	20000	30/3	12	V Distant (25)
13	25.0	1 70	1 70	100000	49/4	60	Regional (125)

Signature for all TL 8 guns is H, for all TL 13 guns it is L Rate of Fire for all guns is 40

26 Pulse Laser Guns

A pulse laser gun is an energy projector It can fire direct fire only and must be vehicle mounted The set-up time increment is Instant

PULSE LASER GUNS

TL	Pwr	Vol	Weight	Price	Pen	Dmg	Range
8	1 0	0 03	0.03	2100	6/2	4	Distant (2 5)
8	2.0	0 07	0 07	4300	12/2	5	Distant (5 0)
8	10.0	0 33	0 33	21000	30/3	10	V. Distant (25)
8	20 0	0 66	0 66	43000	38/3	20	V Distant (50)
8	50 0	1 70	1 70	107000	49/4	50	Regional (125)
8	100.0	3 30	3.30	213000	57/4	100	Regional (250)
13	1.0	0 03	0 30	2100	7/2	5	Distant (2 5)
13	10 0	0 33	0 33	21000	33/3	12	V Distant (50)
13	50	1 70	1 70	107000	51/4	60	Regional (250)

Signature for all TL 8 guns is H; for all TL 13 guns is L Rate of Fire for all guns is 80

27 Standard Plasma Guns

A standard plasma gun is an energy weapon It can fire direct fire only The weapon must be vehicle-mounted Set-up time is instant

STANDARD PLASMA GUNS

TL	Type	Pwr	Vol	Wt	Price	Pen	Dmg	Range
10	PA-10	8 0	0 40	0 40	32000	44/5	20	V Distant (5 1)
11	PA-11	6 6	0 20	0 20	26400	44/5	20	V Distant (5 1)
11	PB-11	15 7	0 47	0 47	62800	54/5	20	V Distant (7 8)
12	PB-12	13 5	0 19	0 19	54000	54/5	20	V Distant (7 8)
12	PC-12	32 0	0 45	0 45	128000	64/5	20	V Distant (12)
13	PC-13	32 0	0 19	0 19	128000	64/5	20	V Distant (12)

Sig for all guns shown is H, ROF is 40

28 Rapid Pulse Plasma Guns

A rapid pulse plasma gun is an energy projector It can fire direct fire only and must be vehicle-mounted The set-up time increment is Instant

RAPID PULSE PLASMA GUNS

TL	Type	Pwr	Vol	Wt	Price	Pen	Dmg	Range
12	RPA-12	11 3	0 08	0 08	22800	44/5	20	V Distant (5 1)
13	RPA-13	22 7	0 03	0 03	22800	44/5	20	V Distant (5 1)
13	RPB-13	26 9	0 08	0 08	54000	54/5	20	V Distant (7 8)
14	RPA-14	31 7	0 02	0 02	16000	44/5	20	V Distant (5 1)
14	RPB-14	37 7	0 05	0 05	37700	54/5	20	V Distant (7 8)
14	RPC-14	44 8	0 11	0 11	89700	64/5	20	V Distant (12)
15	RPA-15	63 5	0 01	0 01	16000	44/5	20	V Distant (5 1)
15	RPB-15	75 3	0 03	0 03	37700	54/5	20	V Distant (7 8)
15	RPC-15	89 7	0 08	0 08	89700	64/5	20	V Distant (12)

Sig for all guns shown is H ROF is RPA-12 40 RPA-13 80 RPB-13· 40 RPA-14 160 RPB-14 80 RPC-14 40 RPA-15 160 RPB-15 160 RPC-15 80

29 Standard Fusion Guns

A standard fusion gun is a very high powered plasma weapon which actually attains fusion of hydrogen in its beam The weapon must be vehicle mounted Setup time increment is instant

STANDARD FUSION GUNS

TL	Type	Pwr	Vol	Wt	Price	Pen	Dmg	Range
12	FX-12	31 0	0 43	0.43	186000	67/5	30	V Distant (18)
13	FX-13	31 0	0 19	0 19	186000	67/5	30	V Distant (18)
13	FY-13	44 0	0 26	0 26	264000	71/5	30	V Distant (21)
14	FY-14	30 9	0 15	0 15	185000	71/5	30	V Distant (21)
14	FZ-14	61 7	0 31	0 31	370000	79/5	30	V Distant (30)
15	FZ-15	61 7	0 22	0 22	370000	79/5	30	V Distant (30)

Sig for all guns is H ROF for all guns is 40

29 Rapid Pulse Fusion Guns

The rapid pulse fusion gun is a high rate of fire energy weapon It must be vehicle mounted Setup time increment is instant

RAPID PULSE FUSION GUNS

TL	Type	Pwr	Vol	Wt	Price	Pen	Dmg	Range
14	RFX-14	42 0	0 11	0 11	131000	67/5	30	V Distant (18)
15	RFX-15	42.0	0 08	0 08	131000	67/5	30	V Distant (18)
15	RFY-15	61 8	0 11	0 11	185000	71/5	30	V Distant (21)
16	RFX-16	42 0	0 06	0 06	131000	67/5	30	V Distant (18)
16	RFY-16	61 8	0 08	0 08	185000	71/5	30	V Distant (21)
16	RFZ-16	123 4	0 12	0 12	370000	79/5	30	V Distant (30)

Sig for all guns is H Rate of fire is RPX-14 40 RPX-15 80 RPY-15 40 RPX-16 160 RPY-16 80 RPZ-16 40

31 CPR Laser Guidance

All CPR guns (mortars, low, and high velocity guns) can have laser guidance for direct and indirect fire

CPR LASER GUIDANCE

TL	Price
8	1000
9	800
10	600
11	400
12+	200

Laser guidance allows the executing of a concentrated attack against as single target in the weapon's danger space All rounds fired can be specified as hitting a single target

32 Point Defense Targetting

Point defense targeting allows the weapon to fire at incoming missiles and projectiles Hardpoint mounted weapons automatically have this capability

For each direct fire weapon which must also serve in a point defense capacity, install one point defense targeting module

POINT DEFENSE TARGETTING MODULES

TL	*Power*	*Weight*	*Volume*	*Price*
9	0 010	0.4	0 4	200000
10	0 008	0.5	0 5	300000
11	0 006	0 6	0 6	500000
12	0 004	0 7	0 7	1000000
13	0 003	0.8	0 8	1250000
14	0 002	0.9	0 9	1500000
15	0 001	1 0	1 0	2000000
16	0 001	1 2	1 2	2250000

33 Weapons Mounts

Consider the type of mount used for the weapon Make sure that there is enough chassis volume for the weapon

Weapons mounts may be manned or unmanned Manned mounts require the allocation of space for the crew

WEAPON MOUNTS

Type	*Location*	*Hul Vol*
Turret	in turret	100%
Cupola	pivot in cupola	100%
Fixed	any	100%
Open	pivot in open	10%

Hull Volume is the percentage of the mount that must be installed within the hull; there must be that amount of hull available for the mount

If a vehicle is open-topped or smaller than UCP of 0 2, the weapon mount must be Fixed or Open, Turrets or Cupolas are not allowed

34 Ammunition Storage

Allocate space for the storage of ammunition (if the weapon fires a projectile)

The suggested ammunition load varies, but it should be enough for ten minutes of continuous fire.

35 Stabilization Gear

If the vehicle uses wheels, tracks, legs, or air-cushion for locomotion, consider adding weapon stabilization for weapon accuracy while moving off-road.

STABILIZATION GEAR

TL	*Volume*	*Cr/Kl*	Max Speed
5	None	—	—
6	×0 05	20000	20
7	×0 075	40000	40
8	×0 10	50000	80
9	×0 10	60000	100
10	×0 10	70000	120

Volume: Multiply weapon volume in kl by the listed volume factor to determine the volume of the stabilization gear in kiloliters.
Weight: One ton per kiloliter

When moving off-road, ignore the Movement DM for the firing vehilce if its speed is less than the maximum speed shown for the equipment on this table

36 Autofire Targets

Determine the number of targets that can be fired on per combat round by referring to the table below.

AUTOFIRE TARGETS

ROF	*Targets*
40	2
80	3
160	4
320	5
640	6
1280	7

Rate of Fire is expressed in rounds per minute

37 Compute Weapons Totals

Compute totals for:
- Power
- Volume
- Weight
- Price

7 - SCREENS

1 Select Screens

Select the specific screens for the craft from the following types

- Nuclear Dampers
- Meson Screens
- Black Globes
- Proton Screens
- White Globes
- Miscellaneous Devices

A variety of screens are available Optimized packs universally have a screen factor of 1, they are optimized for volume and power rather than for defensive factor

2 Nuclear Dampers

Nuclear dampers neutralize nuclear warheads, the effects of high radiation, and disintegrator beams

NUCLEAR DAMPERS

UCP	TL	Power	Volume	Weight	MCr
1	12	2500	675	740	50
2	13	5000	540	590	40
3	13	7500	270	300	45
4	14	10000	110	120	30
5	14	12500	135	150	35
6	14	15000	160	180	38
7	15	17500	135	145	30
8	15	20000	200	220	40
9	15	22500	270	300	50
A	16	25000	160	175	45
B	17	27500	190	210	50
C	18	30000	215	230	55
D	19	32500	245	250	60
E	20	35000	270	270	65
F	21	37500	295	290	70

Power is for the installation, regardless of the size of the craft

OPTIMIZED NUCLEAR DAMPER PACKS

UCP	TL	Volume	Weight	Power	MCr
1	14	28	30	750	40
1	15	16	18	500	35
1	16	13	14	450	25
1	17	11	12	425	15
1	18	9	10	400	10
1	19	8	8	450	5
1	20	7	7	550	4
1	21	6	5	610	3

Power is for the installation, regardless of the size of the craft

3 Meson Screens

Meson screens lessen the effects of meson weapons

MESON SCREENS

UCP	TL	Power	Volume	Wt	MCr
1	12	0 15	1220	910	80
2	13	0 30	400	300	50
3	13	0 45	610	460	55
4	14	0 60	215	160	40
5	14	0 75	270	230	45
6	14	0 90	325	290	50
7	15	1 05	270	245	40
8	15	1 20	400	360	50
9	15	0 135	540	490	60
A	16	1 50	325	310	50
B	17	1 65	375	340	60
C	18	1 80	435	390	70
D	19	1 95	485	460	80
E	20	2 10	540	560	90
F	21	2 25	595	640	100

Power is expressed per kiloliter of craft volume

OPTIMIZED MESON SCREEN PACKS

UCP	TL	Volume	Weight	Power	MCr
1	16	108	85	135	55
1	17	90	75	100	23
1	18	84	65	065	17
1	19	65	55	035	9
1	20	40	45	015	4
1	21	33	40	010	1

Power is expressed per kiloliter of craft volume

4 Black Globes

Black globes restrict any projectile or energy beam from contacting the vehicle

UCP	TL	Power	Vol	Wt	MCr
1	15	50	135	130	400
2	15	55	200	190	600
3	15	60	270	250	800
4	15	65	335	320	1000
5	16	65	270	240	500
6	16	70	400	350	700
7	16	75	475	410	900
8	17	75	270	240	500
9	18	75	270	230	500
A	19	75	270	210	500

Power is for the installation, regardless of the size of the craft

OPTIMIZED BLACK GLOBE PACKS

UCP	TL	Volume	Weight	Power	MCr
1	15	135	130	50	400
1	16	130	128	40	400
1	17	127	126	35	400
1	18	125	124	30	400
1	19	122	122	25	400
1	20	120	120	20	400
1	21	119	118	15	400

Power is for the installation, regardless of the size of the craft

5 Proton Screen

Proton screens protect a vehicle from missiles with antimatter warheads

PROTON SCREENS

UCP	TL	Power	Volume	Weight	MCr
1	19	25000	1350	700	75
2	20	50000	410	190	60
3	20	75000	550	240	70
4	21	100000	620	300	45
5	21	125000	270	430	55
6	21	150000	325	165	60

Power is for the installation, regardless of the size of the craft

OPTIMIZED PROTON SCREEN PACKS

UCP	TL	Volume	Weight	Power	MCr
1	20	12	6	9000	90
1	21	10	5	8000	78

Power is for the installation, regardless of the size of the craft

6 White Globes

White globes restrict any projectile or beam from contacting the craft while still allowing the occupants to see out and to use sensors without restriction

WHITE GLOBES

UCP	TL	Power	Volume	Weight	MCr
1	20	100	30	25	900
2	20	200	40	30	910
3	20	300	55	35	750
4	21	400	30	20	800
5	21	500	40	30	850
6	21	600	55	35	900

Power is for the installation, regardless of the size of the craft

OPTIMIZED WHITE GLOBE PACKS

UCP	TL	Volume	Weight	Power	MCr
1	21	60	55	50	850

7 Basic Obscuration Devices

The following are basic devices to obscure line of sight

OBSCURATION DEVICES

Smoke Discharger: TL 5 0 005 kl 0 005 tons 0.001 Mw Cr150.

Anti-Laser Aerosol: TL 8 0 001 kl 0.001 tons 0 002 Mw Cr20.

Prismatic Aerosol: TL 10 0.001 kl 0.002 tons 0.003 Mw Cr20

Sandcaster: TL 12 0 010 kl. 0 014 tons 0 005 Mw Cr1250

8 Compute Screen Totals

Note totals for

- Power Consumption
- Volume
- Weight
- Price

1 Environmental Controls

Determine the type of environmental control measures to provide for the craft

TL	Description	Power	Volume	Weight	Price	Units
5	Intake Compressor (for power plants in very thin atmosphere)	0 005	0.100	0 100	200	—
5	Basic Environment (heat, lights)	0 001	0.005	0 005	10	per kiloliter of hull
5	Basic Life-Support (sealed environment, atmos, water)	0 001	0 050	0 050	300	per kiloliter of hull
6	Extended Life Support (food, waste recycle)	0 002	0 003	0 003	200	per kiloliter of hull
5	Air Lock	0 002	3.000	0 200	5000	—
10	Artificial Grav Plates	0 050	0 010	0.020	500	per kiloliter of hull
10	Inertial Compensators	0 020	0 010	0 020	250	per kiloliter of hull

Basic Life Support and Extended Life Support are only possible if the vehicle is enclosed Extended Life Support must be provided if occupants are routinely expected to spend 8+ hours aboard the vehicle per day

Only the occupied hull volume need be considered for units, in small craft and starships, the entire hull volume is usually included in order to make the entire craft accessible for maintenance

2 Control Points

Determine the number of control points required using the following formula:
CP=(Pr/100000) ×TL
CP= Control Points Pr= Price. TL= Tech level of the craft.
Section Control Points: Determine the control points required by each of the 8 following sections.
Hull Power Supply. Locomotion Communications Sensors Weapons Screens. Environment Control

3 Computers

If a computer is desired, select one from the list below. A computer multiplies the number of CP input into it by the CP multiple shown, it reduces the number of control panel units needed to control the craft

COMPUTERS

TL	Model	Power	Volume	Weight	Price	Maximum CP Input	CP Multiplier
5	0	0 001	0 5	0 1	0 06	500	5
5	0/fib	0 002	1 0	0 2	0 10	500	5
5	0/bis	0.001	0.5	0 1	0 13	1000	10
5	1	0 002	2.0	0.5	0 40	5000	10
5	1/fib	0 004	4 0	0.9	0 65	5000	10
6	1/bis	0 003	2 0	0.5	0.90	7500	15
7	2	0.003	3 5	0.9	1 90	10000	15
7	2/fib	0 006	7.0	1.6	3.00	10000	15
8	2/bis	0.004	3.5	0.9	3 80	15000	20
9	3	0 004	4 0	1.0	3 80	20000	25
9	3/fib	0.004	8 0	1 9	5 80	20000	25
10	4	0 005	5 5	1 4	6 40	50000	30
10	4/fib	0 010	11.0	2 8	9 70	50000	30
11	5	0 006	6 5	1 6	9.70	100000	35
11	5/fib	0.012	13 0	3.2	14.80	100000	35
12	6	0 007	9 0	2.4	11 80	500000	45
12	6/fib	0 014	19 0	4.8	18 00	500000	45
13	7	0.008	12 0	3 0	17 40	5 million	65
13	7/fib	0 016	24 0	6 0	21 70	5 million	65
14	8	0.009	14 0	3 5	23 90	50 million	95
14	8/fib	0.018	28.0	7 0	30 50	50 million	95
15	9	0 010	17 5	4 4	30 50	100 million	120
15	9/fib	0 020	35.0	8.8	43.00	500 million	120
16	10	0 011	20 0	5.0	43.00	500 million	200
16	10/fib	0 022	40 0	10.0	65 50	500 million	200
17	11	0.012	13.0	3 3	65 50	20 billion	1000
17	11/fib	0.024	36.0	6 6	87 00	20 billion	1000
18	12	0.013	15.5	3 9	87 00	100 billion	10000
18	12/fib	0.026	31.0	7.8	108.50	100 billion	10000
19	13	0.014	18.0	4 5	108 50	500 billion	25000
19	13/fib	0.028	26.0	9 0	130 00	500 billion	25000
20	14	0 015	21.0	5.3	130.00	2 trillion	50000
20	14/fib	0 030	42 0	10 6	150 50	2 trillion	50000
21	15	0.016	24 0	6 0	150 50	50 trillion	100000
21	15/fib	0 032	48 0	12.0	170 00	50 trillion	100000

Power, Volume, Weight, and Price Modifications: If TL 5, ×100 If TL 6, ×10, if TL 7, ×2. Flying craft should have two computers, one is a safety backup Space craft should have three computers, two are safety backups If all computers malfunction, a craft which uses controls that require a computer will be out of control.

4 Control Panel Units

Select and install enough control panel units and control panel add-ons so that the total CPs from the control units multiplied by the computer's CP multiplier (if a computer is installed) equals or exceeds the number of CPs required to control the craft

CONTROL PANEL UNITS

TL	Type	Power	Vol	Wt	Cr	CP
5	Basic Mechanical	—	0 4	0 1	5	0 2
6	Enhanced Mechanical	0 0005	0 4	0 5	30	0 4
7	Electronic	0 0005	0 1	0 005	70	0 5
8	Electronic Linked	0 0005	0 01	0 005	200	0 7
9	Computer Linked	0 0005	0 01	0 001	350	0 8
10	Dynamic Linked	0 001	0 02	0 01	500	1 0
13	Holographic Linked	0.002	0 03	0 02	1000	1 5

Linked panels require a computer; other panels cannot use a computer

5 Special Control Panel Add-Ons

Special add-ons all require a computer

CONTROL PANEL ADD-ONS

TL	Type	Power	Vol	Wt	MCr	CP
9	Heads-up Display	0 005	0 5	0 2	0 02	50
12	Large Holodisplay	0 050	2 0	1 0	0 5	1500
13	Heads-up HoloDisplay	0.020	1 0	0 5	0 10	200

6 Electronic Circuit Protection

If electronic circuit protection is desired, multiply weight and price of computer and controls by 1.5

7 Compute Controls Totals

Note totals for:
Power Consumption
Volume
Weight
Price

9 - ACCOMMODATIONS

1 Basic Crew Complement

Determine the type of craft
If **vehicle** or **small craft**, go to step 2
If **starship** or **spacecraft**, go to step 7

2 Vehicle and Small Craft Crew

Vehicles and small craft require
Operator/Driver: Always required.
Gunner: One per gun
Commander: Required if the craft carries offensive weapons, recommended for flying craft over 100 kiloliters

3 Reduced Vehicle Gunners

Determine if computers and sensors reduce the number of gunners required.
X = (C + S)/W)
X = Reduction in gunners allowed.
C = Computer CP Multiple
S = Sensors CP
W = Weapons CP
X is the number of gunners that can be eliminated because sensors and computer provide substantial assistance.

4 Supplanted Vehicle Commander

Determine if sensors and computer supplant the need for a vehicle commander.
X = (T-S)/C
X = Commander Supplantation Value
C = Computer CP Multiple
S = Sensors CP
T = Total Craft CP Multiple
If X is between 0 and 1, the commander position is not needed because the operator/driver has enough assistance from the sensors and computer to make a tactical decision while operating the craft

5 Special Vehicle Considerations

If space is at a premium the commander position may be eliminated, 2 or more gunner positions may be combined into 1
If space is critical (and the craft only needs 1 gunner) the gunner may be eliminated and the operator/driver be required to fire the gun

6 Vehicle Crew Accommodations

Allocate vehicle crew positions

CREW POSITIONS

Access	*Pwr*	*Vol*	*Wt*	*Price*
None	—	1 0	0.02	100
Cramped	—	2 0	0.02	100
Adequate	—	3 0	0 02	100
Roomy	—	4 0	0 02	100

One position required for each occupant. If occupants are expected to spend more than 8 hours in the vehicle, double the above. If they spend more than 24 hours in the vehicle, provide extended accommodations (step 9); otherwise, go to step 10

7 Starship and Spacecraft Crews

Starships and spacecraft (larger than vehicles and small craft) require an extensive crew to handle the responsibilities of the ship's operations Use the following formulae to compute the requirements

Bridge Crew (Cb):
Cb = (T/C)/750 (round fractions up)
T = Total Craft CP
C = Computer CP Multiple
The minimum bridge crew is 2 If Cb computed above exceeds 10, recompute Cb instead as
Cb = 10 + (Cb/10) (round fractions up)

Engineering Crew (Ce):
Ce = ((P + L))/C)/400 (round fractions up)
P = Power Supply CP
L = Locomotion CP
C = Computer CP Multiple

Maintenance Crew (Cm):
Cm = ((H + A)/C/400 (drop fractions)
H = Hull CP
A = Hull displacement divided by 100
C = Computer CP Multiple

Gunners (Cg):
Cg = (W + F)/C/10 (drop fractions)
W = Weapons CP
F = Screens CP
C = Computer CP Multiple

Flight Crew (Cf):
Cf = Q + R.
Q = Total Subordinate Craft Crew
R = Number of Subordinate Craft

Ship's Troops (Ct):
Ct = (H/1000) × M) (drop fractions)
H = Hull Displacement
M = Troop Multiple (referee's or designer's selection from 1 to 30)
Reduce maintenance crew (Cm) by 1 for every 6 ship's troops carried

Command (Cc):
Cc = Z/6 (drop fractions)
Z = Total crew to this point (does not include Stewards or Medical Crew).

Stewards (Cs):
Cs = ((Cc + Ch)/8) + (((Z-Cc) + Cj))/50) (drop fractions)
Ch = High Passage Passengers
Cc = Command Crew
Cj = Middle Passengers
Z-Cc = Non-Command Crew
At least one steward is required if there are any High Passengers

Frozen Watch (Cf):
Cf = Z/H
Z = Total Crew Count (not including Medical Crew)
H = Hull Displacement Tonnage divided by 1000 (if less than 1, treat as 1)
If Cf low (not emergency low) berths are present, the ship can carry a frozen watch

Medical Crew (Cd):
Cd = (Z/120) + (Cl/20) (drop fractions)
Z = Current crew and passenger count to this point
Cl = Low Passengers

8 Crew Segments

Determine the number of crew segments for the ship The crew is divided into even segments one per 1350 kiloliters of hull (round fractions up) For example, the 45-person crew of a 16,200 kiloliter ship divides into two 23-person segments

9 Extended Accommodations

Starships and spacecraft require extended accommodations rather than crew accommodations Vehicles and small craft require extended accommodations if the crew is present for 24 hours or more

EXTENDED ACCOMMODATIONS

Type	*Pwr*	*Vol*	*Wt*	*Cr*
Bunk	—	13 5	0 5	5000
Low Berth	001	13 5	1 0	50000
Emergency Low	002	27 0	2 0	100000
Small Stateroom	002	27 0	2 0	40000
Stateroom	003	54.0	4 0	400000

Volume includes an allowance for access space, volume of the accommodation itself is half that shown.
Only crew members may have bunks, passengers must have staterooms or low berths Double occupancy of a small stateroom is possible if each occupant uses the room for 12 out of 24 hours Double occupancy of a standard stateroom is possible on a constant basis
A low berth holds one person in low passage An emergency low berth holds up to four people

10 Subordinate Craft

Subordinate craft may be carried on a larger craft
Vehicles (270 kiloliters or less) require 150 percent of their volume
Small craft (270 to 1350 kiloliters) require 130 percent of their volume
Starships and spacecraft (1350 kiloliters or more) require 110 percent of their volume
Irregular configuration craft (UCP configuration 7) are an exception to volume requirements they can carry subordinate craft on their exterior with no extra volume requirement
Fittings to hold subordinate craft cost Cr150 per kiloliter of carried craft

11 Rapid Launch Facilities

If rapid launch facilities (launch tubes) are desired, they may be fitted Launch tubes require a volume equal to 25 times the volume of the largest craft which they will launch Launch tubes costs Cr150 per kiloliter

12 Accommodations Totals

Note totals for
Power Consumption
Volume
Weight
Price

10 - FUEL

1 Required Fuel Tankage

Total required fuel (in kiloliters) from all parts of the craft. Note endurance of the craft (in hours, days, or weeks)

2 Cost and Weight of Fuel

Determine cost and weight of the fuel required Cost and weight shown are per kiloliter of fuel.

The result of this calculation is the cost of one refill of the tanks with fuel

FUEL PRICES

Type	*Weight*	*Price (Cr)*
Hydrocarbons	1.0	250
Radioactives	12 5	75000
Hydrogen	0 07	35
Antimatter	1 0	625000

3 Fuel Purification Plant

If the ship is jump-capable and uses hydrogen fuel and if a fuel purification plant is desired, select one from the table

FUEL PURIFICATION PLANTS

TL	*Power*	*Volume*	*Weight*	*Price*	*Minimum Volume*
8	0 010	0 70	1.5	200	135
9	0 009	0 60	1 2	190	120
10	0 008	0 55	1 1	180	105
11	0 007	0.45	0.9	170	95
12	0 006	0 40	0 8	160	80
13	0 005	0 35	0 7	150	65
14	0 005	0 25	0 5	140	55
15	0 005	0 20	0.4	150	40
16	0 005	0.15	0 3	160	25
17	0 005	0 05	0 1	170	15

Values shown are per kiloliter of fuel per 6 hours One complete fuel purification plant, installed on the basis of the total ship's fuel capacity, will purify in the tanks in 6 hours; a plant installed in the basis of half the ship's fuel capacity will purify all of the fuel in the tanks in 12 hours No fuel purification plant may be made smaller than the minimum volume.

Fuel Scoops: A craft may be fitted with fuel scoops in order to acquire hydrogen gas from a gas giant

The craft must be streamlined or airframe Fuel scoops cost Cr75 per kiloliter of hull They consume no power, volume, or weight

Fuel scoops allow scooping of hydrogen gas (unrefined fuel) at the rate of 20 percent of the tonnage of the hull per hour, until the ship's fuel tanks are filled

4 Special Fuel Tankage

If desired, additional fuel tankage can be allocated

Collapsible Tanks: Large fuel bladders that are installed in the ship's internal cargo hold. Fuel must be pumped from the collapsible tanks into the regular fuel tanks before it can be used. Collapsible tanks costs Cr35 per kiloliter They take no space when empty.

Dismountable Tanks: Fixed, semi-permanent, interior fuel tanks that can be installed in the cargo hold They operate as permanent fuel tanks; the fuel can be used directly from these tanks Dismountable tanks cost Cr75 per kiloliter They take up their full space even when empty. They can be dismounted and stored when not needed.

Exterior Dismountable Tanks: Fixed, semi-permanent, exterior fuel tanks that can be installed by bolting to the outside of the hull They operate as permanent fuel tanks, the fuel can be used directly from these tanks. The ship is considered unstreamlined while the tanks are mounted. Ship volume is increased by the volume of the tanks; ship's weight is increased by the tank weight plus the fuel weight The ship performance must be reevaluated when the tanks are installed

Exterior dismountable tanks cost Cr35 per kiloliter plus the cost of equivalent starship hull volume. They can be dismounted by the starship crew in two weeks at no cost or by professional laborers at a starport in two weeks for Cr10 per kiloliter.

Drop Tanks: Disposable tanks which provide fuel while reducing ship tonnage Tanks are mounted only when needed and dropped away prior to jump They do not affect the routine performance of the ship Cost is Cr10,000 plus Cr75 per kiloliter of drop tank.

5 Cargo Hull

If space is required for cargo or freight transport, allow the desired volume in kiloliters. Cargo space has no extra cost.

6 Compute Fuel and Miscellaneous Totals

Note totals for
- Power Consumption
- Volume
- Weight
- Price

Design Evaluation

Finally, the figures are analyzed to insure that the design has not exceeded hull capacity and that it has not gone over budget or violated Tech Level requirements.

The design is finalized, and a Universal Craft Profile (UCP) is created. A sample UCP is displayed below. (This particular sample is contrived to show examples of the various UCP elements.) The text that follows describes how to create a UCP for any craft.

UNIVERSAL CRAFT PROFILE FORMAT SAMPLE

CraftID: Slow Tug, Type TW, TL 15, MCr688 123
Hull: 90/225, Disp=2,000, Config=1SL, Armor=40G, Unloaded=1270 tons, Loaded=2595 tons
Power: 32/64, Fusion=5420Mw, Duration=30/90
Loco: 30/60, Maneuver=2, 26/52, Jump=2, NOE=190kph, Cruise=750kph, Top=1000kph, Agility=0
Commo: Radio=System
Sensors: PassiveEMS=System, ActiveEMS=FarOrbit, Densitometer=LowPen/250m, Neutrino=1kw
ActObjScan=Rout, ActObjPin=Rout,
PasObjScan=Rout, PasObjPin=Rout,
PasEngScan=Simp, PasEngPin=Rout
Off: ParticleAccel=000, MesonGun=000
Batt 111 111
Bear 111 111
Disintegrator=000, JumpProj=000
Batt 111 111
Bear 111 111
Missiles=x00
Batt 111
Bear 111
PlasmaGun=x00, FusionGun=x00
Batt 111 111
Bear 111 111
BeamLaser=x00, PulseLaser=x00
Batt 111 111
Bear 111 111
Def: DefDM=+1, MesonScrn=0, BlackGlobe=0
Repulsors=x00, Sandcaster=x00
Batt 111 111
Bear 111 111
Tractors=x00, JumpDamper=x00
Batt 111 111
Bear 111 111
Control: Computer=1bis×3, Panel=holodynamic link×216, Special=large holodisplay, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=10×2 (Bridge=2, Engineer=4, Maint=1, Gunnery=1, Flight=4, ShipTroops=1, Command=2, Steward=1, Medical=1, FrozenW=1), Staterooms=10, LowBerths=5, Bunks=2, HighPsg=2, MidPsg=18, LowPsg=5, SubCraft=pinnace×2, air/raft
Other: Cargo=7695kliters, Fuel=4050kliters
ObjSize=Average, EmLevel=Moderate

CraftID

List craft name, type, Tech Level, and total price. Space-faring craft have some special type IDs that are used across the Imperium. These are shown in the table below.

SPACE-FARING CRAFT TYPE CODES

Primary		*Qualifier (Optional)*	
A	Merchant	A	Armored
B	Battle	B	Battle; Boat
C	Cruiser; Carrier	C	Cruiser; Close
D	Destroyer	D	Destroyer
E	Escort	E	Escort
F	Frigate; Fighter	F	Fast; Fleet
G	Gig	G	Gunned
H	Hunter	H	Heavy
I,J	Intruder	I,J	Imperial
K	Pinnace	K	Courier
L	Lab; Corvette	L	Leader; Light
M	Merchant	M	Missile
N	Ferry	N	Nonstandard
P	Planetoid	P	Provincial
Q	Auxiliary	Q	Decoy
R	Liner	R	Raider
S	Scout; Station	S	Strike
T	Tanker; Tender	T	Troop; Transport
U	Tug	U	Unpowered
V	Carrier	V	Vehicle
W	Barge	W	Slow
X	Express	X	Alternate
Y	Yacht	Y	Shuttle; Cutter
Z	Special	Z	Experimental

Hull

List the hull damage points, craft displacement (in displacement tons), configuration, armor rating and type, unloaded weight, and loaded weight.

Hull Damage Points: Hull damage points are listed as two values separated by a slash: inoperative damage level, then destroyed damage level. Compute hull damage points as follows. (Round fractions up; a result can never be less than 1.)

Inoperative: Volume of craft hull ÷ 15

Destroyed: Volume of craft hull ÷ 6.

Unloaded Weight: Compute the unloaded weight of the vehicle as the weight of all components without any fuel or cargo.

Loaded Weight: Compute the loaded weight of the vehicle by including the weight of the fuel, plus the weight of a full cargo hold. Compute the weight of fuel from the following table:

FUEL TABLE

Type	*Weight*	*Cr per kiloliter*
Hydrocarbons	1.00	250
Radioactives	25.00	75000
Hydrogen	0.07	35
Antimatter	1.00	625000

To compute the average weight of a full cargo hold, multiply the volume of the cargo hold in kiloliters by 1000 kg (one metric ton).

Power

List the power plant damage points, power plant output in megawatts, and duration of operation.

Power Plant Damage Points: Power plant damage points are listed as two values seperated by a slash: inoperative damage level, then destroyed damage level. Compute power plant damage points as follows. (Round fractions up; a result can never be less than 1.)

Inoperative: (Volume of power plant − hull volume) × hull inoperative damage points.

Destroyed: Inoperative value × 2.

If the craft uses electronic circuit protection, multiply the inoperative value by 1.5.

For example, if a craft with hull damage points of 45/113 has a power plant that takes 50 kiloliters, and the hull volume is 675 kiloliters, then the power plant's inoperative value is (50/675) × 45, or 3.33, which rounds to 4. The destroyed value becomes 4 × 2, or 8 The final power plant damage point value is 4/8. If the craft had electronic circuit protection, the damage points value would become 6/8.

Duration of Operation: Divide the power plant fuel tank volume in liters (do not include starship jump drive fuel) by the power plant fuel usage per hour to determine the number of hours of continous operation. Divide the number of hours by 24 to arrive at the number of full days of continous operation.

Divide the number of hours by 8 to determine the number of eight-hour work days of operation

The two numbers, 24-hour continous days and 8-hour work days, are separated by a slash.

Locomotion

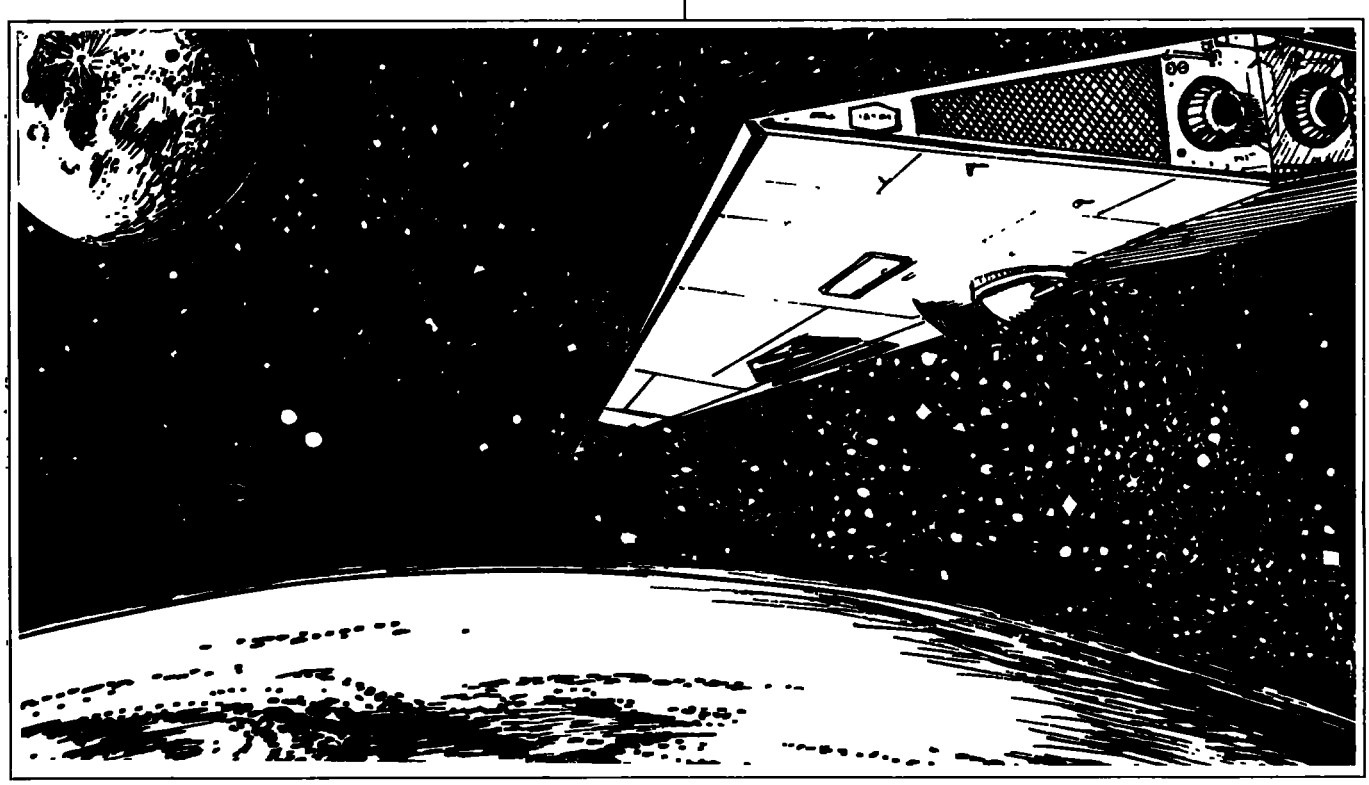
List the locomotion damage points for each of the types of locomotion (some craft have more than one locomotion type· starships, for example, have both maneuver drive and jump drive).

For contact-based vehicles, list the power-to-weight ratio, the on-road speed, and the off-road speed. For a thrust-based vehicle, list the thrust in tons, the Nap-of-Earth (NOE, that is "terrain following") speed, the cruising speed, and the top speed.

For space-faring craft, list the maneuver Gs, the jump drive number, the NOE speed, the cruising speed, the top speed, and the craft's agility.

Locomotion Damage Points: Locomotion damage points are listed just like power plant and hull damage points. Compute locomotion damage points as follows. (Round fractions up; a result can never be less than 1.)

Inoperative: (Volume of locomotion suspension − hull



volume) × hull inoperative damage points. *Note:* For wheels, divide the inoperative result by 2. For legs, divide the inoperative result by 5 and multiply it by the number of legs.

Destroyed: Inoperative value × 2.

After computing the destroyed damage point value, if the craft uses electronic circuit protection, multiply the inoperative value by 1.5.

For example, if a craft with hull damage points of 45/113 has a locomotion that takes 70 kiloliters, and the hull volume is 675 kiloliters, then the locomotion's inoperative value is (60/675) × 45, 4.67 or 5. The destroyed value becomes 5 × 2, or 10. The final locomotion damage point value is 5/10. Were electronic circuit protection present in the craft, the damage points value would become 8/10.

For space-faring craft, list both the damage points for the maneuver drive, and the jump drive. Use the volume of the maneuver drive or the volume of jump drive as the suspension volume when performing the calculation.

Contact-Based Vehicles: List the vehicle's power-to-weight ratio, its road speed, and its off-road speed. To determine the vehicle's power to weight ratio:

(Power plant output in megawatts – vehicle's loaded weight in tons) × 1000.

To determine road speed, consult the following table:

SPEED TABLE

P/W	*KPH*
4	15
6	20
8	25
10	30
12	35
14	40
16	45
18	50
20	55
22	60
24	65
26+	70

For Tracked and Wheeled Vehicles: Add 10 kph per TL over 5, add 10 kph for wheeled vehicles, add 15 kph if vehicle is light.

Light Vehicles: A vehicle is light if it is 5 tons or less at TL5, 10 tons or less at TL6, 15 tons or less at TL 7, 20 tons or less at TL 8, and 25 tons or less at TL 9.

For Legs: Add 5 kph per TL over 10.

Add 1 kph per power-to-weight ratio number over 26.

To determine the vehicle's off-road speed, first compute its ground pressure using the following formula: Vehicle's weight in tons – volume of vehicle's suspension in kiloliters

Consult the following table to determine the vehicle's off-road speed factor. Multiply the vehicle's road speed by the factor shown to get the vehicle's off-road speed:

OFF-ROAD SPEED

Ground Pressure of 6 or less				*Ground Pressure of 7 or more*			
P/W	*Wheels*	*Tracks*	*Legs*	*P/W*	*Wheels*	*Tracks*	*Legs*
4	×0.15	×0.3	×0.5	4	×0.05	×0.1	×0.3
8	×0.2	×0.4	×0.6	8	×0.1	×0.2	×0.4
12	×0.25	×0.5	×0.7	12	×0.15	×0.3	×0.5
16+	×0.3	×0.6	×0.8	16+	×0.2	×0.4	×0.6

Thrust-Based Vehicles: For grav vehicles, list the terrain following speed (NOE), crusing speed, and top speed. For air cushion vehicles list only the top speed and the cruising speed (they always travel at NOE altitude). All speeds listed for vehicles are for a standard atmosphere unless otherwise noted.

For grav vehicles, begin by computing the vehicle's maneuver thrust:

(Total thrust – vehicle's loaded weight)-1.

The result must be greater than zero. If it is not, the design is flawed and more thrust must be provided.

Once the maneuver thrust is known, consult the following table to find the craft's top speed in a vacuum:

TOP VACUUM SPEED

Maneuver Thrust	*Vacuum Speed (kph)*
0.1	120
0.15	180
0.2	240
0.25	300
0.3	360
0.35	420
0.4	480
0.45	540
0.5	600
0.6	720
0.7	840
0.8	960
0.9	1080
1.0	1200
1.2	1400
1.4	1590
1.6	1770
1.8	1950
2.0	2120
2.2	2280
2.4	2430
2.6	2580
2.8	2720
3.0	2850
3.5	3150
4.0	3400
4.5	3640
5.0	3840
6.0	4200

From the top speed, determine the vehicle's other speeds as:

Cruising Speed = Top Speed × 0.75.

NOE Speed = Top Speed × 0.25 (not to exceed the maximum allowed by avionics).

A craft's streamlining affects its speed when operating in a standard atmosphere. Based on the craft's streamlining, modify the speed values as follows:

Airframe: Use 90% of vacuum speed.

Streamlined: 1000 kph is top speed. Compute all other speeds from this top speed.

Unstreamlined: 300 kph is top speed. Compute all other speeds from this 300-kph top speed level List vacuum speed only.

Other atmospheres affect the craft's speed figures:

Very Thin or Less: Use full vacuum speed.

Thin Atmosphere: Use standard atmosphere speed × 1.5.

Dense Atmosphere: Use standard atmosphere speed × 0.75.

Very Dense Atmosphere: Use standard atmosphere speed × 0.25.

For air cushion vehicles, compute the top speed as shown above for grav vehicles, but then multiply it by 0.25 (in effect, an air cushion vehicle's top speed is its NOE speed, and no NOE speed is listed). Compute the cruising speed as × 0.75 of the new top speed. Modify the new top speed by the streamlining effects, but completely ignore all of the effects of atmosphere All air cushion vehicles operate at the same speeds in all of these atmospheres· thin, standard, and dense Remember that air cushion vehicles cannot operate in a very dense atmosphere or in a very thin or vacuum atmosphere

Space-Faring Craft: For space-faring craft, list the maneuver drive thrust in Gs, the jump drive number, along with the standard atmosphere terrain following speed (NOE), cruising speed, and top speed for streamlined and airframe designs If a spacecraft is unsteamlined, it is incapable of travelling in an atmosphere; list only its vacuum cruise speed and top speed Compute the speed values as shown for grav vehicles. Use the spacecraft's maneuver drive thrust in Gs directly as the maneuver thrust—skip the maneuver thrust computation

Agility: Space-faring craft also list the craft's agility, which is used in starship combat. To compute the craft's agility (drop fractions): Agility = (Excess power output in megawatts − unloaded weight of craft in tons) × 5 4. Agility can never exceed 6 Excess power output is the power left over from the power plant after all other components have been powered.

Agility is "the ability to change your craft's orientation over time" (more a function of ship mass than speed). It is obvious that smaller vessels tend to have greater agility. Which is faster, the *Queen Mary* or a rowboat? Which can change its heading more quickly? The rowboat has the greater *agility*, though its "maneuver drive" speed rating is less than the *Queen Mary*'s.

Commo

List each installed communication device and its range.

Sensors

List each installed sensor and its range. Compute and list the craft's sensor profile for locating objects/energy emissions.

Active Object Scan: Active EMS and Radar send out wide-beam electromagnetic emissions in an attempt to locate and classify objects from the reflected signal. Based on the range of the craft's active sensors (do not include LADAR), determine the basic difficulty level for doing active object scans·

DIFFICULTY TABLE

Range of Sensor	*Difficulty*
Distant or less	Formidable
Very Distant	Difficult
Regional	Difficult
Continental	Difficult
Planetary	Difficult
Far Orbit	Routine
Extreme Orbit	Routine
Interplanetary	Routine
Substellar	Simple
Stellar	Simple
Interstellar	Simple

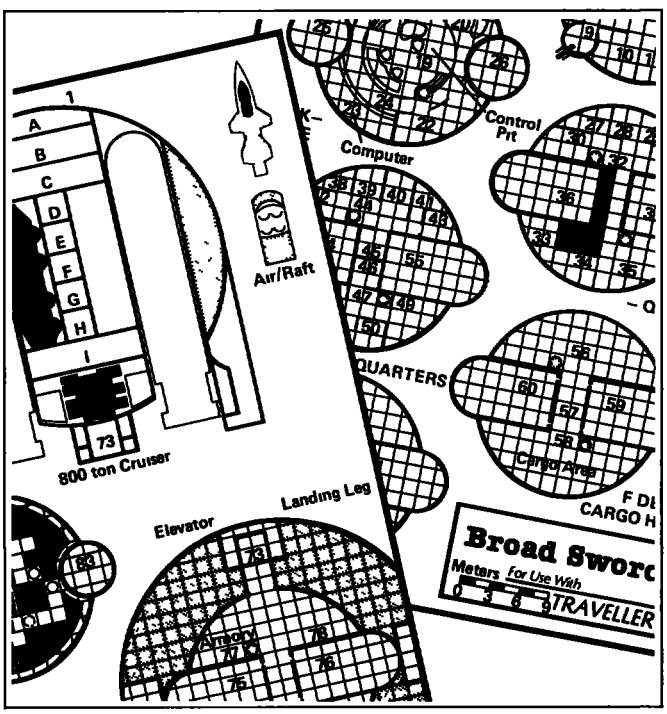
Active Object Pinpoint: Active EMS and radar send out a tight-beam electromagnetic emission in order to get a precise image of an object from the reflected signal. In this way, active EMS and radar can provide a highly detailed view of the object under consideration Tight-beam active sensors have the advantage of only giving away your position to the one enemy target you have scanned. However, the disadvantage is that you must use other sensors to first locate the object you wish to pinpoint scan Based on the range of the craft's active EMS or RADAR, determine the basic difficulty level for active object pinpoint scans by consulting the Difficulty Table above.

Passive Object Scan: A densitometer detects an object's natural gravity and by doing so can locate and classify the object according that particular object's density type. The densitometer is a passive sensor: because it is a passive sensor, it has the advantage of not emitting any signals that can be detected. Consult the following table to determine the densitometer's passive object scan ability:

SCAN ABILITY

TL	*Difficulty*
10	Formidable
11	Formidable
12	Difficult
13	Difficult
14	Routine
15	Routine
16	Routine
17	Simple
18	Simple
19	Simple
20	Simple

Passive Object Pinpoint: A densitometer can also provide a detailed density map of an object's outline and interior.



However, the object from which the densitometer is making this map must first have been located through the use of an object scan Such a scan often results in the enemy craft's precise ID Consult the following table to determine the densitometer's passive object pinpoint ability based on its penetration

PASSIVE OBJECT PINPOINT

Penetration of Sensor	*Difficulty*
Surface	Impossible
1 m	Formidable
50 m	Difficult
100 m	Difficult
250 m	Routine
1 km	Routine
25 km	Routine
2500 km	Simple
250,000 km	Simple

Passive Energy Scan: Passive EMS, laser sensors, radar direction finders, radio direction finders, and neutrino sensors can locate and classify energy emissions, indicating size and power level status Determining a craft's passive energy scan ability is a three-step process. First, consult the following table to determine the sensors' passive energy scan ability:

PASSIVE EMS SENSORS

Distant or less	+1
Very Distant	+2
Regional	+3
Continental	+4
Planetary	+5
Far Orbit	+6
Extreme Orbit	+8
Interplanetary	+12
Substellar	+14
Stellar	+16
Interstellar	+18

NEUTRINO SENSORS

1 Gw	+1
1 Mw	+2
100 kw	+4
10 kw	+6
1 kw	+8
1kw	+10

Second, compute the following:

(Passive EMS or laser sensor, or Radar direction finder + Neutrino)/2

Finally, consult the following table to determine the craft's passive energy scan ability·

PASSIVE ENERGY SCAN ABILITY

Value	*Difficulty*
+0	Impossible
+1	Formidable
+3	Difficult
+6	Routine
+12	Simple

Passive Energy Pinpoint: Neutrino sensors can classify nuclear-based energy emissions with great precision. A passive pinpoint scan by a neutrino sensor can provide the precise energy level of the enemy craft. To determine a craft's passive energy pinpoint ability, consult the following table:

PASSIVE ENERGY PINPOINT ABILITY

Sensitivity	*Difficulty*
1 Gw	Formidable
1 Mw	Formidable
100 kw	Difficult
10 kw	Routine
1 kw	Routine

Off

For craft mounting hardpoint weapons, list the weapons using the hardpoint format

ParticleAccel = 000, MesonGun = 000
Batt 111 111
Bear 111 111

For a specific weapon type, the first digit indicates the UCP value for a spinal mount, the second digit indicates the UCP value for bays, and the final digit indicates the UCP value for turrets. For weapons that cannot be installed in a spinal mount, list the UCP values as "x00," with the lower-case "x" in the spinal mount position.

Also listed are the batteries and the batteries bearing.

Determining Batteries: Space-faring craft with more than one weapon of a type may group them into batteries. Space-faring craft with more than ten weapons of the same type must group them into batteries. A battery may be only a single turret, or may be as many as as ten turrets, but all batteries of the same type of weapon must have the same UCP factor.

Each bay weapon is automatically a battery. The spinal mount of a ship (if it has one) is a single battery.

For example, a ship has 80 triple-beam laser turrets. The ship may have 80 batteries of one turret (UCP factor 3), 40 batteries of two turrets (UCP factor of 4), 16 batteries of five turrets (UCP factor of 6), or 8 batteries of 10 turrets (UCP factor of 8). Other configurations are possible, but these selections constitute the optimal battery configurations from the turret weapon tables on the design flowchart.

When the craft design is used in starship combat, each

BEARING TABLE

Ship Displacement	*Percent Bearing*
Under 20,000	100%
20,000	95%
30,000	90%
40,000	85%
50,000	80%
75,000	75%
100,000	70%
200,000	65%
300,000	60%
400,000	55%
Over 400,000	50%

battery can fire once each turn; each battery may also select a different target. Battery configurations are determined when the ship is built, not on the spur of the moment. The actual number of batteries which may bear on the target may be less than the total number of batteries on larger ships, and is determined from the Bearing Table, on the previous page.

For example, if a 50,000 displacement ship has 15 particle accelerators in bays, 100 laser turrets in eight batteries, 50 missile turrets in five batteries, and 80 sandcaster turrets in eight batteries, it could bring to bear 12 particle accelerator batteries, 6 laser batteries, 6 sandcaster batteries, and 4 missile batteries. The figures are based on the table reading that a 50,000 displacement craft can bring 80% of its batteries to bear on a single target. Round fractions up.

The spinal mount always bears. One battery of each weapon always bears.

Guns: For nonhardpoint weapons, list the weapon stats using the standard format as shown at the bottom of this page.

Def

For space-faring craft, list the defensive DM first. Next, list any screens or defensive weapons installed on the craft. For screens, list their UCP value. Even though repulsors, sandcasters, tractors, and jump dampers can be mounted in bays or turrets, they are considered defensive weapons, and are listed under the defenses section using the bays and turrets UCP format.

Defensive DM: To compute the defensive DM, use the following formula:

Computer Model Number + Agility + Target Size DM (below).

TARGET SIZE DMS

Displacement	*DM*
Under 100	+2
Under 1000	+1
Under 10,000	0
10,000 or more	−1
100,000 or more	−2

Control

List the installed computer, panel units, special control units, and environmental control units.

Accomm

List the number of crew sections, followed by a detailed breakdown of each functional crew area (bridge, engineering, and so on); list the number of high, middle, and low passage passengers; list any subordinate craft carried by the craft.

Other

List the cargo capacity of the craft in kiloliters, the fuel capacity of the craft in kiloliters, the object size, the emmission level, and any other pertinent design notes.

Object Size: Determine the craft's object size (used when the craft is the subject of an object sensor scan) from the table below:

OBJECT SIZE

*Loaded Weight**	*Size*
Over 10,000 tons	Large
100 to 10,000 tons	Average
Under 100 tons	Small

*Note· Craft loaded weight is used, not displacement tonnage.

Emission Level: Determine the craft's emission level (used when the craft is the subject of an energy sensor scan)·

EMISSION LEVEL

Power Plant Output	*EmLevel*	*-1 Lvl if*	*+1 Level if Displacement*
Over 100,000 Mw	Strong	EMM	Under 1000
1000 to 100,000 Mw	Moderate	EMM	Under 100
Under 1000 Mw	Faint	EMM*	Under 20

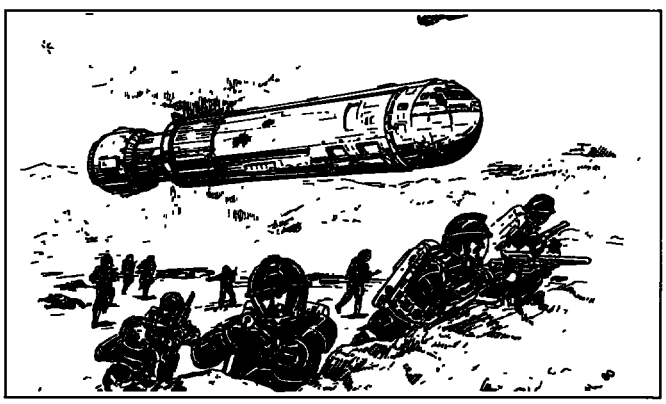
EMM means the craft mounts electromagnetic masking.
*means no emission.

DRAWING CRAFT PLANS

Craft plans may have a scale of 1.5 meters per square. Optimum space between decks is 3 meters: one floor square (1.5 meters by 1.5 meters by 3 0 meters) equals 6.75 cubic meters or 6.75 kiloliters. Two floor squares equal 13.5 kiloliters or one displacement ton.

When allocating space within the craft, assume only a portion of the specified volume for extended accommodation (staterooms, bunks, low berths, and so on) is used; the remainder should be used in common areas and other accomodations for the crew.

A leeway of 10% to 20% should be allowed. If the final craft plan comes within 20% of the craft's UCP volume, the plan is acceptable.



WEAPON STAT FORMATS

	Ammo Notes	*Rounds*	*Pen/ Atten*	*Dmg*	*Max Rng*	*Auto Tgts*	*Danger Space*	*Sig*	*Recoil*	*Diff as*
Plasma A-10	0	0	44/5	20	VDist(5.1)	2	15	Hi	—	FCTL
HiV 2cm CPR	HE	50	1	6	VLong(2.0)	—	—	Med	—	FCTL
	KEAP	50	2	4	VLong(2.0)	—	—	Med	—	FCTL

Starship Combat

In the uncertain environment of the divided Imperium, interstellar conflicts are certain to happen. Starship combat addresses handling such conflicts between space-faring craft

A starship combat situation occurs when a side of adventurers (in a spacecraft) encounters another space-faring craft—and violence is offered by either side.

Starship combat is task-based. As with personal combat, the players are familiar with the concepts of tasks, so they can immediately make reasonable decisions about when to fight and when to prudently make a run for it

These rules are intended for a situation in which the referee must run fewer than 20 spacecraft. The combat rules are presented in two parts: the first part covers the Basic Rules and the second part covers Special Rules. The Basic Rules cover all that is needed to resolve ordinary space combat encounters, and the Special Rules section discusses special combat situations that can occur.

THE BASIC RULES

At the beginning of a combat encounter, a marker representing each individual ship is placed on the playing surface.

Combat involves locating targets by using sensors and performing successive attacks (such as missile fire, laser shots, or spinal meson fire) on the located targets.

A basic "to hit" task is used in every case to obtain a hit; the basic task is modified by such considerations as range between the attacker and the target, the type of weapon used, the defensive abilities of the target spacecraft, and other such factors. If a hit is obtained, the weapon must penetrate the target's screens and active defenses (such as laser fire destroying incoming missiles). The damage inflicted depends on the type of weapon.

Combat continues until one side is vanquished, flees, surrenders, or is destroyed.

DEFINITIONS

Combat Round: Combat is resolved in rounds. Each combat round represents 20 minutes of elapsed time. Thus, three combat rounds equal one hour.

Within a single round, each individual spacecraft is allowed an opportunity to move and to attack. Each may be attacked by one or more enemy spacecraft.

Once all spacecraft in the battle have been provided with the opportunity to act, the combat round is over, and the next combat round begins.

Distance Scale: Combat is conducted on graph paper or hex-grid paper. The distance scale is 25,000 kilometers per square (or hex).

Unit: Refers to a single spacecraft. Markers, crude models, or finely detailed miniatures are all suitable to represent units. However, because of the need to create uncertainty when trying to get positive sensor contact on a target, the combat session should start out with generic markers indicating the location of each starship on the playing surface.

Range Bands: For convenience, space combat divides distance into a series of special ranges. These ranges are:

Visual: Very distant or less (under 50 km).
Near: Very distant to planetary (50 km to 50,000 km).
Far: Planetary to Far Orbit (50,000 km to 500,000 km).
Extreme: Beyond Far Orbit (Beyond 500,000 km)

In terms of distance on the playing surface, the ranges are:

Visual: 1 square (adjacent)
Near: 2 squares
Far: 3 to 10 squares
Extreme: 11+ squares

The starting range of a combat situation depends on the referee's specific statement about the encounter.

Tasks: All combat activities use tasks. Most combat tasks have an absolute time increment of one combat round. Also, in starship combat, unless specifically stated otherwise, all tasks are "nonrepeatable" tasks. In other words, try the task once and if it fails, you are done.

ROLE OF THE TACTICS SKILLS: THE TACTICAL POOLS

Before a combat session begins, total up all the Fleet Tactics skill levels of the participants on each side. This total is known as the "fleet tactics pool." Fleet tactical points can be used as a special "roving DM" on any combat task roll. The number of tactical points to be used as a DM must be specified before the roll is made.

Total up the Ship Tactics skill levels of all the crewmembers of a given spaceship. This total becomes the "ship tactics pool" for that ship. Ship Tactics skill can be used as a DM on any task related to the activities of that given ship.

Once a tactical point is expended, it is used up for the combat round. Any number of tactical points may be used on a given roll as long as they are available. The tactical point pool is received anew each combat round. Any unused tactical points at the end of the combat round are lost and may not be carried over to the next combat round.

Obviously, tactical points are quite valuable because they can be used to favorably influence the outcome of any tasks that are viewed as vital to the success of the attack.

Tactical points may never be used to create a task DM that exceeds the ±8 task DM limit

SETTING UP THE COMBAT SESSION

Once an starship encounter appears to require force, the playing surface must be set up.

Generic markers must be used because sensor scans are required to identify enemy units and make them available as targets.

Each unit's initial speed must be determined. The initial speed can be any value up to ten times the unit's maneuver drive G-number. Of course, high speeds can make it difficult for a unit to stay on the playing surface, so the initial speed needs to be carefully considered. The referee may want to dictate the initial speed as a part of the encounter set up.

THE COMBAT PROCEDURE

Once the playing surface is set up, combat can begin. Each step is described in detail below.

Step 1: Determine Surprise

Surprise is determined only once per combat encounter. Surprise is possible for either side, and the element of surprise gives an advantage both in attacking and in avoiding the enemy.

Surprise is a task, rolled by the side which makes the first hostile move.

To determine if an attacking side has surprise·
Difficult, Leader, Sensor Ops (confrontation).

Referee: Success at this task provides the attacking side with the benefits of surprise. Use the best Leader skill level and Sensor Ops skill level from among the crewmembers of each side. Since this is a confrontation task, both parties contribute DMs as described in the Referee's Guide to Tasks chapter.

If this task fails, both parties are considered to be aware of each other. If any mishap occurs, the defending side has surprise instead.

While in most attack situations the chance of surprise is Difficult, the referee must weigh each situation and set the difficulty accordingly. For example, if the defending side has no reason to expect an attack, the surprise may become Routine. On the other hand, if the attacking side consists of a pirate vessel known to be in the system attacking some local system defense boats with high-quality sensors, achieving surprise may be a Formidable task

Benefits of Surprise: A side with the element of surprise may elect to end the combat situation before it even starts by so stating. NPC-piloted spacecraft which have surprise and are outnumbered can avoid the combat encounter if the referee so chooses.

A side with the element of surprise may freely attack until surprise is lost. The surprised side must continue with the action they were performing before the combat occurred, and it cannot attack in return. All craft of the attacking side may each make one surprise attack. If surprise is not lost, each member of the side may make another surprise attack. This continues until surprise is lost.

Surprise is lost when any unit in the other side gives the alarm in some manner. All spinal mount shots will alert the enemy to an attack; turret and bay fire may not. Any unit that is hit but not rendered inoperative will raise the alarm.

If the alarm is not raised in this manner, there is a chance that an unattacked unit in the defending side will see the attack and give the alarm, as per the following task

To raise an alarm in a surprise attack:
Difficult, Leader, Sensor Ops.

Surprise continues until it is lost, and so it may continue indefinitely. Once surprise is lost, normal combat begins. At the moment surprise is lost, the combat round ends; the attacker may no longer make any further surprise attacks.

Step 2: Fight a Round of Combat

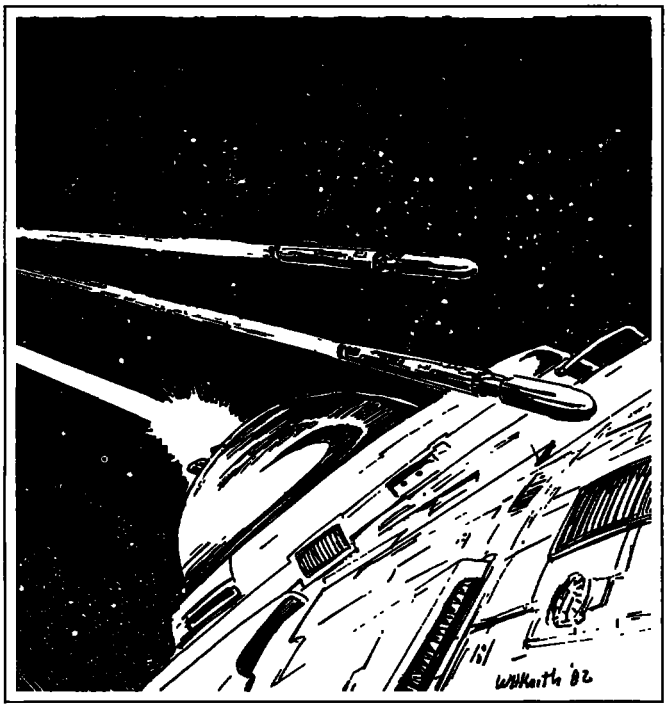
At the beginning of each combat round, the side with the largest tactical point pool gets to select which side goes first.

Once a side has been selected, one unit from that side may take its turn. The unit may move, make sensor scans, and make attacks (limit of one attack per battery per combat round). Any attacks made take effect immediately. Once the unit's turn is finished, one unit from the other side may take a turn. Turns continue to alternate back and forth from side to side in this manner until all units on both sides have had an opportunity to take a turn. Once all have had a chance to take their turn, the combat round is over, and a new combat round begins.

Interrupts: A unit from the opposing side that has not yet taken a turn can choose to interrupt another unit's turn and take their turn in the middle of that unit's turn.

To interrupt another unit's turn:
Routine, Agility (safe).

Referee: If this task is successful, it becomes the interrupting



unit's turn the unit's turn is considered spent for the combat round A failed interrupt roll doesn't count as a spent turn. Ignore mishaps. Pilot skill may be used in place of agility on this task.

Interrupts are subject to these restrictions:

- A unit cannot interrupt the turns of others on his own side.
- Only one active interrupt is permitted per side.
- Only one interrupt is permitted per enemy attack, sensor scan, or square of enemy movement.

Combat Actions: During their turn, all units may move, perform sensor scans, and fire.

Movement: Movement speed is specified based on the unit's maneuver drive value For example, a unit with a maneuver drive of 1 can start out from a standing start with a movement speed of 1 for the turn The unit can move a maximum of one square at movement speed 1.

Each unit must specify a movement speed to be used for the turn. The movement speed represents the maximum number of squares the unit can move that turn, however, the unit may move any number of squares less than the maximum, or it may even remain stationary (25,000 km per square is a lot of space—in effect, the unit is circling in the square)

A unit may change speed each combat round by up to its maneuver drive value Thus if a unit with a maneuver drive-6 is moving at speed 10, the next time it takes a turn, it may reduce its speed to as low as speed 4, or it may increase its speed to as high as speed 16 or any value in between. Or it may leave its speed unchanged at 10.

Sensor Tasks· Sensors must locate a unit and lock on to it before it can become a target. The unit's UCP lists the various sensor difficulty levels for the different types of sensors carried by the unit

At any point in its movement, a unit may declare it is performing a sensor task on an enemy unit. Multiple sensor tasks take time; to reflect this, the sensing unit must forego the firing of one weapon battery for every sensor task performed (one sensor task costs nothing). If the craft has no weapon batteries, only two one-sensor tasks may be performed per turn.

Getting a good sensor lock on a target requires two sensor tasks· the target must first be located using a sensor scan task, upon a getting a successful scan, the sensors must be locked onto the target using a sensor pinpoint task.

1. Locating the Target: Locate the desired target with the following task:

To locate an enemy unit with sensors·

Difficulty, Off = Computer Model Number; Def = Range (confrontation)

Referee· Use the most favorable sensor scan difficulty level from among the unit's UCP. Use the number of squares from the sensing unit to the target unit as a negative DM. Optionally, a character may use Sensor Op skill in place of the computer number

Evaluate the results of this task as·

Extreme Failure: Scan failed.

Failure: Target located if Strong/Large

Success: Target located if it is Moderate/Medium or Strong/Large

Extreme Success· Target located

2. Locking Sensors on the Target: Lock on the desired target with the following task·

To lock on to an enemy unit with sensors:

Difficulty, Off = computer model number; Def = range (confrontation, uncertain).

Referee: Use the most favorable sensor pinpoint difficulty level from among the unit's UCP Use the number of squares from the sensing unit to the target unit as a negative DM. Optionally, a character may use Sensor Op skill in place of the computer number.

If the player's task fails, the sensor lock-on failed, but some benefit may still be gained, as follows:

Some truth: Give unit displacement, power, but incorrect type.

Total truth: Give unit displacement, power, and correct type.

Note: Some examples of type include: Express boat, Regal class battlecruiser, and so on.

Once a unit has been the subject of a successful sensor lock on, replace the generic marker (or flip it over, if the reverse side is different) to indicate that a successful sensor lock on exists. Any friendly unit may fire on a target located by a sensor lock on, even though the friendly unit itself did not actually perform the lock on task.

Each new combat round, as long as the unit does not move out of its square, the sensor lock on stays in effect. If the unit moves one or more squares, a new sensor scan and lock on task must be performed.

If the sensing unit uses active sensors for the scan and the enemy has any functioning sensors, the sensing unit must automatically reveal the sensing unit to the enemy as if the enemy had performed an exceptional success sensor scan on the unit using active sensors.

Fire Combat: The defender may fire at any enemy target unit (which has a sensor lock on) using any of the batteries on his unit. He may fire as many or as few batteries as he wants, at any combination of target units He may even decline to fire at all.

1. Sequence of Fire: Fire against each target occurs in the following sequence:

- All batteries which will fire against that ship must be stated.
- A task is performed for each battery to determine if it scored a hit.
- For each battery that achieved a hit, a task is performed to determine if the hit penetrated the defensive fire of the target. Each battery fired by the target ship as defense may not be fired again when he takes his turn.
- A task is performed to determine for each passive defenses of the target ship that must be penetrated.
- If the battery has hit and then penetrated all defenses, then the damage inflicted is determined and applied.

2. Defensive Weapons: Defensive weapons (sandcasters, repulsors, and beam weapons used as missile defense, or proton beams against antimatter missiles) must be allocatec against the hits of specific batteries.

If a unit has eight laser batteries and has been "hit" fou

times by enemy missiles, the player may allocate two laser batteries against each missile battery hit, all eight lasers against one of the missile battery hits, or any other combination.

Passive defenses (nuclear dampers, meson screens, and configuration) resist each battery that hits.

3. Determining Range: Range is determined by tracing the shortest path of squares between the firing unit and the target. Count the number of squares and compare the result to the range table to determine the range used to resolve the fire.

4. Weapon Fire Tasks: When firing, a unit must do these tasks:

To hit a target in starship combat:

Difficult, Off = computer model size, Weapon Table DM, range DM; Def = def DM (confrontation).

Referee: The Weapon Table DM is from a weapon table.

The range DM is as follows:

Laser Weapons: -1 if target beyond planetary range (worse attack)

Missiles: +1 if target beyond planetary range (better attack)

Meson Weapons: -2 if target beyond planetary range (worse attack)

Fusion Weapons: Cannot fire at targets beyond planetary range

Plasma Weapons: Cannot fire at targets beyond planetary range

Tractors: Cannot be directed at targets beyond planetary range.

The def DM comes from the Def: section of the target's UCP.

To penetrate a defense in starship combat·

Difficult, Off = computer model size; Def = computer model size, Defense table DM (confrontation).

Referee: The defense table DM comes from a weapon defense table. Energy weapons provide an Off DM of +2.

5. Additional Direct Fire Notes:

● *Line of Sight:* Attacks on targets require a clear line of sight. Such a line of sight is a straight line from the center of the attacker's square to the center of the target's square. The line of sight may not pass through any obstruction.

Line of sight is usually not even a consideration in open space; however, the presence of a star, planet, moon, or even a large asteroid on the playing surface can block a line of sight.

● *Pinpoint Location:* When at visual range, a unit can specify that a pinpoint location on a target in an effort to hit a location. If an exceptional success hit is achieved, allow the attacker to select the hit location: reroll on the hit location table until the desired location comes up. If exceptional success +2 is achieved, the location is hit with a critical hit. Otherwise, the shot failed to hit the location, and is resolved as normal.

DAMAGE

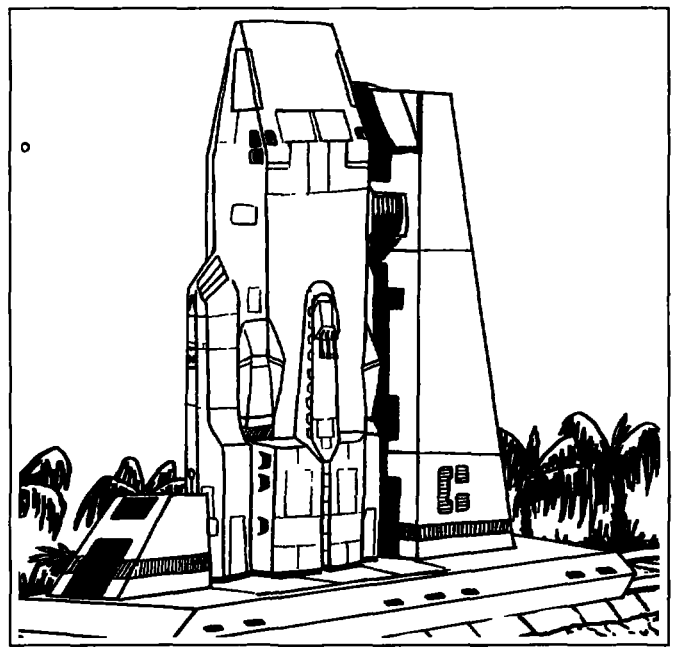
Weapons which penetrate inflict damage. Each battery is allowed one roll on one or more damage tables, depending on weapon type. This roll may be modified by various factors.

Spinal Mounts: Spinal mounts weapons that penetrate inflict one extra damage roll (on each appropriate table) for each letter by which their UCP code exceeds 9 A particle accelerator with a code of A gets 2 rolls on both the surface explosion and radiation tables; a factor of B receives 3 rolls, etc. The number of extra rolls is reduced by one for every 3 levels of armor the target ship has beyond factor 40 (but a weapon always gets one roll). Meson guns are not reduced by armor.

Critical Hits: Find the unit's displacement in the following table. All batteries whose weapon UCP code exceeds the UCP code shown in the second column will inflict (if they hit and penetrate the defenses) one automatic critical hit per weapon UCP code value over the value shown. If a missile battery of factor 9 hits a displacement 400 ship, it will (in addition to any other damage) inflict 5 critical hits. These critical hits are reduced in number by one for every 3 levels of armor the target ship has over 40 Meson gun hits are not reduced by armor.

CRITICAL HIT DISTRIBUTION

Unit Displacement	*1 Critical Hit per Wpn UCP over*	*Unit Disp*	*1 Critical Hit per Wpn UCP over*
below 99	0+	7000	G+
100	1+	8000	H+
200	2+	9000	J+
300	3+	10,000	K+
400	4+	20,000	L+
500	5+	30,000	M+
600	6+	40,000	N+
700	7+	50,000	P+
800	8+	75,000	Q+
900	9+	100,000	R+
1000	A+	200,000	S+
2000	B+	300,000	T+
3000	C+	400,000	U+
4000	D+	500,000	V+
5000	E+	700,000	W+
6000	F+	900,000	X+



In addition to rolled damage, each critical hit reduces a target's armor factor by one A ship's armor factor may not be reduced to less than zero.

CRITICAL HIT TABLE

(2D)	*Critical Hit Result*
2	Ship vaporized.
3	Bridge destroyed.
4	Computer destroyed.
5	Maneuver drive disabled.
6	One screen disabled.
7	Jump drive disabled.
8	Sensors destroyed.
9	Power plant disabled
10	Crew-1.
11	Spinal Mount/Fire control out.
12	Frozen Watch/Ship's troops dead.

DMS FOR SHIP DAMAGE TABLES

- For every 3 armor levels over 40 (defending ship) apply a -1 DM against all weapons on the surface explosions table and all but meson guns on the radiation damage tables.
- If the weapon inflicting the hit is a spinal mount, apply a DM of +6.
- If the weapon inflicting the hit was a nuclear missile, apply a DM of +6 on surface explosion damage.
- If the weapon inflicting the hit was a pulse laser, apply a DM of +2.
- Rolls resulting from other rolls (for example, interior explosion caused by surface explosion) are unmodified.

EXPLANATION OF DAMAGE RESULTS

If an indicated damage location on a ship does not exist, the damage is ignored.

Bridge Destroyed: The ship may not maneuver or jump. It fires and is fired upon as if its computer were half its actual factor (rounding down). If the ship has an auxiliary bridge then command may be transferred to it, negating all penalties

Computer-n: The UCP computer factor is reduced by n. If this result is rolled on the radiation damage table and the computer has a fibre-optic backup, it is ignored.

Computer Destroyed: The UCP computer factor is reduced to zero; the ship may not jump, or launch subordinate craft through launch tubes, although it may continue to fire weapons and maneuver.

Crew-n: One crew section is destroyed Upon reduction of the crew to below 50% of its initial level, the ship may no longer fire its weapons or attempt repair, although it may use its passive defenses, maneuver, or jump. This result does not affect the frozen watch or ship's troops.

Critical: Roll again on the critical hit table. Reduce the ship's UCP armor factor by one for each critical hit received

Frozen Watch/Ship's Troops Dead: On a die roll of 1-3, all personnel in low berths or the frozen watch are dead, on a roll of 4-6, all ship's troops (including marines and security troops) are dead.

Fuel-n: Current fuel is reduced by n% of total fuel capacity (at least 10 tons).

Fuel Tanks Shattered: all fuel on the ship is lost and the ship may not be refuelled. No ship systems requiring energy points may operate.

Interior Explosion: Roll again on the interior explosion table

Jump-n: The UCP jump factor is reduced by the indicated amount

Jump Drive Disabled: The UCP jump factor is reduced to zero.

Maneuver-n: The UCP maneuver factor is reduced by the indicated amount

Maneuver Drive Disabled: The UCP maneuver factor is reduced to zero. The unit must continue moving with its last course and heading unchanged.

One Screen Disabled: One screen (nuclear damper, meson screen, or black globe) of the firing player's choice has its UCP factor reduced to zero

Power Plant-n: Reduce the UCP power plant factor of the target vessel by 10 percent (minimum of 1) for each -n level hit. For example, the Mercenary Cruiser in the *Imperial Encyclopedia* (800-ton displacement) has a power plant UCP factor of 20/40. A power plant-1 hit reduces this by 2 (10 percent of 20) to 18/40. Once the UCP factor is reduced to one-half (10/40), spinal mount weapons (if any) no longer work, and the manuever drive rating drops by one-half An additional five hits on the Mercenary Cruiser would render the ship's power plant inoperative

Any additional hits once the inoperative level is reached are applied as 10 percent damage against the right-hand value (for the Mercenary Cruiser, this reduces the 40 on the right by 4 for each level of power plant hit). If the right-hand number reaches zero, the power plant is destroyed beyond repair.

Power Plant Disabled: The UCP power plant factor is reduced to zero.

Screen-n: The UCP factor for one screen (nuclear damper, meson screen, or black globe) selected by the firing player is reduced by the indicated amount. Damage must be divided as evenly as possible· no screen may receive two hits until all other screens have at least one, or three hits until all others have at least two

Sensors-n: The indicated n number of sensors have been destroyed, selected by the firing player.

Sensors Destroyed: All ship sensors have been destroyed. The ship may no longer fire any weapons.

Ship Vaporized: The ship is utterly destroyed.

Spinal Mount/Fire Control Out: On a die roll of 1-3, the UCP spinal mount factor is reduced to zero; on a roll of 4-6, fire control is out, and no weapons except the spinal mount may fire.

Weapon-n: Each hit destroys one battery of weapons, either offensive (laser, energy weapon, meson gun, particle accelerator, or missile) or defensive (sandcasters, or repulsors). If the ship has only one battery of a type (including spinal mounts), a hit reduces its UCP factor by the indicated amount. As with screens, the firing player chooses which weapons are affected, but damage must be divided as evenly as possible.

SPECIAL RULES

Emergency Agility: Because of the importance of agility, it is possible for a ship to elect not to use energy-consuming weapons in a combat round and instead divert energy to its maneuver drives. In such a case, an emergency agility rating

equal to the ship's maneuver drive may be used. As always, Pilot skill may be substituted for emergency agility if desired

Visible Range: At visible range, several special considerations come into play Because minimal sensor aid is needed at this range, a unit is automatically considered to have a sensor lock on if any friendly unit is at visual range to it.

Spinal mount weapons cannot be used at this range. Spinal mount weapons require moving the entire mass of the ship in order to aim—which is virtually impossible when the target is this close

If a target at this range is hit with nuclear or antimatter missiles, the firing unit also takes radiation hits

Aiming Spinal Mounts: Because a spinal mount must be aimed by moving the entire ship's mass, agility is a good measure of the unit's ability to aim its spinal mount. Optionally, roll the following task to aim a spinal mount before attempting to fire it.

To aim a spinal mount weapon:
Routine, Agility
Referee Pilot skill may be used in place of Agility on this task.

Gunnery Skill: Gunnery skill (turret/bay, spinal, or screens) may be used in place of the computer DM or weapon table DM on the to hit and defensive tasks

Powering Down: A ship may be deliberately powered down to reduce its apparent power plant size to sensors. This dangerous tactic (called the Diskhili maneuver in honor of the Solomani commander Diskhili who used it with great success during the Solomani/Vilani interstellar wars) runs the risk that the power plant may not be restarted as fast as it needs to be. See the chapter on *Travelling* for detailed tasks on starting a starship power plant

Fighter Squadrons: Shipboard fighters are almost always organized into squadrons of 8 to 10 fighters. Because of this, a squadron may be organized into a single "unit" with multiple batteries. Not all of the craft need to be of the same design, but they all must have the same agility.

Tractors: Tech Level 16 tractors only work at near range; Tech Level 17 and beyond tractors also function at far range. Each UCP unit of tractor can seize up to 10,000 tons of weight (not displacement), and it can affect a target's agility according to the following formula:

Tractor Pull ÷ Target Weight = Agility Loss

Multiple tractors can be used in conjunction to increase the tractor pull. Tractors can also be used as an equivalent UCP factor of repulsor Reversed Tractors or repulsors can also be used to cut tractor pull

The Black Globe: Since a black globe absorbs all energy, a ship with its field on is protected from all fire. Unfortunately, the force field works in both directions, the ship may not fire, maneuver, or even see out. These limitations would make the black globe of little value in battle if not for the ability of the field generator to flicker—switch the field on and off many times per second—giving the ship part-time protection while still allowing it to fire, maneuver, and track enemy ships during the "off" intervals

A black globe screen's factor is its maximum rate of flicker; a screen may be on up to 10 percent of the time times its factor. For instance, a screen with a factor of 2 may flicker at a maximum rate of 20 percent; it is on 20 percent of the time in every second. A the beginning of his turn, a player decides the flicker rate of each unit's black globe (if any), which may range from its maximum rate down to zero (off).

Each 10 percent of flicker acts as 6 levels of armor over the base of 40, which protects the owning ship and any enemy ship it fires at. For instance, if a ship has a black globe with a factor of 4 operating at the maximum of 40 percent flicker rate, all damage rolls against the ship will receive a DM of +8, and all damage rolls it inflicts on enemy ships will also have a +8 DM Unlike normal armor, a black globe also affects meson guns.

Energy striking a black globe screen is diverted to the ship's energy sink. Each kiloliter of energy sink will hold 650 "megawatts" of raw, low level energy. When the screen is flickering, a percentage of the incoming energy equal to the flicker rate is absorbed In order to strike the black globe, the weapon must first hit and penetrate all defenses.

The amount of energy a weapon transfers depends on its type and factor. Turret and bay weapons inflict 250 megawatts times their UCP factor. Non-nuclear missiles inflict 500 megawatts times their factor; nuclear missiles inflict 25,000 megawatts times their factor; meson guns inflict 5000 megawatts times their factor.

Spinal mount weapons inflict their full megawatt requirements. For example, a particle accelerator with a factor of 8 would inflict 10,000 megawatts each time it hits and penetrates If the target ship's black globe is operating at a flicker rate of 10 percent, the ship's capacitors would absorb 1000 megawatts.

If a black globe absorbs energy and the ship's energy sinks are already full, the ship is destroyed. A ship without additional energy sinks installed has energy sinks (for the jump drive) equal to:

Volume of the Ship in Kiloliters × Jump Number × 0 005.

Stored energy may be removed from the energy sink by using it to power the ship. Energy may only leave the ship, however, when the black globe is off (or during the off intervals of its flicker)

During a turn, a ship may dispose of its energy from its energy sinks equal to the number of megawatts generated by its power plant, minus 10 percent for every 10 percent of flicker rate of the black globe screen. For example, if a ship's black globe screen is operating at 60 percent and its power plant has an output of 250,000 Mw, then 100,000 Mw may be removed from the ship's energy sinks on that turn.

The screen also affects a ship's ability to maneuver. A ship's agility is reduced by 10 percent (round fractions to the nearest whole number) for each 10 percent of flicker rate of its black globe

Instead of flickering, any black globe may be turned completely on. No enemy fire will affect it, but the ship may not fire or change direction—the ship continues to move with the same heading and speed it had at the time the black globe was turned completely on.

While the black globe is on, all enemy fire automatically hits

the screen, and 100 percent of its energy is absorbed No energy may be removed from the ship's energy sink while the screen is on. All fire also automatically hits (although it may not penetrate the ship's defenses) in the first turn after the black globe is turned off.

If a ship absorbs enough energy to make a jump and is supplied with sufficient fuel, it may jump at the end of the turn

A black globe that is totally on shows up on enemy sensors as a "hole" in space. The prudent commander will flicker his black globe to allow enough emissions from his ship to escape so as to blend in with background levels and effectively be invisible to enemy sensors (roll 1D x 10 percent to determine the flicker rate needed to currently match local backgound levels). A shrewd commander will flicker a white globe for exactly the same effect.

White Globes: Treat white globes just like black globes, except a ship mounting a white globe can see out, maneuver, and fire. All other effects are the same.

Invisibility: Since a black globe field absorbs all energy, a ship with its field completely on is, at any range over a few kilometers, effectively invisible. In battle this will have no effect since a ship that suddenly disappears from enemy sensors in this way will have its course predicted on the basis of its last known position; since the ship cannot maneuver while in the field, the prediction will always be correct.

However, the advantages to a fleet which has not yet been detected by the enemy are immense Suppose, for instance, that a fleet were to jump into a system with its black globes on and its velocity set upon a predetermined course. It could drift unseen past any defending fleet and drop its screens at a preplanned moment to bombard a planet or to engage enemy fleets by surprise.

Further tactical possibilities are left to the imaginations of the referee and players

Boarding: Disabled enemy ships may be captured by boarding In order for boarding to take place, two conditions must be satisfied.

First, the ship to be boarded must be disabled; it must be incapable of maneuvering, all of its offensive weapons must be disabled, and it must not have a working black globe generator.

Second, the ship which has been disabled must be separated by at least one square from any friendly ships which are engaged in protecting the disabled ship from any possible boarding or harm.

At any time thereafter, the disabled ship may be boarded by a boarding party from another ship. Any ship which is capable of maneuver may attempt to board the disabled ship. A ship wishing to engage in an attempt at boarding may initiate the boarding procedure by moving adjacent to the ship to be boarded A boarding party consists of the ship's troops. If the boarding ship has no marines, it will have security troops (consisting of one-third of the ship's service crew station); only marines and troops may board a disabled ship. The entire remaining crew of the disabled ship may fight to defend that vessel

Boarding actions may be resolved by the boarding party through the use of the deck plans, as well as through the use of the personal combat rules

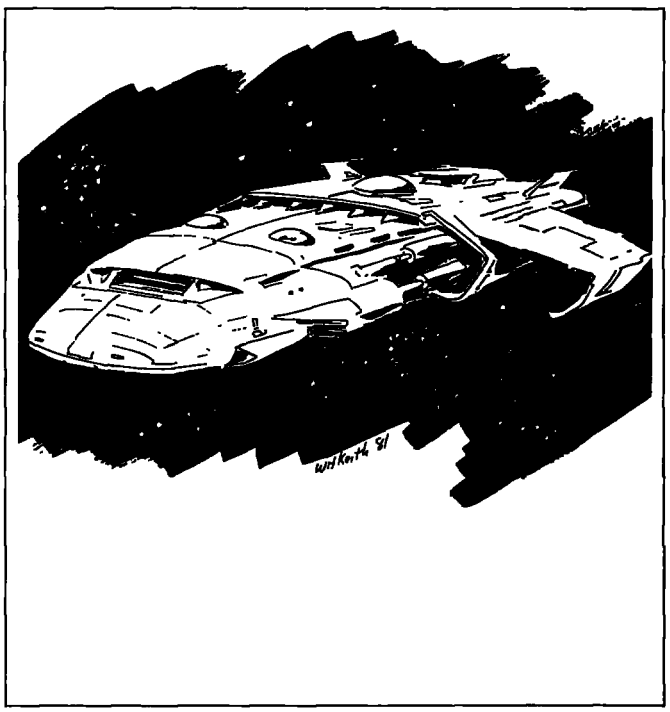
Frozen Watch: A ship's frozen watch is a reserve pool which can be used to replace any crew casualties resulting from ship combat. If a ship has a frozen watch, it may be revived and then used to replace one or more crew sections which were lost in combat.

Damage Control and Repair: It is possible for a ship to undertake emergency repairs, if necessary, during a battle. The damaged ship must be out of range of all enemy ships before the emergency repairs can begin In addition, its crew must be intact (which means its crew factor is at full value). The crew may attempt to repair one ship system for each 10,000 tons of ship or fraction thereof. Attempts may be made to repair weapons (both offensive and defensive weapons which may have been damaged), screens, drives and power plants, and computers.

A repair attempt takes one combat round and is generally considered to be a difficult task. A successful repair attempt negates the effect of one hit; in most cases, this negation means that the repaired system regains one lost factor; weapons batteries that were knocked out with one hit are restored to full function. The crew may not attempt to repair the same system more than once in a turn (although different batteries of the same weapon type may be repaired). The effects of critical hits may not be repaired. The referee should keep in mind that emergency repairs made by the crew are jury-rigged and may not survive long under hard usage.

After the battle has reached a resolution, any ships which have been damaged in the battle may be repaired at shipyards. Jump drives may be repaired at class A starports; any other ship systems may be repaired at class A or B starports. In any situation, repairs to a damaged ship following a battle must be conducted at shipyards of the required Tech Level (although it is an option of the referee to make exceptions to this rule).

Systems repaired during the battle must still be repaired in a shipyard to function properly in the long run



Starship Combat Tasks

To hit a target in starship combat:
Difficult, Off = computer size, weapon table DM, range DM; Def = def DM (confrontation)
Referee: The range DM is

Laser Weapons:	−1 if target is beyond planetary range (worse attack).
Missiles:	+1 if target is beyond planetary range (better attack).
Meson Weapons:	−1 if target is beyond planetary range (worse attack).
Fusion Weapons:	Cannot fire at targets beyond planetary range.
Plasma Weapons:	Cannot fire at targets beyond planetary range.
Tractors:	Cannot be directed at targets beyond planetary range.

Weapon Table DM is found in the appropriate weapon table.
Def DM (computed as part of UCP) equals Computer Size + Agility + Target Size DM.

To penetrate a defense in starship combat:
Difficult, Off = computer size, Penetration Table DM; Def = computer size, (confrontation)
Referee: Energy weapons provide an additional Off DM +2. The Penetration Table DM belongs under the offensive DMs and is added, rather than being a defensive DM that is subtracted.

TARGET SIZE DMS

Tonnage	*DM*
under 100	+2
under 1000	+1
under 10,000	+0
10,000 or more	−1
100,000 or more	−2

RANGE BANDS

Visual:	50 km or less (very distant and less).
Near:	50 to 50,000 km (regional, continental, and planetary).
Far:	50,000 to 500,000 km (far orbit).
Extreme:	500,000 km to 5,000,000 km (extreme orbit).

1 Disintegrators

	Attacking Disintegrator Factor														
	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
To Hit:	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12

To Pen:	Nuclear Damper														
1	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9
2	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9
3	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8
4	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8
5	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7
6	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7
7	-1	0	0	1	1	2	2	3	3	4	4	5	5	6	6
8	-1	-1	0	0	1	1	2	2	3	3	4	4	5	5	6
9	-2	-1	-1	0	0	1	1	2	2	3	3	4	4	5	5
A	-2	-2	-1	-1	0	0	1	1	2	2	3	3	4	4	5
B	-3	-2	-2	-1	-1	0	0	1	1	2	2	3	3	4	4
C	-3	-3	-2	-2	-1	-1	0	0	1	1	2	2	3	3	4
D	-4	-3	-3	-2	-2	-1	-1	0	0	1	1	2	2	3	3
E	-4	-4	-3	-3	-2	-2	-1	-1	0	0	1	1	2	2	3
F	-5	-4	-4	-3	-3	-2	-2	-1	-1	0	0	1	1	2	2

2 Jump Projectors

	Attacking Jump Projector	
	A	B
To Hit:	7	7

To Pen:	Jump Damper	
1	2	2
2	1	2

3 Tractors

	Attacking Tractor Factor								
	1	2	3	4	5	6	7	8	9
To Hit:	5	5	6	6	7	7	8	8	9

To Pen:	Repulsor								
1	9	10	11	11	11	11	11	11	11
2	8	9	10	11	11	11	11	11	11
3	7	8	9	10	11	11	11	11	11
4	6	7	8	9	10	11	11	11	11
5	5	6	7	8	9	10	11	11	11
6	4	5	6	7	8	9	10	11	11
7	3	4	5	6	7	8	9	10	11
8	2	3	4	5	6	7	8	9	10
9	1	2	3	4	5	6	7	8	9
A	0	1	2	3	4	5	6	7	8
B	-1	0	1	2	3	4	5	6	7
C	-2	-1	0	1	2	3	4	5	6
D	-3	-2	-1	0	1	2	3	4	5
E	-4	-3	-2	-1	0	1	2	3	4
F	-5	-4	-3	-2	-1	0	1	2	3

4 Beams

Attacking Beam Factor

	1	2	3	4	5	6	7	8	9	A	B	C
To Hit:	3	4	4	5	5	6	6	7	7	8	8	9

To Pen: Sand

1	5	6	7	8	9	10	11	11	11	11	11	11
2	4	5	6	7	8	9	10	11	11	11	11	11
3	3	4	5	6	7	8	9	10	11	11	11	11
4	2	3	4	5	6	7	8	9	10	11	11	11
5	1	2	3	4	5	6	7	8	9	10	11	11
6	0	1	2	3	4	5	6	7	8	9	10	11
7	-1	0	1	2	3	4	5	6	7	8	9	10
8	-2	-1	0	1	2	3	4	5	6	7	8	9
9	-3	-2	-1	0	1	2	3	4	5	6	7	8
A	-4	-3	-2	-1	0	1	2	3	4	5	6	7

5 Meson Guns

Attacking Meson Gun Factor

	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
To Hit:	4	4	5	6	6	6	7	7	7	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	10	10	10	10	10	10

To Pen: Meson Screen

1	-5	-4	-4	-3	-3	-2	-2	-1	-1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13
2	-5	-5	-4	-4	-3	-3	-2	-2	-1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13
3	-6	-5	-5	-4	-4	-3	-3	-2	-2	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12
4	-6	-6	-5	-5	-4	-4	-3	-3	-2	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12
5	-7	-6	-6	-5	-5	-4	-4	-3	-3	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
6	-7	-7	-6	-6	-5	-5	-4	-4	-3	-1	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11
7	-8	-7	-7	-6	-6	-5	-5	-4	-4	-1	-1	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10
8	-8	-8	-7	-7	-6	-6	-5	-5	-4	-2	-1	-1	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10
9	-9	-8	-8	-7	-7	-6	-6	-5	-5	-2	-2	-1	-1	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9
A	-9	-9	-8	-8	-7	-7	-6	-6	-5	-3	-2	-2	-1	-1	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9
B	-10	-9	-9	-8	-8	-7	-7	-6	-6	-3	-3	-2	-2	-1	-1	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8
C	-10	-10	-9	-9	-8	-8	-7	-7	-6	-4	-3	-3	-2	-2	-1	-1	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8
D	-11	-10	-10	-9	-9	-8	-8	-7	-7	-4	-4	-3	-3	-2	-2	-1	-1	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7
E	-11	-11	-10	-10	-9	-9	-8	-8	-7	-5	-4	-4	-3	-3	-2	-2	-1	-1	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7
F	-12	-11	-11	-10	-10	-9	-9	-8	-8	-5	-5	-4	-4	-3	-3	-2	-2	-1	-1	0	0	1	1	2	2	3	3	4	4	5	5	6	6

To Pen: Configuration

0	-3	-3	-2	-2	-2	-1	-1	-1	0	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9
1	-1	-1	-1	0	0	0	1	1	1	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9	9	10	10	10
2	0	0	1	1	1	2	2	2	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9	9	10	10	10	11	11	11	11
3	1	2	2	2	3	3	3	4	4	5	6	6	6	7	7	7	8	8	8	9	9	9	10	10	10	11	11	11	11	11	11	11	11
4	4	4	5	5	5	6	6	6	7	8	8	9	9	9	10	10	10	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
5	5	6	6	6	7	7	7	8	8	9	10	10	10	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
6	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	8	8	9	10	10	10	11	11	11	11	11	11	11	11	11	11	11	11
7	-4	-4	-3	-3	-3	-2	-2	-2	-1	0	0	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	8
8	7	7	7	8	8	8	9	9	9	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
9	-3	-2	-2	-2	-1	-1	-1	0	0	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9

6 Missiles

Attacking Missile Factor

	1	2	3	4	5	6	7	8	9	A	B	C	D
To Hit:	4	4	5	5	6	6	7	7	8	8	9	9	10

To Pen: Sand or Beam

1	6	7	8	9	10	11	11	11	11	11	11	11	11
2	5	6	7	8	9	10	11	11	11	11	11	11	11
3	4	5	6	7	8	9	10	11	11	11	11	11	11
4	3	4	5	6	7	8	9	10	11	11	11	11	11
5	2	3	4	5	6	7	8	9	10	11	11	11	11
6	1	2	3	4	5	6	7	8	9	10	11	11	11
7	0	1	2	3	4	5	6	7	8	9	10	11	11
8	-1	0	1	2	3	4	5	6	7	8	9	10	11
9	-2	-1	0	1	2	3	4	5	6	7	8	9	10
A	-3	-2	-1	0	1	2	3	4	5	6	7	8	9

To Pen: Repulsor or Disintegrator

1	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8
2	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7
3	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
4	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5
5	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4
6	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3
7	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2
8	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1
9	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0
A	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1
B	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2
C	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3
D	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4
E	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5
F	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6

To Pen: Nuclear Damper or Proton Screen

1	1	2	3	4	5	6	7	8	9	10	11	11	11
2	0	1	2	3	4	5	6	7	8	9	10	11	11
3	-1	0	1	2	3	4	5	6	7	8	9	10	11
4	-2	-1	0	1	2	3	4	5	6	7	8	9	10
5	-3	-2	-1	0	1	2	3	4	5	6	7	8	9
6	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8
7	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7
8	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
9	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5
A	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4
B	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3
C	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2
D	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1
E	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0
F	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1

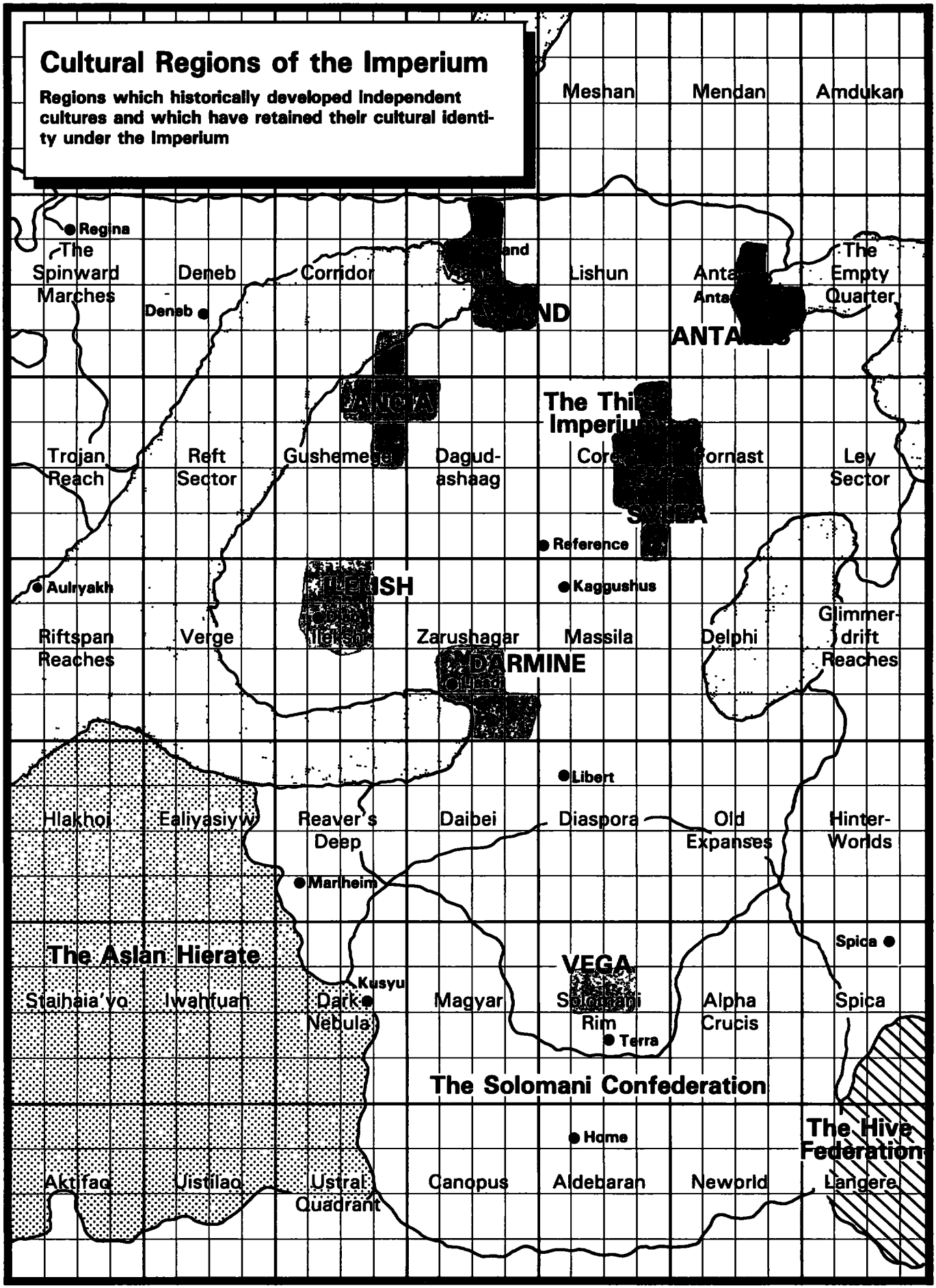
7 Particle Accelerators

Attacking Particle Accelerator Factor

	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
To Hit:	2	3	4	4	5	5	6	6	7	8	8	8	8	8	9	9	9	9	9	10	10	10	10	10	11	11	11	11	11	12	12	12	12

STARSHIP DAMAGE TABLES

Die	*Surface Explosion Damage Table*	*Radiation Damage Table*	*Interior Explosion Damage Table*
−2	No Effect	No Effect	No Effect
−1	Weapon -1	Weapon -1	Power Plant -1
0	Weapon -1	Weapon -1	Jump -1
1	Fuel -1	Weapon -1	Screens -1
2	Weapon -1	Weapon -1	Sensor -1
3	Weapon -1	Weapon -2	Power Plant -1
4	Fuel -1	Sensor -1	Jump -1
5	Weapon -1	Computer -1	Screens -1
6	Weapon -1	Weapon -2	Computer -1
7	Fuel -1	Sensor -2	Power Plant -1
8	Maneuver -1	Computer -2	Sensors -2
9	Weapon -2	Weapon -4	Computer -1
10	Fuel -2	Sensor -2	Crew -1
11	Maneuver -1	Computer -1	Power Plant -2
12	Weapon -3	Computer -2	Jump -2
13	Fuel -3	Crew -1	Screens -3
14	Maneuver -2	Computer -3	Sensors -3
15	Interior Explosion	Crew -1	Fuel Tanks Shattered
16	Interior Explosion	Computer -4	Critical
17	Interior Explosion	Crew -2	Critical
18	Critical	Critical	Critical
	Use this column for:	*Use this column for:*	*Use this column for:*
	Fusion, Plasma, Laser, Missiles, Particle Accelerator, and Disintegrator.	Particle Accelerator, Nuclear and Antimatter Missiles, and Meson Guns.	Meson Guns


Cultural Regions of the Imperium
Regions which historically developed independent cultures and which have retained their cultural identity under the Imperium
Meshan
Mendan
Amdukan
Regina
The Spinward Marches
Deneb
Corridor
Lishun
The Empty Quarter
Deneb
Trojan Reach
Reft Sector
Gushemege
Dagudashaag
Ley Sector
Reference
Aulnyakh
Kaggushus
Riftspan Reaches
Verge
Zarushagar
Massila
Delphi
Glimmerdrift Reaches
Libert
Hlakhoi
Ealiyasiyw
Reaver's Deep
Daibei
Diaspora
Old Expanses
Hinter-Worlds
Marheim
The Aslan Hierate
Spica
VEGA
Kusyu
Staihaia'yo
Iwahfuah
Dark Nebula
Magyar
Rim
Alpha Crucis
Spica
Terra
The Solomani Confederation
Home
The Hive Federation
Aktifaq
Jistilao
Ustral Quadrant
Canopus
Aldebaran
Neworld
Langere

CONVENTIONAL EXPLOSIVES PENETRATION AND DAMAGE

Armor Value	Penetration TL 5	TL 7	TL 9	TL 11	TL 13	Breach TL 5	TL 7	TL 9	TL 11	TL 13
1	1	1	1	1	1	250	167	125	100	83
2	1	1	1	1	1	255	170	128	102	85
3	1	1	1	1	1	260	173	130	104	87
4	1	1	1	1	1	265	177	133	106	88
5	1	1	1	1	1	270	180	135	108	90
6	1	1	1	1	1	276	184	138	110	92
7	1	1	1	1	1	282	188	141	113	94
8	1	1	1	1	1	288	192	144	115	96
9	1	1	1	1	1	294	196	147	118	98
10	1	1	1	1	1	300	200	150	120	100
15	1	1	1	1	1	330	220	165	132	110
20	1	1	1	1	1	365	243	183	146	122
25	1	1	1	1	1	401	267	201	160	134
30	1	1	1	1	1	454	303	227	182	151
40	12	8	6	5	4	730	487	365	292	243
50	150	100	75	60	50	1 8 tn	1 2 tn	888	710	592
60	2.0 tn	1 3 tn	1 0 tn	800	667	16.4 tn	10 9 tn	8 2 tn	6.6 t	5.5 tn
70	27.5 tn	18 3 tn	13 8 tn	11.0 tn	9.2 tn	81.9 tn	54 5 tn	40.9 tn	32 8 tn	27.3 tn
80	375 tn	250 tn	190 tn	150 tn	125 tn	625 tn	415 tn	310 tn	250 tn	210 tn
90	5 0 ktn	3 3 ktn	2.5 ktn	2.0 ktn	1.7 ktn	7 5 ktn	5.0 ktn	3 8 ktn	3 0 ktn	2.5 ktn
100	82 ktn	55 ktn	41 ktn	33 ktn	27 ktn	1 Mtn	67 ktn	50 ktn	40 ktn	33 ktn

SHAPED EXPLOSIVES PENETRATION AND DAMAGE

Armor Value	Penetration TL 7	TL 9	TL 11	TL 13	Breach TL 7	TL 9	TL 11	TL 13
1	1	1	1	1	18	14	11	9
2	1	1	1	1	18	14	11	9
3	1	1	1	1	18	14	11	9
4	1	1	1	1	19	14	11	9
5	1	1	1	1	19	14	11	9
6	1	1	1	1	19	14	11	9
7	1	1	1	1	19	14	11	10
8	1	1	1	1	19	14	11	10
9	1	1	1	1	19	15	12	10
10	1	1	1	1	19	15	12	10
15	1	1	1	1	20	15	12	10
20	1	1	1	1	21	16	13	11
30	1	1	1	1	24	18	14	12
40	2	2	1	1	30	23	18	15
50	10	8	6	5	54	41	32	27
60	58	44	35	29	143	108	86	72
70	317	238	190	158	517	388	310	258
80	4 1 tn	3.1 tn	2 4 tn	2.0 tn	4 9 tn	3.7 tn	3 0 tn	2 5 tn
90	12 2 tn	9 1 tn	7.3 tn	6.1 tn	15 2 tn	11 4 tn	9.1 tn	7 6 tn
100	72 6 tn	54.5 tn	43 6 tn	36.3 tn	85 7 tn	64.3 tn	51 4 tn	42.9 tn
110	330 tn	250 tn	200 tn	165 tn	480 tn	360 tn	290 tn	240 tn

TDX PENETRATION AND DAMAGE

Armor Value	Penetration TL 9	TL 11	TL 13	Breach TL 9	TL 11	TL 13
1	1	1	1	55	37	22
2	1	1	1	55	37	22
3	1	1	1	55	37	22
4	1	1	1	56	37	22
5	1	1	1	56	37	22
6	1	1	1	56	37	22
7	1	1	1	57	38	23
8	1	1	1	57	38	23
9	1	1	1	58	39	23
10	1	1	1	58	39	23
15	1	1	1	61	41	24
20	1	1	1	63	42	25
30	1	1	1	71	47	28
40	6	4	2	90	60	36
50	30	20	12	162	108	65
60	175	117	70	430	287	172
70	950	633	380	1 6 tn	1 0 tn	620
80	12 2 tn	8 1 tn	4 9 tn	14 8 tn	9 9 tn	5.9 tn
90	36 6 tn	24.3 tn	14 6 tn	45.6 tn	30.4 tn	18 2 tn
100	215 tn	145 tn	87 2 tn	260 tn	170 tn	100 tn
110	1 0 ktn	670 tn	400 tn	1.4 ktn	960 tn	575 tn

The listed number indicates how many kilograms of explosive is required to do the indicated task.

Penetration: Does 15 points of damage (for TDX, this is perpendicular to the plane of gravity), and penetrates the indicated armor value enough to break its sealed environment integrity.

Breach: Does 250 points of damage (for TDX, this is perpendicular to the plane of gravity), penetrates the indicated armor value, and leaves a hole one meter in diameter in the armor

Abbreviations: The following abbreviations are used for explosive quantity

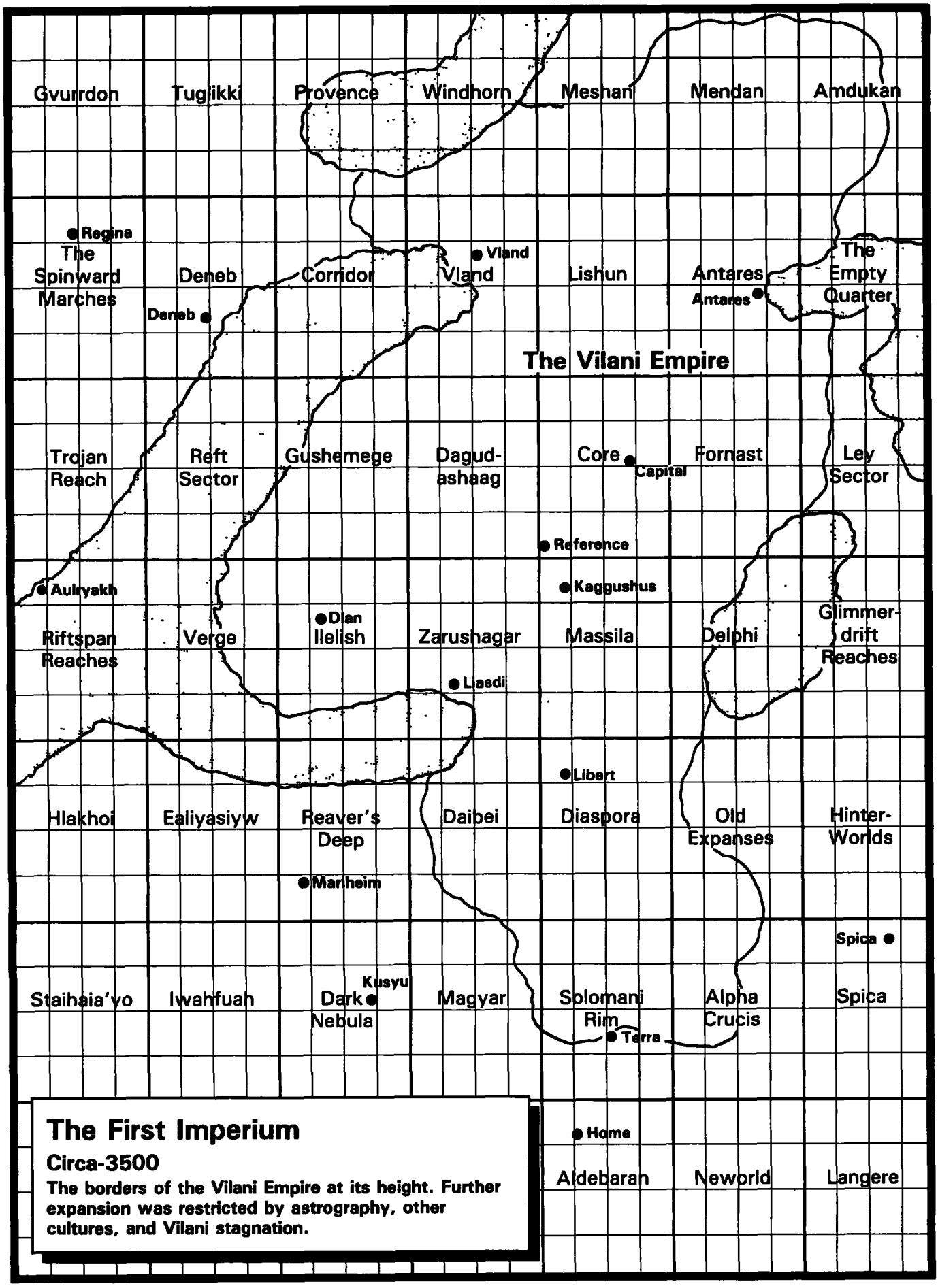
tn = ton (1000 kg)
ktn = kiloton (1000 tons)
Mtn = Megaton (1,000,000 tons)

Prices: Established base prices for explosives are

Conventional. Cr5 per kilogram Conventional explosives are available beginning at Tech Level 5

Shaped Charge· Cr10 per kilogram Shaped charge explosives are available beginning at Tech Level 7.

TDX. Cr150 per kilogram TDX gravity polarized explosives are available beginning at Tech Level 9



The First Imperium

Circa-3500

The borders of the Vilani Empire at its height. Further expansion was restricted by astrography, other cultures, and Vilani stagnation.

MEGATRAVELLER™

REFEREE'S MANUAL

The thousand-year empire has fallen in an instant. An assassin has cut down the emperor and his heirs in one bold stroke and thrown the largest, most stable interstellar empire in history into chaos. There are many candidates for the empty throne, and without agreement on their qualifications, the worlds of the Imperium are divided in their allegiances. By a curious twist of fate, the assassin himself controls three rebellious sectors. The emperor's nephew, considered by many to be a murderer himself, has assumed the throne over the objections of the Imperial Assembly. Other pretenders have stepped forward. Star fleets battle throughout the disputed territories. Sectors are stripped of their fleets to fight in the rebellion, and imperial territory is invaded by alien forces sensing weakness and plunder. Sector after sector secedes from the Imperium to manage its own defense. Sector after sector falls to external forces.

And on this stage of rebellion and interstellar chaos, **Traveller** sets an ongoing drama of role-playing adventure....Players travel from star system to star system, taking sides in the rebellion, fighting for their cause while fighting to stay alive. The dangers of the interstellar environment combine with the dangers of a shattered Imperium to challenge players and referees, and provide never-ending excitement in the far future.

The *Referee's Manual*. This book is intended as a rules reference for the **Traveller** referee. It includes coverage of vehicle and starship design, starship combat, world and star system generation and description, animal encounters, trade and commerce, detailed task resolution, and administration of adventures.

Other **Traveller** Rules Books. This book is part of a three-book set which provides the basic rules and background for playing the game.

The companion *Players' Manual* is a basic compilation of **Traveller** rules and concepts for the individual player. It includes coverage of character generation, combat resolution, psionics, and tasks.

The companion *Imperial Encyclopedia* is a basic reference for both players and referees. It includes historical essays on the Imperium an other interstellar empires, descriptions of starships and vehicles, lists of equipment and prices, maps of territories,and other information valuable to players and referees.

Traveller is a role-playing game. **MegaTraveller** is the name of this **Traveller** rules system set against the background of star-spanning rebellion in the Imperium. Individual players assume the roles of adventurers in the universe of the far future. A referee (responsible for administering the game for the players) plots out the adventures that the players will face, constructs backgrounds and situations, and finally conducts the players through these adventures in exciting sessions. Each session is a gripping adventure where the players make their own decisions about their own fate and fortune.

MegaTraveller *Referee's Manual*. Intended for **Traveller** referees. Intermediate complexity. Suitable for some solitaire play. Requires two or more six-sided dice (not included).

GDW Game Designers' Workshop Since 1973

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MEGATRAVELLER

REFEREE'S COMPANION

Marc W. Miller

Science-Fiction Adventure in the Shattered Imperium

GDW

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EMERGENCY
EMERGENCY

"The Imperium is the greatest possible accomplishment of modern political science. It has withstood the test of time, dissent, and conflict to establish itself as the supreme authority over more territory, more population, and more technology than any other government ever.

"Yet achieving this goal was not an easy process. The Imperium has taken over a thousand years to reach the position it occupies today. Internal conflict (such as the Civil War more than 600 years ago) and external conflict (such as the wars with the Aslan, the Solomani, and the Zhodani) have all shaped the structure of the Imperial government and its armed forces. Territorial expansion driven by economic forces, population pressures, and natural scientific curiosity pushed the Imperial borders to the very limits a natural government can handle.

"The important fact about the Imperium is that it is stable. The legendary "1000-year Empire" that humanity dreams of is an accomplished fact in the Imperium, which today is well on its way to a second millenium.

"In the years to come, we can look forward to refining the structure of the Imperium, confident in the knowledge that its basic structure is sound and has withstood the tests of time. But the changes that can be foreseen are minimal, and they involve only...

"We interrupt our scheduled programming with an important announcement from Capital..."

—From a broadcast lecture by Ignatz P. Yaonis,
Professor of Political Science, University of Fornast, 119-1116.

MEGATRAVELLER™

REFEREE'S COMPANION

The **Referee's Companion** includes material that a **MegaTraveller** referee will find useful in any adventure situation. The articles in this book make it possible to map stellar sectors, star systems, and individual worlds, to conduct large-scale military operations with ease and efficiency, to understand (and convey background about) the alien races that dominate the borders of the Imperium, and to have interesting, exciting **MegaTraveller** adventures. This volume is intended for the referee; properly used, it can make any **MegaTraveller** activity easier and more enjoyable.

Large-Scale Combat

Large numbers of units in a combat engagement can strain the referee's ability to keep the adventure moving. This generally occurs if the referee must single-handedly run over 20 units, while the player characters each run their own characters (and perhaps one or two other characters) in the combat session The burden is definitely on the referee in such instances.

Large-scale combat addresses the problems of trying to fight large-scale battles by providing logical rules to extend personal combat so that it can easily handle combat involving dozens to hundreds of individual units.

This chapter covers additional special rules which apply especially to large-scale campaigns In fact, using large-scale combat to create entire armies in order to fight massive battles (complete with high-tech weapons, vehicles, unusual creatures, and robots) in fantastic alien environments can be a game unto itself.

THE CONGLOMERATE UNIT

The key to large-scale combat is the *conglomerate unit*: an averaged collection of independent units, combined into a single unit to simplify the management headaches associated with sheer numbers of units.

When creating conglomerate units, observe these limits:

150-Meter Scale:

Maximum Individuals: 150 per conglomerate unit.
Maximum Vehicles: 15 per conglomerate unit.
Maximum Small Craft: 1 per conglomerate unit.

1500-Meter Scale:

Maximum Individuals: 1500 per conglomerate unit.
Maximum Vehicles: 150 per conglomerate unit
Maximum Small Craft 15 per conglomerate unit.

In both cases, a starship-sized unit (100 displacement tons or more) is kept separate.

In practice, the goal in creating conglomerate units is to have no more than 20 units on a side. At this level of engagement, things are kept manageable, yet enough freedom of action remains for realism and flexibility

Once the combat session is over, the important conglomerate units (such as the ones including the player characters) can be subdivided back into their individual component units, and damage can be applied to the appropriate individual units.

DEFINITIONS

Large-scale combat provides alternate definitions for the following fundamental terms presented in personal combat.

Combat Round: A large-scale combat round can represent either one minute of elapsed time (10 personal combat rounds), or 10 minutes of elapsed time (100 personal combat rounds), depending on the distance scale selected.

Within a single round, each unit is allowed an opportunity to move and to conduct multiple attacks in a "firefight exchange." Each unit may be attacked by one or more enemy units. If the time scale is 10 minutes per round, the firefight exchange can continue until the attacker wants the exchange to end. Once the firefight exchange has ended, the combat round is over, and the next combat round begins.

Distance Scale: Two distance scales are used: 150 meters per square (or hex), and 1500 meters (1.5 kilometers) per square.

When using the 150-meter scale, combat is conducted in rounds, each lasting one minute. Since the 150-meter scale is 10 times the 15-meter personal combat scale, increasing the time scale by 10 as well provides identical movement rates in both personal combat and large-scale combat.

When using the 1500-meter scale, the combat round is 10 minutes (10 times the 150-meter combat round) Again, the same movement rates are used, since both distance and time are again both increased by 10.

CONDUCTING A LARGE-SCALE COMBAT SESSION

Most of the personal combat rules still apply, lending a tactical feel to large-scale combat engagements.

- Use of the tactical point pool is the same.
- Surprise is exactly the same.
- Movement is still conducted using movement points. A unit may evade just as in personal combat.
- Direct fire combat is identical Pinpoint hits, however, are not allowed, since conglomerate units are being used
- Conglomerate units are always treated as if they are *one target size* larger than their individual component units.
- Indirect fire has a few minor differences (covered below).
- Hand-to-hand combat is the same.
- Penetration and damage are the same, although vehicles no longer have power plant or locomotion hits, since conglomerate units are being used.

THE LARGE-SCALE COMBAT ROUND

When conducting a large-scale combat round, activities proceed somewhat differently than in personal combat.

Movement: The side with the largest tactical point pool selects which side goes first.

Once a side has been selected, one unit from that side may take its turn. The unit may move and make attacks, just as in personal combat. Any attacks take effect immediately. Once the unit's turn is finished, one unit from the other side may take a turn Turns alternate back and forth from side to side until all units on both sides have had an opportunity to take a turn.

The combat round is then over, and a new combat round begins.

As in personal combat, interrupts are allowed.

Firefight Exchange: A unit may shoot at another unit (just as in personal combat) However, when a unit opens fire on another unit, if the firing unit is spotted, a "firefight exchange" occurs The firing unit makes the first attack; then (if the firing unit is spotted) any single enemy unit may shoot at the active unit (also roll for spotting on the enemy unit) Once the enemy unit has conducted its attack, the first round of the firefight exchange ends

If the distance scale is 1500 meters, the active unit may continue firing indefinitely instead of moving. An interrupt may occur by either side during a firefight exchange—however, the interrupting unit is also subject to fire from an enemy unit if it attacks.

As in personal combat, each side is limited to one active interrupt at a time.

But, if an attack task gets exceptional failure, roll for determination using a fixed DM of 2. If the task becomes Impossible, end the fire exchange.

Damage to Conglomerate Units: When the inoperative hits value of a conglomerate unit reaches one-half its original value, reduce the damage points inflicted by the unit by one-half. For example, a unit has a hits value of 16/21 and has FGMP-15s that do 40 points of damage. When the hits value of 16/21 drops to 8/21 because of damage, reduce the 40 points of damage done by the FGMP-15s to 20 points

When the inoperative hits value of a unit reaches 0, the unit is out of the action: it cannot move or attack.

INDIRECT FIRE

In large-scale combat, indirect fire consists of many ammunition rounds hitting a location instead of a single round.

The concept of an indirect fire beaten zone simulates this effect. When an indirect fire unit fires, the area hit by its shells and their bursts is its beaten zone All units in a beaten zone must roll for explosive round hits using the round's full penetration (which differs from how a danger space works).

The beaten zone is defined as a square which is centered on the target point. The size of the beaten zone is determined by the number of rounds fired, the danger space of each round, and the type of beaten zone selected by the firing player.

Danger Space: The weapon tables indicate the size of the danger space of one round from each listed weapon. Danger space on the map is a square with sides the length given on the chart. A listed danger space of 15 meters produces a square burst area 15 meters by 15 meters in size. Airburst HE rounds have a danger space twice that listed; CBM rounds are four times that listed.

Number of Rounds: The beaten zone of an indirect fire attack is found by using the number of rounds fired by the unit in a turn. When a conglomerate unit is created, the number of rounds fired by indirect fire weapons is computed and recorded.

Beaten Zone: The size of the beaten zone square is a multiple of the danger space of a single round; the exact multiple depends on the number of rounds fired (as shown on the Beaten Zone Table). If the exact number of rounds fired is not shown on the table, use the next lower value on the table. The beaten zone is a square with each side equal to the multiplier times the danger space of a single round. For example, if a unit fires a total of 20 rounds per minute, the beaten zone round number used is 16, which provides a multiplier of 4. Thus, if the weapon's single-round danger space is 15 meters by 15 meters, the unit's beaten zone is 60 meters by 60 meters.

For simplicity, all beaten zones less than one square in size are one square in size.

Beaten Zone Type: Four beaten zone types are possible. In addition to the standard beaten zone, there are dispersed, converged, and shattered beaten zones. A dispersed zone represents fire by twice the standard number of rounds. A converged zone represents half the standard number of rounds. A fourth type of beaten zone, the scattered zone, occurs only as a result of point defense fire (see that section for details).

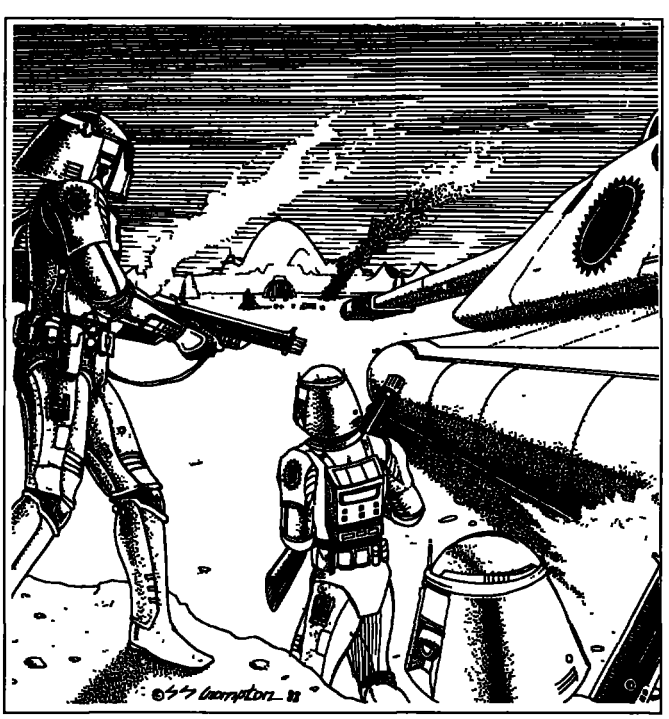
When determining if a unit is hit by an explosive round in a *dispersed* beaten zone, increase the "to hit" task difficulty by one level. Roll twice for hits on each unit in a converged beaten zone.

CREATING CONGLOMERATE UNITS

Individual units are combined and their attributes are averaged or totaled to arrive at new attributes for a single conglomerate unit. Because of the effects of averaging, the best conglomerate units consist of individual units with similar attributes. Producing a conglomerate unit involves a number of steps:

1. Group the Units: Some logical method of grouping the units must be selected. A particularly good way (but not the only way) is to use military organization Often a natural collection of units will suggest itself.

The best conglomerate units are those with similar attributes. The most limiting factor is usually locomotion. For example, combining a grav vehicle with foot soldiers limits the



conglomerate unit to the speed of the foot soldiers. However, vehicles should be combined with other vehicles; characters should be combined with other characters. More specifically, a character in battle dress with a grav belt and an FGMP-15 is best combined with other characters also wearing battle dress and grav belts and carrying FGMP-15s, rather than combined with characters with no armor and wielding body pistols.

On the other hand, combining a single strong unit with several weak ones is a way to "up the average" and increase the survivability of the weaker units. There's a good and a bad side to everything: combining a single strong unit with several weaker ones is a way to lose the strong unit.

A conglomerate unit may only have three types of fire weapons listed for it, and three types of hand-to-hand weapons. If the individual units have more than three types of fire weapons between them, either some units should be swapped out and combined with other similar units; the least-desirable weapons must be ignored

2. Compute the Appropriate Totals: Depending on the attribute, the combined unit total is either a sum or an average The specific procedure for each total is given below.

3. Create the Conglomerate Unit: The computed totals are summarized for each grouping and listed as if the combined units were a single unit.

Once all the conglomerate units have been created, combat may begin.

COMPUTING CONGLOMERATE UNIT TOTALS

This section details the specific procedures used to create conglomerate units by using a simplified example. The end of this section gives a more complicated extended example to show insights into how these procedures are applied.

In all cases, when computing averages for conglomerate units, round 0 5 up to the next whole number.

Conglomerate Unit Example: The five units shown on the Conglomerate Unit Example are being combined into one conglomerate unit

Hits: Add up all the hits values of the individual units and use the total as the hits value for the combined unit

For vehicles or robots, use the lowest of the three values—structure hits, power plant hits, or locomotion hits—as the hits value to be added, ignore the other two hits values

Example: The five characters each have hits of: 3/3, 3/4, 3/5, 3/4, and 4/5. The hits value of the conglomerate unit is the sum of all these values: 16/21.

Weapon Averaging: All weapons of a given type (and even mixed types, although that should be avoided if possible) can be combined into a single averaged weapon, as follows:

- Add all the weapon damage points together, and then divide by 2. This represents the average number of damage points inflicted by the conglomerate unit when it attacks.

Example: Five FGMP-15s are being combined into a single averaged weapon. The FGMP-15 does 16 points of damage, so $(16 \times 5) \div 2 = 40$. The conglomerate unit's FGMPs do 40 points of damage per combat round.

- Add all the weapon penetration values together and divide by the number of weapons. If the penetration has a range rating, average the range rating as well.

Example: As stated, five FGMP-15s are being combined into a single averaged weapon. An FGMP-15's penetration rating is 34/2. Taking the penetration $(34 + 34 + 34 + 34 + 34) \div 5 = 34$. For the range rating, $(2 + 2 + 2 + 2 + 2) \div 5 = 2$. If the weapon mix was instead four FGMP-15s (pen = 34/2) and a PGMP-12 (pen = 20/1), then the computations would be: $(34 + 34 + 34 + 34 + 20) \div 5 = 31.2$ which rounds to 31, and $(2 + 2 + 2 + 2 + 1) \div 5 = 1.8$ which rounds to 2.

- Add all the weapon skill levels together and divide by the number of units.

Example: The five characters each have a high Energy Weapon skill level of: 4, 3, 5, 2, and 4. Computing the average gives $(4 + 3 + 5 + 2 + 4) \div 5 = 3.6$, which rounds to 4

- Add together all the Strength or Dexterity DMs and divide by the number of units.

Example: The five characters each have a Dexterity DM of: +0, +1, +1, +1, and +2. Computing the average gives $(0 + 1 + 1 + 1 + 2) \div 5 = 1.0$ exactly, or +1.

- Add the average skill level and the average Str/Dex DM to create a combined "task +" for the conglomerate unit when it attacks with that weapon.

Example: The combined skill level of the five characters is 4, and the combined dexterity DM is +1. The total "task +" DM is +5.

Armor: Add together all the armor values and divide by the number of units.

Example: The five characters are all in tech 15 battle dress, which has an armor value of 18. The computation is: $(18 + 18 + 18 + 18 + 18) \div 5 = 18.0$, so the armor value of the combined unit is 18. If instead one of the characters was wearing cloth armor, the computation would be: $(18 + 18 + 18 + 18 + 5) \div 5 = 15.4$. In this last case, the armor value of the combined unit would be 15.

Top Movement Speed: Use the movement speed of the slowest unit as the movement speed of the conglomerate unit.

Example. All five units have grav belts (top movement speed 22), so assume a speed of 2 (foot speed) unless otherwise indicated Note any special speed (i.e. grav belt) with that item. If four of the five characters had grav belts, the entire group would be limited to the movement speed of the slowest unit, which is 2 (in this case, it would be better not to combine the unit on foot with the four other units with grav belts).

Skill Levels: Use the highest skill level from among the individual units as the skill level of the conglomerate unit. If the skill doesn't seem to apply in the combat situation (steward skill, for example), then ignore it.

Example: One of the five characters has a skill level of Tactics-2, another has Tactics-1. Three of the five characters have Recon-1, and one character has Leader-3, while two others have Leader-1. The combined unit thus has Tactics-2, Recon-1 and Leader-3

Indirect Fire ROF: The number of rounds an indirect weapon uses is determined from the number of autofire targets the weapon may hit. If the weapon may hit 2 additional autofire targets, the weapon fires 40 rounds per minute; if 3 additional targets, the weapon fires 100 rounds per minute; if 4 additional targets, the weapon fires 200 rounds per minute. Weapons designed using the vehicle design system in the **Referee's Guide** have a specific rounds-per-minute rate already listed for them.

The total rate of fire (ROF) of a conglomerate unit is determined by multiplying the number of weapons firing by the rounds-per-minute rate of the weapon.

Example: A unit consisting of four guns, each with a rounds-per-minute rate of 40, would have an ROF of 160 rounds-per-minute.

Vehicle Capacity in Conglomerate Units: To compute the capacity of a vehicle in terms of the conglomerate units that it can carry, multiply the passenger capacity of the vehicle by the hits value of the average character hits of 3/5.

Example: An armored personnel carrier can carry 20 passengers. Its conglomerate personnel unit capacity is 60/100 (3/5 x 20).

CONVERTING BACK TO INDEPENDENT UNITS

When a conglomerate unit has not taken any damage, converting back to independent units is as simple as pulling out the original independent unit list However, if the conglomerate unit has taken damage during combat, and the component units are important to the adventure (usually this means they contain player characters), then the damage each independent unit has taken must be determined

To illustrate how this is done, consider the conglomerate unit consisting of five characters with FGMPs that was created previously

The unit has taken 11 points of damage.

Applying the damage to the component units of a conglomerate unit is typically done after the combat session is all over

Refer to the original individual component list and inflict the 11 points of damage randomly to the five component individuals. For vehicles and robots, consult the Hit Location Table when applying the hits.

MILITARY ORGANIZATION

If desired, when building conglomerate units, established military organization may be used. The basic building block of military unit organization is the infantry fire team, the weapons crew, or the individual vehicle. These can be organized into larger units, as outlined below.

Introduction to Grouping Units: A fire team contains four soldiers. Leaders, elite troops, veterans, and adventurer characters may be left as individuals. Vehicle crews (for use when outside their vehicles) and weapons crews of less than four men may be grouped into two- or three-man units. Weapons crews of more than four men should be broken up into two or more groups of about equal size.

Note that when it is stated below that soldiers may be left as individual units, they must be veterans or elites to do so.

Unit Organization: Troops, in addition to being grouped into conglomerate units, must be organized into military units. Where the line is drawn between forming a conglomerate unit grouping or using multiple unit organization (in other words, how big you make a conglomerate unit) is up to the players and referee. There is some flexibility in forming conglomerate units, within the following guidelines.

Units are made up of officers, NCOs (noncommissioned officers), and men. There are three types of units: infantry, weapons, and vehicle. It is possible to mix the three together in a single unit.

Team: A team (or fire team) is the smallest organizational unit. In the case of infantry, it consists of four men in a single conglomerate unit. In the case of a vehicle or crew-served weapon, the size of the crew varies. If the crew is four or fewer men, they are divided into as many teams as necessary to avoid having a team larger than four, all teams should be as close to the same size as possible. Thus a weapons crew with 10 men would be divided into two teams of three and one team of four. An infantry team may be formed by two soldiers plus a weapon with a crew of two

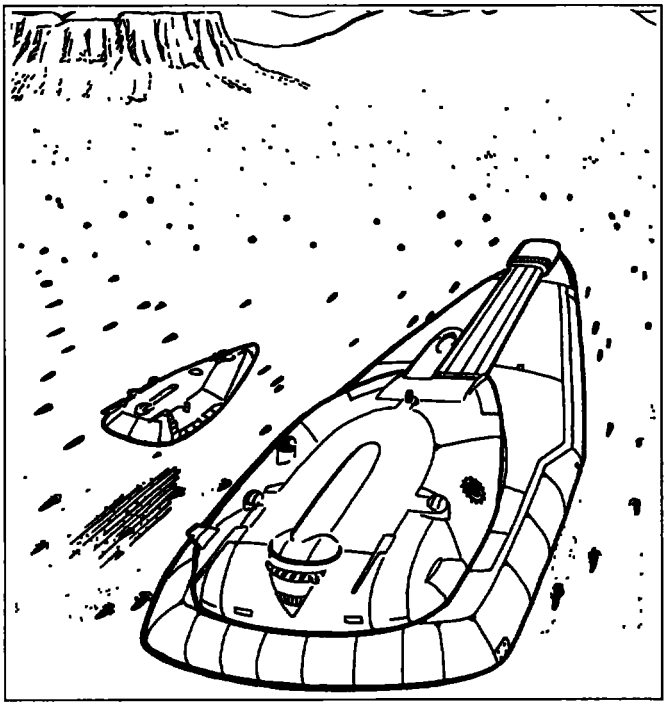
Vehicle Crews: Vehicle crews don't have to be represented as a unique conglomerate unit (unless the crew dismounts during combat), but personnel must be assigned from the player's available troops. The size of each vehicle's crew is determined using vehicle design in the **Referee's Guide**.

There are four crew positions defined: driver, gunner, loader, and commander. On some vehicles there are two gunners, and on others there is no loader. One soldier must be assigned to each crew position. A vehicle commander may also be an officer or NCO.

Squad: A squad consists of two or three teams A vehicle or weapons crew with two or three teams is automatically a squad. Types of teams may be mixed within a squad. For example, a squad might consist of one infantry team, one weapons crew (with four men), and one vehicle with a crew of two carrying the other two teams. There may be no more than one vehicle in any squad; in a vehicle unit, each vehicle is a squad even if it has only a crew of four or fewer.

Each squad has one NCO, who may be either an individual unit, separate from the squad, or may be a man from one of the teams in the squad.

Section A section consists of two squads A section has an NCO, who may be either one of the squad NCOs or a separate individual.



Platoon: A platoon consists of two to five squads. If the platoon has four or five squads, four of them may be grouped into two sections if desired. In addition to its squads (or sections), the platoon contains a command group of one to six men. One of these men is the platoon officer, another may be an NCO (the platoon sergeant), but this is not required. The rest are additional command group personnel: radio operators, runners, extra weapons teams, and so on.

In the command group, teams may consist of two, three, or four men (as always, elites and veterans may be separate). For instance, a platoon command group could have a platoon commander, a platoon sergeant, two radio operators, and the two-man crew of an antitank missile launcher. One radio operator could be assigned to the commander and one to the sergeant, making three teams in the command group.

In vehicle units, the platoon command group consists of the crew of a single vehicle (thus a platoon consists of a command vehicle and two to five other vehicles); the platoon officer is included in the crew.

Any weapons platoon capable of indirect fire may also include one individual forward observer in addition to the command group

Company: A company consists of two to five platoons and has a command group of from one to 10 men, grouped in the same manner as a platoon command group. One of these men is an officer (the company commander); another may be an NCO (the company senior sergeant), but this is not required.

In vehicle units, the company command group consists of the crews of one to three vehicles, totaling no more than 10 men. One vehicle contains the company officer; another may contain an NCO (the senior sergeant) but this is not required.

In weapons units, a company is usually referred to as a battery; in armored units, a company is sometimes referred to as a troop.

Battalion: It is unlikely that a full battalion will be employed in even a large-scale combat session, but a battalion headquarters may be present if two or more companies are present.

A battalion consists of two to five companies and has a command group of eight to 30 men, organized in the same manner as a platoon command group. One of these men is the battalion commanding officer, one is another officer (the battalion executive officer), and one is an NCO (the battalion senior sergeant).

In vehicle units, the command group may have as many vehicles as can be operated by its men. The commander, executive officer, and senior NCO each ride in a different vehicle.

In armored units, a battalion is sometimes referred to as a squadron.

Large Crews: Very large vehicle and weapons crews may have more than three teams; in such cases the crew must be organized as a section, a platoon, or even as a company, depending upon the number of men in the unit.

Marking Units: Each unit should be uniquely identified with a number and/or letter code. If the troops are part of a permanently organized unit, a combination of color and code can be used to identify each unit's place in its battalion organization. For example, B company of a battalion might be called blue battalion. One of its teams might have a code 31A, meaning third platoon, first squad, fire team A.

INITIATIVE AND MORALE FOR MILITARY UNITS

After a unit has been organized and grouped into conglomerate units, the morale and initiative levels of the various conglomerate units should be determined. Each unit is rated separately for its level of initiative and morale based upon the morale levels of the soldier or soldiers in the unit.

Morale: Morale levels of the four qualities of troops are given in the table below

MORALE VALUES

Recruit	4
Regular	7
Veteran	10
Elite	13

In the case of an individual soldier, his combat morale is his individual morale. In the case of a conglomerate unit, the unit's combat morale is the average of the individual morales of the soldiers making up the unit. Fractional results are rounded to the nearest whole number; in the case of a fractional result of exactly 0.5, round up.

For example, a fire team composed of one veteran (morale level 10) and three recruits (morale level 4) would have a team morale of 6 ((10 + 4 + 4 + 4) ÷ 4 = 5.5, rounded to 6) The morale of a vehicle crew is not determined by averaging the morale of its members; its morale is the morale of the vehicle commander

Initiative: The morale level of a unit determines its initiative level. There are three initiative levels in combat: low, average, and high.

All units with a morale of 6 through 10 have average initiative. All units with a morale of 11 or higher have high initiative. As an exception to this, any unit containing an officer has the initiative of the officer, although its morale is determined by the procedure above.

Thus a unit with an elite officer (morale 13) and three recruits (morale 4) would have high initiative, even though it only has a morale of 6.

No low-initiative unit may be used as an officer or NCO; all units containing officer or NCO figures must be organized so as to have at least average initiative

Initiative and morale are very important when using military organization See subsequent rules for their effect.

Example of Determining Initiative: The process of determining unit morale and initiative is fairly involved, and understanding it is essential to playing a military organized combat session. Therefore, the following example of a small unit's organization is provided to illustrate the process.

The referee informs a player that his force will consist of a 46-man infantry platoon consisting of 55 percent recruits, 25 percent regulars, 15 percent veterans, five percent elite Since the total of regulars, veterans, and elite does not come out to even numbers, the referee determines how they are rounded and gives the player a total of 25 recruits, 12 regulars, seven veterans, and two elite. The player organizes them into conglomerate units as a platoon headquarters, a weapon squad, and three rifle squads, as follows:

The platoon headquarters consists of four men: the platoon

commander (an officer), the platoon senior NCO, and two radio operators. The officer and senior NCO are elites; the two radio operators are regulars. The officer and senior NCO are each grouped with one of the radio operators, for two teams of two men each.

The weapons squad is composed of two light machinegun teams, each with one veteran and one recruit, and one tac missile team with one regular and one veteran serving as squad NCO.

All three rifle squads consist of three fire teams, each of four men grouped as a team (a total of nine rifle teams). Two of the teams consist of four recruits each. One of the teams has one regular and three recruits. Three of the teams consist of two regulars and two recruits. Two of the teams have one veteran and three recruits. The last team consists of two regulars and two veterans The last three listed fire teams each contain the NCO of one of the three squads.

The player now determines morale and initiative levels. The officer's team, with one elite and one regular, has a morale of (13 + 7/2 =)10, but has high initiative since it uses the officer's initiative. The senior NCO's team also has a morale of 10, but only average initiative. The weapons squad NCO's team has a morale of (10 + 7/2 =)9 and average initiative.

The two machinegun teams each have a morale of (10 + 4/2 =)7 and average initiative. The two rifle teams consisting of four recruits have a morale of 4 and low initiative. The rifle team consisting of one regular and three recruits has a morale of 5, and low initiative. One of these three fire teams is assigned to each squad.

The three fire teams consisting of two regulars and two recruits have a morale of 6, and thus average initiative. One of these fire teams is assigned to each squad The two fire teams consisting of one veteran and three recruits have a morale of 6 and average initiative also. These two teams contain the squad NCOs for the first and second squads. Finally, the team consisting of two regulars and two veterans has a morale of 9 and average initiative, and contains the squad NCO for the third squad.

COMMANDING MILITARY UNITS

Before each combat round, both sides secretly decide what, if any, command functions their officers and NCOs will engage in during the turn. There are three command functions possible: **lead, order,** and **rally.** An officer/NCO may perform only one of these functions at a time.

Leading is the exercise of command by means of continuous direct personal supervision. Ordering is the exercise of command through orders to units or to other officers/NCOs, which are executed without direct supervision by the ordering officer/NCO. Rallying is the use of an officer/NCO's personal presence to return routed troops to combat.

Officers and NCOs: Differentiation is made in organization between officers and NCOs. The distinction is important, as their command abilities differ in several ways, as explained below. The abilities of officers/NCOs also differ, depending on their initiative levels, explained below as well.

Initiative: Troops of the three initiative classes respond differently to command. High-initiative troops do not require orders or leading: they will act independently and are directly controlled. Average-initiative troops must be ordered or led in order to perform most actions: they will not respond to orders alone.

If low-initiative troops are not being led, they may fire at any enemy troops that are adjacent and perform actions mandated by adverse morale check results. If average-initiative troops have no orders and are not being led, they may, in addition to the actions described above, fire at any enemy troops who have fired at their unit.

Leading: Units which are being led by a high-initiative officer/NCO may perform any action desired Troops who are being led by an average-initiative officer/NCO may perform any action consistent with the orders under which the officer/NCO is acting.

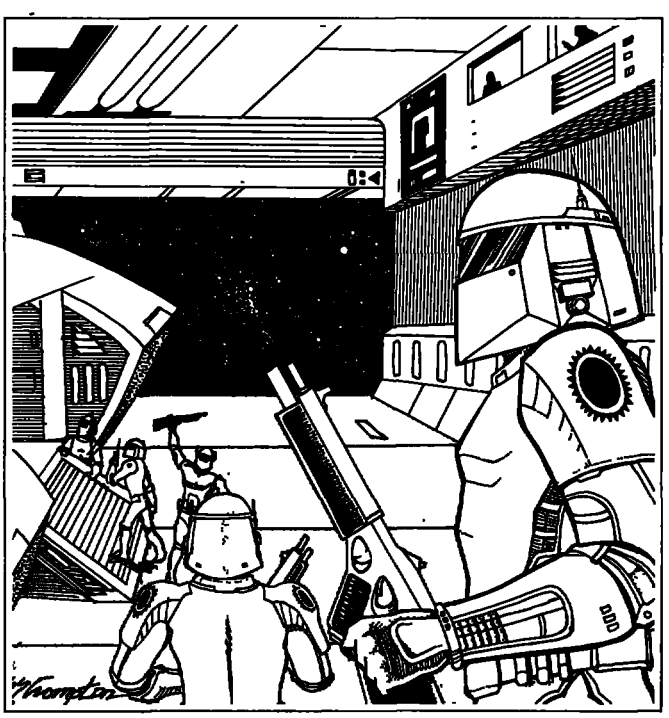
Who May Lead. Any officer may lead any soldiers Any high-initiative NCO may lead any soldiers. Any average-initiative NCO may led any soldiers normally under his leadership. (For example, a platoon senior NCO could lead any soldiers from his own platoon, but could not lead soldiers from another platoon.) While leading, an officer/NCO may freely move and engage in combat.

A single officer/NCO may lead any number of units at once; he may lead subordinate officer/NCOs, who may in turn be leading others.

Requirements. In order to lead, an officer/NCO must be able to see the soldiers being led and must be in constant communication with them.

Orders: Orders are given by officers/NCOs to average-initiative squads, teams, and officers/NCOs, and allow them to act without the direct leadership of a superior; orders must be written and must consist of simple instructions.

Orders must be fairly specific, as explained below Units following orders will perform the stated action; officer/NCOs following orders will lead their troops in performing the action or will issue appropriate orders to their subordinates Orders



take time to give and receive, sometimes a great deal of time, for this reason, orders are often explained to troops before the beginning of the game and initiated by short code words· see below.

During a turn in which he gives or receives orders, an officer/NCO or squad/team may not perform any other action.

Who May Order: All officers may order anyone except an officer of superior rank (a company commander is superior to his executive officer and to all platoon commanders; a company executive officer is superior to all platoon commanders). A high-initiative NCO may order anyone normally under his leadership, but not others An average-initiative NCO may not give orders.

Requirements To give orders, an officer or NCO must be in communication with the unit he is ordering. The time required to receive an order varies according to the officer, NCO, or unit receiving it, as shown in the Order Time Required Table

Times apply to units in direct contact· The units must be adjacent. If stands are not in direct contact, the time is twice that stated If two units possess battle computers (or are in direct contact with a stand possessing a computer) they are also considered to be in direct contact. If all units concerned have map boxes (or are in direct contact with a stand possessing a map box), the time is halved.

These effects are cumulative; for example, if an officer gives an order to an NCO by radio, but both of them have map boxes, the time required is two turns, doubled and halved, or two turns.

Generally, an officer/NCO may give only one order at a time, to any one officer, NCO, or squad/team However, any number of officers in direct contact with the officer giving the orders may receive their orders at the same time. A single code word may also be given to several units at once: see below.

An officer/NCO or unit giving or receiving orders may interrupt the process at any time (and is required to if he suffers any adverse morale check result), in which case the order has not been received and all time spent giving the order up to that point is wasted

Orders to NCOs: These orders must be specific and allow little freedom of action. Orders given directly to a unit may be given to the NCO at the same time; the NCO performs his normal function, but the unit will be capable of operating under its orders without him.

A single order may consist of up to three components: a movement order, a fire order, and a rally point order

- *Movement:* A movement order must state an objective which is clearly definable on a map; it must list a route of travel (if other than a straight line), and it must state a speed of travel. For example, "move to the crest of hill 17, through the forest, at fastest speed" or "move to the northern village, through the valley, at NOE "

As an alternative, a unit may be ordered to maintain positions relative to another unit of the same platoon, which must be visible at all times; in this way, a platoon may assume a formation. For example, "three squares to the left of 1st squad" or "one square behind platoon commander."

The unit may also be ordered to move toward its objective and halt at a recognizable point. For example, "stop at the edge of the woods" or "stop when encountering friendly troops." To aid in writing orders, players may use a small map of the area, with landmarks indicated by letter or number codes, as was done in the case of hill 17 above.

- *Fire:* A fire order must state the conditions under which a unit will fire; this must consist of a simple and unambiguous sentence. For example, "fire as soon as the enemy comes within two squares," "fire if enemy armored personnel carriers come within four squares," "fire at enemy units which are able to fire at 3rd platoon," or "fire at any enemy units within long range."

- *Rally Point:* A rally point order gives a location easily recognizable on a map, to which a unit will move, by a safe route if possible, if the code order to retreat to the rally point is given, or if they recover from a rout and receive no orders. For example, "rally point stone farmhouse."

Delays: An order may also contain a statement delaying its execution until a specific turn or until an order briefing is over. For example, "delay execution until turn 15" or "delay execution until completion of platoon briefing."

Attachment: Instead of the orders above, a squad or team may be attached to another squad or higher-level unit; it then becomes part of the other unit for all purposes. For example, "the platoon antitank team is attached to 3rd squad" or "1st squad is attached to 2nd platoon, B company "

Discretionary Actions· A unit or NCO under orders has some ability to make choices. If the unit is fired upon, or if an enemy is visible and adjacent, the unit may return fire, halt, and/or move to the nearest covered position, if there is one within one turn's movement, as soon as it is no longer receiving enemy fire, the unit must resume following its orders

The referee may decide that certain other minor demonstrations of initiative are reasonable, but should take care not to allow too much freedom

Orders to Officers and Higher NCOs: These orders are somewhat less restrictive than squad/team level orders.

An order to an officer or higher NCO may consist of one simple declarative sentence plus one simple conditional statement. All statements must be clear and unambiguous, as determined by the referee Locations mentioned must be easily identifiable on a map. Orders to platoon and company NCOs should also state what unit type they are to command. Here are a few examples of possible orders:

"Advance on hill 79, proceeding north of the forest. When hill 79 has been taken, give supporting fire to B company."

"Withdraw to point C. If point C is occupied by enemy, withdraw to point D."

"Defend the town. If casualties are suffered, withdraw to the edge of the woods."

"Move at half NOE speed to point 8. If enemy are sighted, execute code bravo."

When an officer/NCO has no other orders, he will defend his current position.

An officer/NCO may lead his troops, and an officer may give orders; troops may be ordered or led to perform any action relevant to the orders under which the officer/NCO is operating, but no others. For example, if a platoon commander were under the first sample order above, he could not make a detour to attack an enemy unit which was holding up the advance of another platoon; he could only engage enemy units which were directly preventing his platoon from taking and holding hill 79.

The referee's judgment is necessary in unclear cases.

An officer/NCO is allowed a certain degree of flexibility regarding the performance of his orders. An officer ordered to move his unit is not required to move each squad every turn; however, he must, over the course of several turns, keep the unit moving. If an officer is ordered to defend a position, he doesn't have to keep every squad stationary; however, every movement must contribute to the defense of that position.

When Orders Are Changed: Orders (of all types) remain in effect until the unit or officer/NCO is given a new order, has completed his current order, or a morale check results in "forced back" or "routed " Orders are not changed if a unit is led for a period, although they are suspended for that time. If a unit has a fire order it will continue to be in effect after its movement order has been completed

Code Words: An order (of any type) may be identified with an execution code, and will then only be performed when the code is given Giving a code word counts as an order, but is received immediately. Up to four code words may be defined for each officer/NCO or unit capable of receiving orders The same code word may be given to several units in one turn. For example, an officer might say, "2nd section and weapons squad, execute code alfa."

A single code may be defined as having different meanings for different units Note that orders to higher level officer/NCOs may contain code words as part of their conditional statements.

Automatic Orders: There are four simple orders which any unit (or several units at once) may be given in one turn.

- *Halt:* The unit will stop in its current position, and remain there until further orders are received
- *Resume:* This order is given to a unit previously ordered to halt, or which has ceased to follow its orders due to a "forced back" or "routed" morale check result. The unit will return to following its previous orders.
- *Retreat:* The unit will move to its rally point or, if it has none assigned, to the closest cover away from the enemy.
- *Flee:* This is a general order, given by a commander to all units under his command. It announces that the battle is lost and troops must attempt to save themselves however they can.

Rallying: During the course of the game, troops may become routed due to enemy action A capable officer or NCO may rally such units during the command segment. For an explanation of routing and rallying see Morale Checks.

Who May Rally: Any officer may rally any troop. High-initiative NCOs may rally troops normally under their leadership. Average-initiative NCOs may not rally any troops.

Requirement: In order to rally troops, an officer/NCO must be visible to them and adjacent to them during the beginning of a combat round. Neither the rallying officer/NCO nor the troops being rallied may move or fire during the turn.

MORALE CHECKS

As explained above, each unit has a basic morale value number representing its general ability to stand up under stress. At various points in combat, units are required to make morale checks.

The player rolls two dice and compares the sum to the unit's morale number The die roll must be less than or equal to the unit's morale number for the unit to pass the check. If the number rolled is greater than the unit's morale, it will suffer adverse results

Morale Modifiers: A unit's morale number may be modified, either instantaneously (for a specific morale check) or permanently (for the rest of the combat session) In either case, modifications are expressed in terms of plus or minus modifications to the checking unit's morale number

All morale modifiers are cumulative, but a unit's morale number may never go below 2.

Instantaneous Modifiers: These are dependent upon circumstances at the time of a specific morale check, and never permanently alter a unit's basic morale number Instantaneous modifiers include:

- NCO visible within one square, +1.
- Officer visible within one square, +2.
- Supreme commander visible within one square, +3.
- Per each hit taken by the unit this turn, −1.
- Unit is under cover but visible, +1.
- Unit is under cover and not visible, +3.

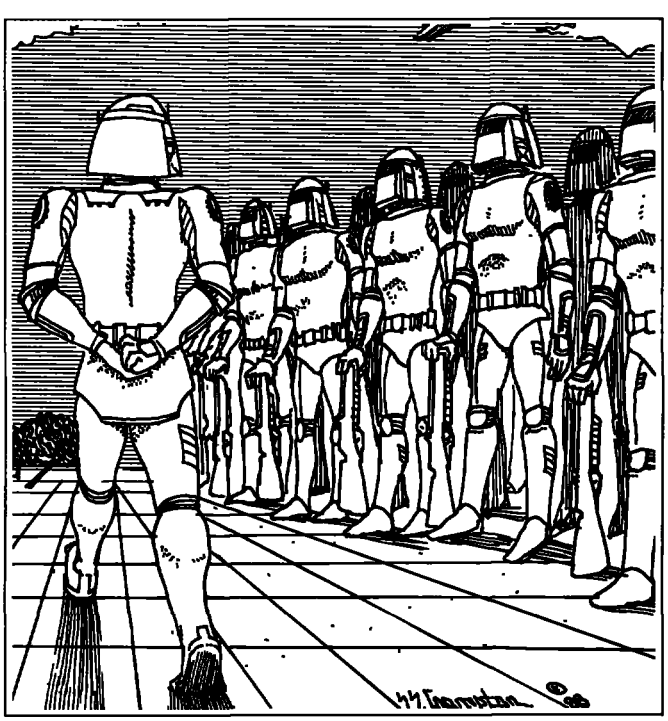
Permanent Modifiers: These alter a unit's basic morale number, and should be recorded on the unit's stat record. A unit's morale is reduced by one each time it suffers a "forced back" or "routed" morale check result.

Conditions Under Which Morale Must Be Checked

Morale must be checked under the following conditions:

Proximity to the Enemy: Whenever a unit is adjacent to an enemy unit (and can see it), the unit must check morale This check is done at the end of the turn.

Casualties: Whenever casualties are suffered, friendly units which are adjacent (and can see the event) must check morale. A casualty is defined as any hit which has at least low penetration. Casualty checks are made at the end of each firefight exchange.



Panic: Often a unit will be influenced by events not directly affecting it, but having an effect on the overall course of the battle A unit must make a panic check (at the end of a combat round) under each of the following circumstances:

- If a unit at any time in a turn was adjacent to a friendly unit which routed, and which was of equal or higher initiative. Note that a unit which routs due to a panic check may cause other units to rout.
- If a personnel unit at any time was adjacent to a friendly combat vehicle which routed.
- If a unit during a firefight exchange was adjacent to a friendly vehicle which was rendered inoperative.
- If a unit was fired upon by friendly units.

Morale Results: Four results are possible if a unit fails its morale check, depending upon the type of check and the amount by which the die roll exceeds the unit's morale. See the Morale Check Table, below.

MORALE CHECK TABLE

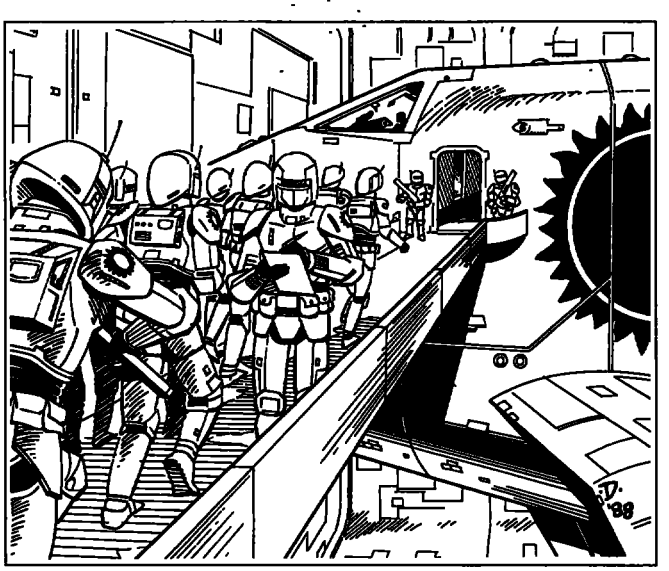
Roll Exceeds	*Type of Morale Check*	
Morale By	*Proximity to Enemy/Casualties*	*Panic*
+1	Suppressed	Fall Back
+2	Fall Back	Forced Back
+3	Fall Back	Routed
+4	Forced Back	Routed
+5	Forced Back	Routed
+6	Routed	Routed

Results of Morale Check Table

Suppressed: The unit may not fire. If under cover, it may not move. If not under cover it must fall back in the direction of the closest cover, away from the enemy, at its fastest ground movement rate (running for infantry, NOE for grav vehicles). This effect lasts for one complete turn.

Fall Back: As above, but if already under cover, the unit will move in the direction of the next closest cover. The effect lasts for one complete turn.

Forced Back: As above, but if the unit does not reach cover in one turn, it will continue to move until it reaches such a position or rallies. The unit's morale is permanently reduced by one.



Routed: As above, but after the unit reaches cover it will continue to move away from the enemy until rallied.

Movement: If a unit is forced to retreat as a result of morale failure, it moves as soon as it fails the morale check.

Surrender: In some cases, a unit which routs will surrender Units which surrender are removed from the session. A routing unit will surrender under the following circumstances:

- If an enemy unit is visible and adjacent at the end of its rout move or at the end of a combat round.
- If it is fired upon by enemy direct fire while routed and there is no unrouted friendly officer/NCO adjacent.
- If it routs while in hand-to-hand combat with an enemy unit.
- If it routs while adjacent to an enemy unit and does not reach an undercover position during its rout move.

Rallying: Units which rout or which are forced back and do not reach a covered position will continue to retreat until rallied.

Each combat round, the unit checks morale. If it passes the check, it has rallied; it may not move or fire in this turn, but returns to its normal capabilities in the next turn If it fails the check it remains in its current condition If an officer/NCO rallies a unit (as specified above) a morale check is required. An average initiative unit which rallies is without orders and will move toward its rally point or, if there is none assigned, the nearest cover.

Officers and NCOs: In addition to being required to check morale themselves, their ability to rally units is as stated above—officers and NCOs may influence the morale checks of others. Units grouped with (or in the same vehicle with) an officer/NCO are included in his morale check, and the effects stated below do not apply to them.

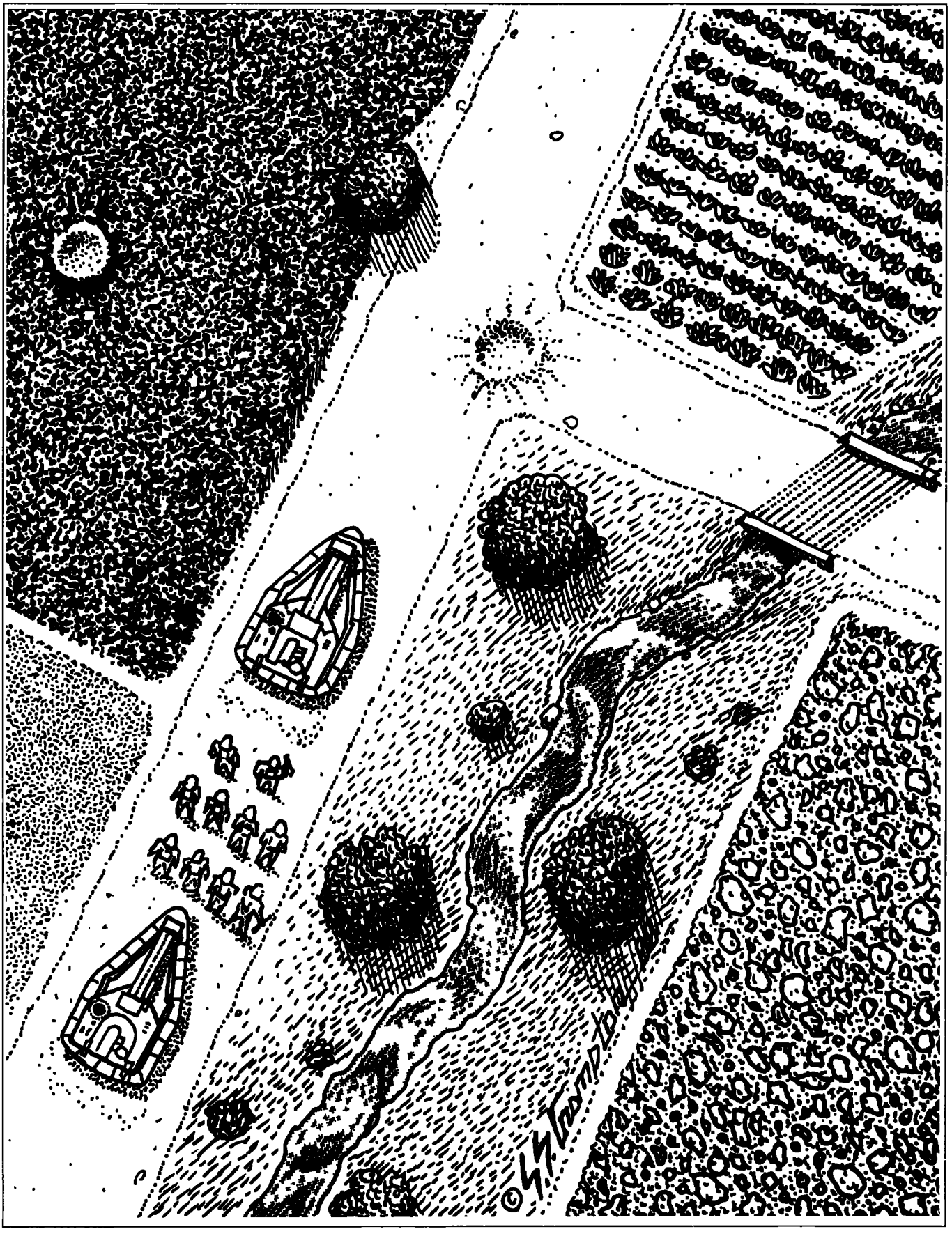
The list of morale modifiers notes that the presence of an adjacent, visible officer/NCO allows the checking unit a favorable morale modification of +1 for an NCO or +2 for an officer. An officer may provide this modification to any unit, but an NCO may provide it only to a unit normally under his leadership.

The highest ranking officer on a side (the supreme commander) provides a morale modifier of +3. Several officers/NCOs may influence a single unit's morale check, in which case their modifiers are cumulative.

Whenever an officer/NCO is required to check morale, that check is conducted before the checks of any unit he may be influencing. If he fails the check, his morale modifier becomes an unfavorable modifier (instead of favorable) for all units visible and adjacent

An officer/NCO may influence the morale check of a subordinate officer/NCO.

Routing Off the Battlefield: If a unit routs off the battlefield, it may return in a later turn. Low-initiative units will never rally, they are gone. The referee should roll for each other unit until it rallies, counting the number of rolls it takes. The unit will rally in that many turns. If an officer rallies, he is also assumed to have rallied any of his men who routed off with him. An average-initiative unit must then be ordered to return to combat; this is possible only if it has a radio. The number of turns a unit spent routing is also the time it will take to return to the battle.



SMALL CONGLOMERATE UNIT EXAMPLE

These five units are being combined into one conglomerate unit:

INDEPENDENT UNITS

No	UPP	Life Force	Dex +	Hits	Skills and Weapons	Pen	DP	Armor Type	Armor Value
1	646	16	+0	3/3	High Energy Weapons-4 (FGMP-15) Leader-3, Tactics-2, Recon-1 Grav Belt	34/2	16	Battle Dress	18
2.	765	18	+1	3/4	High Energy Weapons-3 (FGMP-15) Recon-1 Grav Belt	34/2	16	Battle Dress	18
3	896	23	+1	3/5	High Energy Weapons-5 (FGMP-15) Leader-1, Tactics-1 Grav Belt	34/2	16	Battle Dress	18
4	676	19	+1	3/4	High Energy Weapons-2 (FGMP-15) Leader-1	34/2	16	Battle Dress	18
5	9B5	25	+2	4/5	High Energy Weapons-4 (FGMP-15) Recon-1 Grav Belt	34/2	16	Battle Dress	18

FINAL CONGLOMERATE UNIT

Task +	Hits	Description	Pen	DP	Armor	Speed
+5	16/21	FGMP-15 Tactics-3, Leader-3, Recon-1 Grav belt (Speed 22)	34/2	40	18	2

CONVERTING FROM CONGLOMERATE UNITS TO INDEPENDENT UNITS

When a conglomerate unit has not taken any damage, converting back to independent units is as simple as pulling out the original independent unit list. However, if the conglomerate unit has taken damage during combat, and the component units are important to the adventure (usually this means they contain player characters), then the damage each independent unit has taken must be determined

To illustrate how this is done, here is the conglomerate unit consisting of the five characters with FGMPs that was created above. The unit is now shown as it stands after the battle.

FINAL CONGLOMERATE UNIT

Task +	*Hits*	*Description*	*Pen*	*DP*	*Armor*	*Speed*
+5	5/21	FGMP-15	34/2	20	18	2
		Tactics-3, Leader-3,				
		Recon-1				
		Grav belt (Speed 22)				
		**The unit has taken 11 points of damage **				

Applying the damage to the component units of a conglomerate unit is typically done after the combat session is all over. Apply all hits randomly to the individual components.

INDEPENDENT UNITS—AFTER APPLYING COMBAT RESULTS

No	*UPP*	*Life Force*	*Dex +*	*Hits*	*Skills and Weapons*	*Pen*	*DP*	*Armor Type*	*Armor Value*
1	646	16	+0	0/3	High Energy Weapons-4 (FGMP-15)	34/2	16	Battle Dress	18
		unconscious			Leader-3, Tactics-2, Recon-1				
					Grav Belt				
2	765	18	+1	0/3	High Energy Weapons-3 (FGMP-15)	34/2	16	Battle Dress	18
		unconscious			Recon-1				
					Grav Belt				
3	896	23	+1	2/5	High Energy Weapons-5 (FGMP-15)	34/2	16	Battle Dress	18
		wounded			Leader-1, Tactics-1				
					Grav Belt				
4	676	19	+1	2/4	High Energy Weapons-2 (FGMP-15)	34/2	16	Battle Dress	18
		wounded			Leader-1				
5	9B5	25	+2	3/5	High Energy Weapons-4 (FGMP-15)	34/2	16	Battle Dress	18
		wounded			Recon-1				
					Grav Belt				

MORALE VALUES

Recruit	4
Regular	7
Veteran	10
Elite	13

Morale: Morale levels of the four qualities of troops are given in the table above.

In the case of an individual soldier, his combat morale is his individual morale. In the case of a conglomerate unit, the unit's combat morale is the average of the individual morales of the soldiers making up the unit. Fractional results are rounded to the nearest whole number; in the case of a fractional result of exactly 0 5, round up.

BEATEN ZONE TABLE

Number of Rounds	*Beaten Zone Size*	*Dispersed Zone*	*Converged Zone*
1	1×	1×	1×
4	2×	2×	1×
9	3×	4×	2×
16	4×	5×	2×
25	5×	6×	3×
36	6×	8×	4×
49	7×	9×	4×
64	8×	11×	4×
81	9×	12×	6×
100	10×	14×	7×
121	11×	15×	7×
144	12×	16×	8×
169	13×	18×	9×
196	14×	19×	9×
225	15×	20×	10×

Beaten Zone: The size of the beaten zone square is a multiple of the danger space of a single round; the exact multiple depends on the number of rounds fired, as shown on the Beaten Zone Table.

If the exact number of rounds fired is not shown on the table, use the next lower value on the table. The beaten zone is a square with each side equal to the multiplier times the danger space of a single round. For example, if a unit fires a total of 20 rounds per minute, the beaten zone multiplier used is 16, which provides a multiplier of 4. Thus, if the weapon's single-round danger space is 15 meters by 15 meters, the unit's beaten zone is 60 meters by 60 meters.

For simplicity's sake, all beaten zones less than one square in size are assumed to be one square in size.

A dispersed beaten zone increases the "to hit" task difficulty by one level.

A converged beaten zone allows rolling twice for hits.

MORALE CHECK TABLE

Roll Exceeds Morale By	*Type of Morale Check* — *Proximity to Enemy/Casualties*	*Panic*
+1	Suppressed	Fall Back
+2	Fall Back	Forced Back
+3	Fall Back	Routed
+4	Forced Back	Routed
+5	Forced Back	Routed
+6	Routed	Routed

Morale Results: Four results are possible if a unit fails its morale check, depending upon the type of check and the amount by which the die roll exceeds the unit's morale.

Suppressed: The unit may not fire If under cover, it may not move. If not under cover it must fall back in the direction of the closest cover, away from the enemy, at its fastest ground movement rate (running for infantry, NOE for grav vehicles). This effect lasts for one complete turn

Fall Back: As above, but if already under cover, the unit will move in the direction of the next closest cover. The effect lasts for one complete turn.

Forced Back: As above, but if the unit does not reach cover in one turn, it will continue to move until it reaches such a position or rallies. The unit's morale is permanently reduced by one.

Routed: As above, but after the unit reaches cover it will continue to move away from the enemy until rallied.

TURNS REQUIRED TO RECEIVE ORDERS

Unit	*150m*	*1500m*
Team/squad	2	1
Squad NCO or Platoon NCO	2	1
Section NCO or Company NCO	4	1
Platoon Officer	8	2
Company Officer	16	2

Requirements: To give orders, an officer or NCO must be in communication with the unit he is commanding.

The time required to receive an order varies according to the officer, NCO, or unit receiving it, as shown in the table above.

AUTOFIRE TARGETS TABLE

Additional Autofire Targets Available	*Rate of Fire (Rounds per Minute)*
2	40
3	100
4	200

CONGLOMERATE UNIT CREATION CHECKLIST

1. Produce a list of all units being conglomerated.
2. Group the units.
3. Compute the Appropriate Totals.
   A. Hits.
      1) Individuals. Total all hits
      2) Vehicles. Total all hits, use the lowest value produced for structure, power plant or locomotion, and ignore the others.
      3) Robots. Total all hits; use the lowest value produced for structure, power plant or locomotion, and ignore the others.
   B. Weapon Averaging. Combine all weapons of a given type into a single averaged weapon.
      1) Damage Points Add all weapon damage points and divide by 2.
      2) Penetration. Add all weapon penetration values and divide by the number of individuals.
      3) Range Rating Add all range ratings and divide by the number of weapons
      4) Skills. Add all skill levels together and divide by the number of individuals.
      5) Strength and Dexterity DMs. Add all Strength and Dexterity DMs and divide by the number of units.
      6) Task+. Add the Average Skill Level and Strength/Dexterity DM to produce a combined Task+ for attacks with the specified weapon.
   C. Armor. Add all armor values and divide by the number of individuals.
   D. Top Speed. Use the slowest movement speed in the group.
   E. Skill Levels. Note the highest skill levels in the group, ignore obviously inappropriate skills.
   F. Indirect Fire ROF. ROF equals number of weapons times their rate of fire.
   G Vehicle Capacity. Multiply passenger capacity of a vehicle times an average character hits of 3/5.
4. Create the Conglomerate Unit

In-System Operations

Adventuring within a star system presents great potential for any group of **MegaTraveller** characters. A star system provides vast unexplored territories separated by vast distances—waiting for adventurers to come and investigate it.

A star system is composed of a number of stars and their associate planets and satellites. The world generation system in the **MegaTraveller Referee's Manual** handles the details of producing and interpreting the necessary information

Worlds: The general term *worlds* encompasses planets, gas giants, and satellites.

Planets: A world in orbit around a star is a planet The world generation procedure and the extended system generation procedures usually produce planets.

Gas Giants: A large hydrogen-atmosphere world is a gas giant. Such a world is almost always impossible to land on; it does serve as a source of fuel for starships

Satellites: A world in orbit around a gas giant or a planet is a satellite. Satellites tend to be smaller than planets, but they are occasionally large enough and developed enough to be classified as a mainworld.

Asteroids and Planetoids: Very small worlds are called asteroids or planetoids. They occur in belts in place of planets. For classification purposes, a belt is an Asteroid Belt if it is classified as the mainworld of a system; it is a Planetoid Belt if it is not the mainworld of a system.

LOCATIONS WITHIN A SYSTEM

In addition to the worlds which a system contains, a number of specific locations can be identified These include jump points, Trojan points, orbit, and dangerous lurking points

Jump Points: Jump points are locations at which it is possible to enter jump safely. By definition, a jump point is any point at least 100 diameters out from every star, planet, and satellite in the system.

In order to enter jump safely, a ship must leave a world and travel out at least 100 diameters. If the planet is within 100 stellar diameters of a star, the ship must also travel at least 100 stellar diameters out from the star. If the world is within 100 diameters of a gas giant, the ship must travel at least 100 diameters from the gas giant. For example, in the Sol system, Venus is within 100 stellar diameters of Sol; a ship leaving Venus for a jump point must travel not only 100 diameters out from Venus, but also 100 solar diameters out from Sol.

Trojan Points: Planetoids can assume a stable orbit at the Trojan points of a world's orbit. Those points occur along the orbit line of a world, but 60 degrees before or 60 degrees after the world These points are also called LaGrange Points.

Typically, a few planetoids will accumulate in the Trojan points before and after a gas giant or very large world in a star system. Orbital habitats may be built at the LaGrange points of a large satellite of a world.

Orbit: Many mainworlds (with sufficient technology levels) maintain orbital starports in orbit above the world; such starports service unstreamlined starships calling at the world, establish a transfer point for cargo and passengers, and provide shuttle service to the world surface.

Orbit may be close (with a period of about two hours) or geostationary (with a period equal to the local day length)

Lurking Points: There are a great many possible locations for starships, system defense boats, and other vessels to conceal themselves within a system. The purpose of concealment is to allow defense forces to remain hidden from potential enemies or to allow illegal corsairs, pirates, or smugglers to hide from the authorities. Typical lurking points are within gas giant atmospheres, under the water of seas or lakes, on world surfaces, or in the untravelled outer reaches of a system.

Gas Giant Atmospheres: One of the most frequently travelled and most dangerous locations in a star system is the atmosphere of a gas giant. Because refueling procedures make skimming a gas giant cheap and easy, the atmospheres of gas giants are often crowded with small starships busy refueling their tanks. Furthermore, a gas giant becomes a strategic location for military starships exactly because it is a convenient source of free fuel In defense of a star system, system defense boats are routinely deployed deep in a gas giant's atmosphere, there to lie in wait for invading or intruding starships and to catch them at their most vulnerable—when they are themselves refueling at the gas giant.

System defense boats routinely lurk deep in a gas giant, undetected until they reveal themselves in a lightning attack Fortunately, attacks deep within a gas giant produce imploded hulls and unrecoverable hulks, so corsairs and pirates rarely ambush from such locations

Oceans, Seas, and Lakes: Streamlined starships can not only enter atmospheres and land on world surfaces, they can also enter bodies of water and float or submerge. Since water can be used to produce starship fuel, this capability proves extremely useful for the budget-minded or wilderness-travelling starship.

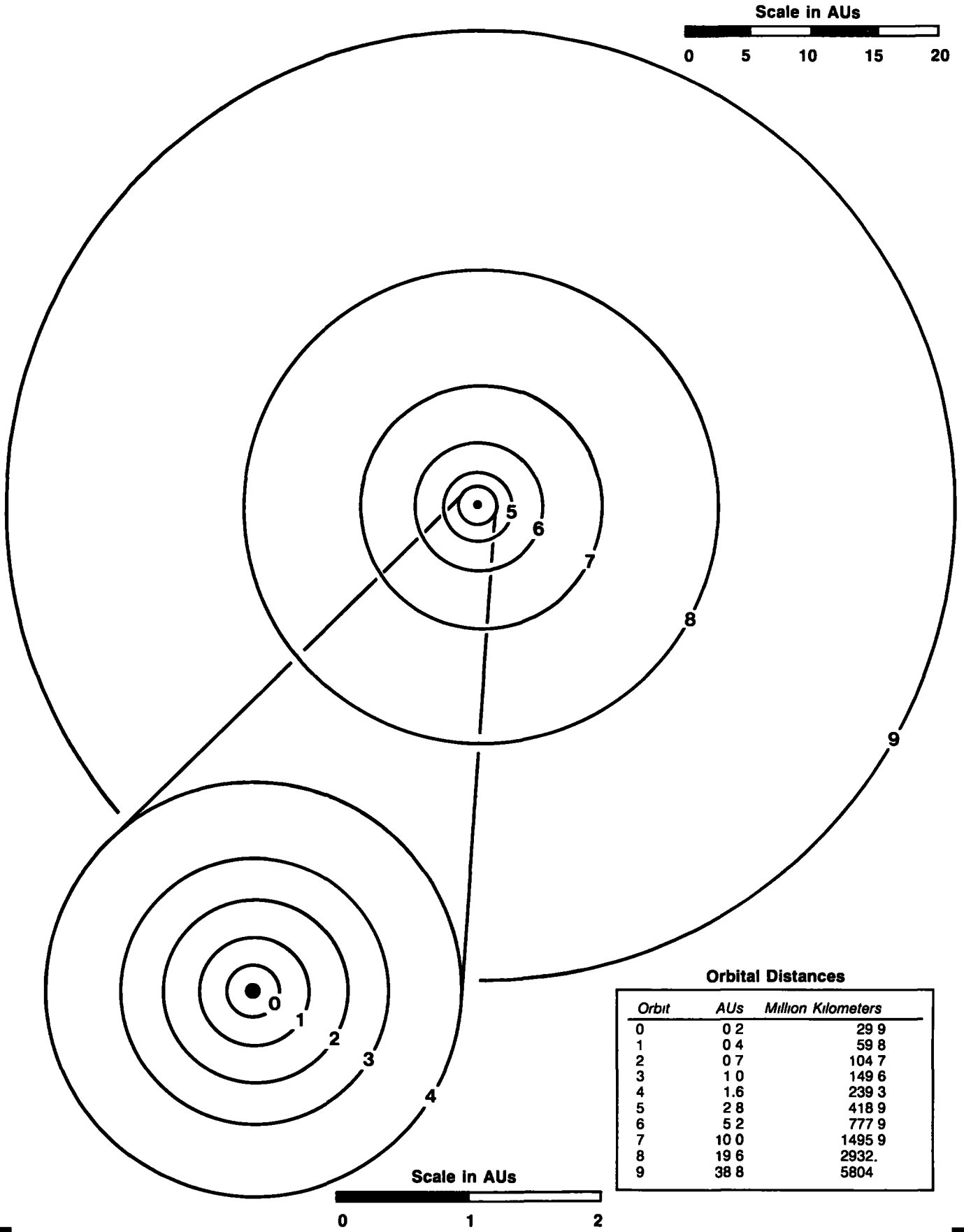
Because of the nature of water and the effects of water on sensors and detectors, ships which are submerged in water (at a depth at least three times their greatest dimension) are relatively difficult to detect. Ships trying to conceal themselves will often resort to hiding underwater. System defense boats ordered to run away (to fight again another day) find under-

IN-SYSTEM TRAVEL TIMES

(Travel times shown in days.)

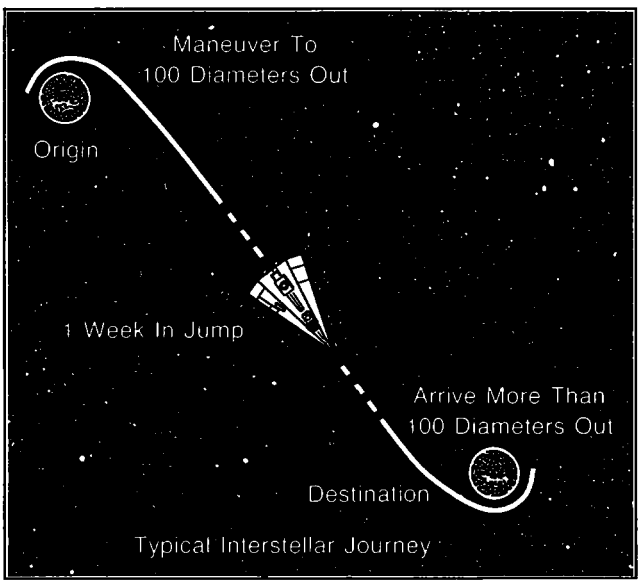
AU	*Million km*	*1G*	*2G*	*3G*	*4G*	*5G*	*6G*	*Remarks*
0.01	1.5	.28	.20	.16	.14	.12	.11	Safe jump distance from size A world.
0.02	3.0	.40	.28	.23	.20	.18	.16	
0 03	4.5	.49	.34	.28	.24	22	.20	
0 04	6.0	.56	.40	.36	.31	.28	.23	
0.05	7.5	.63	.44	.36	31	.28	.25	
0.06	9.0	.69	.49	.40	.34	.31	.28	
0.07	10.5	.75	.53	.43	.37	.33	.30	Safe jump distance from gas giant.
0.08	12.0	.80	.56	.46	.40	.35	.32	
0.09	13.5	.85	.60	.49	.42	.38	.34	
0.1	15.0	.89	.63	51	.44	.40	.36	
0.2	30.0	1 2	.8	.7	.6	.5	.5	
0.3	45.0	1.5	1.0	.8	.7	.6	.6	Typical distance to neighbor world.
0.4	60 0	1.7	1.2	1.0	8	.8	.7	
0.5	75.0	2 0	1.4	1.1	1.0	.8	.8	
0.6	90.0	2.1	1.5	1.2	1.0	.9	.8	
0.7	105.0	2.3	1.6	1.3	1.1	1.0	.9	
0.8	120.0	2.5	1.7	1.4	1.2	1.1	1.0	
0.9	135.0	2.6	1.9	1.5	1.3	1.2	1.1	
1.0	150.0	2.8	2.0	1.6	1.4	1.2	1.1	
2.0	300.0	4.0	2.8	2.3	2.0	1.7	1.6	Typical distance to far neighbor world.
3.0	450.0	4.9	3.4	2.8	2.4	2.1	2.0	
4.0	600.0	5.6	4.0	3.2	2.8	2 5	2.3	
5.0	750.0	6.3	4.4	3.6	3.1	2.8	2.5	
6.0	900.0	6.9	4.9	4.0	3.4	3.1	2.8	Typical distance to a far gas giant.
7.0	1050.0	7.5	5.3	4.3	3.7	3.3	3.0	
8.0	1200.0	8.0	5.6	4 6	4.0	3.5	3.2	
9.0	1350.0	8.5	6.0	4.9	4.2	3.8	3.4	
10.0	1500 0	8.9	6 3	5.1	4.4	4.0	3.6	
20.0	3000.0	12.6	8.9	7.3	6.3	5 6	5.1	
30.0	4500.0	15.5	10.9	8.9	7.7	6.9	6.3	
40.0	6000.0	17.9	12.6	10.3	8.9	8.0	7.3	
50.0	7500.0	20.0	14.1	11.5	10.0	8.9	8.1	
60.0	9000.0	21.9	15 5	12.6	10.9	9.8	8.9	
70.0	10500.0	23.7	16.7	13.6	11.8	10.6	9.6	
80.0	12000.0	25.3	17.9	14.6	12.6	11.3	10.3	
90.0	13500.0	26.8	19.0	15.5	13.4	12.0	10.9	
100.0	15000.0	28.3	20.0	16.3	14.1	12.6	11.5	
200.0	30000.0	40 0	28.3	23.1	20.0	17.9	16.3	
300.0	45000.0	49.1	34.7	28.3	24.5	21.9	20.0	
400.0	60000.0	56.7	40.0	32.7	28.3	25.3	23.1	
500.0	75000.0	63.3	44.8	36.6	31.6	28.3	25.8	
600.0	90000.0	69.4	49.1	40.0	34.7	31.0	28.3	
700.0	105000.0	75.0	53.0	43.3	37.5	33 5	30.6	
800.0	120000.0	80.1	56.7	46.2	40.0	35.8	32.7	
900.0	135000.0	85.0	60.1	49.1	42.5	38.0	34.7	
1000 0	150000.0	89.6	63.3	51.7	44.8	40.0	36.6	
3000 0	450000.0	155.2	109.8	89.6	77.6	69.4	63.4	
5000.0	750000.0	200.4	141.7	115.7	100.2	89.6	81.8	
7000.0	1050000.0	237.1	167.7	136.9	118.5	106.0	96.8	
9000.0	1350000.0	268.9	190.1	155.2	134.4	120.2	109.8	
10000.0	1500000.0	283.5	200.4	163.6	141.7	126.7	115.7	
30000.0	4500000.0	491.0	347.2	283.5	245.5	219.6	200.4	
50000.0	7500000.0	633.9	448.2	366.0	316.9	283.5	258.8	

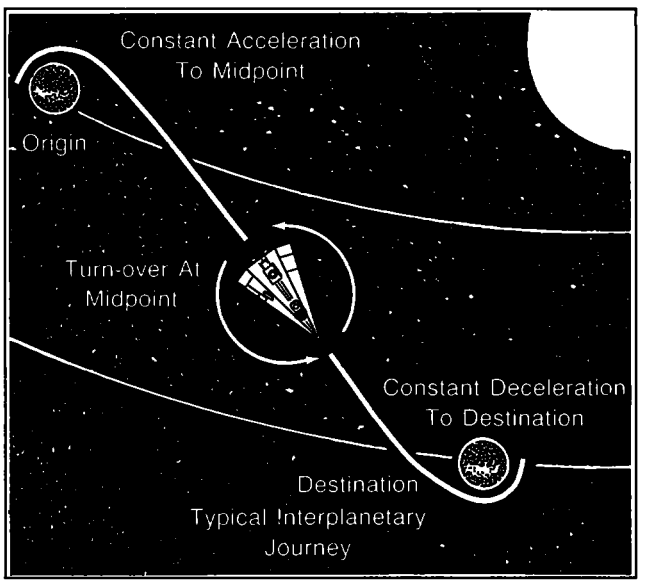
SYSTEM TRAVEL



Orbital Distances

Orbit	*AUs*	*Million Kilometers*
0	0 2	29 9
1	0 4	59 8
2	0 7	104 7
3	1 0	149 6
4	1.6	239 3
5	2 8	418 9
6	5 2	777 9
7	10 0	1495 9
8	19 6	2932.
9	38 8	5804





TRAVEL FORMULA

$$T = \sqrt{D/A/32.4}$$

The travel formula is designed to provide travel time for any ship beginning at a standing start, proceeding at constant acceleration toward its destination until it reaches the midway point, reversing thrust, and then proceeding at constant deceleration for the remainder of the journey.

In order to solve the equation, acceleration (in Gs) and distance (in thousands of kilometers) must be known; the travel time given is in hours.

The In-System Travel Times Table (page 21) provides typical travel times within a system; the information was computed using the travel formula.

water concealment ideal; fugitives (pirates, corsairs, smugglers) also find this type of concealment fruitful.

The Outer Reaches: The fringes of a stellar system, far from any ordinary traffic, offer great potential for hiding starships and space vehicles. With little traffic, the hiding ships can detect anyone approaching at a great distance. And low volumes of traffic make the chance of being found slight Smugglers especially find the outer reaches a safe haven.

Hiding Places: Scattered throughout any star system are a variety of places where starships can be hidden. A starship can use its power plant to melt a concealing cave in an icecap. Densitometers can help locate natural caves or caverns in which a ship can be hidden. Asteroid belts offer an opportunity for a ship to become lost in a scattering of nickel-iron planetoids. A common ship can even be hidden on a starport with judicious renaming and falsified papers.

PROCEDURES

Starships moving from one point to another use the following procedures to plan their actions and courses.

Moving From Point to Point: Ships usually begin travel with an effective velocity of zero—in orbit around a world From that starting point, the ship begins accelerating toward its destination, and continues to build up speed until it reaches the midpoint in its journey, halfway to the destination. At that time, the ship begins to use reverse thrust to slow its speed toward the destination. By the time it arrives, it has slowed to an effective speed of zero again, and can enter orbit around the destination world.

Moving To Jump Point: A ship moving to a jump point does not have to slow down in order to make the jump, having an effective speed of zero just makes the process easier

A ship which enters jump retains its velocity and direction when it emerges from jump in the new system. By reducing its speed to zero, a ship is able to react quickly and move in any direction when it emerges; a ship which had retained its high velocity will be moving at high speed in an effectively random direction when it emerges from jump.

Careful Planning: A good navigator can carefully plan the course of his starship in order to make the best use of its speed and direction. Travel time to a jump point should be computed normally. For each level of Navigation skill above 1, reduce that computed time by 10 percent (Navigation-2 reduces travel time by 10 percent, Navigation-5 reduces travel time by 40 percent), the maximum reduction in travel time to the jump point is 50 percent; the actual time spent in jump cannot be reduced.

The reduction in travel time is possible only on interplanetary journeys to a jump point (and from a jump point to a world); it cannot be used on travel through jumpspace.

Computing Travel Times: The three travel formulae assume constant acceleration to a midpoint, turnaround, and constant deceleration to arrive at the destination at rest, as shown in the diagram There are three variables in the formulae; if any two are known, the third can be determined by using the correct formula. Two graphs are provided: one in hours, kilometers, and G; the other in days, au, and G. To use either one, two of the three variables must be known. For example, if G and days are known, distance travelled in kilometers can be found, if distance in kilometers and time in hours is known, G can be found

THE ACTIVITY CHECKLISTS

These checklists are provided to show typical operations and procedures when entering a star system. The merchant checklist concentrates on trade activity and making a profit. The scout checklist concentrates on exploring a star system using available sensors. It is equivalent to a Class II Survey (taking 2D days). The military checklist concentrates on entering a system which may be occupied by unfriendly forces.

MERCHANT

I. Prepare for Jump.
  A. Check charts for new system.
  B Plot course.
II. Jump to System.
III. Arrive in Star System
  A. Scan area for potential danger, problems, or other data.
  B. Access local communicator directory.
  C. Set course in system.
    1. Gas Giant (Go to IV).
    2 Mainworld (Go to V).
    3. Other world (Go to VI).
  D. Possible ship encounter.
IV Local Gas Giant.
  A. Move to orbit.
  B Refuel and return to orbit.
  C. Set course.
    1. Mainworld (Go to V).
    2 Other World (Go to VI).
    3. Jump Point (Go to VII).
V. Mainworld.
  A. Achieve orbit.
  B. Orbital starport (unstreamlined ships).
  C Surface starport
    1. Unload high passengers
    2. Unload mail.
    3. Unload middle passengers
    4. Unload cargo.
    5. Defrost and unload low passengers.
    6. Conclude low lottery.
  D. Refit and maintenance.
    1. Refuel from starport.
    2. Renew ship life support.
  E. Commodity activity.
    1. Sell speculative cargo.
    2. Buy speculative cargo.
  F. Ship's business.
    1. Pay berthing costs.
    2. Pay bank payment.
    3. Pay maintenance fund.
    4. Pay crew salaries.
  G. Miscellaneous activity.
    1 Patron encounters
    2 Planetary exploration.
  H. Prepare for Departure.
    1. Load cargo.
    2. Load low passengers.
    3. Load middle passengers.
    4. Load high passengers.
    5. Load mail.
    6. Collect income for all aspects of current trip.
  J. Departure
    1. Lift-off.
    2. Achieve orbit.
    3. Set course.
      a. Other World (Go to VI).
      b. Gas Giant (Go to IV).
      c. Jump Point (Go to VII).
    4. Possible ship encounter.
VI Other World.
  A. Achieve orbit.
    1. Scan and map surface.
    2. Investigate interesting details.
  B. Move to surface.
    1. Refuel.
    2. Explore.
  C. Departure.
    1. Lift-off.
    2. Achieve orbit.
    3. Set course.
      a. Other World (Go to VI).
      b. Gas Giant (Go to IV).
      c. Jump Point (Go to VII).
    4. Possible ship encounter
VII Jump Point.
  A. Approach jump point.
  B. Handle necessary calculations.
  C. Jump.

SCOUT

I. Prepare for Jump (range = InterStellar).
  A. Check charts for new system.
  B. Plot course.
  C. Scan (Densitometer) system for:
    1. Number of stars.
    2 Number of gas giants.
  D. Determine (EMS Passive) spectral types.
II Jump to System.
III. Arrive in Star System
  A. Scan area for potential danger, problems, or other data.
  B Proceed inward by ranges.
    1. Range = SubStellar.
    2. Range = System
    3. Range = Interplanetary.
  C. Use available instrumentation as made possible by ranges.
    1. EMS Passive.
      a. Refine spectral and size data for stars.
      b. Note radio transmission sources.
    2. Densitometer.
      a. Locate all possible planets.
      b. Determine size (UWP Size digit) and mass for each.
    3. Neutrino Detector.
      a. Note fission and fusion reaction sources.
      b. Determine stellar stability.
IV. Investigate World or Gas Giant.
  A. Proceed inward by ranges.
    1. Range = FarOrbit.

2. Range = Planetary
B. Use available instrumentation as made possible by ranges.
1. EMS Passive.
a. Determine climatic features.
1) Icecaps
2) Deserts.
3) Air and ocean currents.
b. Map magnetic field.
c. Locate radiation belts.
d. Determine atmosphere (UWP Atmosphere digit).
e. Determine water coverage (UWP Hydrographics).
f Pinpoint radio sources.
2. Densitometer
a. Map surface crust configurations.
b. Map major mineral areas.
3. Neutrino Detector
a. Pinpoint fission and fusion reaction sources.
b. Determine world stability.
C. Move to Surface
1. Refuel.
2. Explore.
D. Departure.
1. Lift-off.
2. Achieve orbit.
3 Set course.
a. Other World or Gas Giant (Go to IV)
b. Jump Point (Go to V)
4. Possible ship encounter.
V Jump Point.
A. Approach jump point
B. Handle necessary calculations.
C. Jump.

MILITARY

I. Prepare for jump (range = InterStellar).
A. Check charts of known system.
B. Scan (Densitometer) system for:
1 Number of stars.
2. Number of gas giants.
C. Determine (EMS Passive) spectral types.
D. Plan arrival point.
1. Outer System.
2. Gas Giant.
3. Mainworld.
4. Other World.
II Jump to System.
III. Arrive in Star System.
A. Outer System (range = Substellar).
B. Gas Giant (range = FarOrbit).
C World (range = FarOrbit).
IV. Outer System.
A. Proceed inward by ranges.
1. Range = SubStellar.
2. Range = System.
3. Range = Interplanetary.
B. Use available instruments as made possible by ranges
1. EMS Passive.
a. Search for and locate all possible bases.
b Search for and locate all possible ships.
c. Note radio transmission sources.
2. Neutrino Detector.
a. Note fission and fusion reaction sources.
C. Approach Gas Giant or World.
V Gas Giant.
A. Proceed inward by ranges.
1 Range = FarOrbit.
2. Range = Planetary.
B Use available instruments as made possible by ranges.
1. EMS Passive.
a. Search for and locate all possible bases.
b. Search for and locate all possible ships.
c Note radio transmission sources.
2 Neutrino Detector
a Note fission and fusion reaction sources.
C. Set course in system.
1. Gas Giant.
2. Mainworld.
3. Other World.
VI. World
A. Proceed inward by ranges.
1. Range = FarOrbit.
2. Range = Planetary.
B. Use available instruments as made possible by ranges.
1. EMS Passive.
a. Search for and locate all possible bases.
b. Search for and locate all possible ships.
c Note radio transmission sources.
2. Neutrino Detector.
a. Note fission and fusion reaction sources.
C. Set course in system.
1. Gas Giant.
2. World.
VII. Investigate World.
A. Proceed inward by ranges.
1 Range = FarOrbit.
2. Range = Planetary
B. Use available instruments as made possible by ranges.
1. EMS Passive.
a Pinpoint radio sources.
2. Neutrino Detector.
a Pinpoint fission and fusion reaction sources.
b. Determine world stability.
C. Move to surface.
1. Refuel.
2. Explore.
D. Departure.
1. Lift-off.
2. Achieve orbit.
3. Set course.
a. Other World.
b. Gas Giant
c. Jump Point.
4. Possible ship encounter.
VIII. Jump Point.
A. Approach jump point.
B. Handle necessary calculations.
C. Jump.

Technology

The Third Imperium records the level of technological achievement on each member world with a value called the tech level. The tech level, recorded in a world's Universal World Profile (UWP), indicates what level of technology one can expect to be available on the world.

The tech level represents the highest level of sophistication commonly available This is the tech level typically encountered near the starport and in the modern urban areas. Most forms of equipment the typical traveller might acquire will be of the UWP tech level.

It is important to note that a world's tech level does not necessarily represent the level of technology enjoyed by the majority of the world's population. The bulk of the population may sometimes possess a tech level significantly lower than the tech level of goods commonly available near the starport. If a traveller travels beyond the world's starport or large urban areas, he or she may encounter tech levels lower than that recorded in the world's UWP.

By way of illustration, consider Terra circa 1985. The world's tech level is marginally tech level 8, but the tech level enjoyed by most of Terra's population of five billion is actually tech level 6. Certain areas (mostly urban North America, Europe, and some parts of Asia) do possess the higher tech level of 8.

THE TECHNOLOGY CHART

The two-page technology chart provides the tech level breakdown for each major technological area. The chart lists **MegaTraveller** technology through tech level 21.

The maximum tech level commonly encountered in the Third Imperium is 15, with an occasional tech level 16. Tech levels over 16 are almost never encountered in the **MegaTraveller** universe except as artifact tech levels. There is only one exception to this in the entire Imperium: Sabmiqys (Antares 2117). Sabmiqys possesses an active, developing tech 17 culture, but because of social reasons the population of Sabmiqys is planetbound. Their space transport tech level is 8: They are without jump drive capability.

Each column on the chart is discussed below. The comments cover tech level 5 or above

Personal Military Technology: Indicates the advancements in personnel-carried weapons and armor. Personal military technology covers everything from clubs to disintegrator weapons.

Tech Level 5 (circa 1930): The standard small arm is the bolt action rifle. Explosive hand grenades come into wide use.

Tech Level 6 (circa 1950): The semiautomatic rifle gradually supersedes the bolt-action rifle, while the carbine, SMG, and automatic pistol achieve wide military use.

Tech Level 7 (circa 1970): The main personal military weapon becomes the assault rifle. Ballistic cloth armor is introduced during the period. Grenade launchers appear: they serve both as a general support weapon and as a limited antitank weapon.

Tech Level 8 (circa 1990): The assault gun remains the standard. Ballistic cloth armor (mainly in the form of flak jackets) comes into universal use. RAM grenade launchers replace earlier grenade launchers. Late in the period, a low-powered laser carbine appears, mainly for use as a rangefinder and target designator.

Tech Level 9 (circa 2010): Laser weapons with much greater lethality appear. Ablative clothing is introduced as a protection against these lasers.

Tech Level 10 (circa 2100): The advanced combat rifle, which fires a RAM grenade, becomes the personal military weapon of choice. Ablative armor enjoys widespread use as a protection against laser weapons, and reflec armor is introduced.

Tech Level 11: Combat armor appears. Essentially an armored vacc suit, combat armor can be pressurized for use in a vacuum or hostile environment.

Tech Level 12: The Gauss rifle is introduced as a sniper weapon. The PGMP-12, the first man-portable plasma gun, often appears during this period.

Tech Level 13: Most armies at this tech level equip their military units with Gauss rifles and combat armor. A powered, highly sophisticated version of combat armor appears, unique enough in its own right to become a brand new type of armor: battle dress. High-gain, optimized plasma gun advancement also occurs, often with special versions of the PGMP weapon developed exclusively for use with the battle dress.

Tech Level 14: By this point, most armies have equipped their troops with battle dress and PGMP-13 type weapons Continuing development of the plasma weapons occurs, and new development produces the man-portable fusion gun. The plasma gun of this period typically incorporates a grav compensator to lighten the weapon and reduce its recoil. A fusion weapon contains the plasma bolt just long enough for a fusion reaction to begin.

Tech Level 15: Combining the PGMP-14 and FGMP-14 technology often yields the FGMP-15, an improved fusion weapon that also incorporates a grav compensator.

Above the Imperium's highest tech level:

Tech Level 16: Continued advancement usually results in dramatically smaller and more efficient fusion and plasma weapons. Advancements in remote neural activity sensing also result in neural weapons—weapons which remotely disrupt

brain activity. A concurrent development is the neural shield: generally designed as a belt, it provides a protective "field" around the wearer, jamming neural weapon fire. It is also an effective psionic shield.

Beyond Tech Level 16: Disintegrator weapons appear. They weaken the strong nuclear force in the atomic nucleus, causing the target's atoms to literally "fly apart," thereby disintegrating the target. The personal damper, when hit with disintegrator fire, strengthens the strong nuclear force and thus attempts to counteract the disintegrator's effect.

At very high tech levels the relativity rifle appears. This weapon's effect is controllable, allowing the attacker to slow down the passage of time by a selectable ratio for the target. At an extreme ratio, it is possible to put the target temporarily into a form of suspension. The higher the time distortion ratio, the greater the energy drain on the weapon

The white globe creates a one-way impenetrable field around the wearer. The wearer can see out, fire weapons, and so on; all the attacker sees is a shimmering white globe around the wearer. It protects against all previously developed weapons except the relativity rifle.

Heavy Military Technology: Indicates the culture's advancements in long-range, vehicle-oriented weapons and armor. Heavy weapon systems include such things as artillery, support weapons, and combat vehicles.

Tech Level 5 (circa 1930): Both the machinegun (a development of the earlier Gatling gun) and the trench mortar are introduced as support weapons. Breech-loading field artillery appears; armored vehicles (tanks) are introduced.

Tech Level 6 (circa 1950): The increase in the importance of armored vehicles leads to the introduction of a variety of antitank weapons. Tactical and strategic rocket-missiles appear as simple, self-propelled projectiles. Late in the period, strategic nuclear weapons are introduced

Tech Level 7 (circa 1970): Tanks now incorporate weapon stabilization allowing them to fire while moving. Composite-laminate armor appears. A wide variety of tactical and strategic guided missiles are introduced. Beam lasers appear on an experimental basis.

Tech Level 8 (circa 1990): Particle accelerators appear, although they are just barely practical at this stage, since they are nonmobile and quite large Computerized systems become the rule in all military vehicles.

Tech Level 9 (circa 2010). The mass driver gun is introduced as an alternative artillery weapon. A lighter-weight version of composite armor appears. Toward the end of the period, the first grav tanks are introduced. The first tank-mounted laser weapons appear.

Tech Level 10 (circa 2100): Tracked tanks are completely supplanted by grav tanks and light wheeled vehicles with crystaliron armor. The plasma gun appears as an artillery and space vessel weapon, and late in the period is mounted on ultraheavy grav tanks. Gravity repulsors appear for use on space vehicles operating outside a gravity well.

Tech Level 11: Large Gauss guns appear as infantry support weapons. All military vehicles are now grav-propelled and possess a pronounced free-flight capability; effectively merging with military aircraft. Meson guns are introduced as a nonmobile, deep-mounted planetary defense weapon and as a space vessel weapon. Robotic missiles appear as an alternative to artillery.

Tech Level 12: Conventional artillery is almost completely supplanted by highly intelligent robotic missiles. Fusion guns appear as grav tank and space vessel weapons. Toward the end of the period, nuclear dampers and superdense armor are introduced.

Tech Level 13: Laser weapons are introduced which fire invisible X-rays, they greatly improve the laser's ability to penetrate obscuration devices. Gravitic compensators appear on vehicle-mounted plasma and fusion weapons, enabling these heavy weapons to be mounted on even very light vehicles. Heavy grav vehicles are virtually indistinguishable from orbital craft.

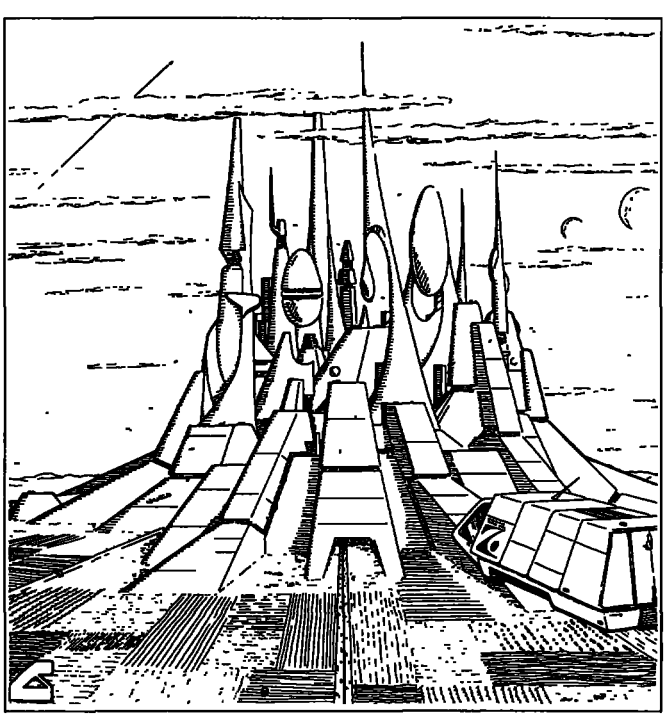
Tech Level 14: Bonded, superdense armor appears, making armored vehicles extremely formidable craft Sophisticated nuclear dampers enable virtually complete protection of entire operational areas against nuclear warheads.

Tech Level 15: The primary direct-fire weapon becomes the battlefield meson gun. Early black globes enable space vessels to gain complete protection against all forms of incoming enemy fire

Above the Imperium's highest tech level·

Tech Level 16: Short-range tractor beams appear for space vessels. An advancement of antigrav technology, the tractor also works as a form of jump damper as well by projecting a pseudogravity well into the vicinity of the target ship (only when the target's agility has been reduced to zero). Antimatter missile warheads appear, antimatter warheads are not affected by nuclear dampers.

Beyond Tech Level 16: The proton screen/proton beam appears, rendering antimatter missile warheads ineffective. At very high tech levels, the jump projector appears The projector induces a jump field around the target, forcing the target to immediately misjump The jump projector is found to be



TECHNOLOGY CHART 1

TL	*Personal Military*	*Heavy Military*	*Computers/Robotics*	*Communications*	*Environment*	*Medical*
0	Club	None	Primitive Math	Runners	Cave Dwellings	Mystical Medicine
	Spear, Cudgel				Crude Huts	Herbal Medicine
1	Bow, Sling	Catapult	Abacus	Heliograph	Settlements, Towns	Diagnosis of Disease
	Sword, Jack Armor		Geometry, Trig	Smoke Signals	Irrigation	
2	Crude Firearms	Small Cannons	Algebra	Printing Press	Cities, Canals	Understanding of
					Bridges, Roads	Internal Anatomy
3	Rifled Firearms	Cannons	Calculus	Telegraph	Cement Structures	Crude Surgery
	Flintlock Weapons					
4	Cartridge Ammo	Gatling Gun	Mech Add Machines	Telephone	Cities in	Early Vaccination
	Mesh Armor	Steel Armor		Audio Recorders	Rugged/Desert	Antiseptics
5	Explosive Grenades	Armored Vehicles	Electric Calculators	Radio	Sealed/Condtnd Cities	Mass Vaccination
	Shotgun	Mortars	Massive Model/1	Radar	Skyscrapers	X-ray Diagnosis
6	Automatic Weapons	Nuclear Weapons	Electronic Computers	Television	Cities in Jungles	Understand Viruses
	SMG, Autopistol	Missiles	Large Model/1 bis			Crude Prosthetics
7	Grenade Launchers	Beam Lasers	Desktop Computers	Satellite Commo	Underground Cities	Organ Transplants
	Cloth Armor	CompLam Armor	Model/2	Video Recorders		Medical Slow Drugs
8	RAM Grenades	Particle Accelerators	Massive Parallel	Fiber Optics	Orbital Settlements	Artificial Organs
	Early Laser Carbine		Model/2 bis	Optical Storage	Early Weather Control	Slow Drugs
9	Laser Weapons	LtWt CompLam Armor	Nonvolatile Memory	Video Telephones	Orbital Cities	Limb Regeneration
	Ablative Armor	Mass Drivers	Vocal Input	Flat Video Screens	Arcologies	Cryogenic Suspension
10	Adv Combat Rifle	Plasma Guns	Voice Transcription	Voice Transcriber	Undersea Cities	Antiviral Vaccinations
	Reflec Armor	Repulsors, Crystaliron	Model/4	Holovideo	Underice Cities	Growth Quickening
11	Combat Armor	Meson Guns	Advanced Synaptics	Personal Datalinks	Gravitic Structures	Nerve Refusion
			Model/5			Artificial Eyes
12	PGMP-12	Fusion Guns, Dampers	Semi-Int Robots	Advanced Translators	Major Terraforming	Broad Antitoxins
	Gauss Rifle	Superdense Armor	Model/6		Adv Weather Control	Enhanced Prosthetics
13	PGMP-13	X-ray Lasers	Holocrystal Storage	Holocrystal Storage	Gravitic Cities	Cloned Body Parts
	Battle Dress		Model/7	Hand Holocameras		Reanimation
14	FGMP-14	Bnd Suprdnse Armor	Brain Implants	Early Meson Commo	Mobile Cities	Genetic Engineering
			Model/8			Memory Erasure
15	FGMP-15	Early Black Globes	Pseudoreality	Meson Commo	Complex Terraforming	Anagathics
			Pseudobio Robots	Pseudoreality		Pseudobio Prosthetics
			Above Average Imperial Technology			
16	FGMP-16	Short Range Tractors	Artificial Intelligence	Hand Meson Commo	Global Terraform	Brain Transplants
	Neural Gun/Shield		Robots Common	Pocket Holovideo		Crude Memory Transfer
17	Fusion Rifle	Early Disintegrators	Self-Aware Robots	Pocket Meson Commo	Terraforming of	Selective Mem Erase
	Plasma Pistol	Antimatter Missiles	Self-Aware Computers		Worlds to 800 km	Intelligent Antibodies
18	Disintegrator Rifle	Adv Disintegrators		Pseudoreality	Terraforming of	Partial Memory
	Personal Damper	Long Range Tractors		Commonplace	Worlds to 4000 km	Transfer (Dupe)
19	Disintegrator Pistol	Proton Screen			Terraforming of	Noncryo Suspend
		Plastic Metal Armor			Worlds to Any Size	Adv Bioengineering
20	Disintegrator Wand	Relativity Beam		Matter Transport	Mobile Worlds	Total Memory
		White Globes		Global Commo	(Sublight Speeds)	Transfer (Dupe)
21	Relativity Rifle	Jump Projector		Matter Transport	Mobile Worlds	Total Rejuvenation
	Personal White Globe	Jump Damper		System Commo	(via Jumpspace)	
					Also	
					Dyson Spheres TL 23	
					Ringworlds TL 25	
					Solid Dyson Spheres TL 27	

TECHNOLOGY CHART 2

TL	*Land Transportation*	*Water Transportation*	*Air Transportation*	*Space Transportation*	*Energy*
0	Foot Travel	Rafts and Canoes			Muscles
	Domesticated Animals	Dugouts, Rowboats			Domestic Animals, Slaves
1	Crude Wheel	Rowed Galleys			Water
	Carts, Wagons, Chariots	Small Sailing Vessels			Water Wheels
2	Advanced Wheel	Multimast Sailing Ships			Wind
	Movable Axle	Crude Navigation			Windmills
3	Extensive Road System	Clipper Sailing Ships	Hot Air Balloons		Electricity
	Stagecoaches	Advanced Navigation			Primitive Storage Batteries
4	Self-Propelled Vehicles	Self-Propelled Ships	Dirigibles		Coal
	Trains	Ironclads, Steamships	Experimental Gliders		Steam Engines
5	Ground Cars	Steel Hulls	Airplanes	Early Rockets	Petrochemicals
	Tracked Vehicles	Early Submersibles	Seaplanes	Satellites	Internal Combustion Engines
6	Amphibian Vehicles	Advanced Submersibles	Early Jet Aircraft	Early Manned Rockets	Nuclear Fission
	Advanced ATVs/AFVs	Scuba Gear	Helicopters	Satellites Common	
7	Hovercraft	Hydrofoils	Supersonic Jet Aircraft	Unmanned Space Probes	Solar
	High Speed Trains	Hovercraft	Ultralights		Primitive Fuel Cells
8	Triphibian Vehicles	Triphibian Vehicles	Triphibian Vehicles	Orbital Shuttles	Geothermal
		Crude Artificial Gills	Hypersonic Jet Aircraft	Space Stations	
9	Early Grav Vehicles	Early Grav Vehicles	Early Grav Vehicles	Jump1 Invented	Superconductors
	Ultra HS Trains	Advanced Artificial Gills	Suborbital Shuttles	Sublight Stellar Travel	Primitive Fusion Plants
10	*Land/Water Transport Merge*		Advanced Grav Vehicles	Interstellar Travel Common	Fusion Plants 2000-Liter Min
			UH Grav Modules	Gravitic Maneuver Drives	Fusion Suprcdes Geothermal
11	*Land/Water/Air Transport Merge*			Jump2	Fusion Plants 1000-Liter Min
		HV Grav Modules		Thruster Technology	
12		Personal Grav Belts		Jump3	Fusion Plants 250-Liter Min
		LT Grav Modules			Advanced Fuel Cells
13	*Land/Water/Air/Orbital Spacecraft Merge*				Fusion Output 3 kw per Liter
				Jump4	Miniaturized Super-Batteries
14				Jump5	Fusion Plants 100-Liter Min
15				Jump6	Fusion Output 6 kw per Liter
		Above Average Imperial Technology			
16		Experimntl Matter Transprt		Fusion Output 7 kw per Liter	
		(Raw Materials Only)			Fusion Plants 80-Liter Min
17		Experimntl Matter Transprt		Primitive Antimatter Plants	
		(Matter Transmutation)			
18		Experimntl Matter Transprt	Self-Aware Starships	Antimatter 1 Mw/Liter	
		(Portal Technology)			Fuel Pods 750-Liter Min
19		Portal Technology			Antimatter 2 5 Mw/Liter
		Regional Range			Fuel Pods 200-Liter Min
20		Crude Energy Sink			Antimatter 15 Mw/Liter
		Continental Range			Fuel Pods 40-Liter Minimum
21		Starship-Sized Portals		Starship-Sized Matter	Antimatter 50 Mw/Liter
				Trans Portals	Fuel Pods 5-Liter Minimum

unreliable in a gravity well at less than 100 diameters and nonfunctional at less than 10 diameters

The jump damper also appears at very high tech levels. Two versions exist: first, as a ship screen to protect against jump projectors, and later developed as a bay weapon and used to restrict the enemy's ability to enter jumpspace.

Computer/Robotics Technology: Indicates the culture's progress in the creation and use of high-tech computer circuitry and robots.

Tech Level 5 (circa 1930): Slow and bulky mechanical calculators give way to slow and bulky electric calculators.

Tech Level 6 (circa 1950): The advent of miniature electronics makes a new generation of computers possible. Reduced cost makes computers more common, and results in a mushrooming of their applications. Improved programming languages make programming much easier, and give birth to the dream of a practical artificial intelligence.

Tech Level 7 (circa 1970): Computers that once filled entire rooms are reduced to desktop size. Processing speeds and offline data storage capacity increases dramatically. While some great strides have been made in AI research, it is conceded that truly inductive, self-learning, self-aware machine artificial intelligence is still but a dream.

Tech Level 8 (circa 1990): "Massively parallel" computer architectures become common. The benefits to language understanding, expert systems, visual recognition systems, and other aspects of artificial intelligence are immediate, as machines can finally consider hundreds of facts at once to make their decisions. Data storage capacity increases by an order of magnitude with the introduction of optical storage devices.

Tech Level 9 (circa 2010): Nonvolatile computer memories become common, so that no power supply is needed to preserve data contained in a computer when the computer is shut off. Computers can now be stored powerless for years, and yet pick up where they left off as soon as power is resumed Practical superconductors allow a significant increase in processing speeds.

Computers at this tech level can follow basic commands when given vocally. These consist of one-word commands from a vocabulary of a few hundred words. No pretraining on the part of the machine is required, but careful enunciation is necessary.

Tech Level 10 (circa 2100): Voice transcription devices become widespread, allowing computers to produce written text directly from spoken words. The use of voders (speech synthesizers) to produce "spoken" computer output becomes common.

Tech Level 11: Prior to this tech level, computers are strictly deterministic; that is, given a certain set of data as input, a computer will always produce the same output. Synaptic processing, an attempt to model computer operation after sophontic brains, is found to introduce a measure of nondeterminism into the computer CPU.

A purely synaptic computer is not functional at all, because of the unreliability caused by the overloaded synaptic circuits. A large percentage of traditional deterministic processors can be used to reduce the number of false matches picked up by the synaptic circuit.

Tech Level 12 More reliable synaptic processors allow true self-programming (heuristic or self-teaching) AI software to be developed, but cost and size continue to be limiting factors.

The self-mobile computer brain with developed manipulative appendages (i.e., a robot) finally becomes an economic and commercial reality.

Tech Level 13: Holographic crystal data storage, first widely available at tech level 13, increases the capacity of computer memory banks by another factor of 10 over optical storage. The most advanced AI software requires the use of synaptic processors, as well as heavy parallelism

Tech Level 14: Experiments with lesser animals make a direct brain implant possible, allowing a computer to exchange massive amounts of data at rates of mere microseconds with a living brain

While robot brains can now include up to 25-percent synaptic processing, the most reliable traditional computers (such as starship computers) still rely on deterministic, massive-parallel processing.

Tech Level 15: Computers become "alive," thanks to sophisticated programming and remarkable visual imaging devices. "Pseudoreality" machines can artificially produce the illusion of existence in whatever they are programmed to produce, with the help of holographic (3D) displays. For example, the personality of a dead individual can be programmed into a computer, allowing one to "converse" with the dead individual (via the computer) as if that individual were still alive.

Above the Imperium's highest tech level

Tech Level 16: Reliable synaptic processing crosses the 50-percent boundary; true creativity and unprogrammed inspiration spring from these fantastic computer brains

Beyond Tech Level 16: Computers with synaptic "brains" can program themselves through their hardware, with no outside software influence. Computers beyond tech level 16 are "self-aware" in every sense of the word. Robots and computers essentially free their creators to pursue higher interests of their choice, while the robots and computers perform the mundane tasks of running society

Communications Technology: Indicates the culture's use of long-range communication devices.

Tech Level 5 (circa 1930). Wireless voice communication (radio) appears in use. Later in the period, a spinoff of radio, known as radar, is developed for detecting far-off metallic objects.

Tech Level 6 (circa 1950): Miniature electronics makes a new generation of communication devices possible Wireless communication expands along new frontiers to include video images (television).

Tech Level 7 (circa 1970): Communication satellite networks remove all barriers to global communication. Advanced electronics makes video recording commonplace.

Tech Level 8 (circa 1990): Optical methods of transmission and data storage are introduced. Fiber optic networks begin to replace older-style metallic wire ones. The fiber optics provide substantially improved transmission quality as well as a much higher quantity of transmissions in the same cable volume.

Tech Level 9 (circa 2010): Personal video communicators (video telephones) appear. Flat video screens only a few

millimeters thick appear, making it possible to mount a video screen on a wall just as one might do with a still picture. Practical superconductors make way for significant advancements in communication transmission volumes and data transfer rates

Tech Level 10 (circa 2100): Voice transcription devices become widespread, allowing spoken words to be stored or transmitted as written text. Holographic (three-dimensional) video appears, although at this point, producing or viewing such videos requires an extensive array of costly equipment.

Tech Level 11 The total personal datalink is introduced, allowing one individual to communicate with any other individual anywhere on a world, any time, using any desired mode of communication· text, voice, or video in any combination The personal datalink (often implemented using a hand computer) device allows the user to record, send, receive, and store message data in any form. Holovideo, however, is still beyond the realm of the personal datalink.

Tech Level 12: Advanced multilingual translation devices come on the scene. These small devices can translate a multitude of spoken languages directly in real-time, with remarkable accuracy and reliability. Language barriers disappear when these devices are linked with all modern forms of communication.

Tech Level 13· Holographic crystal data storage appears, increasing storage capacities tenfold. The first consumer holovideo cameras are developed.

Tech Level 14: Early meson communication is used in specialized applications Meson communication allows transmitting in a straight line to the destination with no consideration necessary for any intervening mass. Thus, it becomes possible to send and receive messages directly through the center of a world to the other side, rather than using communication satellite networks to bounce the signal around the globe

Tech Level 15: Meson communications become the communication method of choice for most commercial applications. Pseudoreality communications appear, allowing the computer to query you extensively on a subject, and to act as your stand-in when delivering the message The receiver of the message can discuss the message with your computer image just as if you were there.

Above the Imperium's highest tech level:

Tech Level 16· Meson communications supersede orbital communication satellites, rendering them obsolete Handheld meson communicators and pocket holovideo cameras appear.

Beyond Tech Level 16· Pseudoreality communications become cheaper and more reliable as the tech levels increase. By tech level 18, pseudoreality communications become infallible when acting as the sender's stand-in.

Starting at tech level 20, matter transport becomes so powerful that transportation ceases to be a communication barrier on a global level. By tech level 21, matter transport eliminates all transportation barriers to intrasolar system communications.

Environmental Engineering Technology: Indicates the ability of the culture to manipulate their environment. It establishes the chance of local terraforming projects being underway, and dictates the ways in which cities and other large civil engineering works are constructed.

Tech Level 5 (circa 1930): Sealed and conditioned cities become possible. While at tech level 4 sealed and conditioned dwellings are possible, this technology has expanded to include an entire city as a unit. Multistory structures over 100 meters in height appear (skyscrapers).

Tech Level 6 (circa 1950)· Building an entire city in a jungle becomes feasible. Skyscrapers become commonplace.

Tech Level 7 (circa 1970): Civil engineering advances enough to make entire underground cities possible.

Tech Level 8 (circa 1990): Orbital settlements (an orbital station (not closed-cycle)) with a permanent population of up to 100 become possible. An early form of wide-scale weather control is introduced. Semireliable seismic quake prediction appears.

Tech Level 9 (circa 2010): Orbital cities (a closed-cycle orbital station) with a permanent population of 1000 or more are introduced. Large, totally self-contained cities (arcologies) become possible

Tech Level 10 (circa 2100). Undersea and underice cities become practical Early seismic quake control appears

Tech Level 11· Structures whose design relies upon a gravitic supplement appear. These structures would collapse without the permanent aid of their gravitic support

Tech Level 12· Major terraforming projects covering thousands of square kilometers become commonplace Significant advances in global weather control help make such terraforming projects possible Massive gravitic structures that can freely move about appear.

Tech Level 13: Entire cities supported by gravitics appear (populations in excess of one million). Athough such cities are stationary (i.e., nonmobile), they can be suspended in the sky at altitudes of up to one kilometer.

Tech Level 14 Gravitic-supported cities that can move about are introduced. Such cities can now reach altitudes of over 10 kilometers.

Tech Level 15: Gravitic cities can now reach orbit on their own. Complex terraforming involving an entire hemisphere becomes commonplace Reliable seismic quake control is also common.

Above the Imperium's highest tech level:

Tech Level 16: Global terraforming becomes commonplace, allowing substantial improvements in a world with an unfavorable global environment For example, transforming a world with an insidious atmosphere to a world with a standard atmosphere is global terraforming

Beyond Tech Level 16: Total terraforming appears at tech level 17 and beyond. Total terraforming involves complete transformation of a world's basic environment to a radically different basic environment of one's choosing For example, transforming a barren vacuum world to a lush, rich world with a dense atmosphere is total terraforming. At extremely high tech levels, moving entire planets about, even through jump space, becomes possible.

Medical Technology: Indicates the quality of biological research and medical care available.

Tech Level 5 (circa 1930). Vaccination of the masses is introduced X-rays are used to view a being's internals and to aid in the diagnosing of illness.

Tech Level 6 (circa 1950): An understanding of viral diseases is developed during this period Crude prosthetic limbs (limbs that are a facsimile of the real thing) appear

Tech Level 7 (circa 1970): Organ transplants become common Medical slow drug is introduced as a method of aiding the healing process.

Tech Level 8 (circa 1990): Nonbiological artificial organs are introduced, as an alternative to organ transplants in some cases Rapid-acting slow drugs are developed

Tech Level 9 (circa 2010)· Advances in genetics lead to the development of practical limb regeneration techniques Late in the period, cryogenic suspension appears (low berth) as a way to buy time in medical emergencies

Tech Level 10 (circa 2100): Genetic manipulation advances produce broad-spectrum antiviral vaccinations (e.g , finally curing the common cold in humans) Early growth-quickening methods are introduced, allowing the accelerated growth of biological tissues.

Tech Level 11. True nerve refusion techniques appear, allowing major neural damage (such as a severed spinal cord) to be surgically repaired Artificial eyes are developed, thus providing a practical means for those who cannot see to regain their sight

Tech Level 12: The broad-spectrum antitoxin is introduced into use This "wonder drug" greatly hastens the recovery of the patient against literally hundreds of diseases. The first totally functional, inexpensive prosthetic body part replacements appear

Tech Level 13. Further advancements in genetics allow selective cloning of replacement body parts to be developed Under certain conditions, a person who has just died can be brought back to life (reanimation)

Tech Level 14. Genetic engineering techniques culminate in the creation of altered, "improved" life forms, including sentients. Deliberate memory erasure becomes possible, and is often first used on criminals.

Tech Level 15: True anagathics and antianagathics appear: convenient drugs which allow aging to be retarded or accelerated. True pseudobionic prosthetic replacements, indistinguishable from the biological original, appear during this period.

Above the Imperium's highest tech level:

Tech Level 16· Successful brain transplants become possible. Memory transfer is developed, although it is not as yet totally reliable.

Beyond Tech Level 16: Intelligent antibodies, ultraminiaturized computer devices that can track down and kill with extreme precision even a single foreign body in an organism, appear at higher tech levels. Advanced bioengineering is developed, allowing living organisms to be directly manipulated into variant life forms.

Total Rejuvenation begins at tech level 21. It is a combination of many techniques which allow a being to get an entirely new body. The technique is tremendously expensive and somewhat risky, but this improves with subsequent tech levels beyond 21.

Land Transport Technology: Indicates the population's methods of land transport Waterworlds may not always possess land transport technology.

Tech Level 5 (circa 1930): Self-propelled personal vehicles (ground cars) are developed Practical tracked vehicles appear, allowing the self-propelled vehicle to traverse some very uneven and difficult terrain.

Tech Level 6 (circa 1950): Ground vehicles are introduced that have a limited ability to travel in water as well (amphibious vehicles). Further advancements in ground vehicles during the period lead to some effective all-terrain vehicle and armored-fighting vehicle designs

Tech Level 7 (circa 1970): Air-cushion hovercraft appear. High-speed trains capable of sustained speeds of over 500 kph are introduced.

Tech Level 8 (circa 1990): Ground vehicles capable of limited water and air travel appear, resulting in the advent of triphibian vehicles

Tech Level 9 (circa 2010): Crude gravitic vehicles are developed as a result of advances in the understanding of subatomic forces. Ultrahigh speed trains capable of speeds in excess of 1000 kph appear

Tech Level 10 (circa 2100): Advances in gravitic vehicles lead to the merging of land and water transport Gravitic vehicles capable of altitudes of several hundred meters appear late in the period.

Tech Level 11· Gravitic vehicles merge with aircraft. Ground transport is still used where atmospheric conditions are a problem.

Tech Level 12· Advances in grav module construction lead to a practical personal grav belt.

Tech Level 13: Grav vehicles become indistinguishable from orbital spacecraft.

Tech Level 14: See space transport.

Tech Level 15: See space transport.

Above the Imperium's highest tech level·

Tech Level 16: The first successes with matter transport as energy occur, but the transport results in considerable randomization of molecular patterns and is thus limited to raw

materials only.

Beyond Tech Level 16: Matter transport using matter transmutation appears at tech level 17, but it is limited to solely inanimate objects Practical matter transport for life forms (using portal/circumvention techniques) does not occur until tech level 18.

Access to the circumvention transport pocket universe is a tech level 25 development The ability to deliberately pinch off a pocket universe does not occur until tech level 35

Water Transport Technology: Indicates the population's achievements with regard to transport over oceans and seas. On worlds where gravitic vehicles are present, grav locomotion blends the land, sea, and air transport into a unified whole.

Tech Level 5 (circa 1930): Steel-hulled vessels and early submersibles appear during this period

Tech Level 6 (circa 1950): Advanced submersibles able to stay submerged for extended periods of time are developed. The advent of scuba gear makes personal underwater excursions practical

Tech Level 7 (circa 1970): Hydrofoil designs allow watercraft to reach speeds in excess of 80 kph. The development of the air cushion hovercraft allows a "ground vehicle" also to traverse water with relative ease.

Tech Level 8 (circa 1990): Triphibian vehicle design results in vehicle designs capable of traversing land, water, and also air. However, such vehicle designs are imperfect: They always prefer one mode (land, water, or air) over the other two, and are but mediocre performers in even the best of their three modes

Tech Level 9 (circa 2010): Artifical gills allow divers to live underwater and "breathe" the water directly for extensive periods. Late in the period, the gravitic vehicle is also developed.

Tech Level 10 (circa 2100): Land and water transport merge.

For all subsequent tech levels, see land transport.

Air Transport Technology: Represents the availability of various forms of air transportation. Vacuum worlds have no air transport until gravitics are invented.

Tech Level 5 (circa 1930): Self-powered airplanes appear. Developments in landing and takeoff techniques lead to the "seaplane," an aircraft design capable of landing and taking off from water.

Tech Level 6 (circa 1950): Advancements in rotary airfoil techniques lead to the development of the helicopter. Further developments in aircraft propulsion techniques result in the jet aircraft.

Tech Level 7 (circa 1970) Further refinements in jet aircraft propulsion occur, leading to the supersonic jet aircraft capable of travelling in excess of 2000 kph. The personal ultralight aircraft appears, due mainly to advancements in lightweight material construction.

Tech Level 8 (circa 1990): Hypersonic aircraft are developed, which are capable of travelling over 5000 kph. Triphibian vehicles appear.

Tech Level 9 (circa 2010): Suborbital shuttle aircraft become common, allowing speeds of more than 10,000 kph. Late in the period, the gravitic vehicle is developed, although at this point such vehicles are only capable of altitudes of less than 10 meters

Tech Level 10 (circa 2100): Gravitic vehicles are now capable of altitudes of several hundred meters, and thus qualify marginally as aircraft.

Tech Level 11: Gravitic vehicles blend the various transportation technologies (air, land, and water) into a single technology.

For all subsequent tech levels, see land transport.

Space Transport Technology: Indicates the world's local achievements in space travel.

Tech Level 5 (circa 1930): Space travel is not possible at this tech level.

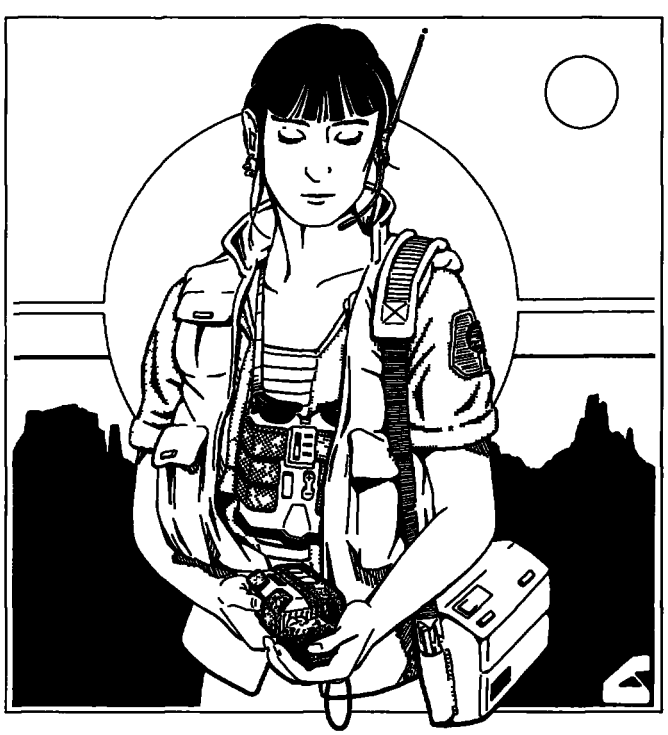
Tech Level 6 (circa 1950): Rockets capable of carrying inanimate payloads are developed, often primarily for military applications. Late in the period, rockets capable of carrying life forms (including sentients) into orbit appear.

Tech Level 7 (circa 1970): Space vessels capable of going beyond world orbit are introduced. Early in the period, this capability is often used to launch space probes with inanimate payloads (typically sensors and communications equipment). Later in the period, animate payloads become possible, which opens the door for the world's inhabitants to explore personally their local star system.

Tech Level 8 (circa 1990): Interplanetary exploration by the world's inhabitants begins in earnest. Orbital shuttles and space stations appear.

Tech Level 9 (circa 2010): Interplanetary travel becomes relatively common. Some cultures launch sublight interstellar missions. Late in the period, the fundamentals of interstellar travel are discovered, leading to the introduction of Jump1 drive.

Tech Level 10 (circa 2100): The availability of Jump1 drive makes interstellar travel common during this period. Gravitic maneuver drives replace older chemical thrust maneuver drives. However, gravitic maneuver drives have difficulty operating away from large masses (they need the strong gravity



field to push against).

Tech Level 11: Jump2 drive is invented. Research into the problems of gravitic drives leads to the introduction of thruster technology. Thruster technology, a combined spin-off of gravitic and damper technology, uses a strong molecular repelling force to produce reactionless thrusters which push against large plates mounted on the space vessel Thrusters do not require the presence of a large gravity field to operate effectively, but instead are highly localized with virtually none of the projection ability of gravitics.

Tech Level 12: Jump3 drive appears.

Tech Level 13: Grav vehicles merge with orbital spacecraft. Jump4 drive appears.

Tech Level 14: Jump5 drive appears.

Tech Level 15: Jump6 drive appears

Above the Imperium's highest tech level:

Tech Level 16: Jump drive efficiency is improved, making the drive require less of the vessel for drive and for fuel. Research fails to create a drive capable of going beyond a controlled Jump6.

Beyond Tech Level 16: Going beyond a controlled Jump6 (to Jump7 and beyond) is, in fact, impossible with the physics of primitive jump technology. At tech level 21, the Jump6 barrier is finally breached with the appearance of starship-sized matter transport portals.

At higher tech levels, self-aware starships appear, making most of the normal crew requirements obsolete. The occupants become mere passengers at this point.

Energy Production Technology: Indicates the culture's ability to make use of energy.

Tech Level 5 (circa 1930): Petrochemical fuel and internal combustion engines become common.

Tech Level 6 (circa 1950)· Nuclear fission power plants are introduced. However, their sheer mass and their hazardous waste often preclude widespread use

Tech Level 7 (circa 1970). Efficient photoelectric solar power cells appear. Primitive fuel cells are also introduced during this period. None of these alternative power sources are yet capable of competing with an equivalent volume of internal combustion engines.

Tech Level 8 (circa 1990): Methods for tapping geothermal sources are developed during this period. Solar cells and fuel cells gain in efficiency, but typically do not yet supersede internal combustion.

Tech Level 9 (circa 2010): Advances in superconductor technology leads to the first primitive fusion power plants. Superbatteries are also a typical development of this period.

Tech Level 10 (circa 2100): Cheap fusion power plants (2000-liter minimum size) come on the scene, and supersede all other forms of energy production in use. Where fusion plant size becomes a problem, superbatteries or fuel cells are employed, finally making the internal combustion engine largely extinct.

Tech Level 11: Fusion power plant minimum size drops to 1000 liters.

Tech Level 12: Fusion power plant minimum size drops to 250-liter minimum. Improved fuel cells appear which dispose of by-products automatically.

Tech Level 13: Fusion power plant output jumps from an average 2 kilowatts per liter to 3 kilowatts per liter Miniaturized superbatteries are introduced.

Tech Level 14: Fusion power plant minimum size drops to 100 liters

Tech Level 15: Fusion power plant output jumps to an average of 6 kilowatts per liter.

Above the Imperium's highest tech level:

Tech Level 16: Fusion power plant minimum size drops to 80 liters and power plant output jumps to an average of seven kilowatts per liter

Beyond Tech Level 16: Antimatter power plants come on the scene. Antimatter fuel pods contain a measured quantity of antimatter enclosed in a strong artificial gravity "bottle." The bottle's gravity fields are maintained by an array of superbatteries. Fuel pods are the heart of an antimatter power plant, and they typically provide "fuel" for up to a year before needing to be replaced.

Antimatter power plant output per hour climbs dramatically at higher tech levels as the capability to contain safely a progressively larger annihilation mass is increased. This means that a given fuel pod is "burned up" at a correspondingly faster rate.

OTHER TECH LEVEL NOTES

Worlds with a tech level of 10 or less often contain some areas on the world that have only been superficially explored. In cases where the tech level is 11 or more, then if the world's population code is less than 6, the world usually has some superficially explored areas. Worlds with a tech level of 7 or less generally have several large unexplored regions on their surfaces.

Below is a chart of the tech levels achieved by the major interstellar powers.

THE FIRST IMPERIUM

Imperial	*TL*	*Comments*
–9235	9	Vilani discover Jump1
–8900	10	Vilani sphere reaches about 10 parsecs in size
–5430	11	Vilani discover Jump2

THE SECOND IMPERIUM
(Originally the Terran Confederation)

Imperial	*TL*	*Comments*
–2431	9	Terrans discover Jump1
–2408	10	First Terran/Vilani Interstellar war ends
–2398	11	Terrans discover Jump2
–2210	12	Terrans discover Jump3

THE THIRD IMPERIUM
(Originally the Sylean Federation)

Imperial	*TL*	*Comments*
–1776	10	Syleans maintain minimal interstellar trade
–650	11	Sylean Federation established
–150	12	Robot manufacturing reestablished
300	13	Vargr Campaigns taking place (210-348)
700	14	Xboat system being built (624-718)
1000	15	Solomani Rim War taking place (998-1002)

Robots in the Imperium

Most worlds of tech level 12 or greater use robots to augment or even replace biological beings in uncreative, menial, or hazardous tasks that require little intelligence. The technological challenge is to build a cheap, reliable robot able to replace completely a being with intelligence. Relatively mindless robotic machines and appliances appear about tech level 8, and reliable speech recognition occurs at tech level 10. The reliability of primitive (noncreative) true artificial intelligence often follows at tech 11, making the way for widespread introduction of primitive artificially intelligent robots at tech 12.

One factor of overriding concern governs all robots in the Imperium: economics. Robots are possible at lower tech levels, but they are not generally practical until tech level 12. (A few industrial, high-population worlds have expensive yet primitive robots as low as tech level 10.)

At the higher tech levels, robots are a cheap and reliable alternative to human labor, particularly in dull or dangerous jobs. Consider the typical tech 15 starport. Ships arrive and depart sporadically around the clock, so staff levels must be kept high enough to service any vessel at any time, even though there may be long intervals during which no ships need to be loaded or unloaded. Robots are an efficient solution to this problem.

A standard cargo robot costs about Cr75,000, and can be financed over 40 years for Cr4500 per year. If maintained regularly (at an additional cost of Cr750 per year), the robot should last as long as 85 years. Obviously, using robots in this situation can cut costs significantly

Pseudobiological robots are rare in the Third Imperium. Tech level 15 is the first tech level at which a convincing pseudobiological robot can be constructed. The majority of the worlds in the Imperium are below tech 15 in local manufacturing capability. Besides this, pseudobiological robots are not particularly cost effective in design (the experimental robot described later would cost 12 million credits to construct). Pseudobio robots also tend to be more fragile and less reliable than traditional robots.

Another reason that pseudobiological robots have been slow to catch on is the bias some have against them. Many people, even from high-tech worlds, are unsure of how to react to a human that turns out to be a machine. Some human-populated worlds harbor a general antirobotic bias, even though robots are technologically feasible there. On such worlds, items advertised as "Human-Made" often bring a premium price.

A famous example of this philosophy is the popular quasireligious Society for the Sovereignty of Man over Machine (SSMM) in the Solomani Confederation.

For these reasons, few researchers spend their time trying to reinvent man in machine form. Much more energy is spent on related pursuits that obviously help humanity, such as prosthetics.

A HISTORY OF ROBOTS IN IMPERIAL SPACE

The age of modern robots was thrust upon the First Imperium by the events of the First Interstellar War. In −2389, the Terran Confederation Navy commissioned a line of mass-produced tech level 12 robots as support staff for military personnel. These were not warbots as we know them today. A few of the robots were expert medical robots or served as administrative support, but most were heavy-duty, hard-working construction robots, used to build temporary installations for advanced bases.

Beginning in −2204, the ambitious Solomani carried their higher technology with them as they established the Rule of Man over the dominions of the defeated Vilani Empire. The Vilani, still at tech level 11, had not yet developed true robots.

Less than 200 years later, Naasirka introduced the first line of robots for private, nonmilitary use. Dubbed "Rashush," these housekeeping and valet robots spread rapidly, thanks to a powerful, high-prestige advertising campaign. Although expensive, ownership of these useful robots was within the reach of many rich citizens of the Second Imperium. The Rashush line is still marketed today.

At the time, the future of robots and robotic appliances looked promising

But in −1776, the Rule of Man crumbled, and the Long Night began.

During these 17 centuries of regression and decay, interstellar communication and trade slowed to a standstill. Progress in robotic science screeched to a halt as many worlds dropped to lower tech levels.

In −650, the Sylean Federation began to reestablish trade between certain worlds. As the Federation grew, technology saw a rebirth, and robots became practical again. In −143, Dover-Gabe, a Sylean manufacturing and mining concern, was awarded a large contract for courier robots.

These robots provided an efficient and secure means of transporting secret military communications from place to place. No one at the time realized the critical historic effect one of these devices would play in the future of robots.

THE SHUDUSHAM CONCORDS

A tragic attack against the Sylean Federation, which occurred in −112 in Core sector, helped shape the Third Imperium's current attitudes about robots. A terrorist group rigged one of

the Dover-Gabe courier robots to self-destruct, and managed to sneak it aboard a 90,000-ton Sylean battleship. *The Empire's Banner* was on a goodwill mission in orbit around the world Fornol (Core 1715) when the robot's hydrogen/oxygen fuel cell exploded. Fornol's premier, two ambassadors, and the Sylean vice-minister were killed, along with a host of ship's officers and crewmen. The repercussions from this event were so far-reaching that the Sylean Federation was nearly thrown into a civil war

This disaster prompted 12 worlds of the Sylean Federation to meet on the neutral world of Shudusham to draft an agreement dealing with the issue of weaponry carried by robots. After much deliberation, all 12 worlds finally signed the completed Shudusham Concords in −110. A hardcopy is on display in the Museum of Sylean History on Capital.

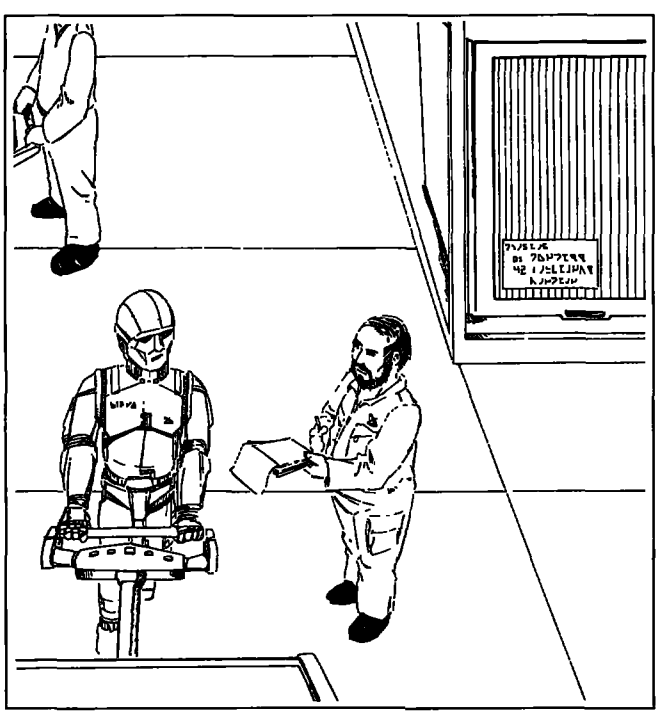
The Concords have no legal force in the Third Imperium, but they have served as a model for many high-tech worlds' documents governing the manufacture and use of robots.

Many worlds still use parts of the pre-Imperial Shudusham Concords as a model for their own laws to keep sabotages with robots in check.

Most worlds declare an owner to be responsible for the actions of his robot, even if the owner did not directly order the action For example, if an owner orders his robot to protect his home, and in so doing the robot kills someone approaching the home, the owner can be charged with accidental murder.

ROBOTS IN THE THIRD IMPERIUM

In the 17th year of the Imperium, Cleon Zhunastu declared, "Any sentient life form within the Imperial borders, regardless of its origin, is a protected being, and thus a citizen of the Third Imperium." Cleon went on to say that robots are not citizens of the Imperium "One may argue that an intelligent robot might be sentient," stated Cleon, "but it is definitely not a life form." In taking this stand, Cleon clearly sided with the industrial interests in the Imperium by declaring robots to be property, not citizens.



In 298, Makhidkarun marketed the first line of robots with tech level-13 brains. These robots, using "high autonomous" software, were more intelligent than earlier robots, so they could be operated by ordinary individuals without special skills or training. By making robots usable by every citizen, Makhidkarun revolutionized the popularity of robots within the Third Imperium.

About 100 years later, in 404, a group of roboticists met at Shudusham to share their latest technological breakthroughs. Shudusham was chosen as the site because of its historical significance and central location. The conference was a success; so much so, in fact, that the Shudusham Robotics Conference has continued to meet every 10 years. Roboticists, manufacturers, heavy robot users, journalists, and other interested parties are drawn from all over explored space to attend a portion of the one-year conference.

Makhidkarun announced another breakthrough in 711: roboticists working in cooperation with the Imperial Navy Research Lab had produced a reliable robot brain with 25-percent synaptic processing. Robots with more synaptic units are more intelligent, so these machines were capable of more powerful programming. Expert robots with higher skill levels appeared more often in the marketplace.

A few years ago, SURD received the Shudusham Conference Medal of Merit for the first convincing "human" pseudobiological robot. The robot, nicknamed Telku, was the main attraction of the meeting. Pseudobios are not mass-produced yet by any Imperial manufacturer, but technology has reached the stage at which such robots can fool real humans.

ROBOTS IN THE SHATTERED IMPERIUM

Not all factions in the shattered Imperium hold to the original precepts of the United Third Imperium. Most namely, some factions consider robots to be citizens instead of property. This is not an unusual view: it is known that Strephon himself was sympathetic to this point of view.

The "Real" Strephon faction and the Antares faction—both factions known to be pro-Strephon—consider robots to be citizens. Several of the worlds in these regions have held this view for the last century or so. As a citizen, many of these worlds believe a robot has the right of individual freedom, the right to vote, and is responsible for its own actions. This means, of course, a robot can be prosecuted for a crime, put in prison, and even terminated.

As an interesting twist to this whole topic, other factions consider a cyborg to be a noncitizen, that is, a cyborg is mere property. A cyborg (coined from "cybernetic organism") is a being with a high percentage of robotic body parts. Views vary on what constitutes a "high percentage."

The Society for the Sovereignty of Man over Machine (SSMM) in Solomani space considers any robotic body part to be a "high percentage," and looks upon its owner with great disdain. Many Solomani, although not professed members of the SSMM, are sympathetic to the view of cyborgs being property rather than citizens.

Margaret's faction is not an overly vocal one, but it is known that Margaret herself has stated on more than one occasion

that "any being willing to let more than 25 percent of their body be replaced by hardware should be treated as such." In fact, as an aside, Margaret is also rumored to have said "no artificial being, biological or otherwise, should be allowed to hold any government office." Margaret's supporters are thus of the view that cyborgs are property rather than citizens, although the robotic percentage needed to make one a cyborg varies from world to world in the region controlled by Margaret.

ROBOT BUILDERS

Several of the Imperial megacorporations make robots.

Naasirka: Naasirka is the largest manufacturer of robots in the Imperium. Naasirka's robots rarely use innovative technology, but their aggressive marketing staff has placed more robots than either Makhidkarun or LSP, Naasirka's two largest competitors.

Makhidkarun: This old Vilani corporation is not the largest manufacturer of robots, but it is the most innovative The company's research staff is responsible for many of the Imperium's significant breakthroughs in synaptic processing.

Ling Standard Products (LSP): Ling Standard Products' expert med-robots are used in a variety of medical applications throughout the Imperium. Ling Standard is also a popular producer of robotic body parts.

Other prominent manufacturers include:

SURD: One of the principal robot manufacturers in Core sector is SURD, the Shinku University Research Directorate SURD was founded about 400 years ago by a group of academic roboticists who agreed to pool their patents together, to make robots and to make money at the same time.

Today, the marketing and fiscal management are left in the hands of corporate officers trained in business matters. No research is actually conducted by SURD itself. Many university robotics departments, however, are patron members of SURD, which provides generous research grants in exchange for the right to exploit commercially useful discoveries.

Star Servants: A significant manufacturer of a wide assortment of low-intelligence robots in the Vland sector. Produces everything from cheap deskbots to expensive valets.

Hedron, LIC: Manufacturers large, massive robots for various heavy operations such as cargo handling and construction. Hedron, LIC is located on Glisten in the Spinward Marches

Spinward Specialties: In the past two centuries a number of firms have sprung up in Deneb and the Spinward Marches. Spinward Specialties, only six years old, is one of the newest. It specializes in contoured chassis courier robots, unarmed but heavily armored against attack

Intect: This firm, located in Deneb Sector, produces various models of environmental-control, cargo-handling, and animal-care robots.

SOLOMANI

Several Solomani companies also produce robots.

Panstellar: Specializing in high technology, Panstellar sells expert robots capable of designing and safely erecting a building in any environment. Panstellar, founded on old Terra, also markets spaceships throughout the Solomani Rim.

Odyssey: An agricultural firm founded during the Long Night in an attempt to save dying colonies in the Solomani Rim region, this firm is a renowned producer of automated agricultural hardware of all types.

Myran Technologies: Specializes in high-tech recreational gear. Renowned for the innovation and quality of its products.

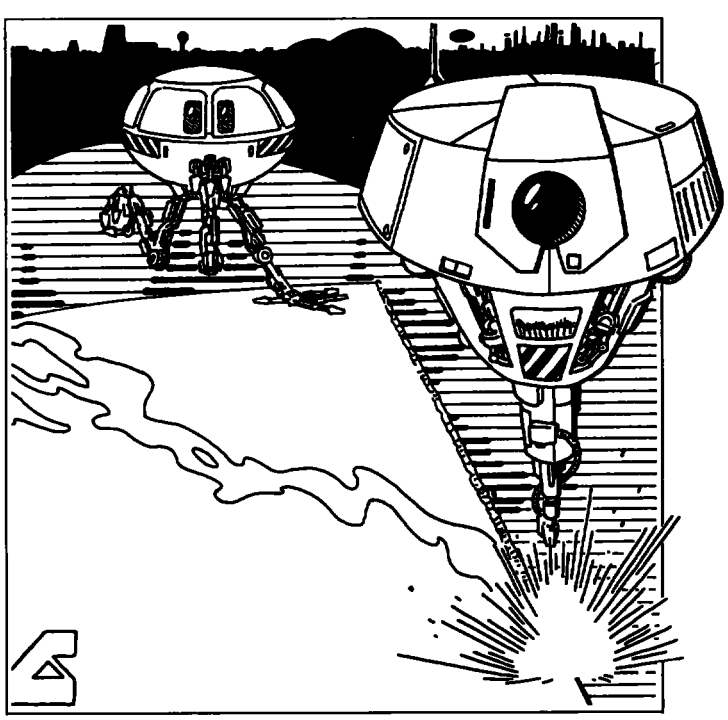
Nichols Manufacturing: A recent entrant into robot manufacture, Nichols has distinguished itself in the Solomani Rim region for its inexpensive orbital station construction.

ZHODANI

The Zhodani have long used mobile robots as part of their armed forces. These robots are not independently intelligent, and are by no means a replacement for humans as warriors. They are, however, a cheap substitute for humans, and they are used in conjunction with humans to provide greater firepower

Zhodani combat robots (usually called warbots) come in a wide variety of models; their specific configurations depend on the environment they will work in and the mission they will perform.

Most warbots are roughly (very roughly) equivalent in size and configuration. They resemble a human torso in shape and size. A grav module serves as the base, eliminating the need for legs while providing greater mobility. A sensor cluster replaces the head, although vaguely resembling it. In between, the torso houses a computer controller, a power source, several sensor processors, and the warbot's weaponry. Two articulated arms are mounted at the shoulders and allow the warbot to interact with the environment without shooting at it; the graspers can pick up objects or manipulate knobs or handles. The two arms also allow the warbot limited walking ability in the event that the unit's grav module is knocked out. Brackets on the back of the warbot allow a variety of additional sensors, weapons, or other useful devices to be mounted for specific missions.



Communications

Communications are an essential part of travel within the **MegaTraveller** universe. The procedures used for communication help make it easy and efficient.

Starships can have four basic types of communicators: radio, laser, maser (microwave), and meson. Each type of communicator has its own strengths and weaknesses.

BRIEF DESCRIPTIONS

The following descriptions provide a basic understanding of the types of communicators available and their strengths and weaknesses.

Radio: Radio communicators send and receive information using radio waves. The information is broadcast (it goes out in all directions, and can be detected by any radio receiver within range). The radio communicator is the only *broadcast* communicator available.

Laser: Laser communicators send and receive information using laser light. Information is beamcast (directed at a specific receiver, and can only be received by that receiver). Laser communicators are adversely affected by poor visibility, smoke, or cloud cover. When used in a Thin or greater atmosphere, range is limited to Continental or less.

Before a laser communicator can be used, the location of the receiver must be known (located visually, by radar or ladar, by prior arrangement, or by other sensors) Once contact is established, the communicator will maintain contact.

Maser: Maser communicators send and receive information using microwaves. The information is beamcast (directed at a specific receiver, and can only be received by that receiver). A maser communicator is a directional beamcast version of the radio communicator. Maser communicators are not adversely affected by atmosphere.

Before a maser communicator can be used, the location of the receiver must be known (located visually, by radar or ladar, by prior arrangement, or by other sensors). Once contact is established, the communicator will maintain contact.

Meson: Meson communicators send and receive information using coded packets of mesons. The information is beamcast (directed at and received by only a specific receiver). By a meson packet's nature, it cannot be intercepted between transmitter and receiver. Nothing obstructs a meson communicator's beam (not even planets or stars).

Before a meson communicator can be used, the location of the receiver must be known (located visually, by radar or ladar, by prior arrangement, or by other sensors). Once contact is established, the communicator will maintain contact for the duration of a transmission.

NOMENCLATURE

In order to uniquely identify communicators, the following standard format is used:

TypeComm Range-TL

Type is the specific communications system (Radio, Laser, Maser, Meson). The suffix *Comm* indicates a communicator. *Range* is the word description of the range of the device; *TL* is the tech level of the device. For example, RadioComm Planetary-5, LaserComm FarOrbit-10, MaserComm System-14, or MesonComm Planetary-15.

COMMUNICATIONS PROCEDURES

Without organization, communicator use would be chaotic. Users would not know how to contact the specific party they wanted, interference between users sharing channels would make them unusable. Consequently, standard communicator procedures have been developed to reduce confusion

Standard communicator procedures apply to radio transmissions and cover two things: channels and directories

Channels: A wide variety of named channels (sometimes called frequencies) is used for radio communications. Channels are named by their use or user: Navy channels, Scout channels, traffic control channels, and others.

TYPICAL COMMUNICATOR CHANNELS

Name	*Type*	*For Communication:*
Traffic Control	Voice	with space traffic control facility
Tactical	Voice	between small craft in combat
Subtactical	Data	between small craft in combat
Supertactical	Image	between small craft in combat
Hailing	Voice	between ships first meeting
Xboat	Data	receive/transmit xmail from xboats
Navy	Voice	between naval vessels
Distress	Voice	by vessels in distress
Scout	Voice	between scout vessels
Company	Voice	between company vessels
Passages	Data	commercial passage reservations
Markets	Data	commodity prices
Entertainment	Image	recreational programming
News	Image	current events

These channels represent the minimum available. More sophisticated levels may be available at higher tech levels, especially at TL 10+ (e.g., hailing with image, as well as voice).

For example, normal communications between three Imperial Navy close escorts travelling in formation would use a Navy channel. When the ships entered a star system, they would communicate with system traffic control using the Traffic

Control channel. When they encountered a nonnavy ship, they would open communications using the Hailing channel. If they became involved in combat, they would switch to a Tactical channel. All of them would routinely monitor the Distress channel, and their group commander would probably assign specific ships to monitor various other channels.

Lines: Although communications take place over channels, a communicator handles operations over lines (the term is taken from the archaic "telephone line" concept). Lines represent the transmission/reception processing ability of the communicator, its connections to antennae, and the data load placed on the various processors involved. For example, the relatively simple task of transmitting voice information can be handled by a single line; a second line is required to handle receiving voice information. Some channels require more lines than others. For example, a simple voice communication channel requires two lines: one for the voice information going out and one for the voice information coming in.

LINES PER CHANNEL

Type	*Receive*	*Send*	*Send/Receive*
Voice Simplex	1/2	1/2	1
Voice Duplex	1	1	2
Computer Data/Telemetry	1	1	2
Image (includes Voice)	2	5	7
Computer Control	2	2	4

Voice Simplex means that the user can send or receive, but not both at the same time (the user must stop sending in order to receive an answer). *Voice Duplex* means that sending and receiving is possible at the same time (as in a telephone conversation).

Channel Capacity: The total number of lines available to a communicator equals the square of the device's tech level. All available lines may be used for reception; the number of lines used for transmission is limited to the tech level of the device. Each channel in use (whether transmitting or receiving, or both) requires one control panel dedicated to it.

For example, the theoretical maximum capacity for a RadioComm System-14 is 196 lines received and 14 lines transmitted. This capacity is sufficient for transmissions on two image channels (at five lines each), one computer control channel (two lines), one computer data channel (one line), and one voice channel (one line) at the same time. Reception on several channels at the same time is possible (Distress channel and Traffic Control channel at a minimum). Using the configuration presented here, at least seven control panels are required.

Computer Monitoring of Channels: Channels can be monitored by the ship's computer. Data and computer control channels are automatically operated by the computer. Voice and image channels can be monitored by the computer, and a live crew person notified when there is activity

For example, the computer normally monitors the Distress channel. When there is a transmission on that channel, the computer notifies a crewmember on the bridge and replays the portion of the transmission previously received.

Directories: Directories are automated lists of available channels within a star system accessible on demand from communicators within the system.

One major problem that communicator users encounter is determining what channels are being used for what purposes. In a static environment (for example, users permanently assigned to a specific world) it is easy to assign channels for a variety of uses and to publish that information Within the Imperium, systems with a tech level of 8 or higher maintain a standard *directory*. Directories are always on the same standard channel within the Imperium; accessing the system's directory (using the RadioCommunicator) inputs a complete list of standard channels within the system into a ship's computer.

For example, upon entering the Regina system, a ship has information about standard channels such as Navy, Scout, Distress, and Hailing It doesn't know system-specific channels such as Market Prices, Passage Reservations, Entertainment Once the Directory has been accessed, the ship's computer knows what channels are available.

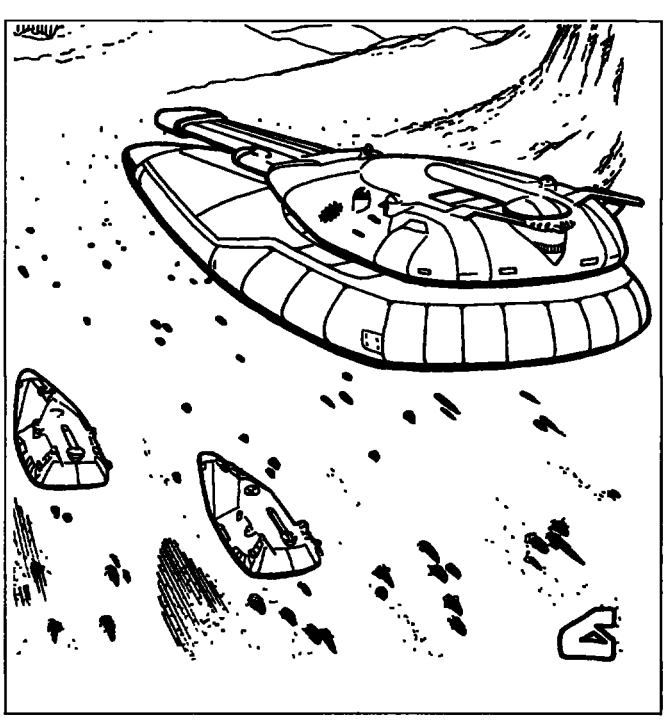
DETECTION LIABILITY

Communicators can be detected by some sensors. The Detection of Communicators table shows communicator types and what sensors will detect and jam them.

DETECTION OF COMMUNICATORS

Type	*Detected By*	*Jammed By*
Radio	Radio, Radar Direction Finder, EMS Passive Array	Radio Jammer
Laser	Laser Sensor, EMS Passive Array	Aerosol, Smoke, Sand
Maser	EMS Passive Array	Not
Meson	Not	Not

Communicators can be detected out to the limit of their own ranges. Lasers and masers can only be detected if the detector is in beam



Megacorporations

Of the millions of organizations which do business inside and outside the Imperium, most are limited to one or two worlds. A few thousand corporations trade over one or more subsectors, a few hundred cover one or more sectors.

Only a few firms (a total of 13) are truly Imperial in scope; they are megacorporations. Staggering in size, these organizations are so large that no one person can know everything they are concerned with at any given moment. Total shares of stock, annual profits, number of employees are all astronomical. Many organizations are so large that different divisions of the same megacorporation may actually be working at cross-purposes. In most regions, megacorporations merely own the land their installations are on, but in some areas they control entire planets, either directly or indirectly.

Most megacorporations are organized very much like smaller companies (with a board of directors, a president, and vice-presidents), but the board and the higher level executive officers of the company are largely out of contact with the day-to-day (or even year-to-year) functioning of the company. These upper-level executives plan only general policy and a few long-distance actions. The most important executives, in terms of personal power, are the various regional managers (by whatever name they may be called) A regional manager may control only a small portion of a megacorporation's total assets, but many hold more power in some regions than the local representatives of the Imperial government.

A small number of Imperial regulatory agencies have power over megacorporations, and the businesses are subject to any applicable local taxes, but, provided they do not blatantly violate Imperial sovereignty, regional managers can usually conduct their company's business as they see fit. Because a direct confrontation with the Imperium would be bad for business, intentional violation of Imperial laws occurs only on a covert basis.

Titles: All corporations engaging in interstellar commerce are required to possess an Imperial charter, usually indicated by the letters LIC following the company name (LIC stands for Limited liability Imperial Charter).

A few Vilani megacorporations are still in business under their Vilani titles (Makhidkarun, Naasirka, Sharurshid, and Zirunkariish).

IMPERIAL MEGACORPORATIONS

There are 13 Imperial megacorporations:

Delgado Trading, LIC: Widely known for its work in miniaturization, Delgado also has extensive holdings in heavy mineral mining and refining, publishing, and antiquities trading. Founded in 997, Delgado is the youngest of the megacorporations.

Stock Ownership: Imperial family, 5 percent; Delgado family, 47 percent, noble families, 27 percent, private ownership, 21 percent.

General Products, LIC: General manufacturers starships, nonstarships, and heavy machinery of all sorts. General is known for inexpensive products of adequate quality, but of late its starship division has been plagued with disaster. The corporation was formed by the merger of a number of smaller manufacturing concerns shortly after the end of the Civil War

Stock Ownership. Imperial family, 5 percent; Hortalez et Cie, 26 percent, noble families, 35 percent; private ownership, 12 percent; Antares Holdings, LIC, 12 percent, other, 10 percent.

GSbAG: GSbAG (popularly known as Gas-bag) has restricted itself almost exclusively to the manufacture of starships

GSbAG is one of two firms charged with the manufacture of the personal vessels of the Imperial family and is a major contractor for the Imperial military. Their products command extremely high prices, but it is generally conceded that the quality makes them well worth it.

Stock Ownership: Hortalez et Cie, 19 percent, Imperial family, 4 percent, noble families (includes the families of the legendary founders), 44 percent; Sharurshid, 4 percent; Instellarms, 3 percent; Tukera Lines, 3 percent; SuSAG, 3 percent; private investors, 4 percent; other, 16 percent.

Hortalez et Cie, LIC: Primarily a banking and investment house, Hortalez specializes in loans to planetary governments, underwriting of large-scale projects, and other fiscal activities. Hortalez is one of the major insurance houses in the Imperium.

Stock Ownership: Hortalez family, 74 percent; Zirunkarish, 5 percent; Naasirka, 7 percent; Makhidkarun, 3 percent; Imperial family, 5 percent; other, 6 percent

Instellarms, LIC: Manufacturing, buying, and selling military equipment of all sorts, Instellarms is a specialty supplier of private and public military units of all sizes and types. Agents of the firm can often be found on a battlefield, negotiating the purchase of the equipment of the losing side before the battle is completely over The company does not deal in interstellar vessels or chemical, bacteriological, or nuclear weaponry.

Stock Ownership: Murdoch Holdings, LIC, 32 percent; Hortalez et Cie, 30 percent; noble families, 8 percent; Ling Standard Products, 6 percent, Ichiban Interstellar, LIC, 5 percent; GSbAG, 5 percent; Sternmetal Horizons, LIC, 8 percent; other, 6 percent.

Ling Standard Products: Originally a mining firm, LSP currently engages in manufacture of electronic equipment, ground and air vehicles, starships and starship armaments systems, drive systems, power systems, computer systems and software, and small arms. LSP maintains mining and manufacturing facilities throughout the Imperium and beyond

Stock Ownership: Imperial family, 8 percent; Hortalez et Cie, 26 percent, GSbAG, 23 percent, noble families, 8 percent; Murdoch Holdings, LIC, 8 percent; other, 27 percent

Makhidkarun: Makhidkarun specializes in the communications, entertainment, and software industries. The firm produces fine musical recordings of all types, two- and three-dimensional motion pictures, books, magazines, and art reproductions of all sorts. Its communications division produces data processing, storage, and retrieval equipment and the requisite software A gourmet foods division trades in all manner of rare and expensive foods, wines, and delicacies. Its software division has pioneered many of the significant advances in artificially intelligent robots using synaptic brains.

Stock Ownership: Imperial family, 5 percent, noble families, 28 percent; Hortalez et Cie, 28 percent; investment trusts, 25 percent; private ownership, 14 percent

Naasirka: Naasirka specializes in the manufacture of information storage and processing equipment and software, computers, robots, and other complex electronic devices. Naasirka is the primary supplier of communications equipment to the Imperial Interstellar Scout Service's xboat branch, and the leading manufacturer of robots in the Imperium.

Stock Ownership: Imperial family, 4 percent; investment trusts, 24 percent, noble families, 23 percent; Hortalez et Cie, 11 percent; Sternmetal Horizons, 6 percent, LSP, 4 percent; General Products, 3 percent; Igsiirdi family, 13 percent, private ownership, 11 percent.

SuSAG, LIC (Schunamann und Sohn AG, LIC): SuSAG engages in a wide range of chemical, pharmaceutical, and gene engineering activities SuSAG is the primary manufacturer of anagathics for the Imperium, and maintains psi drug manufacturing plants in client states outside Imperial borders.

Stock Ownership: Schunamann family, 52 percent; Imperial family, 2.5 percent; Hortalez et Cie, 9 percent; other corporations, 23.5 percent; private ownership, 7 percent; other, 6 percent.

Sharurshid: A Vilani trade and speculation corporation (with very little manufacturing capability), Sharurshid trades in luxury goods from all parts of the Imperium and many areas beyond. Most rare wines and spirits are carried on the starships of Sharurshid.

Stock Ownership· Sharurshid trust, 46 percent; Imperial family, 3 percent; other corporations, 14 percent; Zirunkariish, 13 percent, Hortalez et Cie, 14 percent; private ownership, 10 percent.

Sternmetal Horizons, LIC: Sternmetal is primarily engaged in mining and manufacturing. It produces power generation equipment of all types (including power plants for starships, air and ground vehicles, cities, and industrial installations). Sternmetal is the largest manufacturer of food synthesis equipment in the Imperium.

Stock Ownership: Imperial family, 2 percent; Hortalez et Cie, 29 percent; investment trusts, 32 percent; noble families, 18 percent; Antares Holdings, LIC, 19 percent.

Tukera Lines, LIC: Tukera Lines operates a vast fleet of passenger and freight vessels throughout the Imperium, following the xboat lines In some areas (particularly the older, more established central regions of the Imperium), Tukera Lines has a virtual monopoly on long-distance shipping and travel.

The oldest record of the firm is a charter from the government of the Sylean Federation, but family tradition holds the company to be several centuries older.

Stock Ownership: Tukera family, 29 percent; Imperial family, 3 percent; Sternmetal Horizons, 2 percent; SuSAG, 5 percent; General Products, 2 percent, private ownership, 31 percent; investment trusts, 28 percent

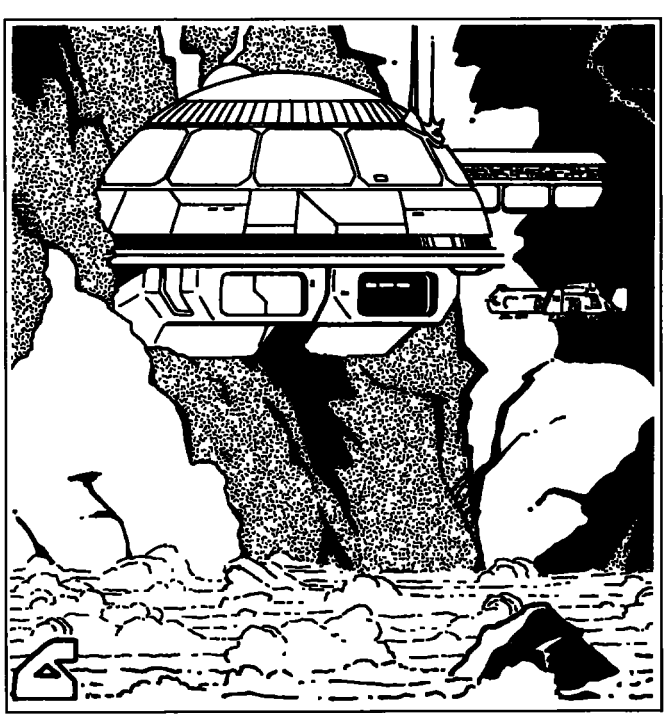
Zirunkariish: A Vilani banking and investment company unlike most other Vilani megacorporations, whose origins are shrouded in mystery. Zirunkariish was founded by the noble Vilani family of Shiishuginsa (a member of which, Antiama, married the Emperor Zhakirov in 679) in the year −425 Zirunkariish is one of the largest insurance underwriters in the Imperium, and while its capital reserves are gigantic, it usually chooses to invest them in various trusts rather than in other megacorporations.

Stock Ownership: Shiishuginsa family, 29 percent; Imperial family, 18 percent; Sharurshid trust, 17 percent; Hortalez et Cie, 7 percent; noble families, 12 percent; investment trusts, 8 percent; private ownership, 9 percent.

NONIMPERIAL MEGACORPORATIONS

It is difficult for a company to grow to the size of a megacorporation unless it has the protection of a suitably-sized government. Because the Imperium controlled space and an economy that could support megacorporations, they almost naturally sprang up.

Some of the interstellar empires that border the Imperium have grown to the size that they can also support megacorporations Besides the 13 Imperial megacorporations, there another 13 megacorporations operating in the territories adjoining the Imperium. In comparison, the largest of these non-Imperial megacorporations is perhaps median-sized when compared with an Imperial megacorporation; the smallest is smaller than any of the Imperial companies.



Keeping Time

Counting time is an essential part of any activity. Naturally enough, many different ways of counting time have been established throughout the regions of space explored by man and by the races that man has encountered. The major time-counting systems known to the Imperium and its neighbors include: the Imperial calendar, the Aslan calendar, the Solomani calendar, the Vilani calendar, and the Zhodani calendar.

THE IMPERIAL CALENDAR

If only for the purpose of consistency within the Imperium, it would have been necessary for that vast interstellar empire to produce a standard time-keeping system. Cleon I used the calendar as just one part of a wide-ranging campaign to establish the power of the Imperium throughout its territory. Within a hundred years, the Imperial calendar was the standard by which history, trade, and bureaucracy were measured.

Basic Units: Imperial timekeeping is based on the time units of the Terran Confederation. During the Rule of Man, the basic units of the Terran day (24 hours) and the Terran year (365 days) were imposed on First Imperium territories by the Terran conquerors. During the Long Night, the day and year remained in place in what interstellar trade remained, and by the time the Third Imperium was established, the use of these particular spans for day and year was easily accepted.

The time periods were simplified: The day was made exactly 24 hours, and the year was made exactly 365 days.

Base Point: Imperial dates count from the year of the founding of the Third Imperium: the year 0. Dates before that are negative; dates after that are positive (with the sign usually suppressed). For example, the First Interstellar War began in −2408 (and ended in −2400); the Third Imperium was founded in 0; the Imperial Second Survey was published in 1065.

Date Format: Within each year, the Imperial dating system uses a modified Julian system which consecutively numbers the days of the year from 001 to 365. Weeks of seven days and months of 28 days are used to indicate periods of time, but they are not named and are not used to indicate dates. The first day of the year is 001; the 100th day is 100.

A complete day and year is provided by the date group: a three-digit day and a three- or four-digit year, separated by a hyphen. For example, the centennial of the Third Imperium was celebrated on 001-100; the millenium of the Third Imperium was celebrated on 001-1000.

Imperial Format: ddd-yyyy (ddd = day; yyyy = year)

Each year begins with a special day called Holiday· day 001. According to the Imperial calendar, Holiday is not a part of any week, but stands alone as a special day.

The Standard Calendar: Because the Imperial year does not vary in length, it is possible to reuse the calendar from year to year. Days always fall on the same date (008 is always a Senday).

The adoption of the standard calendar produced a requirement for names for the days of the week. The decision was made to scrap the traditional Anglic day names and instead a series of numbered day names were established: Oneday, Twoday, Threeday, Fourday, Fiveday, Sixday, and Sevenday. Over the course of the centuries, these names became archaic as they were supplanted by names which were easier to pronounce or spell: Wonday, Tuday, Thirday, Fourday, Fiday, Sixday, and Senday. The commonly accepted abbreviations for these day names (1day, 2day, 3day, 4day, 5day, 6day, and 7day) recall their original names

THE ASLAN CALENDAR

The Aslan base their calendar and timekeeping units on the period of Kusyu, the Aslan homeworld, around Tyeyo, its star.

Basic Units: The Aslan year is the ftahea, 212.2 eakhau (Aslan days) long. A ftahea is 320 days long; an eakhau is 36 hours long. Each eakhau has a unique name; for convenience, they are numbered from one to 212 and referred to by number. To every fifth ftahea, a 213th eakhau is added to keep the calendar in sync with Kusyu.

The Aslan also divide their ftahea into three raohfokh (seasons): Aihros, Tralrea, and Ktaho. Aihros (Beginnings) is the equivalent of spring· the mating season for many animals and the time when annual plant life grows from seed. Tralrea (Growth) is the long season of mild weather on Kusyu; it is the growing season (although in this sense it refers to the growing of herd animals) and lasts 100 eakheau. Ktaho (Harvest) is the hunting season; it is short (only 30 eakheau) and a traditional time of Aslan hunts

Base Point: The Aslan calendar began counting time when the first Tlaukhu was established. The current date of 3653 corresponds to the Imperial date of 1120.

Date Format: An Aslan date is stated in the same format as an Imperial date. A three-digit eakhau number is followed by a hyphen and a four-digit ftahea number. For proper identification, the date is usually followed by the word Aslan. For example, 201-3644 Aslan is the 201st day of the 3644th year of the Aslan calendar; it is equivalent to 000-0000.

Aslan Format: ddd-yyyy (ddd = day [eakhau]; yyyy = year ([ftahea])

Seasons: The planet Kusyu has only minimal axial tilt and orbital eccentricity. There is little in the way of astronomical cause for seasons on the world, and the Aslan calendar has no seasons because there is so little in its climate to cause them.

THE IMPERIAL CALENDAR

Holiday	Wonday	Tuday	Thurday	Forday	Fiday	Sixday	Senday	Wonday	Tuday	Thirday	Forday	Fiday	Sixday	Senday
001	002	003	004	005	006	007	008	009	010	011	012	013	014	015
	016	017	018	019	020	021	022	023	024	025	026	027	028	029
	030	031	032	033	034	035	036	037	038	039	040	041	042	043
	044	045	046	047	048	049	050	051	052	053	054	055	056	057
	058	059	060	061	062	063	064	065	066	067	068	069	070	071
	072	073	074	075	076	077	078	079	080	081	082	083	084	085
	086	087	088	089	090	091	092	093	094	095	096	097	098	099
	100	101	102	103	104	105	106	107	108	109	110	111	112	113
	114	115	116	117	118	119	120	121	122	123	124	125	126	127
	128	129	130	131	132	133	134	135	136	137	138	139	140	141
	142	143	144	145	146	147	148	149	150	151	152	153	154	155
	156	157	158	159	160	161	162	163	164	165	166	167	168	169
	170	171	172	173	174	175	176	177	178	179	180	181	182	183
	184	185	186	187	188	189	190	191	192	193	194	195	196	197
	198	199	200	201	202	203	204	205	206	207	208	209	210	211
	212	213	214	215	216	217	218	219	220	221	222	223	224	225
	226	227	228	229	230	231	232	233	234	235	236	237	238	239
	240	241	242	243	244	245	246	247	248	249	250	251	252	253
	254	255	256	257	258	259	260	261	262	263	264	265	266	267
	268	269	270	271	272	273	274	275	276	277	278	279	280	281
	282	283	284	285	286	287	288	289	290	281	292	293	294	295
	296	297	298	299	300	301	302	303	304	305	306	307	308	309
	310	311	312	313	314	315	316	317	318	319	320	321	322	323
	324	325	326	327	328	329	330	331	332	333	334	335	336	337
	338	339	340	341	342	343	344	345	346	347	348	349	350	351
	352	353	354	355	356	357	358	359	360	361	362	363	364	365

THE UNIVERSAL CALENDAR

The Imperial calendar printed here is the standard one distributed throughout the Imperium. It can be used to determine dates for any year, and can be used as a record to denote the passage of time or to plan for upcoming situations. It is a useful reference for noting dates for required ship maintenance, when starship payments are due, when birthdays will fall, and other timekeeping requirements.

Using the Calendar for Starship Travel: The typical starship voyage spends one week in jumpspace between star systems. Most commercial ships spend the next week in their destination star system· travelling to the destination world, unloading cargo, finding new cargo and passengers, and then travelling away from the destination world to the jump point again All of these activities can be tracked using the Imperial calendar.

COMPARATIVE YEARS

THE ASLAN YEAR

The Aslan year (ftahea) is divided into 212 individually named days (eakhau).

Aihros

Tralrea

Ktaho

Seasons range in length from 30 eakheau to 100 eakheau.

THE IMPERIAL YEAR

The Imperial Year is divided into 365 individually numbered days.

Although common practice recognizes weeks of seven days and months of four weeks, they are not usually used in expressing dates.

THE ZHODANI YEAR

Dranzhrin

Atrint (Raining)

Viepchakistial

Vrienstial (Heat)

Atchafser (Waning)

Dranzhrinatch

Ataniebl (Harvest)

Kazdievlstial

Atshiavl (Chill)

Thequzastial

Atpiapr (Thaw)

Seasons are 40 days each. Holidays (each one day long) are between and outside the seasons.

THE VILANI YEAR

The Vilani year is divided into 500 drandrin.

THE SOLOMANI YEAR

January	Winter
February	
March	
April	Spring
May	
June	
July	Summer
August	
September	
October	Autumn
November	
December	

Months range in length from 28 to 31 days.

THE SOLOMANI CALENDAR

The Solomani calendar is based on the Terran western calendar Its year is the period of revolution of Terra, the human homeworld, around Sol. The year is divided into 365 days, with every fourth year having 366.

Basic Units: The Solomani year is 365.25 days long. Each day is 24 hours long Ten years make a decade, 100 years make a century Years are divided into named months with an arbitrary number of days in each. For convenience, the months are numbered from one to 12, and the days of the month numbered from one to 31 (months have between 28 and 31 days).

Base Point: The Solomani calendar uses as its base point an arbitrary date computed to be the birth year of Christ.

Date Format: A date is expressed as month/day/year. For example, 1-1-5500 is the first day of the first month of the year 5500. The month name, when known, can be substituted for the month number. The Solomani year 5641 corresponds to the Imperial date 1120.

Solomani Format: mm-dd-yyyy (mm = month, dd = day; yyyy = year)

THE VILANI CALENDAR

The Vilani calendar has its basis in the depths of antiquity; its units were dictated by the period and rotation of Vland.

Basic Units: The Vilani distinguish between days and nights when they count time. A drandir is one complete rotation of Vland and is equal to about 23.35 standard hours A drandir consists of a dran (day) and a dir (night) Since the Vilani year is 500 drandir long, there are a total of 1000 dran and dir in the year. The Vilani year is approximately 1.33 standard years in length.

Base Point: The Vilani calendar uses as its base point the founding of the Vilani Empire in −4045, that year is treated as year 1. The Vilani date 3882 corresponds to the Imperial date 1120

Date Format: Vilani dates are entirely decimal. Vilani count both dran and dir when noting dates Dran are odd; dir are even. Dates are expressed in the format year.drandir. For example, 3870.000 is the first half-day of the year 3870; since 000 is even, it refers to the dir (night) 3876.999 is the last half-day of the year 3876; since 999 is odd, it refers to the dran (day).

COMPARABLE TIME UNITS

Type	*Period*	*Equivalent*	*Translation*	*Imperial Value*
Aslan	ftahea	212 2 eakhau	year	320 days
	eakhau	—	day	36 hours
Solomani	year	365 days	year	365 25 days
	day	—	day	24 hours
Vilani	lani	500 drandir	year	486 days
	drandir	1 dran + 1 dir	full day	23 35 hours
	dran	—	day	11 6 hours
	dir	—	night	11 6 hours
Zhodani	thequzdij	3 chten	Olympiad	825 days
	chten	244 4 zhdanstial	year	275 2 days
	zhdanstial	—	day	27 hours

Vilani Format: yyy.ddd

The extremely rational system of Vilani date format makes each date refer to the fraction of the year when specifying a date. For example, 3766 500 is exactly halfway through the year 3766.

THE ZHODANI CALENDAR

The Zhodani base their calendar on the period of Zhdant, the Zhodani homeworld, around Pliebr, its star.

Basic Units: The basis for Zhodani time-keeping is the thequzdij (olympiad). A thequzdij equals three chten (Zhodani year); the chten is 244.44 zhdanstial (Zhodani days) long. A thequzdij is 825.6 standard days long; a chten is 275.2 standard days long, a zhdanstial is 27 02 hours long Three chten make a thequzdij and total 733 zhdanstial; every third thequzdij is 734 zhdanstial long. Each chten is divided into six shidr (seasons) of 40 zhdanstial each. Between the seasons are distinct holidays which celebrate the transition from one to the other

Base Point: The Zhodani calendar counts time from the first Olympiad, held in −6741. The Zhodani date 3474.3 corresponds to the Imperial date 1120

Date Format: A Zhodani date is expressed as thequzdij.chten shidr/zhdanstial. For example, 3471.1 Atrint/28 is the 28th day of the season of Raining in the first year of the 3471st olympiad. The date 3473.1 Viepchaklstial is Moon Day (the 41st day of the year) of the first year of the 3473st Olympiad.

Zhodani Format: oooo.y sssssss/dd (oooo = olympiad [thequzdij]; y = year [chten]; sssssss = season [shidr], dd = day number. A holiday name may be substituted for sssssss/dd).

Zhodani Seasons and Holidays: The Zhodani chten is divided into a sequence of seasons and holidays:

Dranzhrin (Sunbright): The vernal equinox, when days and nights are of equal length. Dranzhrin is New Year's Day.

Atrint (Raining): The season of spring rains and crop planting.

Viepchaklstial (Moon Day): Originally a religious holiday associated with Viepchakl; now a festival of wild abandon.

Vrienstial (Heat): The hot summer season.

Dranzhrinatch (Sunflight): The autumnal equinox; the point when days and nights are of equal length.

Atchafser (Waning): The seaon when the heat of midyear breaks and tempers.

Ataniebl (Harvest): The season of harvesting mature crops.

Kazdievlstial (Thanksgiving): A traditional harvest festival.

Atshtiavl (Chill): The season of freezing winter.

Thequzastial (Olympiad Day): A special holiday every third year; consul elections results are announced, as are winners of the Psionic Games. Every third Olympiad, Atlthequzastial (a second Olympiad Day) is held immediately after Thequzastial; it serves as a leap year day.

Atpaipr (Thaw): The season of melting ice.

THE VARGR CALENDAR

Like other Vargr institutions, the Vargr calendar is in disarray. With no central authority to promulgate a calendar, many competing calendar systems have appeared; none have gained wide acceptance. The most widely accepted dating system in use by the Vargr is the Imperial calendar, because it is a universal standard which can be constantly checked.

Research

There are times when an individual player character needs to know information about a subject, and he or she finds that that information is not available or is not known. It is natural that the character is then moved to research that information. The following are typical subjects which might be subjects of research:

Market Data: Information about markets or other aspects of trade and commerce The information helps the individual better understand the workings of the markets in order to predict better profitable enterprises, which goods to buy, which goods to sell, and which goods are unpredictable. Market data may be used to determine who will buy goods and what prices they will pay for them.

Scientific Data: Information about the physical world and how it can be manipulated. Inventions are the result of research. Chemical formulae are the result of research.

Computer Programs: Computer instructions which dictate to the computer how to process data and how to present reports of the results. Research is involved because of the complexity of the programming needed, and because first efforts at programming are rarely totally successful.

Historical Data: Information about the history of people, governments, markets, and scientific inquiries Research into historical data allows individuals to have greater insights into how results have been obtained in the past, how members of certain groups will react to specific stimuli, and what mistakes to avoid in the future.

Personal Data: Information on people and how they respond. Research into personal data allows individuals to understand and possibly predict what a specific person will do in a specific situation. This information can be helpful in determining what course of action to take when dealing with the individual.

THE PROCESS OF RESEARCH

Research involves a basic process or procedure regardless of the subject matter. In any research process, the investigator establishes a basic subject and then undertakes a circular process to create a hypothesis, test it for validity, and rethink the hypothesis in light of the test results.

The process steps are:

1. Creating (initially) or altering (subsequently) a hypothesis.
2. Testing the hypothesis.
3. Evaluating the test results. At this point, the research returns to step 1 or decides that the research is complete.

A *hypothesis* is a basic statement which can be proven or disproven by testing it against evidence or information. The process may be simple or complex. A chemical experiment might use available information to create the hypothesis: If this liquid turns the indicator blue, it is an acid. A trial might create the hypothesis: If a reliable person saw him rob the store, then he is guilty.

In **MegaTraveller** research, the referee may participate or assist in creating the hypothesis (since a player may not necessarily have the expertise in the field that the character has). A hypothesis does not have to be specific: a chemical research hypothesis might simply be a statement that "this substance can strengthen concrete," or "this chemical is an acid."

Testing the hypothesis consists of a series of tasks established by the referee. These tasks are always uncertain; they do not represent truth so much as the results of tests that are trying to determine truth. When the appropriate testing task is complete, the results are provided to the researcher.

The research task is:

To test Hypothesis X.X:
Difficulty, Skill and Characteristic, Time (uncertain).

Referee This task may be hazardous. Difficulty, Skill and Characteristic, and Time must be determined. Total truth allows minor revision of the hypothesis; exceptional success allows major revision of the hypothesis. Some equipment, supplies, or subjects may be required.

Evaluating the test results is distinctly a player function. The player makes decisions concerning how many times to test the hypothesis, and what those results mean. The player determines what revisions to the hypothesis are possible and what revisions to make. The ultimate success of the research process depends on the decisions the player makes.

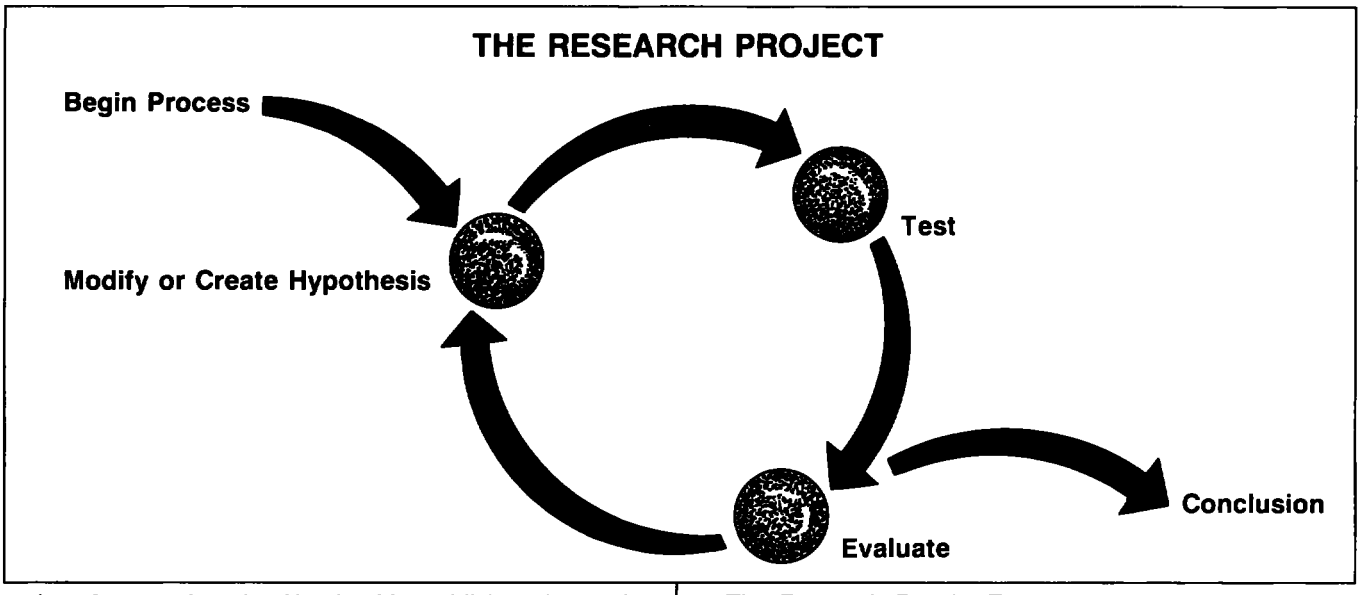
CREATING A HYPOTHESIS

When a player character creates a hypothesis, he makes a basic statement that needs to be tested and proved or disproved

For simplicity, a hypothesis is numbered as a decimal number. For example, the initial hypothesis (regardless of its nature) should be numbered Hypothesis 1.0.

A minor revision of a hypothesis increases the decimal portion by 1 (from 1.0 to 1.1 to 1.2, etc). A major revision of the hypothesis creates a new whole number (2.0, 3.0, 4.0, etc).

The Target Hypothesis: When the referee assists in creating the hypothesis, he also determines the target hypothesis which should be the end result of a successful



series of research tasks. He should establish and note that target hypothesis: for example, it might be Hypothesis 2.3.

Referee-Determined Hypotheses: The referee can determine what the target hypothesis is by careful thought and planning. Within the context of the current adventure situation, the target hypothesis can be specified.

Chance-Determined Hypotheses: At times, the specific target hypothesis does not really matter, or those involved find it difficult to decide what to specify. The target hypothesis can be determined by chance by using the dice. A relatively easy hypothesis can be specified by 1D.1D (use 1D to determine the major revision and 1D to determine the minor revision). A more difficult hypothesis can be specified by 2D.2D (use 2D to determine the major revision and 2D to determine the minor revision).

For example, to specify a relatively difficult target hypothesis, roll 2D for the major revision (throwing 7) and roll 2D for the minor revision (throwing 7 again). The target hypothesis is 7.7.

TESTING A HYPOTHESIS

Each test of a hypothesis is an uncertain task. Undertaking the task is the way in which a researcher generates evidence which will help prove or disprove the hypothesis. The result of the task may be exceptional failure, failure, success, or exceptional success.

Exceptional Failure: When the research receives exceptional failure, he must follow the procedure to stay determined before retrying the task. Exceptional failure makes it harder to continue the line of research.

Failure: If the researcher fails the task, he receives no information. For example, a chemist who does not finish an experiment has no data to use to make a report. Failure primarily consumes time.

Success: If the researcher succeeds in the task, he receives some information about the hypothesis. Success provides information about whether the current hypothesis is true or not.

Exceptional Success: If the researcher achieves exceptional success, he receives some information about the hypothesis.

The Research Results Table shows the results of each research task result

RESEARCH RESULTS

Researcher	*Referee*	*Result*	*Comment*
Ex Failure	Failure	No information	Stay Det
Ex Failure	Success	Inconclusive	Stay Det
Failure	Failure	Inconclusive	
Failure	Success	Inconclusive	
Success	Failure	Improper result	
Success	Success	Proper result	
Ex Success	Failure	Improper result	
Ex. Success	Success	Insight	

When using this table, results indicate· *No information:* Experiment not completed; no data is available. *Inconclusive·* There is not enough information to allow a conclusion to be drawn. *Improper result·* Referee incorrectly tells researcher that the current hypothesis is true or false. *Proper result.* Referee correctly tells researcher that the current hypothesis is true or false *Insight:* Referee correctly tells researcher that the current major hypothesis is true or false.

EVALUATING RESULTS

The researching character is solely responsible for evaluating the results of research. If, on the basis of one or two research tasks, he wants to conclude that a certain hypothesis is true, then that evaluation must be permitted. If the hypothesis, in reality, is false, the consequences will ultimately show up

AN EXAMPLE

John's player character is Dr. Ishuggi. The doctor is helping fight a virulent plague sweeping the continent. It is essential that he determine the manner in which it is transmitted from person to person.

John discusses the basic hypothesis with the referee, and they agree that it should be Hypothesis 1.0 (the plague is spread by rats). At the same time, the referee decides that the target hypothesis is Hypothesis 1.3.

Dr. Ishuggi begins his research by testing the hypothesis. The experiment is a Difficult, Uncertain task which takes days to complete. At its conclusion, he receives a result of "some truth " Some truth in this case might be "the hypothesis appears to be true."

After several tries, the task result is "total truth" and John is told to revise to Hypothesis 1.1 (the plague is spread by the fleas on rats) He immediately achieves total truth on the research task and is told to revise to Hypothesis 1 2 (the plague is spread by the scales of the wings of the fleas on rats).

After several research tasks, each of which produces "some truth," John decides that there is not enough time to continue research and that he must go with what he has Dr Ishuggi submits a report concluding that Hypothesis 1.2 is the answer to the plague's spread.

In reality, Hypothesis 1.2 is not the answer. A method of treating the plague based on Hypothesis 1.2 might be partially effective, but it might also be partially ineffective The results of the incomplete research may then have implications and ramifications that will produce future consequences and adventures

RIGOROUS RESEARCH

Research is not easy Working quickly is often at odds with working carefully This research system clearly pits these two characteristics against each other.

Strategies: Some strategies can be helpful in obtaining good research results

1. Duplication of results. Each hypothesis should be tested many times. Testing a hypothesis once gives a result. Testing it 10 times gives a range of results that can show what the probable value of the hypothesis is. Only after many tests have been made should the hypothesis be revised Depending on the test results, that revision may be major or minor.

2 Cautious work. Where practical, the researcher can specify a cautious task in order to reduce the risk of failure.

3. Hasty work At times, a researcher may be willing to risk the possible failure of hasty work in order to repeat an evaluation several times

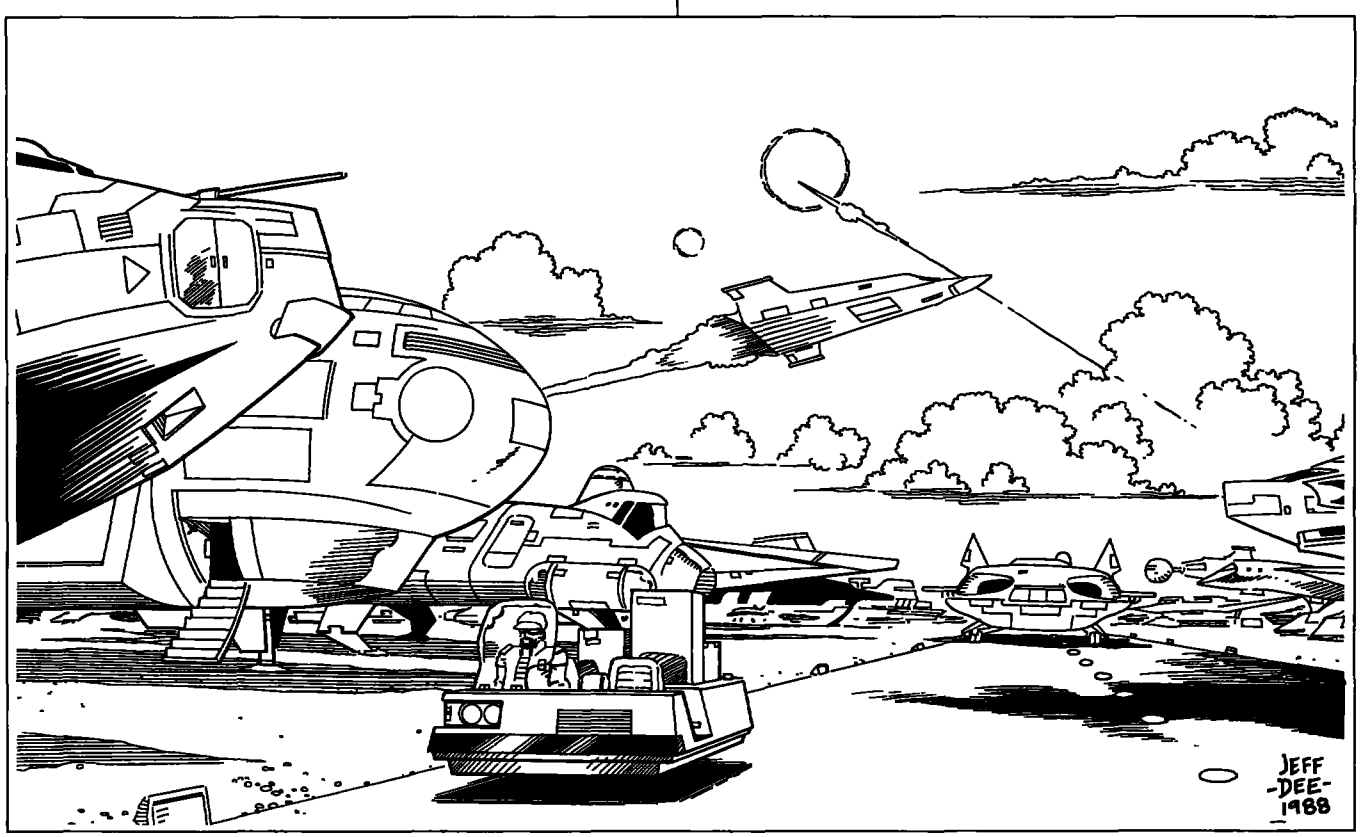
Problems: Conducting research typically involves the problems of time (or lack of time), skill (or lack of skill), equipment, and subjects Each presents its own unique problem to be solved.

REFEREE CONSIDERATIONS

Research is not meant to give magic answers to individuals. Rarely will a researcher discover a major new technical advance or a decided change from accepted technology. Instead, research allows the individual to find out information in a systematic way and be able to use it for his own purposes.

Research is full of false leads, dead ends, and attractive mistakes. The process of research, however, can be an interesting way of leading adventurers into new situations and scenarios. A researcher may need specimens, samples, or equipment that is not available locally, adventures must be mounted in order to find and procure it.

Research can be a lifetime process Beginning from Hypothesis 1.0, a major research project may be aimed at (and only the referee knows this) Hypothesis 12.3. The researcher is seaching for that single target hypothesis that will always produce total truth when tested enough times. Until then, the research must continue.



Aliens

There is a wide diversity of intelligent races within the Imperium and in the territories which adjoin it. Intelligence expresses itself in many different ways, and most of them are demonstrated by an existing intelligent race. A few intelligent races have risen to the top, and they dominate most of explored space because their drives and psychologies have taken them off their homeworlds and out to the stars.

In addition to the humans who dominate the Third Imperium, four intelligent races have achieved high profiles and need to be considered when dealing with interstellar society. Each has its own peculiar qualities and characteristics and must be studied in depth in order to be understood. The following detailed essays show much of what is known about these races: the Aslan, the Vargr, the Zhodani, and the Droyne.

The Aslan: The fierce warrior race of the Aslan is driven by deep instinctual needs for land and territory; as individuals they show intelligence and understand that they are driven by their instincts.

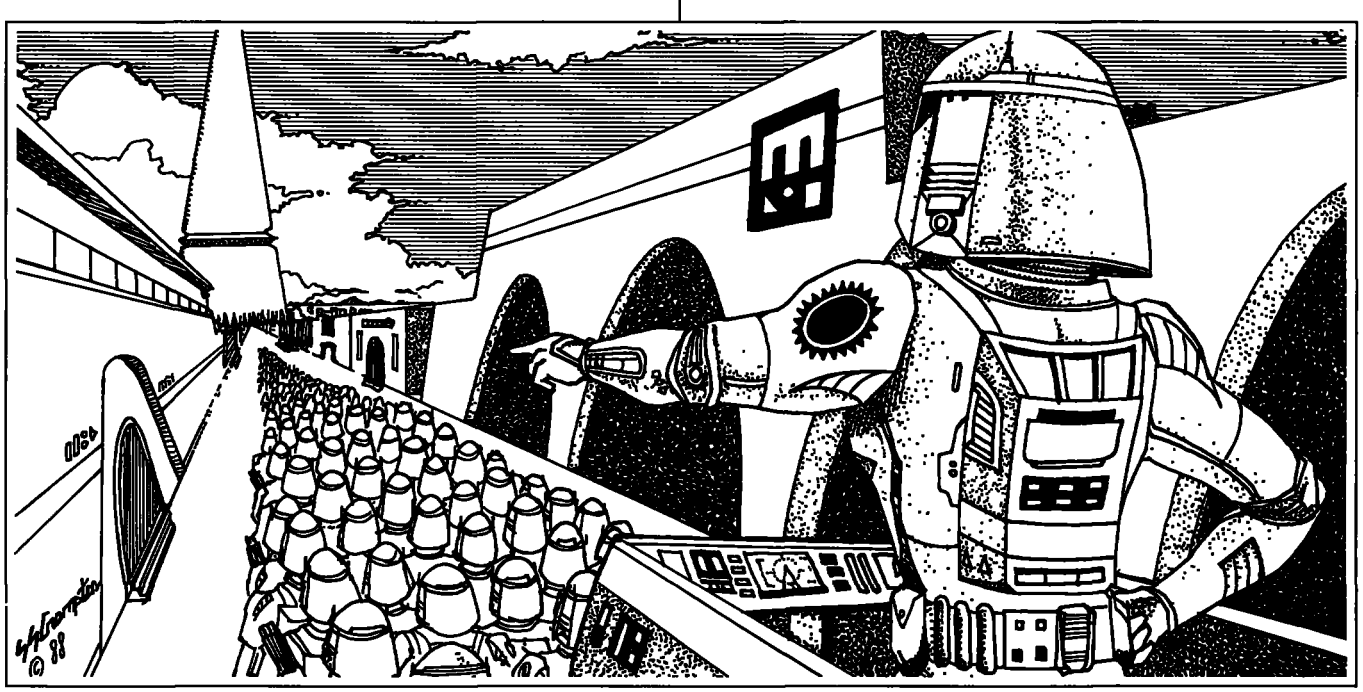
The Vargr: The genetically manipulated Vargr were produced by experiments conducted by Yaskoydray, the legendary Ancient figure who brought such changes to the universe. They themselves know that they are a kind of Terran; that their genetic heritage is the Terran dog. Vargr are characteristically torn by dual drives: toward gregarious groups and away to independence. The dual drives are shown by the Vargr reaction to humans: Some feel great resentment and anger at Terrans—at men; others are drawn to them by the same natural instincts that created man's best friend on Earth.

The Droyne: The multicaste Droyne now live quiet pastoral lives, much like the lives they led before the spectacular Yaskoydray appeared and led them on a campaign that changed the face of the universe. The Droyne were once the Ancients, although they no longer possess the spectacular technology that was the Ancients' hallmark. Some Droyne are Chirpers, a primitive race which has lost much of the Droyne culture. Some Droyne retain great portions of their culture. Somewhere there may still be Ancients, even Yaskoydray, waiting to reappear and again influence the universe.

The Zhodani: The psionic culture of the otherwise ordinary human Zhodani indicates the potential for human society (for better or for worse) that is possible when psionics are incorporated into everyday life.

ALIEN RACES

The overviews of the Aslan, Vargr, Droyne, and Zhodani provided here are intended to furnish background information and basic understanding to the **MegaTraveller** referee. The information is not sufficient for players to handle player characters, but a referee can at least provide non-player characters and successfully manipulate them in basic situations.



Droyne

Rules are made to be broken. Scientists and academicians produced the term "major race" to describe any intelligent race that had independently discovered and implemented the principles of the jump drive. Politicians and bureaucrats (specifically those of races which had developed jump drive) made the term widespread, using it as *de facto* evidence that major races were superior to minor races. Since jump drive technology gave the major races an obvious and powerful advantage, the minor races found it difficult to dispute the classification.

Thus it came as a shock when researchers found (and proved) that the Droyne were a major race. The Droyne seem to have none of the drive that characterizes a major race, they seem content to live placid lives on pastoral planets. By all appearances, they are a minor race. But the fact remains that they have jump drive, and they have had jump drives longer than any other race, including the Vilani. When the Droyne were discovered and identified, a basic scientific and political definition was destroyed.

THE DROYNE HOMEWORLD

Although the Droyne homeworld is no longer known, scientists, historians and other scholars have established a few facts and a large number of theories concerning the nature of that world.

The location of the world is, of course, unknown, but it is believed to have been in the Spinward Marches, the Deneb Sector, or the Trojan Reaches, these being the regions in which the largest number of Droyne worlds and Ancients sites have been discovered.

Casual observers call the Droyne homeworld Droynia; more properly, it is Eskayloyt (meaning Lost Home). This name appears independently in myths and legends on Andor, Zeen, and Auitawry, three scattered Droyne worlds, and is accepted by the majority of scientists researching Droyne origins.

Characteristics of the homeworld are difficult to determine, but some facts are clear. It is predicted to be a small world with a standard or dense atmosphere and a significant hydrosphere; the range of statistics most frequently given are Size 3 to 6, Atmosphere 6 or 8 (probably 8), and Hydrosphere 3+. The data was assembled from an analysis of the Droyne themselves: their flying ability relies on a fairly weak gravity and a reasonably high pressure, thus dictating the size and atmosphere requirements. Hydrographics are required for the development of life as we know it.

Eskayloyt probably orbited an F2 V to F7 V star; Droyne seem to prefer that particular spectral range. Assuming the available data has been interpreted correctly, the Droyne homeworld is a pleasant, Earthlike planet, slightly warmer than Terra, but not significantly so.

The data and assumptions about Eskayloyt have led to many theories about its location and possibly its fate. No known world provides the fossil evidence that it was Eskayloyt; active searches and excavations are currently in progress on several worlds that show promise. There is the possibility that the Droyne evolved on a world thousands of parsecs away and then travelled to our part of the galaxy; in such a case, locating Eskayloyt would be impossible. Some scholars have proposed that the homeworld was destroyed in the Final War and is now an asteroid belt. However, even an asteroid belt might be expected to yield fossil evidence of some sort, and none thus far have done so.

DROYNE PHYSIOLOGY

The Droyne evolved from hexopedal omnivore/gatherers on the unknown world designated Eskayloyt, a small world where low gravity and high atmospheric pressure combined to permit the development of large fliers. Scientists have theorized that Eskayloyt may have been subject to a high level of radiation, and hence that life forms there had a higher mutation rate than those who evolved in systems like Sol. This is considered vital to any image of Droyne evolution for a number of reasons. Of greatest importance is the simple fact that several aspects of Droyne physiology seem to be unlikely enough to absolutely require such an agency for development. Neither intelligence nor Droyne psionic abilities seem adequately justified in evolutionary terms; Droyne seem to lack the drive to use their intelligence to dominate their environment (generally considered to be an essential tenet of sophontology), and their development of psionics talents seems equally improbable in light of what we know about them.

Whatever their evolution, Droyne are unique among the major races. Adult Droyne belong to one of six esorde (castes) which, unlike K'kree and human castes, are not social groupings: They are biologically distinct categories. There is far more difference between Droyne castes than between human sexes, for example.

The Iskyar: Castes seem to be triggered by differences of environment and diet, the effects of which are awakened in the individual during a ceremony, the Iskyar At the Iskyar, Droyne young are assigned a caste as psionic aspects of the ceremony trigger and reinforce existing genetic programs within the youth and cause caste development. Details remain unknown outside of Droyne society, due to the repugnance with which psionic disciplines are regarded. All Droyne have the potential to develop into members of any caste; there is no hereditary predisposition known in caste development.

Physical Description: All Droyne, regardless of caste, share certain key features in common. Each has six limbs, the middle

pair being developed into extensive wings spanning three or more meters. Size varies with caste: between one and two meters. Mass varies from 25 to 50 kilograms.

Skin color is a greyish tone, marked with black patterns that vary from one caste to another. The skin itself is tough and scaled; the wings are black and batlike. Hands and feet have four digits apiece. Fingers are long and flexible, and each is fully opposable to all others on the hand Only three toes are fully developed; the fourth has degenerated into a bony spur or talon which is very effective in combat. The rear limbs are digitigrade.

Droyne have large compound eyes, granting them a wide field of vision. Arrangement of limbs and features is basically quite humanlike, overall. Their bone structure, though, is more analogous to that of Terrestrial birds: bones are hollow and brittle, making even the largest Droyne much lighter and weaker than humans of comparable size.

Droyne Gender: Droyne have three sexes, designated alpha male, beta male, and female. Gender develops only after casting. Drones are female; leaders, sports, and warriors are alpha males; workers and technicians are beta males. Reproduction is complex; pheromones generated by beta males are necessary before a female can ovulate and be fertilized by the alpha male.

The drones lay clutches of fertilized eggs, and nurture them after they hatch. They are fed predigested food reduced to manageable consistency in a mouth pouch; the young are weaned at the age of about one standard year.

Chirpers: If Droyne do not caste, they do continue some development, though much more slowly Sexual differences eventually emerge, but casteless Droyne tend to remain small and semi-intelligent, and continue to resemble immature Droyne in appearance Those Droyne groups which have lost the ability to caste (and these are fairly common) generally live as primitives.

Psionics: It has been demonstrated that the Droyne have extensive psionic talents. For this reason they are largely despised, feared, or ignored by Imperial citizens conditioned to hate all psionics powers. Luckily for the Droyne, their abilities in the area of psionics are not widely publicized, and many Imperials of lower education or social level are unaware of their powers.

All Droyne, even casteless and immature individuals, have a defense mechanism which gives them effective invisibility through psionics, and a homing instinct which guides them to large groups of their own kind. Some castes display additional powers, sometimes quite sophisticated ones, and a few unique to the Droyne race.

Droyne Castes: There are six primary castes in the Droyne sociobiological structure: workers, warriors, technicians, drones, leaders and sports. Before casting occurs, all immature Droyne appear similar; it is only after the casting ceremony that the genetic potential within each individual is unlocked. The castes develop sharp differences from one another in the first year after casting, and thereafter remain distinct physically, mentally and in many facets of behavior.

The castes have further divisions, but these are more social than biological. The six primary castes are defined below.

Worker (Aydin): Manual labor and mundane activity are the province of the worker. They are the least intelligent of the castes and are temperamentally the most placid and contented of all Droyne. Size varies from one to two meters, according to the exact nature of the worker's function

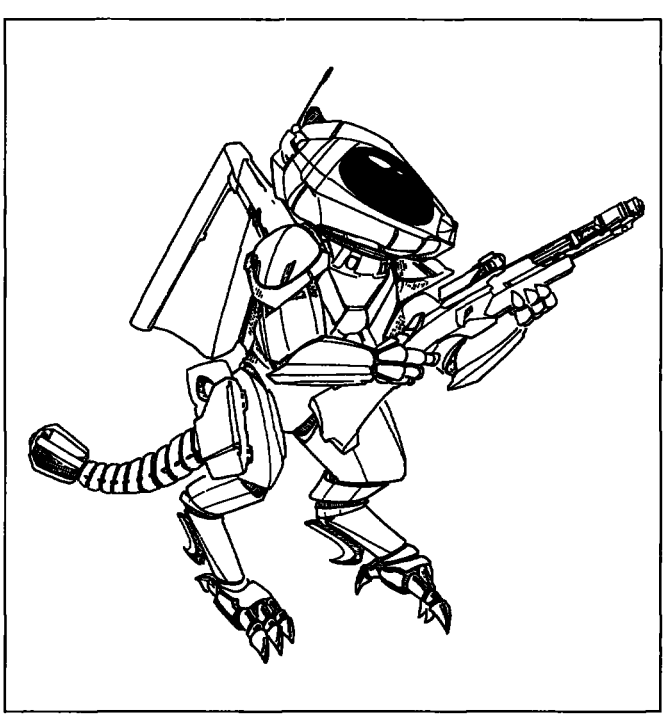
Warrior (Aydih): Trained for combat and possessing comparatively well-developed muscles and reflexes, the warrior is the enforcer and protector of Droyne society. Warriors are more involved with tactics than with strategies, and more with accomplishing missions than with defining what missions are Warriors are larger and stronger than other Droyne castes, sometimes reaching two meters and 60 kilograms in size.

Technician (Ayssath): The science-oriented portion of Droyne society concerned with both research and practical implementation of technology. They are small but dexterous and intelligent, outside of their own area of expertise, they possess little in the way of initiative or decisiveness. Technicians are very capable of fixing, repairing, or assembling mechanisms; when inventing, they usually do so under the intelligent guidance of a leader.

Drone (Aydirsoth). Drones have a variety of roles in Droyne society Their reproductive and family jobs have been noted, and they also play an important part in the casting ceremony. Further, they constitute a sort of middle management caste, responsible for many of the routine functions of business, trade, and administration. Drones can handle routine work and make good managers so long as they have an effective leader to whom they can bring problems.

Leader (Aykrusk): Leaders are required to manage and direct society They are the most intelligent of all Droyne and the most capable of initiative and intuitive thought. In size, they resemble drones and technicians, but they tend towards significantly larger brain cases.

Leaders always take jobs which enable them to lead. Some may be forced to take roles as advisers to other leaders, but leaders are always struggling to personally make decisions



and be responsible for them. Leaders accept the authority of those above them, but are always striving to rise in power within the system. Typical jobs for leaders include: starship captain (leaders tend to be navigators rather than pilots), military or naval officer, company or corporate officer, or family patriarch

Sport (Praytsirv)· Although the caste system of the Droyne is rigid, the sport is the deliberately accepted exception to the caste structure Sports are special individuals who are capable of being alone or away from their family for long periods of time. They can show initiative and self-reliance Sports average around 1 5 meters in height and are about equivalent to drones in intelligence Sports are similar to Vargr emissaries.

Typical jobs for sports include: messenger, prospector, scout, representative, explorer, or driver. Sports make good pilots.

THE EVOLUTION OF THE DROYNE

Along the evolutionary path that all life on Eskayloyt followed, the appearance of natural castes was a recurring biological mechanism; members of the group differentiated according to function. Even though many of the specialized types did not participate directly in the reproduction process, their contribution to the survival of the group enhanced the propagation of their traits. The process paralleled that of Terran bees or ants: even though worker bees do not participate directly in reproduction, the workers make the hive successful, and successful hives survive. Life on Eskayloyt developed many types of castes over the millennia. In the seas, schools of swimmers were composed of distinct members hunters, decoys, and breeders. Later on the continents, herds of grazers roamed the plains, differentiated into leaders, fighters, breeders, and scouts

Somewhere in the course of evolution, genetic interaction produced intelligence. The prehistoric or proto-Droyne had originally evolved into an ecological niche in the forests of their homeworld. Their amphibian ancestors had moved into the forest floors, some of those forest dwellers eventually took up nesting in the tops of trees. Along the way, Eskayloyt underwent dramatic climatic change When the forests thinned out and became plains, the proto-Droyne were soon isolated into small colonies wherever the trees remained, along rivers and in small groves. The triune nature of these proto-Droyne was especially adapted to this life· the alpha male was a hunter; the beta male was the nest-builder; the female was the mother

The proto-Droyne proved especially adaptable when local conditions called for it. Genetic drift constantly produced offspring which became new castes Some of those castes survived, many others died out Vanished castes include an aquatic form (evolved from hunters), an *idiot savant* information processor/memory bank (an evolutionary dead end with some similarities to the technician), and a communicator (evolved as a specialized worker).

New Castes: Evolutionary pressures on the proto-Droyne forced the emergence of new castes. The first new caste to appear was the leader; a small but growing percentage of hunters took on leadership roles in the family groups, and as leaders, they provided direction for the groups. From their positions of dominance, they took a greater share of the food, lived longer, and gained experience which was also beneficial to the leader group. The leader caste obviously had survival benefits for itself and for the Droyne, it survived. New castes developed from old castes as specialized needs arose. The hunter caste gave rise to sports (independent scouts, trackers, messengers, and emissaries) and warriors (defenders of the group) in addition to leaders. Along the way, the hunter caste proved unnecessary and died out; leaders took over the position of the alpha male. The nest-builder caste gave rise to workers (who served as builders, farm labor after agriculture was developed, herders, and servants). After technology was achieved, the technician caste arose (naturally enough, from the nest-builders; the nest-builders themselves died out). The female, the original mother creature of the Droyne, slowly transformed into the drone, with responsibilities for procreation and for management of the family unit.

Important Points: The evolution of the Droyne from their proto-Droyne ancestors took millions of years. The evolution of their present caste structure, to include such a specialized caste as Technician, means that they have had intelligence for hundreds of thousands of years.

Yet, over those hundreds of thousands of years, the Droyne (except for the brief Ancient period) were apparently content to remain on their homeworld There is no evidence that they left it using sublight drives, there is no evidence that they pursued anything other than a simple life on their homeworld, raising enough food to feed themselves, mining metals to meet their basic needs, content to remain as they were.

THE HISTORY OF THE DROYNE

All knowledge about the Droyne can be assigned to three eras: the Prehistoric Period, the Ancient Period, and the Modern Period. Each period has a different, distinct character.

There are many mysteries about the Droyne. Most of them will probably never be solved. But some basic information is known about them, gathered from surviving records, pieced together from fragments of video presentations, bookfilms, holographs, and writings The following is a presentation of what is known about the Droyne—what most individuals have learned in the course of an ordinary education, or what they can find out in ordinary researches.

The Prehistoric Period: The period before the rise of Ancient technology is considered Droyne prehistory. Conventional wisdom includes in this era all Droyne activity prior to −350,000.

Sources: Available information sources about the Droyne Prehistoric Period are rare The primary reference is the work of Zhodani researchers investigating surviving Droyne materials on Viepchakl, the satellite of Zhdant.

First Intelligence: The Droyne showed first evidence of intelligence three million years ago, primarily in the use of tools and the production of elementary decorative clothing. Later advances included agriculture, the use of hunters as scouts and guards, a division of labor, and expansion into fishing and seafaring.

The Rise of the Cities: By about −500,000 the Droyne had established cities which served as trading centers along rivers and coasts Large agricultural areas were worked, often under irrigation Typically, these large cities (actually city-states) had populations of about one million and controlled an area of about

10,000 square kilometers Buffer regions between the cities were under the control of no one.

Differences in available resources naturally led to conflict. At the same time, the appearance of the Warrior caste helped to promote and continue the conflict. Technology advanced under pressure from the continuing warfare, but over a much longer time span than is considered normal for other races. After perhaps 10,000 years, the Droyne advanced to a solid tech level 5.

Much of the incentive for technological advance was the constant warfare between cities. That warfare evolved (by −470,000) into a form of ritualized combat involving only the Warrior and Worker castes. With the ritualization of warfare between cities, the advance of technology stopped, and the Droyne were effectively frozen at tech level 5.

The Long Plateau: From −470,000 to about −350,000, Droyne society remained at a technological plateau To an outside observer, the civilization was static (or stable, depending on the outlook) The Droyne could be seen as clever, extremely intelligent animals, much like bees or ants or termites. They built, communicated, had writing and machines; but they were also satisfied with their idyllic, pastoral lives. They lacked, as a race, the drive upward.

Without some sort of stimulus, the Long Plateau could have lasted forever.

The Ancient Period: The Ancients appeared on the scene suddenly, and at a time when there was effectively no starfaring in the galaxy. They burst into space and expanded to hundreds of worlds, creating colonies, bases, and settlements. Then they destroyed themselves.

Early Vilani researchers who discovered these ruined sites thought each to be representative of a different race, but excavations and further investigation soon showed that this was not so—common factors demonstrated that all were examples of the same civilization. The age of these sites has been established at around −300,000 by Imperial reckoning. The allowance for error in the dating methods is about 10,000 years; it has been concluded that the civilization lasted for a total of less than 50,000 years. The term Ancients has been generally adopted in recognition of the antiquity of the culture.

Extent: The Ancient civilization was wide-ranging. Confirmed Ancient sites have been found in every sector of the Imperium, as well as throughout Vargr and Aslan territory It is reported that there is a high frequency of such sites within the Zhodani Consulate. It is almost certain that the Ancients ranged beyond the limits of explored space, and that evidence of their travels lies beyond the borders of existing human empires

The total number of confirmed Ancient sites visited by the Imperium is in excess of 200. Imperial studies of the reported locations of these sites have produced some statistical data, not necessarily complete, but pointing towards certain conclusions. The frequency of Ancient sites appears to decline with distance from a central point; that point lies somewhere in the Spinward Marches.

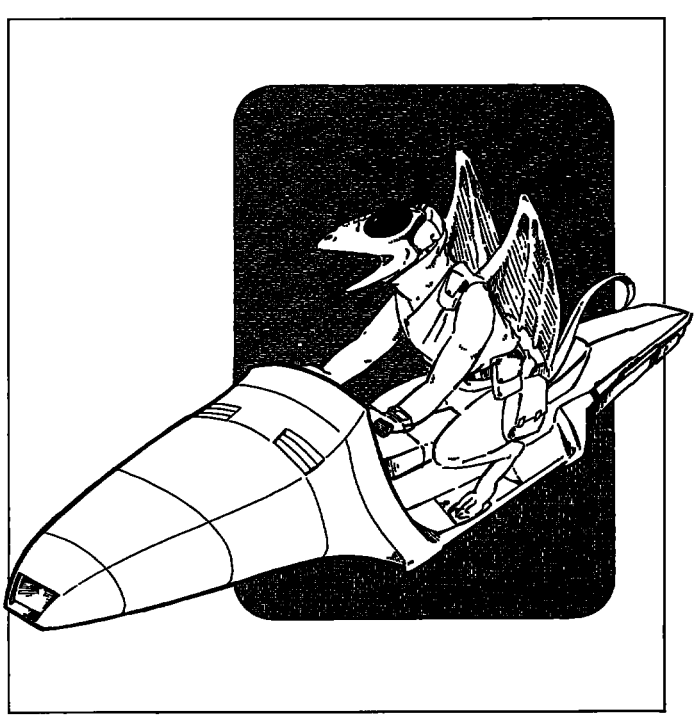
The Ancients would appear to have had a relatively small population. The planets they settled, according to available evidence, usually had only one or, at most, a handful of bases. Estimates of population vary, but do not exceed one million per world. Some investigators believe that their high-population worlds held billions, but were reduced to asteroid belts in the war which shattered their civilization. These scholars say that the worlds that are still intact were the low-population planets of the Ancient Empire. Others, however, hold that none of the evidence found in any asteroid belt confirms this.

If the asteroid belts created by the Ancients were worlds with populations in the billions or tens of billions, then the Ancients at their heights may have had a population in the trillions. Had these planets been no more heavily populated than the confirmed sites known today, then the total Ancients population can be estimated at less than one billion.

Ancient Technology: The most striking aspect of the Ancient technology is not its high level (though this is certainly dramatic), but its diversity. Of the hundreds of Ancient sites which have been excavated and analyzed, each appears to express a different approach to the problems solved by technology. It would be easy to take each site as originating from a different cultural or technological background, as the first Vilani spacefarers theorized them to be.

It appears that each site involved the near total reinvention of the most basic building blocks of technology. One site might use familiar screw fasteners, while another would depend on adhesives for the same task; still others could use rivets, or interlocking ellipsoids, or simple plastic clasps. Where one site's computers and electronics show evidence of depending on silicon chip circuits, another performed the same functions with fiber optics, still another used fluid dynamics, and yet another channeled heat transfer.

Once the Solomani Hypothesis (which theorized that all humanity came originally from Terra) was accepted, it was a simple matter to analyze the gene pools available to each of the distinct human races found on worlds other than Terra. Those studies have concluded that the Ancients visited Terra many times, taking groups of between 1000 and 10,000 humans to each of perhaps a hundred worlds. A few indications



have been discovered which suggest that genetic engineering was used on some of these transplanted groups to encourage rapid adaptation to their new environments, but the vast majority of human races were not so tampered with.

The reason for Ancient interest in humanity is unknown. Theories involving humans as slaves, assistants, workers and even as pets have all been advanced, but there is insufficient evidence now available to support any specific conjecture.

Vargr: At approximately the same time as human samples were removed from Terra, the Ancients took samples of the family *Canidae*. This dog stock was manipulated through genetic engineering techniques to produce an upright stance, an opposed thumb, and intelligence.

Just as the interest in humanity remains unexplained, so too is the reason for Ancient creation of the Vargr race.

The Final War: The Ancients' civilization was destroyed in a cataclysmic war. Over a period of about 2000 years, they fought with such ferocity that hardly any traces of their existence now remain. Archaeologists today work under a severe handicap in attempting to piece together those elements which survived to arrive at any coherent picture of the Ancients, their way of life, or their works.

The Final War was fought with technology far beyond that available to the Imperium, or to any civilization which has existed since the days of the Ancients. Estimates place the resources used at tech level 25 or greater, a level virtually incomprehensible to any contemporary mind.

The weapons of the Final War were brutal in their power. They were capable of great destruction; entire planets were reduced to asteroid belts by what must have been planet-buster bombs. In other cases, planetoids and small moons were seized, moved and directed toward planets to obliterate what must have been bases, cities and installations. Many planets still bear the marks of such attacks.

The weapons of the Final War were also quite sophisticated,

capable of fine control. Entire worlds appear to have escaped the war unscathed, except for the actual sites themselves Frequently, it is only when a site is discovered that it becomes evident that it was the target of an attack. There is no evidence of misses, no pattern bombing, no random attack. What was attacked was hit; high technology coordinated the attacks, which were seemingly impossible to stop, even given Ancient technology. There are, again, various inconsistencies, not always explainable, which could be taken as evidence of a great diversity in technologies and abilities involved in the way war was waged

Puzzles and Puzzles: Despite the Final War, the Ancients appeared to have other interests beyond warfare Their bases and settlements were not built as fortifications; their cities included complexes that were probably entertainment centers, concert halls, theaters, and parks. There were libraries and museums. There were facilities for the raising of children. If the Ancients were so good at warfare, what must they have done in peace before they destroyed themselves?

The Modern Period: With the end of the Final War, the Ancients ceased to exist. Until recently (the last 300 years), the fact that the Droyne were the Ancients was unknown. Once the connection between the Droyne and the Ancients was made, research into the individual Droyne races on many different worlds produced a history of the Droyne since −300,000.

Sources: The history of the Droyne race after the era of the Ancients is virtually nonexistent, if one assumes history to be a chronicle of dates and battles. Droyne history on each of the scattered worlds where they survived after the Final War ran its course is generally lacking in noteworthy events

Modern Droyne History. Archaeologists and historians have found a common pattern in the history of most Droyne worlds that have been investigated. Their history tends to fall into four broad phases: Decline, Recovery, Stagnation, and Contact.

Decline: Evidence shows that the Droyne who survived the Final War were few in number. Fossil remains from this period show the Droyne to have had a prolonged period of barbarism and decivilization. Almost all the scattered Droyne worlds seem to have lost all higher technology, and most were so badly shattered as to have lost the ability to caste (which is known to have been a characteristic of Ancient Droyne, based on a variety of recovered works of art). It was during this period that a large number of Droyne worlds faded into extinction.

Archaeological records put the low point of the post-war Droyne societies at roughly −75,000, nearly 225,000 years after the war. By this time, according to the finds investigated, the race was close to extinction. Virtually all Droyne cultures had lost all ability to caste, their numbers were diminishing and, by all known principles of science, they should have died out

Recovery: On about 20 worlds, however, this did not happen. Around −75,000, the Droyne on these worlds seem to have almost simultaneously undergone a "renaissance." The key to this recovery was a revival of the ability to caste; this, in turn, seems to have been based on the introduction of a set of small gold disks, called coyns, which became the basis for many aspects of Droyne culture. The nature of the coyns is poorly understood, but recent discoveries have begun to provide certain explanations (which are summed up in a later section) concerning the use of the coyns in Droyne ceremonies.

The biggest mystery that remains, however, is how the coyns originated and how they spread to 20 Droyne worlds (or appeared spontaneously on each—a theory that is beyond the realm of rational belief). The most commonly accepted hypothesis, that one Droyne culture developed the coyns and rediscovered the secret of interstellar travel, is not supported by any other evidence available to scientists today. Nonetheless, it is the only truly acceptable explanation and is the grounds for classification of the Droyne as a major race separate and apart from their ancestors, the Ancients. (A rival theory, that the Droyne of a particular world merely used Ancient artifacts to revive space travel, is dismissed because of the universal, pseudoreligious awe and fear with which Droyne are known to regard artifacts of this kind. Still, as some have pointed out, this theory isn't completely impossible: 75,000 years is a long time, and superstitions change even in a race as stable and constant as the Droyne appear to have been.)

Strangely, the Recovery period seems not to have been characterized by widespread interstellar travel. Except for the evidence of the coyns themselves, archaeologists have detected nothing that indicates a major jump in either the sophistication or the spread of Droyne culture or technology The recovery of the caste system led to a halt in declining populations (for reproduction is strongly, though not solely, linked to caste) and a revival of culture and primitive technology. No archaeological evidence exists for the presence of any Droyne group at this time with more than a tech level of 1 or 2, space travel simply doesn't seem to have been possible.

Yet such contact must have occurred. The coyns are not the only element pointing to this conclusion. Droyne culture on each of 20 worlds evolved during the recovery period on parallel lines. At the time Imperial explorers determined that the Droyne were indeed a major race, with multiple-inhabited worlds, the difference between Droyne civilizations were those of technological variation, adaptation to local conditions, and other minor factors. Culturally, they were and are more alike than any two human-settled worlds cut off from one another during the Long Night—a mere 1800 years in length.

The final, most mysterious enigma concerns the coyns themselves. Six of those coyns contain pictorial representations of the major races: Humaniti, Droyne, Vargr, Aslan, K'kree and Hivers. While the Ancients could have left traditions of the three, the others did not exist at the time of the Ancients, and at the time the coyns were introduced, there was little to mark them as particularly exceptional species How then came these six races to be portrayed on the coyns? No reasonable explanation for this has ever been produced.

Droyne traditions are of little use in the development of theories accounting for this period, either. A common myth in each society is that the coyns were introduced by a godlike figure, known as Yaskoydray (usually translated as Grandfather), who appears as a savior figure bringing the coyns to his people, and teaching them the crucial elements of their culture.

DROYNE SOCIETY

The nature of Droyne society stems from the caste system, which dictates much of the interaction between individuals and groups, and reaches out to embrace such matters as government, warfare and a variety of other factors

Social Groupings: Family structure (where a family is part of a race's society) determines a great many details of an individual's character and background. Among the Droyne, there are two basic types of families the dreskay, or extended family, and the tyafelm, or basic family. Families are themselves grouped into an oytrip, or community

Tyafelm: The basic family is a group of at least six Droyne, with one drawn from each caste. Basic families may be balanced, with equal numbers of each caste included, or they may be specialized, with a predominance of one specific caste in the group

Each tyafelm selects as its emblem one of the 36 coyn symbols; that symbol is used to refer to that specific tyafelm

Dreskay: The Droyne extended family is a grouping of several (between three and 18) tyafelmin. The association of many tyafelmin provides a larger gene pool and allows the offspring from the component tyafelmin to come together and form new tyafelmin.

Occasionally, dreskayin esivoy (schism). They split and become two or more dreskayin, dividing the acquired assets between them and then going their own ways. Such splits may be due to local economic pressures, famine or drought, or growth of the family to excessive size. Split families may or may not maintain connections and communications with each other.

As families grow in size, they may also send out iyuksimin (tendrils), small groups to explore, investigate, engage in trade,

A DROYNE TIMELINE

The following table shows several key events in the history of the Droyne.

Imperial	*Event*
-3,000,000	Nest-builders
-2,200,000	First intelligence.
-2,000,000	Agriculture. Hunters.
-1,900,000	Fishing. Seafaring
-1,800,000	First communities.
-1,750,000	Raiding between communities.
-1,600,000	Metal-working
-1,500,000	Ritualized conflict. Warrior caste.
-1,400,000	Leader caste emerges.
-1,000,000	Sport caste.
-900,000	Technician caste
-800,000	Elementary space travel.
-750,000	Interstellar voyages.
-400,000	Grandfather appears.
-400,000	Grandfather creates his children.
-400,000	Immortality.
-390,000	Rosette worlds built.
-380,000	Ringworld at Tireen built.
-350,000	Grand tour of children's worlds.
-300,000	Grandfather visits Terra.
-300,000	The grandchildren rebel.
-300,000	The Final War.

or just travel. Such small groups (usually balanced to include one member of each caste) give the young experience, provide an opportunity for profit or earnings, and sometimes relieve the family of the requirement to support the wanderers

The dreskay is a family, but it is also part school and part grouping of friends; it probably most closely represents the original social unit of precivilized Droyne on their lost homeworld.

Oytrip: The oytrip is a collection of dreskayin, usually geographic. The oytrip is communal in nature, sharing resources for the common good, each caste contributing its abilities and services to the overall community's needs.

Most oytripin are simple, pastoral communities devoted to agriculture, hunting and gathering, or similar functions. On more sophisticated Droyne worlds, or in integrated settings with mixed racial habitation, an oytrip may specialize in manufacturing, trade or even in a military role.

Within a single oytrip, social relations are quite smooth and well regulated. Natural leaders emerge to deal with each specific problem that comes up. The dreskayin within the oytrip are answerable to the Leader-of-Leaders. Drones within the oytrip constitute a separate advisory council, as well as being responsible for the casting of the young Droynes

The leaders have absolute and unquestioned authority, but would no more think of misusing that authority than they would consider destroying the entire oytrip for no reason.

Kroyloss· Droyne society also has a special social institution: the kroyloss, or fraternity. The kroyloss fills a special need for Droyne to set off into the world, but without losing the companionship of other Droyne.

When a young Droyne reaches maturity, it leaves its tyafelm to join or form another, usually within the same dreskay, almost always within the same oytrip Finding another family, however, is sometimes a difficult proposition. For many youths, existing agreements with other families provide an automatic opportunity to join another extended family. But many Droyne are driven by conflicting motivations The young are curious, inquiring, anxious to learn more about their world and their universe. At the same time, they feel incomplete when apart from their family, when separated from other Droyne. The answer, arrived at over the course of millennia, is the institution known as the fraternity. The kroyloss is a voluntary association of Droyne—a brotherhood, a fraternity. The purpose of the brotherhood is to provide companionship and mutual support during adulthood, but without the commitment required of a family.

After a period of wandering or mutual endeavor, a fraternity may break up (with its members leaving to join other families), or it may transform into a family as the individuals grow older. Thus, the fraternity is a sort of prefamily But fraternities have few of the responsibilities of families They can wander in search of adventure, or they may build a business or enterprise. A fraternity may be a kind of partnership which operates a starship in merchant trading, or may form a small military unit for hire. Although one particular caste may predominate in a fraternity, there is at least one of each caste represented. Fraternities have a minimum size of six (one of each caste), and may range in size as large as 20 or more. They may break up as the individuals mature and leave to join families, but more often, they convert into families themselves, occasionally recruiting additional members of the necessary castes. Excess caste members linger as informal family members (auxiliaries), or break off to be on their own (forming broken fraternities) Droyne fraternities can be thought of as semifamilies The members are held less strongly than they are in families; the lack of children, the relative youth of the members themselves, and even tradition all affect perceptions of the fraternity. In some ways, the fraternity is a practice at being a family. But fraternities are also less bound by the standards of society. They can pursue interests that families might not. They can explore, prospect, innovate They allow wandering and adventuring and excitement. But fraternities also provide something that Droyne need: companionship Except for the Sport caste, Droyne need the companionship of others in their daily lives.

Ceremonies: Safety valves are, of course, necessary, and there are formal channels of suggestion and of appeal within the Droyne community. The other major safety valve for the Droyne is embedded in ritual and ceremony Ritual is a crucial element in the activity of the oytrip. Castes are assigned by ceremony. Individuals join and leave dreskayin by ceremony. Success and failure are predicted through ceremony.

Droyne culture has a strong mystical slant, and the emphasis on ceremonial ritual to regulate and reaffirm the whole direction of an oytrip is central to their mystic natures. Many respectable scientists scoff at Droyne mysticism, but others do not discount it as a real factor in the Droyne perception of the universe. Since it was proved that many aspects of Droyne ritual are based on their various psionic talents, the possibility that their ceremonies are more than empty motions has been widely admitted, if not embraced, by the academic community.

Leaders and drones participate in the ceremonial aspects of a community; each oytrip has a number of individuals whose only function is to regulate the ceremonial life of the people. Also of crucial importance to these rituals are the 36 coyns (Droyne: *koynisin*; singular *koynis*) which play a vital part in Droyne life

Coyns: Coyns are the best known and most important of all Droyne rituals. Researchers were long baffled by the apparently random draw of coyns, under the direction of a leader and several drones, which ended in the choice of a caste for an immature individual. Recent research, though, has proven that the coyns that are drawn are used as focuses for concentration. The leader and drones use psionics to open the young Droyne's mind and awaken the appropriate genetic programming latent within its make-up. It has even been suggested that the draw of the caste coyn is not so random as it may appear to outsiders, being selected by clairvoyance or telekinesis to match the potential discovered while probing the young candidate's mind.

Periodically, the coyns are also consulted in a ceremony which determines whether or not an individual can continue to serve the oytrip. The coyns are believed to reveal the future—of an individual, a task or voyage, a battle, and so forth—and are hence ritually consulted on a variety of matters. What has been frequently dismissed as "random fortune-telling" has proven to be surprisingly accurate in many instances. This has been explained as everything from coincidence to luck to some form of precognitive ability, but the truth

remains unknown even to the Droyne. Certainly they believe strongly in the validity of their rituals; the coyns dictate not only life, but death as well, for in most circumstances the failure of an individual to pass the favorable scrutiny of the coyns in a Ceremony of Continuation leads to one of the most unusual facets of Droyne culture—krinaytsyu.

Krinaytsyu: It is a central facet of Droyne society and behavior that the individual exists for the good of the community, rather than the more customary human view to the contrary For this reason, an individual deemed to be no longer worthwhile to the oytrip customarily undergoes krinaytsyu (voluntary death). The individual spends several hours in meditation, making use of the Droyne mastery of psionic self-awareness to turn off the body and mind. The individual dies painlessly and entirely by the force of its own will

Krinaytsyu is expected of all Droyne, but there have always been a small number who resist the self-destructive urge which accompanies the decision of society to withdraw its mantle from them. A few Droyne find some other goal or drive supplanting the basic need to serve the oytrip, and this new desire becomes the new driving force in their lives. They postpone or ignore the calling of krinaytsyu, possibly for years, to pursue their new goal. Such Droyne become known as krinaytsoyni (the deathless), a term of scorn among the Droyne still bound to the oytrip.

Krinaytsoyni live outside the bounds of Droyne society. They are loners, without the support of dreskay or oytrip Leaders, Sports and Drones are most often able to make the transition; lower castes have too strong a need for leadership and direction to comfortably leave their family or community. Such individuals may wander for some time in pursuit of their personal goals. They are characteristically melancholy, lonely, and obsessed by their needs, and ever prone in the face of failure or disappointment to go through with the krinaytsyu they passed up before.

Krinaytsyu is the fate of most of those whose useful service to the community has ended (through age, or through the prediction of the coyns). It is also chosen by those Droyne who are cut off from their oytripin or dreskayin. It is also customary for those who challenge a leader's judgment and are proven wrong to commit krinaytsyu. Leaders and other individuals in positions of great responsibility choose voluntary death when decisions turn out to be disastrous, thus clearing the way for new individuals to take their positions and solve the problems arising from the bad decision.

Krinaytsyu requires one to six hours of meditation and concentration. It cannot be undertaken when concentration is impossible, and can be halted at any time before the end of the period if the individual finds new reason to live.

Leaders among the Droyne are an exception to the general statement that Droyne are not possessive; they are possessive for themselves and their group, be it dreskay or oytrip. The bonds of caste are such that all the leaders work together for the common good of the oytrip But such cooperation rarely extends from one oytrip to another, for their leaders are unable to recognize the concept of themselves answering to another. The oytrip's needs come first; if a resource is in short supply, a leader will do what it can to secure that resource for its people This has led to far more wars than were strictly necessary, for no ready channel for negotiation and compromise between oytripin existed. However, over the millennia, this need was filled by a subcaste of sports, speakers, who emerged as professional diplomats. Sports could present their oytrip's needs to their opposite numbers, who in turn could use the normal processes of appeal to convey those needs upward to the leadership.

Ritual War: Wars are still sometimes fought between oytripin. Warfare is the province of the Warrior caste, though in fact, the entire oytrip contributes to success in war as it does to everything else In war among the Droyne, warriors do the actual fighting, they are not clerks or medics (those jobs are filled by drones); they are not seabees or trench-diggers (workers do these jobs). A warrior is not expected to build, maintain, or repair weaponry—technicians perform that function. Sports act as spies, scouts, couriers, and the like. Leaders make the strategic plans and decisions. As in other aspects of life, the oytrip at war is a smooth, well-oiled machine in which every individual has a role, and crossovers between roles are rare.

Ritual war for the Droyne has specific goals—the capture of the necessary materials, food, weapons; control of strategic transportation or territory. But warriors really die in ritual war. The balance between loss of a cadre of warriors and accomplishment of some specific goal is a decision which the leader must make.

Real War: The difference between Droyne ritual warfare and real warfare is that all castes of Droyne can die in real war. When Droyne come in conflict with non-Droyne, the ordinary rules of ritual warfare no longer apply; the leader mobilizes the entire oytrip toward victory.

A DROYNE GLOSSARY

aydih: warrior
aydin: worker.
aydirsoth: drone.
aykrusk: leader.
ayssath: technician.
dreskay: Extended family of three to 18 tyafelmin.
Droynia: Casual term for the Droyne homeworld.
esivoy: Schism of dreskayin into two or more units.
Eskayloyt: Lost home. The original Droyne homeworld.
esorde: caste.
iskyar: Droyne caste assignment ceremony.
iyuksim: tendril. Exploratory party.
koynis: Medallion used to help assign castes. Coyn.
krinaytsyu: voluntary death. Expected of those no long valuable to the oytrip.
kroyloss: fraternity. Voluntary prefamily or semifamily.
oynprith: Droyne language.
oytrip: Geographic or professional community of extended families.
praytsirv· sport.
tyafelm: Family of six Droyne (one from each caste).
Yaskoydray: Grandfather.

A TYPICAL DROYNE LIFE

The following description of the life that a typical Droyne leads provides some insight into their society and culture.

The Droyne egg, one of a clutch of six laid by the drone, hatches some 60 days later Young Droyne have a relatively long adolescence. The hatchlings develop rapidly; by one year, they can walk; by two years they have an elementary vocabulary; by four years, they can begin an elementary education.

Education: Between age four and age 12, the young Droyne undergoes an extensive education, but not in the sense that humans do. Formal schooling in the classroom sense is minimal. Instead, each Droyne is provided with a program of individualized education which builds on what has already been learned. New learning builds on success; when the Droyne fails some educational area, additional instruction directly addresses the problem area. Droyne with high Sense include psionic training in their education.

Socialization: Socialization ranks equal with education to the Droyne. During the formative years, young Droyne are constantly exposed to social situations and, in the process, learn what is expected of any individual in any situation This socialization is valuable in Droyne caste society: the young learn what is expected and allowed from each caste member. Individuals learn to work and play together, to realize the benefits each gives the other, and to understand the responsibilities each has to the whole.

Preparation For Adulthood: At age 10, the young Droyne begins a two-year preparation for the casting ceremony and the transition to adulthood. The drones, in their capacity as priests and administrators of the casting ceremony, conduct formal and informal examinations and evaluations. Deficiencies are addressed and remedied; the drones form well-informed opinions of the qualities and failings of their charges.

In addition, it is traditional for small groups of young Droyne to make short expeditions out of the community, collecting specimens, visiting archaeological sites, hunting, or just exploring. These juvenile expeditions give the youths practical experience in working together without adult guidance or control Reports and debriefings after such expeditions provide additional information to the drones in preparation for the casting ceremony

Determining Castes: At some time during a Droyne's 12th year, the drones of the community meet and make arrangements for a casting ceremony for the eligible youth of the community The rites of passage for Droyne youth are controlled by the casting of the coyns. Theoretically, the coyns are drawn randomly; in practice, the drones are a major influence on their outcome, and the presence of the entire community reinforces their outcome and its effects on the individual

Each drone participating in the ceremony has arrived at her own conclusion as to the best caste assignment for the individual, and the greatest caste needs of the community. All of the drones sit in a circle, focusing their psionic energies on the coyns as the young Droyne casts them. Each tries to influence them in their vibrating container as the Droyne reaches in; each tries to force a specific coyn highest and into the Droyne's hand The result is an election—the majority will, weighted by psionic power, determines the caste of the young. Even the Droyne being casted can use its own psionic powers to try to influence the coyns being selected.

Once the ceremony has produced a caste decision for an individual, the assembled community reinforces that decision immediately and continuously. The present members of the caste welcome their new comrade into their ranks immediately; the members of other castes find their perceptions of the youth change in view of the new caste

Fraternities (Kroyloss): Those Droyne who do participate in the formation of a fraternity are expected to do so within a year of casting. For some, the fraternity will be the association of choice for all their lives. For most, the fraternity is a phase that leads naturally into a family, either through conversion of the fraternity into a family, through the establishment of a new family, or (by invitation) through joining an already existing family.

Families (Dreskay and Tyafelm): The primary difference between a family and a fraternity is that the family is committed to reproduction Families have children, while fraternities do not (sometimes a fraternity turns into a family because of this definition rather than through any conscious decision on the members' parts).

The Droyne family is essential to procreation. The presence of the different castes helps to make the drone lay eggs and to allow them to be fertilized. Each of the caste members secretes a variety of pheromones which, in combination, makes the drone fertile.

But families, like fraternities, provide a structure to support the individuals and to which the individuals contribute.

Old Age: Old age is a luxury available primarily to sports and leaders When the other castes begin to age, they become less efficient, and soon see their duty to the community is to open new positions for the young; they accomplish it by voluntary suicide.

Zhodani

Human beings have evolved and developed on Terra over the past several million years It thus came as a surprise to Terrans when they travelled to the stars and found that humans were already out there, ruling vast empires among the stars. It took many centuries before it could be established that all of those humans had indeed originated on Terra, and had been transported to many different worlds by another starfaring race many thousands of years ago

Of the three major starfaring human races, the Zhodani are the most alien. Their culture early on developed the science of psionics and integrated it into their society The result was radical differences between what Terrans consider normal and what Zhodani consider normal.

The Zhodani, who are physiologically quite human, are culturally quite different. For all their (reasonably) familiar appearance, the Zhodani are not familiar in their patterns of thought, their behavior, or their culture.

ZHDANT—THE ZHODANI HOMEWORLD

The star system that holds Zhdant (as the Zhodani call their homeworld) lies far spinward of the Imperium in the center of their own empire.

Stellar Data: Zhdant orbits Pliebr, a solitary star. Pliebr is a K0 V star which is smaller and dimmer than Sol. Luminosity is 0 42. Effective temperature is 4900 degrees K. Radius is 0.908 of Sol Mass is 0.811 of Sol

World Orbital Data: Zhdant orbits Pliebr at 0.769 au (orbit number 2) with a period of 273.44 standard days. It rotates on its axis once every 27.02 standard hours.

World Physical Data: Zhdant is 9620 kilometers in diameter and has a thin atmosphere. Forty percent of the world is covered by water, primarily in two seas which divide the world into a large and a small continent. Polar icecaps are minimal, amounting to about two percent of the world's surface

Zhdant has an axial tilt of 18 degrees and an orbital eccentricity of 0.05. Neither creates any appreciable extremes of climate or temperature. The average temperature for Zhdant is 15.9 degrees C.

World Social Data: Zhdant has a population of 83 million, of whom more than 90 percent are racial Zhodani. Significant non-Zhodani population is primarily Addaxur.

Zhdant is governed by a charismatic oligarchy, the supreme council of the Zhodani Consulate, elected from Zhodani nobility throughout the Consulate The world has a law level banning guns in public. The tech level of Zhdant is F (nearly all other worlds do not exceed E).

Zhdant has a type A starport with excellent facilities and a naval base.

Viepchakl: Zhdant has one satellite, a large tidally locked moon with a very thin atmosphere and no water. Viepchakl orbits Zhdant with a period of 40.7 local days at a distance of about 379,500 kilometers. There are no other natural satellites.

Viepchakl is a large and dominating satellite. Natural coloration makes the moon a reddish pink with dark shadows across its face. Windblown dust storms rage across its face from time to time, a phenomenon which was often perceived as portending future events

ZHODANI PHYSIOLOGY

Though human in all respects, the Zhodani differ slightly in appearance from humans of the more commonly encountered Solomani or Vilani ancestry. They tend to be tall and lithe, averaging close to two meters in height, and massing roughly 90 kilograms Complexions are predominantly swarthy and hair color is usually black or brown. Blonde hair is uncommon; a mutation which occurred on Zhdant in the last 10,000 years has made prematurely grey hair twice as common as red hair

Zhodani have 28 teeth (as opposed to the Solomani and Vilani 32), and the teeth tend to be marginally larger.

All of the physiological characteristics of Zhodani are the result of two factors: the original gene pool of the humans who first inhabited Zhdant, and minor mutations or developments which have taken place during the 300,000 years that they have lived on their planet. Their height and physical build are both consequences of Zhdant's 0.85G surface gravity. Basic complexion has been shaped by environmental factors which selected specific traits during evolution while on Zhdant. The ability to digest certain proteins which are native to Zhdant but undigestible to off-world humans is likewise an evolutionary adaptation. There is little doubt that conditions on Zhdant were responsible for much of the physical evolution which took place on precivilized Zhodane.

ZHODANI HISTORY

The history of the Zhodani people begins with their arrival on Zhdant in approximately −302,000. Reconstructed details of Zhodani history are the work of Zhodani archeologists and represent the best hypothesis available for events lost in the mists of prehistory

In −302,000, a fleet of Droyne starships arrived in the Zhdant system and within the space of a year or two established two settlements or bases. One sprawled along the western coast of Qiknavra (the smaller of Zhdant's two continents), creating large networks of rail-guided grav transports, skyscrapers in the western mountain ranges, and undersea dome cities offshore The other settlement occupied a wind-swept desert plain

on the eastern limb of Zhdant's tidally locked moon, Viepchakl.

Over the next century, the two bases grew into cities. Each city created a thriving economy, and they traded goods between them Zhdant City bred humans until the local human population approached 500,000. The uses they were put to remain unclear, although evidence indicates that they were a sort of trained servant or pet. Known Ancient robots or automatons could have been better servants, but the Ancients are not known for their understandable or reasonable behavior.

Viepchakl City underwent a similar development. The foundations of that city burrowed kilometers into the crust of Zhdant's moon, its towers reached heights of 10 kilometers Familiar activities on Viepchakl included the construction of many identical buildings, probably for housing, and a vast tunnel network to carry utility service to the buildings. There was also less understandable activity. Arrow-straight roads tunnelled through intervening rock faces without flinching, but stopped and were abandoned when confronted with crevasses or chasms more than a few meters deep Desert sands were sorted into stockpiles based on color or granular size.

Viepchakl City, on the other hand, shows no evidence of ever having bred or kept humans.

Ancient sites are always different, and the two cities reflected that difference in every aspect They did have one common feature, however: in both cities, road intersections were marked with a stone stanchion topped with a polished crystal octahedron. Zhodani archeologists differ in their assessment of the stanchions' meaning. Some theorize that the columns are decoration, while others assign a practical use: perhaps traffic direction, signposts, or even centralized data processing.

The Final War: Elsewhere in known space, evidence exists that a devastating final war of destruction against the Ancients began in about −300,000 and continued for about 2000 years. The war was late in touching Zhdant Radioactive dating methods place the first nuclear detonation on Zhdant at −299,700. Unfortunately, that first detonation was swiftly followed by a rain of nearly 500 megatons within the space of a few days. Zhdant City and Viepchakl City were both destroyed: their structures were flattened, their landscaping crushed and burned, their mechanisms destroyed. The orbiting asteroid station was knocked from orbit, to crash into the ocean and bury itself in the sea floor.

Zhdant was devastated. Dust thrown into the atmosphere by the megatons of nuclear detonations gave rise to the well-known phenomenon of nuclear winter, which in turn triggered a Zhdant-wide ice age.

Viepchakl was also devastated; its city was destroyed. Its buildings were cut off even with the ground and allowed to shatter when they fell The center of the city became one big crater kilometers across—although the bombs used left no radiation

A ZHODANI TIMELINE

This table shows key events in the history of the Zhodani

Imperial	*Event*
−302,000	Ancients arrive at Zhdant with humans.
−300,000	Extensive development of Qiknavra
−300,000	Final War begins. First Raids.
−300,000	Zhdant devastated.
−300,000	Nuclear Winter. Ice Age begins.
−280,000	Ice Age ends.
−275,000	Nomadic hunter-gatherers reach Dleqiats.
−260,000	Huts. Fishing.
−250,000	*Homo Zhdatl* emerges on northern Dleqiats.
−220,000	*Homo Vlastebr* emerges on Dleqiats
−200,000	Races clash Mixing creates *Homo Zhdotlas*
−100,000	Second Ice Age begins
−80,000	Second Ice Age ends.
−40,000	Animal herding. Breeding
−30,000	Special domesticated breeds
−24,000	Agriculture Grains
−18,000	Moon-worship. Brick buildings Boats.
−18,000	Elementary mathematics
−17,000	Moon-worship Empire at its peak.
−15,000	Moon-worship Empire collapses.
−15,000	Beginning of First Dark Age
−13,000	Rise of noble classes. Feudalism.
−10,000	Encouragement of science and exploration.
−9000	Printing press
−8590	Discovery of Qiknavra.
−8550	Ocean trade. Novel trade goods.
−8450	Contact with Qiknavrats.
−8400	Elementary psionic techniques.
−8203	Industrial revolution.
−8042	First orbital flights.
−8029	First expedition to Viepchakl.
−8018	Viepchakl base. Discovery of Viepchaklts.
−8009	First Qiknavrats-Viepchaklts meetings
−8005	Extinction of Qiknavrats and Viepchaklts.
−8003	Plague spreads. Human die-back.
−8000	Second Dark Age.
−7000	Recovery Ascendance of psionics.
−6400	Reacquisition of space travel.
−6300	First planetary missions
−6200	Planetary colonies.
−6000	Interstellar expeditions (sublight).
−5415	Jump drive discovered.
−5120	Contact with Addaxurs.
−5000	Outward Expansion.
−3000	Contact with Vargr.
−2000	Contact with First Imperium traders.
−300	Conflict with Imperials in the Spinward Marches.
−50	Contact with Imperium in Spinward Marches.
589	1st Frontier War.
615	2nd Frontier War.
620	Uneasy peace with Imperium.
950	3rd Frontier War.
1082	4th Frontier War.
1107	5th Frontier War.

contamination which archeologists have been able to measure.

The attacking fleets left within a few weeks. There is no evidence that there were any further attacks in the system The Final War brushed the Zhdant system for slightly less than 21 standard days

Yet even in the face of this destruction, there were survivors. The humans in the city scattered, taking to the wild. Gene analysis performed in modern times indicates that the total number of human refugees who survived was on the order of 50,000. Some Ancients also survived, likewise fleeing the city for the wilds of the forest and the jungle.

Primitive Man on Zhdant: In the ice age which followed the Final War, the primitive humans on Zhdant scattered to the far corners of their world By −250,000, a primitive human which the Zhodani call Zhdatl (*Homo Zhdatl*; Learning Man) had established himself in the northern mid-latitudes of Dleqiats Shortly thereafter, a rival race of primitive man called Vlastebr (*Homo Vlastebr*, Superior Man) emerged in the southern mid-latitudes of the same continent

In about −200,000, the two distinct human races clashed as each expanded under population pressure into the other's domain. The mixing of the races created (over the next 40,000 years) Zhdotlas (*Homo Zhdotlas*, Supreme Man). Zhdotlas spent a long time in a period of very slow evolution. The prevalent theory is that nearly 120,000 years were spent evolving basic abilities to communicate vocally, establishing social customs which favored survival and later ascendance

In any event, Zhdotlas weathered another ice age and survived while making minor improvements in the chipped stone tools he used. In −40,000, the first major breakthrough came with the herding of animals. Deliberate breeding of herd animals soon followed. By −30,000, Zhdotlas had created several domestic breeds: *kredl* (an analog of Terran cattle), *abrstia* (an analog of Terran chickens, but providing a fibrous feather that can be woven into cloth), and *noql* (an amphibious crawler raised in dammed streams) Fast on the heels of animal herding came agriculture, the raising of grains, and even the planting of orchards. By −24,000, Zhdotlas was well-established as a farmer and had created a growing culture.

Because native animals and plants on Zhdant come from an alien evolutionary line, many (if not most) of them are inedible or undigestible by humans. Zhdant was a hospitable world in one sense, however, in that some of its native life was digestible by humans. Trial and error over the millennia showed which plants and which animals were edible and which were not. In addition, the farming projects of Zhdant City had produced large numbers of crops which naturally propagated after the Final War. Some of these plants and animals displaced local forms and became widespread. The abrstia is known from fossil records and genetic studies to be a native Zhdant life form, the noql is not native to Zhdant, and may be either a naturally occurring life form or one specially tailored by the Ancients

Primitive Chirpers on Zhdant: While humans developed in Dleqiats, the few surviving Ancients in Qiknavra remained on that continent. The devastation of the war was enough to drive them back to the stone age. Without their technological marvels, they were even more helpless than the humans, but some of them did manage to survive.

The Ancients were Droyne—a small race of winged reptiles. Their society included a series of six castes, with membership deciding when an individual reached maturity. The Ancients who fled the devastation of the Final War quickly lost the traditions that established and maintained castes, and became Chirpers (uncasted Droyne). The phenomenon has been observed on many worlds where Droyne survived the destruction of the Final War

Within 50,000 years, the Chirpers had regained agriculture, and within 100,000 years they had created two large Empires: one in the south in the mountain ranges, the other in the lowlands of the north.

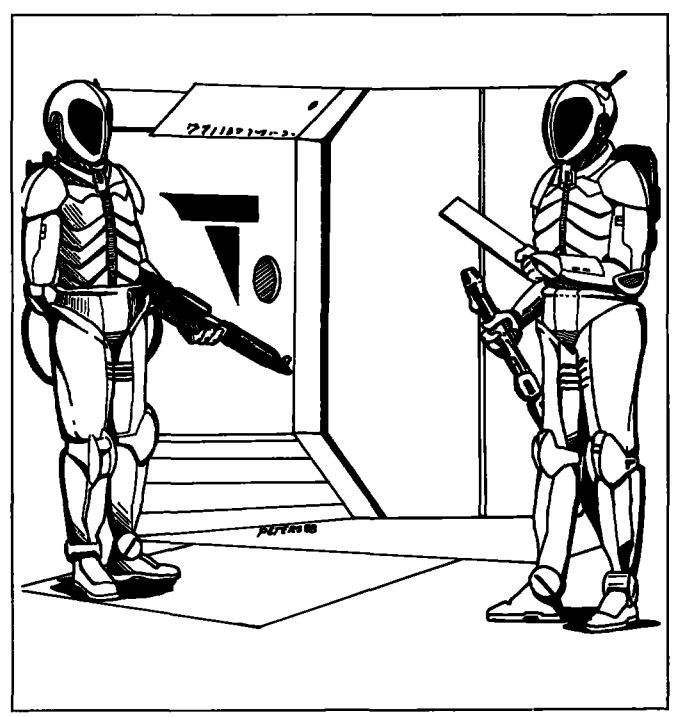
Both empires were static— they made little progress beyond providing food and shelter. The Chirpers seemed unable to regain their former glory.

They did, however, retain their natural psionic abilities. Psionic talents provided limited transportation through teleportation and communications over distance through telepathy Their empires were at least partially maintained through their psionic talents.

The Viepchakliashtie Empire: The first major empire on Zhdant began with the agricultural communities on the western coastal plains of Dleqiats. The lowlands were fertile, rich areas well-suited to farming. Over the course of several centuries, population grew and the land under cultivation expanded

As farmers, they had a natural interest in the seasons. Along the coast, they made the connection between the ocean tides and the phases of Viepchakl overhead. A priesthood capable of predicting seasons and tides grew up, and over the course of the centuries established a religion of Viepchakl worship. Viepchakl's power grew, eventually replacing Pliebr as the most powerful of gods.

By −18,000, the Viepchakliashtie, or Moon-Worshipping Empire, had gained sovereignty over coastal strips for 500 kilometers north and south, and influenced the coasts for



another 1000 kilometers beyond.

Coast-hugging boats were developed. Brick buildings were invented. Mathematics, originally for computing tides, was raised and refined as a science. The art of war, necessary to maintain the strength of the Empire, was also developed. A capital city, Dlolprikl, arose astride a major river flowing from the interior of the continent, and reached a population of more than one million.

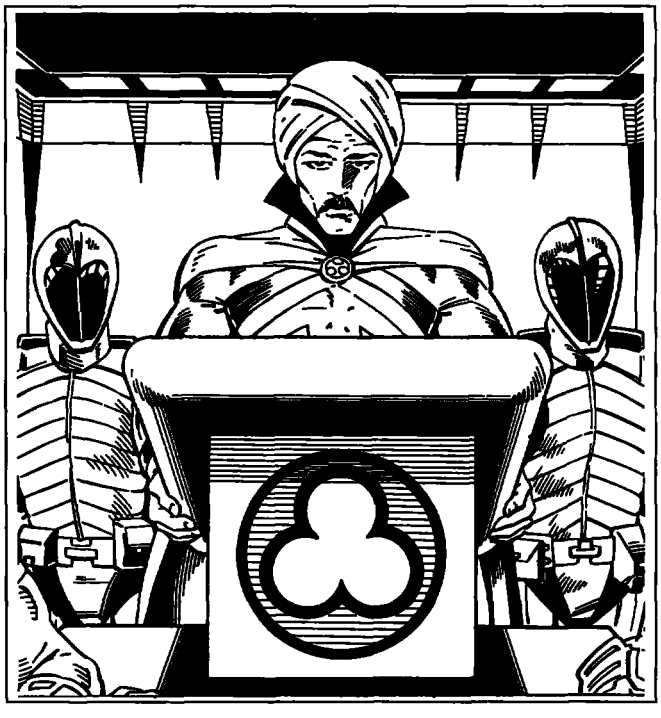
The Viepchakliastie Empire reached its height in about 17,000 when it established total control over the archipelago of some 200 islands within 2000 kilometers of Dlolprikl. Soon after, rivalry between factions of the priesthood split the empire into coastal and offshore states, and they went into decline

The Discovery of Qiknavra: The small successor states to the Viepchakliastie Empire at first maintained their own individual priesthoods, each with a slightly different doctrine. Some states found that a military force was more important to defend territory, to wage war, to maintain a deterrent strength, and to keep the common folk in line. About 13,000, feudalism took hold in force and swept the many small nations of northwestern Dleqiats. This rise of the noble class created a pattern of wars and entangling alliances that characterized the next 3000 years.

Toward the end of that 3000 years, the value of science and a systematic search for answers had its effects on Zhodani culture. In about −9000, the beginnings of true science were being seen in the idle pursuits of the noble classes

The key period can be pinpointed to about a hundred years: −8590 to −8490. In −8590, the printing press was invented (movable type followed in −8530). In −8550, an ocean expedition discovered the continent of Qiknavra. In −8540, explorers in Qiknavra discovered the civilization that ruled parts of that continent: the Chirpers. The Zhodani named them Qiknavratspeople of Qiknavra

Different explorers discovered different groups of Qiknavrats,



different trade goods, different minerals. But all found that the Qiknavrats had psionic powers. Within 10 years, it was a proven fact that humans could learn to use psionics as well Within 20 years, organized human groups were teaching psionics to others. Some Qiknavrats were taken to Dleqiats to serve as teachers of this new science of psionics

Qiknavra was opened up for settlement and exploitation, and large numbers of humans migrated to Qiknavra in search of easy wealth

Psionics was an important factor in the next 200 years Those who found psionics easiest to learn seemed naturally predisposed to it. We now know that those individuals had naturally high psionic strength indicators. Other individuals, equally intelligent, but without a natural ability in psionics, tried to achieve the same results mechanically or technologically. Technological improvements in wagons, ships, signal devices, and printing were all tried in an effort to equal the effects of psionics Since only a small portion of the population could use psionics, the efforts met with some success Within 200 years, Zhdant was undergoing an Industrial Revolution.

Eastern Dleqiats: The Industrial Revolution produced railroads which opened up eastern Dleqiats to a wave of settlement similar to that which had swept Qiknavra some 200 years before. The expansion led to vast farming and ranching concerns on the plains of Dleqiats, expanded shipping along the coasts, and mining in the mountain ranges

Through much of this expansion, the noble classes of the many small states in western Dleqiats maintained their power, claiming the new territories in their own names, and maintaining tax and legal bases of power. When those taxes became too heavy, both Qiknavra and eastern Dleqiats revolted, forming an alliance against the old countries The strife led to war after war in the period −8200 to −8000, with the resultant rapid advances in technology. Aircraft, jets, rockets, plastics, food preservation techniques, radio, submersibles; all the advances associated with warfare were made, but by −8000 the warring countries finally agreed to disagree: Eastern Dleqiats and Qiknavra were democracies (although Qiknavra included Qiknavrats in their government, while eastern Dleqiats did not), and western Dleqiats retained its nobility in a slightly weakened form.

In the period of uneasy peace that began in −8000, all three nations turned their attention to space Limited teleportation to orbit had been commonplace for nearly 100 years, but the technique could never be a practical one, and development of technological methods seemed to be the answer.

The Exploration of Viepchakl: In −7980, the first orbital flights were made by the air force of eastern Dleqiats, followed quickly by flights from Qiknavra. By −7959 the first expedition to Viepchakl was mounted by eastern Dleqiats, and a base was permanently established on the moon by −7950.

In some ways, the exploration of Viepchakl was a replay of the exploration of Qiknavra. There were Chirpers already there.

These Chirpers (called Viepchaklts—people of Viepchakl) were the remnants of the Droyne who had inhabited Viepchakl City and somehow survived in the underground tunnels. Some had been in cold sleep for thousands of years, while others simply wandered the tunnels, tending hydroponics troughs, or eating from automated food producers.

Initially, it was human astronauts from eastern Dleqiats that contacted the Viepchaklts, but within a year, Qiknavra had launched its own expedition, one which included Chirpers.

The Chirpers from each world met in the depths of the ruined Viepchakl City, and within a few days the Qiknavra Chirpers fell ill and died. Reacting quickly, the humans determined that the cause was a bacteriological weapon lying dormant since the Final War. An agent specific to Qiknavrats was carried by the Viepchaklts; and an agent specific to the Viepchaklts was carried by the Qiknavrats. When they met, the biological agents went to work. Although an immediate quarantine was ordered, samples from Viepchaklts had already been sent to Zhdant (months before) and it was only a matter of time before the plague spread to Qiknavrats Apparently, biological agents specific to each type of Droyne were drop-launched during the Final War, but each went to the wrong world; they then waited as a bacteriological time bomb waiting for the two branches of the same race to make contact.

The plague also affected humans On Viepchakl, most humans died within two weeks. Within a year, the plague's first effects were being felt on humans on Zhdant Within two years, the human population was reduced by a third. Within 10 years, population had been reduced by two-thirds The human die-back ruined many of the gains of the past centuries. Vast areas of the plains of eastern Dleqiats were abandoned, as were the Qiknavrats settlements in Qiknavra. Cities were abandoned. Attention turned to survival. By −7940, Zhdant had entered a second Dark Age.

Embracing Psionics: Through the 1000 years of the Second Dark Age, the population of Zhdant slowly recovered Strides in medicine reduced the plague (over hundreds of years) to just another serious illness. Some knowledge was lost, but enough was retained to allow advances in science once they were needed.

The lessons of history were not ignored either. The nobles of western Dleqiats instituted limited democratic principles while retaining most power for themselves. By −6800, the nobles of western Dleqiats were not only firmly in charge of their own countries, but also establishing colonies and expansion territories in eastern Dleqiats and in Qiknavra.

From its earliest time, the noble classes had held the right to raise a limited number of lower-ranked individuals to the next higher noble rank. For example, a viestlas (highborn; Social Standing 13) could elevate a pranatl (aspirant; Social Standing 11) to jdistebr (wellborn; Social Standing 12) It was also possible to raise nonnobles to noble rank. Abuses of this power had created an overabundance of nobles as well as dissention among the commoners. Several revolutions had to be put down with great force, but the basic problem remained. At the same time, psionically trained nobles had gained the upper hand over technologically oriented nobles and moved to maintain their superiority.

In −6731, the first Psionic Games were held, in Dlolprikl, at the start of Atkazdievl. The first games were poorly organized and poorly attended, but they did give participants an opportunity to win a place in the nobility. Successor games were held every three local years (2.25 standard years), and by −6650 they were an established institution.

The psionic nobles' plan resolved many problems. It defused the problem of favoritism in granting new nobilities (now Psionic Games winners entered the ranks of the nobility along with hereditary nobles, and those elevated for service) It also increased the ranks of the psionic nobles, and guaranteed that they would have the majority in any struggle against technologically oriented nobles Finally, it established an event for the public that entertained them, and defused any latent jealousy or fear; it made psionics part of public life.

At the same time, the nonpsionic nobles could not be ignored. Technology provided many of the same things that psionics could, and technology was accessible to the entire population An emphasis on technology could provide jobs, an expanding economy, and a better life for everyone; it also would help assure that the psionic nobles would stay in power. Technology marched forward hand-in-hand with psionics.

Eastern Dleqiats was again settled. A transcontinental railroad was laid, in many places on the same roadbed which had crossed the continent more than 1000 years before. Qiknavra was resettled. Expeditions were mounted to find surviving Chirpers, but they were definitely extinct.

By −6400, the Zhodani had reacquired space travel, and with suitable precautions ventured to Viepchakl, where the Chirpers were also definitely extinct. Planetary missions followed, with several colonies in the Pliebr system (the asteroid belt, a few outer planets) by −6200

The lure of the stars was as great as the lure of the planets. Between −6200 and −5415 some 50 interstellar missions were mounted, colonies were established in six star systems within four parsecs, and trade in research, information, and very valuable or novel goods was carried on. Sublight ships travelled established routes, calling at each colony and returning to Zhodane over a 50-year period. Exploratory missions went farther out, often on 20- or 30-year expeditions. In −5823, a union of all Zhodani was established as the Zhodani Consulate, formalizing a *de facto* union which had existed for some time. During all of their explorations, no intelligent races were encountered, and the universe seemed to be empty except for the Zhodani

In −5415, a breakthrough changed everything. A development company working on fusion power sources in the asteroid belt had chanced on the principles of jump drive and produced a working protoype. Within 10 years, Zhdant was operating a fleet of jump ships and exploring space within 50 parsecs.

Expansion into Space: With jump drive, the Zhodani could

A SHORT ZHODANI GLOSSARY

The following terms are in *Zhdant*

Dleqiats: Major continent on Zhodane.
Dleqiatsz: Native of Dleqiats.
Qiknavra: Minor continent on Zhodane.
Qiknavrats: Native of Qiknavra
Viepchakl: Satellite of Zhodane.
Viepchaklts: Native of Viepchaklts
Vlastebr: Superior person.
Zhdant: The language of the Zhodani.
Zhdatl: Rising person
Zhdotlas: Ruling person.

see a truer picture of the universe. Just beyond their previous limits were systems harboring intelligent life, although still at a rather low technological level. On other worlds, exotic native life provided improved drugs, flavors, and fibers. Minerals from new worlds helped shape better structures, better vehicles, and better communications

In −5120, Zhodani ships encountered the Addaxur, an intelligent race of six-legged carnivores from a high gravity world about 40 parsecs from Zhodane. The Addaxur had established their own interstellar empire of 37 systems with communications maintained by sublight ships. The Zhodani observed the fringes of the Addaxur Empire for about 10 years before making open contact Carefully planned overtures established friendly relations and reserved 10 of the Addaxur's 37 worlds for the Addaxur without restricting Zhodani expansion.

Zhodani expansion was the result of a natural curiosity and of economic forces within Zhodani society; expansion and production made for a better standard of living Worlds were explored, colonies established, industries created. Expeditions were mounted to explore the core of the galaxy, to reach other spiral arms, and even to explore the edges of the galaxy. Zhodani traders travelled the frontiers of the Consulate. They encountered Vargr in Gvurrdon sector in −2800 They traded with the Vilani in Provence and Corridor sectors in around −2000. They traded with Aslan in the Trojan Reach around −460

The Frontier Wars: The Consulate first came into solid contact with the expanding Third Imperium in the sixth century of Imperial expansion. The First Frontier War followed almost immediately (589-604 Imperial). Lasting for 15 years, the war involved all eight of the coreward subsectors of the Spinward Marches The Zhodani rallied to their side certain Vargr of the neighboring Gvurrdon Sector, forming the First Outworld Coalition. The initial attacks caught the Imperium largely unprepared, quickly expelling Imperial settlements from the Chiqrdlans Sector The continued fighting was characterized by raids against high-population worlds in the Marches by Outworld forces. A massive defeat of such an incursion at the battle of Zivije/Rhylanor crippled the Zhodani war effort, though at tremendous cost to the fleet of Grand Admiral Olav hault-Plankwell, the Imperial commander. The negotiated armistice left the Zhodani in control of the Cronor subsector of the Marches, but established extensive Imperial claims elsewhere in the sector, and was acclaimed an Imperial victory by the Imperium.

Admiral hault-Plankwell followed his victory by launching an expedition against the Imperial Core, where he assassinated the Empress Jacqueline and proclaimed himself Emperor. This ignited a series of Civil Wars within the Imperium; in the midst of this turmoil, the Zhodani formed the Second Outworld Coalition and renewed their attack in the Second Frontier War (615-620 Imperial). After a long holding action, the Imperium assembled large forces and again forced a stalemate situation The Imperial Admiral on the spot, Arbellatra Alkhalikoi, (later Empress Arbellatra, whose actions ended the Civil Wars), ceded more territory but won a shaky peace that lasted nearly 350 years

The Third Frontier War (979-986) was characterized more by commerce raiding than by great planetary sieges, and led to severe public sentiment against the high command and the Imperial government An armistice, heavily favoring the Zhodani, was agreed to; the political repercussions forced the abdication of the Emperor Styryx

One hundred years later, the Fourth Frontier War (1082-1084) broke out. Sometimes called the False War, this conflict involved a series of naval battles triggered by a border incident. An armistice was concluded before either side actually got word from the capital with instructions, plans, or reinforcements. The Imperium lost some ground, but the war was, for the most part, a stalemate

The Fifth Frontier War erupted in 1107, when Zhodani forces launched a sneak attack on Regina/Regina in the Spinward Marches. Like the previous wars, initial Outworld Coalition success faded as Imperial resistance stiffened, and, by the end of the war less than a year ago (1111), the situation bogged down into a stalemate with a negotiated settlement

The Zhodani have been at odds with the Imperium since initial contact was established, largely because of the radical dissimilarities in culture between these two branches of humanity. Zhodani morality is repelled by the deviousness of nonpsionic human minds, while Imperial distrust of the Zhodani is bound up in the general antipsionic prejudice that has long characterized the Imperium (The prejudice against psionics feeds opposition to the Zhodani, and vice-versa.) Thus, recent Zhodani history has been dominated by their enmity towards the Imperium, with personal distaste reinforced by a feeling that the Imperium seeks to hamper Zhodane's slow, conservative expansion by preempting the best planets and otherwise limiting growth.

The Core Expeditions: Most cultures around the Imperium (and including the Imperium) have had their hands full exploring and exploiting the worlds and systems in space within or near their own territories The Zhodani, however, are driven by a variety of circumstances and stimuli which have made the galactic core (and the route to the core) of extreme interest. Two basic data produce this effect: Ancient artifacts, and certain rare but recurring psionic effects

The Ancient artifacts were the initial key to curiosity about the galactic core. In the ruins of Zhdant City, explorers found a small device which could project a three-dimensional starmap, a starmap which extended along a corridor 30 parsecs in diameter and more than 8000 parsecs long aimed at the galactic core Initial investigation of the artifact's map showed it to be accurate, even to showing stellar spectra, gas giants, and worlds. The artifact also proved to be a powerful psionic focus; most psionically talented individuals found the device to produce an undefined and unexplained sense of hilarity (possibly caused by differences between human and Ancient brain thought path connections). A very few (fewer than one in 10,000) found that the device produced clear, readable images, usually of ships and star patterns somewhere along the route of the map.

For more than 200 years, the images remained unexplained. In −4074, the Zhodani Heavy Cruiser *Lienjqiets (Swift Wind)* misjumped and was presumed lost; 40 years later, it returned to Consulate space. It had spent 38 years on a tech level 3 world fabricating an important component of its jump drive. The story of its exploits were filed as routine reports and would have

been ignored but for a few interesting facts. First, someone had used the Ancient projector decades before: His vision had been recorded Second, the clear image from the projector proved to be fact during the voyage.

The Ancient device was transformed from a museum piece to a state secret overnight, to be used and examined only under very strictly controlled circumstances All of its visions or premonitions were carefully noted and recorded.

The Zhodani supreme council was faced with a dilemma. The Ancient map device clearly had the ability to foretell the future, although, apparently, only under limited circumstances. It had also been proven a reliable map of the star systems coreward (at least by expeditions which had reached the first 100 parsecs of the route) They could ignore the device, hiding it away in the archives and never investigating its potential. Or, they could analyze its map and use its potential to explore coreward

They chose to use the projector Seven major core expeditions were mounted to travel and explore the route shown in the projector, hundreds of minor expeditions checking out systems off the main route, or even beyond the map's data, were also mounted.

The Third Expedition met armed resistance: a xenophobic culture encompassing seven systems (but without jump drive) reacted violently when the Zhodani arrived. The Zhodani were prepared; the projector's images had included space battles. The xenophobes' resistance was crushed and their worlds bypassed.

The most recent major expedition was 350 years ago (in 750). The supreme council has been planning a new expedition.

ZHODANI PSYCHOLOGY

The fact that psionics makes up a major part of everyday life within the Consulate has had a profound effect upon the mental and emotional make-up of its people. Their way of looking at life is quite at variance with that found in nonpsionic human cultures. It has been said that psionics has made the Zhodani Consulate the most powerful, effective, and absolute tyranny in human history—and also the happiest and most stable. Both statements are quite true

Many motivations and circumstances affect the psychology of the Zhodani, but three are of special interest when trying to understand the Zhodani ambition, respect, and conformity

Ambition: The advanced educational tools available to the Zhodani make it possible for nearly all members of their society to discover their own potential and to see the paths they can take toward its realization. Ambition exists in varying degrees; some individuals might pursue physical conditioning, while others can form long-range plans for the advancement of their careers. The individual ambition differs for each person, but ambition is more commonly accepted as part of Zhodani society.

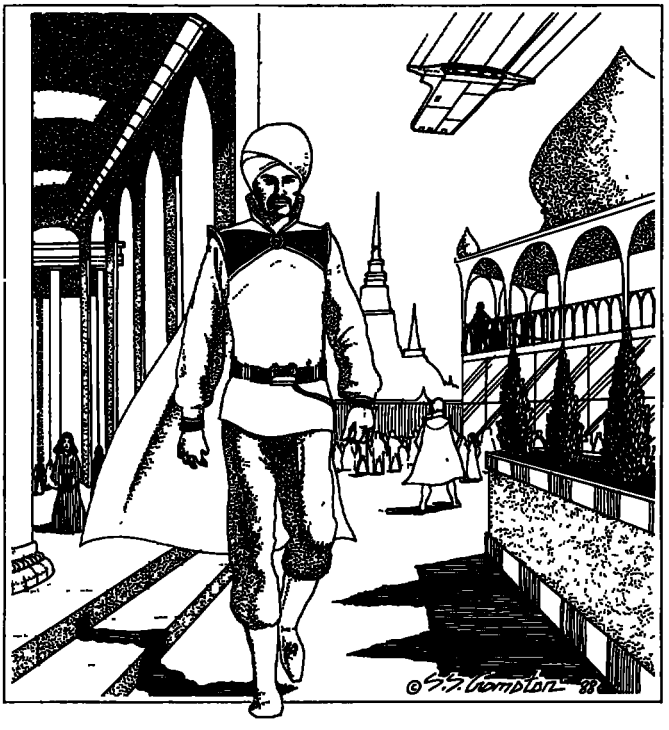
Ambition is accepted in all areas of society except one: major social advancement. Advancement in Social Standing depends on psionic strength, and without it, advancement to Intendant or Noble status is impossible Consequently, ambition for Social Standing is transferred by parents to their children Because psionic strength is not inherited (it seems to be random within the population), it is possible for two parents with low psionic strength to have a child with high psionic strength. Much of the social ambition of Proles is sublimated into ambition for their children—hopes that their children will have a high enough Psionic Strength to warrant training and elevation into the Intendant class.

Intendants' ambition centers around elevation to the Noble class, through participation in the Psionic Games (about one Intendant in seven is elevated to the Nobility through this method), or as a reward for faithful service in later life (about two Intendants in seven are elevated at the end of their careers)

Nobles are already at the high end of the social ladder, but ambition is a cultural norm and is common in the Nobility as well as in the other social classes. Some channel their ambition into seeking further increases in Social Standing; others seek positions in which they can wield their power. as consuls, government officials, or military officers. Some Nobles, however, are discouraged. Some hereditary Nobles have low psionic strengths and (even though they have psionic training) low abilities. Others see the actual workings of Zhodani government and become disillusioned with the compromises that are constantly made, or the discrepancy between theory and reality For these individuals, ambition is not enough. The weary disillusionment that pervades their outlook sabotages their effectiveness as members of the government, and they turn their attention to other areas: exploration, research, teaching, a search for purpose in life

Respect: Respect for social superiors is a natural part of Zhodani society. It is ingrained into everyone in the schools and the community. Required respect can remain for a while, but for true respect to exist, the Nobles must earn it. They earn it in a roundabout way, their Intendants make sure that they receive credit for a great many worthy activities.

The hard-working Intendant class does almost everything in the name of the Nobility. Nobles receive credit for a great many



efforts and deeds, some of which they are personally responsible for, but many more of which are handled by Intendants with little or no supervision. It is in the best interest of an Intendant to make his or her superior Noble look good, because that Noble is responsible for promotions and advancement. But the credit to the Nobility helps ensure that the Nobility is perceived as hard-working and worthy of their positions.

Conformity: Zhodani are conformists. The relatively narrow band of activities which all members of society understand and approve of is known to everyone, and everyone strives to act within that range. The range of acceptable dress (while wide) is rarely exceeded. Interests rarely involve strange or unsuitable subjects. Too much deviation from the norm is considered an aberration and subject to reeducation.

ZHODANI SOCIETY

Zhodani society instills its values in its members. One of the foremost values (the one that humans from the Imperium notice most quickly) is the basic honesty that pervades everything. Trust is an assumption. Locks are rare, and more likely to be safety devices protecting children than antitheft devices. Walls protect from the elements rather than from intruders. Laws deal more with appropriate action than with crimes.

Zhodani society also helps direct individuals to the most productive and satisfying pursuit available. Psionically based techniques help each person understand his or her needs and motivations and place that person where ability and aptitude can contribute most to personal well-being and to the community as a whole.

The Zhodani Legal System: The character of crime in the Consulate is markedly different from that of other human societies. Three broad categories of crime are recognized among the Zhodani: inadvertent, incited, and insane offenses. The concept of premeditated crime for personal gain fits under the insane heading.

Inadvertent crime is an unintentional violation or infraction of the law. It results from inattention or distraction and generally calls for a small monetary penalty. Violations of traffic or parking regulations, failure to return borrowed materials to a lender, and forgetting an appointment with a Noble are all inadvertent violations which people try to avoid, but are not very serious if they occur.

Incited crime is an infraction of a law brought about by another. When an individual is led to believe that an action is acceptable, the violation is reduced in severity in the eyes of the law. The solution is reeducational retraining of the individual to recognize potentially criminal situations and to avoid or properly handle them. Often, the incited individual is seen as weak-willed, someone who is vulnerable to being incited to crime because of a character flaw or subconscious fault. Reeducation uses psychological and psionic techniques to remedy the flaw.

Insane crime is a general heading for most major crimes against property or individuals, including theft, robbery, or murder. The general concept is that any individual who commits such a crime must be insane.

Justice: Technically, all Nobles are empowered to sit in judgment of any accused criminal. In practice, Nobles who do not know telepathy will usually refuse to judge a case, deferring judgment to a telepath.

Procedures are informal; the Noble listens to the basic case and considers the facts presented by both sides Additional facts are gathered by reading the minds of those individuals involved. A judgment is made and the decision recorded (usually being sent telepathically to a local record center)

Most sentences for insane crimes call for reeducation until the insanity has been cured. Occasionally, an execution can be ordered if the individual appears incurable. Prison sentences simply for confinement are not used. Incited crimes are dealt with by quick reeducation to avoid being incited again; inadvertent crimes are usually dealt with by fines or forfeitures.

Crimes by Nobles and Intendants are a special case, since they must be judged by a Noble higher in rank than any of the accused. Inadvertent crimes are handled with a warning or an admonition to the perpetrator; Nobles are believed under the law to be incapable of incited crimes Insane crimes reflect a breakdown in a Noble's personality (commonly portrayed to the Proles as a result of overwork and the demands of responsibility), minor violations are let off with a warning, while major crimes call for reeducation. For the good of all concerned, a convicted Noble is usually transferred to another location or world rather than returned to his or her original position after reeducation. Intendants are also reeducated, but usually lose their Intendant status and are reduced to Social Standing 6 or less.

Bargaining: At first glance, the idea of bargaining in a psionic society would appear impossible Looking deeper shows the practice is alive and well. Bargaining occurs when market pressures produce varying prices for goods, and each side in a bargaining encounter tries to obtain the most advantageous price for the transaction.

A bargainer with psionics might be able to read the mind of the other bargainer, determine the best price he will accept, and then offer that. Obviously, a psionic bargainer has a tremendous advantage. But this model is simplistic Any bargainer whose mind is read is being taken advantage of, and in the face of such mind reading, a bargainer can easily change his mind and ask for a higher price, if only as a penalty for the other's unfair advantage.

Bargaining is, in any case, not a case of two people trying to find out the real price for goods, but an adversarial situation where each side is trying to achieve the best price for himself. As a result, the use of psionics in a bargaining situation is considered unfair, much like reading a teacher's mind for answers to test questions.

The Thought Police: Perhaps the most misunderstood of Zhodani institutions is what Imperials call the infamous Zhodani Thought Police, the Tavrchedl'. The Thought Police are a branch of the government charged with maintaining right thought by the population. To non-Zhodani, they are seen as a secret police constantly spying on the population with psionics Their mission is to catch anyone who is discontented with the system, their lot in life, or their superiors, and to brainwash them into acceptance of the system.

To the Zhodani, the view is completely different The term Tavrchedl' literally means Guardians of Our Morality; the organization is seen as filling a role much closer to fireman than policeman

Zhodani society is a happy one, but even in a happy society, individual members can fall prey to depression, frustration, or disillusionment. They can still suffer from mental illness or imbalances. Individuals can find themselves losing trust or confidence in the system. And it is for these people that the Tavrchedl' exist.

Thought Police monitor all of Zhodani society, conducting periodic examinations of individuals in order to ensure that everyone's mental health is at acceptable levels. But the Thought Police also conduct random sweeps of the community, looking for signs of unacceptable behavior or deviant thought patterns. When they find such patterns, they seek them out, find their source, and remedy the situation.

Reeducation: The cure for any aberrant behavior is reeducation The Zhodani psionic society is excellent at this, psionics has facilitated extremely efficient reeducation Long ago, psionics made possible studies which confirmed what educational techniques worked, and how efficiently. They allowed academics to plan out lessons which could be learned to any degree of efficiency. Psionics also makes possible tests and examinations which can confirm that learning has actually taken place.

The result is excellent diagnosis and careful treatment in reeducation centers. When treatment is completed, the individual rejoins society without any stigma or blot on his record; the period of reeducation is much like a period of recovery from an illness.

THE ZHODANI CONSULATE

The Zhodani give the name Driantia Zhdantia to their interstellar community. The name is commonly translated in Anglic as the Zhodani Consulate. The term Driantia means government by consuls; it is sometimes translated as government by elected leaders, and even just as government.

Within the scope of Driantia Zhdantia are all worlds colonized by the Zhodani and all worlds effectively administered by the Zhodani government (even though the local population is not Zhodani). They total approximately 6500 systems spread through more than 175 subsectors. More than 70 percent of the worlds lie within 100 parsecs of Zhdant, the Zhodani homeworld.

The Zhodani Consulate is a democracy. Representatives (called consuls) are elected to ruling councils for a specific period of time, with those councils responsible for specific responsibilities within the government. Members of the councils are also given the authority to carry out their programs and orders.

Citizenship (and thus the right to vote) in Zhodani society is restricted to the Nobility. Proles and Intendants cannot vote, although they can express their opinions to the Nobility and attempt to lobby or persuade consuls to specific courses of action.

Councils are established at every level of Zhodani society, and all are linked in terms of input and authority. The lowest council is established at the community level within a municipality of 50,000 or fewer citizens; a council of 10 members is elected by the approximately 2800 Nobles who are part of the community. Consuls are each elected for a term of one olympiad.

Each of the lowest councils elects two of its members to the next highest council, usually conducting the election at the end of a term. Consuls thus elected begin a new term serving on that next highest council.

A hierarchy of councils extends all the way from the local community council to the Supreme Council responsible for ultimately shaping Consulate policy. Local community councils elect members to higher councils; depending on the population of a world, there may be one, two, five, 10, or more intermediate councils before the ultimate world council is elected. World councils each elect two consuls to a subsector council. Subsector councils each elect two consuls to a province council (sectors are not a part of the hierarchy of councils). Province councils each elect two consuls to the Supreme Council which meets on Zhdant.

Councils may elect any of their number to the next higher council. Any member who is elected to a higher council technically remains a member of the original council as well. Consequently, a council can in this manner continue to reelect the same member to the higher council for extended periods of time.

Intendants: The Intendant class is approximately three times the size of the Noble class (the actual ratio is eight Intendants to three Nobles). The distribution of Intendants, however, is not carried out in a direct ratio. Typically, each Noble has one Intendant who is specifically assigned to him, this direct relationship provides the Intendant with a mentor and advisor, and provides the Noble with a capable secretary and assistant. Such positions are avidly sought after by ambitious Intendants, since much of the fame and power of a strong Noble rubs off on his personal Intendant.

Each council, when it approves an order, implements it through its Intendant administrative staff. Intendants are frequently the source of recommendations to the council, they are equally often the individuals who see that the order is carried out.

Taking Office: At the lowest level of councils, consuls take office almost immediately after being elected. At the higher levels of councils, a problem arises by way of travel time; often a year or more may be spent just travelling to the site where the council meets. As a result, the accepted convention is that a consul serves until his or her replacement arrives

The Supreme Council: The ultimate ruling authority of the Zhodani Consulate is the Qlomdlabr, the Supreme Council. Unlike the other councils, where newly elected members replace incumbents, the Supreme Council consists of two groups: the standing council (composed of conventionally elected consuls), and senior members (composed automatically of all former members of the standing council).

Senior members of the council are an advisory body: They provide experience and advise to the standing council. Senior members are often offered specific projects to oversee to completion. They originate projects for presentation to the council; sometimes they shepherd the project to completion after approval by the council.

One reason for the existence of the senior members of the council is that wide-ranging projects, of importance to the entire Consulate, sometimes need the authority of a Noble to help ensure their completion

Aslan

The Aslan are the youngest of all the major races, having had starflight for less than 3200 standard years. Despite their youth, the drives of their males for territory and their females for markets has pushed them into space and out to the stars with alarming speed.

KUSYU—THE ASLAN HOMEWORLD

The Aslan homeworld is Kusyu/Kilrai' (I'aheako 0309 A8769H6-E) in what the Imperials call the Dark Nebula sector. Humans often spell Kusyu as Kuzu in Anglic; Kilrai' is often spelled Kilane

Stellar Data: Kusyu orbits a close binary consisting of Tyeyo and its companion Saietaie Saietaie orbits Tyeyo at 4 2 million kilometers with a period of about one eakhau.

Tyeyo is a G4 V star somewhat dimmer than, and fractionally smaller than, Sol Luminosity is 0.77. Effective temperature is 5600 degrees K Radius is 0.93 of Sol Mass is 0.96 of Sol.

Saietaie is a DA dwarf star barely visible against the face of Tyeyo, but becomes noticeable when its orbit swings it up to two stellar diameters to either side of its companion. Luminosity is 0.0003. Effective temperature is 14,000 degrees K Radius is 0 01 of Sol Mass is 0 36 of Sol.

World Orbital Data: Kusyu orbits Tyeyo at 1 au with a period of 320 standard days It rotates on its axis once every 36 standard hours (one eakhau)

World Physical Data: Kusyu is 12,980 kilometers in diameter, and has a standard atmosphere tainted with industrial pollutants Sixty percent of the world is covered with water oceans. Kusyu has two major continents, both in the same hemisphere, and both straddling the equator. Several large archipelagoes lie off the continents' shores. North and south polar icecaps, anchored by island groups, cover about 15 percent of the total world surface

Kusyu has minimal axial tilt and orbital eccentricity Average temperature for the world is about 9 degrees C.

Kusyu has two natural satellites, each about 400 kilometers in diameter, orbiting at 51,000 kilometers and 96,000 kilometers respectively. Several artificial satellites, including two LaGrange stations, are also present

World Social Data: Kusyu has a population of 4.6 billion, which includes the population of the artificial satellites and of several undersea colonies There are less than 600,000 non-Aslan on Kusyu

Humans classify the government of Kusyu as civil service bureaucracy, but Aslan classify the nature of the government as split control, similar in nature to a "balkanized" government for humans. All of the 29 Tlaukhu clans (and about 300 others) have landholds on Kusyu. Weapons restrictions are about equivalent to human law level 4 (military weapons prohibited). Technological level is E, and is about the maximum to be encountered in the Hierate.

ASLAN PHYSIOLOGY

Aslan are descended from four-limbed, carnivorous pouncers originally near the top of the food chain in the forests of Kusyu. About 1 8 million years ago, Kusyu's climate shifted, with the result that the extensive forests of Tafohti (Kusyu's largest continent) almost completely disappeared. As the forests dwindled, so did the small fauna upon which the Aslan had preyed, forcing them to venture out into the expanding grassland plains. The large grazing animals in these regions were too much for a lone Aslan to kill, and they began hunting in ahriy (prides) of several families. The strongest male became the leader, and his family received the best parts of kills, choice sleeping places, and first drink at any waterhole.

The Aslan which has evolved from those beginnings is, like humankind, an upright biped averaging two meters in height and 100 kilograms in weight. There are two sexes: male and female, of which the most notable external difference is the male's increased size and more impressive mane. Females outnumber males by a ratio of 3:1.

The Aslan hand has three fingers opposing one medially placed thumb, and all have retractable claws. In addition, Aslan have a single, highly specialized claw under each thumb; this dewclaw folds back jackknife fashion into a horny covering in the base of the thumb and palm. The presence of these claws and the general nature of their body structure make the Aslan somewhat clumsy by comparison with humans, but what they lack in dexterity they make up for in strength and endurance.

True to their pouncer ancestry, Aslan are capable of short bursts of speed somewhat greater than that manageable by humans and slightly superior hearing and night vision

ASLAN HISTORY

From their earliest days as hunters on Kusyu's grassland plains, the Aslan have had a curious dichotomy in their social organization. Females were traditionally responsible for provisions and improvement of life, while males existed largely for defense and war. The early hunts were conducted by females, and females are generally credited as the innovators in the areas of toolmaking, animal husbandry, and eventually agriculture (developed to support herds of livestock, not for direct consumption). Males adopted female innovations reluctantly, but it was the female of the species who strived always to improve the Aslan way of life.

The Aslan eventually hunted to virtual extinction most of the large carnivores which threatened them on Tafohti. At this

point, fire, metalworking, agriculture, and many other developments had brought the Aslan to the verge of civilization, and the security they now enjoy permitted development of a number of civilized communities on Tafohti.

The territorial instincts of the Aslan male made the general trend of Aslan social development a feudal one Families formed into prides, and prides formed into clans under the leadership of a dominant pride. Clans practiced a variety of semifeudal procedures of fiefdom and vassalage which led to the development of a few very powerful clans, but this was generally the limit of social organization in most Aslan civilizations Although tradition and ritual gradually evolved to curb the aggressive male character, wars were common as clans sought greater power or greater territory, and as population pressure increased on Kusyu, wars grew both more common and more intense. Kusyu barely escaped a global conflict of devastating proportions, saved by two developments which took place at about the same time. First, the Aslan instituted their Hierate, an agreement on the part of the 29 preeminent clans to meet and discuss their differences on a regular basis, replacing the previous procedures which dealt with each problem on a case-by-case emergency basis. This helped ease rivalries and pressures, although it did not eliminate them, and under the new Hierate system there grew up an increasing formality in warfare (the concept of highly limited wars with outside referees was introduced at this time).

The quasi-government was clumsy at best, and probably would not have withstood the test of time if not for the second great innovation—the invention of jump drive. About 96 Aslan (−1999 Imperial), barely a century after the Tlaukhu came into being (the exact date and circumstances of the discovery remain shrouded in mystery), the two most powerful clans (the Yerlyaruiwo and the Khaukheairl) cooperated to an unprecedented degree to produce a star drive. It opened the stars to the Aslan race.

Star travel was the ideal way to satisfy the territorial drives of the race. At first expansion was slow, limited by the gradual development of jump technology But every new planet discovered opened new territories for colonization. The era of 96 to 2100 Aslan (approximately −1999 to −242 Imperial) was an era of expansion and cultural flowering not unlike Earth's Ages of Discovery (A.D. 1450 to 1600, and A.D. 2100 to 2300).

Luckily, the Aslan had come on the scene during the Long Night (342 to 2323 Aslan, −1776 to −30 Imperial) in human space: the era between the Second and Third Imperiums in which humanity was splintered into many rival states. As a result, the Aslan never confronted any human state at a time when it was significantly stronger than an Aslan clan. This was important, for the clans of the Hierate were never (and are not now) capable of acting in concert as a human empire could; clans each conduct wars on their own, sometimes with assistance of others, sometimes without, but never with a sense of central purpose or unity Some human worlds accepted Aslan domination as a superior alternative to the chaos of the Long Night, and now remain within the Hierate with human or mixed human and Aslan population embracing Aslan culture and society Other worlds resisted, and sporadic warfare characterized the Aslan Border Wars (1100 to 2810 Aslan, −1120 to −380 Imperial) which lasted until the Third Imperium appeared on the scene The Peace of Ftahalr (2810 Aslan) established much of Aeitle Sakh (Reaver's Deep) sector as a buffer zone between Aslan and Imperial spheres of influence; the population in the buffer zone was left independent of both interstellar communities.

ASLAN PSYCHOLOGY

Aslan are shaped by their physical and social surroundings. Aslan psychology is dominated by two concerns gender and land

Gender: The sexes have very different roles in Aslan society. Males (in all but the lowest classes) are concerned mostly with military operations, acquisition of territory, and political affairs Females, on the other hand, are concerned more with industry, trade and commerce, and with the accumulation of wealth and knowledge. Females always own and control corporations

Upper-class males have little concept of money, and are literally incapable of functioning in a technological society without aid. They are seldom encountered away from the supervision of a wife, mother, or some other female relative or employer. For instance, a typical Aslan mercenary unit will be organized by a wealthy married female, who will then assign its operation, for a share of the profits, to an unmarried female relative. The battle commander and most of the troops will be unmarried males (many of them also relatives, hired with promises of land grants and the opportunity to gain honor, glory, and reputation in combat). These males are capable of operating most forms of high-tech equipment by rote as black boxes, but their expertise is limited to bravery, tactical skill, and button-pushing. Tasks which require more than this must be entrusted to males of very low social level or to females. Females of high social level fill all staff, operations, supply, and intelligence positions, and handle the administration of the unit.' This example holds true for most aspects of Aslan society.

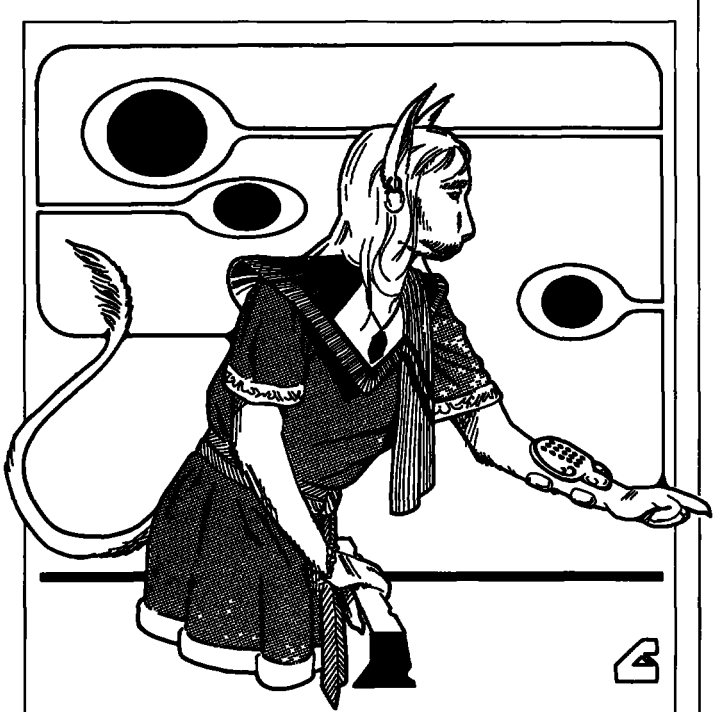
AN ASLAN TIMELINE

The following table shows several key events in the history of the Aslan

ASLAN HISTORY

Aslan	*Imperial*	*Event*
-123	-2190	First World War.
-88	-2160	Second World War (Nuclear).
-60	-2136	Aslan space travel
-22	-2102	Orbital bases.
-18	-2098	Third World War.
0	-2083	Formation of the Tlaukhu.
94	-1999	Aslan invention of jump drive
117	-1980	First contact with humans (Hisol'i).
350	-1776	The Long Night begins for humanity.
1100	-1118	Aslan Border Wars begin
1185	-1044	First crossing of Great Rift.
2810	380	Peace of Ftahalr; Border Wars end.
2902	461	First contact with Zhodani
3077	614	Yerlyaruiwo-Tralyeaeawi War.
3120	652	Hlyueawi clan joins Tlaukhu.
3167	693	Yerlyaruiwo-Tralyeaeawi War ends.
3610	1082	Fourth Frontier War begins.
3644	1111	Current date

Aslan tend to place great emphasis (generally unconsciously) on the gender of those they deal with, whether Aslan or alien. They also tend to make their evaluation of gender based on a cultural rather than a biological basis. As a result, an Aslan can see a human as having a perceived gender of male because she is a gunner, even though she is biologically female. An Aslan might also classify a human male navigator as female (because he considers navigation to be a female occupation). Such judgments have strange ramifications, because an Aslan will accept discourteous behavior from the opposite sex, while challenging to a duel a human believed to be of the same sex Aslan will also refuse to hire individuals of a gender inappropriate to the job (qualified females will not be hired as pilots; qualified males will not be hired as brokers), yet if the human's gender is not directly pointed out, an Aslan will often assume correct gender based on skill qualifications.



Because the ratio of females to males in Aslan society is roughly 3:1, Aslan society tends towards polygamy (which tendency can be traced to Aslan prehistory, when populations were small and a male stood a greater chance of survival with more hunting females in his family). However, a high proportion of females remains unmarried, preferring to devote themselves to business, science, or other matters to the exclusion of marriage. Unmarried females remain part of their father's or brother's families, and in most corporations it is the females who pledge to remain unmarried who get the top positions (since marriage would transfer the wife—and the wife's holdings—to a new family, often outside the clan, to the detriment of the clan's interest in that company).

Land: A deep-seated territorial instinct causes male Aslan to have an inordinate (from the human point of view) concern for the acquisition and control of land. The ownership of land is a major goal in the lives of most Aslan males. An Aslan's stature is determined by the amount of land she (or her husband) controls, and the amount of land controlled by his family, pride, or clan. The lowest classes in Aslan society are landless, providing the farmers, laborers, craftsmen, and workers essential to the society.

The largest landholds are in the hands of the Tlaukhu, and consist of many worlds and parts of worlds Since holding such an extensive territory is beyond the ability of one Aslan, an extensive network of vassals (usually sons, brothers, or male relatives by marriage) administer it in the clan head's name

Landholds are passed on from father to son. Originally, sons fought for the right to inherit their father's landholdings, the losers became subordinate to the winner, or left to seek new landholds for themselves. On large landholds, the losers became vassals to the winner and administered part of the landhold as their own. Primogeniture (the automatic passing of landholds to the eldest son) is a recent cultural innovation, having come into favor about 2300 to 2400 Aslan Sons who do not inherit are ihatei (literally, second sons) With the development of starflight, ihatei became the vanguard of Aslan exploration and conquest of space.

Landholds have always been difficult to come by. Early explorations on Kusyu opened up new territory and made more land available. Periodic warfare has redistributed landholds to the stronger males, and conquering clans redistributed land to particularly brave, resourceful, or deserving males With the advent of starflight, vast new territories became available.

Landholds are frequently granted as rewards for military excellence or other superlative service to the clan. An individual clan will include prides and families of all social levels, the most important of these will be of high Social Level (9+), with extensive landholds (usually all held in fief as vassals of the clan's leader); middle-class prides and families will have smaller landholds, while the lowest classes own no land at all,

but live and work on land belonging to their lords.

ASLAN SOCIETY

The Aslan have long been a warrior race, they are noble and proud, devoted to those in authority above them and responsible for those who owe fealty from below. Aslan society is based on the family and its relationships.

Family Structures: An individual Aslan is usually a member of a family (ekho) of from two to 12 persons under a patriarchal leader. This family will generally include the male family head, one or more wives, plus children and various blood relatives of the leader (unmarried brothers and sisters, aged surviving parents no longer maintaining separate families, adopted orphans of blood relatives). Several families combine into a pride (ahriy), with one family dominant. The leader of that family is also the leader of the pride Other families owe him and his family their fealty. A number of prides form a clan (huiha), with one pride dominant. Again, prides in the clan owe fealty to the clan's leader. The clan's leader is expected, in turn, to protect and provide for members of the clan, and administer his holdings wisely and well

Clans may, in turn, owe fealty to more powerful clans, particularly where blood relationships exist The Tlaukhu consists of the 29 preeminent Aslan clans, the strongest within the Hierate; many other clans owe them fealty, either directly or through a chain of other clans Overall, however, clans owing fealty to one of the Tlaukhu are in the minority, most clans are independent and function accordingly

Dueling: Aslan pride makes them a touchy race, and it is quite easy for Aslan to give or take offense (this behavior originated in the past struggles for dominance within families and prides, and remains a basic part of the Aslan personality). Over the centuries, Aslan touchiness has grown formal and extremely ritualized, this rigid pattern of behavior has been necessary to reduce conflict and injury in the settlement of personal disputes Non-Aslan who do not understand these ritual forms of conduct often find it difficult to get along with individual Aslan.

AN ASLAN GLOSSARY

The following terms are in *Trokh*.

ahryi: pride; several families

aisai: dewclaw.

Akhailrau: Clan ranked number 340

Akhuaeuhrekhyeh· rite of passage.

alr: one.

aokhaor: honor.

areiaao: sprint; Aslan period of time between the uealaao and the khtauaao; approximately 15 9 standard seconds.

Arlaeaha: Vargr.

Aroaye'i: Clan ranked number 397.

ayloi. artificial dewclaw used by humans and other intelligent races which participate in Aslan culture

eakh: suffix for world. Hlyueawikoeakh means Hlyueawiko's World

eakhau: Aslan day of 16 tekhaao; 36 standard hours.

eal: gun.

earleatrais: referee; judge.

eikhoi: dusk.

ekho: family.

fiy: vassal of.

Fiyfiyalr: the Imperium.

fiyrukhte: insults and provocation intended to demean another party. Similar to the human game of "Chicken."

ftahea: Aslan year of 212 2 eakhau, 320 standard days.

Fteirle: Aslan, people.

Hisol'i: Solomani.

hlai: two.

Hlyueawi: Clan ranked number six.

Hrirohrytukhyelreah: the Ancients.

hryeh: four.

hryo: six

htatei: first son

htoi: green.

ihatei: second son.

Istoiuaei: Zhodani

iyrl: twenty (base 8); equals 16 in base 10

Kaukheairl: Clan ranked number two, one of the 29.

khaulear: one hundred (base 8), equals 64 in base 10.

kheh: three

khoiaya: armor

khtauaao: Aslan time period of eight areiaao; 17.96 standard minutes.

khte: zero.

khtyei: holding; landhold

khu: five

ko himself.

koih: seven.

Kusyu: Aslan homeworld; usually spelled Kuzu in anglic

layeau: valley

Loakhtarl: Clan ranked number 730.

Raohkeil: Clan ranked number 450

siya: unmarried

Siyreakhaotoior· Classic Aslan literature; myths and legends of old.

soistsea: unknown lands.

starl: forty (base 8), equals 32 in base 10

Syoisuis: Clan ranked number three, one of the 29.

tahiwihteakhtau: barbarians.

tea: ten (base 8), equals eight in base 10

tekhaao: Aslan hour of eight khtauaao, 135.7 standard minutes

Tlasayerlahel: large Aslan trading corporation.

tlau: thirty (base 8); equals 24 in base 10.

Tlaukhu: the 29.

Tralyeaeawi: Clan ranked number four.

Tyeyo· Kusyu's star, the Aslan sun

uealaao: One Aslan second; smallest commonly used unit of time; approximately 1.988 standard seconds

ukhtai: hero.

ya'uiya: dishonor

Yerlyaruiwo: Clan ranked number one, one of the 29.

Aslan society generally categorizes abrasive, uncultured, or offensive behavior into three classes: familiarity, impoliteness, and discourtesy Familiarity is the treatment of social superiors as equals; it involves social interaction, extreme friendliness, or condescending treatment by a lower-class Aslan toward an upper-class Aslan. Impoliteness stems from a lack of proper education or upbringing; it might include failure to address a social superior by the correct honorifics, failure to respond promptly when one is addressed, or losing one's temper in public. Discourtesy is a deliberate insult, and springs from contempt, a lack of respect, or malice; outward actions may often be perceived by Aslan as discourtesy although they are not meant to be so by someone alien to Aslan culture. Any of these three behaviors can give offense, and an offended Aslan becomes an enemy. Discourtesy, however, is also grounds for dueling.

Dueling is a common way by which insults and slights are resolved, especially if rituals and other tension-relieving forms fail to defuse the problem. Duels follow well-established rituals and are fought to the death only rarely. The rules of conduct and protocols which govern them clearly state what is allowed and not allowed.

A challenge to duel is never made lightly. At the same time, reluctance to challenge is seen in Aslan culture as weakness, a trait few Aslan wish to exhibit. Properly, anyone may challenge at any time. Most challenges are issued in response to discourtesy; elaborate but informal rituals have evolved wherein one party is discourteous and actually gains stature if the other does not reply with a challenge. Much of this behavior seems incomprehensible to individuals not steeped in Aslan culture.

The rituals for dueling, however, are strictly segregated by gender Males and females never duel; insults and slights by the opposite sex are dismissed with the excuse that males (or females) don't understand female (or male) honor. When a transgression becomes too blatant, too extreme, or too unacceptable, then a member of the insulted Aslan's immediate family (and of the correct sex) will respond to the discourtesy with a challenge.

The barriers against certain duels within a family are almost as strong as those for cross-gender dueling. Children never duel with their parents (which socially includes any adults in their family of the previous generation, not just their biological parents)

Duels between Aslan take place as personal combat. Combatants use only their hands (and dewclaws), combat continues until one side receives a wound. In the case of grave insult, the fight may continue to unconsciousness for one participant. The winner has his or her honor satisfied; the loser is required by social and ritual standards to apologize (even if he or she was the one originally insulted).

For non-Aslan, one way to gain an Aslan's respect is to be willing to challenge to duel when required, and to duel if challenged. Aslan consider those who do not embrace their culture to be tahiwihteakhtau (barbarians). Willingness to behave in the honorable fashion is one indication that one is not a completely ignorant barbarian. Since Aslan especially respect prowess in battle, upholding one's honor in a duel is especially respected.

Feuds: Disputes between families, or between prides, usually take place because of slights, insults, mistreatments, or problems which have not been resolved to both parties' satisfaction The families may back different scientific theories; one family member may have won a competition which the other family had traditionally won; a family may have rejected a proposed marriage between it and the other family.

Feuds are an intermediate step between duels and wars. Strangely for Aslan society, they are unstructured and lack rituals to control them. If kept at a low level, a feud is a pretext for discourteous behavior and sparks many duels. If allowed to get out of hand, it involves the vassal prides and families of each side and can erupt into war.

Wars: Disputes between clans (usually over ownership, control, or access to land) are, like duels, also highly ritualized. They are resolved through formal clan wars. Like duels, such wars are given highly specific rules (agreed upon by all parties in advance). There are many modes, from ordinary military conflicts to wars of assassins to capture-the-flag games in which some token must be removed from an enemy stronghold in order for victory to be won. Unlike duels, most (but not all) clan wars do involve the death of enemy personnel. In some cases (particularly wars of assassins), the war may be bloodless, akin to the counting coup practices of certain Indian tribes from early Earth history.

Aslan Governments: Government in the human sense does not exist in Aslan space. There is no central authority for the Aslan as a race, and Aslan have little concept of racial unity, purpose, or pride They do have a fierce pride in their culture; a human who adheres to the culture and traditions which Aslan consider proper is considered closer in spirit than an Aslan who has, for some reason, abandoned those traditions and that culture. Aslan have no racial prejudice, but do have cultural prejudice, with non-Aslan looked upon as tahiwihteakhtau (barbarians) unless they embrace Aslan culture and behave as the Aslan do.

The Aslan equivalent of government is best equated with social structure. The head of the family settles disputes between family members. The head of the pride or a delegated male member of his clan or a delegated vassal settles disputes between prides.

Disputes between clans are settled by clan wars, highly ritualized affairs which will function using specific rules, restrictions in locale, tech level of equipment, combatants, and many other aspects of the conflict. Such disputes are overseen by an earleatrais (referee) from a neutral clan. Such an appointment is an enormous honor for the clan receiving it, and the referee acts with scrupulous objectivity; moreover, especially good referees will be able to produce not only fair decisions, but ones which will salvage honor and pride for both sides of the conflict.

At the top of the chain of family, pride, and clan heads stands the Tlaukhu. The term is used synonymously for the 29 clan heads who meet on Kusyu, and for the 29 clans which are the most powerful in the Hierate. When the Tlaukhu was originally established on Kusyu, it was an alliance of the largest and strongest of the Aslan clans. Since then, the criteria for the composition of the 29 have been strength and land; population, military strength, industrial power, and landholdings are

together considered when evaluating relative rankings of clans. Of the original 29, 19 of the original clans remain in it today; the remaining 10 positions have been occupied (some by a succession of clans) by new clans which have risen in strength, power and population to replace the others. Replacement of clans on the Tlaukhu occurs as the result of clan war, or when a clan falls in power and prestige to the point that it must become vassal to another clan

Representatives of the Tlaukhu meet continuously on Kusyu to arbitrate disputes, settle matters of common interest, and otherwise interact with one another in the interests of their individual clans. It naturally follows that their decisions affect the other clans of the Hierate as well. A decision to cooperate in the development of a new technology affects other clans when the technology becomes available; a decision to settle a clan war affects other clans by creating or removing trade barriers. Regardless of the effects of the decisions of the Tlaukhu, it is in no way to be considered a ruling council. The Tlaukhu makes no laws, decides no issues affecting the Hierate as a whole, owns no collective bases, military forces, or other centralized institutions, and has no power over any clan (except for the power each individual clan in the 29 has over vassal clans). The closest analogy that might be found in human history is the League of Nations, a body with no real authority in which important issues and disputes can be debated, but not necessarily resolved, save by the agreement of all concerned

Each clan is an independent entity (but may also be vassal to another clan). It controls space within each system in which a world is owned; when control of a world is split among several clans, there is a balance of power in the system as well. Each clan in such a case might maintain its own base, its own colonies, its own space station, its own outposts. Each would enforce such regulations regarding interplanetary flight as it saw fit, with local law level serving as a good guide to its stringency of enforcement.

Representatives of other clans (powerful allies, vassals, or overlords) exert some influence on any given world, as do large corporations. These agents or envoys are most often found at the local starport, watching out for the interests of their clan or corporation.

Starports are for the most part extraterritorial enclaves which are not owned by any clan. The facilities are built, operated, and maintained by corporations which lease the land from a local clan. If a clan base is present, this will be located at the starport, but is under the control of the owning clan. Representatives of clans and companies can be found at the starport and other major transport and trade terminals, from whom such permission must be sought.

Justice: Criminal acts are rare, but not completely unheard of in Aslan society. Crimes are different from the insults or slurs that provoke duels, and are classified into three categories: crimes of passion, crimes with victims, and crimes of honor. Crimes of passion involve misbehavior prompted by temper, anger, or provocation (assault other than dueling, intoxication, or rioting). Crimes with victims involve taking of money or items of value (theft, stealing, burglary, fraud, forgery, extortion), violating the person of another for profit (kidnapping, terrorism, piracy). Crimes of honor involve failure to observe rituals established for behavior (ambush, failure to obey the earleatrais in a duel, abandoning responsibilities, lying in a clan council, perfidy).

Originally, all accusations of crime were judged by the head of the family, pride, or clan involved. Through time, other methods have evolved.

For crimes of passion, the accused is judged by the head of the family, pride, or clan involved. Who judges the accused is determined by elaborate protocols which consider the ramifications of the crime and the notoriety which it has received. Appeals may be made to the next higher head. Punishments are minimal for first offenses, with escalating penalties for continued violations. Generally, a contrite apology is sufficient atonement for a first offense. A fine, or perhaps donated labor for the family involved, is called for in later offenses

For crimes with victims, current practice is to find an impartial earleatrais to consider the case and present findings; appeals can be made to a panel composed of the heads of the families of the accused, the victim, and the earleatrais. Penalties call for restitution at the very least, and often doubled or tripled penalties as punishments. Clans vary in their treatment of cases where the victim is physically injured or killed, some inflict a similar fate on the guilty party, while others require restitution and punitive damages, or terms of forced labor. Judgments in cases involving money and males are often very lenient, taking into account the lack of understanding most males have of money.

For crimes of honor, judgment is made by the pride or clan head, depending on the severity of the crime. Crimes of honor are the most serious of crimes in Aslan society, and penalties range from banishment (at a minimum) through mutilation or branding to forfeiture of all property and death. In practice, most crimes of honor are never tried: A duel to the death disposes of the accused before a trial can take place.

Vargr

The Vargr Extents are the coreward regions of space settled by and under the control of various Vargr governments and factions. As a rule, Vargr governments fragment rapidly, and nothing like a unified government has ever been established over the Extents. Many Vargr worlds are still highly balkanized as a result.

For many years the Vargr were a puzzle to Imperial xenologists. Their biochemistry and genetic make-up is almost identical with a number of terrestrial animals, but differs radically from most flora and fauna indigenous to Lair, the purported Vargr homeworld Researchers during the early years of the Third Imperium concluded them to be the result of genetic manipulation of a transplanted species, undoubtedly of Terran origin, and most closely related to Terran canines. A tremendous body of data indicates that the race known as the Ancients were probably responsible This background makes the Vargr unique among the Major Races, and indeed among the majority of sophont races of all kinds, in that they are not the product of natural selection, but rather represent, seemingly, an "experiment" in artificial evolution for purposes unknown to contemporary science.

LAIR—THE VARGR HOMEWORLD

The Vargr "homeworld" and "capital" is a planet called Lair (Provence 0802 A8859B9-F). The world has never been accorded any particular status in the hearts and minds of the Vargr race, unlike such worlds as Terra, Vland, Zhodani, and Kusyu. Of 12 empires which have included Lair (or parts thereof) over the last 800 years, seven of them have been ruled from a different world entirely, and Lair was given no special privileges because of its place in the history of the race. Indeed, Lair was only recently united; several sections of the planet still boasted independence until only a few years ago (this is another unique and noteworthy distinction, for most worlds are united long before their citizens spread out to the stars).

The name Lair is a human one, applied in the absence of any single recognized Vargr name for the world. Use of the name, or any other word indicative of the relationship of the Vargr to nonsentient terrestrial carnivores, is an insult which frequently provokes Vargr to violence. (A human who wishes to avoid an incident is wise to learn proper terminology in the language or dialect of whatever Vargr he happens to be speaking to, and use such terms in preference to the often sarcastic human labels most frequently applied.)

Occasionally, someone forgets that the true homeworld of the Vargr is Terra. Attention instead focuses on Lair, the world where the Ancients deposited their genetically altered experiments about 300,000 years ago.

Stellar Data: Lair orbits Kneng, a solitary star.

Kneng is a G5 V star, dimmer and smaller than Sol. Luminosity is 0.67. Effective temperature is 5500 K. Radius is 0.91 of Sol. Mass is 0.94 of Sol.

World Orbital Data: Lair orbits Kneng at 1 au with a period of 376.72 days. It rotates on its axis once every 26 hours.

World Physical Data: Lair is 12,740 kilometers in diameter and has a dense atmosphere. Half of the world's surface is ocean, dividing the land into five major continents. Approximately five percent of the world surface is icecap.

Lair has no orbital eccentricity, but its axial tilt equals that of Terra: 23.5 degrees (there is some evidence that this tilt was induced approximately 300,000 years ago). Average temperature for the world is 16 degrees C.

Lair has three natural satellites. The largest, orbiting at 150,000 kilometers, is tidally locked to Lair; the others orbit at 2000 kilometers and 9000 kilometers respectively. All have been used for space stations and stepping-off points in space exploration.

World Social Data: Lair has a population of 2.3 billion. Humans classify the local government as a noncharismatic leadership (a term at which the current leader would take offense). Law level is relatively high and reflects the relative instability of the current government. Local technology is equivalent to that of the Imperium.

VARGR PHYSIOLOGY

The Vargr are descended from Terran carnivore/chasers transplanted to Lair by the Ancients, approximately 300,000 years ago. These transplanted carnivores were of the family *Canidae*, and almost certainly of the genus *Canis*. The development of intelligence and of manipulation was thus artificially introduced, and not the result of natural mutations or other environmental factors. Considerable adaptation took place (although exact knowledge of the nature of this manipulation is scant, and thus the evidence for this information is somewhat unreliable). Certainly the Vargr were never fully fitted for the environment of Lair. This has produced rigorous conditions which have made the natural selection and adaptation essential to the survival of the race, and may have resulted in developments not introduced by the Ancients in their original genetic experimentation on Vargr ancestral stock.

Physically, contemporary Vargr are not very impressive. The typical Vargr is about 1.6 meters in height and weighs approximately 60 kilograms. They are upright, bipedal carnivores, rear limbs digitigrade, and still bear a considerable resemblance to their ancestral canine stock externally, though internally there are many important differences.

Vargr hands are very similar in size and appearance to human hands, though with significant internal dissimilarities.

They have approximately the same physical parameters as humans', and are able to use the same equipment without modification or additional instruction. The hands tend to be somewhat more slender and dexterous than human hands (on the average; there is still considerable variation among individual Vargr). Their fingers retain sharp, pointed, nonretractable nails which can function as claws in some close-combat situations.

The Vargr retain many of the characteristics of their canine ancestors, far more so than humans do their primate forefathers. They are covered with a short fur, generally brown, black, or rust colored, though frequently combining shadings of these and other colors. Their tails are fairly long and generally end in a flaring brush. The muzzle is much shorter and less pronounced than in Terran canines, but still is quite evident.

On the average, Vargr reactions are somewhat faster than those of the typical human, but there are still wide variations between individuals. Vargr eyesight is much sharper than human sight, but responds somewhat differently to colors; by human standards, Vargr color patterns frequently seem extremely unusual, sometimes rather muddy, at other times garish and clashing. Their hearing is excellent, but again slightly out of phase with human standards. Sounds which are generally too high-pitched for human ears can be detected, but the lower ranges are often inaudible or only vaguely sensed, rather than heard. The Vargr also possess keen noses, as befits their ancestry, but their sense of smell cannot in any respect be considered the equal of the K'kree, the acknowledged masters of olfactory stimuli.

VARGR HISTORY

There is little in the way of accurately established history known on the development of the Vargr from the time of their original transplantation to the point when they first began to make their presence known to other spacefaring cultures. As with so many elements of Vargr society and background, the truth is frequently obscured in a welter of contradictory claims and historical interpretations among Vargr writers; few human scholars have ever been able to sift through the contradictory material of rival Vargr historians to arrive at any concrete determination of what actually happened. Nor have the Vargr been particularly cooperative in permitting first-hand research by non-Vargr groups. Their normally touchy racial pride has been compounded by a vested interest in keeping information obscure, for many Vargr governments and organizations have founded major portions of their ideology or philosophy on various "accepted" interpretations of history and archaeology which they are reluctant to have examined by outsiders.

It is known that the development of civilization among the Vargr was turbulent and chaotic Their foster homeworld (generally called Lair by Imperials, in preference to any of the four most widely accepted names used by the Vargr for the planet, all of which, according to one humorist, can only be pronounced "by an asthmatic dog with severe bronchitis"), the third planet of a G5 star in the Provence sector, was and is a cool world with broad, shallow seas and a number of small continents. No one is sure which continent marked the original home of the first Vargr transplantees (evidence has been advanced for all of them, and some theories have even held that settlements were made on more than one)

It is certain that the first Vargr bore only distant resemblance to the contemporary Vargr—possibly even less so than the ancestral human stock of the same era (300,000 years ago) does to any of the modern branches of humaniti The manipulation performed by the Ancients would appear to have been directed at developing the potential of the race, as opposed to directly producing a desired result This has convinced several scholars who specialize in Ancients' studies to speculate that the enigmatic race took an incredibly long view of things. They could actually contemplate watching the evolution of a species like the Vargr over countless millennia, as early Terran geneticists could experiment with generations of fruit-flies. It is not known with any degree of certainty whether the Ancients meddled only once with the proto-Vargr stock, or made return visits to guide the continuing evolution of the developing race in the direction they most desired to see taken. Most evidence suggests that only a single intervention was made, though the Church of the Chosen Ones (a rather influential Vargr movement of two centuries ago) postulated—and proceeded to prove, albeit not very convincingly—that the Vargr were carefully brought along a particular course, as they were "intended" to take their place as the leaders of all sophont societies in the Ancients' sphere of influence. The Church of the Chosen Ones has enjoyed periodic revivals and declines, but is currently not a particularly viable movement, and its findings are now usually discredited.

Vargr society seems to have evolved fairly readily from the social groupings of the precivilized Vargr hunting packs. The pack or group seems always to have remained the central focus of Vargr society; the Vargr as a rule seem incapable of accepting authority more remote than the number of people a single charismatic individual can personally sway and command. As the Vargr came to dominate Lair, governments rose and fell, but on the whole, Vargr governments were smaller in scope

than even the most divisive periods of Terran history could give rise to Much of early Vargr history has been likened to the Classical Greek period on Earth—numerous small enclaves, each fiercely independent, rarely unified for more than the most urgent of common causes, were the rule rather than the exception Periodically a charismatic and talented leader would unite a number of these mutually hostile groups by persuasiveness or by force, but such a union would last no longer than the individual's own lifetime (and usually not that long) before disintegrating again

As technology and civilization advanced, the number of individuals who could be directly exposed to a leader's dominion increased, and thus larger states could form. Even these states, however, were far from the human concept of a "nation," for groups supposedly within the sphere of that "nation's" territory could and did act completely without the sanction of the "established government " To a human, most of Vargr history tends to look like uninterrupted anarchy, though of course to the Vargr these problems were accepted as perfectly normal and reasonable.

The period following the discovery of the jump drive in −3810 has also been likened by human historians to certain events in terrestrial history—specifically, to the barbarian migrations which destroyed the Roman Empire and to the heyday of the viking raiders These similarities are apt. Jump drive was first discovered by Vargr researchers looking for a method of winning an edge in the Colonial Rebellion of −3815 to −3790. The colonies set up on two of Lair's sister worlds declared independence from the nation which had originally established them, leading to a three-way struggle (as other nations stepped in) for dominance in the system Jump drive was quickly acquired by every major government on the planet, and Vargr began spreading to the stars.

The Diaspora of the Vargr race was incredibly swift; the natural Vargr tendency to move on when things weren't to their liking (if a fight were impractical, that is) led them to spread quickly, though in the early days colonies were small and spread thin On most colony worlds, the history of Lair tended to replay itself time after time In all their time in space, the Vargr never have (and perhaps never will) come to terms with the concept of a true interstellar state. Time and distance reinforce the basic lack of acceptance accorded to remote authority. Interstellar states have been established, some of them quite large, but the degree of control exercised by the central government is far more tenuous even than that of the Imperium (which exercises minimal control in local affairs, anyway) Then, too, half or more of the worlds which may be within the "boundaries" of a given interstellar state may in fact be not only independent, but actively hostile to that state, while, as always, bands functioning quite independently of any government operate in complete autonomy, even on planets nominally answerable to that government. It has always been a confusing state of affairs, to say the least

Vargr expansion was stopped in the trailing direction by the Windhorn Rift, a region where stellar density is insufficient to permit easy travel. This was probably a lucky thing for the Vargr, for, beyond the Windhorn, the Vilani Imperium held sway at this time Dedicated to maintaining the status quo of the Pax Vilanica, the Vilani emperors would most likely have attempted to subdue the Vargr had they been aware of their existence, for it was accepted Imperial policy at that time that no race possessing the secret of the jump drive should be allowed to exist independently.

As the First Imperium declined, various provincial governors with ambitions of personal advancement took to arming and outfitting "barbarian" mercenaries from beyond the boundaries. One such governor, who controlled the area now comprising portions of Deneb, Corridor, and Provence sectors, is believed to have been the first human to have had dealings with the Vargr, probably after Vargr corsairs raided a world at the edge of his province. This governor supplied arms and equipment to a large corsair group who were employed in his bid for power. Though he was defeated, he had set a precedent; the Vargr knew about the First Imperium and were interested in the wealth of that decadent civilization; by this point in time, Vilani troubles were such that there was no question of imposing the Pax Vilanica over these "barbarians" from beyond the Windhorn.

It will never be known just how much impact the Vargr had on the decline and fall of the First Imperium; the more obvious military victories of the Terran Confederation are generally considered to be the main force in bringing down the Vilani Empire, but inroads by the Vargr surely accounted for much of the collapse It was during this period, in the era of −2400 through −1700, when Vargr migrations around either end of the Windhorn became common. Bands following some charismatic leader would set off to raid and plunder, settle on some inviting world, and found a new colony. Dissidents would inevitably spin off new groups and travel onward. When the Second Imperium, that outgrowth of the victorious Terran Confederation which filled the vacuum left by the Vilani collapse, tottered to its own end with the fall of the Long Night (−1776), much of human space was no better organized than the Vargr had ever been, and Vargr raids and colonization around the Windhorn became even more common.

It was at this time that Vargr corsairs became a byword for pillage and violence, as the Sack of Gashikan (−1658) demonstrated Those Vargr who reached into the human-dominated reaches of Gashikan and Mendan moved onward, and ultimately settled in areas trailing out these human worlds—in the Vargr Enclaves near K'kree space. These enclaves have continued to exist in isolation to this day, though few Vargr are left in the Second Empire of Gashikan, after the fierce wars which accompanied the unification of the region several hundred years ago.

Unfortunately, few specifics can be given on Vargr history, even comparatively recent history, since in fact, it is impossible to talk of "Vargr" history and speak of any single group or body. For instance, Imperials often speak of the Vargr who joined in the Outworld Coalitions against the Imperium, and think of "the Vargr" as Zhodani allies or clients. In actual fact, of course, some Vargr have done just that. Other Vargr states and groups have worked with the Imperium...and still others are completely neutral, or opposed to both states, or hostile to one without necessarily feeling any friendship for the other. In discussing Vargr history, it is evident that no generalizations can be characterized as true. .a statement which, in fact, sums up the Vargr as a race rather well.

VARGR PSYCHOLOGY

Just as they physically continue to exhibit many of the features which are derived from their ancestral stock, so, too, do Vargr show a number of mental and behavioral traits which bear a fairly obvious relationship to the instinctive behavior of the social carnivores of Earth. Although sentient, the Vargr are still very much like the pack-oriented canines who are their Terrestrial cousins.

Vargr are frequently characterized as "inconsistent" by outsiders, who see many of their behavior patterns as contradictory and strange. In actual fact, this seeming inconsistency is no more pervasive than in human cultures, but because these "contradictory" actions and ways of thought crop up in areas where humans are accustomed to a greater degree of uniformity of thought and behavior, the label has stuck. In many parts of the Imperium, humor based on the perceived Vargr traits of inconsistency, confusion, mercurial temperament, and disloyalty is common, and has often led to bad feelings on both sides when this humor becomes a symptom of prejudice (as is all too often the case).

These contradictions are, in fact, based upon the most basic instincts of the Vargr race. For example, the Vargr are a gregarious people, taking joy in the company of one another and seeking the security and comfort of fellowship with others of their own kind This is a natural offshoot of the instincts which kept the hunting packs of presentient Vargr canines together. Yet at the same time Vargr within a group are engaged in nearly constant struggles to achieve prestige and dominance, which frequently gives the appearance of a quarrelsome, sometimes even treacherous nature. Indeed, Vargr move from one group or association to another with great regularity, and seemingly have no loyalty to any specific institution or purpose.

This, too, is a function of the pack mentality. Dominance and prestige play important parts in Vargr society, and a Vargr is rarely content with the status quo for long His chief driving motivation is generally to achieve a higher place in the structure of the social group, or to find a group in which such a higher position can be achieved. Much of this is tied in with the concept of charisma, a general, human-applied term often used to characterize the individual Vargr's ability to dominate others of his kind. The social group is generally united in respect for a single individual whose charisma is higher than theirs. Such an individual means much, much more to Vargr than does a distant, impersonal government or similar institution. Thus, though gregarious, Vargr tend to be united on a low level, in bands or small groups (the equivalent of packs in the society of sentient Vargr).

For the same reasons, these groups tend to be unstable. Though a Vargr may give his loyalty to a charismatic leader, and be willing to follow that leader over the dictates of higher authority if necessary, each Vargr in the group will seek to improve his own position within the group, or will be susceptible to the attractions of some other group where advancement looks faster or the charisma of the leader is superior. It is this aspect of Vargr psychology which has given rise to the notion of disloyalty and indecision as characteristics of the race. To a Vargr, loyalties are temporary, but no less strong for all of that. A Vargr will do his best for the group for as long as he remains with that group, but does not expect to remain in that group forever—nor do others expect him to do so. In time, that Vargr may move on to join another group, possibly with diametrically opposed objectives and ideals; or the Vargr might become a loner for a time. Always, however, he is seeking to improve his own lot by moving on to a position which enhances his own charisma and dominance.

VARGR SOCIETY

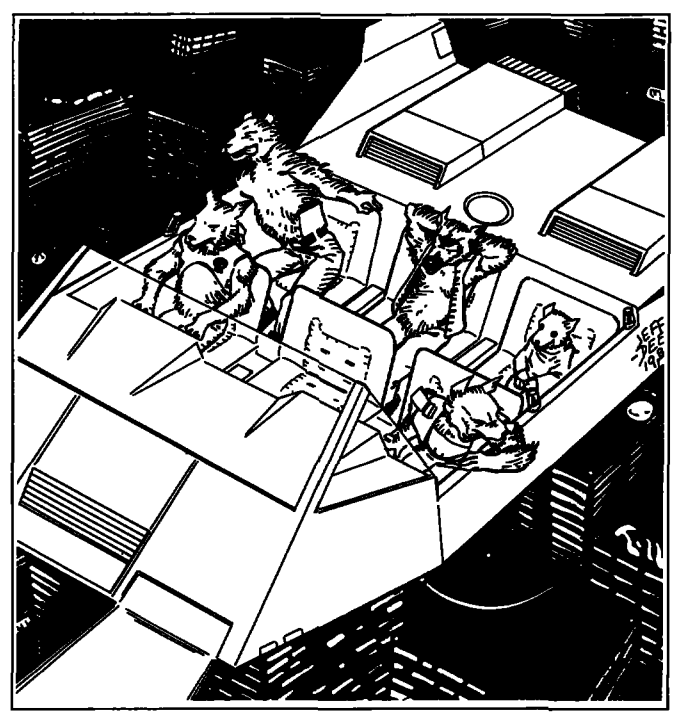
As with other facets of the Vargr, it is very difficult to characterize any one social order as "typical." Knowledge of Vargr social institutions is limited, based solely on intercourse with the Vargr states and groups found along the Imperial frontiers, but it can generally be said that the Vargr have a society, or more properly a group of societies, characterized by endemic and rapid social change.

The key elements in shaping Vargr societies are very strong centrifugal forces resulting from an emphasis on consensus and informal lines of authority, and an equally strong centripetal force resulting from ingrained family-clan-tribe-nation loyalty.

Centralized authority is extremely limited at the upper levels of Vargr society, and actions are based on broad coalitional concerns, with a constant splitting and rejoining of dissident factions. Traditionally, this has made it very difficult for more centralized and organized societies (such as the Imperium) to deal on a meaningful basis with what passes for Vargr states.

The Vargr have little respect for formal authority; what respect they do have decreases as that authority becomes more remote Vargr generally have greater respect for more informal authority figures, and are more likely to obey superiors who are better known to them.

Although they are gregarious, the group behavior of Vargr is characterized by a constant struggle for dominance within the group. The ability to exert personal authority over others derives from an individual's prestige and force of personality.



The Vargr have various words to describe this important personal characteristic, but humans call it charisma. Individuals with high charisma are likely to become leaders in groups, even if they do not have the talent or skill to lead properly. The result is often a charismatic leader who is not truly suited to lead, and a constant splintering of groups as rivals exert their influence over parts of the group and draw them away from the larger whole

Charisma and the struggle for dominance play an important, indeed a crucial, role in Vargr society. Although charisma is in part an integral characteristic of individual Vargr—some have it, some don't—this native talent for exerting dominance over others does fluctuate. Success and failure in various endeavors will add to or subtract from an individual's charisma, not only as a leader's reputation waxes or wanes, but also in that leader's whole bearing. A successful Vargr radiates confidence and ability, and naturally attracts others. Failure has a profound negative impact on the individual's bearing and conduct, and so tells others that he has failed.

Because of this, Vargr are never content to rest upon their laurels. Much of Vargr behavior is based upon a need continually to reaffirm one's abilities, to win the approval and support of others, to prove, over and over, that one is indeed the dominant member of the group. Those with lower abilities, aware of their own lack of the qualities they see in charismatic leaders, attach themselves to such a leader in the hopes that a little bit of his or her reflected glory will help them. By extension from the basic struggle to prove that he is better than everyone around him, the Vargr follower tends to transfer his attention to proving that his group is better than other groups. This is one of the strongest forces in Vargr society; it has allowed what little social cooperation exists among Vargr.

But the transference of individual- to group-dominance is inherently unstable, of course. Individuals within the group are each seeking their own niche, and will always be striving to achieve more and better things to improve their own charisma. As leaders make mistakes or go off in a direction others disagree with, factions emerge and cause considerable upheaval as members of the original group are drawn in different directions. Often factions are just individuals who want to go a different way; without enough charisma to sway others in the group, they end up on their own, either by deserting their erstwhile comrades, or by being driven out for refusing to recognize the authority of the group's accepted leader.

Social interactions are understandably complex as a result of these many factors. In fact, the problems of obtaining a consensus of opinion between disparate groups has given rise to a vast body of Vargr—known as Emissaries—whose whole function is to mediate between various parties and help groups come to terms enough to permit mutual action for mutual benefit. Emissaries bear a resemblance not only to the diplomatic services of other races, but also, most vividly, to the Heralds of medieval Earth; they are go-betweens who arrange all manner of agreements, in politics, business, and other areas of life, thus enabling the society to function despite the inherent instability of the system.

Another important characteristic which binds the Vargr together is a fierce racial pride. Vargr are easily insulted, and are prone to enter into fights without regard for possible consequences This strong feeling of pride finds many outlets; for many Vargr, there is an outspoken attitude that they alone, of the sophont races in known space, have been chosen for a special place in the scheme of things. They see the genetic manipulation of the Ancients as being an essentially selective attempt to develop a special, superior breed—the Vargr.

Some xenologists, however, tend to discount this feeling as stemming from a massive racial inferiority complex—an apologia aimed at disarming those who might say that they are somewhat less worthy of their sentience and their civilization because of their unique origins. Like so many aspects of Vargr culture, this question is one which evokes no consensus of opinion whatsoever; attitudes and opinions vary widely among individual Vargr.

VARGR GOVERNMENT

There is no central Vargr government; indeed, there is no governmental type that can be said to be "typically Vargr." Every conceivable form of governmental organization can be found somewhere in the Vargr Extents; oftentimes several radically different governments can be found on the same world. The only cohesive force in the Extents is the fierce feeling of racial pride, which, on occasion, does bring about a slight tendency towards racial cooperation. Such tendencies, however, usually break down quickly in the wake of struggles for dominance among the cooperating groups.

The higher the level of government, the more unstable it usually becomes, because of the impossibility of gaining consent from all Vargr involved Since there is little respect given to formal authority figures who do not derive their authority from a high charisma, respect decreases rapidly as authority becomes more remote It can basically be said that Vargr attach little importance to a title, office, or position, and a great deal of importance to the essential character of the individual occupying that position. A distant leader, no matter how personally able or charismatic, cannot exercise his charisma to win others to his standard, and thus is considered less worthy of respect than someone on the spot who has the charisma to influence his neighbors directly.

Of course, some governments and institutions are more stable than others, within the overall limits of what Vargr consider to be governments. Governments, to the Vargr, are institutions which provide services and protection to a large number of people who accept that government's assistance, and follow, to some degree, the leaders appointed by that government—when those leaders have the necessary charisma to retain government support. Those governments which are capable of appointing individuals who can retain the confidence of the governed are successful; those which cannot forfeit that confidence and are unstable in the subsequent struggles for dominance. Yet governments can be somewhat unlikely from the human standpoint; there are numerous cases of several governments coexisting in the same physical territory. Land has little meaning to Vargr—only group consensus and personal prestige.

Even the most stable Vargr governments exercise little effective control over the common citizen. Laws are followed only in proportion to the government's ability to enforce them. A highly charismatic leader can attract followers for almost

anything—"legal" or "illegal." The neighbors of the Vargr are constantly the subject of impromptu raids and scattered piracy by bands of Vargr (totally without government sanction, of course) who have been talked into a raid, battle, or war by a charismatic leader. The inability of Vargr governments to deal with these situations (or even to comprehend the concept of dealing with them) led to many frequent misunderstandings with neighboring human cultures throughout the history of Vargr-human contact.

Military: Once again, it is extraordinarily difficult to discuss Vargr military institutions in any but the broadest terms, since there is so much room for variation from one Vargr organization to another. Few, if any, "standard" conventions exist governing the composition, use, or organization of Vargr military units; even among the Gvegh cultures of the Imperial frontiers (which are generally the standard upon which Imperial discussions of typical Vargr groups are based) there is a wide variation in the military aspects of Vargr culture.

Most Vargr governments maintain planetary armies in one form or another. There is a certain degree of instability in the structure of most armies; since the characteristic Vargr emphasis on charisma over formal authority causes individuals to rise to officer positions based more on their ability to sway a crowd than on their ability to plan a battle. Vargr officers tend to rise and fall in the ranks according to their success or failure in the field, with new officers coming up from the ranks often completely unprepared for the needs of military leadership.

The result is a general tendency among the Vargr to have a higher but rather more brittle morale than comparable human units. A unit may go into battle with enormous confidence and determination, inspired by a charismatic leader, but, if that leader proves less capable in battle than he appeared off the field (or if the leader is killed), morale tends to fall apart quickly. Some groups of soldiers may fight quite tenaciously in defeat, should they include among them another charismatic individual capable of swaying the soldiers to fight on. Others will break quickly in the absence of direct inspiration.

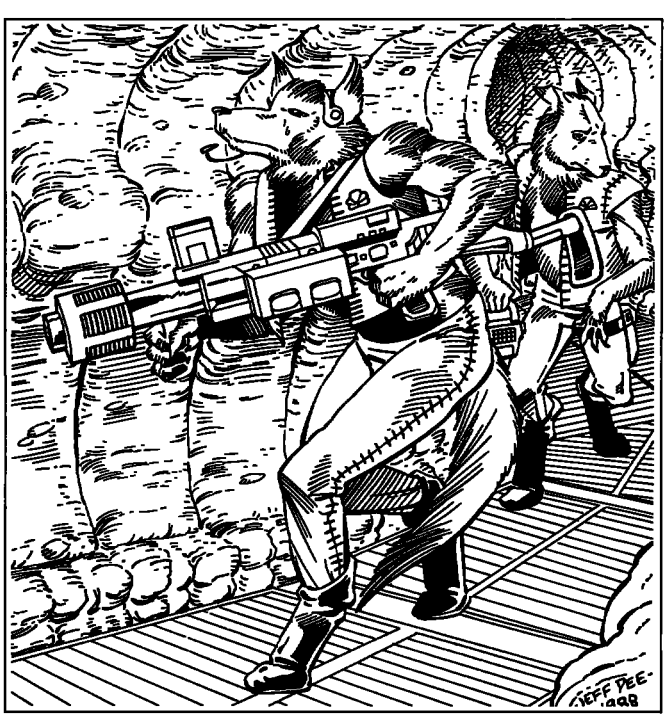
Vargr military units are, like any Vargr institution, prone to divisive and disruptive influences at even the best of times. There is a disturbing tendency for individual, charismatic soldiers to become the centers of movements that resist higher authority for one reason or another, giving rise to conditions that humans would describe as mutinies, and on occasion to outright treachery on or off the battlefield.

Actually, Vargr mutinies are frequently more in the nature of strikes or protest meetings. Good parallels in Terran history would include such incidents as the various army mutinies in the late Republic/early Empire period of Rome, or the Great Mutiny of the British Navy in A.D. 1798. In both cases, these mutinies were characterized by a refusal to continue duty until certain demands were met (often including requests for the replacement of unpopular officers), but no real change in the basic loyalties of the personnel involved. This is generally the case with Vargr army units as well, though incidents in which leaders have acted entirely on their own initiative in mounting a raid or starting a battle, contrary to the plans and instructions of higher military authority, are also quite common. And, on occasions, desertions (even in the midst of a major battle) have been organized by charismatic individuals who sense an opportunity to gain status by joining the opposition The worst of these offenses are discouraged by severe penalties exacted against such traitors.

Military organization varies enormously from one group of Vargr to the next. Imperial observers tend to "humanize" Vargr military organizations by applying familiar names to ranks and units, though often the correspondence is stretched rather thin in the process.

Vargr space navies are generally equivalent to the armies as described above. Again, they are generally organized on a strictly local level, led by popular rather than trained officers, and subject to frequent disciplinary problems. There are no specific Marine units in most Vargr states (though a few do maintain them); units of the army are often assigned to shipboard duty directly, with little distinction made for special training or organization.

In addition to the government-employed armed forces, corsair bands continue to flourish throughout the Vargr Extents. Corsairs can grow to wield considerable power (sometimes more than the government), depending on the charisma and prestige of their leadership. By and large, Vargr corsair bands contain integral space transport and skilled combat forces, with experience in all aspects of fighting. They carry out piratical raids on neighbors (both governments and one another), and can also be found hiring out as mercenaries either in whole or in part to raise additional money. Corsair mercenaries frequently hire out at much more reasonable prices than an equivalent human unit would establish, with the stipulation that they be permitted to loot, and retain a certain percentage of the booty thus gained, in the course of the campaign Vargr mercenary bands sometimes operate within the Imperium, but under rather close scrutiny by Imperial authorities, who prefer not to encourage the kinds of major economic dislocations that result from a policy of widespread, indiscriminate pillaging of this sort.



Large-Scale Campaigns

"To begin [playing **Traveller**], start out small, especially if you are also new. Don't try to run something of breathtaking scope the first time out; the record-keeping alone will overwhelm you, and your players will rapidly lose interest."

But now you've played those smaller campaigns. Both you as the referee and your players have learned the basic **Traveller** rules, and they feel comfortable within the game. They're ready for a big challenge, and you want to give it to them.

It isn't easy. Large-scale campaigns have different problems than do smaller gaming sessions, or adventures that begin and end in a few sessions. Record-keeping is one of the biggest headaches in bigger games, but there are other problems, too. They can be handled, and if handled correctly, the results can be engrossing.

If large-scale campaigns are so much work, are they worth the trouble?

Definitely! While shorter "one-shot" adventures are fun, they don't equal the satisfaction you and your players can derive from a well-orchestrated campaign that spans a wider range of space and time in a consistent fashion.

Traveller is a big enough game to keep learning more rules (which are more ways to keep excitement high for the players). The players themselves keep learning, and as they mature in terms of the game, they make the referee's life both easier and more challenging, as he strives to keep them interested and as they think up new responses to scenarios.

And the "real world" keeps growing, providing new ideas for adventures, personalities, and technology.

TRAVELLER MATERIALS

Don't cheat yourself. A wide-ranging campaign is difficult and there is no reason for you to make it harder than it needs to be. Make use of any supporting products you can find If you have plenty of free time, certainly use it to generate rules or background, but don't forget that your own time is valuable If it would be cheaper to buy the supporting material than to do it yourself, then buy it. On the other hand, if you enjoy the die rolling and personal creative activity associated with producing background, don't let the availability of information stop you from rolling up your own personal universe.

If you or a friend can program a computer, let it do much of your generating "grunt work." It's fun to hand generate worlds and characters, of course, but in a large-scale campaign you might need so many that you'll wear all the spots off your dice if you don't have some help. A computer can kick out hundreds of worlds instantly, letting you pick the good ones. Most importantly, this assistance leaves you the time and mental energy to do the real creative work of the campaign, fleshing out the numbers to come up with a consistent world.

HELP FROM YOUR PLAYERS

Nor do you have to do all the work yourself Let your players help out if you are short on time. They can each roll up a world's basic library data stats You can then take up where they leave off to create the bells and whistles that the players will discover only as you lead their characters through the adventure

This method also adds extra color just because your players will do things a little differently than you would have Variety is the spice of life, whether that life is genuine or played in a game Remember that **Traveller** has this solitaire playability When the whole group can not get together, you or some of your players can still play the game by doing such things as generating worlds and characters, conducting trade, and designing ships.

A FEW WORDS OF WARNING

I can't tell you how to successfully run a large-scale campaign in five words, but I can tell you how to wreck a large-scale campaign using that many: "Let It Grow Too Fast." Don't lose control of your game. When a player character becomes a sector duke, or when they each have personal Ancient artifacts that disintegrate opponents with a thought, you'll find it harder and harder to think up challenging scenarios.

Keep things a manageable size. Naturally, a large-scale campaign has more in it than a short adventure, but that's no excuse to let things get away from you. Stay on top of the situation with advance organization, and you'll find life a lot simpler.

Take your time in developing your campaign, and you'll find that it grows naturally by itself. Sure, it will need regular watering and fertilizer, but if you're spending all your resources pruning the overgrowth, neither you nor your players will find time to enjoy the game

SIZE AND SPACE

The primary necessity for a large-scale campaign is a large area of space. The easiest way to get this is to pick two locations some distance apart. The first is the beginning and the second is the destination. This seems easy enough, but more important is a motive for the travel between the two locations. There are several approaches that can be used to develop these motives

One of these approaches is the "courier" method. If the characters need to deliver a person or a package to the destination the entire problem is solved. By making sure that there are

plenty of interferences between the two locations, the adventure keeps moving.

A second technique is the "historical" or "tourist" approach. With this method, the referee presents a situation so that the characters are interested in travelling to the destination by virtue of its historical importance.

Since such travel must be made through the Imperium and the chaos of its rebellion, to be a wide-range adventure it is necessary to use a "rebellion" reason for travel, something that involves more than one location. A local affair will not work for this.

Trade: An obvious source of interworld travel is *trade*. If the characters have a ship, you can manipulate the markets in such a way that their most lucrative profits can be made by continuing to travel farther and farther in one direction. This works in a campaign only when there is no hurried timetable that the characters must meet. Trade also has the advantage of providing a means of travel as well as a motive.

The Wheel: A simple way to run a far-ranging campaign is what I call the "wheel method " Start the player characters at a certain world and then let them radiate out into surrounding areas like the spokes of a wheel from a central axle. This allows you the pleasure of developing one world in more detail, since the characters will be returning to it again and again.

Back and Forth: Sometimes twice as much work is easier. That is, when planning a long-range campaign, start it at both ends with two groups of characters (played by the same players, of course). They can work toward each other, meeting in the middle or retracing steps to get back to one of the original endpoints. This has several advantages. One is that the referee can use the two different locations to develop two different types of overall environment and culture, perhaps crossing an Imperial border to get two different "flavors" at the two ends.

■

Don't cheat yourself....Make use of any supporting materials you can find.

■

By playing back and forth between the two locations, this method also gives the referee time to develop more intricate plots at one end while the characters are busy at the other. The players themselves are happy because of the variety of playing multiple characters. At the same time, less experienced players will learn good habits in playing more than one character. One common problem is that newer players have an improper tendency to share possessions between their characters. If the characters are far enough away from each other that they don't even know each other, this possiblity is eliminated.

This technique also makes it easier to use more than one race in the campaign, since different groups of characters at different locations would be more likely to be from different races. It would be easy, for example, to have a campaign span the border between the Imperium and Vargr space. Vargr player characters could start at one location and humans could start at the other.

Very intricate plots can be developed by working both ends against the middle. It is difficult even for a good referee to think of all the ins and outs of a situation immediately. But if there are "vacations" from the campaign the referee has an opportunity to develop events that will stimulate the players.

Remember that everyone is active, not only the player characters. Political groups will continue to grow (or shrink, as the case may be). Trade will go on. Battles and disagreements will not disappear just because the players are busy with a different part of the campaign. To handle this, keep in mind that absent characters are still active, then think logically what their actions would be. While the player characters battle the intricacies of one adventure, you have time to invent new characters and new situations at another location, giving the illusion that all of these events were preplanned. Small acorns can grow into large oaks this way.

Themes and More Themes: Where can the referee get these themes? The answer is: almost anywhere, as long as he knows how to look. Newspapers are an excellent source. We saw an article once about the problem of space debris becoming a hazard to satellites orbiting the earth. This became the basis of a piece of library data mentioning the destruction of a Vargr vessel that collided with just such debris—just more local color in that case, but it was food for thought for players, reminding them again that **Traveller** was different than their daily lives.

Another article on the possibility of new fruits and vegetables through the use of cloning is clipped and filed away. Some day we will use it in an adventure as flavor. It could end up as a library data entry, or as part of a continuing look at how life at high tech levels is different, by showing such advances in the course of an adventure. Such a description of a product would also add interest to a ship's cargo.

Any newspaper can fill the bill for this purpose, particularly if it is one that your players do not read. Go to the public library and find the *Christian Science Monitor* or the Sunday *New York*

Times (this won't work if you live in New York) or another large newspaper with regular science and human interest sections. Find the science magazines and read them with an eye to how you can use new discoveries in an adventure setting. Almanacs and trivia books can serve the same purpose. Seek and you shall find.

PEOPLE AND OTHER LIVING THINGS

Personalities can make or break a campaign. No, I don't mean the personality of the referee or of the players, I refer to the personalities of the NPCs. If a campaign is wide-ranging, characters will meet more NPCs than otherwise, and this means more work for the referee.

Fortunately, there are ways to make this effort easier and more worthwhile. As discussed before, reuse characters if possible to fit in with the theme of the campaign. Since the player characters are "travellers" by definition of the game, the individuals they meet are more likely to be travellers also.

If your player characters meet a certain trader in a spaceport on Junidy, it should not be too surprising if they see him again at the Regina spaceport. Don't overdo this or you will have an entourage tailing your characters, but an occasional "chance" meeting (you decide if the meeting was really accidental, of course) gives a sense of continuity to the campaign. If your characters go through Vland customs once and must deal with a pesky official, the next time they arrive at Vland, you can use that official again.

MORE NPC ADVICE

Where can you get NPCs and how can you make them seem real to your players? Read a lot. Meet a lot of different people yourself. Learn the diversity present in your fellow man. Then draw upon this well in your campaign. If you have the time and the inclination, take a cultural anthropology class at a local university. Plutarch's *Lives of the Ancient Greeks and Romans* is a beautiful book for different personalities and motivations, and I guarantee you will be able to find it in your library.

One of my favorite techniques for "instant" personalities is to use a real person. When the characters question the clerk of the local TAS hostel, I think of a friend I knew in high school or college, or one of the teachers. I saw these people day in and day out for years, so it's pretty easy to guess their reactions, and to mimic their personality traits. This will take a little practice if you're not used to it, but your players will then always encounter three-dimensional characters instead of cardboard cutouts. Since everyone seems "real," your players won't know which of these encounters is important and which is "just some guy in the starport."

WAKING UP FROM THE BOOKKEEPING NIGHTMARE

How can you best organize all of this material? Get a three-ring binder with divider tabs. Label one tab for each world.

Then put in your information. Create more world detail and put that in the book. Develop important NPCs ahead of time and put them in the book. Maps of the world and its important cities should also go in. If you can, put the gist of the information on a separate page which you can show to the players for library data. They should never see the material straight from your notebook because it contains too much information for their tender eyes.

If an NPC moves from one world to another, then move the page with his information to that section of the book. Keep a table of contents at the front of the book with each NPC's name in alphabetical order. When you move the pages for that NPC to another world, make sure that you update the table of contents so you can find that information later.

Physically moving these pages automatically makes sure that NPCs are "real." That is, you must not move a page more often than once every week since travel time must be kept in account. When you move a page for a certain date, jot down the details of the trip: time and means of passage, so that you can refer to it later on. In effect, each NPC has his own diary page. If you keep these up to date, when the characters arrive at another world you can flip to that section of the notebook and instantly tell which NPCs they might run across while there.

LIFE AND DEATH

Health in a long-term campaign is an important issue. If a character dies or is otherwise unable to actively participate, another character must be introduced for the player who has lost that character. If you use the wheel method, your players may play several different characters from a particular world (naturally, they play only one in any game session, while their other characters are "busy" with other activities of their own).

In this case, if a character is out of the action, the player can use one of his other characters from the same locale. You as referee must make sure that the introduction of the character to the rest of the group is believable. You cannot just pick up a character and drop him somewhere else. If a player does not have another character already available in the same area, then a new one must be generated, and you must again make sure that the addition of this character into the campaign makes sense.

There are other methods that can be used to help characters continue in the campaign as long as these methods are not overused. If your players enjoy "puzzle" adventures that depend mostly on thought rather than gunplay, then the characters may live a long time without ever finding themselves in life-threatening situations.

This does not mean that you should "make life easy on the players." When combat happens, it happens, and you must not interfere with it when it does. If characters are hurt, they are hurt, and the players can only hope that medical science can bring them back up to full health. If you fudge rolls or give characters rewards that they have not earned, you will find your campaign becoming weaker rather than stronger. Anything worth having is worth waiting for.

In the field of medical science, there are some things that can be done to save a favorite character from the jaws of death. At higher tech levels, doctors can revive "dead" patients in some circumstances, and working toward a successful "rebirth" could form an adventure scenario in itself. Naturally, the player involved would have to run a different character for these sessions.

KEEP IT SMALL

The secret to having a successful wide-range campaign is to not let it grow larger than you can handle it. The key is to start

small. Begin with one or two worlds worked out to some degree of detail. Give your players characters on each of these worlds, then let them loose. If you have not decided on a theme or two you will probably find that your players come up with a few by themselves. A character that steals something precious may be chased halfway across the galaxy. The reoccurrence of his pursuers gives a (pleasant?) feeling of continuity to the campaign, while with each new world reached for refuge, your campaign gets bigger. This step-by-step growth is easy to handle and you are not swamped with work by a sudden deluge of worlds.

If your characters move too fast for you, erect barriers to them. Make sure these barriers are genuine by thinking them up ahead of time. A high-law-level world can help by locking up part of the group. Once thought up, these barriers can be used whenever appropriate—just keep a list of simple ideas in the back of your notebook.

Plots can come from a variety of sources. There are a few books which claim to provide a number of plots or guidelines on how to construct plots One of these books which I have used is *Steal This Plot: A Writer's Guide to Story Structure and Plagiarism*, by June and William Noble, published by Eriksson. It lists a number of possible motives for characters, many of which can be adapted to adventure situations.

WHEELS WITHIN WHEELS

One thing to remember in a large-scale campaign is the tip "wheels within wheels." You should have several plots going at once if only because your characters are playing in several different areas. But you should also see to it that your plots interrelate somehow so that there is a sense of continuity to the campaign.

The simplest way to accomplish this is to think it up later—you should never be in a hurry in a large-scale campaign. When the valuable museum piece is stolen and the characters must look for it, let them spend some time. As the item is moved from world to world, they must chase after it, and in so doing you already have a bigger campaign. Just introduce smaller scenarios on the in-between worlds.

You should have a general idea ahead of time concerning who made off with this thing, but you can change this later as long as it fits with the facts so far. If this is too difficult, but you want to connect the incident to some other group some distance away, let the second group swipe it from the original thieves. Just remember to have a motive.

THE MAGIC QUESTION

Before any NPC does anything important, make sure you can reasonably answer "Why?" Practice this, and you'll soon find yourself with a multitude of usable ideas. In the incident just mentioned, think of five reasons for stealing something before reading on.

Got 'em? Compare yours to mine:

1) the obvious cash value;

2) its religious or cultural importance;

3) desire to get someone else in trouble by leaving false clues that point to them;

4) the item is part of a set, and the thief owns the rest of the set;

5) the museum personnel were rude, and the thief is performing a quick snatch-and-run "revenge."

If yours don't match, then that means you have more than five ideas now, and two or three of them already sound like the basis for a mystery adventure Pick the one you like best, and then leave clues for one of the other motivations. Let your characters loose, and—presto—instant scenario.

Why is it so important to be able to come up with these "instant" scenarios? Because in a large-scale campaign, you need a lot of things going on at once Even if you aren't running a "solve-the-theft" adventure, you can still broadcast the loss over the evening news and leave your players wondering whether it's important or not

RED HERRINGS

These false leads go by the general name of "red herrings." Over the course of time, you'll need hundreds of these in a large-scale campaign. NPCs need interesting motivations; worlds must have their interesting features; events take place. Any of these not directly germane to the main adventure theme is a red herring. The fun of a large-scale campaign is that you and your characters have the time for some real fishing. You'll find that some of these red herrings become important themes that later recur. You don't have to tell the players that this wasn't what you had in mind from the very beginning. Red herrings mislead and misdirect. They become more attractive than the real goal or become confused with the real goal. Best of all, for the imaginative referee, red herrings can be converted to real clues if they are truly more interesting.

YOU'RE ON YOUR OWN

Perhaps you've played **Traveller** for years, and you've run a few big adventures already. If you've read this far, you must have learned something you can inject into your campaign to give it some extra spice.

Mapping

An essential element of the referee's activities in **MegaTraveller** is mapping. It falls to the referee to know the details of the territories in which his players are adventuring, regardless of whether that territory is a sector, a star system, or a world. Mapping is the way for the referee to maintain information about those territories.

Mapping is also an essential element of the player's activities in **MegaTraveller**. Players need to know where they are, and they need to plan their journeys from one point to the next. The decisions they make are extremely dependent on maps.

Different types of maps are called for by different situations in **MegaTraveller**. Each map presents a specific type of information and makes it possible for players to make specific decisions about their travels. The basic map types to be expected include:

- Sector maps.
- Subsector maps.
- Star system maps.
- World maps
- Continental (or similar scale) maps.
- Local maps.

Each type of map has its own attractions and its own usefulness. All of the map types help an individual referee to better control and coordinate different parts of an adventuring campaign.

SECTOR MAPS

A sector map is a broad planning map which lays out (for easy visual reference) the locations of important worlds and the trade routes that connect them

A sector is an appropriate size of territory for most continuing **MegaTraveller** adventures and campaigns. Its size provides enough worlds for many, many interesting situations without confining the referee or the players. A typical sector is capable of holding the attention of a band of players for many adventures

SUBSECTOR MAPS

At first glance, a subsector map seems to be a recapitulation of a sector map. It shows the same material with only slightly greater resolution. Virtually everything that the subsector map shows is also shown on the sector map. The advantage of the subsector map, however, is *focus*.

The smaller size of the subsector map and its greater concentration on a confined area allows the referee to focus on a restricted number of worlds and on their interactions. With fewer worlds to consider, the referee can spend more time defining their relationships One or two worlds will tend to dominate the small region (due to population, trade classifications, position on the trade routes, or technology level); those dominant worlds become the starting place for a number of adventures into the subsector.

For the players, it becomes easier to focus on having adventures Rather than considering all 400 or more worlds in a sector, their attention is focused on the 40 or so worlds of the single subsector. Using a subsector map is a way for the referee to tell the players (indirectly, of course) that *this* region is where the action is

Subsector Names: Subsectors are named by the inhabitants or the bureaucracy of the larger sector which surrounds them. In addition, subsectors are lettered A to P to show their position within the sector. Either the name or the letter is usually sufficient to identify the subsector.

STAR SYSTEM MAPS

The star system map shows the general relationship of the worlds within a star system to the central star. Because of the size of a star system, the map is necessarily schematic. Its purpose is to show players adventuring in a system what worlds are present and where they are.

Procedure: The black scale bar on the left of the map form is graduated in orbits numbered 0 to 15. For each orbit which has a world present, draw a short line to the right of the graduation and add a dot to show the presence of a world. Leave empty orbits blank

If a second or third star is present in the star system, add it at the appropriate orbit and draw a line from the star's symbol to one of the other black scale bars on the form. Note the worlds orbiting that star on its scale bar.

Satellites of any world can be added by showing small dots around the world dot

Appropriate information about worlds can be written in near each world dot: name, UWP, trade codes, and remarks.

WORLD MAPS

World maps are a convenient way of showing an entire planet or satellite in one presentation. The standard method of rendering world maps in **MegaTraveller** uses a geodesic grid which divides the entire world surface into 20 triangles. Each triangle is divided into 15 full hexagons and 18 half-hexagons; the three points of the triangle each share a pentagon with four other triangles.

The elegance of the geodesic map approach is shown in the

relationship of the triangles and the hexagons. Distance can be traced by counting hexagons (and multiplying the total number of hexes by the hex size in kilometers). When a path moves out of a large triangle, it can be traced into a half-hexagon of the adjacent triangle. Paths can be traced over the poles, along the equator, or by any meandering route. Distances are computed by counting hexagons. Areas can be approximated by also counting hexagons.

It is especially important to notice that the locations where the vertices of the triangles meet are pentagons rather than hexagons. They each have a slice taken out of their area, but each has only five sides.

The Equator: The dashed line through the center of the geodesic map represents the world's equator. In some cases, and for special mapping purposes, the equator marking can be ignored. For example, the poles are normally considered to be in the fractional pentagons at the top and bottom of the map. The poles could be moved to other pentagons in order to better show polar land or sea territory. In that case, the equator would be traced by a strange path through the triangles.

Computing Hex Size: The equator on the map is 35 hexes long. Using the UWP, it is easy to determine the diameter of the world; multiply the diameter of the world by pi (3.14 is a good approximation) to determine the length of the equator; divide the equator length by 35 for the size of each hexagon on the map.

For example, Terra has a UWP of A867A69-F; its diameter digit is 8 and its diameter is 12,800 kilometers. Multiplying its diameter by pi gives an equatorial length of (12,800 x 3 14 =) 40,192 Dividing the equatorial length by 35 produces a hex size of (40,192/35 =) 1148 kilometers. Each hex on a geodesic map used to show Terra would be about 1150 kilometers across.

CONTINENTAL MAPS

The continental map shows a hemisphere of a world—half of the world shown on the world map. Its primary purpose is to allow greater detail to be shown on a restricted area.

In addition, (like the subsector map,) it allows the referee to focus the attention of the players on a specific part of a specific world.

LOCAL MAPS

The local map is provided to allow the referee to map specific locations in great detail. The hexagon grid of the world map and the continental map is repeated on the local map as a very large hexagon which is itself divided into a smaller hexagon pattern. The smaller hexes on the local map are one-tenth the size of the large hexagon; the scale of the small hexes is one-tenth the scale of the large hex. For example, if Terra is mapped on the world map grid, the hex scale is 1150 kilometers per hex; when mapping on the local map, the small hexes are each 115 kilometers across.

The local map can also be used to provide greater detail for other local maps. If a local map has been produced for a specific area at a scale of 115 kilometers per hex, one of those hexes could be mapped in greater detail using a new local map. Since each hex is one-tenth the size of the larger hex, the scale for this new local map is 11.5 kilometers per hex.

TERRAIN SYMBOLS

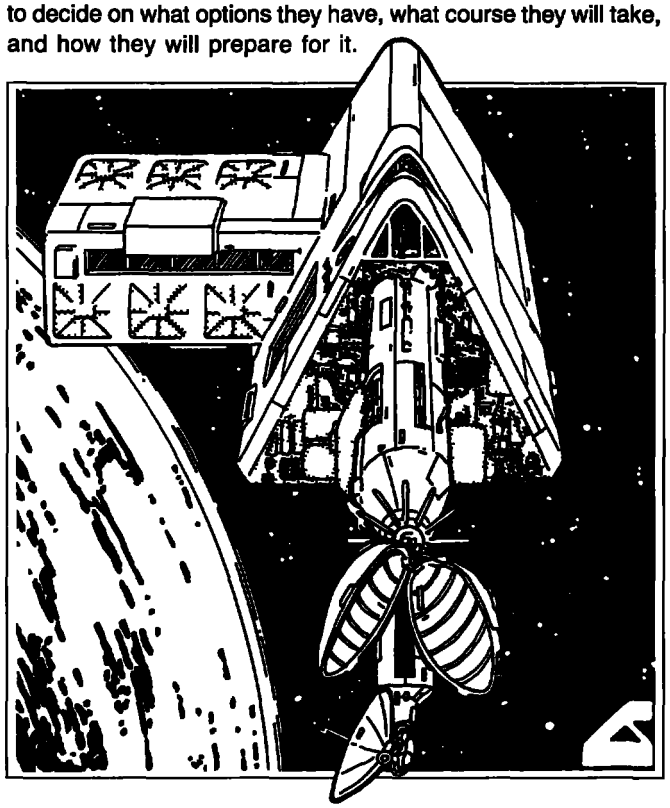
Whenever a hex grid is used to map terrain, a variety of symbols are called for. Simple symbols are often self-explanatory: blue shading for water, jagged peaks for mountains, dots for cities, lines for roads. If the symbols are not completely obvious, the map should carry a notation which states the symbol and what it means.

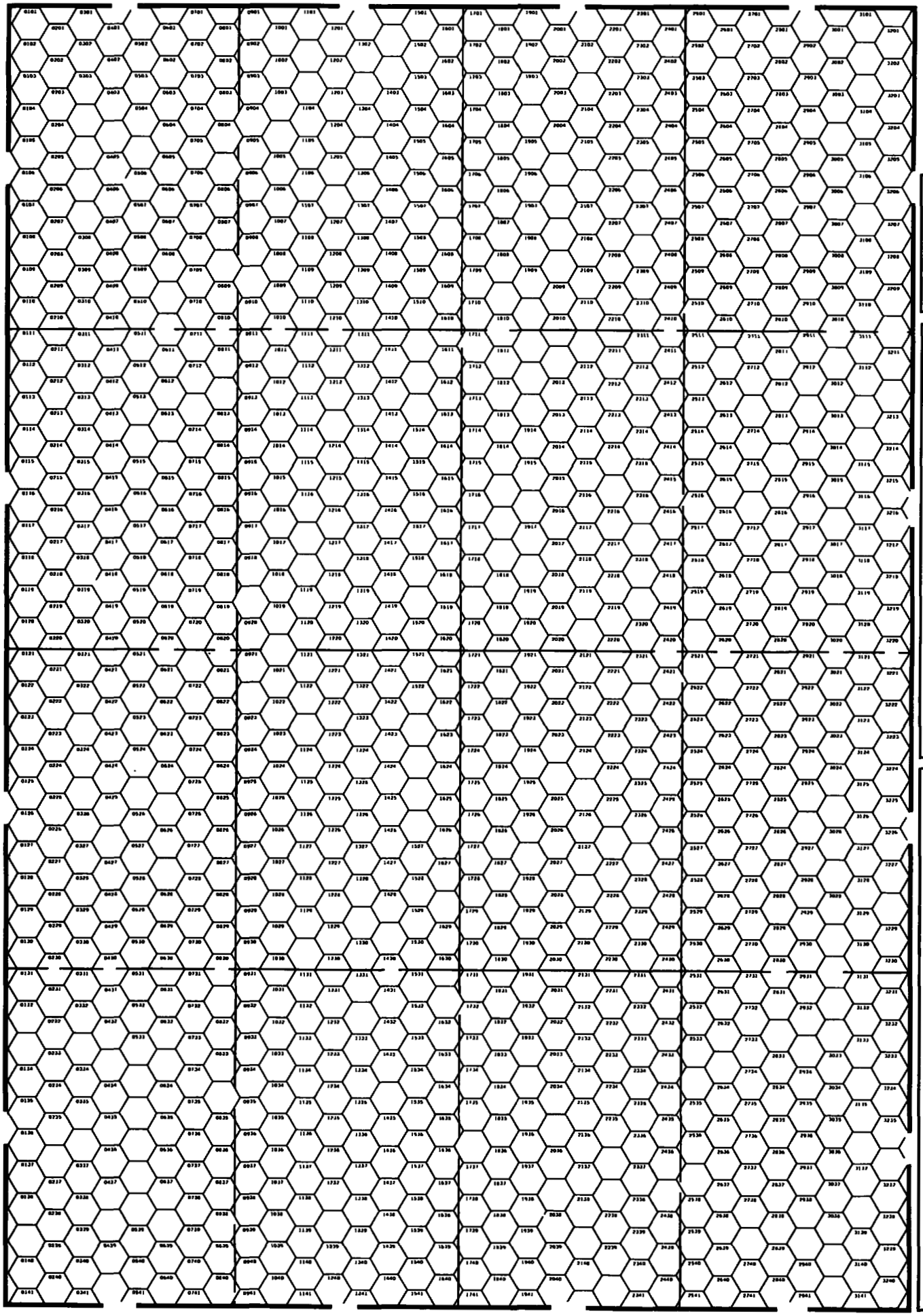
Photocopiable Symbols: Carefully done maps can be works of art, and careful referees pay attention to detail when they prepare their maps. One detail which should always be considered, however, is photocopiability. Some detailed symbols, some colors, and some pencil markings do not copy well on photocopy machines. When symbols and markers are chosen, attention should be paid to whether they will reproduce well since photocopies of maps can be extremely useful to the players in their adventures

PLAYERS AND MAPPING

The responsibility of players in the mapping process is greatly reduced when compared to the responsibility of the referee. **MegaTraveller** is a science-fiction role-playing game, and it must be assumed that the player characters have access to cheap, easily reproduced maps of the territories they are travelling in. A starship will have starcharts of subsectors and sectors, and its sensors can provide a map of any system it enters within a few days at most. Any populated world usually has for sale detailed maps of its surface. A starship's sensors can provide at least a continental outline map of a world it is orbiting.

Unless the player characters are exploring uncharted territory, they should be provided with maps of the regions they are in. The responsibility of the players is to use their maps to decide on what options they have, what course they will take, and how they will prepare for it.





A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

SUBSECTORS WITHIN A SECTOR

MAP LEGEND

Starport Type
Bases
Gas Giant
Tertiary
World Type
X-Boat Route
World Name

Travel Zone Code (Red)
No Gas Giant
Dominion
border
WORLD

CHARACTERISTICS

- No Water Present
- Water Present
- Asteroid Belt

BASES

- Imperial Naval Base
- Imperial Scout Base
- Zhodani Base
- Independent Base
- Research Station
- Scout Way Station
- Imperial Reserve
- Imperial Prison
- Exile Camp

TRAVEL ZONES

- Amber Zone
- Red Zone

POPULATION

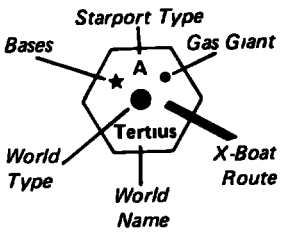
Samanha — under one billion
PRIMUS — over one billion

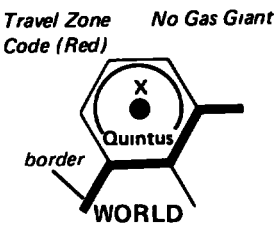
World names in red are subsector capitals

Sector Name

SUBSECTOR GRID

MAP LEGEND





WORLD CHARACTERISTICS

- ○ No Water Present
- ● Water Present
- Asteroid Belt

BASES

- ★ Imperial Naval Base
- ▲ Imperial Scout Base
- ● Independent Base
- Research Station
- ▲ Scout Way Station
- R Imperial Reserve
- P Imperial Prison

TRAVEL ZONES

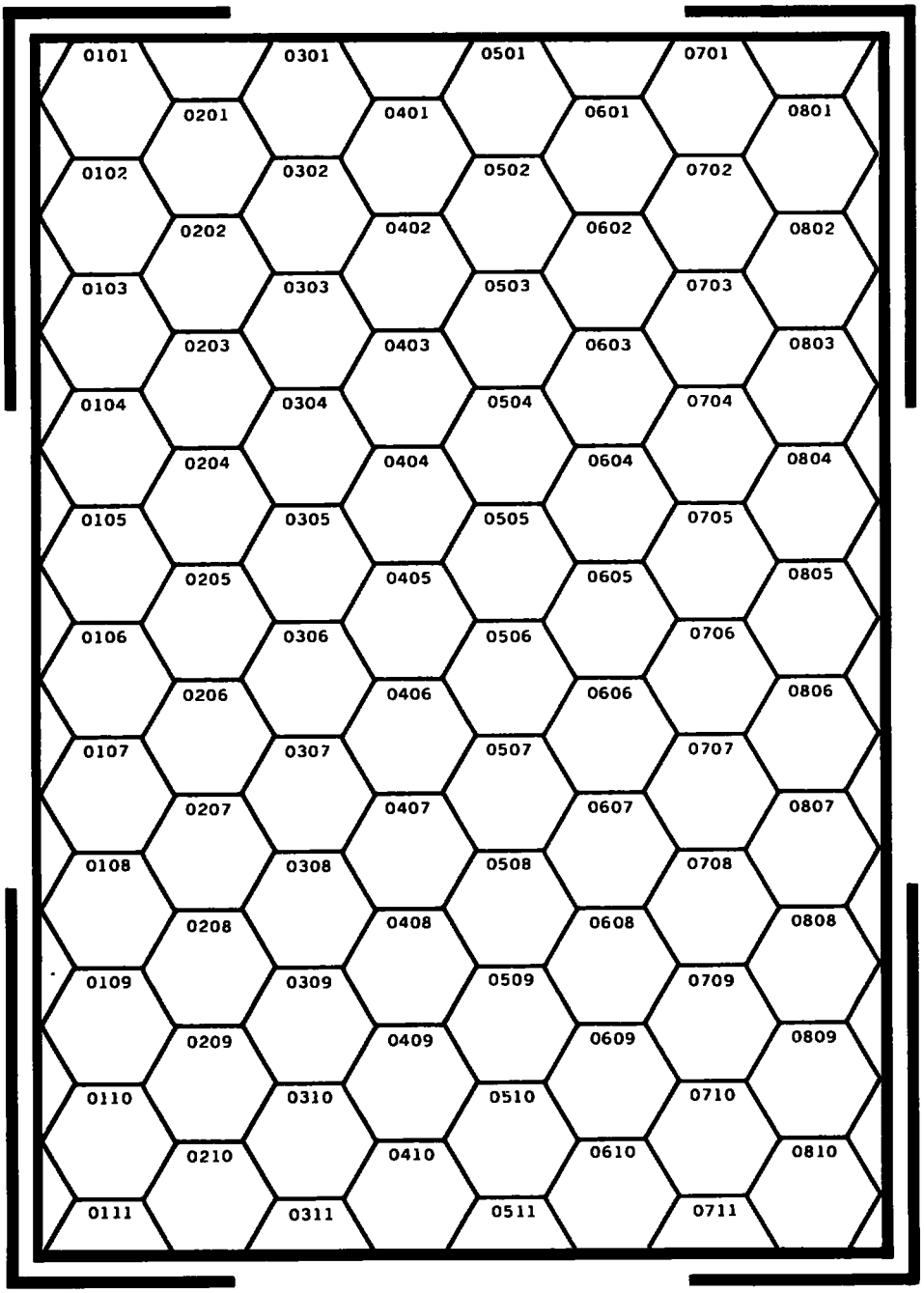
- Amber Zone
- Red Zone

POPULATION

Secundus	under one billion
PRIMUS	over one billion

World names in red are subsector capitals.

A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

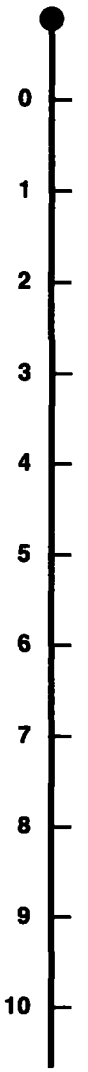


SUBSECTOR OF THE SECTOR	
A	I
B	J
C	K
D	L
E	M
F	N
G	O
H	P

SYSTEM MAP

Mainworld Name

System Hex Location

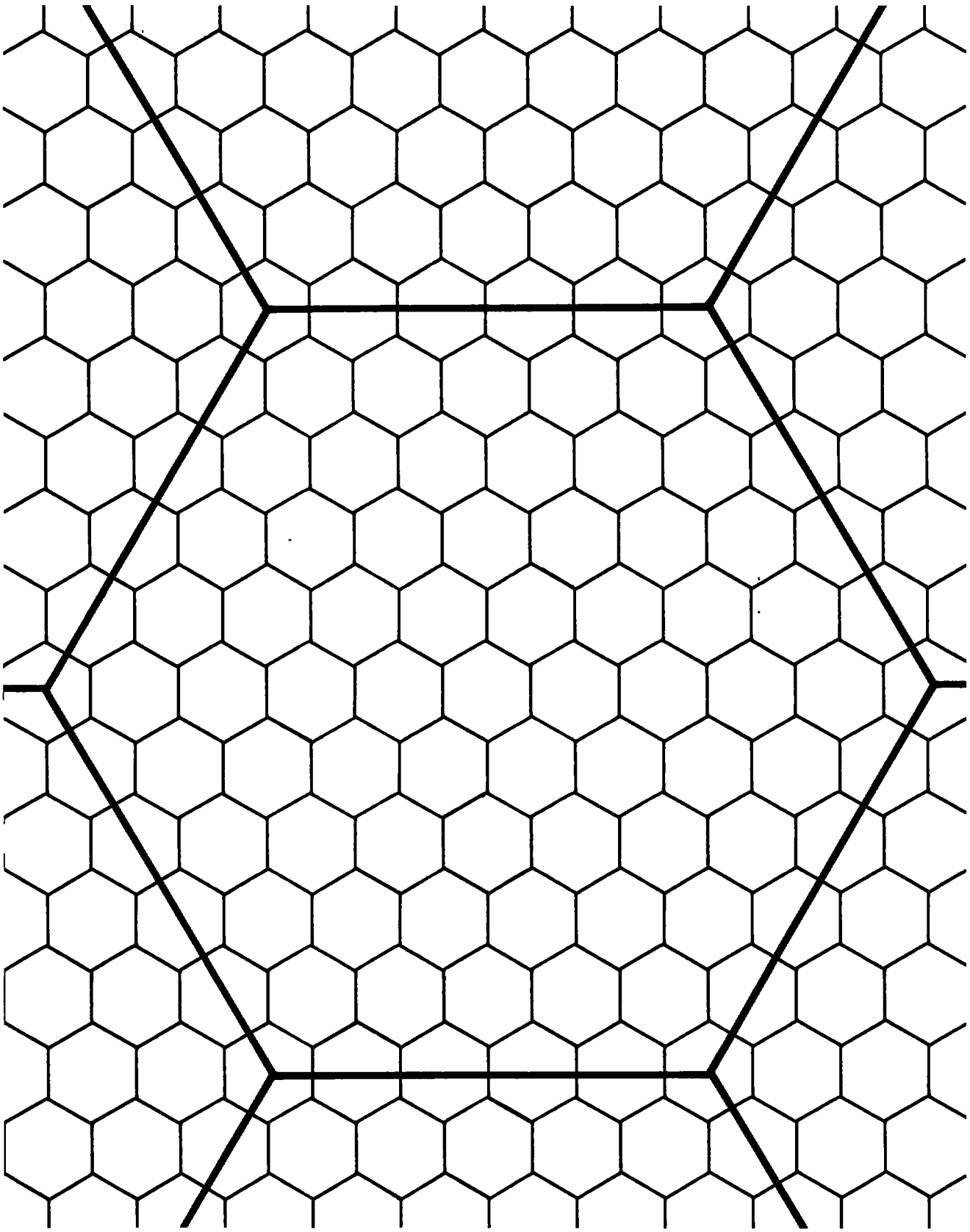


ORBITAL DISTANCES

Orbit	*AUs*	*Million Kilometers*
0	0.2	29 9
1	0 4	59.8
2	0 7	104.7
3	1.0	149 6
4	1.6	239.3
5	2.8	418.9
6	5.2	777.9
7	10.0	1495.9
8	19.6	2932
9	38.8	5804.
10	77.2	11,548.
11	154.0	23,038.
12	307.6	46,016.
13	614.8	91,972.
14	1229 2	183,885
15	2548 0	367,711
16	4915.6	735,363
17	9830.8	1,470,666.

LOCAL MAP

World Name	UWP	Hex Scale in km	Location



Alien Languages

Regardless of the information conveyed by words in a language, the words themselves (as groupings of sounds) obey certain rules of frequency and pattern. An analysis of this pattern allows words which carry the correct linguistic feel to be generated randomly for use as player and non-player character names, world names, names and descriptive terms applying to equipment, occasional words that are dropped in conversation, and elements which figure prominently in adventure plots.

Languages Covered: Word Generation Tables have been created for Aslan, Droyne, Vargr, Vilani, and Zhodani languages. All of the tables are used in essentially the same way.

WORD GENERATION PROCEDURE

Words in other languages, as in English, have definite letter frequencies and syllable patterns and it is possible to generate words in those languages using their letter frequencies and patterns

Sounds: Sounds in languages may be vowels (simple sounds unimpeded by the mouth, lips, or teeth) or consonants (the alterations to vowels performed by the mouth, lips, or teeth). While a vowel can be spoken without consonants (for example, the vowel o), a consonant cannot be pronounced without a vowel (for example, the consonant m is really pronounced em).

Syllables: Syllables are formed from up to three elements: an initial consonant, a vowel, and a trailing consonant. These three elements can produce up to four types of syllables. vowels (V), initial consonant plus vowel (CV), vowel plus trailing consonant (VC), and initial consonant plus vowel plus trailing consonant (CVC). The frequency with which each type of syllable appears in the language helps determine its character.

The Word Generation Table used 2D6 (of two different colors; here they are described as red and white) to generate words in three steps:

- Determining word length (in number of syllables).
- Determining syllable types (V, VC, CV, or CVC).
- Determining syllable components (consonants and vowels).

Word Length: Words may be any length The table provides for words from one to six syllables long Roll 1D6 for the length of the word in syllables. A referee may instead specify a word length in syllables (common words tend to be shorter; esoteric words tend to be longer)

Syllable Type: For each syllable, the syllable type must be determined from the Basic and Alternate Tables (instructions for when to use each are given beneath the tables).The Basic Table is always used for the word's initial syllable; the Basic and Alternate Tables are used for other syllables, according to the type of syllable which precedes them.

At this point, it is possible to produce a syllable map of the word For example, CVC-VC-V. The English word syllable could be mapped as CVC-V-CV.

Syllable Components: For each component (initial consonant, vowel, and trailing consonant) in each syllable, the specific sound for that component must be determined from the appropriate table.

An initial consonant is determined from the Initial Consonant column of tables; a vowel is determined from the Vowel column of tables; a trailing consonant is determined from the Final Consonant column of tables.

In each case, select the proper column of tables and throw 1D6: the result shows which of the six tables in the column should be used. Then make two distinct 1D6 throws and compare the results to the rows and columns within the table to determine the specific sound (shown as a letter or combination of letters) which is the specific syllable component required.

The ultimate result of the procedure is a randomly generated word of one or more syllables which can be used as a name or fragment of speech within the selected language.

LANGUAGE NOTES

The following notes indicate some of the distinctive qualities of the various languages addressed.

Anglic: The standard language of the Imperium is Anglic (sometimes called Galanglic, for Galactic Anglic). The language is a derivation of English (liberally spiced with loan words from a variety of languages) disseminated throughout the territory of the Imperium during the Rule of Man.

Aslan: The Aslan, with the exception of a few isolated lost colonies, share a common language and culture. The Aslan call their language *Trokh*.

A single-letter vowel in *Trokh* cannot be followed directly by the same single letter vowel. For example, A followed by A becomes simply A; on the other hand, AE followed by AE becomes AEAE, and even AE followed by EI becomes AEEI. Be sure to understand and make this change when generating Aslan words.

Droyne: Although the many distinct and scattered Droyne worlds each have their own language, they all share a common heritage: their coyn-casting ceremony. As the Droyne ventured into interstellar commerce and met others of their kind, they discovered their common bond, and the fact that the language of the coyn-casting ceremony was the same everywhere. For centuries, outsiders (that is, non-Droyne) were unaware that this common language existed.

The common Droyne language (they call it *Oynprith*) was originally rarely used in public; it had the status of a ritual or

ceremonial language, much like Latin on Terra. Over the past several hundred years, Oynprith has proven especially useful to the Droyne as a language of trade, and it has finally reached the status of the universal Droyne language.

When a vowel letter (even in a dipthong—a multiple letter vowel) follows the same letter, the two letters are combined into just one letter. For example, when O and OY occur in succession, they are combined into OY; on the other hand, when OY and OY occur in succession, they remain OYOY. Be sure to understand and make this change when generating Droyne words.

Vargr: There are hundreds of Vargr languages spoken on the thousands of worlds which have been settled by the Vargr. The most commonly encountered Vargr language in the Domain of Deneb and its neighboring sectors is Gvegh. More than 60 percent of all Vargr in the region speak languages in the Gvegh language group (Gvegh, Gvegh-Aek, Knithnour, Uedhu, and Taeksu). The Vargr Word Generation Table produces Gvegh words.

Vilani: The Ziru Sirka (the Grand Empire of Stars; the First Imperium) was a Vilani Empire and it spoke Vilani. The language lost its primary language status when the empire fell to the Rule of Man; but the language has never completely died out. Large populations on worlds within 10 parsecs of Vland speak Vilani as a primary or secondary language. Many Vilani words and names have been incorporated into Anglic, and Vilani is taught in many schools in order to provide a greater understanding of common word origins.

Vilani is especially important to the Vilani megacorporations (Naasirka, Makhidkarun, and Sharurshid) where it is as widely used as Anglic.

Zhodani: The Zhodani call their language *Zdetl*; the present form of *Zdetl* was formally proclaimed the official language of the Zhodani Consulate on the occasion of the 300th Olympiad. Some dialects of the language exist, but they tend to be the jargon of specific occupations rather than true differences in language.

GENERATING OTHER LANGUAGES

The blank Word Generation Table is provided to assist the referee in producing Word Generation Tables for other major and minor languages throughout the universe. To use the table, the referee selects the sounds (from the Consolidated Sounds List) that he or she considers appropriate for the language and creates a separate list. One list each should be created for initial consonants, vowels, and final consonants. A total of 216 occurrences for each separate list is required; specific sounds may repeat some or many times. The sounds are then entered in a photocopy of the blank Word Generation Table, which can be used with the standard procedures.

USING THE TABLES

The Word Generation Tables can be used to produce a variety of interesting words A few options include:

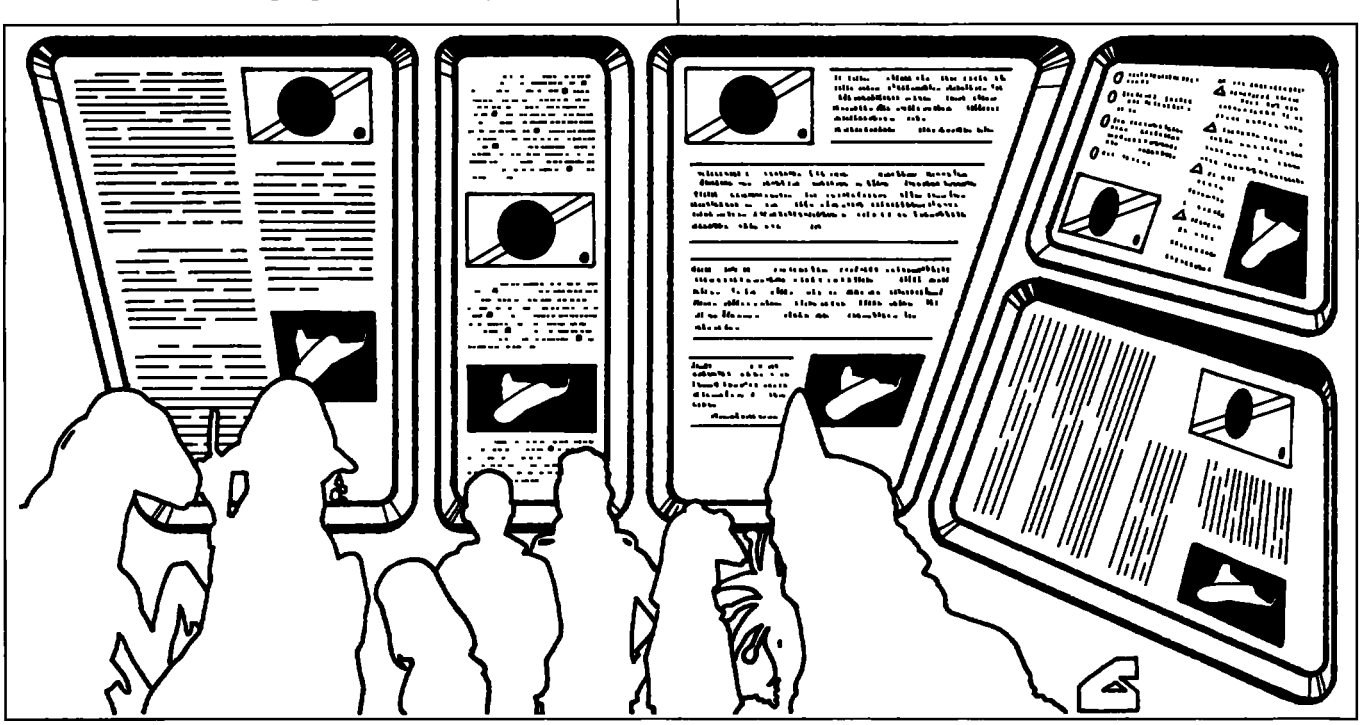
Place Names: Used to convey local atmosphere and flavor.

Personal Names: Used to show a character's alien nature.

Enigmas: Used in passing where they can be overheard and acted upon by the player characters: "Beware of the Achtiabr."

AN AID TO THE IMAGINATION

If standard English sound frequencies were inserted into the Word Generation Table, the table would produce many nonsense words and an occasional true English word. The Word Generation Tables work the same way in other languages: They produce many nonsense words and a few gems. The tables are intended as a convenience to the referee, to relieve him of the tedium of rote (no one likes to make up 100 random words without some help or inspiration). The referee then uses his or her imagination to see and choose the intriguing and interesting words.



VILANI WORD GENERATION

Basic — *Red Die* / *White Die*

Red Die	1	2	3	4	5	6
1	V	V	V	V	V	V
2	CV	CV	CV	CV	CV	CV
3	CV	CV	CV	CV	CV	CV
4	CV	CV	CV	VC	VC	VC
5	VC	VC	VC	VC	VC	CVC
6	CVC	CVC	CVC	CVC	CVC	CVC

VILANI WORD GENERATION

1 Determine word length (1D syllables)

2 Determine syllable structure Use the **Basic** syllable type table if first syllable in word, or if otherwise instructed Otherwise, use the **Alternate** syllable type table.

3 Determine initial consonants from column 1, vowels from column 2; final consonants from column 3

Alternate — *Red Die* / *White Die*

Red Die	1	2	3	4	5	6
1	CV	CV	CV	CV	CV	CV
2	CV	CV	CV	CV	CV	CV
3	CV	CV	CV	CV	CV	CV
4	CV	CV	CV	CVC	CVC	CVC
5	CVC	CVC	CVC	CVC	CVC	CVC
6	CVC	CVC	CVC	CVC	CVC	CVC

INITIAL CONSONANT

1	1	2	3	4	5	6
1	K	K	K	K	K	K
2	K	K	K	K	K	K
3	K	K	K	K	K	K
4	K	K	K	K	K	K
5	K	K	K	K	K	K
6	K	K	K	K	K	K

2	1	2	3	4	5	6
1	K	K	K	G	G	G
2	G	G	G	G	G	G
3	G	G	G	G	G	G
4	G	G	G	G	G	G
5	G	G	G	G	G	G
6	G	G	G	G	G	G

3	1	2	3	4	5	6
1	G	G	G	G	G	G
2	M	M	M	M	M	M
3	M	M	M	M	M	M
4	M	M	M	M	M	M
5	M	M	M	D	D	D
6	D	D	D	D	D	D

4	1	2	3	4	5	6
1	D	D	D	D	D	D
2	D	D	D	D	D	D
3	L	L	L	L	L	L
4	L	L	L	L	L	L
5	L	L	L	L	L	L
6	L	L	L	SH	SH	SH

5	1	2	3	4	5	6
1	SH	SH	SH	SH	SH	SH
2	SH	SH	SH	SH	SH	SH
3	SH	SH	SH	SH	SH	SH
4	KH	KH	KH	KH	KH	KH
5	KH	KH	KH	KH	KH	KH
6	KH	KH	KH	KH	KH	KH

6	1	2	3	4	5	6
1	N	N	N	N	N	N
2	N	N	N	N	S	S
3	S	S	S	S	S	S
4	S	S	P	P	P	P
5	B	B	B	B	Z	Z
6	Z	Z	R	R	R	R

VOWEL

1	1	2	3	4	5	6
1	A	A	A	A	A	A
2	A	A	A	A	A	A
3	A	A	A	A	A	A
4	A	A	A	A	A	A
5	A	A	A	A	A	A
6	A	A	A	A	A	A

2	1	2	3	4	5	6
1	A	A	A	A	A	A
2	A	A	A	A	A	A
3	A	A	A	A	A	A
4	A	A	A	A	A	A
5	A	A	A	A	A	A
6	A	E	E	E	E	E

3	1	2	3	4	5	6
1	E	E	E	E	E	E
2	E	E	E	E	E	E
3	I	I	I	I	I	I
4	I	I	I	I	I	I
5	I	I	I	I	I	I
6	I	I	I	I	I	I

4	1	2	3	4	5	6
1	I	I	I	I	I	I
2	I	I	I	I	I	I
3	I	I	I	I	I	I
4	I	I	I	I	I	I
5	I	I	I	I	I	I
6	I	I	I	I	I	U

5	1	2	3	4	5	6
1	U	U	U	U	U	U
2	U	U	U	U	U	U
3	U	U	U	U	U	U
4	U	U	U	U	U	U
5	U	U	U	U	U	U
6	U	U	U	U	U	U

6	1	2	3	4	5	6
1	U	U	U	U	AA	AA
2	AA	AA	AA	AA	AA	AA
3	II	II	II	II	II	II
4	II	II	II	II	II	II
5	II	II	II	II	UU	UU
6	UU	UU	UU	UU	UU	UU

FINAL CONSONANT

1	1	2	3	4	5	6
1	R	R	R	R	R	R
2	R	R	R	R	R	R
3	R	R	R	R	R	R
4	R	R	R	R	R	R
5	R	R	R	R	R	R
6	R	R	R	R	R	R

2	1	2	3	4	5	6
1	R	R	R	R	R	R
2	R	R	R	R	R	R
3	R	R	R	R	R	R
4	R	R	R	R	R	R
5	R	R	R	R	R	R
6	R	R	R	R	R	R

3	1	2	3	4	5	6
1	R	R	R	R	N	N
2	N	N	N	N	N	N
3	N	N	N	N	N	N
4	N	N	N	N	N	N
5	N	N	N	N	N	M
6	M	M	M	M	M	M

4	1	2	3	4	5	6
1	M	M	M	M	M	M
2	M	M	M	M	M	M
3	M	M	M	M	M	M
4	M	M	M	M	M	M
5	M	M	M	M	M	M
6	M	SH	SH	SH	SH	SH

5	1	2	3	4	5	6
1	SH	SH	SH	SH	SH	SH
2	SH	SH	SH	SH	SH	SH
3	SH	SH	SH	SH	SH	SH
4	SH	SH	SH	G	G	G
5	G	G	G	G	G	G
6	G	G	G	G	S	S

6	1	2	3	4	5	6
1	S	S	S	S	S	S
2	S	S	S	S	S	D
3	D	D	D	D	D	D
4	D	D	D	D	D	D
5	P	P	P	P	P	P
6	K	K	K	K	K	K

WORD GENERATION

ASLAN WORD GENERATION

1 Determine word length (1D syllables).
2 Determine syllable structure. Use the Basic syllable type table if first syllable in word or if previous syllable ended in a vowel. Otherwise, use the Alternate syllable type table.
3 Determine initial consonants from column 1, vowels from column 2, final consonants from column 3.

Basic

Red Die \ White Die	1	2	3	4	5	6
1	V	V	V	V	V	V
2	V	V	V	V	V	V
3	V	CV	CV	CV	CV	CV
4	CV	CV	CV	CV	VC	VC
5	VC	VC	VC	VC	VC	VC
6	CVC	CVC	CVC	CVC	CVC	CVC

For initial syllables, or after CV or V

Alternate

Red Die \ White Die	1	2	3	4	5	6
1	V	V	V	V	V	V
2	V	V	V	V	V	V
3	V	V	V	VC	VC	VC
4	VC	VC	VC	VC	VC	VC
5	VC	VC	VC	VC	VC	VC
6	VC	VC	VC	VC	VC	VC

For syllables after VC or CVC

INITIAL CONSONANT

1

	1	2	3	4	5	6
1	F	F	F	F	F	F
2	F	F	F	F	F	F
3	FT	FT	FT	FT	FT	FT
4	FT	FT	FT	FT	H	H
5	H	H	H	H	H	H
6	H	H	H	H	H	H

2

	1	2	3	4	5	6
1	H	H	H	H	HF	HF
2	HF	HF	HF	HK	HK	HK
3	HK	HK	HK	HK	HK	HK
4	HK	HK	HK	HL	HL	HL
5	HL	HL	HL	HL	HL	HR
6	HR	HR	HR	HR	HR	HR

3

	1	2	3	4	5	6
1	HT	HT	HT	HT	HT	HT
2	HT	HT	HT	HT	HT	HT
3	HW	HW	HW	HW	HW	K
4	K	K	K	K	K	K
5	K	K	K	K	K	K
6	K	K	K	K	KH	KH

4

	1	2	3	4	5	6
1	KH	KH	KH	KH	KH	KH
2	KH	KH	KH	KH	KH	KH
3	KH	KHT	KHT	KHT	KHT	KHT
4	KHT	KHT	KHT	KHT	KHT	KHT
5	KT	KT	KT	KT	KT	KT
6	KT	KT	KT	KT	L	L

5

	1	2	3	4	5	6
1	L	L	L	R	R	R
2	R	R	R	R	S	S
3	S	S	S	S	S	S
4	S	S	ST	ST	ST	ST
5	ST	ST	ST	T	T	T
6	T	T	T	T	T	T

6

	1	2	3	4	5	6
1	T	T	T	T	T	T
2	T	T	T	T	T	TL
3	TL	TL	TL	TL	TR	TR
4	TR	TR	TR	W	W	W
5	W	W	W	W	W	W
6	W	W	W	W	W	W

VOWEL

1

	1	2	3	4	5	6
1	A	A	A	A	A	A
2	A	A	A	A	A	A
3	A	A	A	A	A	A
4	A	A	A	A	A	A
5	A	A	A	A	A	A
6	A	A	A	A	A	A

2

	1	2	3	4	5	6
1	A	A	A	A	A	AI
2	AI	AI	AI	AI	AI	AI
3	AI	AI	AI	AI	AO	AO
4	AO	AO	AO	AO	AO	AO
5	AU	AU	AU	AU	E	E
6	E	E	E	E	E	E

3

	1	2	3	4	5	6
1	E	E	E	E	E	E
2	E	E	E	E	E	E
3	E	E	E	E	E	E
4	EA	EA	EA	EA	EA	EA
5	EA	EA	EA	EA	EA	EA
6	EA	EA	EA	EA	EA	EA

4

	1	2	3	4	5	6
1	EA	EA	EA	EA	EA	EA
2	EI	EI	EI	EI	EI	EI
3	EI	EI	EI	EI	EI	EI
4	EI	I	I	I	I	I
5	I	I	I	I	I	I
6	I	I	I	I	I	IY

5

	1	2	3	4	5	6
1	IY	IY	IY	IY	IY	IY
2	IY	IY	IY	IY	IY	O
3	O	O	O	O	O	O
4	O	OA	OA	OA	OA	OI
5	OI	OI	OI	OI	OI	OI
6	OI	OU	OU	OU	OU	OU

6

	1	2	3	4	5	6
1	U	U	U	U	UA	UA
2	UA	UA	UI	UI	UI	UI
3	YA	YA	YA	YA	YA	YA
4	YA	YA	YE	YE	YE	YE
5	YE	YE	YE	YE	YO	YO
6	YO	YO	YU	YU	YU	YU

FINAL CONSONANT

1

	1	2	3	4	5	6
1	H	H	H	H	H	H
2	H	H	H	H	H	H
3	H	H	H	H	H	H
4	H	H	H	H	H	H
5	H	H	H	H	H	H
6	H	H	H	H	H	H

2

	1	2	3	4	5	6
1	H	H	H	H	H	H
2	H	H	H	H	KH	KH
3	KH	KH	KH	KH	KH	KH
4	KH	KH	KH	KH	KH	KH
5	KH	KH	KH	KH	L	L
6	L	L	L	L	L	L

3

	1	2	3	4	5	6
1	L	L	L	L	L	L
2	L	L	L	L	L	L
3	L	L	L	L	L	L
4	L	L	L	L	L	L
5	LR	LR	LR	LR	LR	LR
6	LR	LR	LR	LR	LR	LR

4

	1	2	3	4	5	6
1	LR	LR	R	R	R	R
2	R	R	R	R	R	R
3	R	R	R	R	R	R
4	R	R	R	R	R	R
5	R	RL	RL	RL	RL	RL
6	RL	RL	RL	RL	RL	RL

5

	1	2	3	4	5	6
1	RL	RL	RL	RL	RL	RL
2	RL	S	S	S	S	S
3	S	S	S	S	S	S
4	S	S	S	S	S	S
5	S	S	S	S	S	S
6	S	W	W	W	W	W

6

	1	2	3	4	5	6
1	W	W	W	W	W	W
2	W	W	W	W	W	W
3	W	W	W	W	W	W
4	W	W	W	W	'	'
5	'	'	'	'	'	'
6	'	'	'	'	'	'

DROYNE WORD GENERATION

1 Determine word length (1D syllables).
2 Determine syllable structure. Use the Basic syllable type table if first syllable in word or if previous syllable ended in a vowel. Otherwise, use the Alternate syllable type table.
3 Determine initial consonants from column 1, vowels from column 2, final consonants from column 3.

Basic

Red Die \ White Die	1	2	3	4	5	6
1	V	V	V	V	V	V
2	V	CV	CV	CV	CV	CV
3	CV	CV	CV	CV	CV	CV
4	VC	VC	VC	VC	VC	VC
5	VC	VC	VC	VC	VC	CVC
6	CVC	CVC	CVC	CVC	CVC	CVC

For initial syllables, or after CV or V

Alternate

Red Die \ White Die	1	2	3	4	5	6
1	V	V	V	V	V	V
2	CV	CV	CV	CV	CV	CV
3	VC	VC	VC	VC	VC	VC
4	CVC	CVC	CVC	CVC	CVC	CVC
5	CVC	CVC	CVC	CVC	CVC	CVC
6	CVC	CVC	CVC	CVC	CVC	CVC

For syllables after VC or CVC

INITIAL CONSONANT

1

	1	2	3	4	5	6
1	B	B	B	B	B	B
2	B	B	BR	BR	BR	BR
3	D	D	D	D	D	D
4	D	D	D	D	D	D
5	DR	DR	DR	DR	DR	F
6	F	F	F	F	F	F

2

	1	2	3	4	5	6
1	F	F	F	F	F	F
2	H	H	H	H	H	H
3	H	H	H	H	H	H
4	H	K	K	K	K	K
5	K	K	K	K	K	K
6	K	K	KR	KR	KR	L

3

	1	2	3	4	5	6
1	L	L	L	L	L	L
2	L	L	M	M	M	M
3	M	M	M	M	M	M
4	M	M	M	M	N	N
5	N	N	N	N	N	N
6	N	N	N	N	N	N

4

	1	2	3	4	5	6
1	P	P	P	P	P	P
2	P	P	P	P	P	P
3	PR	PR	R	R	R	R
4	R	R	R	R	R	R
5	R	S	S	S	S	S
6	S	S	S	S	S	S

5

	1	2	3	4	5	6
1	S	S	S	S	S	S
2	S	S	S	S	S	S
3	S	SS	SS	SS	SS	SS
4	SS	SS	SS	SS	SS	ST
5	ST	ST	T	T	T	T
6	T	T	T	T	T	T

6

	1	2	3	4	5	6
1	TH	TH	TH	TH	TH	TR
2	TR	TR	TR	TS	TS	TS
3	TS	TS	TS	TS	TS	TS
4	TW	TW	TW	TW	TW	TW
5	TW	TW	TW	V	V	V
6	V	V	V	V	V	V

VOWEL

1

	1	2	3	4	5	6
1	A	A	A	A	A	A
2	A	A	A	A	A	A
3	A	A	A	A	A	A
4	A	A	A	A	A	A
5	AY	AY	AY	AY	AY	AY
6	AY	AY	AY	AY	AY	AY

2

	1	2	3	4	5	6
1	AY	AY	AY	AY	AY	AY
2	E	E	E	E	E	E
3	E	E	E	E	E	E
4	E	E	E	E	E	E
5	E	E	E	E	E	E
6	E	E	E	E	E	E

3

	1	2	3	4	5	6
1	E	E	E	E	E	E
2	E	E	E	E	E	E
3	I	I	I	I	I	I
4	I	I	I	I	I	I
5	I	I	I	I	I	I
6	I	I	I	I	I	I

4

	1	2	3	4	5	6
1	I	I	I	I	I	I
2	O	O	O	O	O	O
3	O	O	O	O	O	O
4	O	O	O	O	O	O
5	O	O	O	O	O	O
6	OY	OY	OY	OY	OY	OY

5

	1	2	3	4	5	6
1	OY	OY	OY	OY	OY	OY
2	U	U	U	U	U	U
3	U	U	U	U	U	U
4	U	U	U	U	U	U
	U	U	U	U	U	U
6	U	U	U	U	U	U

6

	1	2	3	4	5	6
1	U	U	U	U	U	U
2	U	U	U	YA	YA	YA
3	YA	YA	YA	YA	YA	YA
4	YO	YO	YO	YO	YO	YO
5	YO	YU	YU	YU	YU	YU
6	YU	YU	YU	YU	YU	YU

FINAL CONSONANT

1

	1	2	3	4	5	6
1	B	B	B	B	B	B
2	D	D	D	D	D	D
3	D	D	D	D	D	F
4	F	F	F	F	H	H
5	H	H	H	H	K	K
6	K	K	K	K	K	K

2

	1	2	3	4	5	6
1	L	L	L	L	LB	LB
2	LD	LD	LD	LD	LD	LD
3	LD	LK	LK	LK	LK	LM
4	LM	LM	LN	LP	LS	LS
5	LT	LT	M	M	M	M
6	M	M	M	M	M	M

3

	1	2	3	4	5	6
1	M	N	N	N	N	N
2	N	N	P	P	P	P
3	P	P	P	P	P	P
4	P	P	R	R	R	R
5	R	R	R	R	R	RD
6	RD	RD	RF	RF	RK	RK

4

	1	2	3	4	5	6
1	RK	RK	RK	RM	RM	RM
2	RM	RN	RN	RN	RP	RS
3	RS	RS	RS	RT	RT	RT
4	RT	RT	RV	RV	S	S
5	S	S	S	S	S	S
6	S	S	S	S	S	S

5

	1	2	3	4	5	6
1	S	S	S	S	S	S
2	S	S	S	SK	SK	SK
3	SK	SK	SK	SS	SS	SS
4	SS	SS	SS	SS	SS	ST
5	ST	ST	ST	ST	T	T
6	T	T	T	T	T	T

6

	1	2	3	4	5	6
1	T	T	T	T	TH	TH
2	TH	TH	TH	TH	TS	TS
3	TS	TS	TS	TS	TS	TS
4	TS	TS	V	V	V	V
5	X	X	X	X	X	X
6	X	X	X	X	X	X

VARGR WORD GENERATION

1 Determine word length (1D syllables).
2 Determine syllable structure. Use the Basic syllable type table if first syllable in word or if previous syllable ended in a vowel. Otherwise, use the Alternate syllable type table.
3 Determine initial consonants from column 1, vowels from column 2, final consonants from column 3.

Basic

Red Die \ White Die	1	2	3	4	5	6
1	V	V	V	V	VC	VC
2	VC	VC	VC	VC	VC	VC
3	VC	VC	VC	VC	VC	VC
4	CV	CV	CV	CV	CVC	CVC
5	CVC	CVC	CVC	CVC	CVC	CVC
6	CVC	CVC	CVC	CVC	CVC	CVC

For initial syllables or after VC or CVC

Alternate

Red Die \ White Die	1	2	3	4	5	6
1	CV	CV	CV	CV	CV	CV
2	CV	CV	CV	CV	CV	CV
3	CV	CV	CV	CV	CV	CV
4	CVC	CVC	CVC	CVC	CVC	CVC
5	CVC	CVC	CVC	CVC	CVC	CVC
6	CVC	CVC	CVC	CVC	CVC	CVC

For syllables after V or CV

INITIAL CONSONANT

1

	1	2	3	4	5	6
1	D	D	D	D	D	D
2	D	D	D	DH	DH	DH
3	DH	DH	DH	DH	DH	DH
4	DZ	DZ	DZ	DZ	DZ	F
5	F	F	F	F	F	F
6	G	G	G	G	G	G

2

	1	2	3	4	5	6
1	G	G	G	G	G	G
2	G	G	G	G	G	G
3	GH	GH	GH	GH	GH	GH
4	GH	GH	GH	GH	GH	GN
5	GN	GN	GV	GV	GV	GV
6	GV	GV	GV	GZ	GZ	GZ

3

	1	2	3	4	5	6
1	GZ	K	K	K	K	K
2	K	K	K	K	K	K
3	K	K	K	K	K	K
4	K	KF	KF	KF	KF	KF
5	KH	KH	KH	KH	KH	KH
6	KH	KH	KH	KH	KH	KN

4

	1	2	3	4	5	6
1	KN	KN	KN	KN	KN	KS
2	KS	KS	KS	KS	KS	KS
3	L	L	L	L	LL	LL
4	LL	LL	LL	LL	LL	LL
5	N	N	N	N	N	N
6	N	NG	NG	NG	NG	NG

5

	1	2	3	4	5	6
1	R	R	R	R	R	R
2	R	R	R	R	R	RR
3	RR	RR	RR	RR	RR	RR
4	RR	S	S	S	S	S
5	S	S	S	S	S	S
6	T	T	T	T	T	T

6

	1	2	3	4	5	6
1	T	TH	TH	TH	TH	TH
2	TH	TH	TH	TS	TS	TS
3	TS	TS	V	V	V	V
4	V	V	V	V	V	V
5	Z	Z	Z	Z	Z	Z
6	Z	Z	Z	Z	Z	Z

VOWEL

1

	1	2	3	4	5	6
1	A	A	A	A	A	A
2	A	A	A	A	A	A
3	A	A	A	A	A	A
4	A	A	A	A	A	A
5	A	A	A	A	A	A
6	A	A	A	A	A	A

2

	1	2	3	4	5	6
1	A	A	A	A	A	A
2	AE	AE	AE	AE	AE	AE
3	AE	AE	AE	AE	AE	AE
4	AE	AE	AE	AE	AE	AE
5	AE	AE	AE	AE	AE	AE
6	AE	AE	AE	AE	AE	AE

3

	1	2	3	4	5	6
1	AE	AE	AE	AE	E	E
2	E	E	E	E	E	E
3	E	E	E	E	E	E
4	E	E	I	I	I	I
5	I	I	I	I	I	I
6	O	O	O	O	O	O

4

	1	2	3	4	5	6
1	O	O	O	O	O	O
2	O	O	O	O	O	O
3	O	O	O	O	O	O
4	O	O	O	O	O	O
5	O	O	O	O	OE	OE
6	OE	OE	OE	OE	OE	OE

5

	1	2	3	4	5	6
1	OE	OE	OE	OE	OE	OE
2	OE	OE	OU	OU	OU	OU
3	OU	OU	OU	OU	OU	OU
4	OU	OU	OU	OU	OU	OU
5	U	U	U	U	U	U
6	U	U	U	U	U	U

6

	1	2	3	4	5	6
1	U	U	U	U	U	U
2	U	U	U	U	U	U
3	UE	UE	UE	UE	UE	UE
4	UE	UE	UE	UE	UE	UE
5	UE	UE	UE	UE	UE	UE
6	UE	UE	UE	UE	UE	UE

FINAL CONSONANT

1

	1	2	3	4	5	6
1	DH	DH	DH	DH	DH	DZ
2	DZ	DZ	DZ	DZ	G	G
3	G	G	G	G	G	G
4	G	G	G	G	G	G
5	G	GH	GH	GH	GH	GH
6	GH	GH	GH	GH	GH	GHZ

2

	1	2	3	4	5	6
1	GHZ	GHZ	GHZ	GHZ	GZ	GZ
2	GZ	GZ	GZ	K	K	K
3	K	K	K	K	K	K
4	K	KH	KH	KH	KH	KH
5	KH	KH	KH	KH	KH	KHS
6	KHS	KHS	KHS	KHS	KS	KS

3

	1	2	3	4	5	6
1	KS	KS	KS	KS	L	L
2	L	L	L	L	L	L
3	L	L	LL	LL	LL	LL
4	LL	N	N	N	N	N
5	N	N	N	N	N	N
6	N	N	N	N	N	N

4

	1	2	3	4	5	6
1	N	N	N	N	N	N
2	N	N	NG	NG	NG	NG
3	NG	NG	NG	NG	NG	NG
4	NG	NG	NG	NG	NG	NG
5	NG	NG	NG	NG	NG	NG
6	NG	NG	NG	R	R	R

5

	1	2	3	4	5	6
1	R	R	R	R	R	R
2	R	R	R	R	R	R
3	RR	RR	RR	RR	RR	RR
4	RR	RR	RR	RR	RR	RR
5	RR	RR	RR	RRG	RRG	RRG
6	RRG	RRG	RRGH	RRGH	RRGH	RRGH

6

	1	2	3	4	5	6
1	RRGH	RS	RS	RS	RS	RS
2	RZ	RZ	RZ	RZ	RZ	S
3	S	S	S	S	TH	TH
4	TH	TH	TH	TS	TS	TS
5	TS	TS	Z	Z	Z	Z
6	Z	Z	Z	Z	Z	Z

ZHODANI WORD GENERATION

1 Determine word length (1D syllables).
2 Determine syllable structure. Use the Basic syllable type table if first syllable in word or if previous syllable ended in a vowel. Otherwise, use the Alternate syllable type table.
3 Determine initial consonants from column 1, vowels from column 2, final consonants from column 3.

Basic

Red Die \ White Die	1	2	3	4	5	6
1	V	V	V	CV	CV	CV
2	VC	VC	VC	VC	VC	VC
3	VC	VC	VC	CVC	CVC	CVC
4	CVC	CVC	CVC	CVC	CVC	CVC
5	CVC	CVC	CVC	CVC	CVC	CVC
6	CVC	CVC	CVC	CVC	CVC	CVC

For initial syllables, or after CV or V

Alternate

Red Die \ White Die	1	2	3	4	5	6
1	V	V	V	V	V	V
2	CV	CV	CV	CV	CV	CV
3	VC	VC	VC	VC	VC	VC
4	CVC	CVC	CVC	CVC	CVC	CVC
5	CVC	CVC	CVC	CVC	CVC	CVC
6	CVC	CVC	CVC	CVC	CVC	CVC

For syllables after VC or CVC

INITIAL CONSONANT

1

	1	2	3	4	5	6
1	B	B	B	B	B	BL
2	BL	BL	BR	BR	BR	BR
3	BR	CH	CH	CH	CH	CH
4	CH	CH	CH	CH	CH	CH
5	CH	CHT	CHT	CHT	CHT	CHT
6	CHT	CHT	D	D	D	D

2

	1	2	3	4	5	6
1	D	D	D	D	D	DL
2	DL	DL	DL	DL	DL	DL
3	DR	DR	DR	DR	DR	F
4	F	F	F	F	FL	FL
5	FL	FR	FR	FR	J	J
6	J	J	J	J	J	JD

3

	1	2	3	4	5	6
1	JD	JD	JD	JD	K	K
2	K	K	K	KL	KL	KR
3	KR	L	L	L	M	M
4	N	N	N	N	N	N
5	N	N	P	P	P	P
6	P	P	P	PL	PL	PL

4

	1	2	3	4	5	6
1	PL	PL	PL	PL	PR	PR
2	PR	Q	Q	QL	QL	QR
3	QR	R	R	R	R	R
4	S	S	S	S	S	S
5	S	SH	SH	SH	SH	SH
6	SH	SH	SH	SHT	SHT	SHT

5

	1	2	3	4	5	6
1	SHT	SHT	SHT	T	T	T
2	T	T	ST	ST	ST	ST
3	ST	ST	ST	TL	TL	TL
4	TL	TL	TL	TL	TL	TL
5	TL	TS	TS	TS	V	V
6	V	V	V	VL	VL	VR

6

	1	2	3	4	5	6
1	VR	Y	Y	Y	Z	Z
2	Z	Z	Z	ZD	ZD	ZD
3	ZD	ZD	ZD	ZD	ZD	ZD
4	ZD	ZH	ZH	ZH	ZH	ZH
5	ZH	ZH	ZHD	ZHD	ZHD	ZHD
6	ZHD	ZHD	ZHD	ZHD	ZHD	ZHD

VOWEL

1

	1	2	3	4	5	6
1	A	A	A	A	A	A
2	A	A	A	A	A	A
3	A	A	A	A	A	A
4	A	A	A	A	A	A
5	A	A	A	A	A	A
6	A	A	A	A	A	A

2

	1	2	3	4	5	6
1	A	A	A	A	A	A
2	A	A	A	A	A	A
3	A	E	E	E	E	E
4	E	E	E	E	E	E
5	E	E	E	E	E	E
6	E	E	E	E	E	E

3

	1	2	3	4	5	6
1	E	E	E	E	E	E
2	E	E	E	E	E	E
3	E	E	E	E	E	E
4	E	E	E	E	E	E
5	E	E	E	E	E	E
6	E	E	E	I	I	I

4

	1	2	3	4	5	6
1	I	I	I	I	I	I
2	I	I	I	I	I	I
3	I	I	I	I	I	I
4	I	I	I	I	I	I
5	I	I	I	I	I	I
6	I	I	IA	IA	IA	IA

5

	1	2	3	4	5	6
1	IA	IA	IA	IA	IA	IA
2	IA	IA	IA	IA	IA	IA
3	IA	IA	IA	IA	IA	IA
4	IA	IA	IA	IA	IA	IA
5	IE	IE	IE	IE	IE	IE
6	IE	IE	IE	IE	IE	IE

6

	1	2	3	4	5	6
1	IE	IE	IE	IE	IE	IE
2	IE	IE	IE	IE	IE	IE
3	IE	IE	IE	IE	O	O
4	O	O	O	O	O	O
5	O	O	O	O	O	O
6	R	R	R	R	R	R

FINAL CONSONANT

1

	1	2	3	4	5	6
1	B	B	BL	BL	BL	BL
2	BL	BL	BL	BR	BR	BR
3	BR	BR	BR	BR	CH	CH
4	CH	CH	CH	D	D	D
5	D	DL	DL	DL	DL	DL
6	DL	DL	DR	DR	DR	DR

2

	1	2	3	4	5	6
1	DR	DR	DR	F	F	F
2	F	F	FL	FL	FL	FL
3	FL	FR	FR	FR	FR	FR
4	J	J	J	J	K	K
5	KL	KL	KL	KL	KR	KR
6	L	L	L	L	L	L

3

	1	2	3	4	5	6
1	L	L	L	L	L	L
2	M	M	N	N	NCH	NCH
3	NCH	NCH	NCH	NCH	NCH	NJ
4	NJ	NJ	NJ	NJ	NS	NS
5	NS	NS	NS	NSH	NSH	NSH
6	NSH	NSH	NSH	NSH	NT	NT

4

	1	2	3	4	5	6
1	NT	NT	NTS	NTS	NTS	NTS
2	NZ	NZ	NZ	NZ	NZ	NZH
3	NZH	NZH	NZH	NZH	NZH	NZH
4	P	P	PL	PL	PL	PL
5	PL	PL	PL	PR	PR	PR
6	PR	PR	PR	PR	Q	Q

5

	1	2	3	4	5	6
1	QL	QL	QR	QR	R	R
2	R	R	R	SH	SH	SH
3	SH	SH	SH	SH	T	T
4	T	T	TS	TS	TS	TS
5	TS	TS	TS	TL	TL	TL
6	TL	TL	TL	TL	TL	TL

6

	1	2	3	4	5	6
1	V	V	V	V	V	VL
2	VL	VL	VL	VR	VR	VR
3	VR	VR	Z	Z	Z	Z
4	Z	Z	Z	Z	Z	ZH
5	ZH	ZH	ZH	ZH	ZH	ZH
6	'	'	'	'	'	'

SOUNDS LIST

The Consolidated Sounds List shows the approximate pronunciations of the sounds shown in the Word Generation Tables. Individuals should keep in mind that the sounds are approximations. In some cases, different sound symbols are shown for the same sound approximations; in such cases, they are identified for the languages to which they apply.

The Word Generation Tables and the Consolidated Sounds List show sounds in Anglic. The individual languages use their own symbols and alphabets (sometimes more than one alphabet) to represent the sounds shown. In many cases, a language alphabet may have one symbol for a sound represented by several Anglic letters here, or it may represent the sound by a grouping of two or more letters.

CONSOLIDATED SOUNDS LIST
(Aslan, Droyne, Vargr, Vilani, Zhodani)

INITIAL CONSONANTS

Symbol	*Pronounced*
B	bee
BL	blade
BR	bright
CH	chest
CHT	watched
D	doll
DH	this
DL	paddle
DR	drain
DZ	suds
F	fang
F	like whew (Aslan)
FL	flood
FR	frown
FT	rift
G	gang
GH	ach (voiced)
GN	hag night
GV	hag view
GZ	hag zebra
H	hit
HF	hfang
HK	hkang
HL	hlang
HR	hrang
HT	htang
HW	what
J	joy
JD	charged
K	kite
KF	lock fist
KH	ach (German)
KHT	Nachte (German)
KL	heckle
KN	lock night
KR	crown
KS	locks
KT	locked
L	long
LL	miller
M	more
N	name
NG	thing
P	poor
PL	play
PR	prey
Q	king
QL	cling
QR	crown
R	run
RR	perro (trilled)
S	sun
SH	shield
SHT	Ishtar
SS	hiss
ST	stop
T	ton
TH	think
TL	Tlaloc (Aztec)
TR	trip
TS	tsar
TW	twin
V	vine
VL	Vland
VR	vroom
W	win
Y	yellow
Z	zebra
ZD	mazda
ZH	measure
ZHD	—

VOWELS

Symbol	*Pronounced*
A	lock
AE	kite
AI	kite (Aslan)
AO	Mao (Chinese)
AU	house
AY	lake
E	men
EA	(separately)
EI	bay
I	kit
IA	yank
IE	layer
IY	feet
O	on
O	go (Droyne)
OA	(separately)
OE	doe
OI	noise
OU	loud
OU	(separately) (Aslan)
OY	ahoy
U	fun
U	lute (Aslan)
UA	(separately)
UE	feud
UI	(separately)
R	Przemysl
YA	yard
YO	yo-yo
YU	feud

FINAL CONSONANTS

Symbol	*Pronounced*
B	crab
BL	able
BR	labor
CH	which
D	had
DH	with
DL	paddle
DR	badder
DZ	sudz
F	cliff
FL	waffle
FR	afraid
FT	rift
G	hog
GH	ach (voiced)
GHZ	ach zebra
GZ	hog zebra
H	how
J	age
K	pick
KH	loch (Scottish)
KHS	ach so
KL	pickle
KR	cracker
KS	locks
L	doll
LB	call back
LD	held
LK	milk
LL	miller
LM	helmet
LN	call now
LP	help
LR	all right
LS	calls
LT	hilt
M	dam
N	can
NCH	branch
NG	thing
NJ	ninja
NS	cans
NSH	n + sh
NT	cant
NTS	cants
NZ	lens
NZH	n + zh
P	cap
PL	apple
PR	tapper
Q	pick
QL	pickle
QR	picker
R	her
RD	card
RF	wharf
RK	work
RL	curl
RM	worm
RN	worn
RP	warp
RR	perro (trilled)
RRG	rr + g
RRGH	rr + gh
RS	cars
RT	wart
RV	Harvard
RZ	car zebra
S	vase
S	hiss (Aslan)
SH	wish
SK	disk
SS	hiss
ST	list
T	hit
TH	with
TS	hits
TL	Tlaloc (Aztec)
V	have
VL	Vland
VR	vroom
W	wow
X	ax
Z	fez
ZH	measure
'	(glottal stop)

MEGATRAVELLER™

REFEREE'S COMPANION

Expand the rebellious universe of **MegaTraveller** with more rules, background, information, and materials for the dedicated referee. Materials that simply would not fit into the grand, three-volume **MegaTraveller** rules set have been brought together into one volume as the **MegaTraveller Referee's Companion**. This compendium helps provide detail to science-fiction campaigns, adds scope to **MegaTraveller** projects, and sparks interest in any adventure. The **MegaTraveller Referee's Companion** includes:

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Design: Marc W. Miller

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Our 15th Year

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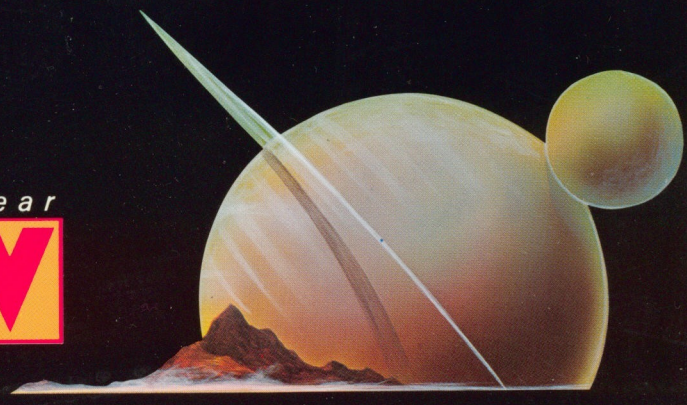

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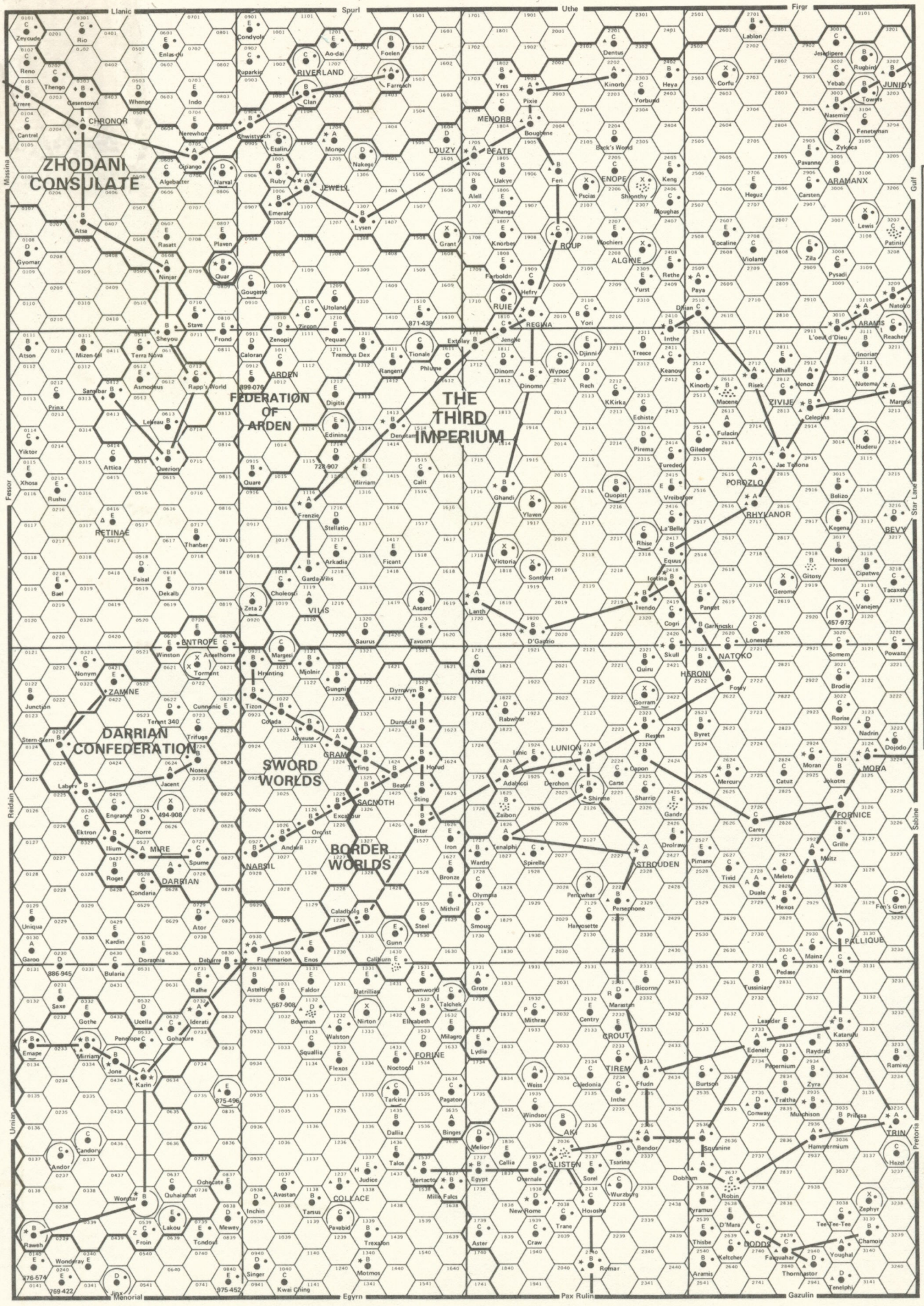
PLAYERS' MANUAL

Marc W. Miller

Science-Fiction Adventure in the Shattered Imperium

GDW



A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

SUBSECTORS WITHIN A SECTOR

- A Chronor
- B Jewell
- C Regina
- D Aramis
- E Querion
- F Vilis
- G Lanth
- H Rhylanor
- I Darrian
- J Sword Worlds
- K Lunion
- L Mora
- M Five Sisters
- N District 268
- O Glisten
- P Trin's Veil

MAP LEGEND

Starport Type
Bases
Gas Giant
Tertius
World Type
X-Boat Route
World Name
Travel Zone Code (Red)
No Gas Giant
Quintus
border

WORLD CHARACTERISTICS

- ● No Water Present
- ● Water Present
- ⁘ Asteroid Belt

BASES

- ★ Imperial Naval Base
- ▲ Imperial Scout Base
- ♦ Zhodani Base
- ● Independent Base
- Γ Research Station
- ▲ Scout Way Station
- R Imperial Reserve
- P Imperial Prison
- X Exile Camp

TRAVEL ZONES

- ▬ Amber Zone
- ▬ Red Zone

POPULATION

Secundus	under one billion
PRIMUS	over one billion

World names in red are subsector capitals.

The Spinward Marches

A Detailed Stellar Sector Located on the Fringes of the Imperium

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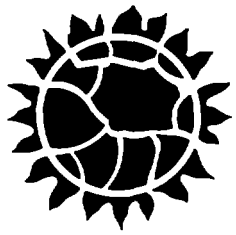
Marc W. Miller

MEGATRAVELLER™

PLAYERS' MANUAL

Science-Fiction Role-Playing
in the Shattered Imperium



Edited by Joe D. Fugate, Sr. and Gary L. Thomas

GAME DESIGNERS' WORKSHOP

MegaTraveller is the current edition of the rules for the **Traveller** science-fiction role-playing system. **MegaTraveller** incorporates rules changes, revisions and additions which have been made over the years in order to maintain it as a leading state-of-the-art rules system.

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MegaTraveller
Players' Manual

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The time is the distant future. Humanity has made the leap to the stars; interstellar travel is not only possible, but commonplace.

The ruling interstellar power is the Imperium, a large, human-dominated empire more than a thousand years old, encompassing 11,000 worlds in a region over 2,000 light-years across.

But while the Imperium's thousand-year reign has created an illusion of strength and lasting power, continued expansion and internal pressure have combined to strain the Imperium's ability to govern to the limit. The cohesive thread that has held the vast Imperium together has always been the person of the emperor, the one individual to whom all Imperial citizens ultimately owe their loyalty.

Now the emperor is dead at the hand of an assassin, leaving no immediate heirs and no clear successors. The Emperor's nephew claims the throne; so does his cousin. Even his assassin, citing an obsolete and obscure precedent, claims the throne. No one knows whom to follow; someone is following each of the claimants. Several border regions have lost their faith in the Imperium's ability to protect them and have declared their independence. A few neighboring interstellar powers, learning of the Imperium's internal chaos, have begun to advance into unprotected frontier provinces.

The Imperium has been shattered...

MEGATRAVELLER

It is against this background of star-spanning rebellion and emerging splinter empires that **Traveller** is set. Its role-playing game rules provide an entire universe to be explored. Players can assume any role and undertake any mission in the universe of the future.

Traveller postulates that mankind has conquered the stars and that travel from one stellar system to another is commonplace. However, the tremendous distances involved dictate that interstellar voyages can take weeks, months, sometimes years.

In some respects, the situation is similar to Earth in the 18th century. Communication is limited by the speed of travel, setting the stage for adventure in a grand fashion with all the trappings of classic science fiction: star-spanning empires, huge starfleets, wily interstellar merchants (and equally wily interstellar pirates), complex diplomatic maneuvers, and larger-than-life heroes, heroines, and villains.

Traveller is the name of the overall game. **MegaTraveller** is the name of this rules set, and is used to differentiate it from the 10 years of development and earlier editions that preceded it.

TRAVELLER IS A ROLE-PLAYING GAME

Each *player* in **Traveller** creates and manipulates a *character*, an alterego in the universe of the future. The character interacts with the *referee*, a game manager who administers the action of the game and in many cases actually creates the events that make up an *adventure*.

The attributes of the player's alternate persona are numbers generated by rolling dice, and these characteristics aid the referee in determining how successful the character may be in achieving whatever goal he or she strives for. **Traveller** is open-ended, which means that there are no set conditions for winning. Each player sets his or her own goal and has a lifetime (in game terms) to achieve it. **Traveller** can continue for as long as the referee and the players desire. **Traveller**, like the universe, has no limits.

ADVENTURES

Traveller is a set of detailed rules covering how the universe operates. These rules govern day-to-day activities to be expected for any individual. Against this background of basic information, players can work, earn money, travel to distant worlds, and lead exciting lives of daring and adventure.

But **Traveller** provides much more. The characters have an opportunity to undertake genuine adventures as they search for their own self-appointed goals. Some adventures result from day-to-day activity; others occur as players play prewritten scenarios.

Many **Traveller** adventures come straight from the referee's own imagination. Each new world presents the referee with an opportunity to present a new situation to the players, who must cope with the situation if they are to progress in their own life of adventure.

GETTING YOUR FEET WET

The basic rules of **Traveller** deal with the major aspects of the way the universe works. The technological levels of the various cultures players will contact in the course of play can be set at any level desired from the primeval past (tech code Pre-Industrial) through present day Earth (about tech code Indust) to the barely conceivable wonders of the distant future.

This book, the *Players' Manual*, covers the player-related aspects of **Traveller**. Another volume, the *Referee's Manual*, covers the referee's duties of creating and administering an adventure (world generation, vehicle design, starship combat, encounter resolution). Yet a third volume, the *Imperial Encyclopedia*, provides background information, lists of equipment and vehicles, historical essays, checklists, and diagrams.

Generating Characters: A character can come from any walk of life; he or she may select any of 18 different careers (Army, Barbarians, Belters, Bureaucrats, Diplomats, Doctors, Flyers, Hunters, Law Enforcers, Navy, Nobles, Marines, Merchants, Pirates, Rogues, Sailors, Scientists, or Scouts) and gain skills and experience in that field. A band of adventurers consists of characters who have themselves selected careers and now bring to the band the skills they have learned. Some may be young and relatively inexperienced, but there will also be characters with varied levels of achievement and varied backgrounds.

Tasks: Tasks are the building blocks of the player's adventures. As they adventure, at crucial points the characters must perform tasks relevant to the goals of the moment. **Traveller** provides a simple but comprehensive system for resolving tasks, allowing the players to bring their character's hard-earned skills to bear on any problem, big or small, and attempt to solve it.

Not only does the task system clearly quantify the task difficulty and the useful skills that apply, it also heightens the players' awareness of the potential dangers (hazardous tasks, uncertain tasks, and so on) and of the possibility of mishaps on tasks that fail. The players must carefully weigh both the risks and rewards of their characters' actions. Such struggles form the very heart of adventuring.

Combat: Naturally, not everyone (or everything) the players meet will be friendly, and it will occasionally be necessary for characters to "fight fire with fire."

Traveller's basic combat rules allow quick and easy resolution of confrontations between small groups of characters. **Traveller**'s advanced combat rules allow resolving fights ranging from simple bare-knuckles fisticuffs to engagements between entire armies, and virtually everything in between. Every conceivable type of weapon is covered: from broken bottles to starship meson weapons.

REQUIRED MATERIALS

The *Players' Manual* contains all the rules necessary to be a **Traveller** player.

The *Referee's Manual* provides additional rules needed for the **Traveller** referee. An independent, non-involved referee allows a degree of flexibility and continuity not possible when the players themselves control the game. As such, a referee inserts a measure of uncertainty into the minds of the players as they play. Finally, a referee deals with situations that the rules may not cover; after all, no set of rules can totally define the universe and how every aspect of it works.

Traveller is a conversational game and as such has no board or playing surface, but it does require certain materials in order to play. You will need two or more six-sided dice per player, writing instruments (pencils, pens, colored markers, and so on), and paper (scratch paper for lists and computations, graph paper for diagrams, and other types such as index cards or tracing paper). The most important requirement, however, is imagination. You provide that. With imagination **Traveller** becomes a vehicle to carry you to the limits of the universe.

DIE ROLLING CONVENTIONS

Routinely in the course of **Traveller**, players and referees roll dice to determine a random result or unpredictable course of action. These dice throws may be made by players for their characters or by the referee to simulate the effects of nature, of non-players, or of unseen forces. Rolls by the referee may be kept secret or partially concealed, depending on their effects. In situations where the players would not actually know the results of the roll or would not know the exact roll made, the referee will make the roll in secret.

Generally a throw involves two dice; exceptions requiring one die or three or more dice are clearly stated. The number of dice is either stated directly (one die, four dice) or

BASIC DEFINITIONS

Traveller uses certain words and abbreviations in a unique manner. In order to be able to properly understand the Traveller rules, players should acquire some familiarity with these words and abbreviations. The following is a listing of words, phrases, and abbreviations commonly used in Traveller:

Character. The fictional role played in **Traveller**. The character is distinct from the *player*, who is the person playing the game. Player characters are manipulated by the players; nonplayer characters are manipulated by the referee.

Characteristic. One of several abilities which a character has. Three of these are *physical* characteristics: Strength, Dexterity, and Endurance; three other possible characteristics are *mental* characteristics: Intelligence, Education, and Social Standing. Characteristics are always capitalized.

Credit (Cr). The monetary unit that is often referred to in **Traveller**. A hand calculator costs Cr10. For very large amounts of money, the megacredit (abbreviated MCr) represents a total of one million credits. A ship's boat costs MCr16.

Die (plural is Dice). Technically, a random number generator; actually the familiar six-sided die used in many games. In order to make events unpredictable by the players, events are often given probabilities of occurring. Dice are used to generate random numbers that represent these probabilities.

Die Roll (also Die Throw). The actual use of dice to create a random number.

Die Modifier (DM). A number that is added to or subtracted from the die roll to obtain a modified result. DMs represent efforts to change probabilities in favor of or against some result. For example, a situation may allow a DM +2 if the character has Intelligence of 10 or more. After throwing two dice and rolling 7, the player with Intelligence 10 or more is allowed to increase the roll by +2 to 9.

Encounter. The meeting of one or more characters, and one or more persons, things, or events. Encounters may or may not result in significant interaction with player characters. An encounter with a clerk in a store is not likely to be of great importance, and it may not even be mentioned to the players. On the other hand, an encounter with a band of cutthroats late at night or with a pack of wild animals could permanently affect the characters, and is dealt with in detail. A large part of a referee's job is the administration of encounters.

Jump. A trip from one point in space to another using jump drives, travelling at greater than the speed of light. A jump is made by leaving the universe of the game and travelling through a different plane of existence (called jump space in **Traveller**, but often called hyperspace in science-fiction literature).

Nonstarship. A spaceship without a jump drive, which is incapable of interstellar travel on its own. Nonstarships may be small craft (less than 100 tons) or larger transport vessels (often called spaceships).

Patron. A non-player character used by the referee to create an encounter for player characters. Patrons are usually used to motivate players to move in a direction more fully in tune with the wishes of the referee. The referee can also use patrons to provide income or diversion for player characters.

Player. A person who is playing **Traveller**. The **Traveller** player is the physical person playing the game and should not be confused with the character who is manipulated by the player.

Referee. An individual who creates and administers the hypothetical universe and adjudicates conflicts between the players' characters and other inhabitants or forces within the universe.

Skill. An ability to perform a set action such as navigating a starship, shooting a rifle, or programming a computer. Skills are attained in levels (Navigation-1, Computer-2, etc.); the higher the level of a skill, the more expertise a character has in that area. Many different individual skills are available to characters. Skills are always capitalized; when an individual's skill level is shown, it is a number hyphenated after the skill name (Rifle-1, for example).

Small Craft: Any spacecraft under 100 tons. Typical small craft types include launch, pinnace, cutter, ship's boat, fighter, and shuttle. Small craft are restricted to a star system and cannot perform jumps.

Starport. A facility that exists for the service of interstellar and interplanetary vessels of all sorts. A starport is also used for embarkation and disembarkation of passengers and cargo.

Starship. Any spacecraft which is capable of interstellar flight is known as a starship. Starships may be commercial, private, or military. Any starship must be a minimum of 100 tons.

System. A star and its associated companion stars (if any), orbiting planets, and their associated satellites. One world of the system is designated the system's *mainworld* and identifies the system.

Task. A specific objective the players wish to accomplish during the course of an adventure. The referee listens to the player's request and defines a task for it. For example, the players may want their characters to cross a hazardous vacuum plain on foot in vacc suits. The referee must decide the difficulty (Simple, Routine, Difficult, or Formidable), the requisite skills and characteristics (such as Vacc Suit or Endurance), the average time duration (1 day, 1 week, or whatever), and any special risks that apply (hazards, uncertain outcomes, and so on). Die rolls, modified by the character's abilities, determine the actual outcome of the defined task.

World. Any inhabited astronomical body. A world could be a planet like Earth, a satellite of a planet, an airless planet with domed or underground cities, a hollowed-out planetoid, or an artificial construct such as a space station or L-5 type colony.

Universe. The totality of existence for the player characters, the mythos, the informational background created by a referee. In **Traveller**, "universe" refers to the game "reality" in which the characters controlled by the players interact with the various characters and forces controlled by the referee.

abbreviated to save space (1D, 4D).

The following terms and conventions for dice throws apply to the game.

Throw: That dice roll required to achieve a stated effect. If only a number is stated it must be rolled exactly. A number followed by a plus (such as 8+) indicates that that number or greater must be rolled. Similarly, a number followed by a minus (such as 6-) indicates that that number or less must be rolled. Throws can be identified because the sign *follows* the number.

If the throw is one requiring success to avoid something not wanted, the throw may be termed a "saving throw."

Die Modifier (DM): A number to be applied to a die roll before it is used. Die modifiers are preceded by a sign which indicates whether the number is to be added to or subtracted from the die roll. Thus +4 would be added to the die roll, while -2 would be subtracted.

Implied Values: Rules or situations may call for the generation of a random number within a specific range (perhaps 10 to 60). In this case, inspection of the highest number will give the number of dice to be rolled and the multiplier to be applied. For instance, if the rules call for 10 to 60 animals to appear the referee can easily see that one die is to be rolled and the result multiplied by 10.

THE ADVENTURING SESSION

Playing **Traveller** is fun. For maximum enjoyment, sessions should be conducted in some relatively quiet, comfortable place where there is room for the referee to consult his or her materials out of the direct vision of the players, but close enough for conversation.

Beginning: During the first adventuring session, take a moment to determine a little background data. Why is your character here, and why is he or she with this group? Working out this background data helps you get into your role.

A close examination of the various characters in the group can often help with this. Are several of the characters former navy personnel? Obviously they met in the service and became friends, deciding to seek their fortunes after they were all discharged on the same planet. Perhaps the characters are distantly related, have mutual friends, or are old school chums. A little imagination can come up with a reason why these people want to try a group effort and will give some clues to your character's later behavior.

When the background is sketched in, the referee will answer some questions about the basic situation.

Where are you and how did you get here? Are you actively looking for work, or were you sought out? Is there a patron involved? What are you supposed to do? What will your payment be if you are successful? What do you need to find out to carry out the job? What equipment is available? And so on.

Go ahead and talk the job offer over with the other players and decide your actions. One player should be chosen to speak for the group as a whole.

The referee tells you what information you have discovered, how much time was used up, and any other relevant details (like the fact that someone is following you as you leave the library).

Game Time: The passage of game time is of great importance. Your actions must be measured against those of the rest of the universe. The ratio of real time to game time is left up to the referee. Obviously it must be a flexible ratio depending on circumstances.

You should be aware that some situations which take almost no game time can take a great deal of real time. For instance if you want to know certain details of a door you are about to go through, you might ask, "How big is it?" On being told, you might ask, "Is it shut or open? Can I see anything through it or is the area beyond it dark?" All of this information could be gained in a few seconds of observation if you were actually present; it is the artificial nature of the game that makes it take so long.

In addition, the passage of time costs you money. You must eat and have lodging (covered by simple rules on upkeep). If you suffer aging effects, you may require medical care. Starships, vehicles; robots, and items of equipment must all be maintained at regular intervals, or they will soon begin to deteriorate.

Outside Influences: The actions of other forces in the universe should not be neglected. You might run afoul of the law while completing a job or might anger some local criminal organization. If the referee decides that something of this nature has happened, he or she will decide what action (if any) the offended party (or parties) will take, how long that action will take to put into motion, and what effect the action will have on you and the group.

As the session continues, you will often engage in discussions of varying lengths. Try to keep these conversations on track (don't let them stray to outside events such as a replay of last night's football game or a blow-by-blow of a similar situation in another game). As the discussion takes place, be mindful of what is really happening and how long it takes in game terms.

If you begin a loud argument in the middle of a restaurant, for instance, the owner may interrupt you and ask you to leave. If you are having an argument in the privacy of your own spaceship, you need only figure out how much game time the discussion takes.

The End of the Session: For shorter adventures (called *scenarios*), an adventuring session should end when the characters manage to reach the goal of the adventure. For long adventures (called *campaigns*) that take several sessions to complete, a particular session should end at a convenient stopping place.

In any case, the session should be ended before the players or referee are exhausted (four to six hours is a fair limit). Sometimes, it may not be possible to resolve a particular scenario in only one session. When a stopping point is reached (usually some temporary lull in the action), players should make written notes of the current situation. The action can then be picked up where it stopped during the next session even if considerable time passes before the players can get together again.

Avoid obnoxious or obstreperous behavior. If you insist on being a disruptive player, do not be surprised if you are ejected from the group. Losing one's temper is no fun for anybody involved. As time passes, everyone will become accustomed to each others' styles and desires. Adventuring sessions will become smoother, and the pleasure received from an evening's adventure will increase for all involved.

RESOLVING TASKS

The Universal Task Profile (UTP) provides you with a simple (but still comprehensive) method of codifying tasks. So how does the UTP system work?

A UTP answers these questions about a task:

- How hard is the task?
- What skills and characteristics are crucial to this task?
- How long does this task typically take?
- Does this task involve any special risks?

The UTP provides a list of answers to these questions. A task uses the predefined answers in response to questions.

The predefined answers are specified in real-world terms. Even if you don't know the task system, you can quickly understand a task defined by a Universal Task Profile.

WHAT DOES A UTP LOOK LIKE?

The UTP always follows the same format. For example:

To locate the source of the strange hum:
Routine, Recon, Int, 1 min (hazardous, unskilled OK).
Referee: Any **Major** or **Destroyed** mishaps automatically become **Minor** mishaps.

The UTP is always separated from the surrounding text by a blank line both above and below.

HOW HARD IS THE TASK?

When setting the difficulty, select from four difficulty levels:

Simple: Success is highly likely. Roll 3+ on 2D to succeed.

Routine: Success is likely. Roll 7+ on 2D to succeed.

Difficult: Success is unlikely. Roll 11+ on 2D to succeed.

Formidable: Success is rare. Roll 15+ on 2D to succeed; success is only possible with DMs.

Note that the 2D roll for each level is easy to remember because it is 4 more than the prior level. If a 2 is rolled, a *fumble* occurs and the task attempt fails no matter what.

WHAT IS CRUCIAL TO THE SUCCESS?

When crucial skills and characteristics are chosen as task modifiers (DMs), a task uses related skills (like Pilot and Ship's Boat), or one skill and one characteristic.

A skill level must be added directly as a DM on the task roll. Characteristics are *always* divided by 5 (drop fractions) when used in tasks. Never add characteristics directly.

HOW LONG DOES THIS TASK TAKE?

The time increment on a task profile is 10 percent of the typical task duration. A roll of 3 dice (whose average result is 10) determines how many increments the task takes. The increment is always *one-tenth* of the typical task duration.

If the duration of the task doesn't matter, the task is *Instant* and that's that. No time roll is made.

If the duration *always* takes the same time, the task is *Absolute*. No time roll is made.

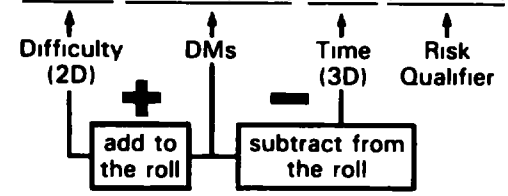
The duration of an attempt equals the increment times 3D (after any DMs are applied). The minimum is 3 increments.

DOES THIS TASK INVOLVE ANY SPECIAL RISKS?

The standard task assumes a normal amount of risk. Other levels of risk are possible:

UNIVERSAL TASK PROFILE FORMAT

Task Phrase
To diagnose damage done to an air/raft
Task Specification
Routine, Gravitics, Edu, 15min (uncertain)



Safe: With *safe* tasks if a mishap occurs, it is never damaging.

Hazardous: With *hazardous* tasks, there is a high likelihood of a serious mishap if the task fails.

Fateful: With *fateful* tasks, a mishap is guaranteed if the task fails. Don't confuse this with hazardous, which indicates the *severity of mishap*. "To avoid a mishap" situations are good examples of fateful tasks because if they fail, the mishap has not been avoided.

Uncertain: With *uncertain* tasks, the result of the attempt is largely opinion or cannot be confirmed. Those individuals associated with the task have some idea of how successful the task attempt was; however, they are not certain of the outcome.

Sensor readings, interchanges between characters (including any task which might require a reaction roll), psionics, computer programming, repairs, and research are all good candidates for uncertain tasks.

Unskilled OK: When a task states *unskilled OK*, the specified skills are useful, but not required. There is no penalty for not having the specified skills.

Confrontation: When two opposing sides are working at cross-purposes, the task becomes a *confrontation*.

HASTY OR CAUTIOUS TASKS

The standard task attempt assumes the character is taking a reasonable amount of care while performing the indicated task. The player can change this amount of care.

Hasty: When a player is in a hurry, he can specify that he would prefer a *hasty* task. The time required is shorter, but the task becomes harder. The task DMs are doubled before subtracting them from the time roll; the task difficulty increases one level.

Cautious: When it is more important to reduce danger than to finish quickly, a player can specify a *cautious* task.

A determination roll is required first. If successful, the task is cautious. If unsuccessful, the task is increased in difficulty one level.

In a cautious task, the time roll is doubled before subtracting DMs; the task difficulty decreases one level.

TASKS THAT FAIL

The details of handling failed tasks are the realm of the referee and thus are covered in the *Referee's Manual*.

Characters

Characters are the focus of **Traveller**; they are the alter egos of the players, and all activity centers on them. Each character is a person within the game and has abilities and characteristics which define his or her actions and reactions. The *character* is the **Traveller** personality; the *player* is the person engaged in playing the game. A *player character* is a character manipulated by a player.

A *non-player character* (NPC) is a character manipulated by the referee in order to allow interaction between the player characters and the universe. Once a player character is generated, he or she continues to live an exciting life of adventure in the **Traveller** universe. This life ends only with death or disability. Nonplayer characters appear and disappear as the referee needs them.

All characters begin the game the same way: untrained, inexperienced, and about 18 years of age. Each character is generated with a series of die rolls. He or she then embarks on an abstract career in order to gain skills and experience. Ultimately, the character retires or leaves that career, receives mustering out benefits, and is ready to begin adventuring.

A Note on Gender and Race: Nowhere in these rules is there a specific requirement established that any character (player or non-player) be of a specific gender or race. Any character is potentially of any race and of either sex.

INITIAL CHARACTER GENERATION

Characters are essentially described by six characteristics describing the physical and mental attributes of the individual. These characteristics are generated through a series of die rolls. Roll two six-sided dice for each of the following characteristics: Strength, Dexterity, Endurance, Intelligence, Education, and Social Standing. Record the results on paper.

Values for the six generated characteristics may range initially from 2 to 12 (with 7 the average value). As a result of various modifications, characteristic values may ultimately range from 1 to 15. For player characters the values of characteristics may not exceed 15; values do not go below 1 except for the results of calamitous injury or aging.

Obviously, it is possible for a player to generate a character with seemingly unsatisfactory values; nevertheless, each player should use the character as it is created. The Acquired Skills tables and experience procedures offer a genuine opportunity to enhance values, given only time and luck. Should a player truly consider the character so poor as to be beyond help, various options in the character improvement chapter of this guide are available to the player to improve characteristics.

The Universal Personality Profile (UPP): Characters in **Traveller** are defined using the Universal Personality Profile (the UPP), which expresses characteristics in a specific sequence using hexadecimal (base-16) numbers. In hexadecimal notation, 0 through 9 are represented by the common Arabic numerals; 10 through 15 are represented by the letters A through F. The highest single-digit number is 15 (F).

Characteristics are in the order rolled: Strength, Dexterity, Endurance, Intelligence, Education, and Social Standing. For example, a character who is average in all respects would have a UPP of 777777. If he were highly intelligent, his UPP would be 777B77 (the B indicates an intelligence of 11).

The UPP allows the referee (and players) to tell the characteristics of persons they encounter. Because the notation uses single digits or letters for each characteristic, numbers that are normally two digits cannot lead to confusion.

Naming: Once generated, the character should be named. There are several schools of thought on the nature of names. One school holds that the character should carry the name of the player; the referee can then refer to John or Marsha and everyone knows exactly who's who. This usage is convenient but tends to lose some of the flavor of the campaign.

Another school of thought calls for the use of pseudonyms or fanciful names (for example: James Doraan Anderson, or Timothy Fairweather; more extremely, Seeker or Starkiller). As with everything involved in **Traveller**, the actual choice depends only on the players and on their imaginations.

Titles: Social Standing for each character shows the relative position within society for an individual. Those with Social Standing B+ (11 or greater) are considered to be noble, and may assume their family's hereditary title. Noble titles are commonly used, even if the individual is not engaged in local government. At the discretion of the referee, the noble may have some ancestral lands or fiefs on his or her homeworld.

Knights: A knight (Social Standing B) is entitled to the use of Sir (or Dame) before his (or her) name.

Baron: Social Standing C entitles the individual to the title Baron (or Baroness). Or the individual may use the prefix *von*, *haut*, or *hault* with his or her name to denote baronial nobility.

Marquis: Social standing D indicates a marquis (or marchioness).

Count: Social standing E indicates a count (or countess).

Duke: Social standing F indicates a duke (or duchess).

Although player characters cannot advance beyond Duke, noble ranks include Archduke (16 or G) and Emperor (17 or H).

The Noble Ranks table shows the range of noble titles and their corresponding social levels.

CHARACTERISTICS

Personal characteristics are defined as follows:

Strength indicates the character's ability to apply physical force with his muscles.

Dexterity measures physical coordination and an ability to perform detailed manipulation of objects.

Endurance measures physical stamina and an ability to continue to work over time.

Intelligence corresponds to native ability to manipulate knowledge, apply logic, and arrive at conclusions. It corresponds to IQ or "raw" intelligence.

Education indicates level of accumulated knowledge gained in formal and informal settings.

Social Standing notes the social class and level of society from which the character (and his or her family) comes.

Other Character Attributes: In the course of character generation the character will acquire age (in years and in four-year terms), rank, money, skills, and possessions.

Nonhuman Attributes: The six personal characteristics assume a human character. Intelligent nonhuman races may have different characteristics in place of (or in addition to) these human characteristics.

HOMEWORLD DESCRIPTION

Once the character's six basic characteristics have been generated, the next step is to create a brief description of the character's homeworld.

Terminology: A homeworld is the world which a character claims as his domicile or place to which he returns when possible. A birthworld is the world on which a character was born and probably raised. A baseworld is the world with which a character currently has connections or business ties. Homeworld and baseworld are generally the same, and are not necessarily a character's birthworld.

Determining Homeworld: A character can specify homeworld in several different ways: a specific homeworld can be selected and used; a homeworld can be generated using homeworld *codes*; a homeworld can be generated using world *characteristics* generated from the *Referee's Manual.*

Homeworlds can be created using the Homeworld Description Codes table. Codes are brief statements that describe conditions on the world; they provide less detail than the referee-created world characteristics, but they are easier to use and remember. Using the Homeworld Description Codes table, throw 2D for each of the codes: starport, size, atmosphere, hydrographics (an asteroid has no hydrographics), population, law level, and tech level. Die modifiers are called for when generating certain codes.

Homeworlds can be created using the referee's world generation system (in the *Referee's Manual*). The referee's system generates world characteristics: precise numbers which specifically define and differentiate the conditions on a world. For example, two worlds may both be coded as *Wet Worlds* (with oceans on 24 to 94 percent of the world): one might have a world hydrographic characteristic of 3 (and have oceans over 30 percent of its surface), while the other might have a hydrographic characteristic of 8 (and oceans covering 80 percent of its surface). The World Profile Code Equivalents table shows the code equivalents for translating the worlds generated under the referee's system into world codes.

The best way to create a homeworld is to select an established world and use its description. The character is provided with a background for a world which has a relationship with the history of the universe. There is the possibility of acquaintances on the world, as well as potential for adventures within the established society of the already-created universe.

SOME TYPICAL HOMEWORLDS

Regina (Spinward Marches): A strategic world on the frontier of the Imperium.

Starport A, Medium Size, Dense Atmosphere, Wet World, Moderate Pop, Hi Law, Average Stellar

Glisten (Spinward Marches): An industrial asteroid belt.

Starport A, Asteroid, Vacuum World, Hi Pop, Mod Law, Hi Stellar

Capital (Core): The capital of the Imperium, home of the Emperor, and center of all Imperial government.

Starport A, Medium Size, Dense Atmosphere, Wet World, Hi Pop, Hi Law, Hi Stellar

Terra (Solomani Rim): The original human homeworld, ruled by a succession of governments over the past 4000 years.

Starport A, Large Size, Standard Atmosphere, Wet World, Hi Pop, Hi Law, Hi Stellar

Deneb (Deneb Sector): An important industrial world.

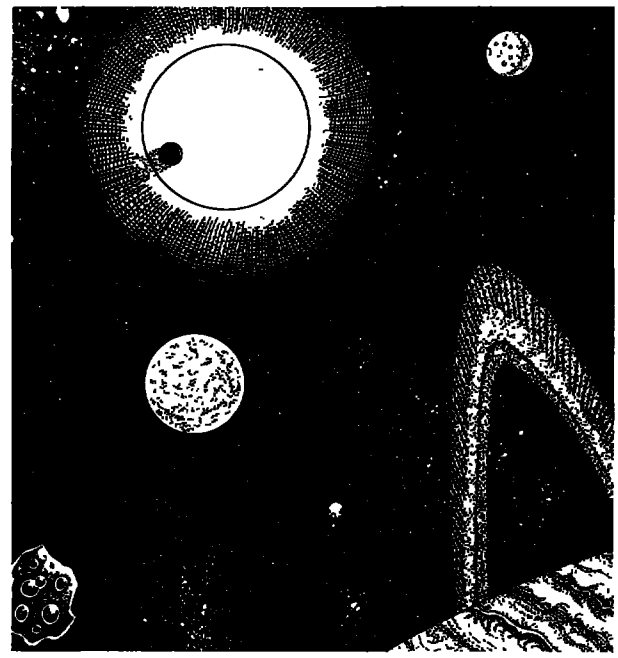
Starport B, Medium Size, Dense Atmosphere, Wet World, Hi Pop, Mod Law, Avg Stellar

Nasemin (Spinward Marches): A backwater world in the border of the Imperium.

Starport B, Large Size, Dense Atmosphere, Water World, Mod Pop, Low Law, Avg Stellar

Vland (Vland Sector): The ancient capital of the First Imperium, a predecessor to the current Imperium.

Starport A, Medium Size, Dense Atmosphere, Wet World, Hi Pop, Hi Law, Hi Stellar



CAREER TYPES

Traveller has 18 general career types that exist in the human societies within the galaxy. For players who are adventuring within the general human-dominated space that serves as a background for Traveller, these services are commonplace and ordinary. The services shown are also sufficiently general to allow their use in virtually all Traveller situations.

Each service lists its homeworld restrictions; when a world characteristic code is shown with a plus, that level or higher must be present. For example, if the restriction is Pre-Stellar+, the world must be at least Pre-Stellar in tech code.

The character's homeworld must fit the restrictions for the career, or the character cannot attempt to enlist in the career.

The careers are:

Army: A member of the planetary armed fighting forces. Soldiers deal with world surface actions, battles, and campaigns. They may also serve as mercenaries for hire. Army characters must come from a world with a tech code of Pre-Stellar+.

Barbarian: A rugged individual from a primitive world Barbarians are accustomed to hardship and are well versed in wilderness and survival situations. Barbarians must come from a world with a tech code of Pre-Ind.

Belter: An individual who prospects and mines asteroid belts in search of mineral deposits, artifacts, or salvageable materials. Being a belter is a difficult and often dangerous career, calling for individuals who are highly self-reliant, competent, and determined. Belters must come from a world with a tech code of Early Stellar+.

Bureaucrat: An individual in a government or organization in a management or executive capacity. Bureaucrats are often well-versed in the administrative and economic aspects of commerce. Bureaucrats must come from a world with a population of Mod Pop+ and a law code of Low Law+.

Diplomat: A member of the foreign service of a government. Diplomats may gain valuable interpersonal abilities and academic knowledge during their careers. Diplomats must come from a world with a tech code of Indust+ and a law code of Low Law+.

Doctor: A trained individual conducting a medical practice. Doctors know and understand well the art and science of medical diagnosis and treatment. Doctors must come from a world with a tech code of Indust+.

Flyer: A member of the Close Orbit and Airspace Control Command (the Air Force) of a world. Flyers patrol the world from the air and from orbit, monitor traffic to and from the world, and protect the world from hostile spacecraft. Flyers must come from a world with a tech code of Indust+, a population of Mod Pop+, and an atmosphere of Thin+.

Hunter: An individual who tracks and hunts animals for sport or profit. Hunters often become quite knowledgeable about the less urban aspects of visiting alien worlds. Hunters can come from any world with an atmosphere of Thin+.

Law Enforcer: A member of the law enforcement branch of a world's government. Law enforcers typically have good investigative skills. Law enforcers tend to be familiar with the unsavory aspects of society. Law enforcers must come from a world with a tech code of Indust+.

Marines: Members of the armed fighting forces carried aboard starships. Marines deal with piracy and boarding actions in space, defend the starports and bases belonging to the navy, and supplement other ground forces. Marines must come from a world with a tech code of Pre-Stellar+.

Merchant: An individual engaged in commercial enterprises. Merchants may crew the ships of the large trading corporations, or they may work for the independent free traders which carry chance cargos and passengers between worlds. Merchants can engage in every activity from plodding, conventional commerce, through quasi-legal actions, to outright violations of the law such as smuggling. Merchants must come from a world with a tech code of Early Stellar+.

Navy: This term refers to members of the interstellar space navy, which has taken on the duty of performing patrols of the space between the stars. The navy has the responsibility for the protection of all of society from the many lawless elements in the interstellar trade channels. The navy also serrves to protect society from foreign powers. Navy characters must come from a world that has a tech code of Pre-Stellar+.

Noble: A noble can be described as an individual who is a member of the upper class in society. Nobles, for the most part, perform few consistent functions throughout their lives. Nobles most often have large amounts of ready money available for them to spend, or they may possess useful influence in high places. Nobles have no homeworld skill limitations.

Pirate: An individual crewmember of an interplanetary or interstellar vessel who makes a living attacking, hijacking, or plundering commerce. Pirates tend to be rugged individuals who depend heavily on their measure of cunning and skill, as well as a degree of luck to manage to net their livelihood. Pirates must come from a world with a tech code of Early Stellar+.

Rogue: A member of the criminal element, who is, as a matter of course, familiar with the rougher and more illegal methods of accomplishing tasks. Rogues tend to be good at circumventing the law, which, unfortunately, also makes them somewhat likely to be wanted criminals on one or more worlds. Rogues must come from a world with a tech code of Indust+.

Sailor: A member of the Nautical Force Command (the wet navy) of a world. Sailors patrol a world's hydrosphere, monitor traffic upon it, and protect those travelling the seaways from being preyed upon by lawless elements. Sailors must come from a world with a hydrographics of Wet+.

Scientist: An individual who has been trained in the technological or research sciences. Scientists conduct scientific investigations into materials, situations, and phenomena. Scientists must come from a world with a tech code of Pre-Stellar+.

Scout: A member of the exploratory service. Scouts spend a large portion of their time exploring new areas, and mapping and surveying known or newly discovered areas, as well as maintaining the communications ships which carry important information and messages between the many worlds of the galaxy. Scouts must come from a world with a tech code of Early Stellar+.

HOMEWORLD GENERATION

HOMEWORLD DESCRIPTION CODES

Die	Star-port	Size	Atmos	Hydro	Population	Law Code	Tech Code
2	A	Asteroid	Vacuum	Desert World	Low Pop	No Law	Pre-Industrial
3	A	Small	Vacuum	Desert World	Low Pop	Low Law	Industrial
4	A	Small	Thin	Dry World	Mod Pop	Low Law	Industrial
5	A	Small	Thin	Dry World	Mod Pop	Mod Law	Pre-Stellar
6	A	Small	Standard	Wet World	Mod Pop	Mod Law	Pre-Stellar
7	B	Medium	Standard	Wet World	Mod Pop	Mod Law	Early Stellar
8	B	Medium	Standard	Wet World	High Pop	Mod Law	Early Stellar
9	B	Medium	Dense	Wet World	High Pop	Mod Law	Avg Stellar
10	C	Large	Dense	Wet World	High Pop	High Law	Avg Stellar
11	C	Large	Exotic	Wet World	High Pop	High Law	High Stellar
12	D-X	Large	Exotic	Water World	High Pop	Ext Law	High Stellar
on D-X:			DMs:	DMs:		DMs:	DMs:
Roll 1D;			If Size =	If Size =		If Pop =	Starport A, +3
1-3 = D			Asteroid, -9	Small, -2		Lo Pop,-1	Starport B, +2
4-5 = E			Small,-2	Large, +2		Hi Pop,	Starport C, +1
6 = X			Large, +2			+1	Asteroid, +1
							Water World, +1
							Low Pop, +1
							High Pop, +2

Roll 2D on each column of the table to determine the homeworld description. The exact **Traveller** world characteristic for each code is on the table below.

WORLD PROFILE CODE EQUIVALENTS

Value	Size	Atmos	Hydro	Pop	Law Code	Tech Code
0	Asteroid	Vacuum	Desert World	Low Pop	No Law	Pre-Industrial
1	Small	Vacuum	Desert World	Low Pop	Low Law	Industrial
2	Small	Thin	Dry World	Mod Pop	Low Law	Industrial
3	Small	Thin	Dry World	Mod Pop	Mod Law	Pre-Stellar
4	Small	Standard	Wet World	Mod Pop	Mod Law	Pre-Stellar
5	Medium	Standard	Wet World	Mod Pop	Mod Law	Early Stellar
6	Medium	Standard	Wet World	High Pop	Mod Law	Early Stellar
7	Medium	Dense	Wet World	High Pop	Mod Law	Avg Stellar
8	Large	Dense	Wet World	High Pop	High Law	Avg Stellar
9	Large	Exotic	Wet World	High Pop	High Law	High Stellar
10	Large	Exotic	Water World	High Pop	Ext Law	High Stellar
11		Exotic			Ext Law	Hi Stellar
12		Exotic			Ext Law	Hi Stellar
13		Exotic			Ext Law	Hi Stellar
14		Exotic			Ext Law	Hi Stellar
15		Exotic			Ext Law	Hi Stellar

Consult the *Referee's Manual* and world generation for more on the world profile codes. This table reflects where travelling characters are likely to be *from*. They are likely to be from a moderate to high population world with a good starport, and a technology level of early stellar or higher.

DEFAULT SKILLS

Navy, Marines, Flyers, Scouts, Merchants, or Pirates: Vacc Suit-0.
All Characters Except Barbarians: Gun Combat-0.
Early Stellar+: Computer-0.
Average Stellar+: Grav Vehicle-0.
Industrial, Pre-Stellar, or Early Stellar: Wheeled Vehicle-0.

WORLD TECH CODES

Pre-Industrial: From the stone age to just prior to internal-combustion engines.
Industrial: Internal combustion engines, mass production, nuclear power, and miniaturized electronics.
Pre-Stellar: Personal super-computers, interplanetary travel, and early anti-gravity.
Early Stellar: Fusion power, interstellar jump drive, and anti-grav vehicles.
Avg Stellar: Sophisticated robots, large jump-capable starships, holocrystal data storage, personal anti-grav belts, and extensive terraforming.
Hi Stellar: Man-portable fusion power plants, anti-grav suspended cities, huge jump-capable starships, convincing pseudo-human robots, and age-retarding medicine (anagathics) commonplace.

STARPORT CODES

A: Excellent quality installation.
B: Good quality installation.
C: Routine quality installation.
D: Poor quality installation.
E: Frontier installation.
X: No starport.

WORLD SIZE CODES

Asteroid: Dia below 200 km.
Small: Dia 200-7199 km.
Medium: Dia 7200-11,999 km.
Large: Dia 12,000-16,800 km.

ATMOSPHERE CODES

Vacuum: Very little (if any) atmosphere (pressure below 0.43)
Thin: Thin nitrogen-oxygen atmosphere (pressure 0.43-0.7)
Standard: Standard nitrogen-oxygen (pressure 0.71-1.49)
Dense: Dense nitrogen-oxygen (pressure 1.5-2.5)
Exotic: Unusual, dangerous.

HYDROSPHERE CODES

Hydrosphere is water unless atmosphere is exotic.
Desert World: Water covers under 5 percent of the surface.
Dry World: Water covers 5-24 percent of the surface.
Wet World: Water covers 25-94 percent of the surface.
Water World: Water covers 95-100 percent of the surface.

WORLD POPULATION CODES

Lo Pop: Less than 10,000.
Mod Pop: 10,000 to 1 billion.
Hi Pop: 1 billion or more.

WORLD LAW LEVEL CODES

No Law: No prohibitions.
Lo Law: Machineguns, Autorifles, Energy Weapons, and Body Pistols prohibited. Legal weapons*: Battle Dress, Carbine, Laser Pistol, Laser Rifle, Pistol, Revolver, Rifle.
Mod Law: Firearms prohibited. Legal weapons*: Bayonet, Boomerang, Bow, Early Firearms, Halberd, Neural Pistol, Neural Rifle, Pike, Spear.
High Law: Weapons prohibited outside the home. Legal weapons*: Battle Axe, Blowgun, Bola, Broadsword, Crossbow, Cutlass, Foil, Sword.
Extreme Law: Weapons prohibited. Legal weapons: Blade, Cudgel, Dagger, Hand Axe, Sling.
*And ones from higher codes.

ACQUIRING SKILLS AND EXPERTISE

A newly generated character may attempt to enlist in any career allowed by his homeworld. The Prior Service table lists throws. Throwing those numbers or higher on two dice allows enlistment. Most careers allow die modifications if the character has one or two characteristics of a certain level or higher. If both are in the required level, the modification is cumulative.

For example, the Navy throw is 8+; DM +1 is allowed for Intelligence of 8 or more, and DM +2 for Education of 9 or more. If a character, Hylan Vincent, 8946A8 (Intelligence 6 and Education 10) wants to enlist in the Navy, he has a DM +2 (for Education). If he rolls a 3 on two dice and adds his DM +2, he gets 5, which is insufficient (he needs 8+). The Navy rejects him.

Only one enlistment attempt is permitted per character. If rejected for enlistment, he must submit to the draft.

The Draft: If an enlistment attempt fails, the character must submit to the draft. Each of the six military services (Navy, Army, Marines, Scouts, Flyers, and Sailors) has a draft number; the draftee rolls one die, entering the service with that number.

Note that it is possible for a character to be drafted into the very service which had just previously rejected an enlistment. It is also possible to be drafted into a service which an individual's homeworld restrictions would normally disallow.

A draftee is not eligible for a commission during his first term of service; he becomes eligible during the second and subsequent terms of service if he reenlists.

Terms of Service: Upon enlistment (or upon being drafted) a character embarks on a four-year term of service. This adds four years to the character's age. Each time he reenlists, it is for a four-year term of service. The Terms Table lists a character's beginning and ending age for each term of service.

TERMS TABLE

Term	*Starting Age*	*Half-term*	*Ending Age Full-term*
1	18	20	22
2	22	24	26
3	26	28	30
4	30	32	34
5	34	36	38
6	38	40	42
7	42	44	46
8	46	48	50
9	50	52	54
10	54	56	58
11	58	60	62
12	62	64	66
13	66	68	70
14	70	72	74
15	74	76	78
16	78	80	82
17	82	84	86
18	86	88	90
19	90	92	94
20	94	96	98
21	98	100	102

Default Skills: Certain characters automatically receive default skills of level 0. A level of 0 for a skill indicates that the individual can undertake ordinary activities but is not experienced enough to try dangerous activities or fancy actions. A skill level 0 is sufficient to prevent a task from increasing in difficulty because of lack of skill, although a skill level 0 provides no skill DM.

Default skills are conferred automatically as follows:

Characters enlisting in the Navy, Marines, Flyers, Scouts, Merchants, or Pirates automatically receive Vacc Suit-0.

All characters, except Barbarians, automatically receive Gun Combat-0 (Gun Combat is a cascade skill).

Characters from a world with a tech code of Early Stellar+ automatically receive Computer-0.

Characters from a world with a tech code of Average Stellar+ automatically receive Grav Vehicle-0; characters from a world with a tech code of Industrial to Early Stellar automatically receive Wheeled Vehicle-0.

Survival: Each career term involves some danger; during each term, a character must successfully throw the career's survival number or better to avoid injury in the line of duty. Each service also has DMs which may apply.

Failure to successfully achieve the survival throw forces the character to leave the service after having served only two years of the four-year term. The short term is not counted for mustering out benefits.

However, the character may still roll for special duty and take the indicated skill rolls if successful. The character may not roll for commission/position or promotion during the short term.

Optional Survival Rule: The referee or player may decide that failure of the survival throw results in death and that a new character must be generated.

Commissions/Positions and Promotions: Each service has a commission/position number, in order to be given a commission/position, the character must throw the stated number. DMs may apply to the throw. If the commission/position is achieved, the character receives rank 1 in the career. A character may attempt to acquire a commission/position once per term of service until successful, but a draftee may not attempt to acquire a commission in the first term of service.

In the same term of service that a commission is received and in each subsequent term of service, a character may attempt to be promoted. Each service has a promotion number and DMs affecting that promotion throw. If a promotion is achieved, the character advances to the next higher rank in the service. A character is eligible for one promotion per term of service. Commissions/positions or promotions are not available to Belters, Doctors, Hunters, Rogues, Scientists, or Scouts.

Special Duty: Each service has a special duty number. To be given special duty the character must throw the stated number. If special duty is achieved, the character gets an extra skill throw for the term.

Skills and Training: During each term of service, a character has the opportunity to acquire personal skills and expertise. Allowances are made for the character's acquisition of new skills based on service, special duty, commission/position, and promotion.

Skills are acquired by rolling on the Acquired Skills table once for each skill allowed, using one die. There are four tables, each containing different general types of skills. One of the tables is chosen before the die is rolled, and the single die roll determines the specific skill acquired.

Of the four Acquired Skill tables, the first three may be used by any character. The fourth is available only through advanced education and may be used only by characters who have an Education characteristic of 8+.

During the character's first term of service, he becomes eligible for two term skills; during each additional term of service, the character becomes eligible for one term skill. Upon receiving a commission/position, he becomes eligible for one additional skill. Upon being promoted, the character becomes eligible for one additional skill. If the character receives special duty, he becomes eligible for one additional skill.

If any throw (including DMs) for commission/position, promotion, or special duty is at least 4 or greater than the required throw, then *two* extra skills are received instead of one. For example, a character who joins the Navy, receives a commission, receives a promotion during the initial term of service, and receives a special duty roll of 9 or better becomes eligible for six skills in his first term. The same character, in the next term, is eligible for only one skill if he does not receive another promotion or any special duty.

Some skills are automatically acquired by characters (without using eligibility) by virtue of rank or service. The Rank and Service Skills table lists them. When characters achieve the indicated rank or service, they get the indicated skill.

Belters, Doctors, Hunters, Rogues, Scientists, and Scouts are an exception to the normal eligibilities. Because these careers have no rank or promotion (only special duty) such characters do not become eligible for promotion-related extra skills during their careers. Instead, Belters, Doctors, Hunters, Rogues, Scientists, and Scouts each receive two term skills for each term of service, including the first.

The Acquired Skills tables provide characteristic alterations (like +1 Strength) and skills acquisition results.

Characteristic Alterations: These are expressed as an addition to (or subtraction from) ability. Alterations usually affect Strength, Dexterity, or Endurance (but some services can affect other abilities). These alterations are applied immediately and require no further attention. An example is +1 Dexterity.

Characteristic alterations reflect physical (or other) training while in the service. A result of +1 Strength, for example, may mean the service has required calisthenics, improving strength.

Acquisition of Skills: Upon the first acquisition of a skill, the player writes the skill name, followed by a dash and the number 1 (thus: Navigation-1). The second time the skill is acquired, the number is increased to show greater expertise (thus, Navigation-2). Further acquisitions of the skill will increase this level. The higher the level, the greater the expertise in that skill.

SKILL TYPES

Skill types that can be acquired are: basic (like Navigation), cascade (like Gun Combat), and included (like Handgun).

Basic Skills: These are expressed as a general ability, such as Navigation or Engineering. No further choice is needed.

Cascade Skills: Cascade skills call for an immediate selection of a specific skill as a result. (Gun Combat is an example of a cascade skill.) The player should select from the skills available. Some cascade skill lists contain skills that are themselves cascade skills and call for further selection.

Included Skills: Some skills include other skills within them. No additional choice is required; the character is treated as having all the skills. Handgun is an example of an included skill.

Skill Limitations: No character can (at any time) have more skills (or combined total levels of skills) than the sum of Intelligence and Education. If the character has reached this limit, he may voluntarily reduce any current skill as needed to *make room* for a new skill or an increased skill level in an existing skill.

After making the skill rolls for the term, make sure a character's limits have not been exceeded. If they have, reduce any skill levels (at the player's discretion) to meet the restriction.

Homeworld Limitations: Certain skills are not available on the character's homeworld. Vehicle skills are limited by the character's homeworld tech code, and weapon skills are limited by the character's homeworld tech code and law code.

Law Enforcers, Pirates, and Rogues may select weapon skills one law code lower than their homeworld's law code.

A character may override the homeworld limitation and acquire a skill not normally available by rolling 2D for 7+. If that fails, he forfeits the skill attempt. For example, if a character from an Early Stellar tech code got Vehicle skill on a skill roll and wanted to try for Grav Belt skill (Avg Stellar), he must roll 2D. If the roll is less than 7, he loses his Vehicle skill roll.

Nobles are not subject to any homeworld skill limitations.

AGING

At the end of a term, add four years to a character's age.

When a character reaches age 34 (the end of the fourth term), aging begins to take its toll. The Aging table (page 47) must be consulted then and at each subsequent term's end. This table shows the characteristics affected (Strength, Dexterity, Endurance, and eventually Intelligence) and the throws necessary to avoid the effects of aging. Upon failing a specific saving throw, the indicated reduction is applied to the characteristic.

THE IMPERIAL CALENDAR

The Imperial calendar was established at the creation of the Third Imperium as a universal calendar reform. Imperial dates count from the year of the founding of the Imperium, the year "zero." Dates before zero are negative, after are positive. For example, Terra discovered the jump drive in -2431. The Imperium was founded in 0. The Emperor Strephon was assassinated in 1116.

The year is divided into 365 standard days, which are grouped into 52 weeks of seven days each. The lengths of days and weeks is a legacy of Terran domination during the Second Imperium. Days are numbered consecutively beginning with 1. The first day of the year is a holiday not part of any week. For example, the first day (Holiday) of the year 1116 is 001-1116. The emperor was assassinated on 132-1116. The last day of the year is 365-1116.

ANAGATHICS

Anagathics are longevity drugs. They help prolong life and prevent aging. Upon reaching age 30 at the end of the third term of service (but never before age 30), a character may try to locate a source of anagathics. If successful and if the supply can be maintained, the character will age ever so slowly. With luck, the character may reach an age of 100 or more before old age finally takes its toll.

If the character wants to use anagathics, he or she must so specify before making the survival roll for the term. In deciding to be an anagathics user for the term, the character must make the following concessions:

Apply an automatic DM of -1 to the survival roll. This is in addition to the regular +2 DM the character may receive (or +terms in the case of Belters). This DM represents the dangerous side-effects anagathics have on some users and the extra risks anagathics users often take to maintain a constant supply. If at any point the character decides to give up taking anagathics (and so specifies before rolling for survival), the survival roll reverts to normal. Society generally frowns on nobles who take anagathics, so when generating a noble character who wants to take anagathics, apply a DM of -2 to the survival roll, instead of -1.

For each term in which the character indicates his or her desire to use anagathics (whether a supply is found or not), his eligibility for the mustering out benefits roll is forfeited for that term. This represents some of the great expense involved in maintaining a steady supply of anagathics.

Once the character voices the desire to be a user of anagathics, the maximum number of rolls on the Cash table becomes two instead of the usual three rolls. This restriction is permanent even if the character later gives up taking anagathics. This represents the great financial burden associated with just trying to find a reliable supply of anagathics.

Finding Anagathics: To find an available supply of anagathics for the four-year term, roll 12+ on 2D, with the following DMs based on the character's homeworld: DM +3 if Starport A, DM +2 if Starport B, DM +1 if Starport C, DM +1 if tech code Early Stellar, DM +2 if tech code Average Stellar, DM +3 if tech code High Stellar.

If the character fails the anagathics availability roll, one retry is allowed if the character rerolls another survival roll first (needless to say, the character must succeed at the second survival roll, or be forced to muster out).

On a successful availability roll, the character automatically succeeds at the aging saving throws for two characteristics of his or her choice. In effect, the character selects the one characteristic (Strength, Dexterity, or Endurance) which to risk in an aging saving throw. The age 66 line of the Aging Table (see page 47) requires four saving throws, so upon reaching the age 66 line, two characteristics of choice are automatically saved, and the other two must be risked in an aging saving throw as normal.

It takes a while for the total effects of anagathics to be felt. On the first term of taking anagathics, advance to the next line on the Aging Table as usual.

However, for each *subsequent* term in which a supply of anagathics is maintained, the character can *remain* on that line of the Aging Table instead of advancing one line per term as usual. So, if the character is on the age 34 line, he or she can stay on the age 34 line as long as a constant supply of anagathics is maintained.

If the character ever loses the supply of anagathics for a term, at the end of the term, roll saving throws *twice* for each characteristic (but do not yet advance one line on the Aging Table; it also takes a while for the effects of anagathics to totally go away). Both rolls must succeed or the characteristic is lowered by the indicated amount on the Aging Table. This represents the withdrawal effects from interrupting the supply of anagathics.

If the character continues to abstain from anagathics in subsequent terms, normal Aging resumes (advance one line per term on the Aging Table as usual). The double saving throw withdrawal effects occur only at the end of the first term in which the character stops taking anagathics.

If the character later regains the supply of anagathics, the term in which he begins retaking anagathics is treated again as a first term on anagathics: the saving throw benefits are received, but the character must still advance one line on the Aging Table. Obviously, anagathics are most effective if they can be taken *long-term without interruption.* A continually interrupted supply can have devastating effects.

Recording Age: Notice a character on anagathics will quickly get *out of sync* with the Aging Table on page 47. Thus, even though the character's actual age may be 50, if the character has been able to maintain a constant supply of anagathics, the character will roll a saving throw for only one characteristic (instead of all three) on the age 34 line of the Aging Table that term. Next term, the individual will have an actual age of 54, but will again roll on the age 34 line, and so on.

If a character's age has ever been affected by anagathics, so indicate by writing the age as: Age 34 (50).

The 34 represents the character's apparent age and, hence, the line of the Aging Table currently being used. The (50) represents the character's actual age in years. If the character has an available supply of anagathics, list anagathics as a possession. If the character is currently in withdrawal from anagathics (just lost the anagathics supply this term), add an exclamation point after the age: Age 34! (50).

AGING CRISIS

If, as a result of aging, a characteristic is reduced to zero, the character has an *aging crisis* and becomes quite ill. A basic saving throw of 8+ applies to avoid death.

If the character survives, recovery is made immediately. The characteristic which was reduced to zero automatically becomes 1.

This process occurs each time a characteristic is reduced to zero. If more than one characteristic reaches zero simultaneously, perform a separate Aging crisis for each characteristic.

Disability: At a certain point in life, characters may quit adventuring: when the age 66 line of the Aging Table is reached; when any one physical characteristic (Strength, Dexterity, or Endurance) permanently equals 1; or when the sum of all three physical characteristics equals 10 or less.

The player is then free to generate a new character. Quitting due to disability allows the player to maintain a reasonably competent character.

REENLISTMENT AND MUSTERING OUT

Characters may reenlist for continuing service. Eventually, events will force a character to leave the service—to muster out.

Reenlistment: Generally, a character is free to leave the service or to remain for another term, depending on the individual's goals and desires. As always, war, peace, and other events loom ever-present over the character, and then others may decide the course of his career.

Each service has a reenlistment number; in order to undertake a subsequent term of service, a character must throw that number or greater (no DMs are allowed). If the throw is not successful, reenlistment has been denied, and the person must leave the service and muster out into the game. If the throw is 12 (exactly), the needs of the service require that the character serve another term, regardless of his or her personal desires.

Because a character may be required to serve another term, the reenlistment throw is required at the end of each term of service, whether the character intends to continue or not.

Retirement: A character may serve any number of terms voluntarily and may leave after any term (provided a mandatory reenlistment throw of 12 exactly does not occur). A person may retire any time after the end of the fifth term. Retirement grants the individual an annual retirement pay (in addition to any mustering out benefits); rates of retirement pay are shown in the Retirement Pay table.

Most human characters have only one career in their lives, although a few humans are daring enough to make a complete shift from their current career into a totally new career. The generated **Traveller** player character is one of these rare individuals.

When the character retires from his or her present career and musters out, a significant career shift has occurred. Character generation represents experience in a *prior career.* If a character being generated wants to change careers, he musters out into the game. (Because **Traveller** rules allows for continued character improvement after character generation, no provision is made for changing careers *during* character generation.)

Mustering Out: When a character leaves a chosen career (for any reason), he is eligible for mustering out benefits. The two Mustering Out tables indicate the nature of these benefits: one provides travel, education, and material benefits, while the other provides cash severance pay. Each table is matrixed by service and a single die roll. When mustering out of the service, a character is allowed to consult these tables based on total terms of service and on final rank.

One benefit roll is allowed for each full term served (exception: see Aging). Note that if a character serves only half a term, that term does not count toward mustering out benefits.

In addition, a character who has achieved rank 1 or 2 receives one extra roll, while a character with rank 3 or 4 receives two extra rolls. A character who has received rank 5 or 6 receives three extra rolls and, in addition, may apply a DM of +1 to die rolls on the Skills and Benefits table. Characters with the skill of Gambling-1+, Prospecting-1+, or higher may add +1 to the die roll on the Cash table.

A character is free to choose between the Benefits table and the Cash table, but no one may consult the Cash table more than three times (exception: see Aging) during the mustering out process.

For example, a character who has served four terms of service and has no rank is eligible for four mustering out benefits. She may roll a total of four times, distributing the rolls as she desires between the two tables, provided only that she may roll no more than three times on the Cash table. The player must designate the table being used before rolling the die.

In addition to the skills acquired while actually in service, the following skills and substantial rewards can be acquired through the mustering out procedures.

Retirement Pay: Any character who leaves the service at the end of the fifth or later term receives retirement pay. This pension is paid at the beginning of each year, effective upon leaving the service, and may be collected at any class A or B starport. The table indicates the rate of pay, which is dependent upon the character's total terms of service. Service beyond the eighth term adds Cr2000 per additional term (this benefit is waived for each term in which the character opted to take anagathics: see Aging and also Anagathics).

Retirement pay is not available to characters who have been Barbarians, Pirates, Rogues, or Scouts.

Travel Allowances: The mustering out procedure makes a variety of benefits available which may generally be called travel allowances. Such allowances take three basic forms: money, passages, and Travellers' Aid.

Money: The Cash table indicates specific amounts of money which become available. Some portion of the money should

THE SOLOMANI HYPOTHESIS

When the Solomani (the current term for the Terrans) discovered jump drive in -2431, they also discovered more than a dozen human races had already colonized the worlds surrounding Earth. At the time, there was no satisfactory explanation for the more than 40 genetically identical human races.

The Solomani Hypothesis, first proposed by Magis Sergei haut-Devroe (64 to 141), theorized that all of the many widely scattered human races of the galaxy originated on Terra, and he thought that they were transported to their current homeworlds by an alien race (called the Ancients) for purposes which even today remain unclear. The approximate date of this scattering has been established as -300,000.

When Terra was incorporated into the Imperium in 588, a small historical mission verified much of haut-Devroe's work. The hypothesis was already generally accepted by the majority of the human population in the Imperium.

More than 40 known human races have been located (and several more of them failed to adapt to their new worlds and are now extinct); only three have reached widespread prominence: the Vilani, the Zhodani, and the Solomani.

MERCHANT DOCTOR JAMES ANDERSON

The following illustrates character generation. Actual die throws are shown in parentheses, as are comments on the application of game rules. Die modifications are labeled DM.

Just after school, Anderson sets out to win his fortune. Anderson's player generates personal characteristics: He rolls 7, 6, 7, 10, 10, and 9. His player could select an existing world as Anderson's homeworld; instead he decides to generate a homeworld, with the following result:

Starport B, Small, Thin, Wet, High Pop, Mod Law, Avg Stellar.

Wanting to be a merchant, he visits a class B starport (roll 7+ to enlist, DM+2 for Int 6+, and DM+1 for Str 7+; he rolls 4+3=7) and convinces a captain to let him sign on.

FIRST TERM

During his first term (survival requires 5+, DM+2 for Int; he rolls 9+2=11), he faces humdrum events. When he applies for a commission (roll 4+, DM+1 for Int; he rolls 2+1=3) and fails the test, he pushes for special duty (roll 4+; he rolls 6) and gets it. Anderson decides to continue his career (roll 4+; he rolls 7) and reenlists.

Skills: He is eligible for three skills (two for the initial term, one for special duty). His duties included operating a ship's vehicle (Table 2, roll 1=Vehicle, he selects Grav Vehicle). While on board, he manned sensors for a watch (Table 2, roll 5=Technical; he selects Sensor Ops) during in-system flight to the safe jump-point. His special assignment is training as a ship's medic (Table 4, roll 1=Medical).

SECOND TERM

Anderson's second term is uneventful (survival requires 5+, DM +2 for Int; he rolls 7+2=9). He takes and passes the commission test, earning his commission as 4th Officer and an extra skill in the process. He fails the 3rd Officer test (roll 10+, DM+1 for Int; he rolls 8+1=9). He wants more special duty (roll 4+; he rolls 5) and barely gets that. He signs on for a third term (roll 4+; he throws 7) and is accepted.

Skills: He is eligible for four skills this term (one for service, two for his commission, one for special duty). Anderson continues his ship's vehicle duty (Table 2, roll 1=Vehicle, he selects Grav Vehicle to increase his expertise). He teaches his knowledge to others (Table 2, roll 3=Inborn, he selects Instruction). Several cargo loadings take place in orbit (Table 4, roll 2=Space; he selects Zero-G Environ), giving him experience in Zero-G. He continues his training as a ship's medic (Table 4, roll 1=Medical), increasing his skill level to Medical-2.

THIRD TERM

Anderson survives some danger this term (survival requires 5+, DM+2 for Int; he rolls 5+2=7). He fails the test for 3rd Officer (roll 10+, DM+1 for Int; he rolls 2+1=3) and considers quitting. However, he gets special duty (roll 4+; he rolls 8, which grants him two skill rolls). He is unsure whether to continue (roll 4+; he rolls 4) but finally reenlists.

Skills: Anderson is eligible for three skills. During his disillusionment, he frequents seedy dives, drowning his sorrows (Table 1, roll 4=Hand Combat, he selects Brawling). He spends time with his crewmembers (Table 3, roll 4=Space; he selects Pilot), and one recommends him as a backup pilot. As his spirits pick up, he becomes more fun to be around (Table 2, roll 3=Inborn; he selects Carousing).

FOURTH TERM

Things are looking up for Anderson, until a pirate raid nearly kills him (survival requires 5+, DM+2 for Int; he rolls 3+2=5). He again fails the test for 3rd Officer (roll 10+, DM+1 for Int; he rolls 7). He thinks his path lies more in volunteering for special duty, which he receives (roll 4+; he rolls 7). He reenlists and begins a fifth term (roll 4+; he rolls 5).

Skills: He is eligible for two skills this term. He gets several bridge assignments at the communications console (Table 2, roll 5=Technical; he selects Communications) and, continuing his medical studies (Table 4, roll 1=Medical), gains certification as a full ship's doctor.

Aging: Because this is the end of his fourth term, he is susceptible to aging. He considers anagathics but decides he can't afford them on his salary. He ages slightly through the term. Saving throws for Strength (8+), Dexterity (7+), and Endurance (8+) are required—he rolls 5, 7, and 7, lowering his Strength and Endurance by one each.

FIFTH TERM

Beginning his fifth hitch (survival requires 5+, DM +2 for Int; he rolls 7+2=9), he shoots for 3rd Officer (roll 10+, DM +1 for Int; he rolls 6+1=7) and fails. He seeks more special duty (roll 4+; he rolls 7), and his efforts pay off. Now (roll 4+; he rolls 3), the service falls on hard times and no longer needs his services. He is eligible to retire (pension of Cr4000 per year).

Skills: He is entitled to two skills. He studies (Table 3, roll 4=Space, Table 4, roll 2=Space) to improve his Pilot skill and earns a final skill level of Pilot-2.

Aging: Age takes its toll—throws for Strength (8+), Dexterity (7+), and Endurance (8+); he rolls 7, 6, and 11, resulting in the reduction of his Strength and Dexterity by one point each—with a decrease in health.

MUSTERING OUT

Eligible for benefits (five rolls on the tables for terms served), he gains (Cash table, roll 4=Cr20,000) a bonus of Cr20,000, (Benefits table, roll 3=+2 Education) an educational benefit, (Benefits table, roll 4=Weapon) an auto pistol, (Benefits table, roll 6=Middle Passage) a travel allowance, (Benefits table, roll 4=Weapon, again), and Handgun skills.

Anderson feels it is hard to get ahead on a merchant starship. He is a good starship pilot and a certified doctor; his skills make him valuable to any adventuring party.

Merchant Fourth Officer Doctor James Anderson

556AC9 Age 38 5 terms Cr20,000

Medical-3, Pilot-2, Grav Vehicle-2, Sensor Ops-1, Communications-1, Instruction-1, Brawling-1, Handgun-1

Auto Pistol, 1 Mid Passage

Starport B, Small, Thin, Wet World, High Pop, Mod Law, Avg Stellar

be considered severance pay or life's savings; the remainder is a travel allowance.

Passages: The Skills and Benefits table includes passages (tickets for interstellar travel). They are acquired in blank, and each represents one passage (interstellar voyage) between one world and the next world visited by the starship. They are available in three classes: high passage (first-class accommodations worth Cr10,000), middle passage (second-class accommodations worth Cr8000), and low passage (frozen-sleep accommodations worth Cr1000). Passages may be retained, or they may be cashed in at 90 percent of their face value.

Travellers' Aid: The Travellers' Aid Society is a private organization which maintains hostels and facilities at all class A and B starports in many parts of human space. Facilities are available (at reasonable cost) to members and their guests.

Travellers' Aid Society membership may be acquired upon mustering out while using the Benefits table. Membership may be achieved only once per character. Receipt of membership in the Travellers' Aid Society upon mustering out may be construed as a reward for heroism or extraordinary service to the Society rather than an official benefit of the service.

Membership is for the life of a character and is not transferable. The Travellers' Aid Society invests its membership fees and other income; it uses its capital and return to provide benefits to its members. Every two months it pays dividends in the forms of one high passage to each member. This passage may be used, retained, or sold.

Characteristic Alterations: Finally, the Skills and Benefits tables make provision for some characteristic alterations. These tend to be increases in Intelligence, Education, or Social Standing and are applied to the character immediately.

Material Objects: The mustering out procedure makes several types of objects available: weapons, instruments, forensic kit, a letter of marque, a watch, or a starship.

Weapons: The Benefits table indicates a receipt of a weapon; in such cases, a character may choose any weapon.

If, while mustering out, the same benefit is received again, the character has the option of taking another example of the same weapon, selecting a different weapon, or taking the benefit as +1 in skill in the weapon category previously received. For example, the benefit weapon entitles the character to select any weapon, so he may choose a cutlass. On the next benefit roll, he again receives weapon as a benefit. He could select a different weapon, choose cutlass again, or elect to take expertise in the weapon category he has already received (giving an expertise of Large Blade-1).

Instruments: A Doctor may receive a full set of instruments for treatment of injuries and illnesses. The set includes surgeon's instruments, diagnostic tools, and a supply of drugs suitable for most purposes. Basic value of the set is Cr5000.

Forensic Kit: A Law Enforcer may acquire a forensic kit to test for evidence at the scene of a crime. The kit includes equipment to test for fingerprints, residues, poisons, gasses in the air, and so on. The kit also includes a still camera for recording the scene. Approximate value of the kit is Cr9000.

Watch: Bureaucrats may receive the proverbial gold watch for their years of service. Typically, this item has a value of Cr50. On a throw of 7+, it may have a value of Cr200 to Cr1200.

Letter of Marque: A government may issue a letter of marque authorizing a Pirate to raid the shipping of its enemies. Such a Pirate receives quasi-official status as a privateer. A letter of marque has no monetary value; it provides a positive DM for receipt of a ship as a benefit.

Starships: Several types of starships are available as mustering out benefits: a scout/courier, a safari ship, a lab ship, a corsair, a seeker, a yacht, or a free trader. A **Scout/Courier** is a very common type of dispatch vessel within human space. A **Safari Ship** is an excursion vessel intended for trophy-taking (real or photographic) expeditions to other worlds. A **Lab Ship** is a mobile base for scientific analysis and investigation. A **Corsair** is an armed commercial raiding ship. A **Seeker** is a Scout/Courier modified for asteroid prospecting and mining. A **Yacht** is a noble's plaything used to entertain friends and undertake political or commercial missions. A **Free Trader** is an elementary interstellar merchant ship plying the space lanes carrying cargo and passengers.

Scout/Couriers are technically loaned to ex-Scouts and are subject to recall; because of upheaval in the Imperium, the Scout/Courier is effectively owned by the characters but cannot be sold. Corsairs are owned by the character. Regardless of how many times a character receives a Scout/Courier or a Corsair as a benefit, he can receive only one ship.

Other ships are subject to 40-year loans. The first ship benefit receipt provides the ship with a liability for the loan. If the benefit is received more than once, each additional one is considered to represent actual possession of the ship for a 10-year period. (The ship is 10 years older, and the payment term is reduced by 10 years.) A character may own a ship, free and clear, by rolling the ship benefit five times (once to obtain it, four times to pay off the sequences of payment); the ship is 40 years old.

PREDECESSORS TO THE THIRD IMPERIUM

The First Imperium was established in -4045 by the Vilani and reached its height about -3500. By -2400, it was a static, decaying empire, waiting for a push to topple it.

The Terrans discovered jump drive in -2431 and encountered the Vilani and their First Imperium. After many interstellar wars (-2408 to -2219), the Vilani empire collapsed and was taken over by the Terran Confederation. This new empire was technically the Rule of Man, although it is sometimes called the Second Imperium. It tried valiantly to reverse the decay of the First Imperium, but ultimately failed. The Rule of Man itself collapsed in -1776. One major effect of the Rule of Man was to thoroughly mix the Vilani and the Solomani within the Imperial population.

When the Rule of Man collapsed, most of civilized space was plunged into the Long Night, a period of isolation and technological stagnation which lasted from -1776 to 0.

Around -30 a small group of industrialized worlds began an expansion campaign to restore interstellar trade on a grand scale. The campaign succeeded beyond anyone's wildest dreams, restoring trade lanes and communications between hundreds of worlds. In the year 0, the Third Imperium was established. A thousand years later it was the largest, strongest empire in history.

BASIC CHARACTER GENERATION

BASIC SKILL ELIGIBILITY

For initial term of service.....2
Per subsequent term.....1
Upon receiving commission.....1
Upon receiving promotion.....1
Upon receiving special duty.....1

Note: Scouts receive two skills per term of service.

If the throw (including DMs) for commission, promotion, or special duty is 4 greater than the required throw, then two skills are received instead of one.

MUSTERING OUT BENEFITS

Per term of service.....2
If rank 1 or 2.....1
If rank 3 or 4.....1
If rank 5 or 6.....1

Benefits Table: DM + 1 if rank 5 + .

Cash Table: DM + 1 if retired or Gambling-1 + .

CHARACTER GENERATION CHECKLIST

1. Roll for personal characteristics (2D each): Strength, Dexterity, Endurance, Intelligence, Education, and Social Standing.

2. Select service choice, and then roll for enlistment, using all applicable DMs.

A. If rejected, submit to the draft.

B. Roll for survival.

C. Roll for position, called commission for these six careers (if not yet rank 1).

D. Roll for promotion (if rank 1 or higher).

E. Roll for special duty.

F. Determine skills allowed.

1.) Specify automatic rank and service skills.

2.) Specify acquired skills allowed by character's basic skill eligibility.

3.) Specify character's special skills allowed by assignment to special duty.

4.) Specify cascade skills.

G. If completing term 4 + , determine aging effects.

H. Roll for reenlistment and return to 2B if successful.

3. Complete the mustering out procedure.

A. Determine benefits.

B. Record characteristics and skills for later use.

PRIOR SERVICE TABLE

	Navy	*Marines*	*Army*	*Scouts*	*Flyer*	*Sailor*
Enlistment	8 +	9 +	5 +	7 +	6 +	6 +
DM + 1 if	Int 8 +	Int 8 +	Dex 6 +	Int 6 +	Str 7 +	End 10 +
DM + 2 if	Edu 9 +	Str 8 +	End 5 +	Str 8 +	Dex 9 +	Str 8 +
Draft	1	2	3	4	5	6
Survival	5 +	6 +	5 +	7 +	5 +	5 +
DM + 2 if	Int 7 +	End 8 +	Edu 6 +	End 9 +	Dex 8 +	End 8 +
Commission	10 +	9 +	5 +	—	5 +	5 +
DM + 1 if	Soc 9 +	Edu 7 +	End 7 +	—	Edu 6 +	Int 9 +
Promotion	8 +	9 +	6 +	—	8 +	6 +
DM + 1 if	Edu 8 +	Soc 8 +	Edu 7 +	—	Edu 8 +	Edu 8 +
Special Duty	5 +	4 +	6 +	4 +	6 +	6 +
Reenlist	6 +	6 +	7 +	3 +	6 +	6 +

Characters cycle through this table during each term of service. The reenlistment roll is required even if the character does not intend to reenlist: a roll of 12 exactly means mandatory reenlistment. DMs on enlistment are cumulative if the character has the necessary attributes. All rolls except draft are 2D.

TABLE OF RANKS

Rank	*Navy*	*Marines*	*Army*	*Scouts*	*Flyer*	*Sailor*
1	Ensign	Lieutenant	Lieutenant	—	Pilot	Ensign
2	Lieutenant	Captain	Captain	—	Flight Ldr	Lieutenant
3	Lt Cdr	Force Cdr	Major	—	Sqdn Ldr	Lt Cdr
4	Commander	Lt Colonel	Lt Colonel	—	Staff Major	Commander
5	Captain	Colonel	Colonel	—	Group Ldr	Captain
6	Admiral	Brigadier	General	—	Air Marshal	Admiral

This table indicates the initial rank (rank 1) if a commission is received, and subsequent ranks as promotions are received. Scouts do not have ranks, commissions, and promotions.

MUSTERING OUT TABLES

Die Roll	*Benefits Table*					
1	Low Psg	Low Psg	Low Psg	Low Psg	Low Psg	Low Psg
2	+ 1 Int	+ 2 Int	+ 1 Int	+ 2 Int	+ 1 Edu	+ 1 Int
3	+ 2 Edu	+ 1 Edu	+ 2 Edu	+ 2 Edu	Weapon	+ 1 Edu
4	Weapon	Weapon	Weapon	Weapon	Weapon	Weapon
5	Travellers'	Travellers'	High Psg	Weapon	High Psg	+ 1 Soc
6	High Psg	High Psg	Mid Psg	Scout Ship	Mid Psg	High Psg
7	+ 2 Soc	+ 2 Soc	+ 1 Soc	—	+ 1 Soc	Travellers'

Characters with rank 5 or 6 may add + 1 to their rolls. Weapon benefits must be declared immediately; additional benefits of weapon may be declared as skill in a weapon of the type previously taken. A Scout ship can only be received once; if received again, there is no additional benefit, and the roll is wasted.

Die Roll	*Cash Table (in credits)*					
1	1,000	2,000	2,000	20,000	2,000	2,000
2	5,000	5,000	5,000	20,000	5,000	5,000
3	5,000	5,000	10,000	30,000	10,000	10,000
4	10,000	10,000	10,000	30,000	10,000	10,000
5	20,000	20,000	10,000	50,000	10,000	10,000
6	50,000	30,000	20,000	50,000	20,000	20,000
7	50,000	40,000	30,000	50,000	30,000	30,000

Amounts shown are in credits (Cr). No more than three rolls may be made on this table. Individuals who have Gambling-1 + or who have retired receive a DM of + 1 on the cash table.

BASIC CHARACTER GENERATION

ACQUIRED SKILLS TABLES

1. Personal Development Table

	Navy	*Marines*	*Army*	*Scouts*	*Flyers*	*Sailors*
1	**Physical**	**Physical**	**Physical**	**Physical**	**Physical**	**Physical**
2	+1 Dex	+1 Dex	+1 Dex	+1 Dex	+1 Dex	+1 Dex
3	+1 End	**Physical**	+1 End	+1 End	+1 End	+1 End
4	**Vice**	**Vice**	**Vice**	**Vice**	**Vice**	**Vice**
5	**Mental**	**Hand Cbt**	+1 Edu	**Mental**	Brawling	Brawling
6	+ 1 Soc	**Blade Cbt**	**Hand Cbt**	**Gun Cbt**	**Inborn**	**Inborn**

2. Service Skills Table

	Navy	*Marines*	*Army*	*Scouts*	*Flyers*	*Sailors*
1	Ship's Boat	ATV	ATV	Grav Veh	**Hand Cbt**	**Gun Cbt**
2	Vacc Suit	Vacc Suit	Grav Veh	Vacc Suit	Vacc Suit	Comm
3	Fwd Obs	**Blade Cbt**	**Gun Cbt**	Mechanical	**Gun Cbt**	Fwd Obs
4	**Space Cbt**	**Spl Cbt**	**Spl Cbt**	**Space**	**Vehicle**	**Vehicle**
5	**Hand Cbt**	**Hand Cbt**	**Hand Cbt**	Electronics	**Vehicle**	**Sm Water**
6	**Gun Cbt**	**Gun Cbt**	**Gun Cbt**	**Inborn**	**Vehicle**	**Spl Cbt**

3. Advanced Education Table

	Navy	*Marines*	*Army*	*Scouts*	*Flyers*	*Sailors*
1	Vacc Suit	**Vehicle**	**Vehicle**	**Vehicle**	**Aircraft**	**Lg Water**
2	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical
3	Electronics	Electronics	Electronics	Electronics	Electronics	Electronics
4	**Space**	Tactics	Tactics	**Inborn**	Gravitics	Gravitics
5	**Space Cbt**	**Hand Cbt**	**Blade Cbt**	**Spl Cbt**	**Gun Cbt**	Navigation
6	**Inborn**	**Spl Cbt**	**Gun Cbt**	Medical	Survival	Demolition

4. Advanced Education Table (allowed only for characters with education 8+)

	Navy	*Marines*	*Army*	*Scouts*	*Flyers*	*Sailors*
1	Medical	Medical	Medical	Medical	Medical	Medical
2	Navigation	Tactics	Tactics	**Space**	**Inborn**	Vehicle
3	**Space Tech**	Tactics	Tactics	**Space Tech**	**Space**	**Vice**
4	**Technical**	**Technical**	**Technical**	**Technical**	**Technical**	**Technical**
5	**Space**	**Inborn**	**Inborn**	**Inborn**	**Inborn**	**Inborn**
6	**Interpers**	**Interpers**	**Interpers**	**Interpers**	**Interpers**	**Interpers**

Note: Cascade skills are indicated in bold. Consult the skills list to select one component skill immediately.

MUSTERING OUT BENEFIT OBJECTS

Weapon: Select and receive any weapon. If weapon is received as a mustering out benefit object again, the character may select the same weapon again, a different weapon, or one level of skill in a weapon previously taken as a mustering out benefit object.

Scout Ship: Receive a scout/courier exploratory and dispatch vessel as a loan from the Scout Service (the character is considered on detached duty from the Scouts). There is little or no accountability required for the ship, but it cannot be sold.

Travellers': Receive membership in the *Travellers' Aid Society*. Membership entitles the individual to one high passage every two months, as well as general access to Travellers' Aid Society facilities.

Low Passage: Receive one Low Passage allowing one passage (in low berth; frozen sleep) from one world to the next stop on a starship's itinerary. Value: Cr1000.

Mid Passage: Receive one Middle Passage allowing one passage (in standard quarters) from one world to the next stop on a starship's itinerary. Value: Cr8000.

High Passage: Receive one High Passage allowing one passage (in luxury quarters) from one world to the next stop on a starship's itinerary. Value: Cr10,000.

DEFAULT SKILLS

Characters receive default skills for their homeworld tech codes and careers.

Industrial.....Wheeled Vehicle-0.
Pre-Stellar.....Wheeled Vehicle-0.
Early Stellar.....Computer-0, Wheeled Vehicle-0.
Average Stellar.....Grav Vehicle-0, Computer-0.
High Stellar.....Grav Vehicle-0, Computer-0.
Navy.....Vacc Suit-0.
Marines.....Vacc Suit-0.
Flyers.....Vacc Suit-0.
Scouts.....Vacc Suit-0.
All But Barbarians.Gun Combat-0.

RANK AND SERVICE SKILLS

Navy Captain.....+1 Social
Navy Admiral.....+1 Social
Marine.....Large Blade-1
Marine Lieutenant.....Handgun-1
Army.....Combat Rifleman-1
Army Lieutenant.....SMG-1
Scout.....Pilot-1
Flyer.....Aircraft-1
Sailor.....Small Watercraft
Sailor Lieutenant.....Large Watercraft

RETIREMENT AND PENSIONS

A character who completes a fifth (or later) term is considered retired after mustering out. Retirement allows a pension equal to Cr2000 times the number of terms served.

Anagathics: Terms (during character generation) in which a character takes anagathics may not be counted toward retirement pay.

ENLISTMENT RESTRICTIONS

Army.....Pre-Stellar+
Flyer.....Industrial+, Mod Pop+, Atmos Thin+
Marines.....Pre-Stellar+
Navy.....Pre-Stellar+
Sailor.....Wet World+
Scout.....Early Stellar+

THE DRAFT

When any attempt at enlistment fails, the character may submit to the draft.

The draft provides enlistment into one of the six military services: Navy (1), Marines (2), Army (3), Scouts (4), Flyers (5), and Sailors (6).

BASIC CHARACTER GENERATION

BASIC SKILL ELIGIBILITY

For initial term of service.....2
Per subsequent term.....1
Upon receiving commission.....1
Upon receiving promotion.....1
Upon receiving special duty.....1

Note: Doctors and Scientists receive two skills per term of service.

If the throw (including DMs) for commission, promotion, or special duty is 4 more than required, then two skills are received instead of one.

MUSTERING OUT BENEFITS

Per term of service.....2
If rank 1 or 2.....1
If rank 3 or 4.....1
If rank 5 or 6.....1

Benefits Table: DM + 1 if rank 5 + .

Cash Table: DM + 1 if retired or Gambling-1 + .

CHARACTER GENERATION CHECKLIST

1. Roll for personal characteristics (2D each): Strength, Dexterity, Endurance, Intelligence, Education, and Social Standing.

2. Select service choice, and then roll for enlistment, using all applicable DMs.

A. If rejected, submit to the draft.

B. Roll for survival.

C. Roll for position, called commission for these six careers (if not yet rank 1).

D. Roll for promotion (if rank 1 or higher).

E. Roll for special duty.

F. Determine skills allowed.

1.) Specify automatic rank and service skills.

2.) Specify acquired skills allowed by character's basic skill eligibility.

3.) Specify character's special skills allowed by assignment to special duty.

4.) Specify cascade skills.

G. If completing term 4 + , determine aging effects.

H. Roll for reenlistment and return to 2B if successful.

3. Complete the mustering out procedure.

A. Determine benefits.

B. Record characteristics and skills for later use.

PRIOR SERVICE TABLE

	Law Enf	*Doctor*	*Diplomat*	*Bureau*	*Scientist*	*Noble*
Enlistment	6 +	9 +	8 +	5 +	6 +	(special)
DM + 1 if	Int 7 +	Int 8 +	Edu 8 +	Edu 8 +	Int 9 +	—
DM + 2 if	Dex 10 +	Dex 9 +	Soc 9 +	Str 8 –	Edu 10 +	—
Survival	6 +	4 +	4 +	4 +	5 +	4 +
DM + 2 if	Int 7 +	Int 8 +	Edu 9 +	Edu 10 +	Edu 9 +	—
Position	6 +	—	5 +	6 +	—	5 +
DM + 1 if	Edu 7 +	—	Int 8 +	Soc 9 +	—	Edu 9 +
Promotion	8 +	—	10 +	7 +	—	12 +
DM + 1 if	Edu 8 +	—	Soc 10 +	Int 9 +	—	Int 10 +
Special Duty	4 +	6 +	5 +	6 +	5 +	6 +
Reenlist	6 +	4 +	5 +	5 +	5 +	4 +

Characters cycle through this table during each term of service. The reenlistment roll is required even if the character does not intend to reenlist: a roll of 12 exactly means mandatory reenlistment.

DMs on enlistment are cumulative if the character has the necessary attributes.

Bureaucrats: Must reenlist if the reenlistment throw is successful.

Nobles: Characters with Social Standing 10 + are eligible for a career as a noble; enlistment is automatic for such characters. Rank corresponds to noble rank (determined from Social Standing) once the character successfully rolls for position.

TABLE OF RANKS

Rank	*Law Enf*	*Doctor*	*Diplomat*	*Bureaucrat*	*Scientist*	*Noble*
1	Corporal	—	3rd Secy	Clerk	—	B Knight
2	Sergeant	—	2nd Secy	Supervisor	—	C Baron
3	Lieutenant	—	1st Secy	Asst Mgr	—	D Marquis
4	Detective	—	Counselor	Manager	—	E Count
5	Chief	—	Minister	Executive	—	F Duke
6	Commisnr	—	Ambass	Director	—	—

This table indicates the initial rank (rank 1) if a position is received, and subsequent ranks as promotions are received. Doctors and Scientists do not have rank, position or promotion.

MUSTERING OUT TABLES

Die Roll	*Benefits Table*					
1	Low Psg	Low Psg	Low Psg	Low Psg	Low Psg	Low Psg
2	+ 1 Int	+ 1 Edu	+ 1 Int	Mid Psg	Mid Psg	High Psg
3	Forens Kit	+ 1 Edu	+ 2 Edu	—	High Psg	Weapon
4	Weapon	Weapon	Weapon	Watch	+ 1 Soc	Weapon
5	High Psg	Instrument	+ 1 Soc	—	Weapon	Travellers'
6	+ 1 Soc	Mid Psg	High Psg	High Psg	Lab Ship	Yacht
7	Travellers'	—	Travellers'	+ 1 Soc	—	—

Characters with rank 5 or 6 may add + 1 to their rolls on this table. Weapon benefits must be declared immediately, additional benefits of weapon may be declared as skill in a weapon of the type previously taken.

Die Roll	*Cash Table (in credits)*					
1	1,000	20,000	2,000	—	1,000	10,000
2	2,000	20,000	5,000	—	2,000	10,000
3	5,000	20,000	10,000	10,000	5,000	50,000
4	7,500	30,000	10,000	10,000	10,000	50,000
5	10,000	40,000	10,000	40,000	20,000	100,000
6	25,000	60,000	20,000	40,000	30,000	100,000
7	50,000	100,000	30,000	80,000	40,000	200,000

Amounts are in credits (Cr). No more than three rolls may be made on this table. Individuals who have Gambling-1 + or who are retired receive DM + 1.

BASIC CHARACTER GENERATION

ACQUIRED SKILLS TABLES

1. Personal Development Table

	Law Enforc	*Doctor*	*Diplomat*	*Bureaucrat*	*Scientist*	*Noble*
1	**Physical**	+1 Str	**Physical**	+1 End	+1 Str	**Physical**
2	+1 Dex	+1 Dex	+1 Edu	+1 Edu	+1 Dex	+1 Dex
3	**Mental**	+1 End	**Mental**	**Mental**	+1 End	+1 End
4	**Hand Cbt**	**Mental**	**Blade Cbt**	Brawling	**Mental**	**Mental**
5	**Vice**	+1 Edu	**Gun Cbt**	+1 Dex	**Interpers**	**Vice**
6	Gambling	+1 Soc	**Inborn**	**Inborn**	**Inborn**	**Hand Cbt**

2. Service Skills Table

	Law Enforc	*Doctor*	*Diplomat*	*Bureaucrat*	*Scientist*	*Noble*
1	Streetwise	+1 Dex	**Mental**	**Gun Cbt**	**Gun Cbt**	**Gun Cbt**
2	**Vehicle**	**Technical**	Vacc Suit	**Vehicle**	**Hand Cbt**	**Hand Cbt**
3	**Inborn**	Medical	**Vehicle**	**Hand Cbt**	**Inborn**	**Environ**
4	**Hand Cbt**	**Vice**	**Vehicle**	**Inborn**	**Vehicle**	**Vehicle**
5	**Blade Cbt**	Medical	**Vice**	**Vehicle**	**Sp Tech**	**Vice**
6	**Gun Cbt**	**Blade Cbt**	Computer	+1 Edu	**Environ**	+1 Dex

3. Advanced Education Table

	Law Enforc	*Doctor*	*Diplomat*	*Bureaucrat*	*Scientist*	*Noble*
1	**Vice**	Medical	**Vice**	Recruiting	Mechanical	**Space**
2	Forensic	Medical	Streetwise	**Vehicle**	Electronics	Ship's Boat
3	**Environ**	Mechanical	Interrog	Liaison	**Technical**	**Vehicle**
4	Tactics	Electronics	Recruiting	Interrog	**Technical**	Navigation
5	**Technical**	**Technical**	**Inborn**	**Interpers**	**Academic**	**Sp Tech**
6	Interrog	**Academic**	**Economic**	**Economic**	**Academic**	Leader

4. Advanced Education Table (allowed only for characters with Education 8+)

	Law Enforc	*Doctor*	*Diplomat*	*Bureaucrat*	*Scientist*	*Noble*
1	Legal	Medical	Liaison	**Economic**	**Science**	**Science**
2	**Inborn**	**Science**	**Interpers**	**Academic**	**Science**	**Technical**
3	**Economic**	**Interpers**	**Academic**	Computer	**Academic**	**Academic**
4	Interview	**Technical**	**Technical**	Admin	**Inborn**	**Interpers**
5	Forensic	**Mental**	**Inborn**	**Inborn**	**Mental**	**Inborn**
6	**Interpers**	**Academic**	+1 Soc	Leader	**Academic**	**Inborn**

Note: Cascade skills are indicated in bold. See the skills list to select one component skill immediately.

MUSTERING OUT BENEFIT OBJECTS

Weapon: Select and receive any weapon. If weapon is received as a mustering out benefit object again, select the same weapon again, a different weapon, or one level of skill in a weapon previously taken as a mustering out benefit object.

Lab Ship: Receive a laboratory ship as a grant for research. The first receipt of the ship provides use of the ship. Each additional receipt pays off ten years of the ship's 40 year mortgage.

Yacht: Receive a yacht as a personal ship. The first receipt provides use of the ship. Each additional receipt pays off ten years of the ship's 40 year mortgage.

Travellers': Receive membership in the *Travellers' Aid Society*. Membership entitles the individual to one high passage every two months, as well as general access to Travellers' Aid Society facilities.

Instruments: Receive a full set of medical instruments for diagnosis and treatment of injuries and illnesses. Basic value of the set is Cr5000.

Forensic Kit: Receive a full equipment set for testing and examining evidence at crime scenes; it includes a still camera. Basic value of the set is Cr9000.

Watch: Receive a commemorative gold watch in view of many years of fine service. Basic value of the set is Cr50. On a throw of 7+, it has a value of Cr200 to Cr1200.

DEFAULT SKILLS

Characters receive default skills for their homeworld tech codes and careers:

Industrial.....Wheeled Vehicle-0.
Pre-Stellar.....Wheeled Vehicle-0.
Early Stellar.....Computer-0, Wheeled Vehicle-0.
Average Stellar.....Grav Vehicle-0, Computer-0.
High Stellar.....Grav Vehicle-0, Computer-0.
Navy.....Vacc Suit-0.
Marines.....Vacc Suit-0.
Flyers.....Vacc Suit-0.
Scouts.....Vacc Suit-0.
All But Barbarians.Gun Combat-0.

RANK AND SERVICE SKILLS

Law Enforcer.....Streetwise-1
Law Enf Detective.....Interrogation-1
Law Enf Chief.....Admin-1
Law Enf Commissioner.....Liaison-1
Doctor.....Medical-1
Diplomat.....Liaison-1
Scientist.....Technical-1

RETIREMENT AND PENSIONS

A character who completes his fifth (or later) term is considered retired after he musters out. He receives a pension equal to Cr2000 times the number of terms served.

Anagathics: Terms (during character generation) in which a character takes anagathics may not be counted toward retirement pay.

MEDICS

Any character with at least Medical-1 is a *medic* and is eligible to be hired as a medic on a starship crew.

Any character with at least Medical-3 is a *doctor* and may establish an independent medical practice.

Any doctor with Dex 8+ is a *surgeon* as well as a doctor.

ENLISTMENT RESTRICTIONS

Law Enforcer.....Industrial+
Doctor.....Industrial+
Diplomat.....Low Law+, Industrial+
Bureaucrat.....Low Law+, Mod Pop+
Scientist.....Pre-Stellar+
Noble.....Pre-Stellar+

BASIC CHARACTER GENERATION

BASIC SKILL ELIGIBILITY

For initial term of service.....2
Per subsequent term.....1
Upon receiving commission.....1
Upon receiving promotion.....1
Upon receiving special duty.....1

Note: Belters, Rogues, and Hunters receive two skills per term.

If the throw (including DMs) for commission, promotion, or special duty is 4 more than required, then two skills are received instead of one.

MUSTERING OUT BENEFITS

Per term of service.....2
If rank 1 or 2.....1
If rank 3 or 4.....1
If rank 5 or 6.....1

Benefits Table: DM + 1 if rank 5 + .

Cash Table: DM + 1 if retired, Prospecting-1 + , or Gambling-1 + .

CHARACTER GENERATION CHECKLIST

1. Roll for personal characteristics (2D each): Strength, Dexterity, Endurance, Intelligence, Education, and Social Standing.

2. Select service choice, and then roll for enlistment, using all applicable DMs.

A. If rejected, submit to the draft.

B. Roll for survival.

C. Roll for position, called commission for these six careers (if not yet rank 1).

D. Roll for promotion (if rank 1 or higher).

E. Roll for special duty.

F. Determine skills allowed.

1.) Specify automatic rank and service skills.

2.) Specify acquired skills allowed by character's basic skill eligibility.

3.) Specify character's special skills allowed by assignment to special duty.

4.) Specify cascade skills.

G. If completing term 4 + , determine aging effects.

H. Roll for reenlistment and return to 2B if successful.

3. Complete the mustering out procedure.

A. Determine benefits.

B. Record characteristics and skills for later use.

PRIOR SERVICE TABLE

	Merchant	*Belter*	*Pirate*	*Rogue*	*Hunter*	*Barbarian*
Enlistment	7 +	8 +	7 +	6 +	9 +	5 +
DM + 1 if	Str 7 +	Dex 9 +	Soc 7 –	Soc 8 –	Dex 10 +	End 9 +
DM + 2 if	Int 6 +	Int 6 +	End 9 +	End 7 +	End 9 +	Str 10 +
Survival	5 +	9 +	6 +	7 +	6 +	6 +
DM + 2 if	Int 7 +	(terms)	Int 8 +	Int 9 +	Str 10 +	Str 8 +
Position	4 +	—	9 +	—	—	6 +
DM + 1 if	Int 6 +	—	Str 10 +	—	—	Str 10 +
Promotion	10 +	—	8 +	—	—	9 +
DM + 1 if	Int 9 +	—	Int 9 +	—	—	Int 6 +
Special Duty	4 +	6 +	5 +	5 +	6 +	7 +
Reenlist	4 +	6 +	7 +	5 +	5 +	6 +

Characters cycle through this table during each term of service. The reenlistment roll is required even if the character does not intend to reenlist: a roll of 12 exactly means mandatory reenlistment.

DMs on enlistment are cumulative if the character has the necessary attributes.

Belters: Belters receive a variable DM for survival based on terms served: in the first term of service, the DM is + 1; in the second term of service, the DM is + 2; in the seventh term of service, the DM is + 7.

TABLE OF RANKS

Rank	*Merchant*	*Belter*	*Pirate*	*Rogue*	*Hunter*	*Barbarian*
1	4th Officer	—	Henchman	—	—	Brave
2	3rd Officer	—	Corporal	—	—	Warrior
3	2nd Officer	—	Sergeant	—	—	Leader
4	1st Officer	—	Lieutenant	—	—	Chieftain
5	Captain	—	Leader	—	—	Chief
6	Owner	—	—	—	—	Elder

This table indicates the initial rank (rank 1) if a position is received and subsequent ranks as promotions are received. Belters, rogues, and hunters do not have rank, position, or promotion.

MUSTERING OUT TABLES

Die Roll	*Benefits Table*					
1	Low Psg	Low Psg	Low Psg	Low Psg	Low Psg	Low Psg
2	+ 1 Int	+ 1 Int	+ 1 Int	+ 1 Soc	High Psg	Weapon
3	+ 2 Edu	Weapon	Weapon	Weapon	Weapon	Weapon
4	Weapon	High Psg	Letter	Weapon	Weapon	Weapon
5	Weapon	Travellers'	– 1 Soc	High Psg	Weapon	—
6	Low Psg	Seeker	Mid Psg	Travellers'	Safari Ship	High Psg
7	Trader	—	Corsair	—	—	High Psg

Characters with rank 5 or 6 may add + 1 to their rolls. Weapon benefits must be declared immediately; additional benefits of weapon may be declared as skill in a weapon of a type previously taken.

Die Roll	*Cash Table (in credits)*					
1	1,000	—	—	—	1,000	—
2	5,000	—	—	—	1,000	—
3	10,000	1,000	1,000	10,000	5,000	1,000
4	10,000	10,000	10,000	10,000	5,000	2,000
5	10,000	100,000	50,000	50,000	10,000	3,000
6	20,000	100,000	50,000	100,000	100,000	4,000
7	50,000	100,000	50,000	100,000	100,000	5,000

Amounts shown are in credits (Cr). No more than three rolls may be made on this table. Individuals who have Gambling-1 + or Prospecting-1 + , or who have retired receive a DM of + 1 on the cash table.

BASIC CHARACTER GENERATION

ACQUIRED SKILLS TABLES

1. Personal Development Table

	Merchant	*Belter*	*Pirate*	*Rogue*	*Hunter*	*Barbarian*
1	**Physical**	**Physical**	**Physical**	**Physical**	**Physical**	**Physical**
2	+1 Dex	+1 Dex	+1 Dex	+1 Dex	+1 Dex	+1 Dex
3	+1 End	+1 End	+1 End	+1 End	+1 End	**Physical**
4	**Hand Cbt**	**Vice**	**Vice**	**Vice**	**Mental**	**Vice**
5	**Blade Cbt**	**Hand Cbt**	**Hand Cbt**	**Hand Cbt**	**Gun Cbt**	**Physical**
6	**Vice**	Vacc Suit	**Blade Cbt**	**Carousing**	**Blade Cbt**	**Hand Cbt**

2. Service Skills Table

	Merchant	*Belter*	*Pirate*	*Rogue*	*Hunter*	*Barbarian*
1	**Vehicle**	**Space**	**Space**	**Hand Cbt**	**Hand Cbt**	**Hand Cbt**
2	Vacc Suit	Zero-G Env	Zero-G Env	**Gun Cbt**	**Gun Cbt**	**Hand Cbt**
3	**Inborn**	**Gun Cbt**	**Gun Cbt**	Demolition	**Environ**	**Blade Cbt**
4	**Interpers**	Prospect	**Spl Cbt**	**Vehicle**	**Environ**	**Environ**
5	**Technical**	Prospect	**Blade Cbt**	+1 Edu	Hunting	**Arch Wpn**
6	**Gun Cbt**	**Space**	**Gun Cbt**	**Vehicle**	**Vehicle**	**Gun Cbt**

3. Advanced Education Table

	Merchant	*Belter*	*Pirate*	*Rogue*	*Hunter*	*Barbarian*
1	Streetwise	Ship's Boat	**Vice**	**Vice**	Electronics	**Hand Cbt**
2	Mechanical	Mechanical	Mechanical	**Vice**	Mechanical	Mechanical
3	Electronics	Electronics	**Gunnery**	Streetwise	**Technical**	**Environ**
4	**Space**	Prospect	Ship Tact	**Inborn**	Computer	**Environ**
5	**Space Cbt**	**Explor**	Tactics	**Interpers**	**Environ**	**Vice**
6	**Academic**	**Space**	**Space**	Tactics	**Economic**	**Arch Wpn**

4. Advanced Education Table (allowed only for characters with Education 8+)

	Merchant	*Belter*	*Pirate*	*Rogue*	*Hunter*	*Barbarian*
1	Medical	Medical	Pilot	Medical	Medical	Medical
2	**Space**	**Space**	**Space**	**Vice**	**Technical**	Interrog
3	**Sp Tech**	**Sp Tech**	**Vice**	**Vice**	Hunting	Tactics
4	**Technical**	**Technical**	**Technical**	**Technical**	**Explor**	**Environ**
5	**Explor**	**Inborn**	**Inborn**	**Inborn**	**Inborn**	**Inborn**
6	**Economic**	**Sp Tech**	**Electronics**	**Inborn**	**Academic**	**Inborn**

Note: Cascade skills are indicated in bold. See the skills list to select a component skill immediately.

MUSTERING OUT BENEFIT OBJECTS

Weapon: Select and receive any weapon. If weapon is received as a mustering out benefit object again, the character may select the same weapon again, a different weapon, or one level of skill in a weapon previously taken as a mustering out benefit object.

Free Trader: Receive a free trader merchant ship. The first receipt of the ship provides use of the ship; each additional receipt pays off ten years of the ship's 40 year mortgage.

Seeker: Receive a seeker asteroid prospecting and mining ship. The first receipt provides use of the ship; each additional receipt pays off ten years of the ship's 40 year mortgage.

Corsair: Receive a corsair commerce raiding (pirate) ship. The first receipt of the ship provides use of the ship; each additional receipt pays off ten years of the ship's 40 year mortgage.

Safari Ship: Receive a safari (excursion) ship. The first receipt provides use of the ship; each additional receipt pays off ten years of the ship's 40 year mortgage.

DEFAULT SKILLS

Characters receive default skills for their homeworld tech codes and careers:

Industrial.....Wheeled Vehicle-0.
Pre-Stellar.....Wheeled Vehicle-0.
Early Stellar.....Computer-0, Wheeled Vehicle-0.
Average Stellar.....Grav Vehicle-0, Computer-0.
High Stellar.....Grav Vehicle-0, Computer-0.
Merchant.....Vacc Suit-0.
Pirate.....Vacc Suit-0.
All But Barbarians: Gun Combat-0.

RANK AND SERVICE SKILLS

Merchant First Officer.....Pilot-1
Belter (1st term).....Vacc Suit-1
Belter (3rd term).....Zero-G Environ-1
Pirate.....Brawling-1
Pirate Lieutenant.....Pilot-1
Rogue.....Streetwise-1
Hunter.....Hunting-1
Barbarian.....Large BLade-1
Barbarian Warrior.....Blade Cbt-1
Barbarian Chief.....Leader-1

RETIREMENT AND PENSIONS

A character who completes his fifth (or later) term is considered retired after he musters out. He receives a pension equal to Cr2000 times the number of terms served.

Anagathics: Terms (during character generation) in which a character takes anagathics may not be counted toward retirement pay.

ENLISTMENT RESTRICTIONS

Merchant.....Early Stellar+
Belter.....Early Stellar+
Pirate.....Early Stellar+
Rogue.....Industrial+
Hunter.....Atmosphere Thin+
Barbarian.....Pre-Industrial

CHARACTER FORMATS

1. Navy Lieutenant
5948D9 Age 34 4 terms Cr 60,000
Sensor Ops-3, Admin-1, Communications-1, Brawling-1, Vacc Suit-1, Forward Obs-1, Handgun-1
Starport B, Medium, Thin, Dry World, Mod Pop, Low Law, Pre-Stellar

2. Marine Captain Baron
848876C Age 32 3.5 terms Cr 2000
Handgun-3, ATV-1, Large Blade-1, Battle Dress-1, Combat Engineer-1, Grav Vehicle-1, Combat Rifleman-1, Vacc Suit-1, Brawling-1, Electronic-1, FA Gunnery-1
Starport A, Small, Standard, Dry World, High Pop, Mod Law, High Stellar

3. Army Major
7BBB78 Age 28 2.5 terms Cr10,000
Handgun-3, Combat Rifleman-2, Brawling-2, Grav Vehicle-2, SMG-1, Tactics-1
Starport B, Small, Standard, Wet World, Mod Pop, Low Law, Avg Stellar

4. Scout
BC7687 Age 30 3 terms Cr 0
Leader-2, Electronic-2, Pilot-1, Ships Boat-1, Vacc Suit-1, Handgun-1, Mechanical-1, Grav Vehicle-1
Starport A, Medium, Standard, Wet World, Mod Pop, Mod Law, Avg Stellar

5. Flyer Squadron Leader
37CC84 Age 26 2 terms Cr 20,000
Handgun-4, Jet Aircraft-2, Brawling-1
1 Low Passage
Starport B, Small, Standard, Wet World, Mod Pop, Low Law, Avg Stellar

6. Sailor Lieutenant
7C7678 Age 34 4 terms Cr 22,000
Communications-4, Battle Dress-2, Combat Engineer-1, Submersible-1, Small Watercraft-1
Starport A, Medium, Standard, Wet World, Mod Pop, Mod Law, Avg Stellar

7. Law Enforcer Sergeant
5A7B88 Age 30 3 terms Cr10,000
Laser Weapons-2, Streetwise-2, Leader-1, Interview-1, Carousing-1, Tactics-1, Electronics-1, Artisan-1
1 Low Passage, Laser Pistol
Starport B, Asteroid, Vacuum World, Mod Pop, Mod Law, Avg Stellar

8. Doctor
4AB877 Age 30 3 terms Cr 120,000
Medical-4, Electronics-4, Computer-1, Linguistics-1
Starport C, Medium, Thin, Wet World, Low Pop, High Law, Early Stellar

9. Diplomat
984AAA Age 26 2 terms Cr 10,000
Liaison-1, Gambling-1, Bribery-1, Streetwise-1, Robot Ops-1, Instruction-1, Computer-1
Starport B, Small, Thin, Wet World, High Pop, High Law, Avg Stellar

10. Bureaucrat Director
759AC2 Age 38 (62) 12 terms Cr40,000
Leader-6, Liaison-3, Brawling-2, Jack-of-all-trades-2, Grav Vehicle-2, Trader-2, Interrogation-1, Carousing-1, Computer-1, Linguistics-1, Handgun-1
1 Mid Passage, Anagathics, Auto Pistol
Starport B, Medium, Thin, Wet World, Hi Pop, Mod Law, Hi Stellar

11. Scientist
5897A7 Age 34 4 terms Cr50,000
Biology-3, Jack-of-all-trades-2, Artisan-1, Sensor Ops-1, Small Blade-1
1 Mid Passage, Lab Ship
Starport B, Large, Exotic, Dry World, Mod Pop, Mod Law, Hi Stellar

12. Noble Knight
69777B Age 34 4 terms Cr10,000
Brawling-3, Handgun-2, Streetwise-2, Disguise-1, Grav Belt-1
1 High Passage, Yacht
Starport A, Medium, Standard, Wet World, Mod Pop, Mod Law, Hi Stellar

13. Merchant 2nd Officer
588547 Age 32 3.5 terms Cr20,000
Electronics-3, Pilot-1, Robotics-1, Mechanic-1, Streetwise-1, Grav Vehicle-1, Linguistics-1
Starport A, Small, Thin, Wet World, Hi Pop, Mod Law, Early Stellar

14. Belter
6A4669 Age 30 3 terms Cr1000
Prospecting-3, Laser Weapons-2, Zero-G Env-1, Vacc Suit-1
Travellers' Aid Society Membership, Laser Pistol
Starport B, Asteroid, Vacuum World, Mod Pop, No Law, Early Stellar

15. Pirate Sergeant
A69A64 Age 54 8 terms Cr0
Streetwise-2, Small Blade-2, Bribery-2, Brawling-1, Handgun-1, Rifleman-1, Turret Gunner-1, Pilot-1, Navigation-1, Large Blade-1, Intrusion-1, Zero-G Env-1
2 Mid Passage, 1 Low Passage, Dagger
Starport A, Medium, Standard, Wet World, Mod Pop, Mod Law, Early Stellar

16. Rogue
86A863 Age 28 2.5 terms Cr20,000
Leader-1, Intrusion-1
Starport C, Medium, Standard, Water World, Mod Pop, Hi Law, Early Stellar

17. Hunter
8A9786 Age 40 5.5 terms Cr1000
Hunting-3, Rifleman-3, Sensor Ops-2, Stealth-2, Survival-1, Handgun-1, Small Blade-1, Communications-1, Grav Vehicle-1
2 Low Passage, Auto Rifle, Safari Ship
Starport A, Large, Exotic, Desert World, Mod Pop, Mod Law, Avg Stellar

18. Barbarian
A36459 Age 42 6 terms Cr3000
Brawling-2, Recon-2, Crossbow-2, Survival-1, Large Blade-1, Shotgun-1
Light Crossbow, Shotgun
Starport E, Medium, Standard, Wet World, Mod Pop, Low Law, Pre-Ind

Skills

This chapter provides players and referees with definitions of UPP characteristics and available skills. Understanding these is the key to understanding both the character's general abilities and the specific probability of successfully performing tasks.

PERSONAL CHARACTERISTICS

A human's characteristics are: Strength, Dexterity, Endurance, Intelligence, Education, and Social Standing. Characteristics are capitalized to draw attention to them and distinguish the words from their ordinary usage. Three are *physical characteristics*: Strength, Dexterity, and Endurance. Others are *mental characteristics*: Intelligence, Education, and Social Standing. Each has its own realm of application:

Strength (Str): Ability to apply physical force.

Strength × 1: Load in kilograms that may be carried more than five minutes to all day and considered unencumbered.

Strength × 2: Load carried for more than five minutes to all day but considered encumbered. When a character is encumbered with a Strength × 2 load, subtract 1 from the character's Strength, Dexterity, and Endurance.

Strength × 3: Load carried by a character in active military duty for more than five minutes to all day but considered encumbered. When a character is encumbered with a strength × 3 load, subtract 2 from the Strength, Dexterity, and Endurance.

Strength × 5: Load carried under five minutes.

Strength × 10: Load lifted (not carried) under one minute.

Strength × 15: Load dragged for less than five minutes.

Different Gravity: These values for strength assume a gravity of 1G—generally a large (size 8) world. Divide Strength by the gravity in Gs (on a world with gravity of 0.125 Gs, a character with Strength 7 has Strength 7 ÷ 0.125, or 56).

Dexterity (Dex): Coordination. Dexterity is used when hand-eye coordination or agility is important, like when performing mechanical repairs, shooting firearms, or walking a ledge.

Endurance (End): Physical stamina.

Endurance × 1: Number of waking hours until fatigue begins. Once fatigued, subtract one point for every two additional waking hours. Undertaking no tasks for two hours halts the loss of Endurance and "buys back" one point of Endurance. If Endurance reaches zero, the character collapses; once collapsed, the character must sleep for 8 hours to return to normal. Less than 8 hours of sleep (but at least 4) returns Endurance to its full level; fatigue starts immediately. Less than 4 hours of sleep (but at least 1) returns Endurance to one-half of its normal level (drop fractions); and fatigue starts immediately.

Endurance × 3: Number of waking hours until a character collapses (Endurance becomes zero). After being awake for this number of hours, the character must sleep, no matter what.

Intelligence (Int): Corresponds roughly to IQ. Values 10+ and over are genius level; 5- indicates learning difficulties.

Education (Edu): Knowledge from formal and informal settings. Highly technical tasks depend on Education, not on Intelligence.

Social Standing (Soc): A character's social class. Standing 11+ holds a patent of nobility from the Third Imperium or similar interstellar governments. The individual is considered noble.

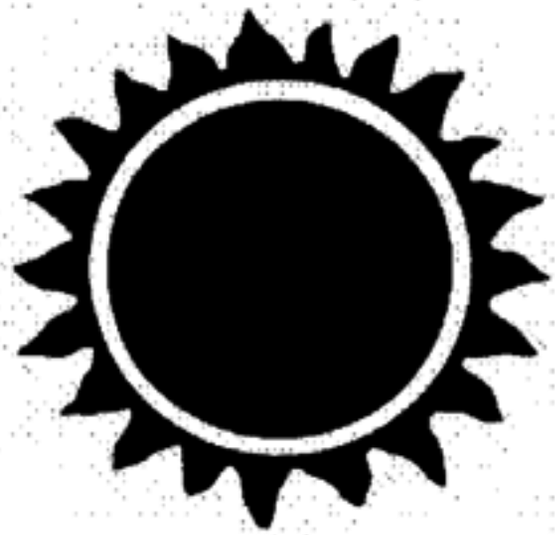
Social Standing 5 or less indicates that the character has

THE IMPERIAL SUNBURST

The symbol of the Third Imperium was established by Cleon (the first emperor) when the empire was proclaimed. Images show him standing before the original banner with a golden yellow sunburst against a black background, representing Capital's type G star against dark space.

In 247, the Eliyoh (a nonhuman minor race) joined the Imperium. To that race the symbology was unimpressive. The Eliyoh vision centered in the far infrared, which resulted in distinction between the official colors of black and yellow being impossible. So the Empress Porfina declared that the symbol would have no official color.

The original banner in the imperial throne room is still black with a yellow sunburst. The Imperial Interstellar Scout Service uses a red sunburst; the Imperial Navy, yellow; the Imperial Army, black; the Imperial Marines, maroon.



willis leal (order #936752)

SKILL LIST

PERSONAL CHARACTERISTICS

Strength (Str)
Dexterity (Dex)
Endurance (End)
Intelligence (Int)
Education (Edu)
Social Standing (Soc)

SECONDARY CHARACTERISTICS

Life Force (LIf) = Str + Dex + End)
Determination (Det) = (End + Int)
Experience (Exp)(= Int + Edu)

SKILLS

Academic (Cascade)
- Admin
- History
- Linguistics
- Persuasion
- Science
- + 1 Education

Admin
Advanced Combat Rifle (Weapon)
Aircraft (Cascade)
- Helicopter
- Jet-propelled Aircraft
- Lighter-than-air Craft
- Propeller-driven Aircraft

Animal Handling (Cascade)
- Guard/Hunting Beasts
- Equestrian
- Herding

Archaic Weapons (Cascade)
- Blowgun
- Bola
- Boomerang
- Bow
- Crossbow
- Early Firearms
- Sling

Artisan
Assault Rifle (Weapon)
ATV (Includes)
- Wheeled Vehicle
- Tracked Vehicle

Autocannon (Weapon)
Autorifle (Weapon)
Axe (Includes)
- Battle Axe
- Hand Axe

Battle Axe (Weapon)
Battle Dress (Includes)
- Vacc Suit

Bayonet (Weapon)
Biology (Serves as)
- Genetics minus 1

Blade (Weapon)
Blade Combat (Cascade)
- Axe
- Cudgel
- Foil
- Large Blade
- Polearm
- Small Blade

Blowgun (Weapon)
Body Pistol (Weapon)
Bola (Weapon)
Boomerang (Weapon)
Bow (Weapon)
Brawling
Bribery
Broadsword (Weapon)
Broker
Carbine (Weapon)
Carousing (Serves as)
- Steward minus 1

Chemistry
Combat Engineering
Combat Rifleman (Includes)
- Advanced Combat Rifle
- Assault Rifle
- Carbine
- Gauss Rifle
- Rifle

Communications
Computer (Serves as)
- Robot Ops minus 1

Crossbow (Weapon)
Cudgel (Weapon)
Cutlass (Weapon)
Dagger (Weapon)
Demolitions
Disguise
Early Firearms (Weapon)
Economic (Includes)
- Admin
- Broker
- Legal
- Trader

Electronics
Energy Weapons (Includes)
- Fusion Gun
- Plasma Gun

Engineering
Environ (Cascade)
- Animal Handling
- Archaic Weapons
- Hunting
- Recon
- Stealth
- Survival

Equestrian
Exploratory (Cascade)
- Pilot
- Sensor Ops
- Survey
- Survival
- Vacc Suit
- Vehicle

FA Gunnery (Cascade)
- High-energy Weapons
- Mass Drivers
- Meson Guns
- Mortars and Howitzers

Fleet Tactics
Foil (Weapon)
Forensic
Forgery
Forward Observer
Fusion Gun (Weapon)
Gambling
Gauss Rifle (Weapon)
Genetics
Grav Belt
Grav Vehicle (Serves as)
- Grav Belt minus 1

Gravitics
Grenade Launcher (Weapon)
Guard/Hunting Beasts
Gun Combat (Cascade)
- Energy Weapons
- Handgun
- Laser Weapons
- Neutral Weapons
- Rifleman
- Submachinegun

Gunnery (Cascade)
- Screens
- Spinal Weapons
- Turret Weapons

Halberd (Weapon)
Hand Axe (Weapon)
Hand Combat (Cascade)
- Blade Combat
- Brawling
- + 1 Endurance
- + 1 Strength

Handgun (Includes)
- Body Pistol
- Pistol
- Revolver
- Snub Pistol

Heavy Weapons (Includes)
- Autocannon
- Grenade Launcher
- Light Assault Gun
- Machine Gun
- VRF Gauss Gun

Helicopter (Serves as)
- Lighter-than-air Craft minus 1
- Jet-propelled Aircraft minus 1
- Propeller-driven Aircraft minus 1

Herding
High-energy Weapons (Serves as)
- Mass Drivers minus 1
- Meson Guns minus 1
- Mortars and Howitzers minus 1

High-G Environ (Includes)
- Laser-0
- Energy-0

History
Hovercraft (Serves as)
- Large Watercraft minus 1
- Small Watercraft minus 1

Hunting
Inborn (Cascade)
- Artisan
- Carousing
- Instruction
- Jack-of-all-trades
- Leader

Instruction
Interpersonal (Cascade)
- Admin
- Interview

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SKILL LIST

Liaison
Linguistics
Steward
Interrogation
Interview (Serves as)
Interrogation minus 1
Intrusion
Jack-of-all-trades
Jet-propelled Aircraft (Serves as)
Helicopter minus 1
Lighter-than-air Craft minus 1
Propeller-driven Aircraft minus 1
Large Blade (Includes)
Broadsword
Cutlass
Sword
Large Watercraft (Serves as)
Hovercraft minus 1
Small Watercraft minus 1
Laser Pistol (Weapon)
Laser Rifle (Weapon)
Laser Weapons (Includes)
Laser Pistol
Laser Rifle
Leader
Legal (Serves as)
Admin minus 1
Liaison (Serves as)
Admin minus 1
Streetwise minus 1
Light Assault Gun (Weapon)
Lighter-than-air Craft (Serves as)
Helicopter minus 1
Jet-propelled Aircraft minus 1
Propeller-driven Aircraft minus 1
Linguistics
Machine Gun (Weapon)
Mass Drivers (Serves as)
High-energy Weapons minus 1
Meson Guns minus 1
Mortars and Howitzers minus 1
Mechanical
Medical
Mental (Cascade)
+1 Intelligence
+1 Education
Meson Guns (Serves as)
High-energy
Weapons minus 1
Mass Drivers minus 1
Mortars and Howitzers minus 1
Mortars and Howitzers (Serves as)
High-energy Weapons minus 1
Mass Drivers minus 1
Meson Guns minus 1
Naval Architect
Navigation (Serves as)
Sensor Ops minus 1
Neural Pistol (Weapon)
Neural Rifle (Weapon)
Neural Weapons (Includes)
Neural Pistol
Neural Rifle
Persuasion
Physical (Cascade)
+1 Dexterity
+1 Endurance
+1 Strength
Physics
Pike (Weapon)
Pilot (Serves as)
Ship's Boat minus 1
Pistol (Weapon)
Plasma Gun (Weapon)
Polearm (Includes)
Bayonet
Halberd
Pike
Spear
Prop-driven Aircraft (Serves as)
Helicopter minus 1
Jet-propelled Aircraft minus 1
Lighter-than-air Craft minus 1
Prospecting
Recon (Serves as)
Sensor Ops-1 (not minus 1)
Recruiting
Revolver (Weapon)
Rifle (Weapon)
Rifleman (Includes)
Autorifle
Carbine
Rifle
Robot Ops
Robotics (Serves as)
Robot Ops
Computer minus 1
Science (Cascade)
Biology
Chemistry
Genetics
Forensic
Medical
Physics
Robotics
Sensor Ops
Screens
Ship Tactics
Ship's Boat
Sling (Weapon)
Small Blade (Includes)
Blade
Dagger
Small Watercraft (Includes)
Hovercraft minus 1
Large Watercraft minus 1
Snub Pistol (Weapon)
Space (Cascade)
Engineering
Navigation
Pilot
Sensor Ops
Ship's Boat
Vacc Suit
Space Combat (Cascade)
Gunnery
Sensor Ops
Ship Tactics
Tactics
Space Tech (Cascade)
Communications (Commo)
Computer
Engineering
Gravitics
Vacc Suit
Spear (Weapon)
Special Combat (Cascade)
Battle Dress
Combat Engineering
Combat Rifleman
Demolition
FA Gunnery
Forward Observer
Grav Belt
Heavy Weapons
High-energy Weapons
High-G Environ
Stealth
Zero-G Environ
Spinal Weapons
Stealth
Steward
Streetwise
Submachinegun (Weapon)
Survey (Serves as)
Sensor Ops minus 1
Survival
Sword (Weapon)
Tactics (Serves as)
Ship Tactics minus 1
Technical (Cascade)
Communications (Commo)
Computer
Electronics
Gravitics
Robot Ops
Sensor Ops
Trader
Tracked Vehicle (Serves as)
Wheeled Vehicle minus 1
Turret Weapons
Vacc Suit
Vehicle (Cascade)
Grav Vehicle
Helicopter
Hovercraft
Jet-propelled Aircraft
Large Water Craft
Lighter-than-air Craft
Propeller-driven Aircraft
Ship's Boat
Small Water Craft
Tracked Vehicle
Wheeled Vehicle
Vice (Cascade)
Bribery
Disguise
Forgery
Gambling
Intrusion
Streetwise
VRF Gauss Gun (Weapon)
Wheeled Vehicle (Includes)
Tracked Vehicle minus 1
Zero-G Environ

little influence. Social Standing is the most volatile of the characteristics and can vary as the character's reputation becomes known by others. Social Standing also indicates the basic standard of living the character likes to maintain:

Social Standing × Cr250: The number of credits the character must spend in a month on upkeep (food, clothing, lodging, and incidentals). Ordinary purchases (buying equipment, getting a starship high passage ticket) does not count toward this total.

If the character is unable to keep up the proper rate of upkeep spending for a year, his or her *apparent* Social Standing drops one level. Apparent Social Standing is the Social Standing perceived by others.

SPECIAL CHARACTERISTICS

Certain combinations of characteristics have a special meaning. These special combinations are:

Life Force (Strength + Dexterity + Endurance): The character's three physical characteristics, representing the character's total *Life Force* (abbreviated *Lif*). When the sum of these three equals zero, the character is dead.

Determination (Endurance + Intelligence): Personal force of will representing *Determination* (abbreviated *Det*). Determination plays a critical role in the resolution of tasks; it affects the likelihood that a character will keep trying a task if he fails.

Experience (Intelligence + Education): These two indicate *Experience* (abbreviated *Exp*). No character can have more skills (or combined levels of skills) than the sum of Intelligence and Education. In certain tasks (at the referee's discretion), dividing Experience by 5 can substitute as a temporary skill DM.

SKILL DEFINITIONS

Skills are an important part of a character, assisting the referee (and the player) in calculating both general abilities and the specific probability of performing tasks. Skills are written with a capital letter to distinguish them from the ordinary use of the word. Characters have levels of skills ranging from 0 or 1 to 5 or higher. An individual's skill level is shown by the skill name followed by a dash and the skill level.

Skill Classes: Three classes of skills are: basic skills (such as Navigation), cascade skills (such as Gun Combat), and included skills (such as Handgun).

Basic Skills: Basic skills are a general ability to perform certain types of activities or tasks. For example, Navigation.

Cascade Skills: Cascade skills call for an immediate selection of a specific skill as a result. The player should immediately select from one of the skills listed as available. Some cascade skill lists contain skills that are themselves cascade skills. For example, Aircraft (Cascade: Propeller-driven Aircraft, Jet-propelled Aircraft, Helicopter, Lighter-than-air Craft).

Included Skills: Some skills *include* other skills. No additional choice is required. For example, ATV (Includes: Tracked Vehicle, Wheeled Vehicle).

Weapon Skills: Skills identified as *weapon* skills refer to specific weapons allowed by the skill Often, a weapon skill is the end of one or more cascade or included skills. For example, Advanced Combat Rifle (Weapon).

Serves As Skills: Some skills overlap other skills, and can be used as those other skills at a lower skill level. Such skills are identified by the *Serves as:* statement. A skill can serve as another skill at a lower skill level (such as skill minus 1) or at an absolute level (such as skill-1 or skill-0). For example, Wheeled Vehicle (Serves as: Tracked Vehicle minus 1).

Maximum Skills: No character may have more skills (or total of levels of skills) than his or her *Experience* (the sum of his or her Intelligence + Education). A character with UPP 77894A would be restricted to a total of 13 combined skills and levels of skills (this restriction does not apply to level-0 skills).

Skill Receipt Restrictions: Some skill receipts are restricted. Restrictions apply only during prior career resolution, not during later receipt of skills through experience. When a restriction prohibits a component of a cascade skill, another selection is required. For other skills, another skill roll is necessary.

SKILL LIST

The following skills are available for **Traveller**:

Academic (Cascade: Admin, History, Linguistics, Persuasion, Science, +1 Education): The individual has undertaken a specific area of academic study in one of the arts or sciences.

Admin: The individual has experience with bureaucratic agencies, and understands the requirements of dealing with and managing them.

To avoid close inspection of papers:
Simple, Admin, Legal, 1 min (fateful).
Referee: This task assumes a world with No Law. Increase difficulty one level for each increase in law code: Low Law is Routine; Mod Law is Difficult; Hi Law is Formidable; Ext Law is Impossible.

To avoid police harassment:
Simple, Admin, Legal, 5 min (fateful).
Referee: Increase the difficulty for this task one level for each increase in law code above No Law.

Advanced Combat Rifle (Weapon): The individual can use the advanced combat rifle.

Aircraft (Cascade: Helicopter, Jet-propelled Aircraft, Lighter-than-air Craft, Propeller-driven Aircraft): The individual is skilled in the operation, use, repair, and maintenance of a specific type of aircraft commonly available in society.

The selected skill is used in tasks involving operation of the aircraft. Mishaps may involve instrument failure, engine failure, rough or crash landings, midair collisions, and so on.

Animal Handling (Cascade: Guard/Hunting Beasts, Equestrian, Herding): The individual is skilled in dealing with and controlling animals.

Archaic Weapons (Cascade: Blowgun, Bola, Boomerang, Bow, Crossbow, Early Firearms, Sling): The individual is skilled in a type of archaic weapon. All archaic weapons require a homeworld tech code of Pre-Industrial and have a law code maximum of Mod Law.

Artisan: The individual has skill and experience creating objects and artifacts. The skill may be used to duplicate objects and works of art, either legally or illegally. When used illegally, artisan skill is similar to forgery but applies to objects or works of art instead of documents.

Assault Rifle (Weapon): The individual can use the assault rifle, a (Pre-Stellar) basic soldier's weapon.

ATV (Includes: Tracked Vehicle, Wheeled Vehicle): The individual can operate, use, and maintain both wheeled and tracked vehicles.

Autocannon (Weapon): The individual can use the autocannon, a high-rate-of-fire, semiportable (and usually vehicle-mounted) weapon.

Autorifle (Weapon): The individual can use the autorifle, a basic soldier's weapon.

Axe (Includes: Battle Axe, Hand Axe): The individual can use axes as weapons.

Battle Axe (Weapon): The individual can use the battle axe.

Battle Dress (Includes: Vacc Suit): The individual can operate battle dress, a high-tech military armored suit.

Bayonet (Weapon): The individual can use the bayonet when attached to a firearm and used as a form of polearm.

Biology (Serves as: Genetics minus 1): The individual has skill in the life sciences, and understands the structure, functioning, growth, evolution, and distribution of organisms.

Blade (Weapon): The individual knows how to use the blade, a short fighting knife.

Blade Combat (Cascade: Axe, Cudgel, Foil, Large Blade, Polearm, Small Blade): The individual can use edged weapons.

Blowgun (Weapon): The individual can use the blowgun.

Body Pistol (Weapon): The individual can use the body pistol.

THE RIGHT OF ASSASSINATION

Martin II, the fifth emperor of the Third Imperium, died in 244, leaving no immediate heirs. Cleon III, a remote member of the Imperial line, was approved by the Moot and crowned within a year. He exercised power foolishly and arbitrarily, installing a court of shameless, flattering sycophants. He marched suspected traitors off the skypalace's many terraces. When his advisors contradicted him, he had them shot or shot them himself. As the cabinet dwindled, the survivors agreed that Cleon the Mad (as he was called, but not to his face) had to go.

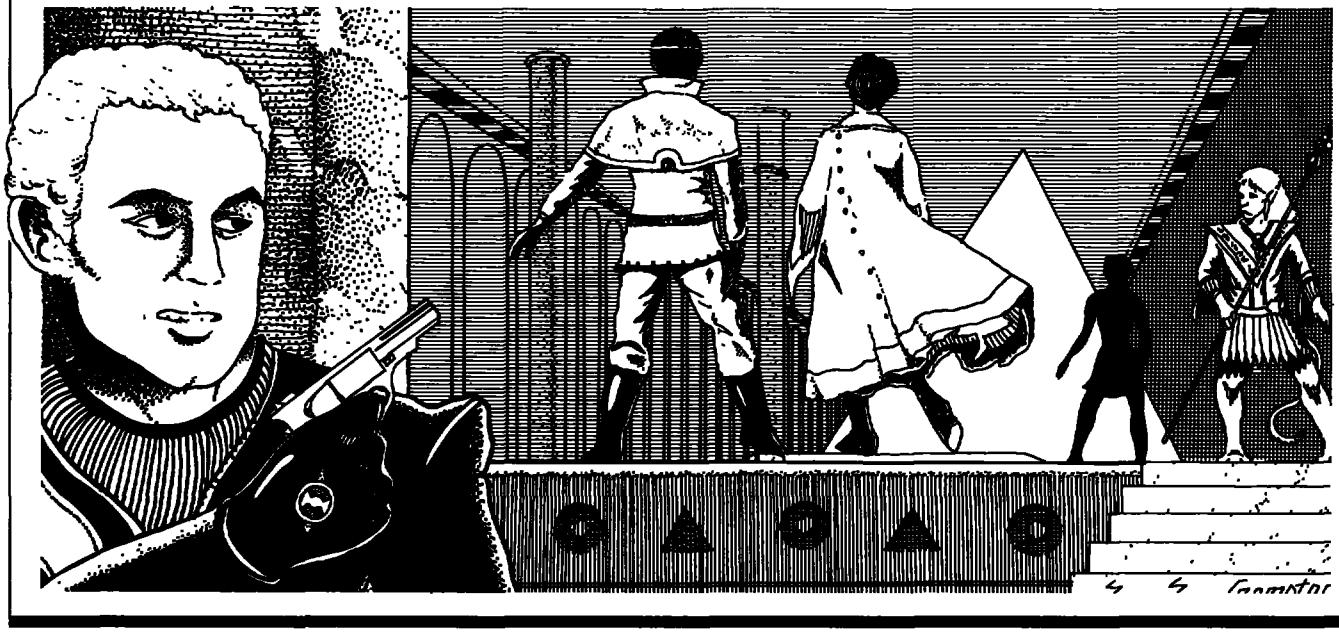
The Duchess Porfiria, Minister of Justice in the cabinet, actually performed the deed, confronting Cleon III in the throne room following a private party. Their raging gunfight actually took less than three minutes, and it ended with Cleon III sprawled dead beneath a glistening white party dome.

Porfiria's heroic action, combined with her position as the eldest daughter of Emperor Martin II's grand-nephew, was sufficient for the Moot to confirm her as Empress. Their action also established a precedent for succession by right of assassination.

Assassination became more prominent in 475. Cleon IV assassinated the Empress Nicholle and her immediate family, and claimed the throne. His excuse was that Nicholle was too weak to govern; he had enough noble support to succeed her. Jerome assassinated Cleon IV. Jaqueline I assassinated Jerome. Between 475 and 629, each of the 21 successions to the throne involved the death of the Emperor by assassination or battle.

The coronation of Arbellatra in 629 put an end to the assassinations. In the next 500 years, the Imperium put that period of upheaval and chaos behind it. Assassination became a footnote in the history texts. But for the record, the right of assassination remains a precedent to which conditions apply: the assassin must be a high-ranking Imperial noble; he or she must do the deed personally; and he or she must then claim the throne.

In 1116, the Imperium was shaken when the precedent was revived. Archduke Dulinor of Ilelish assassinated the Emperor Strephon, also killing the Empress Iolanthe, the Grand Princess Cienca Iphegenia, and the Aslan Yerlyaruiwo ambassador. He then ascended the steps to the Iridium Throne, sat on it long enough to make a formal claim, and fled to his own worlds dozens of parsecs distant to prosecute his own campaign to rule the Third Imperium.



Bola (Weapon): The individual knows can use the bola as a weapon.

Boomerang (Weapon): The individual can use the boomerang as a weapon.

Bow (Weapon): The individual knows archery: how to use a bow and arrows.

Brawling: The individual is skilled in hand-to-hand combat, and can fight without weapons or with typical improvised weapons such as clubs or bottles. The use of brawling skill is governed by the combat rules.

Bribery: The individual has had experience in bribing officials in order to circumvent regulations or ignore cumbersome laws.

Broadsword (Weapon): The individual can use the broadsword, a long, heavy sword.

Broker: The individual is skilled in the marketing of goods, and he understands the business of buying and selling.

To find a buyer for a load of laser rifles:
Simple, Broker, Streetwise, 1 day (hazardous).
Referee: This task assumes a Law Code of No Law. Increase the difficulty one level for each increase in Law Code: Lo Law is Routine; Mod Law is Difficult; Hi Law is Formidable; Ext Law is Impossible. For law levels where laser weapons are legal, this task is not hazardous.

Uses of the Broker skill are governed by trade and commerce rules.

Carbine (Weapon): The individual knows how to use the carbine, a short, easy-to-carry rifle.

Carousing (Serves as: Steward minus 1): The individual is a gregarious and sociable individual who is well adapted to meeting and mingling with strangers in unfamiliar surroundings.

Chemistry: The individual has skill in the science of inanimate matter, and understands the composition, structure, properties, and reactions of elements and compounds. Chemistry skill applies to inanimate matter, not living organisms.

To analyze a chemical compound for trace elements:
Routine, Chemistry, Edu, 1 hour.
Referee: The character be able to gain access to the proper equipment in order to successfully perform this task.

Combat Engineering: The individual has had a degree of practical training in combat engineering. Combat engineering involves the rapid construction of field fortifications, fortification camouflage, and the assessment of a fortification's ability to withstand enemy fire. Combat engineering also involves mine placement and clearance, and placement of untended ground sensors.

Combat Rifleman (Includes: Advanced Combat Rifle, Assault Rifle, Carbine, Gauss Rifle, Rifle): The individual has been trained in the use of modern combat rifles.

Communications: The individual is trained in the use, repair, and maintenance of communications devices.

While nearly everyone can press the button and make a communicator function, this skill is necessary to be able to understand why the device does not work correctly, as well as to be aware of the details and limitations on the device's possible use.

To establish a communicator connection:
Simple, Communications, Int, 3 min.

To listen in on a communicator line or channel:
Difficult, Communications, Int, 3 min.
Referee: A mishap indicates the unauthorized listener has been detected.

Computer (Serves as: Robot Ops minus 1): The individual is skilled in the operation of electronic and fiber optic computers (both ground and shipboard models).

While any character can use a computer to retrieve data that is freely available, computer skill is required to circumvent the computer's programming. Computer skill is required to program a computer.

To retrieve unprotected data from a computer:
Simple, Computer, Edu, 1 min (safe, unskilled OK).
Referee: This task assumes a tech code of Early Stellar+. For Pre-Stellar computers, the task is Routine; for Industrial computers, the task is Difficult.

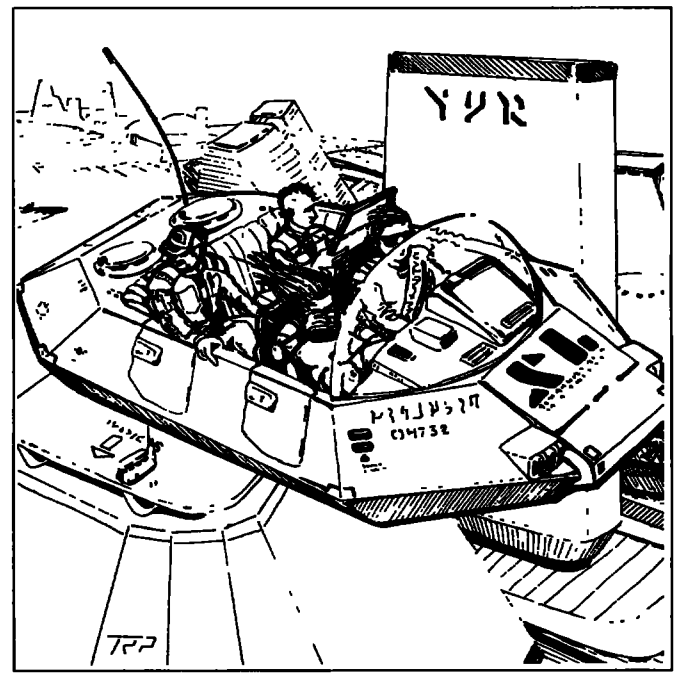
Crossbow (Weapon): The individual can use the crossbow as a weapon.

Cudgel (Weapon): The individual can use the cudgel as a weapon.

Cutlass (Weapon): The individual can use the cutlass as a weapon.

Dagger (Weapon): The individual can use the dagger as a weapon.

Demolitions: The individual is experienced in the proper handling, placement, and efficient use of explosives.



Disguise: The individual is experienced in modifying his mannerisms and appearance to prevent recognition.

To change one's appearance beyond recognition:
Difficult, Disguise, Edu, 5 min. (uncertain).
Referee: This task requires proper materials (which include ordinary make-up, common household items, or shipboard materials); access to a disguise kit makes the task one level easier. Without proper materials, this task is one level more difficult.

The quality of the disguise varies according to the result of the uncertain task.

Early Firearms (Weapon): The individual knows how to use any primitive firearm which depends on separate powder and ball rather than on cartridges.

Economic (Cascade: Admin, Broker, Legal, Trader): The individual has experience working with the financial aspects of business and commerce.

Electronics: The individual has skill in the use, operation, and repair of electronic devices. The person is considered handy in this field, with the equivalent of a green thumb. This skill includes the repair of laser and energy weapons.

Use the standard diagnosis and repair task rules for the repair of electronic devices.

To diagnose major damage done to a hand computer:
Routine, Electronics, Computer, 5 min (uncertain).
Referee: The character must have the skill of Electronics or this task becomes one level more difficult. Diagnosis is always uncertain. Diagnosis must succeed before repair begins.

To repair (in the shop) major damage to a hand computer:
Difficult, Electronics, Computer, 1 hour.
Referee: If the result of the diagnosis task was **No Truth** or **Some Truth** the repaired hand computer will not work.

Energy Weapons (Includes Fusion Gun, Plasma Gun): The individual is familiar with a variety of military energy weapons.

Engineering: The individual can operate and maintain starship maneuver drives, jump drives, and power plants. A skilled engineer is essential for the proper operation of any starship. Engineering experience enables an individual to operate the vital drives of starships (and any craft with a fusion power plant), as well as to maintain the machinery against failure.

To prepare a jump drive during pre-jump:
Routine, Engineering, Edu, 2 min.
Referee: If the starship is using unrefined fuel (when not equipped to do so), this task is hazardous. If the starship is past annual maintenance, this task is hazardous. For every month the ship is past annual maintenance, increase difficulty one level. If this task fails, the starship cannot engage the jump drive.

To engage the jump drive:
Routine, Engineering, Edu, 2 min.
Referee: If the starship is using unrefined fuel (when not equipped to do so), this task is hazardous. If the starship is within 100 diameters of a massive body, this task is Difficult (hazardous). If the starship is within 10 diameters of a massive body, this task becomes Formidable (hazardous). Treat mishaps as follows: **Superficial:** A jump relativity error occurs. The ship remains in jumpspace 7+1D-3 days (from 5 to 10 days) before emerging in the destination system. **Minor:** A jump relativity error occurs, and, in addition, the ship emerges at the extreme edge of the destination system. Travel time to the main world is 1D×8 hours. **Major:** A jump relativity error occurs, and, in addition, the ship misjumps. Throw 1D for the number of dice to throw, then throw that number of dice to determine the distance of the misjump in hexes; finally, throw 1D to determine the direction of the misjump. **Destroyed:** The starship is destroyed.

Environ (Cascade: Animal Handling, Archaic Weapons, Hunting, Recon, Survival, Stealth): The individual has experience living and working in a rural or wilderness setting.

Equestrian: The individual is skilled in controlling and riding draft animals, beasts of burden, and transport animals. Animals remain a prime form of transport on many worlds, and a trained individual knows the basics of animal control enough to ride and control them (if the animals are also properly broken and trained).

To ride a trained animal at a walk:
Simple, Equestrian, Dex, 1 hour.
Referee: The time roll indicates when both the individual and the animal are in need of a night's rest.

ANGLIC

The official language of the Third Imperium is Anglic. A distant descendent of Terran English, Anglic was the language of the Rule of Man (-2204 to -1776). The Anglic language remained a common interstellar language for trade and commerce during the Long Night. Its widespread use on the original worlds of the Third Imperium made it a natural language selection when the empire was established.

On many worlds, Anglic is only a second language used for system traffic control, commercial operations, and interstellar communications. Anglic is sometimes called Galanglic (for Galactic Anglic).

The Imperium has not been able to prevent the emergence of a variety of Anglic dialects. Interstellar communications, holocrystals, and recordings help to spread a uniform pronunciation of Anglic throughout the Imperium. Within the Imperium, any Anglic speaker can understand almost any other, but isolated communities on worlds with little contact with the interstellar trade lanes shift their speech patterns to form dialects. Broad areas within the Imperium have established their own pronunciation patterns; accepted dialects include Rim (which includes Terra), Core (the central region of the Imperium), Riftian (the spinward frontiers), and Transform (the Antares region).

To ride a trained animal at a run or in chases:
Routine, Equestrian, Dex (fateful).

To control a panicked or stampeding animal:
Difficult, Equestrian, Str (hazardous).

Exploratory (Cascade: Pilot, Sensor Ops, Survey, Survival, Vacc Suit, Vehicle): The individual has training and experience in planetary survey and exploration.

FA Gunnery (Cascade: High Energy Weapons, Mass Drivers, Meson Guns, Mortars and Howitzers): The individual has had some training as a gunner in field artillery weapon systems.

Fleet Tactics: The individual has been trained formations and maneuvers of naval operations. Fleet Tactics is used in command of two or more starships.

Foil (Weapon): The individual can use the foil.

Forensic: The individual is skilled at gathering and interpreting evidence at the scene of a crime or accident. Special forensic equipment is sometimes required. Crude forensic equipment is available at a tech code of Industrial; forensic equipment from higher tech codes is more reliable and gives more detailed information.

Forgery: The individual has developed some skill at faking documents and papers, with a view to deceiving officials, banks or patrons.

To create a convincing counterfeit credit note:
Formidable, Forgery, Dex, 1 day.

Forward Observer: The individual has been trained to adjust artillery fire from distant batteries or from ships that are in orbit.

Modern fire support is a tremendously effective weapon, but it is, nonetheless, virtually useless unless it can be accurately directed.

Fusion Gun (Weapon): The individual can use a fusion gun as a weapon.

Gambling: The individual is well-informed concerning games of chance, and he is wise in how to play them. He has an advantage over nonexperts and is generally capable of winning. Gambling, however, should not be confused with regular risk-taking.

To win in an organized casino game:
Difficult, Gambling, Int.
Referee: Allow bets of up to Cr10,000; winners receive double their bet. Make a secret failure roll when the player loses; a mishap means the game was dishonest. In any event, the player may also want to roll the following task:

To determine if a game was dishonest:
Routine, Gambling, Int.

To win in a private game:
Difficult, Gambling+1, Int.
Referee: Games allow bets up to Cr5000; winners receive double their bet. Make a secret failure roll when the player loses; a mishap means the game was dishonest.

Gauss Rifle (Weapon): The individual can use a gauss rifle as a weapon.

Genetics: The individual has training in the science of organisms. Genetics is a combination of Biology and Chemistry (with Chemistry applying to living organisms instead of inanimate matter).

To analyze a living organism for trace elements:
Routine, Genetics, Edu, 1 hour.
Referee: The living organism is not killed. This task could be done using Chemistry, but the organism would be killed. Equipment is required.

Grav Belt: The individual can use a grav belt.

To perform routine maneuvers with grav belt:
Routine, Grav Belt, Dex (unskilled OK).
Referee: Roll once for short flights, two or three times for long flights. Increase difficulty one level for bad weather.

Grav Vehicle (Serves as: Grav Belt minus 1): The individual can use an air/raft, floater, flier, and all types of grav vehicles. Grav vehicles are the major transportation form on most worlds with a tech code of Early Stellar or greater. Most people are aware of the basic operation. Grav vehicles can be dangerous to operate in high-speed situations or in bad weather.

To perform routine maneuvers with grav vehicle:
Routine, Grav Vehicle, Dex.
Referee: Roll once for short flights, two or three times for long flights. Increase difficulty one level for bad weather conditions.

Gravitics: The individual can use and repair gravitic devices. Gravitic devices use the principles of gravity modules. This skill is used to understand, repair, assemble, and operate grav modules.

To diagnose major damage to a grav belt:
Routine, Gravitics, Grav Belt, 5 min (uncertain).
Referee: A player must succeed with his diagnosis task before he can proceed with repair.

To repair (in the shop) major damage to a grav belt:
Difficult, Gravitics, Grav Belt, 1 hour.
Referee: If the diagnosis produced **Some Truth** (no matter what happens with this task), the belt will not work.

Grenade Launcher (Weapon): The individual can use a grenade launcher.

Guard/Hunting Beasts: The individual is skilled in controlling, directing, and training animals in guard or hunting duties. The creatures are generally carnivore/chasers.

To make a trained animal follow a simple command:
Routine, Guard/Hunting Beast, Int (uncertain).
Referee: This task is for an animal of *average* intelligence. If the animal is particularly intelligent, reduce the difficulty to Simple; if the animal is somewhat less intelligent, increase

the task to Difficult. Mishaps can include property damage, escape of the animal, or uncontrolled attacks by the animal.

Gun Combat (Cascade: Energy Weapons, Handgun, Laser Weapons, Neural Weapons, Rifleman, Submachinegun): Gun Combat is a specific skill in the use of a category of modern slug throwers.

Gunnery (Cascade: Screens, Spinal Weapons, Turret Weapons): Gunnery is a specific naval skill in the operation and use of one of several types of starship armament.

Halberd (Weapon): The individual can use a halberd.

Hand Axe (Weapon): The individual can use a hand axe.

Hand Combat (Cascade: Blade Combat, Brawling, +1 Endurance, +1 Strength): The individual has experience in hand-to-hand combat.

Handgun (Includes: Body Pistol, Pistol, Revolver, Snub Pistol): The individual can use handguns.

Heavy Weapons (Includes: Autocannon, Grenade Launcher, Light Assault Gun, Machine Gun, VRF Gauss Gun): The individual can use heavy weapons.

Helicopter (Serves as: Lighter-than-air Craft minus 1, Jet-propelled Aircraft minus 1, Propeller-driven Aircraft minus 1): The individual can operate a helicopter. The character's homeworld must be tech code Pre-Stellar with a standard or dense atmosphere.

Herding: The individual can control domesticated food or draft animals. Herbivores are usually subject to this skill.

High-energy Weapons (Serves as: Mass Drivers minus 1, Meson Guns minus 1, Mortars and Howitzers minus 1): The individual can use battlefield high-energy weapons. These weapons are larger, more powerful versions of the man-portable plasma and fusion guns.

High-G Environ (Includes: Laser Weapons-0, Energy Weapons-0): The individual has experience in an environment having a gravity of 2Gs or more. A high-gravity environment exerts considerable stress on the body and often does bodily harm to those not accustomed to dealing with extreme gravity. High gravity severely limits the range of slug throwers, but has little or no effect on lasers and energy weapons.

To avoid injury during physical exertion on a high-G world: Routine, High-G Environ, Int (fateful).

Referee: Exertion includes such things as running, hand combat, lifting loads in excess of Strength × 1, and other physical activities.

History: The individual has a broad knowledge of history, and he also understands the variety of techniques that are used in researching information relating to people, places, and events.

To locate background information about a mysterious patron: Difficult, History, Streetwise, 1 day (uncertain).

Hovercraft (Serves as: Large Watercraft minus 1, Small Watercraft minus 1): The individual is skilled in the operation of the hovercraft. The character's homeworld must be tech code Pre-Stellar with a standard or dense atmosphere.

Hunting: The individual can track and hunt animals. In animal encounter situations, this skill enhances the chance of surprising such animals and of surviving such encounters when the animals are dangerous.

Inborn (Cascade: Artisan, Carousing, Instruction, Jack-of-all-trades, Leader): The individual has innate abilities and has developed one of them through experience.

Instruction: The individual has the ability to teach and motivate.

Interpersonal (Cascade: Admin, Interview, Liaison, Linguistics, Steward): The individual has experience dealing with others in various settings.

TRADE ROUTES AND FEEDER LINES

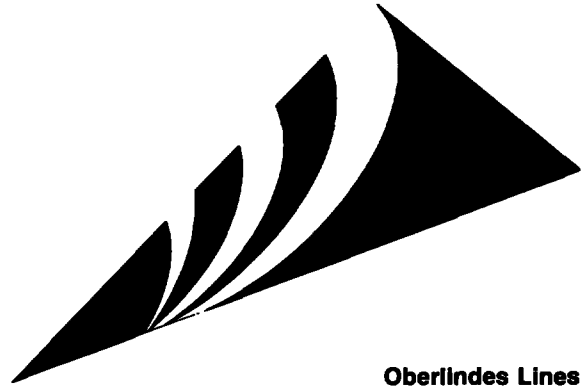
At first glance, starships seem to just follow straight lines from origin to destination. The reality is quite different. There is a kind of terrain in interstellar space; clusters of worlds and regions of empty space direct ships into distinct channels.

The Imperium is crisscrossed with trade routes which jump between major worlds, connecting vital suppliers with essential markets, important government worlds with high population worlds, and strategic resources with exploiting industry. Trade routes are a natural outgrowth of economic and market pressures. When a market is no longer profitable, the trade routes bypass it.

The trade routes are the territory of the Imperium's largest trading companies. They maintain fleets of commercial transports and merchants who serve these tradeworlds, and they reap large profits in doing so.

But the trade routes directly serve fewer than a tenth of the worlds of the Imperium. The other 90 percent of the Imperium's worlds are served by feeder lines, tramp freighters, and free traders. These smaller companies and unscheduled ships carry passengers and cargo between worlds off the main trade routes.

A traveller leaving Menorb for Heya would first catch a tramp freighter for Pixie and transfer to a scheduled liner for Kinorb. Once at Kinorb, he would wait for the first available ship to Heya. Ships along the trade routes are scheduled and predictable; ships travelling to worlds off the main routes are unscheduled and unpredictable.



Oberlindes Lines

Interrogation: The individual knows the psychological arts of interrogation. The individual will be able to extract more information from a subject than is normally possible. There is no direct psychological or physical assault on the individual interrogated; instead, the ability of the interrogator derives the information. The interrogator has a high ability to detect lying and to piece together hints from a large number of interrogations.

Interview (Serves as: Interrogation minus 1): The individual is skilled in conversing with others on an individual basis. The character's knowledge of psychology, body language, and oral communication allows him to draw others out, making the person being interviewed more apt to be open.

The maximum benefit from this skill is obtained only when the individual is in a prearranged conversation with one or two individuals. Time spent in preparation is important; situations where preparation is inadequate are more difficult.

To determine an obscure fact about another's background: Routine, Interview, Int, 5 min (uncertain).

Intrusion: The individual has experience in clandestine methods of acquiring goods that belong to others. An individual with Intrusion can pick locks, open locked safes, and pockets.

To clandestinely open a magnetic door lock without a key: Difficult, Intrusion, Stealth, 5 sec.

Referee: In situations where the character is likely to be discovered, make this task hazardous.

Jack-of-all-trades: The individual is proven capable of handling a wide variety of situations and is resourceful at finding solutions and remedies. Jack-of-all-trades allows the character one free retry per level of Jack-of-all-trades on any task that fails. This represents the character's resourcefulness when finding solutions.

Jet-propelled Aircraft (Serves as: Helicopter minus 1, Lighter-than-air Craft minus 1, Propeller-driven Aircraft minus 1): The individual has skill in the operation of jet-propelled aircraft. The character's homeworld must be tech code Pre-Stellar or Early Stellar and have a Thin, Standard, or Dense atmosphere.

Large Blade (Includes: Broadsword, Cutlass, Sword): The individual is skilled in the use of large edged weapons.

Large Watercraft (Serves as: Hovercraft minus 1, Small Watercraft minus 1): The individual is skilled in the operation of large watercraft, including submersibles. The character's homeworld cannot be a Desert World.

Laser Pistol (Weapon): The individual can use a laser pistol.

Laser Rifle (Weapon): The individual can use a laser rifle.

Laser Weapons (Includes: Laser Pistol, Laser Rifle): The individual can use laser weapons.

Leader: The individual has lead others through difficult situations, and he also possesses a knowledge and self-assurance which work together to form a capable emergent or appointed leader.

Legal (Serves as: Admin minus 1): The individual is familiar with a wide variety of the laws and regulations of interstellar travel and relations.

Familiarity with the laws that control interstellar commerce is essential for any trader. Legal reflects a knowledge of these regulations. The character will not be familiar with the myriad laws on each individual world encountered nor will he be able to function as a lawyer.

Liaison (Serves as: Admin minus 1, Streetwise minus 1): The individual is trained in the art of dealing with others; this skill is usable in relations with members of military units, citizens in a community, and with alien or foreign cultures.

This individual is trained to subordinate his own views and prejudices where they may conflict with those opinions held by the individuals he is dealing with. As a result, greater cooperation can be achieved and progress in mutual projects made.

Liaison is similar to Streetwise and Admin. Streetwise deals with the unsavory aspects of society, while Admin deals with the formal bureaucratic structure. Liaison is a formal training that spans both but also extends to alien cultures.

Light Assault Gun (Weapon): The individual can use a light assault gun.

Lighter-than-air Craft (Serves as: Helicopter minus 1, Jet-propelled Aircraft minus 1, Propeller-driven Aircraft minus 1): The individual is skilled in the operation of a lighter-than-air craft. The character's homeworld must be tech code Indust or Pre-Stellar, and it must also have a Standard or Dense atmosphere.

Linguistics: The individual has training and experience communicating through the use of foreign languages. The level of skill represents the number of languages (other than his native tongue) that the character knows. Upon receiving this skill, the character should specify which foreign languages he knows.

An individual with Linguistics has the ability to quickly learn and understand an unknown language based on language structure laws.

Machine Gun (Weapon): The individual can use a machine gun.

Mass Driver (Serves as: High Energy Weapons minus 1, Meson Guns minus 1, Mortars and Howitzers minus 1): The individual is trained in using mass drivers as battlefield weapons.

Mechanical: The individual has skill in the use, operation, and repair of mechanical devices. The person is considered handy in this field, with a talent similar to that of a green thumb. This skill includes nonenergy weapon repair; it does not include Engineering.

Mechanical skill allows a character to operate mechanical devices easily, and, in addition, he can repair them quickly and efficiently.

Medical: The individual has skill in medical arts.

Medical-1 qualifies an individual as a medic on a starship crew.

Medical-3 qualifies an individual as a doctor and assumes a license to practice medicine, including writing prescriptions, handling most ailments, and dealing with other doctors on a professional level. Dexterity 8+ qualifies a doctor to be a surgeon.

To treat a minor wound (1 characteristic reduced to zero): Routine, Medical, Edu, 3 min.

To treat a major wound (2 characteristics reduced to zero): Difficult, Medical, Edu, 2 days.

To revive a low passage passenger: Routine, Medical, Edu, 1 min (fateful).

Xeno-Medicine: Normally, medical expertise is considered to apply to humans and, to a limited extent, to the animals which live on human worlds. However, anyone with Medical can apply that skill (increase task difficulty one level) to nonhuman aliens.

Mental (Cascade: +1 Education, +1 Intelligence): The individual has improved his mental abilities.

Meson Guns (Serves as: High-energy Weapons minus 1, Mass Drivers minus 1, Mortars and Howitzers minus 1): The individual can use meson guns.

Mortars and Howitzers (Serves as: High-energy Weapons minus 1, Mass Drivers minus 1, Meson Guns minus 1): The individual can use mortars and howitzers.

Naval Architect: The individual is trained in the design of starships and small craft. Knowledge of the requirements for accurate, usable ship design plans and of the details of ship design are part of this skill.

The use of this skill is governed by the starship design and construction rules and does not allow the invention of new devices or equipment.

Navigation (Serves as: Sensor Ops-1): The individual has training in interplanetary and interstellar navigation.

The starship navigator plots the course and ensures that information is available to the pilot and crew as they need it. The navigator interprets the long-range data provided by the ship's scanners and detectors.

Navigation expertise qualifies a character for the position of navigator on a starship.

To compute the proper course for a starship making a jump: Routine, Navigation, Edu, 2 min (uncertain).

Neural Pistol (Weapon): The individual knows how to use a neural pistol.

Neural Rifle (Weapon): The individual knows how to use a neural rifle.

Neural Weapons (Cascade: Neural Pistol, Neural Rifle): The individual knows how to use neural weapons.

Persuasion: The individual is skilled acting to persuade groups to take a course of action.

Preparation is critical to the use of the skill of Persuasion. Persuasion is most aptly applied to large numbers of people through an effective use of either live or recorded media. While the skill of Persuasion is similar in some respects to the skill of Leader, Persuasion is not the same. Leadership involves responsibility, knowledge, and action, and a leader will always try to choose and direct the best course. Persuasion implies only the ability to influence others, whether for their own good or not. Individuals with high levels of Persuasion may become propagandists.

To convince a lynch mob to take a particular course of action: Difficult, Persuasion or Leader, Int, 10 min.

Physical (Cascade: +1 Dexterity, +1 Endurance, +1 Strength): The individual has improved his physical abilities.

Physics: The individual has training and experience in the science of matter and energy.

Pike (Weapon): The individual can use the pike (a polearm). The use of this skill is governed by the combat rules.

Pilot (Serves as: Ship's Boat minus 1): The individual can operate starships and large interplanetary ships. This skill includes both interplanetary and interstellar aspects of large ship operation. The single most important ship crew position is the pilot, responsible for control of the starship's liftoffs, landings, and routine flight.

The term pilot refers to interstellar ships; much of the interstellar ship operation, however, is similar to that of interplanetary craft, and Pilot applies to large interplanetary craft (100 tons and up).

To pilot a starship from a world's surface to jump point: Routine, Pilot, Navigation.

Referee: Time for this task depends on time needed to reach a safe jump point at 100 diameters from a world.

Pistol (Weapon): The individual can make use of a pistol.

Plasma Gun (Weapon): The individual can use a plasma gun.

MEGACORPORATIONS

Although billions of companies do business within the Imperium, and millions are engaged in interstellar commerce, only a very few of them grow to become large enough and powerful enough to extend their activities to every corner of the empire. The favored few are referred to as *megacorporations* (of which there are only 13 total). Megacorporations dominate interstellar commerce on the grand scale. Their brands, trade names, and service marks have come to be almost universally recognized throughout the Imperium.

Delgado. Military hardware, miniaturization, minerals, publishing, trading, recreational products.

General Products. Heavy industry, starships, vehicles.

GSbAG. Starships.

Hortalez. Banking, investments, finance arrangements.

Interstellarms. Military hardware, military units, strategic planning.

Ling-Standard Products. Mining, electronics, vehicles, weapons, consumer goods.

Makhidkarun. Communications, computers, entertainment, recreation.

Naasirka. Information retrieval hardware and software, robots, electronics.

SuSAG. Chemicals, pharmaceuticals, geneering.

Sharurshid. Trade and speculation, luxury goods.

Sternmetal. Mining, manufacturing, energy supplies, food synthesis.

Tukera. Passenger and freight transport, trade and speculation.

Zirunkarish. Capital investment, real estate, insurance.

Polearm (Includes: Bayonet, Halberd, Pike, Spear): The individual is trained in the use of polearms.

Propeller-driven Aircraft (Serves as: Jet-propelled Aircraft minus 1, Helicopter minus 1, Lighter-than-air Craft minus 1): The individual is trained in the operation of propeller-driven fixed wing aircraft. The character's homeworld must be tech code Indust or Pre-Stellar and have a Thin, Standard, or Dense atmosphere.

Prospecting: The individual has gained experience in searching out mineral wealth on the surfaces of worlds and in deep space.

The skill of Prospecting allows an individual to have greater likelihood of discovering mineral deposits. This skill alone is not sufficient for the discovery of vast mineral wealth; but it does provide a greater probability of an individual discovering what is there.

To mine an asteroid for 1 kg of ore:
Routine, Prospecting, Dex, 1 hour.

Recon (Serves as: Sensor Ops-1): The individual is skilled in military scouting and is capable of moving about in the wilderness without being detected.

To discover an enemy group in rough terrain:
Difficult, Recon, Hunting (uncertain, confrontation).
Referee: A result of **Some Truth** means both sides have spotted each other; **No Truth** means the characters have been sighted by the enemy without noticing the enemy themselves.

Recruiting: The individual is familiar with the most effective means of approaching individuals and presenting proposals for employment, couched in terms most likely to produce acceptance.

Recruiting affects both the quality and quantity of recruits who will respond to a request for application. Recruiting can obtain nonplayer character hirelings with skills suited for specific tasks. Leader, on the other hand, tends to attract indiscriminately all within the range of the character's personality, skill or no skill.

To locate a potential hireling:
Routine, Recruiting, Int, 4 hours (uncertain, interpersonal).

Revolver (Weapon): The individual can use a revolver.

Rifle (Weapon): The individual can use a rifle.

Rifleman (Includes: Autorifle, Carbine, Rifle): The individual can use standard infantry weapons.

Robot Ops: The individual is trained in overseeing robots and in instructing them in their specific duties.

Under ordinary circumstances, a person with Robot Ops automatically succeeds in instructing the robot. For more complicated situations, define a task for the robot to understand.

A robot with Intelligence-0 will not perform properly unless it is instructed by someone with Robot Ops.

Any robot with an Intelligence 4- (a dumbot) requires supervision of its work at occasional intervals. This can be accomplished by a sophont or by another robot with higher Intelligence. As a rule of thumb, a robot with an Intelligence of 4 or below will have difficulty performing a task for which it has no skill.

To instruct a robot on a task in a skill it has:
Routine, Robot Ops, robot's skill, 1 min (uncertain).

To instruct a robot on a task for which it has no skill:
Formidable, Robot Ops, robot's Int, 2 min (uncertain).
Referee: Use the robot's Intelligence divided by 5 as a DM for this task.

Robotics (Serves as: Robot Ops, Computer minus 1): The individual is trained in designing, building, and repairing high-tech robots. The Robotics skill serves as Electronics minus 1, Gravitics minus 1, Mechanical minus 1 when dealing with robots.

Science (Cascade: Biology, Chemistry, Genetics, Forensic, Medical, Physics, Robotics): The individual has training in an area of modern science.

Sensor Ops: The individual can operate a variety of modern sensors. He is also familiar with interpreting their readings.

To scan the area for unidentified starships:
Routine, Sensor Ops, Edu, 10 sec (uncertain).

To scan an area for life forms:
Routine, Sensor Ops, Biology, 1 sec (uncertain).

Screens: The individual is skilled in the operation of a variety of protective equipment developed for starships. Screens include nuclear dampers, meson screens, and black globe generators.

Ship Tactics: The individual has been trained in the operation of a starship or spaceship in battle. Ship Tactics is a skill which is used by individuals who are in command of a single ship in combat.

Ship's Boat: The individual is familiar with the operation of small interplanetary craft collectively known as ship's boats. These craft range from five to 100 tons and include shuttles, lifeboats, launches, ship's boats, and fighters.

To pilot a shuttle from a world's surface to orbit:
Routine, Ship's Boat, Sensor Ops, 5 min.

Sling (Weapon): The individual can use a sling.

Small Blade (Includes: Blade, Dagger): The individual is skilled in the use of small edged weapons.

Small Watercraft (Includes: Hovercraft minus 1, Large Watercraft minus 1): The individual is skilled in the use of small water craft, including submersibles. The individual's homeworld must be tech code Pre-Indust to Pre-Stellar and cannot be a Dry World.

Snub Pistol (Weapon): The individual can use a snub pistol.

Space (Cascade: Engineering, Navigation, Pilot, Sensor Ops, Ship's Boat, Vacc Suit): The individual has been a member of a starship or spaceship crew.

Space Combat (Cascade: Gunnery, Sensor Ops, Ship Tactics, Tactics): The individual has training in starship combat.

Space Tech (Cascade: Communications, Computer, Engineering, Gravitics, Vacc Suit): The individual has training in the technical aspects of starship operation.

Spear (Weapon): The individual can use a spear.

Special Combat (Cascade: Battle Dress, Combat Engineering, Combat Rifleman, Demolition, FA Gunnery, Forward Observer, Grav Belt, Heavy Weapons, High-energy Weapons, High-G Environ, Stealth, Zero-G Environ): The individual has training in combat activities.

Spinal Weapons: The individual is skilled in the operation of major starship weaponry.

Stealth: The individual is skilled in covert activity. The individual remains unobserved by moving quietly and by taking maximum advantage of available cover. Stealth is of no benefit against electronic surveillance devices or robots.

To move down an empty starship corridor unobserved:
Difficult, Stealth, Dex, 30 sec.

Steward: The individual is experienced and capable in the care and feeding of passengers.

Steward skill represents a general knowledge of cooking, personal care and attention, and other areas of experience which will make passengers and crew happy and content with their conditions of passage.

Streetwise: The individual is acquainted with the ways of local subcultures (which tend to be similar everywhere in human society) and thus is capable of dealing with strangers without alienating them.

Close-knit subcultures (for example, some portions of the lower classes, trade groups such as workers, and the underworld) generally reject contact with strangers or unknown elements. Streetwise expertise allows contact for the purposes of obtaining information, hiring persons, purchasing or selling contraband or stolen goods, and other shady or borderline activities.

To infiltrate a gang of smugglers:
Difficult, Streetwise, Carousing, 1 day.

Submachinegun (Weapon): The individual can use a submachinegun.

Survey (Serves as: Sensor Ops minus 1): The individual is skilled in mapping and charting star systems.

Survey is a skill conferring expertise to produce accurate maps and directories of Imperial territory. Survey allows an individual to accurately determine the characteristics of an unknown or unclassified world. It allows an individual to correctly produce maps and information about star systems as well.

To determine a planet's physical codes:
Routine, Survey, Edu, 25 min (unskilled OK).
Referee: Success reveals size, atmosphere, and hydrographic codes.

Survival: The individual can live off the land or stay alive in situations where most individuals would have trouble finding food, water, or shelter.

The likelihood of Survival (no matter how good) allowing a character to find breathable air in a vacuum is rather slight, but Survival would allow an individual to use any tools at hand to build an adequate shelter or to locate caves or natural features which could assist in survival.

JUMPSPACE

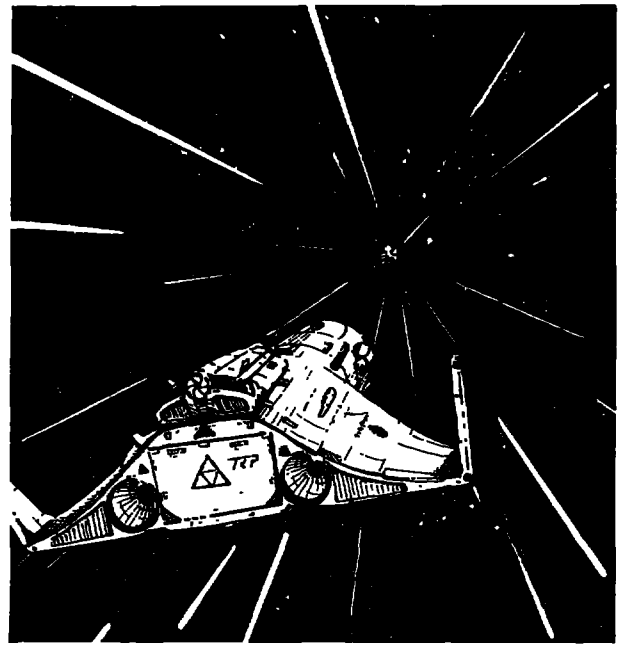
The central secret of interstellar travel is jumpspace. Without jump, interstellar travel would be restricted to the universal speed limit of light speed, and intelligent species would never travel to the stars. Jump allows travel at speeds up to six parsecs per week.

The basic concept of jumpspace is that of an alternate space. Theoretically, jumpspaces are alternate spaces, each only dimly understood from the standpoint of our own universe. Jump is defined as the movement of matter from one point in space (called *normal space*) to another point in normal space by travelling through an alternate space (called *jumpspace*). The benefit of jump is that the time required is relatively invariant—about one week. If the distance travelled is greater than can be covered in one week in normal space, then a gain has been made. Jumpspace makes possible enormous gains.

Entering jump is possible anywhere, but perturbations due to gravity make it safest to begin a jump at least 100 diameters out from a world or star. Ships are naturally precipitated out of jumpspace before they get too deep into a gravity field.

Normal jumps take 168 hours (plus or minus 10 percent) to complete, regardless of the distance travelled.

Misjumps: Sometimes a jump goes wrong. Catastrophic failures destroy the ship and its crew. Other failures can destroy a drive or send a ship in the wrong direction. Some misjumps reduce a jump-6 to a mere jump-1, or convert a jump-1 into jump-10, 20, or higher.



Sword (Weapon): The individual can use a sword.

Tactics (Serves as: Ship Tactics minus 1): The individual has training and experience in small unit tactics (up to and including units of 1000 troops, or individual spaceships). This skill is not to be confused with strategy, which deals with the reasons for the encounter and the intended results of the encounter; strategy is the realm of the players, rather than the characters.

Technical (Cascade: Communications, Computer, Electronics, Gravitics, Robot Ops, Sensor Ops): The individual has training and experience in technical aspects of modern society.

Trader: The individual has an awareness of the techniques and practice of commerce in all its expressions. Trader may be used to estimate resale value of items.

Tracked Vehicle (Serves as: Wheeled Vehicle minus 1): The individual is skilled in the operation of tracked vehicles. The individual's homeworld must be tech code Indust to Pre-Stellar and cannot be a Water World.

Turret Weapons: The individual has skill in the operation of both turret-mounted and fixed small craft weaponry.

Vacc Suit: The individual has been trained and has experience in the use of the standard vacuum suit (space suit), including armored battle dress and suits for use on various planetary surfaces in the presence of exotic, corrosive, or insidious atmospheres.

Nonbreathable atmospheres or hostile environments can be easily overcome by the correct use of protective equipment. However, the danger of minor mishaps becoming fatal remains great.

To avoid a dangerous situation when attempting an unusual maneuver in a vacc suit:
Routine, Vacc Suit, Dex, 1 min (fateful, hazardous).

To cross a vacuum plain in vacc suits and on foot:
Routine, Vacc Suit, End, 1 hour.
Referee: The oxygen supply in each vacc suit only lasts 6 hours. Characters may want to attempt a hasty task, if they are daring.

Vehicle (Cascade: Grav Vehicle, Helicopter, Hovercraft, Jet-propelled Aircraft, Large Water Craft, Lighter-than-air Craft, Propeller-driven Aircraft, Ship's Boat, Small Water Craft, Tracked Vehicle, Wheeled Vehicle): The individual is skilled in the operation, use, and maintenance of a specific type of vehicle which is commonly available in society.

Having skill in a one of the categories of vehicle allows the character to operate that specific vehicle in a safe and efficient manner.

Vehicle skill is used by characters for operation and as a DM against accident, it may also be used to assist in repairing and maintaining a vehicle. Mishaps may involve throwing a tread, broken axles, collisions, and so on.

To perform routine driving maneuvers with a vehicle:
Routine, (Vehicle skill), Dex (unskilled OK).
Referee: Time for this task depends on the maneuver. Roll once for short trips, two or three times for long trips. Increase the difficulty by one level for bad weather conditions.

Vice (Cascade: Bribery, Disguise, Forgery, Gambling, Intrusion, Streetwise): The individual has experience with the more unsavory or clandestine aspects of society.

VRF Gauss Gun (Weapon): The individual is skilled in the use of the very rapid fire gauss gun, a heavy, usually vehicle-mounted, weapon.

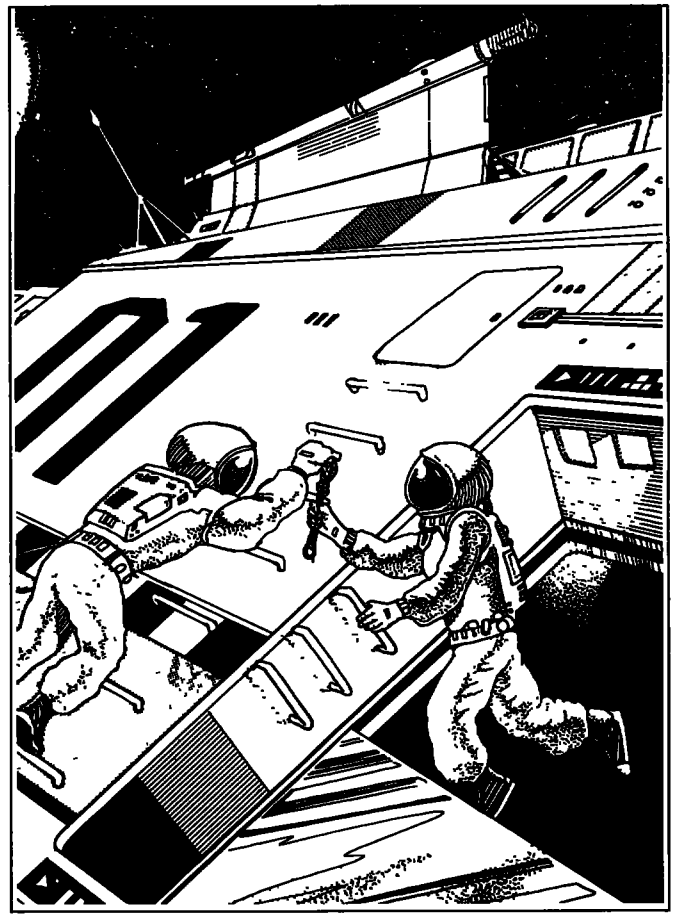
Wheeled Vehicle (Includes: Tracked Vehicle minus 1): The individual is skilled in the operation of wheeled vehicles. The individual's homeworld requires tech code Indust+ and cannot be a Water World.

Zero-G Environ: The individual has been trained to work in a zero-G environment.

When any action is attempted, the problems of recoil and inertia can handicap or render helpless individuals not trained to compensate for it.

Individuals who lose control may not continue until they have reoriented themselves and regained control.

To remain in control during a zero-G activity:
Routine, Zero-G, Dex (unskilled OK).
Referee: If using magnetic grips, tethers, or handholds, reduce the difficulty of this task one level. If attempting a free jump or any violent activity (such as hand combat or firing weapons that have recoil), increase the difficulty of this task one level. If the character loses control, he must successfully reroll this task, at one difficulty level higher than normal, to regain control.



Character Improvement

Even after a character has mustered out of prior service, he or she can still increase skills and characteristics in the course of many **Traveller** scenarios. Quite naturally, these increases are not automatic or easy, and players should remember that acquiring one or two skill levels during character generation usually takes the equivalent of four years of game time. Players must be patient to succeed.

There are two basic means of improving a character: *experience* and *formal training*. What is the difference between experience and formal training? Experience requires successful observation beforehand (preferably), followed by successfully performing some task that makes use of the desired new skill. Formal training requires determination, plus the appropriate learning materials—books, computer terminals, tools and equipment, a teacher, and perhaps some institution.

EXPERIENCE

Experience comes from participation; a passive character accumulates less knowledge. Positive results come when a character is successful, but one can learn from mistakes, too.

New Skills by Tasks: Gaining experience depends on tasks and is determined by successful and unsuccessful task rolls. A character may specifically state that he is trying to gain some particular new skill, then he may attempt an *observation* task for rudimentary knowledge related to the task he later attempts.

To observe a particular procedure (to learn it):
Difficult, Determination.

Referee: This task is attempted only by a character unskilled in the skill being observed. If the character succeeds, he receives a temporary skill level-0 for use in the next task attempt with this skill (and then loses the skill level-0). The time duration for this observation task varies and should be set by the referee. The observation task itself may be hazardous if the procedure is hazardous.

Players note the skills their characters have observed.

The observation task comes into play in the case in which a character wants to earn ATs (defined below) for a particular skill and so attempts to involve himself as much as possible in that skill. When someone wants to learn to repair an automobile engine, he spends more time tinkering with his own engine, hangs out at garages, and watches others perform repairs. In game terms, this means that characters will tag along with each other as much as they can. When one character goes to haggle with some merchants, another will accompany him so he can learn Trader or Broker skill. Another character, flying an air/raft or piloting a starship, will be pestered by his friend who wants to try it. These situations may entail further danger, and in any case should add spice to adventures, if only because they further the opportunities for character interaction.

Trial and Error: When the character attempts a task that would normally require a skill that he does not have, he gradually (if lucky and persistent) learns something about it. At the end of each adventure session, the referee should reward each character with one adventure tally (AT) for a particular skill that played a significant part in the session. The AT may be in a new skill or a skill that the character already has, but an AT for a new skill can be given only if the character succeeded in a task that would normally require that new skill (this is why successful observation is so important). Players should keep track of their ATs. ATs can accumulate over time and are not lost except as described below.

For example, repairs to a malfunctioning air/raft normally require the skill of Gravitics. A character without Gravitics who succeeds in the repair task would be awarded an AT for Gravitics at the end of the game session. (If the task was unsuccessful, the Gravitics AT would not be awarded.) A character might have attempted several different tasks, but he receives an AT for only *one* skill per session, decided upon by the referee. It is possible that a character might receive no AT for a session.

A character can gain up to two ATs per game year for each skill.

ATs should be recorded to show both the skill and the date. For example, AT-Gravitics (001-1117) or AT-Gravitics (270-1117).

GAINING THE SKILL

When a player thinks that his character has sufficiently practiced a new skill (shown by the accumulation of ATs for it) he may attempt to gain that skill. Accumulated ATs may also be used to increase an existing skill level.

To obtain (or improve) a skill by experience alone:
Formidable, AT, Int (safe).

Referee: This task can be attempted once at the start of each adventure session, and can not be repeated until the next session if the attempt fails. Accumulated ATs are a DM for this task; the character must have at least one AT for the skill to attempt this task.

If the character already has the pertinent skill, success increases the skill one level. If the character does not have the

skill, success gives him that skill at level-0. Failing this task does not affect ATs; they continue to accumulate as usual. Succeeding in this task reduces the number of ATs for the skill to 0; the character must start anew to raise the skill another level. The absolute maximum DM for the task is +8.

ATs and Characteristics: Characteristics can be improved with ATs. Once he accumulates ATs, if a player makes a successful task roll his characteristic value increases by one.

ATs are harder to accumulate for characteristics because it is harder for the character to apply himself to this more general type of activity. To accumulate ATs for a characteristic, the player must declare (at the beginning of the session) that he is working for an AT in that particular characteristic. If the character has a good opportunity to apply this characteristic, the referee can award him one AT in that characteristic.

Other Advantages to ATs: Increasing skills and characteristics by accumulating ATs encourages characters' participation, keeps their interest at a high level, and makes them aware of the benefits they can achieve during any session.

FORMAL TRAINING

Characters can gain skills through formal training, which includes anything that is not just *watching and doing:* self-study, study at home, private tutoring, reading, a college course, an intensive seminar, or computer instruction. Formal training produces documentation that a skill has been learned. This fact is usually unimportant but can make a difference. A character with medical skill learned during combat might not qualify as a "genuine" doctor, and a character who learned to fly an air/raft by bringing in smuggled goods might not qualify for a driver's license, even though highly skilled.

Tasks for Formal Training: Successfully gaining training requires successfully completing three separate tasks:

Task 1—Finding the Appropriate Formal Training: A character needs to find a training environment. The materials depend on the type of training, subject matter, and duration. The player must determine the facilities and setting, and convey that to the referee, who must deal with the search for those facilities.

To find formal training in a particular subject:
Routine, Applicable skill.
Referee: This task should be adjusted for each course of formal training.

Making this task more difficult are Rare skills (a dead language), underworld skills (bribery or forgery), Low population (fewer teachers and other materials), wrong tech code (trying to learn gravitics on a Pre-Industrial world), wrong law code (trying to learn to use automatic weapons where they are restricted), prestigious schools (where not everyone can meet the high standards for admission), special materials needed for study (such as cadavers for medical training), or inappropriate world physical characteristics (a Vacuum World for jet pilot training or Desert World for large watercraft training).

The opposite conditions would tend to make this task simpler. The referee must balance the circumstances and decide upon the final task difficulty for each case.

Some skills might be used as DMs for this task, depending

INSTITUTIONS OF HIGHER LEARNING

Institutions of higher learning may be public universities organized on a planetwide basis, corporate training systems, private institutions, and special programs.

University of Regina. A broad spectrum planetary institution providing education in all areas; its campuses are scattered all over Regina. Its greatest strength is history, sociology, psychology, and political science.

University of Rhylanor. A technically oriented planetary institution to support industry and commerce on Rhylanor. Its primary programs include the hard sciences: biology, chemistry, electronics, gravitics, mechanics, physics.

Imperial Sylean University. The traditional school for the Imperial family and most higher noble families. The university is one of the most prestigious in the Imperium.

The Jumpspace Institute. Originally established at Deneb to investigate interstellar jump drives. Financed originally by the Duke of Deneb, the institute has since become an arm of the sector government. Programs include training for starship engineers and naval architects.

Mining School of Glisten. A practical training institution that supports the asteroid mining industry: a basic prospector's orientation, advanced mining techniques training, and seminars for mining managers. The school is sponsored by mining companies in Glisten Belt.

The Naasirka Endowment. The Naasirka Endowment is a high-tech scientific establishment which combines hands-on research with educational internships. Areas of interest include computer hardware and software. Although the administration offices are on Vland, internships are sponsored throughout the Imperium.

on the type of formal training desired. Computer skill might make it easier to find computer-aided instruction software for a particular skill. Streetwise skill could help a character find someone willing to teach a component of the Vice cascade skill. Admin could help a character cut through the red tape in applying for school admission. A character using Persuasion could convince a tutor to take on a new student. Interview could help determine a potential tutor's real level of expertise in a subject.

The time duration for this task also varies considerably, depending on circumstances. At the upper limit, some college courses might require a character to apply up to a year before the course starts. Finding just the right person to teach a skill could easily take a year.

If a tutor is used, he must be qualified both in the desired skill and as an instructor. He can teach the character the desired skill at a level up to one level less than his own skill level. For example, a shipmate with Navigation-3 could teach someone else up to a level of Navigation-2. The teacher would also have to have at least Instruction-1.

Ideally, the referee will create a small scenario for the player to adventure in while finding the people and equipment he needs for this task. The referee can see to it that not only is the character serious about learning, but that the player also has a good time on the way to a higher level of skill.

In some circumstances this task could be hazardous, fateful, or nonrepeatable.

Task 2—Staying Determined During Training: Staying determined once training has begun is harder for some than for others. Many characters make plans but fail to follow through on them, just as people in real life sometimes run out of steam before they finish a project. One thing necessary for successful formal training is consistency, and characters must be willing to apply themselves for the entire duration of the training to get the benefit. A character who gives up on a course half way through will get little from his good intentions.

To stay determined during a course of study:
Routine, Determination, 20 hours.

Referee: This task varies, depending upon the type of formal training undertaken. A typical course of study should average 200 hours in length; this might consist of 40 hours per week in a five-week intensive course; two hours of lecture per week over a period of two years; a college class that meets three hours per week with outside work of seven hours per week over a period of twenty weeks; or self-study or computer-aided instruction of one hour per weekday for 40 weeks.

If the character fails, the time duration roll determines how long the character spent before losing interest in the training. In the worst case, the character could spend the entire amount of time, or even extra study time, but never really apply himself during that period and so not be eligible for the next roll, as described below.

Task 3—Completing Formal Training: If a character finds formal training and applies himself to the full course of study, he may gain or increase his level of expertise in a skill. Occasionally, however, an unfortunate character will not master the material despite having done the work.

To complete formal training and gain a skill:
Difficult, Related skill, Instruction.

Referee: A character who has found training and has stayed determined is eligible to find out if he successfully adds to his repertoire of skills from the training.

Related skill is the skill being studied; a character trying to learn Robotics-4 could use his Robotics-3 skill as a DM. Pilot-3 (which can be used as one level lower of Ship's Boat) can be used as Ship's Boat-2 in an attempt to learn Ship's Boat-3. The referee may determine that other skills may also be applicable: a character studying Gravitics could benefit from prior knowledge of Physics, and a character training in Interrogation could benefit from the levels he has earned in Interview. The referee must decide on a case by case basis which skills can be used. Only one, however, can be used; a character with Computer-3 and Electronics-2 could not use both skills to modify a roll to learn Robotics.

The Instruction skill for this task is that of the *teacher* rather than that of the *learner.* A character studying Legal from someone with Instruction-2 has a DM +2 for this roll.

If the character already had some level of the pertinent skill, success in this task will give him an increase of 1 level in that skill, to a maximum skill level of 4. If the character did not have the skill to any degree, success will give him that skill at skill level-0.

However, if the character fails at this task, he still receives two ATs for the skill. He can later apply them for experience increases.

A character can succeed in a formal training task only once per game year.

Costs for Formal Training: On the average, formal training costs approximately Cr10 per hour. This figure must be adjusted by the referee based on the specific circumstances for each case.

Training for Characteristic Improvement: Characters can choose to undertake formal training to increase the values of their physical and mental characteristics to a maximum of 15 in each characteristic. The procedure is identical to that used above, but the value of the characteristic is used for the DM for the completion task. A characteristic cannot increase by more than +1 for each game year.

For example, a character could regularly lift weights to improve his Strength; he could study fencing to improve his Dexterity; or he could run regularly to improve his Endurance. A memory course could enhance his Intelligence, and he could regularly participate in a reading and discussion group to increase his Education.

Changes to Social Standing: Social Standing is an exception to these rules; it cannot be increased by formal training or experience, but requires significant cash expenditures and consequent changes in lifestyle to "become" part of the desired social class.

If a character wishes to maintain a new higher level of spending in an attempt to permanently raise his Social Standing, he must spend as much as his desired Social Standing would require for the course of a year. At the end of the year, the character's social standing increases by one. However, this technique *cannot* be used to gain noble status.

Advanced Character Generation

Basic character generation produces characters efficiently and quickly, but with some sacrifice in background detail. Advanced character generation concentrates on the character's career history and provides more detail. The trade-off is time: advanced character generation takes a lot longer. Advanced character generation covers the following careers: Mercenary (which includes the Army and Marines), Navy, Scouts, and Merchants.

OVERVIEW

Advanced character generation starts by rolling 2D for Strength, Dexterity, Endurance, Intelligence, Education, and Social Standing. This step is identical to basic **Traveller** character generation. Create the character's homeworld using the homeworld generation procedure in basic **Traveller** character generation. The character begins at age 18.

PRE-CAREER OPTIONS

A character may, at age 18 and before enlisting in a service, pursue one or more pre-career options before beginning a service career. These options include college, a service academy (the Military Academy, the Naval Academy, or the Merchant Academy), medical school, and flight school.

College: Anyone may apply for college. The admission throw determines if the character begins attending college; if the throw is not achieved, the character remains at age 18 and may attempt some other course of action (trying for a service academy or proceeding directly to career resolution).

The success throw determines if the character remains in college for the full four years; if this throw is not achieved, the character has aged one year (to age 19) and may now enlist in the Army, Marines, Navy, Scouts, or Merchants; this first enlistment will be for a short (three-year) term.

The OTC and NOTC throws are voluntary. A character may select OTC (Officer Training Corps for the Army and Marines) or NOTC (Naval Officer Training Corps), but not both. OTC and NOTC, if successfully completed, each provide a commission as an officer in the appropriate service.

The education throw determines the increase in Education that the individual receives while in college; a throw of less than one is treated as one.

Finally, the student throws for honors (which represents a high level of achievement in the education process); if successful, the individual receives the designation *honor graduate* and education is raised to 10 (or the current level plus one, whichever is greater).

An individual who receives honors may apply for medical school; an individual who elected to be in NOTC and receives honors may apply for flight school.

Regardless of whether the individual makes the honors throw, he is now 22 years of age, and may enlist in one of the enhanced careers. A character in OTC is automatically enlisted in (and commissioned as an officer in) the Army or the Marines. A character in NOTC is automatically enlisted in (and commissioned as an officer in) the Navy.

The Naval Academy: Any character with Social Standing 8+ may apply for admission to the Naval Academy. The admission throw determines if the character is accepted at the Academy.

The success throw determines if the character remains at the Academy; if unsuccessful, the character has aged one year (to age 19) and is immediately drafted into the Navy for a short (three-year) term. The education throw indicates the character's increased Education as a result of attendance.

The indicated skills are each received on a roll of 4+ on one die. If the honors roll is achieved, the character is recognized for scholastic accomplishment and may apply for admission to medical school or flight school.

In any case, the character has graduated from the Naval Academy and automatically receives a commission as an ensign in the Navy or a second lieutenant in the Marines. He is now 22 years of age.

If the individual attends medical school or flight school, service does not begin until that education is completed.

The Military Academy: Any character who has Social Standing 6+ may choose to apply for admission to the Military Academy.

The admission throw determines if the character is accepted at the Academy The success throw determines if the character remains at the Academy; if unsuccessful, the character has aged one year (to age 19) and is immediately drafted into the Army for a short (three-year) term.

The education throw indicates the character's increased Education, which is a result of attendance. In addition, the indicated skills are each received on a roll of 4+ on one die.

If the character achieves the honors roll, he is recognized for scholastic and martial accomplishment, and he may elect to attend commando school during the first year of active service. Whether or not he attends commando school, the character has graduated from the Military Academy and automatically receives a commission as a second lieutenant in the Army; he is now 22 years of age.

The Merchant Academy: Attendance at a Merchant Academy is possible for characters once they have enlisted in the merchant service. A character who has enlisted in a Megacorporation or a Sector-wide line may apply for admission to a Merchant Academy.

The admission throw determines if the character is accepted

at the Academy. The success throw determines if the character remains at the Academy; if unsuccessful, the character has aged one year (to age 19) and is immediately drafted into the Army for a short (three-year) term.

The education throw indicates the character's increased Education as a result of attendance.

If the honors roll is achieved, the character is recognized for scholastic and martial accomplishment, and may select the department to which he will be assigned. In any case, the character has graduated from the Merchant Academy and automatically receives a commission of rank O1.

Medical School: Any character who graduates with honors from college or a service academy may apply for admission to medical school. The admission throw determines if the character begins attending medical school; if unsuccessful, the individual then continues normally to entrance into a career in the Army, Navy, Scouts, or Merchants.

The success throw determines if the character remains in medical school for the full four-year term; if unsuccessful, the character has aged one year (to age 23) and then may enlist in a service, or move to active duty in a service if a graduate of a service academy for a short term of three years.

The skills shown are received automatically. If the honors throw is achieved, the character receives one additional level of Medical and one level of Computer. The character then graduates (at age 26).

He may apply for a direct commission (which is granted automatically) as rank O3 in the Navy (Medical Branch), Army, Scouts, or Merchants (Purser Department Medic). Marines have no medical officers; they are treated by Navy doctors.

Flight School: Any commissioned college honors graduate or Naval Academy graduate with honors may attend flight school simply by applying. Any other Naval Academy graduate may apply for admission. If the admission throw is not achieved, then the character continues by beginning naval or marine service normally.

The success throw determines if the individual passes the course and is not washed out (if unsuccessful, the character has aged one year and reports for duty in the Navy or Marines). The indicated skills are each received on a roll of 4+ on one die. In addition, an automatic skill of Pilot-1 is received by all graduates of flight school.

Attendance at flight school is possible only for individuals holding commissions (from NOTC, the Naval Academy, or the Merchant Academy); when the character reports for duty, he or she begins serving a short term and enters basic officer training.

BEGINNING THE CAREER

Characters begin their career by joining a service. The selection of the service may be dictated by OTC or NOTC in college or by graduation from a service academy. If it is not dictated, the character must make his own service selection and enlist.

Enlistment: Each career lists the available enlistment options and the throws required to enlist on an enlistment chart. If the throw is successful (taking into account DMs shown on the chart), the individual has enlisted.

Successful enlistment commits the individual to a term of service of four years.

Terms of Service: Upon enlistment, a character embarks on a term of service lasting four years. Each time a character reenlists, it is for an additional four-year term of service.

Advanced character generation subdivides each term of service into four *one-year* assignments. Characters determine their new assignment each year and resolve all actions pertaining to it. At the conclusion of four such assignments, a character has completed one four-year term, and may attempt to reenlist or elect to muster out.

Terms of service may occasionally be shorter than usual—for example, if the individual does not succeed at college and then enlists.

Term skills as called for in basic character generation are not rolled for, nor are rank and service abilities received; the skills received from the specific assignments in advanced character generation substitute for them.

Assignments: Each one-year assignment is resolved separately. Resolution is a multi-step procedure: the specific assignment is selected, and that assignment is resolved in terms of survival, specific character rewards (different for each career, and includes such things as decorations, promotions, or bonuses), and new skills acquired.

Survival: A character risks some chance of injury or death while serving in a service career. To survive a duty assignment, the character must throw the indicated number or higher on two dice. If the throw is successful, the individual has survived and continues with resolution of the assignment. If the throw is not successful, the character leaves the service immediately and does not count the current term of service toward mustering out benefits. If desired, the optional survival rule may be used: the character has died and character generation ends for that person.

Rewards: The various character rewards are unique to each career type, and specific rules are given for each in the section for each career. The possible types of rewards include decoration, promotion, or bonuses.

For the careers where a character may receive a decoration, if the character fails a decoration roll by six or more (for example, by rolling a 4 when 10+ was needed), he has been criminally charged and must consult the Court-Martial Table.

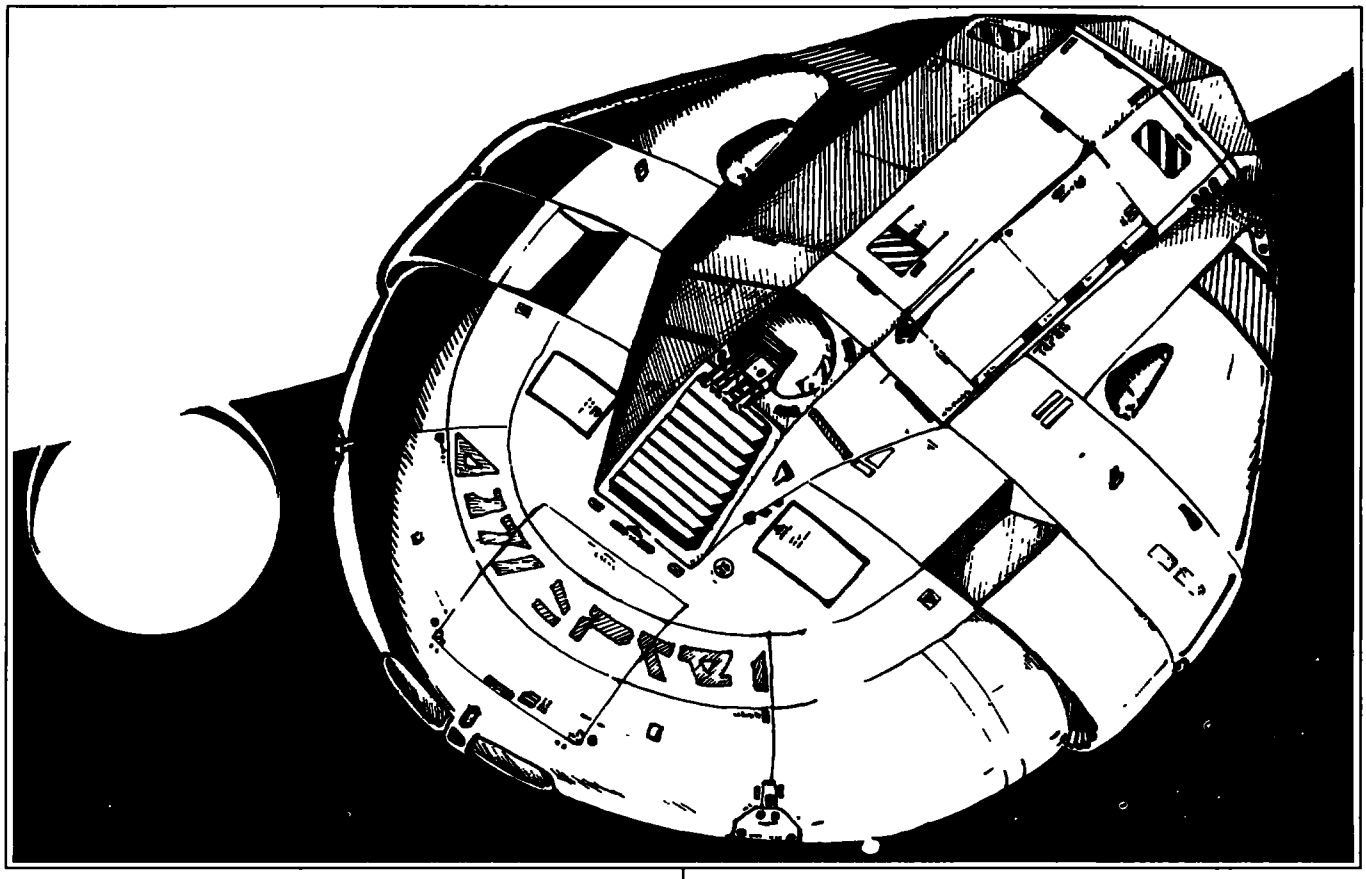
Skills: A character may receive skills as a result of the specific duty assignment. If the character rolls the indicated number or higher, then he becomes eligible for one skill, immediately determined from the appropriate skill table.

The types of skills available depend on the characters' rank and the nature of the duty assignment performed, as well as other factors.

Special Assignments: Characters may receive special assignments from time to time; they include additional schooling or training.

Resolving special assignments varies with the career and is covered in the section on each enhanced career type.

Multiple School Assignments: Characters who receive several assignments to the same school are taking refresher courses and again may attempt to receive each of the listed skills, unless a character (upon receiving such an assignment) already has a skill level of 4 or higher in any one skill offered by the school. In this case, the character is assigned



to the school as an instructor and receives one level of Instruction skill.

Aging: Aging is conducted in accordance with initial (basic) character generation. A character may locate anagathics once per term and, upon success, they will be available for the entire term.

Short Terms: If an individual has begun his or her term of service at an age which conflicts with normal procedure, then he or she must either reenlist or muster out at the next correct age (22, 26, 30, etc) even if that will result in the term being shorter than four years.

Reenlistment and Mustering Out: After completing a total of four assignments, a character has finished one term, and he or she may attempt to reenlist. At the conclusion of a character's last term, mustering out benefits are received in a manner similar to that described in Initial Character Generation (page 17).

BROWNIE POINT ELIGIBILITY

A character receives brownie points as follows:

Completion of each four-year term.....1 BP.
Graduation from college or a service academy.....1 BP.
Graduation from medical school or flight school.....1 BP.
Upon receiving honors... .....1 BP.
Upon receiving a special assignment.....1 BP.
Upon receiving a decoration:
- Meritorious Conduct under Fire (MCUF).....1 BP.
- Medal for Conspicuous Gallantry (MCG).....2 BP.
- Starburst for Extreme Heroism (SEH).....3 BP.
- No brownie points are awarded for a Purple Heart.

Brownie Points: Brownie points (BP) are special DMs received for significant successful efforts on the part of a character. A brownie point may be used at any time as an extra DM on any die roll *after it has been rolled.* Once a brownie point is expended in this way, it is used up for good. Any number of brownie points may be used on a given roll, as long as the character has them available. Brownie points may be accumulated for as long as desired and used whenever desired.

WRITING RESUMES

Upon completing the final term, each player should prepare a resume with the information an employer would have available on an applicant. The resume should consist of four parts.

1. **General:** The general section should include age, branch of service, terms served, service arm, transfers to different service arms and when they took place, and final rank.
2. **Special Assignments:** Each special assignment should be listed, although the results should not be.
3. **Awards, Decorations, or Bonuses:** All special rewards received should be listed.
4. **Equipment Qualified On:** Each type of equipment on which the player has at least one level of expertise is listed, although the exact level of expertise on each type is not listed.

The above list of items makes up a character's initial resume provided to potential employers. UPPs or exact skill levels of potential nonplayer employees do not appear on initial resumes. Other characters must use tasks to estimate the character's characteristics or skill level.

Character sheets list the UPP and all skill levels.

ENHANCED CHARACTER GENERATION

Generate the six basic characteristics using 2D: Strength, Dexterity, Endurance, Intelligence, Education, and Social Standing.

COLLEGE

Admission	9+	DM+2 if Edu 9+
Success	7+	DM+2 if Int 8+
OTC	8+	DM+1 if Soc 8+
NOTC	9+	DM+1 if Soc 10+
Education	1D-2	DM+1 if Int 9+
Honors	10+	DM+1 if Int 10+

Honors graduates receive Edu 10 or current Edu +1, whichever is greater.

NAVAL ACADEMY

Admission	10+	DM+2 if Soc 10+
Success	9+	DM+2 if Edu 8+
Education	1D-3	DM+1 if Int 9+
Honors	9+	DM+1 if Int 9+

Skills: Graduates roll 4+ on 1D for each of these skills: Vacc Suit, Navigation, Engineering.

MILITARY ACADEMY

Admission	10+	DM+2 if Str 10+
Success	9+	DM+2 if Edu 8+
Education	1D-3	DM+1 if Int 9+
Honors	9+	DM+1 if Int 9+

Skills: All graduates receive Combat Rifleman. Graduates throw 4+ on 1D for each of these skills: Tactics, Leader, Admin, Heavy Weapons, Forward Observer, Computer.

MERCHANT ACADEMY

Admission	9+	DM+2 if Edu 10+
Success	9+	DM+2 if Int 8+
Education	1D-3	DM+1 if Int 9+
Honors	9+	DM+1 if Int 9+

Skills: Graduates select one of the five Merchant departments and throw for three department skills.

MEDICAL SCHOOL

Admission	9+	DM+2 if Edu 10+
Success	8+	DM+2 if Edu 8+
Honors	11+	DM+1 if Edu 11+

Skills: All graduates receive +1 Education, Medical-3, and Admin. Honors graduates receive Medical and Computer.

FLIGHT SCHOOL

Admission	9+	DM+1 if Dex 9+
Success	7+	DM+1 if Int 8+

Skills: Graduates receive Ship's Boat and Navigation, and 1D-3 (minimum of 1) levels of Pilot.

AGING TABLE

	Loss/Saving Throw				
Age	*Str*	*Dex*	*End*	*Int*	*End of Term*
34	−1 (8+)	−1 (7+)	−1 (8+)	—	4
38	−1 (8+)	−1 (7+)	−1 (8+)	—	5
42	−1 (8+)	−1 (7+)	−1 (8+)	—	6
46	−1 (8+)	−1 (7+)	−1 (8+)	—	7
50	−1 (9+)	−1 (8+)	−1 (9+)	—	8
54	−1 (9+)	−1 (8+)	−1 (9+)	—	9
58	−1 (9+)	−1 (8+)	−1 (9+)	—	10
62	−1 (9+)	−1 (8+)	−1 (9+)	—	11
66+	−2 (9+)	−2 (9+)	−2 (9+)	−1 (9+)	12

Aging: Age is the character's physical age (*apparent age* if using anagathics). End of term is when the character normally makes the saving throw shown. End of term is correct only if *not* using anagathics.

COURT-MARTIAL TABLE

Die	*Result*
-1	Case dismissed.
0	Reprimand (-1 to next promotion).
1	Reprimand (-3 to next promotion).
2	Reduce rank -1.
3	Reduce rank -2.
4	Jail (2D months), reduce rank -2.
5	Jail (1D years), DD.
6	Jail (2D years), DD.
7	Jail (2D years), DD.
8	Death. Escape; KCr10 reward.
9	Death. Escape; KCr10 reward.
10	Death. Escape, killing 1D guards; KCr100 reward.

DMs: +1 is rank E7 to E9, +2 if combat assignment, -2 if training, -1 if rank O7+, +2 if command duty.

DECORATION AND SURVIVAL

When a character becomes eligible to receive a decoration, he must make a decoration roll.

Poltroonery: A character may elect to take a +DM on his survival roll (cowardice) in return for a -DM on the roll for decoration. If he fails the decoration roll by six or more (for example, rolling 4 when 10+ is needed), he will be court-martialed. Roll 1D on the Court Martial Table.

Guilt: Enlisted men are automatically guilty. Officers throw 10+ to avoid a court-martial, DM +1 per level of Admin. Brownie points may be used. Court-martial results are not necessarily truth.

Dishonorable Discharge (DD): The character loses 3 rolls for mustering out benefits and does not receive a pension.

Jail: Jail sentence (2D months) serves as the next year of service. The other jail sentences increase a character's age and result in mustering out.

Death Penalty/Escape: The character has a price on his head, and receives no mustering out benefits or pensions.

BROWNIE POINTS

Brownie points are special DMs that a character receives for significant efforts. Brownie points may be used (at any time) as a DM on any die roll *after it has been rolled.* Once expended, brownie points are lost. Any number of brownie points may be used on a given roll. Brownie points may be accumulated for as long as is necessary and then used whenever they are needed.

A character receives brownie points as follows:

Finish of each 4-year term	1
Graduation from College	1
Service Academy	1
Medical School	1
Flight School	1
For honors	1
For a special assignment	1
Per MCUF received	1
Per MCG received	2
Per SEH received	3
Per Purple Heart received	0

RESUMES

Each character should have a resume with pertinent information available.

1. General: Include age, branch of service (army or marines), terms served, combat service arm, transfers, and final rank.

2. Special Assignments: List each special assignment.

3. Awards, Decorations, or Bonuses: List all special rewards.

4. Equipment Qualified On: List each type of equipment on which the character has at least one skill level.

UPPs or exact skill levels of potential non-player employees are not on initial resumes. The player's character sheet lists the character's full UPP and skill levels.

Mercenary Characters

One area of personal endeavor for travellers is in the fighting profession of the mercenary.

The combat environment across the many rival states of the now-divided Imperium is one of limited war. Not only do worlds continue the local wars they have always fought; now all worlds must balance more than ever the considerations of how much force is required to win a local conflict with how much force is likely to trigger more widespread war.

Small, poor states threatened with invasion or encroachment will hire professional soldiers as cadres to drill and lead their citizen militias. Larger states can often afford to hire and equip complete mercenary contingents as strikers, or spearhead troops. Small commando units will be in demand as industrial espionage is waged between megacorporations virtually states unto themselves. In addition, hired soldiers will always be in demand as security or bodyguard troops because force remains the only true protection against force.

The stock in trade of the mercenary is experience, and the regular army is the best source of experience available. The primary (and almost sole) source of mercenary soldiers is the Army.

Most worlds and interstellar governments divide their Army into three major force commands: the Close Orbit and Airspace Control Force, the Nautical Force (often called the wet navy) and the Ground Force. Mercenary characters are from the Army Ground Force or the Marines.

Mercenary Ranks: Ranks for characters in the Army, Marines, and in Mercenary service are shown in the Mercenary Table of Ranks. Ranks O1 to O10 are called *officers* or *commissioned officers.* Ranks E1 to E9 are *enlisted personnel.* Within the enlisted ranks, ranks E3 to E9 are *noncommissioned officers (NCOs).*

Troopers: The general term for Army and Marine soldiers, regardless of rank, combat arm, or any other factor is *troopers.*

INITIAL ACTIVITIES

Initial activities include pre-career options, enlistment, combat arm selection, and initial training.

Pre-Career Options: Characters intending an Army, Marine, or Mercenary career may consider College, the Military Academy, the Naval Academy (for a Marine commission), and Medical School. Naval Academy graduates who select the Marines may try for Flight School.

Enlistment: All characters initiate their Army or Marine careers by enlisting. This procedure is essentially identical to that for standard character generation. Successful enlistment commits the individual to a term of service of four years.

Throw 5+ to enlist in the Army; allow DM+1 if Dexterity is 6+, and DM+2 if Endurance is 5+. The character begins with rank E1.

Throw 9+ to enlist in the Marines; allow DM+1 if Intelligence is 8+, and DM+2 if Strength is 8+. The character begins with rank E1.

Draft: If an individual is unsuccessful in enlisting, he may submit to the draft. A throw of 3 (1D) will result in being drafted into the Army; a throw of 2 (1D) will result in being drafted into the Marines. Any other result prohibits the individual from Mercenary service, and a new character must be generated if Mercenary service is desired.

Automatic Enlistment: Enlistment is not necessary for characters who are commissioned into a service as a result of an academy or OTC/NOTC.

Combat Arm Selection: A combat arm is one of several divisions within the Army (or Marines). Each combat arm is dedicated to a specific type of combat; often the different arms reinforce, complement, and supplement each other. Both the Army and the Marines are divided into Infantry, Cavalry, Artillery, Support, and Commandos.

Characters entering the service must select one of the combat arms available to that service. Army characters may select any combat arm except Commandos. Marine characters may select Infantry or Support. Commando, however, cannot be selected initially by anyone except a Military Academy honors graduate. Combat arms may be changed later in the career.

Initial Training: The first year of service is dedicated to *initial training.* The character receives Gun Combat and one skill by throwing 1D and consulting the Military Occupational Specialty (MOS) table of the character's chosen combat arm.

CAREER RESOLUTION

Career resolution begins once a character graduates from all pre-career schools and has enlisted.

Assignments

Each term, a character carries out four assignments (initial training constitutes the first assignment of the first term).

Each one-year assignment is resolved separately using a three-step procedure: officers determine if they will hold a command in the current assignment; the specific assignment is selected; and that assignment is resolved in terms of survival, decorations, promotions, and skills.

Command Determination (officers only): Any officer may (but is not required to) consult the Mercenary Command Duty table in an attempt to be placed in a command position. For each arm, the throw shown (if successful) places the officer in a command position; failure places the officer in a staff

position. Electing not to consult the table results in an automatic assignment to a staff position.

Specific Assignments: The Mercenary Assignment table determines the character's specific assignment. These assignments may include any of the ones that follow: training, internal security, police action, counterinsurgency, raid, ship's troops, and garrison. It is also possible to receive a *special* assignment.

Assignment Resolution: In each assignment, four aspects must be resolved: survival, decoration, promotion, and skills.

Survival: The throw for survival determines whether or not the character survives the current year of assignment. Failing the survival throw forces the character to end character generation and muster out (the optional survival rule may be implemented: a character who fails the survival throw is dead). If the indicated number is thrown exactly, the character has received a wound or injury; if the injury occurs while serving in a police action, counterinsurgency, or raid, it is officially classed as a combat wound, and the character is awarded the Purple Heart.

A character may take a negative DM on survival and then apply it as an equal positive DM for decorations during the next step.

Decoration: Characters may receive decorations for their heroism. If a character rolls the indicated number or higher, he is awarded the Meritorious Conduct under Fire (MCUF). If the character rolls a number at least three higher than the stated number, he receives the Medal for Conspicuous Gallantry (MCG) instead. If the player rolls at least six higher than the number indicated, he receives the Starburst for Extreme Heroism (SEH) instead.

If a negative DM was taken on survival, an equal positive DM may be used to attempt to win a decoration. For example, a character might take a DM -2 for survival, increasing the chance for failure. If he survives nonetheless, then DM +2 is allowed when rolling for decorations.

The reverse of this procedure (positive DMs for survival; negative DMs on decoration) is also possible, but if the decoration throw fails by six or more (for example, rolling a 4 when 10+ is needed), he must consult the Court-Martial Table.

Promotion: A character may receive a promotion by throwing the indicated number or greater (2D). Where a number is listed in parentheses, *officers* may not roll for promotion.

Normally an officer may not receive more than one promotion per four-year term. However, the fact of receiving a commission (through OCS, for example) does not prohibit the receipt of a promotion during a four-year term, and the automatic promotion given a military attache does not prohibit the receipt of another promotion during the term.

Enlisted characters may be promoted as often as once per assignment. However, they may not be promoted beyond the rank of E9 except though attendance at officer candidate school (OCS).

Skills: A character may receive skills as a result of his assignment. If the character rolls the indicated number or higher, then he or she becomes eligible for one skill to be determined immediately. A character may roll for a skill on any skill column or table available to him.

Special Assignments: Characters who receive a special assignment are sent to service schools or given unusual duty. The Mercenary Special Assignments table shows these duties.

REENLISTMENT AND MUSTERING OUT

At the end of a four-year term, the character must either reenlist or muster out. If reenlistment is not successful, then the character must muster out.

Army Reenlistment: Reenlistment in Army requires a throw of 7+. Army enlisted characters receive DM +2.

Marine Reenlistment: Reenlistment in the Marines requires a throw of 6+. Marine personnel who are cross-trained in Artillery or Cavalry and announce their intention to reenlist into either of those arms of service receive DM +1.

Changing Combat Arms: Through differing processes, enlisted personnel and officers may change their combat arm.

Enlisted characters may change their combat arm through cross-training or commando school. Once properly cross-trained, a character may reenlist for a specific combat arm. Reenlistment may always specify a specific combat arm in which the character is properly cross-trained; if reenlistment is successful, the character serves the next four-year term in skill, combat arm. A character who attends commando school may transfer to the Commandos at the beginning of the next one-year assignment.

Officers may change arms of service at the beginning of any four-year term with the single exception that they may not transfer to Commandos until after attending commando school.

Mustering Out Benefits: At the conclusion of a player's last term, all mustering out benefits are received as described in basic character generation.

SPECIAL RULES

The following special rules apply to Army, Marine, and Mercenary service.

Marine Tradition: Whenever a Marine receives Blade Combat, it must be taken as Large Blade (because Marines are trained in Cutlass due to Marine tradition). A saving throw against Marine tradition is possible: throw 9+; DM-3 if already Large Blade-1; DM-6 if already Large Blade-2 or higher.

Combat Ribbons: A character's resume should include details of combat experience. Each time that a character receives a combat assignment (police action, counterinsurgency, or raid), a combat service ribbon is awarded. Each time an officer holds a command assignment in combat, he receives a command cluster on the combat ribbon. For example, a character has three combat ribbons with two command clusters: he has had three one-year combat assignments, and in two of them he was an officer in command.

Marine Flight Officers: A character who has attended flight school may always take a special assignment as a flight assignment. He is assigned to the flight branch of the Navy as a pilot in a Marine flight wing. The assignment is resolved according to the Enhanced Naval Character generation rules.

Draftees: Characters who are drafted into a service may not attend officer candidate school (OCS) during their first four-year term.

The Starburst for Extreme Heroism: Any character who receives the SEH receives a technical promotion to the next higher rank when he or she musters out.

ENHANCED MERCENARY CHARACTERS

ENLISTMENT

Army Enlistment: Throw 5+ to enlist in the Army; DM+1 if Dexterity is 6+, and DM+2 if Endurance is 5+. The character begins with rank E1.

A graduate of the Military Academy or college OTC is rank O1 in the Army.

Marine Enlistment: Throw 9+ to enlist in the Marines; DM+1 if Intelligence is 8+, and DM+2 if Strength is 8+. The character begins with rank E1.

A graduate of the Naval Academy or college NOTC is rank O1 in the Marines.

The Draft: If enlistment is not successful, the character may submit to the draft. Throw 1D: a result of 2 drafts the character into the Marines; a result of 3 drafts the character into the Army. Any other result prohibits Mercenary service, and a new character must be generated if Mercenary service is desired.

Drafted characters cannot receive a commission during the first four-year term.

THE COMBAT ARMS

The Army and the Marines have five combat arms that are identical: Infantry, Cavalry, Artillery, Support, and Commando.

A new character must select an initial combat arm. Army characters may select any except Commandos. Marine characters may select Infantry or Support.

INITIAL TRAINING

The first year of service covers the character's *initial training*. The character receives Gun Combat. He also receives one skill from the MOS table.

COMMAND DUTY

Officer Branch	*Army*	*Marine*
Artillery	8+	9+
Cavalry	7+	7+
Infantry	7+	7+
Support	10+	10+
Commando	6+	7+

Note: This table is used only by officers (rank O1+).

ASSIGNMENT

Die Artillery	*Cavalry*	*Infantry*	*Support*	*Commando*
2 Raid	Raid	Raid	Raid	Raid
3 Training	Training	Raid	Internal Security	Raid
4 Ctrlns	Ctrlns	Ctrlns	Ctrlns	Ctrlns
5 Police Action	Police Action	Ctrlns	Garrison	Police Action
6 Garrison	Garrison	Garrison	Garrison	Police Action
7 Garrison	Garrison	Garrison	Garrison	Internal Security
8 Training	Training	Training	Training	Training
9 Police Action	Police Action	Police Action	Police Action	Ctrlns
10 Ctrlns	Internal Security	Internal Security	Internal Security	Raid
11 Special Duty	Special Duty	Special Duty	Special Duty	Special Duty
12 Special Duty	Special Duty	Special Duty	Special Duty	Special Duty

Note: Marines (of any combat arm) never serve on Counterinsurgency or Internal Security; if that assignment is thrown, they are assigned to Ship's Troops instead.

ASSIGNMENT RESOLUTION

Infantry Cavalry, Artillery	*Training*	*Internal Security*	*Police Action*	*Ctrlns*	*Raid*	*Ship's Troops*
Survival	auto	4+	5+	5+	6+	4+
Decoration	none	12+	9+	10+	6+	12+
Promotion	6+	6+	8+	9+	6+	6+
Skills	7+	none	7+	8+	5+	6+

DMs: For survival, DM+1 if any MOS skill 2+. For promotion, DM+1 if Edu 7+.

Support	*Training*	*Internal Security*	*Police Action*	*Ctrlns*	*Raid*	*Ship's Troops*
Survival	auto	4+	4+	5+	6+	3+
Decoration	none	none	10+	11+	7+	12+
Promotion	6+	6+	9+	10+	7+	6+
Skills	8+	none	7+	7+	6+	6+

DMs: For promotion, DM+1 if Int 8+.

Commando	*Training*	*Internal Security*	*Police Action*	*Ctrlns*	*Raid*	*Ship's Troops*
Survival	3+	4+	4+	5+	6+	5+
Decoration	none	none	9+	9+	5+	10+
Promotion	8+	7+	8+	7+	6+	6+
Skills	6+	none	7+	6+	5+	6+

DMs: For survival, DM+1 if any MOS skill 2+. For promotion, DM+1 if End 8+.

Garrison Duty: Characters survive, with no decoration or skills earned. Enlisted personnel can be promoted on 7+.

SURVIVAL

Failing the survival throw ends character generation and forces mustering out. (The optional survival rule may be implemented: A character who fails survival is dead.) If the number is thrown *exactly*, the character is wounded or injured. An injury in a police action, counterinsurgency, ship's troops, or raid is a combat wound and is awarded the Purple Heart. A character may take a negative DM for survival and apply it as an equal positive DM for decorations.

DECORATIONS

If a character rolls:

Decoration Throw or higher.....MCUF
Decoration Throw +3 to +5.....MCG
Decoration Throw +6 or more....SEH

With a negative survival DM, an equal positive DM can be taken for decoration.

PROMOTION

An officer may be promoted once per term; enlisted personnel, once per assignment (not beyond E9 except though OCS).

ENHANCED MERCENARY CHARACTERS

SPECIAL ASSIGNMENTS

Die	Enlisted	Officer
1	Cross-Training	Intelligence Sch
2	Specialist Sch	Command College
3	Commando Sch	Commando Sch
4	Protected Forces	Staff College
5	Recruiting Duty	Recruiting Duty
6	OCS	Attache/Aide
7	OCS	Staff College

DMs: Marine enlisted, DM+1 if Edu 7+. Army enlisted, DM+1 if End 7+.

SPECIALIST SCHOOL

Die	Training	Schooling
1	Mechanical	Academic
2	Electronic	Medical
3	Gravitic	Space
4	Comm	Environ
5	Vehicle	Computer
6	Ship's Boat	Liaison

Note: The training column is for anyone, and the schooling column is for when Int + Edu is more than 16.

SERVICE SKILLS

Die	Army Life	Marine Life	NCO Skills	Command Skills	Staff Skills	Shipboard
1	Brawling	Brawling	Hvy Wpns	+1 End	Mechanic	Fwd Obs
2	+1 Str	**Vice**	Mechanical	**Gun Cbt**	Fwd Obs	Ship's Boat
3	**Vice**	+1 Str	Tactics	**Vehicle**	Computer	**Gunnery**
4	+1 Dex	+1 Dex	Hvy Wpns	Hvy Wpns	Electronics	Vacc Suit
5	+1 End	+1 End	Mechanical	Leader	Medical	**Gunnery**
6	+1 End	**Hand Cbt**	Tactics	Tactics	Instruction	Vacc Suit
7	Handgun	+1 Edu	Leader	Tactics	Admin	Sh Tactics
8	+1 Soc	+1 Soc	**Inborn**	**Inborn**	**Academic**	Fl Tactics
9	+1 Soc	+1 Soc	**Interpers**	—	—	—
DMs:	+1 if O1+	+1 if O1+	+1 if E5	+1 if O4+	+1 if O4+	+1 if O2+
	+2 if O4+	+2 if O4+	+2 if E7	+2 if O7+	+2 if O7+	+2 if O4+
	+3 if O7+	+3 if O7+	+2 if E9			

Note: Army Life is for the Army, Marine Life for Marines, NCO Skills for rank E3 to E9, Command Skills for rank O1+ with Command Duty, Staff Skills for rank O1+ without Command Duty, and Shipboard Skills for Marines on Ship's Troops.

MILITARY OCCUPATIONAL SPECIALTY (MOS) TABLE

Die	Artillery	Cavalry	Infantry	Support	Commando	Ship's Troops
1	**FA Gunner**	**Vehicle**	**Gun Cbt**	**Vehicle**	**Gun Cbt**	**Gun Cbt**
2	**FA Gunner**	**Vehicle**	**Gun Cbt**	Combat Eng	**Gun Cbt**	**Gun Cbt**
3	**Vehicle**	**Vehicle**	Hvy Wpns	**Vehicle**	Hvy Wpns	Zero-G Env
4	Mechanical	**Hvy Wpns**	Hvy Wpns	Mechanical	Demolition	**Environ**
5	Fwd Obs	**Hvy Wpns**	**Vehicle**	Electronic	**Environ**	High-G Env
6	Computer	Mechanical	**Environ**	Medical	Recon	Fwd Obsv
7	**Technical**	**Technical**	Vacc Suit	**Technical**	Battle Drss	Battle Drss

DMs: If homeworld is Avg Stellar+, DM +1.

Note: Any Marine on Ship's Troops assignment may select that column.

TABLE OF RANKS

Rank	Enlisted	Rank	Officer	Basic Rank
E1	Private	O1	Second Lieutenant	1
E2	Lance Corporal	O2	First Lieutenant	1
E3	Corporal	O3	Captain	2
E4	Lance Sergeant	O4	Major (Marine Force Commander	3
E5	Sergeant	O5	Lieutenant Colonel	4
E6	Gunnery Sergeant	O6	Colonel	5
E7	Leading Sergeant	O7	Brigadier General	6
E8	First Sergeant	O8	Major General	6
E9	Sergeant Major	O9	Lieutenant General	6
		O10	General	6

Note: Individuals with commissions (ranks O1 to O10) are officers; all others (E1 to E9) are enlisted personnel. Noncommissioned officers are ranks E3 to E9; ranks O1 to O3 are *company grade* officers; ranks O4 to O6 are *field grade* officers; ranks O7 to O10 are *general* officers.

SPECIAL ASSIGNMENTS

Cross-Training: Select any combat arm (not Commandos) for cross-training. Roll for one skill on the MOS table.

Specialist School: Throw 1D on the Specialist School table.

Commando School: Cross-training in Commandos. Throw 5+ (1D) for: Brawling, Gun Combat, Demolitions, Intrusion, Stealth, Survival, Recon, Vacc Suit, Blade Combat and Instruction.

Protected Forces Training: Throw 3+ (1D) for: Vacc Suit, High-G Environ, Zero-G Environ.

Recruiting: Receive Recruiting skill.

OCS: Advance to rank O1 (rank E7 advances to rank O2) in current or cross-trained branch. Roll twice on the Service Skills table and once on the MOS table. Rank E8 and E9 are commissioned to Rank O3, adding no skills. OCS is prohibited over age 38: Reroll on the Special Assignments table, and if OCS is selected, a waiver allows attendance.

Intelligence School: Throw 4+ (1D) for: Forgery, Bribery, Streetwise, Interrogation, and Vice.

Command College: Throw 4+ (1D) for: Tactics, Leader, and Recon.

Staff College: Throw 4+ (1D) for: Admin, Combat Engineering, Computer, Robot Ops.

Military Attache/Aide: Roll 1D: 1-4 assigns duty as a military attache; 5-6, duty as aide to a general.

An *attache* receives promotion of one grade and +1 Social Standing.

An *aide* receives +1 Social Standing and selects command duty or a special assignment (not military attache/aide).

REENLISTMENT

At the end of a four-year term, the character must either reenlist or muster out. If reenlistment is not successful, then the character must muster out.

Army Reenlistment: Throw 7+; DM +2 if rank E9 or less.

Marine Reenlistment: Throw 6+; DM +1 if cross-trained in Artillery or Cavalry and reenlisting into either of those arms of service.

MUSTERING OUT

At the conclusion of a player's final term, all mustering out benefits are received as described in basic character generation.

Navy Characters

The force that rules the space between the stars controls both transportation and communication and, as a result, controls all intercourse between worlds. The instrument of such control is the Navy.

General Background: An interstellar community operates under many unique restrictions—it consists of many *island-planets* adrift in an *ocean* of space. Communication between the worlds absolutely depends on technology. Ships flying between the worlds are vulnerable to pirates and raiders; the worlds themselves are vulnerable to attacks from unfriendly governments. To control such an ocean of stars, society must depend on its starfaring Navy.

Most interstellar states (whether individual nations on a world, independent worlds, small groups of worlds, or vast interstellar empires) maintain navies. These navies are organized to provide the most possible protection for their territory. In large groups of worlds (such as the Third Imperium and most of its interstellar neighbors), the Navy is organized with a three-tiered structure: the major forces of the Navy are the *fleets* (which together comprise the Imperial Navy); the local provinces (subsectors) maintain *reserve fleets*; worlds of high enough technology maintain their own *system squadrons*. The fleets are composed of the latest and best in warship technology; reserve fleets are usually with second line, obsolescent (but not obsolete) ships handed down from the fleets; system squadrons, supported by the tax base of only one world, are suited only for defense of that world. The distinctions between these forces are primarily based on size, resources, and duties.

Naval Ranks: Ranks for characters in the Navy are shown in the Naval Table of Ranks. Ranks O1 to O10 are called *officers* or *commissioned officers*. Ranks E1 to E9 are *enlisted personnel;* within the enlisted ranks, ranks E3 to E9 are *petty officers*.

Spacers: The general term for Navy personnel, regardless of rank, branch, type of Navy, or any other factor is *spacers*.

INITIAL ACTIVITIES

Initial activities include pre-career options, enlistment, combat arm selection, and initial training. A beginning naval character must be aware of two facts—the tech code of the subsector he is in (usually taken as the tech code of the capital of the subsector, but always no less than Early Stellar) and the world codes of the character's homeworld. These factors influence which naval forces are available to the characters.

Pre-Career Options: Options for Navy persons include college, the Naval Academy, and medical and flight school.

Enlistment: All characters initiate their Navy careers by enlisting. If all enlistment attempts fail, the character may not undertake naval service. Successful enlistment commits the individual to a term of service of four years.

Throw 8+ to enlist in the Imperial Navy; allow DM+1 if Int is 8+, and DM+2 if Educ is 9+.

Throw 7+ to enlist in the Reserve Fleet; allow DM+1 if Int is 8+, and DM+2 if Educ is 9+. The reserve fleet has a tech code equal to the tech code of the subsector capital.

Throw 6+ to enlist in the character's homeworld's System Squadron; allow DM+1 if Int is 8+, and DM+2 if Educ is 9+. A homeworld will have a System Squadron only if its tech code is Early Stellar+. If the homeworld is less than Early Stellar, there is no System Squadron, and this option is not available.

The character begins with rank E1.

Draft: If an individual is unsuccessful in enlisting, he may submit to the draft. A throw of 1 (1D) will result in being drafted into the Imperial Navy. Any other result prohibits the individual from naval service, and a new character must be generated if naval service is desired.

Automatic Enlistment: Enlistment is not necessary for characters who are commissioned as a result of the Naval Academy or NOTC. Naval Academy graduates are commissioned with rank O1 in the Imperial Navy. NOTC graduates are commissioned with rank O1 in the Reserve Fleet.

Branch Selection: A branch is a Naval division that deals with one aspect of naval operations. The five branches are Flight, Engineering, Medical, Gunnery, Technical Services, and the Line. The Line is a generalized duty branch for officers, equivalent to Crew for enlisted personnel. The Technical Services branch exists only in the Imperial Navy and spans complex equipment maintenance, computer programming, and intelligence gathering. Characters are assigned a branch upon joining. Consult the Branch Assignment table (1D).

Medical school graduates are assigned to the Medical branch and flight school graduates to the flight branch. A character with Social Standing 9+ may select any branch.

Initial Training: The first year is dedicated to *initial training*. An enlisted character rolls for two skills on the Branch Skills table. An officer undergoes *officer training* and rolls for two skills on the Branch Skills table or the Officer Staff Skills table (officers with commissions from OCS do not undergo this training).

CAREER RESOLUTION

Career resolution begins once a character graduates from all pre-career schools and has enlisted.

Assignments

Each term, a character carries out four assignments (initial or officer training is the first assignment of the first term).

Each one-year assignment is resolved separately using a three-step procedure: officers determine if they will hold a command in the current assignment; the specific assignment is

selected; and that assignment is resolved in terms of survival, decorations, promotions, and skills.

Command Determination (Officers Only): Any officer may consult the Naval Command Duty table to be placed in a command position. For each branch, success places the officer in a command position; failure places him in a staff position. Not consulting the table results in assignment to a staff position.

Specific Assignments: The Naval Assignment table determines the character's specific assignment. These assignments may be: shore duty, training, battle, siege, strike, and patrol. It is also possible to receive a *special assignment*.

Special Assignments: Characters who receive a special assignment are sent to service schools or given unusual duty.

Assignment Resolution: In each specific assignment, four aspects must be resolved: survival, decoration, promotion, and skills.

Survival: The survival throw determines if the character survives the assignment year. Failing the throw forces ending character generation and mustering out (the optional survival rule may be implemented: a character who fails the survival throw is dead). If the number is thrown, the character has received a wound or injury; if the injury occurs while serving in a police action, counterinsurgency, or raid, it is a combat wound, and the character receives the Purple Heart.

A character may elect to take a negative DM on his survival roll and then apply it as an equal positive DM for decorations in the next step.

Decoration: Characters may receive decorations for their heroism. If a character rolls the indicated number or higher, he is awarded the Meritorious Conduct under Fire (MCUF). If the character rolls a number at least three higher than the stated number, he receives the Medal for Conspicuous Gallantry (MCG) instead. If the player rolls at least six higher than the number indicated, he receives the Starburst for Extreme Heroism (SEH) instead.

If a negative DM was taken on survival, an equal positive DM may be used to attempt to win a decoration. For example, a character might take DM -2 for survival, thus increasing the chance that the throw will not be achieved. If he survives, then DM +2 is allowed when rolling for decorations.

The reverse of this procedure (positive DMs for survival; negative DMs on decoration) is also possible, but if the decoration throw fails by six or more (for example, rolling a 4 when 10+ is required), consult the Court-Martial Table.

Promotion: A character may receive a promotion by throwing the indicated number or greater (2D). Where a number is listed in parentheses, *officers* may not roll for promotion.

Normally, an officer may not receive more than one promotion per term. However, receiving a commission (through OCS, for example) does not prohibit another promotion during a four-year term, and the automatic promotion given a military attache does not prohibit another promotion during the term.

Enlisted characters may be promoted as often as once per assignment. They may not be promoted beyond the rank of E9 except though attendance at officer candidate school (OCS). The table of ranks indicates the levels promotion will bring.

Skills: A character may receive skills as a result of his assignment. If the character rolls the indicated number or higher, then he or she becomes eligible for one skill to be determined immediately. A character may roll for a skill on any skill column or table available to him.

Retention In Assignment: At the end of each assignment, roll one die—if the result is a 6, then the next assignment will be the same as the previous one. However, no one can be retained in the same assignment more than once in succession; he cannot be retained in the same assignment involuntarily at the end of a four-year term, even if he reenlists; retention does not occur on a special assignment.

REENLISTMENT AND MUSTERING OUT

At the end of a four-year term, the character must either reenlist or muster out. If reenlistment is not successful, then the character must muster out.

Imperial Navy Reenlistment: Reenlistment in Imperial Navy requires a throw of 6+. Petty officers (rank E4+) or commissioned officers (rank O1+) receive DM +1.

Reserve Fleet Reenlistment: Reenlistment in the Reserve Fleet requires a throw of 6+. Petty officers (rank E4+) or commissioned officers (rank O1+) receive DM +2.

System Squadron Reenlistment: Reenlistment in the System Squadron requires a throw of 5+. Commissioned officers (rank O1+) receive DM +2.

Changing Branch: Characters may reenlist for a different branch at the beginning of a four-year term. The reenlistment must be successful, and the character must have received cross-training in the new branch at some time prior to reenlistment.

Changing Navy: It is not possible to transfer between the System Squadron, the Reserve Fleet, and the Imperial Navy.

Mustering Out Benefits: At the conclusion of a player's last term, all mustering out benefits are received as described in basic character generation.

SPECIAL RULES

The following special rules apply to the Navy.

Combat Ribbons: A character's resume should include details of combat experience. Each time that a character receives a combat assignment (battle, siege, or strike), a combat service ribbon is awarded. Each time an officer holds a command assignment in combat, he receives a command cluster on the combat ribbon. For example, a character has three combat ribbons with two command clusters: he has had three one-year combat assignments, and in two of them he was an officer in command.

Draftees: Characters who are drafted may not attend officer candidate school (OCS) during their first four-year term.

The Frozen Watch: Some Imperial Navy ships carry reserve crewmembers in cold sleep as potential replacements for battle casualties. Characters selected for Frozen Watch (a special assignment) are carried for one year in suspended animation: they are one year older chronologically than they are physically (for each year spent on Frozen Watch). No skills are learned on this assignment.

Rank Limits: The size of a Navy restricts the maximum rank possible for officers. The highest rank available in a System Squadron is commodore. The highest rank available in the Reserve Fleet is fleet admiral. The highest rank available in the Imperial Navy is grand admiral.

ENHANCED NAVAL CHARACTERS

BACKGROUND INFORMATION

A naval character must know:

- The technological code of the subsector he is in (usually the technological code of the subsector capital but never less than Early Stellar).
- The planetary characteristics of the character's homeworld.

ENLISTMENT

Imperial Navy: Throw 8+ for enlistment in the Imperial Navy; allow DM+1 if Int is 8+, and also allow DM+2 if Edu is 9+.

Reserve Fleet: Throw 7+ for enlistment in the Reserve Fleet; and also allow DM+1 if Int is 8+ and DM+2 if Edu is 9+.

System Squadron: Throw 6+ to enlist in the homeworld System Squadron; allow DM+1 if Int is 8+, and DM+2 if Educ is 9+. If the homeworld is less than Early Stellar, it has no System Squadron.

The character begins with rank E1.

Naval Academy graduates are commissioned with rank O1 in the Imperial Navy. NOTC graduates are commissioned with rank O1 in the Reserve Fleet.

Enlistment commits the individual to a term of service of four years.

The Draft: If enlistment is unsuccessful, the character throws 1D: a result of 1 drafts him into the Imperial Navy.

BRANCH ASSIGNMENT

Die	*Enlisted*	*Officer*
0	Technical	Technical
1	Crew	Line
2	Crew	Line
3	Engineering	Engineering
4	Engineering	Gunnery
5	Gunnery	Line
6	Gunnery	Flight
7	Medical	Medical

DMs: If Edu 9+, DM +2; if Int 10+, DM +2. If Imperial Navy, DM -2. **Note:** Automatic Medical if Medical School graduate or unsuccessful Medical School. Automatic Flight if Flight School graduate. Choice if Social Standing 9+.

INITIAL TRAINING

Enlisted persons receive two skills from the Branch Skills table; officers receive two skills from the Branch Skills table or Officer Staff Skills table.

COMMAND DUTY

Officer Branch	*Throw*
Line	7+
Flight	8+
Gunnery	9+
Engineering	10+
Medical	11+
Technical	12+

DMs: If rank O2-, DM -2. If Rank O4-, DM-1. If Int 7-, DM -1. If Edu 7-, DM -1.

Note: This table is used only by officers (rank O1+).

ASSIGNMENT

Die	*Assignment*
2	Battle
3	Shore Duty
4	Siege
5	Strike
6	Patrol
7	Training
8	Patrol
9	Strike
10	Shore Duty
11	Special Duty
12	Special Duty

Note: If the College or Academy graduate and rank E4-E9, DM+1.

ASSIGNMENT RESOLUTION

Line/Crew	*Training*	*Shore Duty*	*Patrol*	*Siege*	*Strike*	*Battle*
Survival	auto	4+	4+	5+	6+	6+
Decoration	none	12+	11+	10+	7+	6+
Promotion	6+	7+	7+	8+	7+	6+
Skills	7+	7+	6+	6+	5+	5+

DMs: For survival, DM+1 if any MOS skill 2+. For promotion, DM+1 if Edu 7+.

Flight	*Training*	*Shore Duty*	*Patrol*	*Siege*	*Strike*	*Battle*
Survival	3+	3+	3+	3+	3+	4+
Decoration	none	none	10+	9+	9+	8+
Promotion	none	11+	11+	10+	9+	9+
Skills	7+	none	7+	7+	6+	6+

DMs: For promotion, DM+1 if Int 8+.

Gunnery	*Training*	*Shore Duty*	*Patrol*	*Siege*	*Strike*	*Battle*
Survival	auto	3+	4+	5+	5+	6+
Decoration	none	12+	11+	10+	9+	7+
Promotion	6+	6+	8+	8+	7+	6+
Skills	8+	none	7+	5+	6+	6+

DMs: For survival, DM+1 if any MOS skill 2+; promotion, DM+1 if End 8+.

Engineering	*Training*	*Shore Duty*	*Patrol*	*Siege*	*Strike*	*Battle*
Survival	auto	auto	3+	4+	5+	5+
Decoration	none	none	12+	11+	7+	7+
Promotion	7+	7+	5+	8+	6+	6+
Skills	7+	8+	6+	7+	6+	5+

DMs: For promotion, DM+1 if Int 8+.

Medical	*Training*	*Shore Duty*	*Patrol*	*Siege*	*Strike*	*Battle*
Survival	auto	auto	3+	3+	3+	4+
Decoration	none	none	none	none	11+	10+
Promotion	7+	6+	7+	8+	6+	6+
Skills	8+	6+	7+	7+	7+	6+

DMs: For promotion, DM+1 if Int 8+.

RETENTION IN ASSIGNMENT

Throw 6 (1D) for the next assignment to be the same as the previous one. However: a person cannot be retained in the same assignment more than once in succession; he cannot be retained in the same assignment involuntarily at the end of a four-year term, even if he reenlists; retention cannot occur on a special assignment.

ENHANCED NAVAL CHARACTERS

SPECIAL ASSIGNMENTS

Die	Enlisted	Officer
1	Cross-Training	Cross-Training
2	Specialist Sch	Intelligence Sch
3	Recruiting	Recruiting
4	Gunnery School	Naval Attache
5	Engineer Sch	Command Coll
6	OCS	Staff Coll
7	OCS	Staff Coll

DMs: DM+1 if Edu 8+.

SPECIALIST SCHOOL

Die	Training	Schooling
1	Mechanical	Academic
2	Electronic	Medical
3	Gravitic	Space Tech
4	Comm	Space
5	Engineering	Computer
6	Ship's Boat	Liaison

Note: Training is for anyone; schooling is for when Int+ Edu more than 16.

SERVICE SKILLS

Die	Navy Life	Shipboard	Shore Duty	Petty Off	Cmd Off	Staff Off
1	Brawling	Gambling	**Vice**	Vacc Suit	**Vehicle**	Computer
2	+1 Str	+1 Dex	**Vehicle**	**Blade Cbt**	+1 Endur	Electronic
3	Carousing	**Hand Cbt**	Fwd Obs	**Gun Cbt**	**Gun Cbt**	**Gun Cbt**
4	Gambling	Mechanic	Vacc Suit	Mechanic	Ship's Bt	**Academic**
5	+1 Endur	Ship's Bt	Liaison	Medical	Pilot	Bribery
6	+1 Dex	Vacc Suit	Vacc Suit	**Vehicle**	Leader	Ship Tcts
7	+1 Endur	Zero-G En	Fwd Obs	Zero-G En	Leader	Fleet Tcts
8	+1 Educ	**Comm**	**Environ**	+1 Educ	+1 Social	+1 Int
9	**Inborn**	Admin	Vacc Suit	Instruction	**Inborn**	Ship Tcts
10	Vacc Suit	**Inborn**	Battle Drs	**Interpers**	Ship Tcts	Fleet Tcts
DMs:	+4 if O1+	+4 if O1+	+1 if O4+ +4 if O7+	+2 if O5+ +4 if O7+	+2 if O4+ +4 if O7+	+2 if O4+

Note: Navy Life is available to any Navy character; Shore Duty, during training or shore duty; Shipboard, when not on training or shore duty; Petty Officer, for rank E4 to E9; Command Officer, for rank O1+ with Command Duty; Staff Officer, for rank O1+ without Command Duty.

BRANCH SKILLS

Die	Line/Crew	Flight	Gunnery	Engineer	Medical	Technical
1	Mechanic	Vacc Suit	Fwd Obs	Mechanic	Admin	Mechanic
2	Electronic	Admin	**Gun Cbt**	Electronic	**Technical**	Mechanic
3	**Gun Cbt**	**Gun Cbt**	**Comm**	Engineer	Electronic	Electronic
4	Navigation	**Comm**	Computer	Mechanic	Admin	Electronic
5	Computer	Ship's Boat	Sens Ops	Vacc Suit	Medical	Computer
6	**Interpers**	**Space**	**Spl Cbt**	**Sp Tech**	Computer	Computer
7	Zero-G En	Pilot	**Gunnery**	Engineer	Medical	Gravitics
8	Vacc Suit	Pilot	**Gunnery**	Engineer	Medical	**Technical**

DMs: If Reserve Fleet, DM +1. If Imperial Navy, DM +2.

TABLE OF RANKS

Rank	Enlisted	Rank	Officer	Basic Rank
E1	Spacehand Recruit	O1	Ensign	1
E2	Spacehand Apprentice	O2	Sublieutenant	1
E3	Able Spacehand	O3	Lieutenant	2
E4	Petty Officer Third Class	O4	Lieutenant Commander	3
E5	Petty Officer Second Class	O5	Commander	4
E6	Petty Officer First Class	O6	Captain	5
E7	Chief Petty Officer	O7	Commodore	5
E8	Senior Chief Petty Officer	O8	Fleet Admiral	6
E9	Master Chief Petty Officer	O9	Sector Admiral	6
		O10	Grand Admiral	6

Officers (ranks O1 to O10) have commissions; all other ranks are *enlisted* personnel. Ranks O7 to O10 are *flag* ranks, E3 to E9 are noncommissioned officers.

The maximum officer rank is commodore (O7) in a System Squadron, fleet admiral (O8) in a Reserve Fleet, and grand admiral (O10) in the Imperial Navy.

SPECIAL ASSIGNMENTS

Cross-Training: Select any branch; the individual is now cross-trained in it. Roll for one skill on that branch table.

Specialist School: Throw 1D on the Specialist School table.

Recruiting: Receive Recruiting skill.

Gunnery School: Make four throws (1D) and on each 5+ receive Gunnery.

Engineering School: Throw 5+ (1D) for: Mechanical, Electronics, Gravitics, and Engineering.

OCS: Advance to rank O1 (enlisted characters rank E7 advance to rank O2) in current or any cross-trained branch. Roll twice on the Service Skills table and once on the Branch Skills table. Rank E8 and E9 receive direct commissions to rank O3. They receive no new skills.

OCS is prohibited over age 38; reroll on the Special Assignments table; if OCS is selected, a waiver allows attendance.

Intelligence School: Throw 4+ (on one die) for: Forgery, Gun Combat, Bribery, Streetwise, and Interrogation.

Naval Attache/Aide: Roll 1D: 1-4 assigns duty as a naval attache; 5-6 assigns duty as aide to an admiral.

An *attache* receives promotion of one grade and +1 Social Standing.

An *aide* receives +1 Social Standing and for his next assignment may select command duty or any special assignment (other than Naval attache/aide).

Command College: Throw 4+ (1D) for: Ship Tactics, Fleet Tactics, Leader, and Admin.

Staff College: Throw 4+ (1D) for: Fleet Tactics, Admin, Liaison, Computer, and Robot Ops.

REENLISTMENT

Navy Reenlistment: Reenlistment in the Navy requires a throw of 6+; DM +1 if rank E4+ or rank O1+.

Reenlistment in a Different Branch: Characters may not reenlist in a different branch unless cross-trained in the desired branch. If cross-trained, the individual may reenlist at the beginning of the new four-year term of service.

MUSTERING OUT

At the conclusion of a character's last term, all mustering out benefits are received as described in basic character generation.

Scout Characters

Any large interstellar government has a need for an exploratory service. An organized, continuing exploration of the frontiers of any territory is necessary in order to best exploit resources and to be warned of potential threats.

General Background: The Imperial Interstellar Scout Service is the exploratory arm of the Imperium. It had its origins in the initial explorations of the Imperium's frontiers. Long ago, however, the Scout Service expanded its responsibilities to cover more than mere exploration. It now maps the territory it once explored, and it is responsible for providing navigational charts and maps to the ships that now travel through that territory. In addition, the Scout Service provides long distance courier or postal services between points within the empire.

To perform its diverse missions, the Scouts have two distinct needs for personnel: the highly independent and self-sufficient individual who can perform missions alone and without supervision; and the team player who can work on a group effort within a rigid organization. The Scout Service must train and use both types of individual.

Scout Ranks: Ranks for characters in the Scouts are shown in the scout table of ranks. *Ordinary* rank corresponds to enlisted rank in the military: ranks IS-1 to IS-9 correspond to military ranks E1 to E9. *Administrator* rank corresponds to officer rank in the military: ranks IS-10 to IS-18 correspond to military ranks O1 to O9.

Scouts: The general term for members of the Scout Service regardless of rank, combat arm, or any other factor is *Scouts.*

INITIAL ACTIVITIES

Initial activities include pre-career options, enlistment, combat arm selection, and initial training.

Pre-Career Options: Characters intending a Scout career may consider college and medical school.

Enlistment: All characters initiate their Scout careers by enlisting. This procedure is essentially identical to that for standard character generation. Successful enlistment commits the individual to a term of service of four years.

Throw 7+ to enlist in the Scouts; allow DM+1 for Int 6+, and DM+2 for Str 8+. The character begins with rank IS-1.

Draft: If an individual is unsuccessful in enlisting, he may submit to the draft. A throw of 4 (1D) will result in being drafted into the Scouts. Any other result prohibits the individual from Scout service and a new character must be generated if Scout service is desired.

Automatic Enlistment: Enlistment is automatic (if desired) for characters who are have graduated college. The character begins with rank IS-1. College honors graduates automatically receive rank IS-10.

Office Selection: The Scout Service is broadly divided into the *Bureaucracy* and the *Field.* College graduates are in the Bureaucracy; all others are in the Field.

Each division of the Scouts is composed of several *offices:* the Field consists of Survey, Communications, and Exploration; the Bureaucracy consists of Technical, Operations, Administration, and Detached Duty.

Individuals who join the Scouts are initially assigned to a specific office within the Scout Service structure and then receive *initial training* from that office. The Office Assignments table produces the assignment for each character. Office assignments remain in force for the complete four-year term; reassignments are available when reenlisting.

Initial Training: The initial year of service in the Scouts is dedicated to *initial training.* The character consults the Initial Training table entry corresponding to his office assignment and receives the skill shown.

CAREER RESOLUTION

Career resolution begins once a character graduates from all pre-career schools and has enlisted.

Assignments

Each term, a character carries out four assignments (initial training constitutes the first assignment of the first term).

Each one-year assignment is resolved separately using a two-step procedure: the specific assignment is selected, and the assignment is resolved in terms of survival, promotion, and skills.

Specific Assignments: The Duty Assignment table determines the character's specific assignment. Possible assignments include training, base operations, routine, mission, special mission, and wartime mission. Scouts in the Field use one column; Scouts in the Bureaucracy use another. Scouts in the Bureaucracy who hold administrator rank are allowed a DM of +2 on the duty assignment table, which allows them to avoid some training (the DM is voluntary). However, a natural roll of 2 always means a war mission, regardless of the DM.

Transfers: A Scout in the Field may receive *transfer* as a duty assignment. When this occurs, the individual has been permanently transferred to the Bureaucracy. Such a transfer may be declined, in which case the individual rolls again (if transfer is received on the reroll, it must be taken).

A transfer places the individual in the Scout Bureaucracy. The character rolls on the Office Assignment table under the Bureaucracy to determine the office assignment. A roll on the Duty Assignment table then determines the specific duty to be undertaken.

Because the Bureaucracy has rank and the Field does not, the Scout character immediately receives ordinary rank equal to the number of terms served (a Scout in the fourth term of service becomes rank IS-4).

Special or War Missions: When a special or war mission is assigned, the Scout character has been sent on a dangerous and important mission. The extra training and preparation for the assignment results in an extra skill taken from the special or war mission column, in addition to any other skills received for the year.

Schools: Individuals who receive training as an assignment are sent to a service school. The character should consult the School Assignment table to determine available schools and then roll one die. Once the school is determined, the individual may roll on the school table to determine the skills received by attendance. Certain schools confer two skills, while others confer only one, as noted below each column of the table.

It is possible to be assigned most schools more than once. Administrator school, however, may only be attended once; the subsequent receipt of an assignment to administrator school calls for a reroll.

Assignment Resolution: This step includes survival, promotion, and skills.

Survival: The throw for survival determines if the character survives the current year of assignment. Failing the survival throw forces the character to end character generation and muster out (the optional survival rule may be implemented: a character who fails the survival throw is dead).

Promotions: Scouts serving in the Field do not receive promotions; those in the Bureaucracy can achieve promotions to a variety of ranks. A character may receive a promotion by throwing the indicated number or greater (2D).

Individuals who have not received administrator status may receive promotions in ordinary rank (it is possible to receive such a promotion each year, to a maximum of IS-9). Promotions beyond IS-9 are not possible unless the individual attends administrator school and receives administrator rank IS-10.

Characters with administrator rank may receive up to one promotion per four-year term.

Each time a promotion is received, the individual is allowed to receive one new skill. Ordinary rank allows a skill from the appropriate office column or the scout life column of the skill tables. Administrator rank allows a skill from the administrator rank column.

Skills: A character may receive skills as a result of his assignment. If the character rolls the indicated number or higher, then he or she becomes eligible for one skill to be determined immediately. A character may roll for a skill on any skill column or table available to him.

REENLISTMENT AND MUSTERING OUT

At the end of a four-year term, the character must either reenlist or muster out. If reenlistment is not successful, then the character must muster out.

Scout Reenlistment: Reenlistment in the Scouts requires a throw of 3+.

The Scout Service maintains an up-or-out policy for ordinary rank: If an individual does not receive continuing promotions, then the individual is not allowed to reenlist. If a character's ordinary rank is not equal to or greater than his or her number of terms of service, then he or she will not be permitted to reenlist.

Changing Office Assignment: Characters may change their office assignment. An office assignment remains in effect for the remainder of the term of service for the individual. Individuals are allowed to apply for reassignment to another office (within the Bureaucracy or the Field) when they reenlist. When reenlistment occurs, the character may roll again on the Office Assignments table: if the result is different, or if reassignment is not desired, the individual may choose to remain in the current office.

Members of the Bureaucracy are never reassigned to the Field; members in the Field are never reassigned to the Bureaucracy (but they may be transferred).

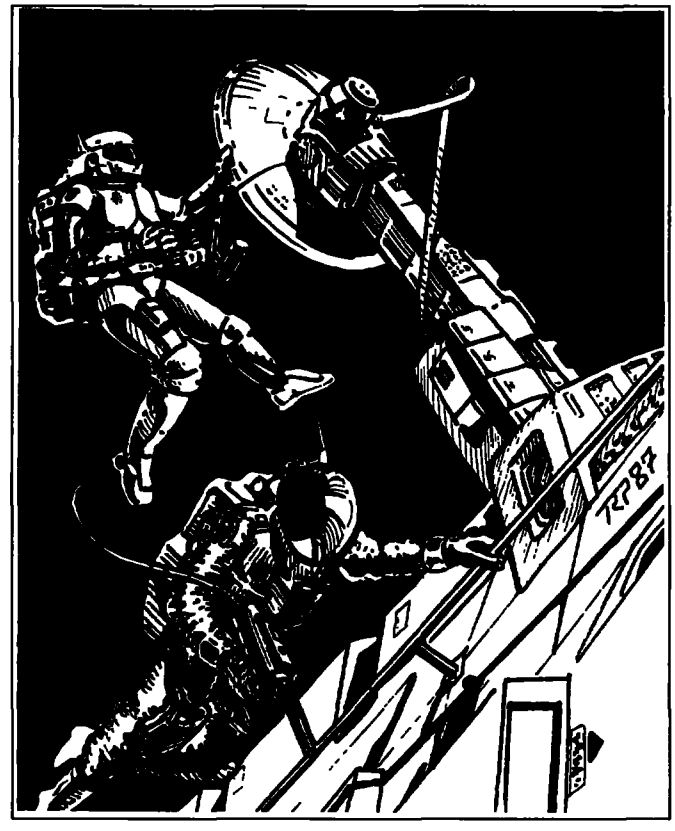
Mustering Out Benefits: At the conclusion of a player's last term, all mustering out benefits are received as described in basic character generation.

SPECIAL RULES

The following special rules apply to the Scouts.

Draftees: Characters who are drafted into a service may not attend administrator school during their first four-year service term.

Detached Duty: Any scout who is serving in the Detached Duty division when he leaves the service is given permanent detached duty on a roll of 9 + (DM + number of terms served). Although the assignment has no responsibilities, the individual receives a scout/courier (if he has not already received one through mustering out) and a stipend (similar to, but not exactly like, a pension) of Cr4000 per year.



ENHANCED SCOUT CHARACTERS

ENLISTMENT

Throw 7+ to enlist in the Scouts; DM+1 if Int 6+, DM+2 if Str 8+. Starting rank is IS-1.

College graduates may choose automatic enlistment. Starting rank is IS-1, IS-10 for honors graduates.

The Draft: If enlistment is unsuccessful, the character may throw 1D: a 4 (1D) drafts him into the Scouts.

OFFICE ASSIGNMENT

Die	*Field*	*Bureaucracy*
2	Survey	Detached Duty
3	Survey	Detached Duty
4	Survey	Technical
5	Survey	Technical
6	Communications	Operations
7	Communications	Operations
8	Communications	Operations
9	Communications	Administration
10	Exploration	Administration
11	Exploration	Administration
12	Exploration	Administration

Note: Honors graduates choose their office assignment (not reassignments).

INITIAL TRAINING

Office Assignment	*Skill*
Survey	Pilot
Exploration	Pilot
Communications	Pilot
Detached Duty	Admin
Technical	Computer
Operations	Leader
Administration	Admin

DUTY ASSIGNMENT

Die	*Field*	*Bureaucracy*
2	Wartime Mission	Wartime Mission
3	Training	Training
4	Training	Base
5	Base	Training
6	Routine	Routine
7	Routine	Routine
8	Mission	Base
9	Mission	Mission
10	Special Mission	Mission
11	Special Mission	Mission
12	Transfer	Special Mission

DMs: If rank IS-10+, DM+2 (but natural 2=2).

Transfer: If transferred to the Bureaucracy, a person may decline and reroll once. Use the Office Assignment table for assignments and Duty Assignment table for duties. Characters receive rank equal to their terms.

ASSIGNMENT RESOLUTION

Survey	*Training*	*Base*	*Routine*	*Mission*	*Spl Msn*	*War Msn*
Survival	3+	3+	3+	4+	5+	6+
Skills	School	8+	7+	6+	6+	7+

DMs: For survival, DM+1 if End 9+. For skills, DM+1 if terms 3+.

Commo	*Training*	*Base*	*Routine*	*Mission*	*Spl Msn*	*War Msn*
Survival	3+	4+	4+	5+	6+	6+
Skills	School	None	7+	7+	6+	6+

DMs: For survival, DM+1 if End 9+. For skills, DM+1 if Pilot-3+.

Explore	*Training*	*Base*	*Routine*	*Mission*	*Spl Msn*	*War Msn*
Survival	3+	3+	4+	5+	7+	6+
Skills	School	None	8+	7+	5+	6+

DMs: For survival, DM+1 if End 9+. For skills, DM+1 if Int 9+.

Admin	*Training*	*Base*	*Routine*	*Mission*	*Spl Msn*	*War Msn*
Survival	Auto	Auto	Auto	3+	3+	5+
Promotion	No	7+	7+	7+	6+	5+
Skills	School	7+	7+	7+	7+	7+

DMs: For survival, DM+1 if Int 9+.

Operation	*Training*	*Base*	*Routine*	*Mission*	*Spl Msn*	*War Msn*
Survival	Auto	Auto	Auto	3+	4+	5+
Promotion	8+	9+	8+	7+	6+	4+
Skills	School	8+	8+	6+	5+	4+

DMs: For survival, DM+1 if Pilot-2+. For promotion, DM+1 if Int 9+.

Technical	*Training*	*Base*	*Routine*	*Mission*	*Spl Msn*	*War Msn*
Survival	Auto	Auto	Auto	3+	5+	6+
Promotion	10+	9+	9+	8+	7+	6+
Skills	School	7+	7+	6+	7+	6+

DMs: For survival, DM+1 if Edu 10+.

Detached	*Training*	*Base*	*Routine*	*Mission*	*Spl Msn*	*War Msn*
Survival	Auto	Auto	Auto	4+	6+	7+
Promotion	No	No	8+	7+	5+	5+
Skills	School	No	7+	6+	6+	3+

DMs: For survival, DM+1 if rank O1+.

Notes: Auto= survival is automatic; no throw is needed. None= no skills received. No= no promotion is possible. School= skills are received from a school.

Promotions: Administrator rank receives a maximum one promotion per four-year term; ordinary rank may receive up to one promotion per year. Characters in the Field do not have rank or promotions.

TABLE OF RANKS

Rank	*Enlisted*	*Rank*	*Officer*	*Basic*
E1 IS-1	Recruit	O1 IS-10	Admin Trainee	1
E2 IS-2	Apprentice, Clerk	O2 IS-11	Jr Administrator	1
E3 IS-3	Journeyman	O3 IS-12	Administrator	2
E4 IS-4	Skilled Worker	O4 IS-13	Group Administrator	3
E5 IS-5	Asst Team Leader	O5 IS-14	Senior Administrator	4
E6 IS-6	Team Leader	O6 IS-15	Scout Commander	5
E7 IS-7	Asst Supervisor	O7 IS-16	Scout Leader	5
E8 IS-8	Supervisor	O8 IS-17	Senior Scout Leader	6
E9 IS-9	Senior Supervisor	O9 IS-18	Senior Scout Leader	6

Ranks IS-1 to IS-9 are *ordinary* (the equivalent of *enlisted* rank); IS-10 to IS-18 are *administrator* (the equivalent of *officer* rank).

ENHANCED SCOUT CHARACTERS

SCHOOL ASSIGNMENT

Die	Admin	Operation	Technical	Detached Dty	Survey	Explore	Comm
1	Special	Special	Special	Special	Special	Special	Special
2	Special	Special	Special	Special	Int Sch	Special	Special
3	Special	Ship	Tech	Special	Special	Contact	Ship
4	Ship	Ship	Tech	Int Sch	Fld Train	Contact	Ship
5	Fld Train	Fld Train	Tech	Int Sch	Fld Train	Fld Train	Fld Train
6	Admin	Admin	Admin	Fld Train	Fld Train	Fld Train	Fld Train

SCOUT SCHOOLS

Die	Ship School	Intelligence School	Technology School	Specialist School	Field Training	Contact School
1	Pilot	Disguise	Computer	Medical	**Vehicle**	Survey
2	Navigation	Streetwise	Electronics	Mech	Grav Belt	Liaison
3	Engineer	**Hand Cbt**	Gravitics	Robot Ops	Recon	Linguistics
4	**Gunnery**	**Vice**	Mech	**Gunnery**	Survival	Streetwise
5	**Space**	**Gun Cbt**	Naval Arch	Sensor Ops	Navigation	Survival
6	**Space**	Survival	**Technical**	**Academic**	Survey	**Gun Cbt**
Note:	*Roll twice*	*Roll twice*	*Roll once*	*Roll once*	*Roll once*	*Roll twice*

SKILL TABLES

Die	Scout Life	Exploration	Comm	Survey	Special or War Mission	Field Service
1	+1 Str	Grav Vehicle	Zero-G En	**Inborn**	Hunting	**Tech**
2	Gambling	**Vehicle**	Pilot	Pilot	Bribery	+1 Educ
3	**Gun Cbt**	**Gun Cbt**	Ship's Bt	Vacc Suit	Animal Hnd	**Gun Cbt**
4	Carousing	Vacc Suit	Vacc Suit	Vacc Suit	Artisan	Carousing
5	**Gun Cbt**	Recon	**Comm**	Survey	**Vice**	**Gun Cbt**
6	**Hand Cbt**	**Space**	**Space**	**Space**	Liaison	Gambling
7	+1 Educ	Survival	Survival	**Environ**	Survival	+1 Educ
8	**Physical**	**Inborn**	Pilot	Navig	**Gun Cbt**	**Inborn**
9	**Physical**	**Vehicle**	Navig	Engineer	**Space**	Streetwise
10	**Physical**	**Gun Cbt**	Navig	Survey	+1 Soc	**Mental**
DM+4:	if Str 9+	terms 3+	terms 3+	terms 3+	rank IS-10+	terms 3+

Die	Admin	Operation	Technical	Detached Duty	Admin Rank	Bureaucracy
1	Electronics	Mech	Sensor Ops	Electronics	Admin	+1 Int
2	Admin	**Gun Cbt**	Mech	Admin	Admin	Gambling
3	**Comm**	**Vehicle**	**Vehicle**	**Comm**	Computer	Carousing
4	Computer	Engineer	Vacc Suit	Computer	Vacc Suit	+1 Edu
5	Robot Ops	Computer	Electronic	Robot Ops	**Gun Cbt**	Computer
6	Broker	Navigate	**Technical**	**Gun Cbt**	**Space**	**Vehicle**
7	+1 Int	Pilot	Engineer	Artisan	Liaison	+1 Int
8	+1 Edu	Ship's Bt	**Academic**	Brawling	**Academic**	+1 Edu
9	Liaison	**Gunnery**	**Technical**	Streetwise	Leader	Streetwise
10	**Academic**	Ship Tcts	Medical	Vice	+1 Soc	+1 Int
DM+4:	IS-10+	IS-10+	Edu 9+	IS-10+	IS-13+	IS-10+

Note: Scout Life is available to any Scout character. Special or War Mission is available if a character is on Special or War Mission this year. Admin Rank is available to individuals rank IS-10+. Bureaucracy is available if a character is a member of the Bureaucracy.

SCHOOLS

Individuals who receive training as an assignment are sent to a service school. Consult the School Assignment table to determine which schools are available, and then roll one die. Once the school is determined, the individual may roll on the Scout Schools table to determine the skills received by attendance. Certain schools confer two skills, while others confer only one, as noted below each column of the table.

It is possible to be assigned to most schools more than once.

Administrator School: Attendance transfers the individual to the Bureaucracy. Roll on the Office Assignment table. The character is promoted to rank IS-10. Draftees may not attend administrator school during their first four-year term.

REENLISTMENT

At the end of a four-year term, the character must either reenlist or muster out.

Scout Reenlistment: Reenlistment in the Scouts requires a throw of 3+.

The Scout Service maintains an up-or-out policy for ordinary rank: if an individual does not receive continuing promotions, the individual is not allowed to reenlist. If a character's ordinary rank is not equal to or greater than his or her number of terms of service, reenlistment is not permitted.

Changing Office Assignment: Characters may change their office assignment. An office assignment remains in effect for the remainder of the term of service for the individual. Individuals may apply for reassignment (within the Bureaucracy or the Field) when they reenlist. The character may roll again on the Office Assignments table: if the result is different, or if reassignment is not desired, the individual remains in the current office.

Members of the Bureaucracy are never reassigned to the Field; members in the Field are never reassigned to the Bureaucracy (but may be transferred).

MUSTERING OUT BENEFITS

At the conclusion of a player's last term, all mustering out benefits are received as described in basic (initial) character generation.

Merchant Prince Characters

The immense network of merchant companies provides an opportunity for individuals to travel and to make their living.

General Background: There are six types of merchant lines divided into three general classes. Merchant *megacorporations* and *sector-wide lines* are *large* merchant lines. Merchant *subsector-wide lines*, *interface lines*, and *fledgling lines* are *small* lines. The *free traders* are a special case; they are neither small nor large.

Merchant Ranks: There are two types of ranks in Merchant service: *enlisted* and *commissioned*.

Enlisted Rank: Enlisted Merchant characters receive enlisted rank based on seniority; the individual E-rank number is the number of the current term of service. In the first term of service, the character is rank E1. Enlisted rank is an indication of seniority. Individuals who transfer to other companies retain their E-rank based on their current term of service. There are no names for enlisted ranks. Rank is stated by department and rank (for example, Engineering E1, or Deck E4).

Commissioned Ranks: The Table of Ranks and Promotions shows the various officer ranks. The titles vary by department.

Merchants: The general term for members of the Merchant service, regardless of rank or any other factor is *merchants*.

INITIAL ACTIVITIES

Initial activities include pre-career options, enlistment, combat arm selection, and initial training.

Pre-Career Options: Characters intending a Merchant career may consider college, the Merchant Academy (available after enlistment), and medical school.

Enlistment: Each of the six types of merchant lines has a throw to enlist. If the throw is successful (taking into account DMs), the individual has enlisted. Successful enlistment commits the individual to a term of service of four years.

Starport Restrictions: Each merchant line indicates a minimum starport type. If the character's homeworld has a starport type less than that shown, the individual may not enlist in that merchant line.

Draft: If an individual is unsuccessful in enlisting, he may submit to the draft. A throw of 5 (1D) will result in being drafted into the Merchants (to a Free Trader). Any other result prohibits the individual from Merchant service.

Automatic Enlistment: A college honors graduate may automatically enlist in a megacorporation.

Department Assignment: Merchant lines (except the Free Traders) are divided into departments. Characters consult the Department Assignment table when they enter the service. Free Traders are placed in a department called *Free Trader*.

When an individual receives a commission, it is in the department in which the individual is currently serving.

Initial Training: There is no initial training in the Merchants.

CAREER RESOLUTION

Career resolution begins once a character graduates from all pre-career schools and has enlisted.

Assignments

Each term, a character carries out four assignments.

Each one-year assignment is resolved separately using a three-step procedure: the specific assignment is selected; officers determine if a position is available; and that assignment is resolved in terms of survival, skills, and bonus.

Duty Assignment Definitions: The specific types of duty assignments possible are:

Route is duty on a merchant ship serving an established trade route consistent with the size of the merchant line.

Charter is duty on a merchant ship which has been chartered to a specific company or individual.

Speculative Trade is duty on a merchant ship which is buying goods in cheap markets and transporting them on speculation to markets where they can be sold at large profits.

Exploratory Trade is duty on a merchant ship which is opening new markets (within known territory or unknown territory).

Smuggling is a Free Trader pursuit in which the ship captain transports goods illegally in order to make large profits.

Piracy is a Free Trader pursuit in which the ship captain actively attacks and raids other shipping.

No Business is a Free Trader situation in which there is no available merchant activity; the lack of funds forces the character to remain on the planet looking for work.

Special Duty allows consultation of the Special Duty Table.

Transfers Up or Down: It is possible to receive a transfer to another merchant line as an assignment. It is remotely possible for a character to receive several transfers within the same year of service.

Transfer Up indicates that the Merchant character has been recruited by the next higher type of merchant line and may transfer to that line immediately. The character then rerolls on the specific Assignments table for the assignment for the current year within this new merchant line.

Transfers up occur in this order: Free Traders to Fledgling Line to Interface Line to Subsector-Wide Line to Sector-Wide Line. It is not possible to transfer up to a megacorporation.

Transfer Down indicates that the Merchant character has been let go by his or her current employer, has been recruited by the next lower type of merchant line, and may transfer to that line immediately. The character then rerolls on the specific Assignments table for the assignment for the current year within this new merchant line.

Transfers down occur in this order: Megacorporation to Sector-Wide Line to Subsector-Wide Line to Interface Line to Fledgling Line to Free Trader.

When an individual transfers to a new merchant line (up or down), his current department does not change. However, individuals transferring to Free Traders enter the Free Trader Department; individuals transferring from Free Traders to a higher line consult the Department Assignment table.

Any character rank O4+ transferring between merchant lines also transfers to the Deck Department (even if the character has served less than one full term in rank O4).

Available Position: Once an assignment is received, officers determine if they are serving in a position consistent with their rank. It is possible that the officer will be forced to serve in a position one rank lower than his rank would call for. For example, a Merchant assistant engineer (rank O2) might find no openings available for him; he must work as a drive hand (rank O1) for the current assignment.

Individuals in rank O0 who cannot find an available position must serve as enlisted personnel for the current year. Individuals in the Free Traders, rank O1, serve as enlisted if they do not find an available position.

Only officers serving in a position normally filled by their rank are eligible to take the test for promotion (the department test is an exception to this rule).

Assignment Resolution: The Assignment Resolution Tables indicate the types of assignments possible within each department. In the proper column, throws are provided for survival, skills learned, and bonuses received.

Survival: If the throw is successful, the individual has survived and continues with resolution of the assignment.

Skills: A character may receive skills as a result of a specific duty assignment. If the character rolls the indicated number or higher, then he or she receives one skill. The skill received must be taken from one of the skill table columns available.

Bonuses: During an assignment it is possible that the company will share its profits with the character in the form of a bonus. If the throw for bonus is successful, the individual makes one throw on the Cash Mustering Out table and receives one-half the amount shown.

Special Duty: Individuals who receive special duty as an assignment consult the Special Duty Table.

Schools are available for commissioned officers; training is available for enlisted personnel. Both require a transfer to a specific department upon completion (except transfers do not take place for individuals rank O5+). No transfer takes place if the individual is already in the department concerned. Schools and training may be received any number of times.

PROMOTION

Enlisted personnel are promoted every four years. For example, an enlisted merchant would have rank E2 after eight years of service.

Commissions: Merchant Academy graduates are automatically commissioned rank O1 in the service. Special Duty may provide a commission. Enlisted characters receive a commission if they pass the examination for promotion (which they may be able to take if they are serving on a Route assignment).

Promotion: Promotions are received by passing an examination, which may be taken only if the individual has the required qualifications and is serving in a position consistent with his rank.

REENLISTMENT AND MUSTERING OUT

At the end of a four-year term, the character must either successfully reenlist or muster out.

Merchant Reenlistment: Reenlistment in Merchants requires a throw of 4+; DM +1 if rank O1+.

Transfers between Departments: Both enlisted and officer characters may transfer to a new department at the end of a four-year term of service if they have ever attended a school or training for that department. Officers automatically transfer to the Deck Department after one full term in rank O4.

Mustering Out Benefits: At the end of a last term, mustering out benefits are received. It is possible to receive a ship as a mustering out benefit from some merchant lines; Free Trader Owner/Captains *automatically* have a free trader. Far Traders are jump-2 trading ships. Fat Traders are larger capacity jump-1 trading ships. Receipt of a ship provides possession of it; additional receipts indicate 10 years of payments.

SPECIAL RULES

The following special rules apply to Merchant service.

Draftees: Characters who are drafted may not attend officer candidate school (OCS) during their first four-year term.

Reduced Passage: Individuals formerly employed by a merchant line may purchase stand-by middle passages at half price if the ship has empty staterooms available.

IMPERIAL MERCHANT LINES

Trade is an especially important part of Imperial society. Some of the companies that handle trade include:

Makhidkarun: A megacorporation providing passenger and freight service to all of the Imperium. Operations are confined to the established trade routes.

Tukera: A megacorporation providing passenger and freight service, supplemented by trade speculation along the major trade routes. Tukera is an aggressive company with a reputation for eliminating competition.

Al Moral: A sector-wide line serving Imperial worlds in the Spinward Marches. With headquarters on Mora, the company also provides service in the Mora subsector.

Sinzarmes: A subsector-wide line serving the Regina subsector; it provides feeder service from subsector worlds to the trade route worlds.

Oberlindes Lines: An interface line with scheduled service within the Regina and Aramis subsectors supporting extensive trade across the Imperial border with the Vargr.

UTP: A fledgling line of five free traders who have agreed to work together. UTP (Uakye Transport Partners) concentrates on operations between Efate and Regina.

Jamison Factors: A free trader operating as a tramp in the Spinward Marches. The crew of the *Empress Nicholle* works for a share of the profits. The ship is registered out of Vland but has not been there in 20 years.

ENHANCED MERCHANT CHARACTERS

ENLISTMENT

Type of Line	Star-port	Line Size	To Enlist
Megacorp	B	Large	9+
Sector-wide	C	Large	8+
Subsector-wide	D	Small	7+
Interface	any	Small	7+
Fledgling	any	Small	7+
Free Trader	any	—	7+

DMs: If Str 7+, DM +1. If Int 6+, DM +2. Enlistment automatic if college honors graduate.

Note: Enlistment requires a homeworld starport that is equal to or better than the minimum shown. Free Traders are neither large or small lines: they are a special case.

Reenlistment: Throw 4+ to reenlist; DM +1 if rank O1+.

DEPARTMENT ASSIGNMENT

Die	Large Merchant Line	Small Merchant Line
1	Purser	Purser
2	Purser	Purser
3	Purser	Purser
4	Sales	Engineering
5	Engineering	Engineering
6	Engineering	Engineering
7	Engineering	Deck

Note: Characters in the Free Traders are automatically assigned to a multi-function department called the *Free Trader*, and they may not change positions.

INITIAL TRAINING

There is no initial training in the Merchants.

AVAILABLE POSITIONS

Department	Large Line	Small Line
Deck	9+	10+
Engineering	8+	8+
Purser	7+	6+
Administration	8+	9+
Sales	6+	6+

DMs: If Int 9+, DM+1. If Edu 9+, DM +1.

Free Traders: Throw 8+ to determine position availability, DM +1 if Int 9+.

Note: If a position is not available, the individual must serve at one rank lower. *Free Trader* officers must serve as enlisted personnel when a position is not available.

SPECIFIC ASSIGNMENT TABLES

Die	Large Line	Small Line	Free Trader
2	Transfer Down	Transfer Down	Transfer Up
3	Route*	Route*	Route*
4	Route*	Route*	Exploratory Trade
5	Route*	Route*	Route*
6	Route*	Route*	No Business
7	Route*	Charter	Route*
8	Route*	Speculative Trade	No Business
9	Charter	Speculative Trade	Charter
10	Speculative Trade	Exploratory Trade	Speculative Trade
11	Exploratory Trade	Exploratory Trade	Exploratory Trade
12	Special	Special	Smuggling
13	Special	Transfer Up	Piracy

*Enlisted tested to rank O0. **Large and Small Lines:** If Edu 6-, DM -1; rank 04+, DM +1. **Free Traders:** If Soc 5-, DM +1; Rank O6, reroll (unless No Business).

ASSIGNMENT RESOLUTION

Deck	Route	Charter	Exploratory	Speculative
Survival	Auto	3+	4+	3+
Skills	7+	7+	5+	6+
Bonus	None	None	11+	12+

Engineering	Route	Charter	Exploratory	Speculative
Survival	Auto	Auto	4+	3+
Skills	7+	6+	5+	6+
Bonus	None	None	12+	11+

DMs: For survival, DM+1 if any department skill 2+.

Purser	Route	Charter	Exploratory	Speculative
Survival	Auto	Auto	3+	Auto
Skills	6+	5+	8+	7+
Bonus	None	None	12+	11+

DMs: For bonus, DM+1 if Steward-2+.

Administration	Route	Charter	Exploratory	Speculative
Survival	Auto	Auto	3+	3+
Skills	6+	5+	8+	7+
Bonus	None	None	12+	11+

DMs: For survival, skills, and bonus, DM+1 if any department skill 2+.

Sales	Route	Charter	Exploratory	Speculative
Survival	Auto	Auto	4+	3+
Skills	7+	6+	5+	5+
Bonus	None	11+	10+	8+

DMs: For survival, skills, and bonus, DM+1 if Broker-2+ or Trader-2+.

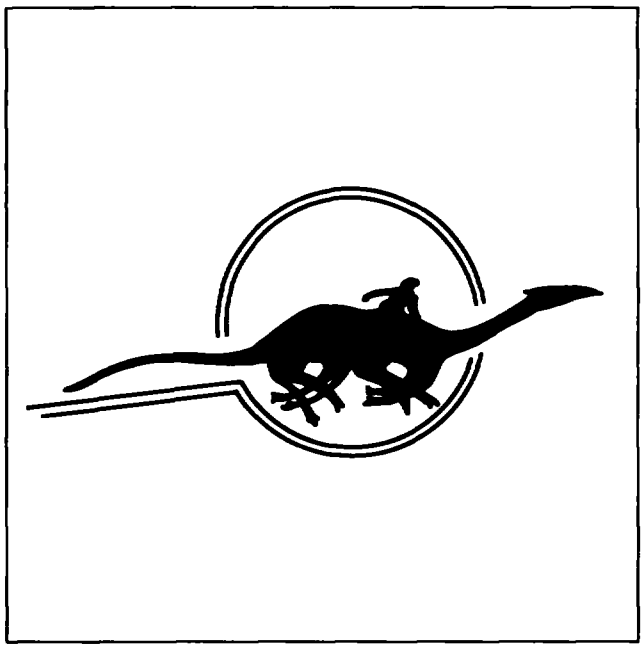
Free Trader	Route	Charter	Exploratory	Speculative
Survival	3+	4+	5+	5+
Skills	7+	6+	5+	5+
Bonus	11+	10+	8+	7+

DMs: For survival, DM+1 if Pilot-2+; for bonus, DM +1 if Trader-2+.

Free Trader	Smuggling	Piracy	No Business
Survival	6+	7+	3+
Skills	5+	4+	3+
Bonus	6+	5+	None

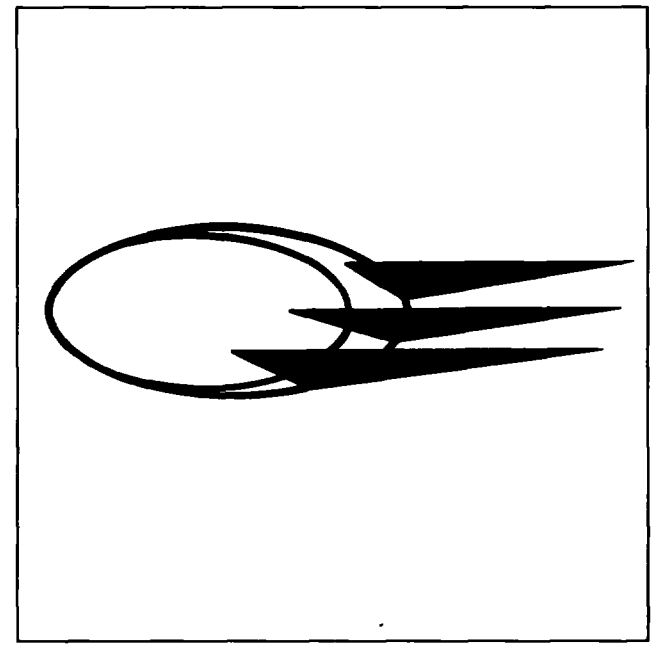
DMs: For survival, DM+1 if Pilot-2+; for bonus DM +1 if Trader-2+.

SCOUT AND MERCHANT CHECKLISTS



SCOUT
CHARACTER GENERATION CHECKLIST

1. Generate character.
   A. Generate six personal characteristics: Strength, Dexterity, Endurance, Intelligence, Education, Social Standing.
   B. Determine character's homeworld.
2. Pre-Enlistment Options.
   A. College.
   B. Medical School.
   C. Flight School.
3. Enlistment.
4. Select Office.
5. Receive Initial Training.
6. Resolve Current Term.
   A. Resolve Current Year (four years per term).
      1) Determine Assignment.
      2) Resolve Assignment.
         a) Survival.
         b) Promotion.
         c) Decoration.
         d) Skills.
7. Conclude Current Term.
   A. Aging.
   B. Reenlistment.
   C. Muster Out.
      1) Determine Mustering Out Benefits.
      2) Write Resume.



MERCHANT PRINCE
CHARACTER GENERATION CHECKLIST

1. Generate character.
   A. Generate six personal characteristics: Strength, Dexterity, Endurance, Intelligence, Education, Social Standing.
   B. Determine character's homeworld.
2. Pre-Enlistment Options.
   A. College.
   C. Medical School.
   D. Flight School.
3. Enlistment.
   A. MegaCorporation.
   B. Sector-wide Line.
   C. Subsector-wide Line
   D. Interface Line.
   E. Fledgling Line.
   F. Free Trader.
4. Merchant Academy.
5. Determine Department Assignment.
6. Resolve Current Term.
   A. Resolve Current Year (four years per term).
      1) Determine Assignment.
      2) Resolve Assignment.
         a) Survival.
         b) Skills.
         c) Bonus.
   B. Take Exam for Promotion.
7. Conclude Current Term.
   A. Aging.
   B. Reenlistment.
      1) Reenlist in Different Branch?
   C. Muster Out.
      1) Determine Mustering Out Benefits.
      2) Write Resume.

MegaTraveller Combat

As adventurers journey from world to world among the stars, they will visit everything from ultra high-tech cities to untouched wilderness. Throughout their travels, those encountered will include everything from other intelligent beings, like or unlike themselves, to exotic and alien creatures of many kinds. The temperament of those encountered will include everything from sedate and passive to wild and violent. At times the only way such encounters can be dealt with is by force. In order to resolve such encounters, this chapter on combat is provided.

COMBAT SITUATIONS

A combat situation occurs when a party of adventurers (on foot or in a vehicle) encounters another party of characters, a herd of beasts, a group of robots, or a collection of vehicles and violence is offered by either side. Combat can involve any combination of characters, creatures, robots, or vehicles.

Combat is task-based. The combat rules are in two parts: *Basic Rules* and *Special Rules*. Basic Rules cover ordinary combat encounters; Special Rules cover special combat situations that can crop up.

The Basic Rules assume a breathable atmosphere with the same atmospheric pressure as Earth, as well as the same temperature range, surface gravity, and approximate planetary size. Selected Special Rules deal with the effects of different planetary characteristics.

Referee's Responsibilities: Setting up encounters and determining the actual circumstances of each encounter are the realm of the referee and are covered in the section on encounters in the *Referee's Manual*.

PERSONAL COMBAT—THE BASIC RULES

Personal combat can be used in enclosed spaces or outdoor encounters. It works best when the referee must run fewer than 20 NPCs, animals, robots, or vehicles.

An Overview of Combat: At the beginning of a combat encounter, a marker or miniature figure representing each individual character, animal, robot, or vehicle is placed on the playing surface.

Personal combat involves successive attacks (such as blows if brawling, swings with blade weapons, or shots with guns) by each individual character, animal, robot, or vehicle involved.

A basic *to hit* task is used to obtain a hit; the basic task is modified by range between the attacker and the target, the type of weapon used, attacker expertise in the weapon, and other factors. If a hit is obtained, the weapon's penetration is compared to the target armor to see if any damage results. Damage depends upon the type of weapon. Combat continues until one party is vanquished, flees, surrenders, or is destroyed.

The *Hits* Value: Combat uses *damage points* to determine the effect of hits during combat.

How likely a unit is to survive damage points is indicated by the unit's *hits* value. The hits value for all units (characters, animals, robots, or vehicles) works the same: each hits value is a set of numbers separated by a slash. The first number indicates how many damage points it takes to render the unit out of action (i.e., unconscious or inoperative), and the second tells how many more points it takes to kill or destroy the unit.

The number of damage points varies with the weapon and hit. For example, a dagger inflicts 2 damage points.

After the combat session is over, the player characters, and *important* NPCs, robots, or vehicles must assess damage inflicted and seek the needed medical treatment or repairs. (See *Assessing Damage* for details.)

The Life Force and Hits table shows the hits value for each value of Life Force (Strength + Dexterity + Endurance).

Vehicles and robots have three types of hits values: structure, power plant, and locomotion. Computing the hits values for vehicles and robots is discussed in the vehicle design section of the *Referee's Manual*. Vehicles may also take damage to crewmembers; both vehicles and robots may take damage to onboard electronics and other such fixtures or devices. Assessing vehicle and robot damage is covered in the *Referee's Manual*.

LIFE FORCE AND HITS

Life Force	*Hits Value*
3+	1/ 1
6+	2/ 1
9+	2/ 2
12+	2/ 3
15+	3/ 3
18+	3/ 4
21+	3/ 5
24+	4/ 5
27+	4/ 6
30+	4/ 7
33+	5/ 7
36+	5/ 8
39+	5/ 9
42+	6/ 9
45+	6/ 10

The Effects of Tactics Skill: Before a combat session begins, total the Tactics skill levels from among the participants on *each* side. This total the is *tactical points pool*. Tactical points form a special *Roving DM* on any combat task roll. An individual must specify the number of tactical points he intends to use as a DM before he proceeds with making the roll. Once a tactical point is expended, it is used up for the combat round. Any number of available tactical points may be used on a given roll. The tactical point pool is received anew each combat round. Any unused tactical points at the end of the combat round are lost and may not be carried over to the next round.

Tactical points are valuable because they can favorably influence the outcome of vital tasks.

Tactical points may *never* create a task DM that exceeds the

total task DM limit of plus or minus 8.

THE COMBAT PROCEDURE

Once an encounter appears to require force, combat begins.

Surprise: At the beginning of the encounter, the party to make the first hostile move determines if it has *surprise*.

Initiative: In each combat round, the side with the largest tactical point pool has the initiative and selects which side goes first.

Resolution: Once a side has been selected, one unit from that side may take its turn. The unit may move and make an attack (limited to one attack per unit per combat round). Any attacks made take effect immediately. Once the unit's turn is finished, one unit from the *other* side may take a turn. Turns continue to alternate from side to side in this manner until all units on both sides have had an opportunity to take a turn. Once all have had a chance to take their turn, the combat round is over, and a new combat round begins.

Combat Actions: During its turn a unit may move, fire weapons, and (for character, animals, and robots) conduct hand-to-hand combat. Within limits, a unit can interrupt another unit in the middle of its turn.

SURPRISE

Surprise is determined only once per combat encounter. Surprise is possible for either party, and the element of surprise gives an advantage both in attacking and in avoiding the enemy.

Surprise is a task rolled by the party which makes the first hostile move.

To determine if an attacking party has surprise:
Difficult, Leader, Recon (confrontation).

Referee: Success provides the attacking party with *surprise*. Use the best Leader skill level and Recon skill level from the party. This is a confrontation task; both parties contribute DMs to the task. If this task fails, both parties are aware of each other. If any mishap occurs, the *defending party* has surprise instead.

In most attack situations the chance of surprise is Difficult; the referee must weigh each situation and set the difficulty accordingly. For example, if the defending party has no reason to expect an attack, the surprise task may become Routine. On the other hand, if the attacking party consists of a bunch of noisy thugs rushing a defending party of highly skilled commandos, achieving surprise may be Formidable.

A party with surprise may elect to end the combat situation before it even starts by so stating. Non-player character parties which have surprise and are outnumbered usually avoid the combat encounter.

The Benefits of Surprise: A party with surprise may freely attack until surprise is lost. The surprised party continues with the action they were performing before the combat occurred and cannot attack in return. Members of the attacking party may each make one surprise attack. If surprise is not lost, each member of the party may make another surprise attack (this continues until surprise is lost).

Surprise is lost when any unit in the other party gives the

DEFINITIONS

The following definitions are used in combat.

Combat Round: Combat is resolved in rounds. Each combat round represents six seconds of elapsed time. Thus, 10 combat rounds equal one minute.

In a round, each individual character, non-player character, animal, robot, or vehicle is allowed to move and attack. Each may be attacked by enemy characters, non-player characters, animals, robots, or vehicles. Once all individual characters, non-player characters, animals, robots, or vehicles in the battle have had a chance to act, the combat round is over, and the next begins.

Distance Scale: Combat is conducted on graph paper or hex-grid paper. Two distance scales are used: interior combat uses a scale of 1.5 m per square (or hex), and outside combat uses a scale of 15 m per square (10 times the distance scale of interior combat). Many starship and building plans use a square grid, representing a distance of 1.5 m. Personal combat is ideal for use with these plans.

A calculator is handy when computing distances in either of the two combat scales. For example, if a weapon is listed as having a danger space of 7.5 m, you can determine that this is 5 squares in the 1.5m scale. When computing the equivalent distance in the 15m scale, round up on .5 and above. Therefore, this weapon's danger space is two squares in the 15m scale.

Unit: Refers to a single character, non-player character, animal, robot, or vehicle. Each "unit" is allowed an opportunity to move and to attack during a combat round.

Range Bands: For convenience, personal combat divides distance into a series of *range bands*.

RANGE BANDS

close	1 m or less
short	1 to 5 m
medium	5 to 50 m
long	50 to 250 m
very long	250 to 500 m
distant	500 m to 5 km
very distant	5 to 50 km
regional	50 to 500 km
continental	500 to 5,000 km
planetary	5,000 to 50,000 km
far orbit	50,000 to 500,000 km
extreme orbit	500,000 to 5 million km

The Range Bands table describes the bounds of range bands for personal combat scales (1.5 m and 15 m). In personal combat, the ranges beyond distant are used to compute effects of long-range fire from orbiting starships, far-off ground artillery, and the like. The starting range of a combat situation depends on the referee's statement.

Tasks: Combat activities use tasks. Most combat tasks have a time increment of one round. In personal combat, most tasks are *nonrepeatable, no-failure* tasks: Ignore rolling for failure or mishaps unless a fumble occurs.

alarm. All unsilenced shots alert the enemy to an attack; silenced pistols, laser weapons, and guns in vacuum do not make any noise when fired. Any unit that is hit but not rendered unconscious or inoperative will make sufficient noise (such as a scream) to raise the alarm.

If the alarm is not raised, an unattacked unit in the defending party may see the attack and give the alarm:

To raise an alarm in a surprise attack:
Difficult, Leader, Recon.

Surprise continues until it is lost and may continue indefinitely. When surprise is lost, the combat round ends; the attacker may make no more surprise attacks and normal combat begins.

INTERRUPTS

A unit from the opposing side (which has not yet taken a turn) can choose to *interrupt* another unit's turn and take its turn in the middle of that unit's turn.

To interrupt another unit's turn:
Routine, Movement speed (safe).

Referee: If this task is successful, it becomes the interrupting unit's turn. The interrupted unit's turn is considered spent for the combat round. A failed interrupt roll doesn't count as a spent turn. Ignore mishaps.

Interrupts are subject to these restrictions:

- A unit cannot interrupt the turn of another on his own side.
- Only one active interrupt is permitted per side.
- Only one interrupt is permitted per enemy attack or per square of enemy movement.
- Unintelligent animals never perform an interrupt.

Interrupt Example: The players are fighting a group of NPCs on a starship. It is the players' turn. One of the player characters, Dur Telemon, takes his turn.

Dur decides to run from cover at the end of the corridor to an inset doorway closer to the enemy and, thereby, close from medium to short range; this action enables him to get a better shot. Dur starts to move (run) down the hall by moving out into the open one square. One of the NPC players specifies an interrupt; he wants to take his turn now and shoot at Dur while Dur is in the open. The NPC rolls for the interrupt task and succeeds.

Before the NPC can attack, another player character, Aybee Owen declares an interrupt of the NPCs turn. Aybee wants to lay down covering fire for Dur by shooting at the NPC who is going to shoot at Dur. Aybee rolls an interrupt task and succeeds. Because all damage from attacks takes effect immediately, if Aybee can put the NPC out of the action before the NPC's turn resumes, the NPC will be unable to do anything to Dur. Neither the players nor the NPCs can interrupt any further (since only one interrupt per side is allowed, per square of movement or per attack). When Dur moves another square, or if he shoots while moving down the hall, another pair of interrupts will become possible.

MOVEMENT

Units must specify one movement speed to be used for each turn. Movement speed 1 is human walking speed; speed 2 is human running speed; and higher speed levels apply to some animals and to vehicles. An animal's speed is determined when it is created (see the *Referee's Manual*). A vehicle's speed is determined by dividing its velocity in kilometers per hour by 10.

The Movement table gives the number of movement points a unit receives for each movement speed. Each square a unit moves into costs one movement point. Thus, to move three squares would cost a unit 3 movement points.

Movement Die Modifiers: Movement speed is an advantageous DM in the defense if a unit is a target at short range. For example, a running character (speed 2) receives an advantageous defensive DM of 2 when being attacked at short range.

For each range band beyond short range, divide the movement DM by 2 (drop fractions). For a running character who is a target at medium range, his movement DM becomes 1 (one-half of his speed of 2); at long range, the character's movement DM drops to zero (one-half of 1): he no longer receives a defensive DM for running at long range or beyond.

When a moving unit is attacking, he must also apply his movement speed as a disadvantageous DM. Thus, if a character is attacking while running (speed 2), he must apply a minus DM of 2 to his attack. This DM is unaffected by movement range.

If both the attacker and the defender are moving, the DMs are cumulative. If the attacker is riding in an air/raft moving at speed 4, and he wants to shoot an animal (at short range) moving at speed 3, the total DM on the to hit task is -7.

Matching Vectors: However, if the vehicle operator wishes to match vectors with a given moving target:

To match vectors with a moving target:
Routine, Vehicle, Movement DM (confrontation).

Referee: The Vehicle skill and movement DM of both the attacker and the defender may be used as DMs to either help or thwart this task, as appropriate. With ground vehicles, this task is not possible unless the ground vehicle is travelling on smooth, hard ground such as a road. If this task is successful, the to hit task can be treated as if the vehicle temporarily has a form of manual fire control.

Fire Control: Vehicles with weapon fire control work a little differently. Find the difference in speed between the vehicle and the target, and use the result as the defender's movement DM at short range. Divide the movement DM by 2 for each range band beyond short range as usual. For example, if an air/raft with weapon fire control is moving at speed 4, and the target is moving at speed 3, the vehicle only gets a DM to hit of -1 at short range, and no DM at medium range or beyond.

Evade: A unit may state evade as a movement qualifier (*speed 1 evade*, for example), in an attempt to make himself a more difficult target. An evading unit must pay double the normal movement cost to enter a square. A typical square that ordinarily costs 1 movement point to enter, costs 2 movement points if the unit is evading in that square.

An evading unit may not use any weapons to parry or block in hand-to-hand combat. Unintelligent animals may not evade.

To compute the defender and attacker's movement DMs,

an evading unit applies double its movement speed as a movement DM. For example, a running evading character (speed 2) receives an advantageous defensive DM +4 when being attacked at short range; a walking evading character must apply a DM of -2 on his attacks.

Additional Movement Notes: A character may not *run* if he has just been involved in hand-to-hand combat that turn.

Conscious characters or animals may always move a minimum of 1 square per turn. This also applies to vehicles and robots as long as their means of locomotion is still operating.

FIRE COMBAT

A unit may shoot once, using fire combat, at another unit during a combat round. Fire combat may be direct fire (the attacker can see the target) or indirect fire (the attacker cannot see the target, but instead fires at the target by the direction of an observer who can see the target). Only weapons specifically listed as indirect fire weapons may use indirect fire to shoot at a target.

Determining Range: Range is determined by tracing the shortest possible path of squares between the firing unit and the target of the attack. Count the number of squares and compare the result to the Range Bands table to determine the range used to resolve the fire.

If a unit is firing at a target at a different altitude, determine the range to the target as the greater of the difference in altitude (in meters, kilometers, or whatever) or the range to the ground square the target is over on the playing surface. For example, if a vehicle is flying over a ground square that is at medium range (5 to 50 meters), but the vehicle's altitude is 200 meters (long range), then the vehicle's range for purposes of combat attacks is long range.

Direct Fire: All units (enemy or friendly) in a firing unit's line of fire are potential targets. The likelihood of hitting a target with direct fire is a task:

To hit a target with direct fire:
(Difficulty), Weapon, Dex, Movement DM, 1 combat round (absolute).
Referee: The difficulty level of this task varies, depending on the type of weapon used and the range to the target. Select the proper difficulty from the Direct Fire Difficulty Profile table.

The following increase the difficulty by one level:

- Target under cover, but still visible.
- Small target (basketball size or less). An animal weighing 10 kg or less is a small target, as is a robot with a chassis volume of 10 liters or less.
- Attempting rapid fire (emptying ammo clip in one round).

The following decrease the difficulty by one level·

- Large target (groundcar-size or larger). An animal weighing 500 kg or more is a large target, as is a robot with a chassis volume of 500 liters or more.

HAND-TO-HAND COMBAT

A unit at close range may (but does not have to) attack using hand-to-hand combat. If the unit conducted a fire attack in the current combat round, it may defend against hand-to-hand attacks, but it may not initiate them.

A unit conducting a hand-to-hand attack must roll two tasks: a confrontation task to determine if he can attack and (if the confrontation task is successful) a hand-to-hand attack.

To determine if a hand-to-hand combat attack can be made:
Routine, Dex, 1 combat round (absolute, confrontation).
Referee: The unit rolling this task adds its Dex DM; the other subtracts its Dex DM. If the task fails, the defending unit has blocked the hand-to-hand attack. Ignore failure or mishap rolls.

As with any combat damage, damage inflicted in hand-to-hand combat is applied immediately, so attacking first in hand-to-hand combat is important.

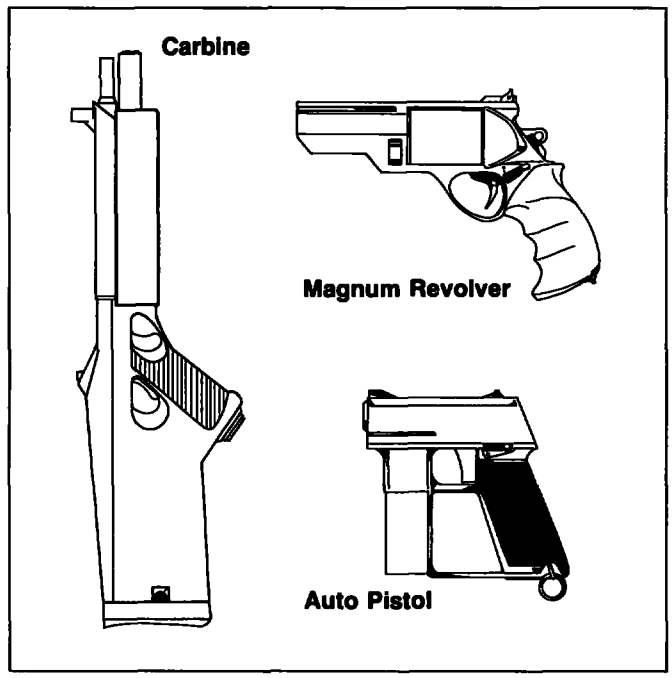
To hit in hand-to-hand combat:
Simple, Weapon, Str, Wpn Def, 1 combat round (absolute).
Referee: Defender may use his weapon defense (whatever weapon he currently has) as a negative DM to avoid a hit.

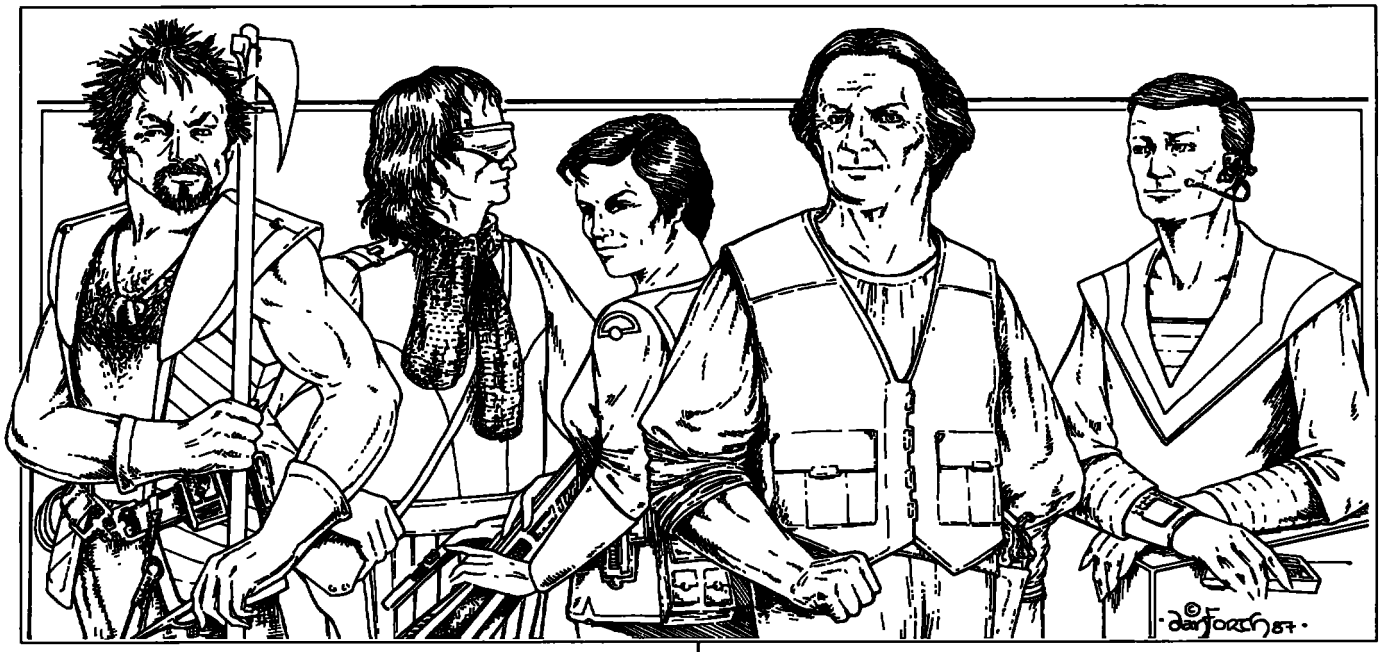
If either the attacker or the defender uses a weapon not specifically designed as a hand-to-hand weapon, use the following general guideline to classify it: if the weapon is blunt (like the butt of a rifle) treat it as a club; if the weapon is sharp (like a broken bottle), treat it as a dagger.

An unskilled individual must increase the difficulty one level.

If desired, when a successful hit is scored, a "disarm opponent" result may be selected instead of applying damage. If so, the disarmed unit may not attack using that weapon for the rest of the round. Any weapon, including natural weapons (such as hands), may be disarmed (in the case of natural weapons, a disarm result is actually a "stun").

With weapons that can be knocked out of the enemy's grasp (such as a gun), the enemy unit must roll 2D on the Mishap table and then conduct scatter on the weapon to see where it lands (see Indirect Fire); either unit may retrieve the weapon





by moving to the square with the weapon and spending the rest of his turn picking up the weapon.

A disarmed unit can always move or attack with other weapons in his possession; he just cannot attack using the disarmed weapon.

A unit that is or has been attacked by hand-to-hand combat may not perform interrupts. In other words, a unit being attacked by hand-to-hand combat may not interrupt the attacking unit; attacking an enemy unit with hand-to-hand combat is a good way to prevent that enemy unit from performing an interrupt during the rest of the round. The attacked enemy unit may still take its turn whenever it likes (as normal), it simply cannot interrupt another unit's turn in order to take its own turn. The attacked enemy unit may move during its turn, or it may decide to stay and counterattack using hand-to-hand combat.

Units not engaged in the hand-to-hand attack may interrupt with a fire attack, or they may interrupt the hand-to-hand attack in order to move adjacent to a unit (same or different unit) and conduct a hand-to-hand attack themselves. No more than one interrupt per side is allowed at any given time.

A unit who specifies he is conducting a hand-to-hand attack cannot perform any further actions: he must end his turn with the hand-to-hand attack.

PENETRATION AND DAMAGE

Once a target character has been hit, it is necessary to determine what, if any, damage was sustained.

Determining the Penetration Rating For a Given Range: Each weapon's penetration rating includes a penetration and an attenuation.

The listed penetration is for short range. The attenuation indicates how many range bands to count (starting with short range) *before* the penetration drops by half. The weapon's penetration continues to drop by half every so many range bands, until either the weapon's maximum range is reached, or the penetration reaches zero.

For example, if a weapon with a penetration rating of 4/3 (read as "four per three") has a penetration of 4 at short range, then the penetration drops by one-half unit for every 3 range bands. Thus, the weapon has a penetration of 4 at short, medium, and long range; the weapon also has a penetration of 2 at very long, distant, and very distant range, and it has a penetration of 1 at regional, continental, and planetary range; and a penetration of 0 at far orbit, extreme orbit, and interplanetary range.

However, a weapon's maximum range limits how far it may fire, even if the penetration has not dropped to zero. Referring to the above example, if the weapon's maximum range is distant, it may not fire at any targets beyond distant range.

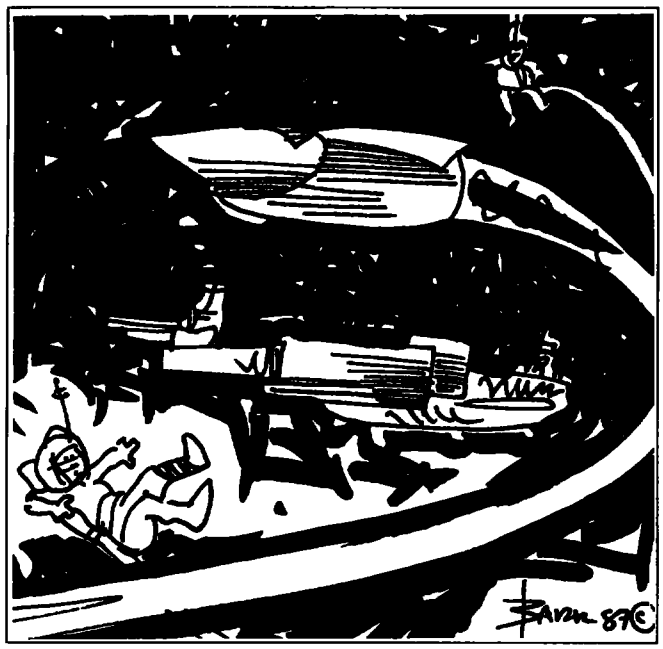
Determining Damage: To determine the actual damage suffered by a target, compare the weapon's penetration at that range to the target's armor.

If the weapon's penetration is at least twice the armor value, the weapon inflicts its full damage point value. This is known as a *high penetration* result.

If the weapon's penetration is at least equal to the armor value, then the weapon inflicts 50 percent of its damage point value. This condition is sometimes referred to as a *low penetration* result.

If penetration is less than the armor value, the weapon inflicts 10 percent of its damage point value if the target is a character with exposed areas of less than the full armor value. On the other hand, if the character is fully enclosed in the armor, the hit has no effect. Vehicles and robots always apply such hits as structure damage. This is known as a *zero penetration* result.

Marginal Success: If the task roll (including DMs) is equal to the roll that is needed for success, marginal success (a *graze*) has occurred: apply 50 percent of the normal damage point value (drop fractions). Thus, if a weapon would inflict 50 percent damage at this range, marginal success would only cause 25 percent damage. For example, if a weapon inflicts 3 damage points when it penetrates cloth armor at this range on a marginal success, it would only do 1 point of damage.



Exceptional Success: If the task roll (including DMs) exceeds the roll needed for success by:

2+.....apply damage points × 2 (a minimum of 1)
4+..... . .. apply damage points × 4 (a minimum of 2)
8+. . .....apply damage points × 8 (a minimum of 4)

If a weapon normally causes 3 points of damage at this range when it penetrates cloth armor, an exceptional success of 2+ would cause the weapon to inflict 6 points of damage.

Because of the minimums, it is possible for a weapon that ordinarily has zero penetration to inflict damage points upon achieving exceptional success.

An easy way to remember marginal and exceptional successes' effects on damage is: exact roll, halve it; 2+, double it once; 4+, double it twice; 8+, double it three times.

Cover. While cover makes it more difficult for an individual to hit a target, it generally makes a hit more serious because lightly armored areas of the target are exposed. Thus, if a hit is obtained on a target under cover and the target has exposed areas (areas with little or no armor), treat the target as only having one-half of its regular armor value when computing penetration.

Unconsciousness· An unconscious character or animal may not perform any activity throughout the rest of the combat session.

Damage to Vehicles and Robots: Damage to vehicles or robots can occur in the superstructure, power plant, or locomotion. Also, individual crewmembers (in vehicles), mounted weapons, or various other devices can be hit and destroyed in combat.

Reaching the Inoperative Level: A vehicle or robot that has reached the inoperative leven on structural hits may not perform any activity for the rest of the combat session If the inoperative level has been reached on the power plant hits, the vehicle may not move, and may not use any weapons or installed devices requiring power plant energy (flying vehicles automatically crash: roll 3D on the Mishap table).

If the locomotion inoperative level has been reached, the vehicle may not move. Flying vehicles which lose their locomotion must roll the following task:

To avoid a crash landing when locomotion becomes inoperative:
Difficult, Vehicle, Dex (fateful).
Referee: Roll this task when the air vehicle hits the ground.

In the turn following the loss of locomotion, an air vehicle continues to move forward at one-half of its current movement rate and drops at a rate of 10 meters per second.

PERSONAL ARMOR

Values for the most common types of personal character armor are listed on the Personal Armor Table on page 74. With the exception of reflec armor, no character may wear any armor along with another type of armor. If a character wears reflec with another type of armor armor, use the best armor factor for the defender when making the computation for the armor penetration

DIRECTIONS WITHIN THE GALAXY

Over the centuries, interstellar navigators have established conventions for stating directions throughout space. The direction of the galactic core is *coreward.* Its opposite, toward the rim of the galaxy, is *rimward.* The direction of galactic rotation is *spinward*; its opposite is *trailing.*

Galactic directions describe interstellar astrography; however, they also name businesses or organizations. One of the Imperium's distant frontier sectors is called the Spinward Marches. Rimward Lines is an important interstellar transport company. Encroaching commerce raiders on the frontier of the Imperium are called the Trailing Threat.

DIRECT FIRE DIFFICULTY PROFILES

DIRECT FIRE DIFFICULTY PROFILES

Type	*Close*	*Short*	*Med*	*Long*	*V Long*	*Dist*	*V Dist*	*Region*	*Cont*
Handgun	Sim	Rou	Dif	For	Imp	—	—	—	—
Rifle	Rou	Rou	Dif	Dif	For	Imp	—	—	—
Thrown*	Rou	Dif	For	Imp	—	—	—	—	—

*Thrown weapons include any crude hand-thrown projectile (blade, spear, etc.).

Weapon Enhancements

Type	*Close*	*Short*	*Med*	*Long*	*V Long*	*Dist*	*V Dist*	*Region*	*Cont*
Scope*	—	—	—	Dif	Dif	Imp	—	—	—
Gyrostable	—	—	Rou	Dif	For	Imp	—	—	—
Scope + Gyro	—	—	Rou	Dif	Dif	For	Imp	—	—

When weapon enhancements are added to a weapon, substitute the above difficulty profiles for those in the first table.
*Scope may be either optical or electronic sights.

Fire Controlled (crew-served or vehicle mounts)

Type	*Close*	*Short*	*Med*	*Long*	*V Long*	*Dist*	*V Dist*	*Region*	*Cont*
Tech 5	—	Rou	Rou	Dif	Dif	For	Imp	—	—
Tech 6	—	Rou	Rou	Dif	Dif	For	Imp	—	—
Tech 7	—	Rou	Rou	Rou	Dif	Dif	Imp	—	—
Tech 8	—	Rou	Rou	Rou	Rou	Dif	Imp	—	—
Tech 9	—	Rou	Rou	Rou	Rou	Dif	For	Imp	—
Tech 10	—	Sim	Rou	Rou	Rou	Dif	For	Imp	—
Tech 11	—	Sim	Rou	Rou	Rou	Dif	For	Imp	—
Tech 12	—	Sim	Sim	Rou	Rou	Dif	For	For	Imp
Tech 13	—	Sim	Sim	Rou	Rou	Dif	Dif	For	Imp
Tech 14	—	Sim	Sim	Sim	Rou	Rou	Dif	For	Imp
Tech 15	—	Sim	Sim	Sim	Rou	Rou	Dif	For	Imp
Tech 16	—	Sim	Sim	Sim	Sim	Rou	Dif	For	Imp

Difficulty Codes: Difficulty codes are abbreviated as follows: Sim: Simple, Rou: Routine, Dif: Difficult, For: Formidable, Imp: Impossible. — indicates that that there is no difficulty profile for the weapon or equipment at the range shown.

Additional Direct Fire Notes

Bows, Crossbows, Bola, Boomerang, and Sling: Instead of using the character's Dexterity as the crucial characteristic on a "to hit" task, these weapons use the average of the character's Strength and Dexterity (drop any fractions when making calculations).

Line of Sight: Attacks on targets by direct fire require a clear line of sight. Such a line of sight is a straight line from the center of the attacker's square to the center of the target's square. Since the line of sight must remain clear at all times, it may not pass through any obstruction that would block an individual's view.

Obstructions and Cover: Any wall, fixture, or terrain feature which can totally hide the target from view constitutes an obstruction. Unless explicitly stated by the unit, being behind such obstructions and under cover causes the target to be hidden from view. A hidden target must always operate under certain restrictions: The unit may not fire or be fired upon.

Certain types of obstructions (such as a fence or a corner in a corridor) allow a unit to be under cover, but the unit will still remain visible. Other types of obstructions (such as a wall) never allow a character to be under cover but still remain visible. Common sense tells which type of obstructions are which. A unit under cover has the ability to fire and can be fired upon.

A hidden unit remains hidden until he decides to fire during his turn, at which point he automatically becomes under cover but visible. Being under cover increases the "to hit" task difficulty by one level but makes any hit obtained more likely to penetrate if the target has lightly armored areas (such as the head and neck on characters).

Under Cover versus Evading: Under cover but visible refers to a nonmoving unit, while evading always refers to a moving unit. Thus, a unit cannot be both under cover and evading; he is one or the other.

Line of Fire: Each square passed through by the line of sight before and after passing through the target until the line of sight encounters an obstruction is the line of fire of the weapon. All targets along the weapon's line of fire and in the same range band as the primary target are attacked by the fire (at full penetration for the range band); others in the line of fire but in different range bands are not.

For example, if a gauss rifle fires at a target at long range, all other targets along its line of fire at long range are attacked, while targets along the line of fire but at short or medium range are not.

The target closest to the firing unit is attacked first, then the next closest (target means active units in the fire's danger space, regardless of hostile or friendly status).

Danger Space: Some weapons (such as a plasma gun) have a danger space of more than one square. Such

weapons can cause damage to units near the primary target if those units are in the weapon's danger space. See Group Hits, below.

Unless an alternate danger space is specified for a particular weapon, all weapons have a danger space of 1 square.

Group Hits: All units in a weapon's danger space, but not in the designated primary target square, may also suffer damage. Roll for a hit on all units in the weapon's danger space.

In the target square, compute the weapon's penetration as normal. One square away, the weapon's penetration is halved; two squares away it is halved again, and so on. If the penetration is reduced to zero, then no damage is suffered.

For example, a vehicle's fusion gun hits a target in a square at long range, with a normal penetration at that range of 14 and a danger space of 10 meters (six 1.5 meter squares). All adjacent units may also suffer damage (roll for a hit on each one), but with a penetration rating of 7 (instead of 14). Two squares away, those receiving hits are subjected to a penetration rating of 3; three squares away, those receiving hits are subjected to a penetration rating of 1. Beyond that, no hits are suffered, since the penetration rating drops to 0.

Automatic Weapon Fire: Certain weapons can be set on full automatic, if desired. Switching between full automatic (fire multiple rounds per pull of the trigger) and semiautomatic (fire one round per pull of the trigger) takes one full combat turn. The unit may move and evade while changing the setting, but may not fire.

An automatic weapon set on full automatic may hit multiple targets adjacent to the primary target. The weapon tables list the additional adjacent autofire targets (in addition to the primary target) that may be hit by the weapon when it is set on full automatic.

Autofire Weapons With a Danger Space: For weapons that can attack targets adjacent to the primary target through both autofire and the effects of a danger space: conduct all autofire attacks first. Once the autofire attacks are complete, roll for hits on any remaining targets in the danger space using the normal danger space rules, measuring danger space from the primary target. In some cases, the referee will have to randomly select which of the adjacent targets to subject to the autofire and which targets to leave for the danger space effects.

Rapid Fire: A character may specify that he wishes to conduct "rapid fire" with his weapon. If this is the case, increase the "to hit" task difficulty one level, but allow the character to designate three separate primary targets near each other. The targets don't need to be adjacent, but they all must fall within the same 45-degree arc. When combined with automatic fire, rapid fire allows a character to thoroughly "spray" an area with fire.

When a character uses rapid fire, he has automatically "emptied his weapon" and must spend the next combat round reloading. A character may move or evade while reloading, but he may not fire.

The Weapons table indicates which weapons may and may not conduct rapid fire under the recoil column of the weapon tables.

A unit without fire control may never conduct both pinpoint location fire and rapid fire at the same time.

Recoil: Certain weapons with more recoil than normal are marked as high-recoil weapons on the Weapons table. Such weapons require that the attacking character be stationary and well braced in order to fire. Consequently, high recoil weapons may only be fired if the attacking character does not move at all during the combat round.

Pinpoint Location: If desired, a unit can specify that he is going for a pinpoint location on a target in an effort to hit a more vulnerable location. If an exceptional success hit is achieved (see Penetration and Damage, below), treat the target's armor as one half of normal when computing penetration and apply all the usual effects of exceptional success. Otherwise, the shot failed to hit the intended location and is resolved as normal.

A pinpoint location attack may also be used on vehicles or robots in an attempt to deliberately achieve a power plant, locomotion, or crew hit (if the crewmember is visible), rather than a structure hit. A pinpoint hit on a vehicle's locomotion or visible crewmember uses one-half the vehicle's normal armor when computing penetration; a pinpoint hit on a vehicle's power plant must use the vehicle's full armor when computing penetration.

A unit without fire control may never conduct both a pinpoint location attack and rapid fire at the same time.

Coup de Grace: Most weapons may be used to administer a coup de grace shot to an unconscious or unstruggling unit (typically a character, animal, or robot) at close range if the unit with the weapon so states. The task to hit automatically succeeds.

Indirect Fire: Personal combat covers indirect fire weapons that are located on the field of battle. For rules on calling in long-distance artillery strikes (such as fire from orbiting starships), see the *Special Rules* section.

The only indirect fire that can be conducted indoors is hand-throwing grenades. All other indirect fire is exclusively an outdoor combat activity.

Outdoor indirect fire arrives on the next combat round following its request. Indirect fire must use the following task to see where it hits:

To hit a targeted location with indirect fire:

Difficult, Forward Obs, 1 combat round (absolute, unskilled OK, fateful).

Referee: Indirect fire requires the assistance of a character who can see the target: This condition is accomplished through using the Forward Observer skill of this particular character. The firing unit does not need to see the target to use indirect fire. Indirect fire called in by an independent observer begins arriving in the combat round immediately following the request.

If this task fails, the indirect fire automatically scatters; roll for a mishap. Forward Observer skill may be used as a special minus DM on the Mishap table. When fire scatters, it hits in a randomly adjacent area (square, hex).

COMBAT CHARTS

RANGE TABLE

Description	Range	Number of Squares: Personal Combat 1.5 meter	Personal Combat 15 meter	Large-Scale Combat 150 meter	Large-Scale Combat 1,500 meter*
Close	0m to 1m	0	Mutual	Mutual	Mutual
Short	1m to 5m	1	0	Mutual	Mutual
Medium	5m to 50m	3	1	Mutual	Mutual
Long	50m to 250m	30	3	0	Mutual
Very Long	250m to 500m	150	15	1	0
Distant	500m to 5km	300+	30	3	1
Very Distant	5km to 50km	—	300+	30	3
Regional	50km to 500km	—	Indirect	300+	30
Continental	500km to 5,000km	—	Indirect	Indirect	300+
Planetary	5,000km to 50,000km	Indirect fire, starship, or strategic scale only			
Far Orbit	50,000km to 0.5Mkm	Indirect fire, starship, or strategic scale only			
Extreme Orbit	0.5Mkm to 5Mkm	Starship or strategic scale only			
Interplanetary	5Mkm to 1AU	Starship or strategic scale only			
System	1AU to 1kAU	Starship or strategic scale only			
Substellar	1kAU to 100kAU	Starship or strategic scale only			
Stellar	100kAU to 1pc	Starship or strategic scale only			
Interstellar	1pc to 2pc	Starship or strategic scale only			

Conversion Factors

1,000m	1km
1,000,000km	1Mkm
150Mkm	1AU
1kAU	1,000AU
200kAU	1 parsec (pc)
1 parsec	3 26 light years
1 light year	61,350AU

Note: 0 means unit is in the same square (Mutual is also automatically a range of 0).

Mutual: Any enemy units in the same square are at this range by mutual agreement of both sides. Optionally, one side may interrupt the other and force the range to be this without the other side's consent

Indirect: Indirect fire only.

MOVEMENT POINTS TABLE

Speed	Indoor Scale: 6 sec Combat Rounds 1 5m Scale	Indoor Scale: 15m Scale	Outdoor Scale: 1 min Combat Rounds 150m Scale	Outdoor Scale: 10 min Combat Rounds 1500m Scale
1	10	1	1	1
2	20	2	2	2
3	30	3	3	3
4	40	4	4	4

Vehicles: Use the vehicle speed in kph directly as the number of movement points at 1 5 m scale. Divide the vehicle speed in kph by 10 to determine the number of movement points for all outdoor combat scales.

HAND-TO-HAND WEAPONS

Natural Weapons	Pen	Block	Damage
Claws	3	1	2
Teeth	4	0	2
Horns	5	1	2
Hooves	4	0	2
Stinger	5	0	3
Thrasher	8	1	2
Hands	1	1	1
Club	2	0	2

Small Blades	Pen	Block	Damage
Dagger	2	1	2
Blade	3	2	2

Large Blades	Pen	Block	Damage
Sword	4		3
Cutlass	3		3
Broadsword	7*		3

*Divide penetration by 2 if character's Strength is less than 10

Foil	Pen	Block	Damage
Foil	3	2	1

Axes	Pen	Block	Damage
Hand Axe	6	1	3
Battle Axe	8	1	3

Polearms	Pen	Block	Damage
Bayonet	3	1	3
Spear	3	1	2
Halberd	5	2	3
Pike	2	1	3
Staff/Cudgel	2	1	2

PERSONAL ARMOR TABLE

Type	Value
Jack	(1)
Mesh	2
Flak Jacket	3
Cloth	5
Ablat	1 [6]
Reflec	10
Vacc Suit-8	5
Vacc Suit-12	6
Vacc Suit-14	7
Body Pressure Suit	1
Hostile Environ Vacc Suit-8	6
Hostile Environ Vacc Suit-9	7
Hostile Environ Vacc Suit-12	8
Hostile Environ Vacc Suit-13	9
Hostile Environ Vacc Suit-14	10
Combat Environment Suit	6
Combat Armor-11	8
Combat Armor-12	10
Combat Armor-14	18
Battle Dress-13	10
Battle Dress-14	18

Notes: Values in parentheses () only apply in hand-to-hand combat; values in brackets [] only apply against laser fire

HIT LOCATION

Hit	Subtable 1	Subtable 2	Subtable 3
1 Superstructure	1 Power Plant	1 Device	1 Locomotion
2 Crew	2 Power Plant	2 Device	2 Locomotion
3 Crew	3 Power Plant	3 Device	3 Locomotion
4 Subtable 1	4 Power Plant	4 Device	4 Locomotion
5 Subtable 2	5 Power Plant	5 Weapon	5 Turret
6 Subtable 3	6 Computer	6 Weapon	6 Turret

Hit Effects

Superstructure: Apply the damage only to the superstructure

Crew: Apply the damage to the superstructure, and then (for vehicles) apply one-half of the damage points to randomly selected personnel inside

Power Plant: Apply the damage to the superstructure, and also apply the damage points to the power plant inside If the power plant is not fusion, also roll the tech level or less on 3D to avoid a catastrophic explosion (destroys the vehicle or robot). Once the damage has reached one-half the power plant's inoperative level, a power loss occurs: any energy weapons may no longer be fired, and the vehicle or robot's top speed drops by one-half.

Computer: Apply the damage to the superstructure Also, on a vehicle, the computer is destroyed; on a robot, its brain is destroyed If a robot's brain is hit, it ceases to function

Device: Apply damage to the superstructure, then destroy some important device or sensor

Weapon: Apply damage to the superstructure, then destroy some mounted weapon If the vehicle or robot mounts a nonenergy weapon, the individual should also roll the tech level or less on 3D to avoid a catastrophic magazine explosion (which destroys the vehicle or robot)

Locomotion: Apply damage to the superstructure, then apply the damage points to the locomotion as well. Once the damage has reached a level which is equal to a total of one-half of the locomotion inoperative level, the vehicle or robot's top speed drops by one-half

Turret: Apply damage to the superstructure, then destroy a weapon turret (or destroy an appendage on a robot)

Assessing Damage

This chapter describes how to assess damage a character has taken during combat. To assess the damage done to vehicles or robots, see the *Referee's Manual.*

CHARACTER DAMAGE

To assess the damage done to a character, count up the number of damage points he received during combat.

For each damage point received, roll 1D and apply the results as damage to the character's Strength, Dexterity, or Endurance. Apply each roll to *one* of the three characteristics.

If the character was not dead, do not allow all three characteristics to go to zero. If the character was not unconscious, do not allow any characteristics to go to zero.

The Wounds table shows the level of damage the character has received so that diagnosis and treatment may be done.

WOUNDS

Damage Level	*Observed Values of Strength, Dexterity, and Endurance*
Superficial	None reduced to zero (flesh wound).
Minor	1 reduced to zero (moderate wound).
Major	2 reduced to zero (serious wound).
Destroyed	All reduced to zero (death).

TREATMENT OF INJURED OR SICK CHARACTERS

Injured or sick characters can be diagnosed and treated using the following tasks:

Diagnosis: Determine the preferred method of treatment of the character.

To diagnose an injury:
Routine, Medical, Int, 2 min (uncertain).

Referee: This task assumes external injuries. If injuries are internal, double the time increment, and there may be a need for special equipment. If **Some Truth,** treatment may be made but may be less than optimum: secretly roll 2D on the Mishap table for additional damage. On a Major mishap, apply 1D points of additional damage.

Treatment: Treatment quality depends on diagnosis quality.

Treatment in the field (first aid) is one level more difficult than in hospital facilities. Treatment without a medical kit is one level more difficult. All difficulty increases are cumulative.

To treat an injury:
Difficult, Medical, Int, 10 min.

Referee: Difficulty depends on the damage sustained. Treating superficial damage requires a Simple task; treating minor damage is a Routine task; treating major damage is a Difficult task; treating destroyed damage is a Formidable task.

Major or destroyed injuries require a surgeon (Dexterity 8+) for treatment, or increase the task difficulty by one level.

The task duration determines the amount of time the physician must spend on initial treatment; of inactivity and healing are usually required for complete recovery (see below).

If a superficial or minor mishap occurs during treatment, simply apply additional damage to already existing wounds.

If a major or destroyed mishap occurs during treatment, full recovery of the faculties may not be achievable even with the best treatment and latest technology. Reroll 2D on the Mishap table to determine the amount of permanent damage taken by the character.

ARCHDUKE DULINOR

Emperor Strephon saw something in Dulinor that others somehow missed. His willingness to cut through to the heart of a problem was not necessarily a virtue to many of the established, conservative nobility. Many criticized Strephon when he elevated Dulinor to Archduke in 1104. In the years following, many felt that criticism justified.

Yet at the same time, Dulinor was responsible for great advances in his subjects' standard of living. He established policies for the dissemination of technology; he instituted a universal draft (increasing training and education); he was vocal in his criticism of conservative forces in the Imperium.

Dulinor made great strides during his 12 years as archduke, fighting the conservative elements of Imperial society and the vastness of the Imperium itself. His own public statements during the period reflected a growing bitterness and disaffection with the empire and with its emperor.

Nevertheless, Dulinor's four pistol shots in the Imperial Palace were totally unexpected. His mobilization of subsector and sector fleets to his cause revealed careful planning on his part. His advantage has given him a third of the empire, and he has plans to take the rest.

SLUG THROWERS

PERSONAL SLUG THROWERS

	Ammo Notes	Rds	Pen/ Atten	Dmg	Max Range	Autofire Targets	Danger Space	Signa-ture	Recoil	Difficulty As
Revolver (5mm)	—	6	0/–	3	Medium	—	—	Med	Med/R	Handgun
Revolver (7mm)	—	6	1/2	3	Long	—	—	Med	Med/R	Handgun
Revolver (9mm)	—	6	2/2	3	Long	—	—	Med	Med/R	Handgun
Magnum Revolver (9mm)	—	6	3/2	3	Long	—	—	Med	Med/R	Handgun
Snub Pistol (10mm)	HE	6	1/–	4	Medium	—	1.5	Med	Low/R	Handgun
	HEAP	6	6/–	4	Medium	—	1.5	Med	Low/R	Handgun
	tranq	6	1/–	1	Medium	—	1.5	Med	Low/R	Handgun
	gas	6	—	1	Medium	—	1.5	Med	Low/R	Handgun
Auto Snub Pistol (10mm)	HE	20	1/–	4	Medium	—	1.5	Med	Low/R	Handgun
	HEAP	10	6/–	4	Medium	—	1.5	Med	Low/R	Handgun
	tranq	10	1/–	1	Medium	—	1.5	Med	Low/R	Handgun
	gas	10	—	1	Medium	—	1.5	Med	Low/R	Handgun
Body Pistol	—	6	0/–	3	Medium	—	—	Med	Med/R	Handgun
Autopistol (7mm)	—	15	1/2	3	Medium	—	—	Med	Med/R	Handgun
Autopistol (9mm)	—	15	2/2	3	Long	—	—	Med	Med/R	Handgun
Gauss Pistol (4mm)	—	15	4/2	4	Long	—	—	Low	Low/R	Handgun
	tranq	15	2/–	1	Long	—	—	Low	Low/R	Handgun
Carbine (7mm)	—	10	2/2	3	V Long	—	—	Med	Med/R	Rifle
Rifle (7mm)	—	3/2	—	3	V Long	—	—	Med	Med/R	Rifle
Rifle (9mm)	—	3	5/2	3	V Long	—	—	Med	Med/R	Rifle
	tranq	3	1/–	1	V Long	—	—	Med	Med/R	Rifle
Hunting Rifle (13mm)	—	2	4/2	4	Long	—	—	Hi	Hi	Rifle
	tranq	2	3/–	2	Long	—	—	Hi	Hi	Rifle
Autorifle (7mm)	—	20	3/2	3	V Long	2	—	Med	Med/R	Rifle
Gauss Rifle (4mm)	—	40	7/4	3	Distant	3	—	Low	Low/R	Rifle
	tranq	40	2/–	1	Distant	3	—	Low	Low/R	Rifle
Shotgun	pellets	10	1/1	4	Medium	—	1.5	Hi	Med	Rifle
	tranq	10	1/–	1	Medium	—	1.5	Hi	Med	Rifle
	gas	10	—	1	Medium	3	—	Hi	Med	Rifle
Autoshotgun	pellets	20	1/1	4	Medium	—	1.5	Hi	Med	Rifle
	tranq	10	1/–	1	Medium	—	1.5	Hi	Med	Rifle
	gas	10	—	1	Medium	3	—	Hi	Med	Rifle
SMG (9mm)	—	30	3/1	3	Long	3	—	Med	Med/R	Handgun
Assault Rifle (5mm)	—	30	3/2	3	V Long	—	—	Med	Med	Rifle
Assault Rifle (7mm)	—	30	3/2	3	V Long	—	—	Med	Med	Rifle
Accelerator Rifle (6mm)	—	15	3/–	3	Medium	—	—	Low	Med/R	Rifle
Adv Combat Rifle (7mm)	—	20	3/3	3	V Long	—	—	Med	Med	Rifle**
	DS	20	4/3	3	V Long	—	1.5	Med	Med	Rifle**
	tranq	20	2/–	1	V Long	—	—	Med	Med	Rifle**
Adv Combat Rifle (9mm)	—	20	4/3	3	V Long	—	—	Med	Med	Rifle**
	DS	20	6/3	3	V Long	—	1.5	Med	Med	Rifle**
	HE	20	3/3	4	V Long	—	1.5	Med	Med	Rifle**
	tranq	20	3/–	1	V Long	—	—	Med	Med	Rifle**
Assault Rocket Launcher	HE	20	5/4	5	V Long	2	3	Hi	Low	Rifle**
	HEAP	20	10/4	4	V Long	2	1.5	Hi	Low	Rifle**
	KEAP	20	8/4	4	V Long	2	1.5	Hi	Low	Rifle**
Light Assault Gun	HE	5	3/–	4	V Long	—	1.5	Med	Hi	Rifle
	KEAP	5	8/3	4	V Long	—	1.5	Med	Hi	Rifle
	flech	5	2/3	2	Long	—	45	Med	Hi	Rifle
	tranq	5	2/–	1	Long	—	45	Med	Hi	Rifle

Ammo Notes shows types available HE· high explosive. HEAP. high explosive, armor piercing. KEAP· kinetic energy, armor piercing. DS. discarding sabot. Flech: exploding round with antipersonnel pellets **Autofire Targets** is the number of targets (adjacent to the primary) that may be hit with full auto fire. **Danger Space** (if any) is in meters. **Signature** is the light and noise produced by the weapon Low: hard to spot. Med. fairly easy to spot, especially in darkness Hi: always easy to spot. **Recoil** is the severity of the recoil: Low: can fire in a zero-G environment without causing disorientation. Med: causes disorientation in a zero-g environment. Hi: cannot move during turn if firing. /R indicates rapid fire is possible. ** Treat weapon as gyro-stabilized.

CREW-SERVED SLUG THROWERS

	Ammo Notes	Rds	Pen/ Atten	Dmg	Max Range	Autofire Targets	Danger Space	Signa-ture	Recoil	Difficulty As
Medium Machinegun-5	belt	100	3/3	3	V Long	3		Hi	Med	Rifle
Light Machinegun-6	belt	100	3/3	3	V Long	2		Hi	Med	Rifle
Heavy Machinegun-6	belt	100	6/3	3	V Long	2		Hi	Med	Rifle
5.5mm Gatling Gun-7	hopper	2500	2/3	3	Distant	3		Med/R*	Hi	Rifle
7mm Gatling Gun-7	hopper	2500	3/3	3	Distant	3		Med/R*	Hi	Rifle
5.5mm Gatling Gun-8	hopper	5000	2/3	3	Distant	3		Med/R*	Hi	Rifle
7mm Gatling Gun-8	hopper	5000	3/3	3	Distant	3		Med/R*	Hi	Rifle
VRF Gauss Gun	hopper	30000	21/4	10	V Dist	4		Low/R*	Med	Rifle

*Rapid fire uses ammo at a rate 3 times that of regular fire.

Heavy Weapons skill is used on the "to hit" task for these weapons.

Setup Increments: Light Machinegun, 2 sec. Medium Machinegun, 2 sec. Heavy Machinegun, 6 sec. Gatling Guns, 15 sec. VRF Gauss Gun, 1 min. Each of these weapons requires a two-man crew if towed or carried, one man crew if vehicle mounted.

PERSONAL ENERGY WEAPONS

	Ammo Notes	Rds	Pen/ Atten	Dmg	Max Range	Autofire Targets	Danger Space	Signa-ture	Recoil	Difficulty As
Laser Weapons										
Laser Pistol-9	—	50	4/2	3	V Long	—	—	Med	Low	Handgun
Laser Carbine-8	—	50	7/2	3	Distant	—	—	Med	Low	Rifle
Laser Rifle-9	—	100	9/2	3	Distant	—	—	Med	Low	Rifle
Laser Pistol-13	—	200	6/2	3	Distant	—	—	Low	Low	Handgun
Laser Carbine-13	—	200	12/2	3	Distant	—	—	Low	Low	Rifle
Laser Rifle-13	—	200	20/2	3	Distant	—	—	Low	Low	Rifle
Energy Weapons										
PGMP-12*	—	40	20/1	12	Distant	—	4.5	Hi	H	Rifle
PGMP-13*	—	0	25/1	13	Distant	—	4.5	Hi	Hi	Rifle
PGMP-14	—	0	25/1	14	Distant	—	4.5	Hi	Low	Rifle
FGMP-14*	—	0	34/2	14	Distant	—	4.5	Hi	Hi	Rifle
FGMP-15	—	0	34/2	15	Distant	—	4.5	Hi	Low	Rifle
FGMP-16	—	0	34/2	16	Distant	—	4.5	Hi	Low	Rifle
Plasma Rifle	—	0	25/1	13	Distant	—	4.5	Hi	Low	Rifle

*Battle Dress skill is also required before this weapon can be fired with skill.

Ammo Notes shows types available. HE: high explosive. HEAP: high explosive, armor piercing KEAP kinetic energy, armor piercing. DS: discarding sabot Flech. exploding round with antipersonnel pellets. **Autofire Targets** is the number of targets (adjacent to the primary) that may be hit with full auto fire. **Danger Space** (if any) is in meters. **Signature** is the light and noise produced by the weapon. Low: hard to spot. Med: fairly easy to spot, especially in darkness. Hi: always easy to spot **Recoil** is the severity of the recoil: Low: can fire in a zero-G environment without causing disorientation. Med: causes disorientation in a zero-g environment. Hi: cannot move during turn if firing. /R indicates rapid fire is possible.

GRENADES

HAND-THROWN GRENADES

	Ammo Notes	Rds	Pen/ Atten	Dmg	Max Range	Autofire Targets	Danger Space	Signature	Recoil	Difficulty As
Hand Grenade-5	HE	1	7	8	Medium	—	3	—	—	Thrown
Smoke Grenade	Smoke	1	0	0	Medium	—	1.5	—	—	Thrown
Incendiary Grenade	Fire	1	0	—	Medium	—	3	—	—	Thrown
Hand Grenade-6	HE	1	7	8	Medium	—	3	Gren	—	Thrown
	HEAP	1	12	6	Medium	—	1.5	Gren	—	Thrown
Chemical Smoke Grenade	Smoke	1	0	0	Medium	—	1.5	Gren	—	Thrown
Hand Grenade-7	HE	1	9	8	Medium	—	3	Gren	—	Thrown
	HEAP	1	18	6	Medium	—	1.5	Gren	—	Thrown
Hand Grenade-9	HE	1	11	8	Medium	—	3	Gren	—	Thrown
	HEAP	1	21	6	Medium	—	1.5	Gren	—	Thrown
Hand Grenade-11	HE	1	13	8	Medium	—	3	Gren	—	Thrown
	HEAP	1	22	6	Medium	—	1.5	Gren	—	Thrown
Hand Grenade-13	HE	1	15	8	Medium	—	3	Gren	—	Thrown
	HEAP	1	23	6	Medium	—	1.5	Gren	—	Thrown
Hand Grenade-16	HE	1	17	8	Medium	—	3	Gren	—	Thrown
	HEAP	1	25	6	Medium	—	1.5	Gren	—	Thrown

A grenade has a low signature when thrown; it has a high signature when it explodes.

GRENADE LAUNCHERS

	Ammo Notes	Rds	Pen/ Atten	Dmg	Max Range	Autofire Targets	Danger Space	Signature	Recoil	Difficulty As
7cm AT GL-6	HEAP	1	24	6	V Long	—	1.5	Med	Hi	Indirect
8cm AT GL-6	HEAP	1	28	6	V Long	—	1.5	Med	Hi	Indirect
9cm AT GL-6	HEAP	1	32	6	V Long	—	1.5	Med	Hi	Indirect
Disposable AT GL-6*	HEAP	1	31	6	V Long	—	1.5	Med	Hi	Indirect
4cm GL-7	HE	1	7	8	V Long	—	7.5	Med	Med	Indirect
	HEAP	1	15	6	V Long	—	1.5	Med	Med	Indirect
4cm Auto GL-7	HE	16	7	8	V Long	2	7.5	Med	Med	Indirect
	HEAP	16	15	6	V Long	2	1.5	Med	Med	Indirect
Disposable AT GL-7*	HEAP	1	36	6	V Long	—	1.5	Med	Hi	Indirect
4cm RAM GL-8	HE	3	24	8	V Long	—	15	Med	Med	Indirect
	HEAP	3	7	6	V Long	—	1.5	Med	Med	Indirect
4cm RAM Auto GL-8	HE	20	24	8	Distant	2	15	Med	Med	Indirect
	HEAP	20	7	6	Distant	2	1.5	Med	Med	Indirect
	flech	20	2	2	Distant	2	90	Med	Med	Indirect
4cm RAM GL-9	HE	3	28	8	Distant	—	15	Med	Med	Indirect
	HEAP	3	9	6	Distant	—	1.5	Med	Med	Indirect
	flech	3	2	2	Distant	—	90	Med	Med	Indirect
4cm RAM Auto GL-9	HE	20	28	8	Distant	2	15	Med	Med	Indirect
	HEAP	20	9	6	Distant	2	1.5	Med	Med	Indirect
	flech	20	2	2	Distant	2	90	Med	Med	Indirect
4cm RAM GL-10	HE	3	32	8	Distant	—	15	Med	Med	Indirect
	HEAP	3	9	6	Distant	—	1.5	Med	Med	Indirect
	flech	3	3	2	Distant	—	150	Med	Med	Indirect
4cm RAM Auto GL-10	HE	20	32	8	Distant	2	15	Med	Med	Indirect
	HEAP	20	9	6	Distant	2	1.5	Med	Med	Indirect
	flech	20	3	2	Distant	2	150	Med	Med	Indirect
4cm RAM GL-11	HE	3	36	8	Distant	—	30	Med	Med	Indirect
	HEAP	3	11	6	Distant	—	1.5	Med	Med	Indirect
	flech	3	3	2	Distant	—	150	Med	Med	Indirect
4cm RAM Auto GL-11	HE	20	36	8	Distant	2	30	Med	Med	Indirect
	HEAP	20	11	6	Distant	2	1.5	Med	Med	Indirect
	flech	20	3	2	Distant	2	150	Med	Med	Indirect

*A disposable launcher is thrown away after firing once. Heavy Weapons skill is used on the "to hit" task for these weapons. 7cm, 8cm, 9cm AT GL-6, and the disposable launchers each require a crew of 2; all others are individual weapons.

GRENADES AND RECOILLESS RIFLES

RIFLE GRENADES

	Ammo Notes	Rds	Pen/ Atten	Dmg	Max Range	Autofire Targets	Danger Space	Signature	Recoil	Difficulty As
4cm RG-6	HE	1	5	8	Long	—	1.5	Med	Med	Indirect
	HEAP	1	6	6	Long	—	1.5	Med	Med	Indirect
6cm RG-6	HE	1	9	8	Long	—	1.5	Med	Med	Indirect
	HEAP	1	18	6	Long	—	1.5	Med	Med	Indirect
4cm RG-7	HE	1	7	8	Long	—	1.5	Med	Med	Indirect
	HEAP	1	22	6	Long	—	1.5	Med	Med	Indirect
6cm RG-7	HE	1	11	8	Long	—	1.5	Med	Med	Indirect
	HEAP	1	27	6	V Long	—	1.5	Med	Med	Indirect
4cm RAM-8	HE	1	7	8	V Long	—	9	Med	Hi	Indirect
	HEAP	1	24	6	V Long	—	1.5	Med	Hi	Indirect
	flech	1	2	2	Long	—	90	Med	Hi	Indirect
4cm RAM-9	HE	1	9	8	V Long	—	9	Med	Hi	Indirect
	HEAP	1	28	6	V Long	—	1.5	Med	Hi	Indirect
	flech	1	2	2	Long	—	90	Med	Hi	Indirect
4cm RAM-10	HE	1	9	8	Distant	—	9	Med	Hi	Indirect
	HEAP	1	32	6	Distant	—	1.5	Med	Hi	Indirect
	flech	1	3	2	V Long	—	150	Med	Hi	Indirect
4cm RAM-11	HE	1	11	8	Distant	—	18	Med	Hi	Indirect
	HEAP	1	36	6	Distant	—	1.5	Med	Hi	Indirect
	flech	1	3	2	V Long	—	150	Med	Hi	Indirect
4cm RAM-13	HE	1	13	8	Distant	—	18	Med	Hi	Indirect
	HEAP	1	38	6	Distant	—	1.5	Med	Hi	Indirect
	flech	1	4	2	V Long	—	150	Med	Hi	Indirect

Heavy Weapons skill is used on the "to hit" task for these weapons.

Use: RG-6, RG-7, RAM-8, RAM-9 may be fired from a rifle, autorifle, or assault rifle. RAM-10, RAM-11, RAM-13 may also be fired from an ACR or Gauss rifle.

RECOILLESS RIFLES

	Ammo Notes	Rds	Pen/ Atten	Dmg	Max Range	Autofire Targets	Danger Space	Signature	Recoil	Difficulty As
6cm Recoilless Rifle-6	HE	1	9	10	V Long	—	15	Low	Low*	Rifle
	HEAP	1	20	8	V Long	—	1.5	Low	Low*	Rifle
8cm Recoilless Rifle-6	HE	1	13	10	V Long	—	15	Low	Low*	Rifle
	HEAP	1	30	8	V Long	—	1.5	Low	Low*	Rifle
10cm Recoilless Rifle-6	HE	1	16	10	Distant	—	30	Low	Low*	Rifle
	HEAP	1	40	8	Distant	—	1.5	Low	Low*	Rifle
6cm Recoilless Rifle-7	HE	1	9	10	V Long	—	15	Low	Low*	Rifle
	HEAP	1	20	8	V Long	—	1.5	Low	Low*	Rifle
	flech	1	2	3	V Long	—	45	Low	Low*	Rifle
8cm Recoilless Rifle-7	HE	1	13	10	V Long	—	30	Low	Low*	Rifle
	HEAP	1	30	8	V Long	—	1.5	Low	Low*	Rifle
	flech	1	2	3	V Long	—	150	Low	Low*	Rifle
10cm Recoilless Rifle-7	HE	1	16	10	Distant	—	30	Low	Low*	Rifle
	HEAP	1	40	8	Distant	—	1.5	Low	Low*	Rifle
	flech	1	2	3	Distant	—	180	Low	Low*	Rifle

Heavy Weapons skill is used on the "to hit" task for these weapons.

*A recoilless rifle is unwieldy enough that it cannot be fired while moving; however, it has no recoil when used in zero-G. Any recoilless rifle requires a crew of 2.

Ammo Notes shows types available. HE: high explosive. HEAP: high explosive, armor piercing. KEAP: kinetic energy, armor piercing. DS: discarding sabot. Flech· exploding round with antipersonnel pellets. **Autofire Targets** is the number of targets (adjacent to the primary) that may be hit with full auto fire **Danger Space** (if any) is in meters. **Signature** is the light and noise produced by the weapon. Low: hard to spot Med: fairly easy to spot, especially in darkness. Hi. always easy to spot. **Recoil** is the severity of the recoil: Low· can fire in a zero-g environment without causing disorientation. Med: causes disorientation in a zero-g environment. Hi· cannot move during turn if firing.

HEAVY ENERGY WEAPONS

	Ammo Notes	Rds	Pen/ Atten	Dmg	Max Range	Autofire Targets	Danger Space	Signature	Recoil	Difficulty As
Plasma A	0	0	44/5	20	V Dist	2	15	Hi	Hi	FC TL
Plasma A-Rapid Pulse-12	0	0	44/5	20	V Dist	2[a]	15	Hi/R*	Hi	FC TL
Plasma B	0	0	54/5	20	V Dist	2	30	Hi	Hi	FC TL
Plasma B-Rapid Pulse-13	0	0	54/5	20	V Dist	2[b]	30	Hi/R*	Hi	FC TL
Plasma C	0	0	64/5	20	Region	2	45	Hi	Hi	FC TL
Plasma C-Rapid Pulse-14	0	0	64/5	20	Region	2[c]	45	Hi/R*	Hi	FC TL
Fusion X	0	0	67/5	30	Region	2	45	Hi	Hi	FC TL
Fusion X-Rapid Pulse-14	0	0	67/5	30	Region	2[c]	45	Hi/R*	Hi	FC TL
Fusion Y	0	0	71/5	30	Region	2	45	Hi	Hi	FC TL
Fusion Y-Rapid Pulse-15	0	0	71/5	30	Region	2[d]	45	Hi/R*	Hi	FC TL
Fusion Z	0	0	79/5	30	Region	2	45	Hi	Hi	FC TL
Fusion Z-Rapid Pulse-16	0	0	79/5	30	Region	2[e]	45	Hi/R*	Hi	FC TL

*Ignore the ammo restrictions with rapid fire on this weapon.

Notes: a. autofire targets: 3 if TL 13; 4 if TL 14+. b. autofire targets: 3 if TL 14; 4 if TL 15+. c. autofire targets: 3 if TL 15; 4 if TL 16+. d. autofire targets: 3 if TL 16; 4 if TL 17+. e. autofire targets: 3 if TL 17; 4 if TL 18+.

FA Gunnery Skill (High Energy Weapons) is used in "to hit" tasks using these weapons.

STARSHIP WEAPONS

	Ammo Notes	Rds	Pen/ Atten	Dmg	Max Range	Autofire Targets	Danger Space	Signature	Recoil	Difficulty As
Beam Laser-8	0	0	70/5	500	Far Orbit	—	45	Hi	Low	FC TL
Beam Laser-13	0	0	75/5	600	Far Orbit	—	45	Low	Low	FC TL
Pulse Laser-8	0	0	75/5	750	Far Orbit	4	45	Hi	Low	FC TL
Pulse Laser-13	0	0	80/5	800	Far Orbit	4	45	Low	Low	FC TL
Sandcaster	0	0	20/2	10	V Long	—	15*	Low	Med	FC TL
Plasma-10	0	0	83/5	800	Planet	—	45	Hi	Hi	FC TL
Plasma-11	0	0	85/5	800	Planet	—	45	Hi	Hi	FC TL
Plasma-12	0	0	88/5	800	Planet	—	45	Hi	Hi	FC TL
Fusion-12	0	0	99/5	900	Planet	—	45	Hi	Hi	FC TL
Fusion-15	0	0	103/5	900	Planet	—	45	Hi	Hi	FC TL
Fusion-16	0	0	105/5	900	Planet	—	45	Hi	Hi	FC TL
Particle Accelerator	0	0	/6	2000	Planet	—	×15	Low	Low	FC TL
Meson Gun	0	0	—	—	Planet	—	×15	Low	Low	FC TL

Gunnery Skill (fixed, turret, or spinal, depending on the weapon mount) is used in "to hit" tasks using these weapons.

Any of these weapons (except the Sandcaster) can also be used as an indirect fire weapon when the ship is in orbit.

* A Sandcaster has a diverging danger space: the danger space shown is for short range. Triple it for each subsequent range band.

A particle accelerator's penetration equals its UCP (Universal Craft Profile) factor ×250 in a vacuum atmosphere; ×100 in trace atmosphere; ×0 in all others. Its danger space equals its USP factor multiplied times the danger space value shown.

A meson gun that hits kills all life in its danger space, destroys all vehicles, collapses all buildings, and any smooth ground surface becomes uneven ground.

Ammo Notes shows types available. HE: high explosive HEAP: high explosive, armor piercing KEAP· kinetic energy, armor piercing. DS: discarding sabot Flech exploding round with antipersonnel pellets **Autofire Targets** is the number of targets (adjacent to the primary) that may be hit with full auto fire **Danger Space** (if any) is in meters. **Signature** is the light and noise produced by the weapon. Low: hard to spot. Med· fairly easy to spot, especially in darkness. Hi: always easy to spot. **Recoil** is the severity of the recoil: Low: can fire in a zero-g environment without causing disorientation. Med: causes disorientation in a zero-g environment. Hi· cannot move during turn if firing. /R indicates rapid fire is possible.

ARCHAIC WEAPONS

	Ammo Notes	*Rds*	*Pen/ Atten*	*Dmg*	*Max Range*	*Autofire Targets*	*Danger Space*	*Signa-ture*	*Recoil*	*Difficulty As*
Bola	—	none	1	2	Medium	—	—	Low	Med	Thrown
Blowgun	tranq	1	2/1	1	Medium	—	—	Low	Low	Thrown
Boomerang	—	none	2	2	Long	—	—	Low	Med	Thrown
Sling	pellet	1	1/*	2	Medium	—	—	Low	Med	Thrown
*Sling pen doubles with each range band rather than drops by half.										
Bows										
Short Bow	bolt	1	1/1	1	Medium	—	—	Low	Low	Handgun
Long Bow	bolt	1	2/1	2	Long	—	—	Low	Low	Handgun
Crossbows										
Light Crossbow	bolt	1	2/1	2	Long	—	—	Low	Low	Handgun
Heavy Crossbow	bolt	1	3/1	3	Long	—	—	Low	Low	Handgun
Repeating Crossbow	bolt	10	2/1	2	Long	—	—	Low	Low	Handgun
Early Firearms										
Hand Cannon	ball	1	0/*	3	Medium	—	—	Hi	Med	Handgun
Flintlock Pistol	ball	1	0/[1]	3	Medium	—	—	Hi	Med	Handgun
Percussion Revolver	ball	6	0/[1]	3	Medium	—	—	Med	Med	Handgun
Flintlock Musket	ball	1	2/2	3	Long	—	—	Hi	Med	Rifle
Percussion Rifle	ball	1	3/2	3	V Long	—	—	Med	Med	Rifle

*Hand Cannon does no damage if fired at close range.

Ammo Notes shows types available. HE: high explosive HEAP: high explosive, armor piercing. KEAP: kinetic energy, armor piercing. DS: discarding sabot. Flech: exploding round with antipersonnel pellets. **Autofire Targets** is the number of targets (adjacent to the primary) that may be hit with full auto fire **Danger Space** (if any) is in meters. **Signature** is the light and noise produced by the weapon Low: hard to spot Med: fairly easy to spot, especially in darkness Hi: always easy to spot. **Recoil** is the severity of the recoil: Low: can fire in a zero-g environment without causing disorientation. Med: causes disorientation in a zero-g environment Hi: cannot move during turn if firing. /R indicates rapid fire is possible.

Treating Superficial Wounds: The character must be diagnosed and must receive at least a field treatment sometime within the next 2D hours. If the character has not received at least a field treatment in the required time, roll 2D on the Mishap table and apply the indicated amount of additional damage to the character (from infection, catastrophic trauma, or whatever).

Healing Rate: +1 per day for each characteristic that is injured.

Cost: Roll 3D for the cost in credits of miscellaneous medical items.

Treating Minor Wounds: The character with a minor wound must be diagnosed and must receive at least a field treatment sometime in the next 1D × 10 minutes (the character will remain unconscious for 3D minutes). If the wounded character does not receive treatment in the required time, roll 2D on the Mishap table and apply the indicated amount of additional damage to the wounded character (the additional damage results from blood loss, catastrophic trauma, or whatever). Reroll every hour until treatment is received, or until the character dies.

Minor surgery is required for all gunshot, fragment, blade, and puncture wounds, but is not needed for laser and energy weapon burns.

The injured or sick character must spend 2D days of total inactivity. The character may be moved by others but must remain in bed. During the injured or sick character's inactive period, all characteristics will be halfway between their wounded level and the original. At the end of the period, final healing will take place.

Healing Rate: +1 per day for 1 characteristic (player's choice).

Cost: Nonsurgical costs Cr10 × 2D; Surgical, Cr500 × 1D. If the period of inactivity is spent in a hospital, the cost is Cr500 per day for 1D days, Cr100 per day thereafter. Field care is Cr50 per day.

Treating Major Wounds: The character with a major wound must be diagnosed and must receive at least a field treatment sometime in the next 2D minutes (the character will remain unconscious for 1D hours). If successful treatment is not received in the required time, roll 3D on the Mishap table and apply the indicated amount of additional damage to the character (from blood loss, catastrophic trauma, or whatever). Reroll every hour until treatment is received, or until the character dies.

Surgery is required for all major wounds.

The injured or sick character must spend 1D × 10 days of total inactivity. The character may not be moved by others and must remain in bed. During the inactive period, all characteristics will be halfway between their wounded level and the original; at the end of the period, final healing will take place.

Healing Rate: +1 per day for 1 characteristic (player's choice).

Cost: Surgery, Cr1,000 × 1D. If inactivity is in a hospital, Cr500 per day for 1D days, Cr100 per day thereafter. Field care is Cr50 per day.

Treating Destroyed Wounds: Death of a character is not instantaneous. Diagnosis within 1D minutes may be used to keep a character barely alive—enough alive, at least, to receive later treatment in tech level 9+ hospital facilities or transport in low berth.

If the character is in low berth or if he is in hospital facilities of at least tech level 9, his characteristics remain at zero, and he is vulnerable to any influence that interferes with his life support (for example, a severe jolt, depletion of supplies, and so on). As long as the character has constant medical attention, and his life support is not threatened, he may be sustained in this condition for up to 2D months.

To recover, the character must be rediagnosed and receive treatment in hospital facilities of at least tech level 13 or more. If successful treatment is not received in the 2D months indicated above, the character dies.

A special DM of +1 per facility tech level over 13 is allowed. If the treatment is successful, the character is comatose with all 3 physical characteristics at 1.

After undergoing treatment, the character may resume limited, nonphysical activity as soon as all characteristics have reached 4 (or full level, if less).

Healing Rate: The character must decide which characteristic to restore. Roll 2D for 9+, with a DM of +1 per facility tech level over 12. If successful, add 1 to the characteristic for the month.

When any one characteristic reaches 4 (or its original level, if less), the character regains consciousness. When two of the three characteristics reach their original level, no more healing occurs. The character must remain inactive until healing ends. The character may be treated on a tech level 13+ world and then removed to a lower tech world for healing.

Cost: Suspended animation costs Cr1000 per week; treatment, Cr250,000; healing in a hospital (required), Cr150,000 per month.

Special Rules

This section covers additional rules to handle special case situations and offers more realistic (but sometimes less playable) options to certain basic rules. These rules are not required to play out a simple combat session; they are intended to assist the referee and players in handling special case situations which can occur. Pick and choose from these rules and guidelines as you need them.

MAPPING TERRAIN IN OUTDOOR SITUATIONS

Before beginning an outdoor combat situation, the referee can map the details of the local terrain on the playing surface. Inspiration for terrain can be obtained by consulting actual maps of suitable areas. Most libraries have a map department where maps can be studied for ideas.

Ground Contour: Hills, gullies, bluffs, and other ground contour features are important barriers to sight and movement. They may be represented as sloping ground or sheer cliffs.

Ground contour features can be presented as contour lines (as on a topographic map). The intervals between contours may be any height, but must be constant for a given map.

Terrain Characteristics: The ground surface of clear terrain, unless otherwise specified, is assumed to be relatively firm and level, allowing easy going for ground vehicles, robots, and characters.

Areas of the playing surface (or, in some cases, the entire playing surface) may be represented as one or more of the following types: uneven ground (broken), soft ground (mud), boulder field, sand, ice, or pools of water.

Uneven ground, soft ground, boulder field, sand, and ice can all be combined with a sloping ground contour to become "sloping uneven ground," or "sloping boulder field," and so on. Sheer cliff is a terrain type in its own right and is not combined with any other terrain type.

Vegetation (see below) can be combined with different ground types. A typical swamp consists of pools of water, broken by islands of soft ground with trees and undergrowth; desert oases are low areas of soft ground with sparse undergrowth and widely spaced trees surrounding a central pool of water.

Vegetation: There are four types of vegetation: dense trees, sparse trees, dense undergrowth, and sparse undergrowth. Some areas may have both trees and undergrowth and combine the effects of both types. Areas of vegetation should be clearly delineated with borders or colored areas and should be defined by type.

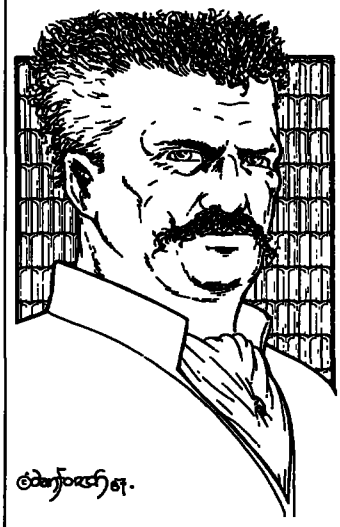
Even dense forests have small clearings and sparse areas scattered through them. Trees should be defined as a particular height, decided before the combat session. On Terra, trees range from less than 10 meters to more than 100 meters.

Rivers and Streams: Rivers are wide (50 to 500 meters) bodies of flowing water; streams are narrower (less than 50 meters). Mark any rivers or streams. Many rivers and streams have steep banks which should be marked. Determine where rivers can be crossed by men and ground vehicles; streams are assumed to always be crossable.

Roads: The layout of roads should take into account the nature of surrounding terrain. Roads through sloping areas will be built up in some places and cut into the ground in others to reduce the grade; roads going up long slopes may have switchbacks for the same reason. Roads travelling over low-lying areas near a river are often on built-up causeways.

Buildings: When important, record the height of each building (in number of stories) and the material from which it is constructed.

Other Structures: Bridges, walls, fences, fortifications, railroads and monorail lines, and other such structures may



DUKE NORRIS

The Duke of Regina was never raised to be duke; he was a second son. Norris joined naval intelligence and served creditably until his brother's premature death. With his father dying and his brother dead, he was thrust into a position of responsibility.

Tests of his strength came early. Border incidents forced him into negotiations with the hated psionic Zhodani; he learned to see them as people rather than stereotypes. He assembled a cosmopolitan staff and was evenhanded in his treatment of problems and citizens. He took the long view, cultivating his naval intelligence contacts. He predicted the Fifth Frontier War and appealed to the Emperor for reinforcements. When the tide of war turned against the empire, he seized control of the fleets, turning back the tide.

His heroism was not for public consumption, but the emperor noticed; that's usually enough. Patents of nobility named Norris Archduke of Deneb, the ranking noble on the frontier in 1114.

be represented. Their heights (if over a few meters) and their construction materials should be indicated.

Other Worlds: The nature of the terrain is limited only by one's imagination. A situation might take place in a forest of giant trees with trunks 100 meters in diameter or on a living island floating in the sea.

Perhaps the apparently solid ground is honeycombed with animal burrows and will collapse if driven across by heavy vehicles. Representation and game effects of these and other terrain features must be left to the players and referee.

THE IMPORTANCE OF BEING IN COMMUNICATION

In order to promote tactics, indirect fire corrections, or other information, units must be in communication. A unit must be in communication to be allowed to contribute to or draw from the tactical points pool. There are several means of communication possible.

Direct Verbal Communications: This includes hand signals and verbal commands. Any two units which can see each other and are within long range of each other are in communication.

Radio: Units equipped with radios are in communication with each other as long as both are within the stated range of each other's radios and are not being successfully jammed. Jamming is covered in the vehicle design section of the *Referee's Manual.*

Lasers: Units equipped with tight beam laser communicators are in communication if stationary and if an unobstructed line of sight exists between them. If one of the two communicators is linked to a battlefield computer, the units may remain in communication while moving, as long as an unobstructed line of sight exists.

If the line of sight is obstructed, communication is terminated until the line of sight is reestablished. If two communicators are not linked to a computer and one of them moves, one minute must be spent in the new position before communication is restored. In addition to obstacles listed in the section on visibility and spotting, a laser's line of sight is blocked by antilaser aerosols.

However, as tech level increases, lasers become able to see through smoke and aerosols. See the discussion on lasers in the vehicle design section of the *Referee's Manual.*

Masers: Maser communicators function in the same way as laser communicators, except that smoke and antilaser aerosols have no effect on the line of sight.

Wire Telephone: Characters equipped with telephones are in communication with each other if a wire link exists between them. Wire may only be placed before the start of a combat session, and, thus, only characters in prepared positions may have telephones, and the telephone must remain in place; if a character moves, his telephone does not move with him.

There are two possible types of connection: *direct* and *switchboard.*

A *direct connection* requires two telephones, one at each end, and neither telephone may be part of another connection; thus a character acting as a strategic commander with direct phone links to three other tactical commanders requires three separate phones.

A *switchboard* can link up to 20 phones to each other; a master switchboard can link up to 20 switchboards. Prior to tech code Avg Stellar (8), each switchboard requires an operator. Before the combat session, determine the locations of all telephone wires, telephones, and switchboards. If a wire is cut, communication is interrupted.

Wire may be cut by indirect fire or by enemy units who discover it. If indirect fire falls on the wire, roll once for each length of wire in the danger space. Any hit destroys the wire. For enemy units who move across the wire:

To discover the opposition's battlefield telephone wire when crossing it:

Routine, Recon, minus movement DM, absolute: 1 combat round (safe).

Referee: Subtract the unit's movement DM on this task. If the task succeeds, the wire is discovered and destroyed.

Meson Communicators: Meson communicators are available at very high tech levels. They cannot be jammed and do not require a line of sight between the sender and receiver. Two communicators may not communicate while either is moving unless one of them is linked to a battlefield computer. One minute is required to regain communication after moving if a computer is linked.

Battle Computer Links: For a communicator to be linked to a battle computer, they must be within short range of each other on the field of battle. A vehicle computer, robot, or hand computer with a battlefield coordinate program may act as a battle computer (see the *Referee's Manual*).

Beam communicators (lasers, masers, and meson communicators) may not communicate if either the sender or receiver is moving unless one of them is linked to a battle computer.

For example, suppose a commanding character and his three subordinates all have laser communicators, and the commander's laser communicator is linked to a battle computer. If all four are moving, the subordinates may all communicate with the commander (who is linked to a battle computer), but not with each other (they are not linked to a battle computer).

NPC MORALE

Optionally, the referee may assign a morale value to the NPC side, which he is operating. If the referee knows how he wants the NPCs to behave, and when he wants them to give up the fight, then by all means play the NPCs that way and ignore morale entirely. Assigning a morale value is for the times when the referee is unsure or has no hard-set notion of how the fight should go.

The basic morale values are: very low, low, average, and high. As a combat session is progressing, the referee may begin rolling a morale task at some point in the session for the NPCs:

To maintain a fighting stance in a combat session:

Routine, Leader, absolute: 1 combat round.

Referee: Typically begin rolling this task once every combat round for NPCs who have sustained at least 25 percent casualties. Increase the difficulty level by one for each additional 25 percent casualties taken by the NPC party. Thus at 50 percent casualties, this task becomes Difficult; at 75 percent

casualties the task becomes Formidable, and so on.

Also adjust the difficulty level based on the general morale level of the NPC party: *Very Low Morale:* Formidable. *Low Morale:* Difficult. *Average Morale:* Routine (this is what's shown in the task). High Morale: Simple.

If the NPC party fails this task, the referee makes no further rolls of this task and must begin a fighting withdrawal by the NPCs. If a mishap occurs, the NPC party is in total rout: The NPCs can only move; they cannot fight; and they must move, at the fastest speed they can move, away from the opposing party.

Use the highest leader skill level from among the NPC party for the DM on this task. Don't forget tactical points on this task; they may come in handy if you decide you'd prefer the NPCs to "hang in there" a little longer.

Optionally, the referee may want to assign different morale values to different parts of the NPC party. Depending upon how significant the segment with the lower moral is and when the NPC group begins to withdraw (or rout), the difficulty level on this task may increase for the remaining portion of the NPC party.

SURPRISE: POWERING UP VEHICLES

Since vehicles (and robots) are usually not parked with their power plants running, if an side is caught unprepared, powering up the vehicles can become an important consideration.

Units of the surprised side do not begin starting their vehicle power plants until surprise is lost. Once a vehicle crew reaches a parked vehicle, it must succeed at the following task:

To "power up" (start) a cold vehicle:
Routine, Vehicle, Dex, power plant time increment.
Referee: The time increment on this task varies, depending on the type of power plant:
Internal-combustion Engine: 5 sec
Improved Internal-combustion Engine: 2 sec
Gas Turbine: 10 sec
MHD Turbine: 15 sec
Fuel Cells: 5 sec
Fusion (vehicle): 1 min (cold)/6 sec (warm)
Fusion (small craft, spaceship, or starship): 5 min (cold)/ 30 sec (warm)

THE REBELLION

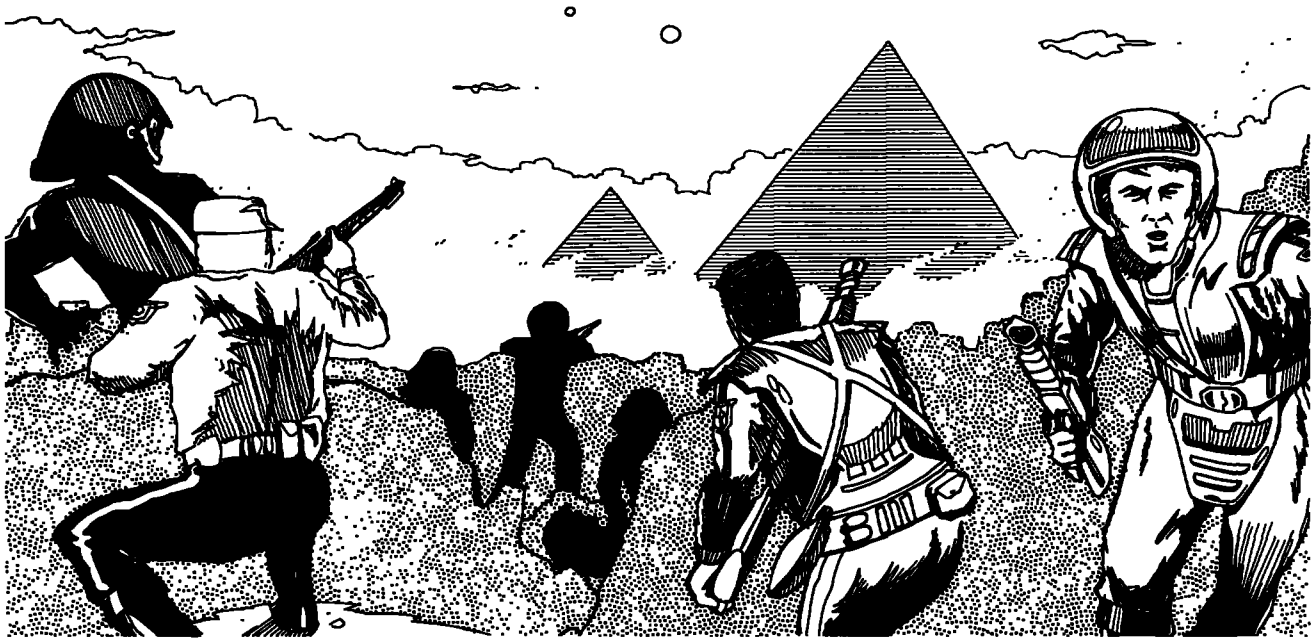
The Third Imperium has ruled for more than a thousand years. Now, it is being shattered by a violent struggle for supreme power. The death of the Emperor Strephon has left the throne empty, and many factions are fighting to occupy it.

The Emperor's assassin, the Archduke Dulinor of Ilelish, has fled to his home sector and is rallying fleets and militias to his support. Fully a third of the Imperial sectors now side with him.

Emperor Lucan has actually ascended the Iridium Throne, despite and over the objections of the Moot. Questions remain unanswered about the death of his elder brother, Varian, only hours after Strephon's assassination.

One faction of the Moot has proposed the Duchess Margaret as an alternative to Lucan. She is also of royal blood, although a distant relation to Strephon. She is now in hiding, fleeing an arrest order by Lucan.

Signs of weakness have emboldened the Imperium's enemies: The Corridor Fleet was transferred to the Core, and Vargr raiders moved in; the Spinward Marches territory is cut off from the Imperium. Imperial forces were withdrawn from the Trojan Reach to fight Vargr, and Aslan *Ihatei* are moving on worlds at the empire's frontier. Imperial fleets on the Solomani Rim retreated to a more defensible line: The Solomani have since gobbled up entire sectors. The Vland sector has seceded; so has Antares sector...and Daibei.



Note: Engineering skill can also be used as a DM when dealing with fusion power plants.

For flying vehicles or any vehicle with multiple power plants, the operator(s) should also run safety checks: they may do so by making a cautious attempt.

If the safety checks are not made, this task becomes uncertain. On a **Some Truth** result, implement a "warning light" event later (low fuel, one of the power plants malfunctions, or whatever). Require a fateful task roll to avoid the problem's becoming more serious.

Note that a vehicle equipped with an energy weapon may not fire it until the vehicle is powered up.

Because fusion-powered vehicles take so long to power up from a cold start, most fusion power plants have a special "low fuel consumption park" setting, allowing them to "warm start" with the second time increment shown. The fuel consumption rate when in this special park setting is only about 10 percent of the normal rate and for most game purposes can be ignored. If a fusion vehicle is being parked for less than a week, it can usually be warm started; otherwise, it must be cold started.

MOVEMENT: OUTDOOR TERRAIN EFFECTS

Terrain affects the movement ability of units depending on the terrain type and mobility of the unit, as noted below.

Ground Contour: Characters, robots, and animals may only move 50 percent of the normal rate across a sloping terrain, and they may not climb sheer slopes (cliffs) without special equipment (ropes, climbing gear, etc.)

Wheeled ground vehicles may not cross sloping terrain.

Trees: Trees may be either dense or sparse.

Characters, robots, and animals are not affected by trees. Characters with grav belts or flying robots may move through dense or sparse trees at 50 percent of the normal rate.

Ground and flying vehicles may only move at 50 percent of the normal rate through areas of sparse trees and may not move through areas of dense trees. Flying vehicles are unaffected when flying over trees.

Undergrowth: Undergrowth may be either dense or sparse.

Characters, robots, and animals are unaffected by sparse undergrowth and move through dense undergrowth at 50 percent of the normal rate.

Tracked ground vehicles are unaffected by undergrowth. Wheeled ground vehicles move through sparse undergrowth at 50 percent of the normal rate and through dense undergrowth at 25 percent of the normal rate.

Flying vehicles are unaffected by undergrowth.

Ground Characteristics: Normal movement distances assume firm, even ground. There are six other possible ground types: uneven ground (broken), soft ground (mud), boulder field, sand, and ice.

Personnel move through all special ground types except soft ground at 50 percent of the normal rate; they are unaffected by soft ground.

Wheeled ground vehicles move through sand and soft ground at 50 percent of the normal rate and move through uneven ground, mud, and ice at 25 percent of the normal rate. They may not move through boulder fields.

Tracked ground vehicles move through uneven ground, mud, and ice at 50 percent of the normal rate and may not move through boulder fields. They are unaffected by sand and soft ground.

Flying vehicles are unaffected by special ground types except that they move through boulder fields at 50 percent of the normal rate when flying nap-of-earth. They may fly over boulder fields at normal movement rates.

Water Barriers: Streams, rivers, lakes, and pools of water constitute water barriers. Characters, robots, and most ground vehicles may cross water barriers only at bridges and fords. Ground vehicles listed as amphibious may cross at their listed amphibious movement rate (see vehicle design in the *Referee's Manual*).

Roads: Roads have no effect on characters, animals, and flying vehicles. Ground vehicles move on roads at their listed road speeds.

MOVEMENT: WEAPON SETUP AND TAKE-DOWN

Some towed or carried weapons require time to ready them for firing. No movement or fire may be conducted while setting up these weapons. If a weapon requires setup, it is given a task time increment on the weapon tables.

If the weapon is an indirect fire weapon that has been vehicle mounted, it requires only one-half the normal time increment when setting up, and no take-down task roll is required at all. Vehicle-mounted direct fire weapons never require any setup time.

To set up or take down a weapon requiring preparation:
Routine, Weapon category, Cbt Engineering, time increment.

Referee: Certain weapons have a setup time increment listed for use with this task. Taking down the weapon requires the same task roll and time increment as does setting up.

MOVEMENT: SPECIAL SITUATIONS

The task system makes it quite easy to define on-the-fly tasks for special movement situations. Certain movement activities are common enough to benefit from additional explanation.

Opening a Sliding Door, Iris Valve, or Hatch: If a character or robot begins a turn adjacent to a sliding door, iris valve, or hatch, he may open the portal. The portal is not open for passage until the beginning of the next combat round.

During a single combat round when a sliding door, iris valve, hatch, or airlock is given conflicting commands at the same time (such as one character trying to open it while another is trying to close it), all such commands are ignored for that round, and the portal remains in the position it was in at the start of that round.

Closing a Sliding Door, Iris Valve, or Hatch: Portals are closed using the same procedures as for opening them.

Climb Ladder: A character climbs (up or down) one meter per complete combat round spent climbing a ladder.

Calling a Lift (Elevator): If the character or robot begins a combat round adjacent to the door of a lift (elevator), he may call it using the following task:

To call a lift (elevator):
Routine, Dex, 2 sec.

Referee: Ordinarily, calling a lift is a Simple task, but in the

heat of battle, it tends to be more difficult. The referee should roll this task for the character, with the time duration of the task representing the combat round in which the lift arrives at that level. Once the lift arrives, the door will open, and the characters may enter the lift during the next combat round. If no character enters the lift, after two combat rounds the doors close, and the lift goes to a different level.

Cycle Airlock: If a character is adjacent to an airlock entrance, he may initiate the cycling procedure. After two combat rounds (on the third round), the airlock opens and may be entered. Once all the characters are in the airlock, the door is considered to be closed at the start of the next action phase. The airlock then cycles for two complete combat rounds, and the other door opens at the start of the third combat round. While an airlock is cycling, it ignores all other commands. If an airlock door is open but no character enters the airlock, then the door closes at the start of a combat round following the initiation of the cycling procedure by a character on the other side of the airlock.

Jumping Down: A character, animal, or robot may jump down from a higher point, if positioned in such a location.

For example, a character on a balcony 3 meters up could jump over the balcony edge to the ground level. Jumping down is a task:

To safely jump down from a higher level:
Routine, Dex, 1 combat round (absolute, fateful).

Referee: If the jumping distance is 3 meters or less, use this task as is. If the jumping distance is 3 to 6 meters, this task becomes Difficult and hazardous, fateful. If the jumping distance is 6 to 9 meters, this task becomes Formidable and hazardous, fateful. If the jumping distance is over 9 meters, the character automatically receives a **Destroyed** × 2 mishap result (8 damage points); if landing in water (or the equivalent), the character automatically receives a **Destroyed** mishap result (4 damage points).

A robot can succeed at this task only if it has legs. Any jumping task involving a robot is always hazardous, fateful.

To convert these jump distances to the appropriate value for a gravity other than 1G, divide the distance by the square root of the local gravity in Gs. (Or see the World Gravity table in the *Referee's Manual*.)

When the character lands, he is stationary and is not evading in the square where he lands for the rest of his turn.

Swing Down: A character who begins adjacent to a change in levels may lower himself over the edge, swing down, and jump to the ground. Lowering over the edge reduces the jumping down distance by 2 meters; otherwise, treat swinging down the same as jumping down.

Jumping Up: A character can jump straight up a distance equal to the average (drop fractions) of his basic Strength and Dexterity × 0.1 meters. To convert to a gravity other than 1G, divide the distance by the square root of the local gravity in Gs.

Example: A character with a UPP of 846985 can jump straight up 1.9 meters on a 1G world (square root of 0.1 = 0.32; 0.8 V 0.32 = 1.9).

Jumping Across: A character can perform a running jump

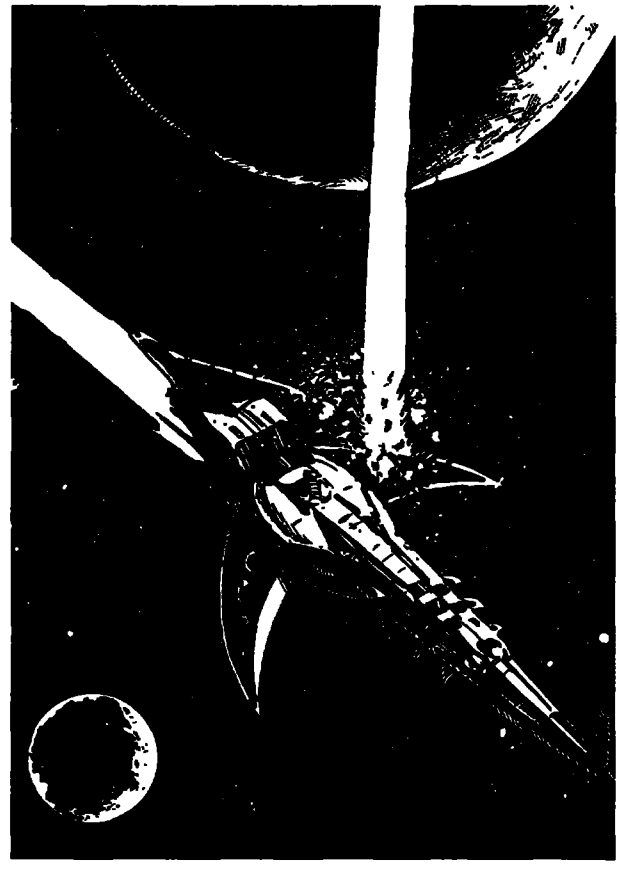
CORRIDOR

Corridor is the vital sector linking the Spinward Marches with the Imperial capital. The only viable trade and communications routes between the two regions must pass through a relatively narrow channel of star systems wedged between two great starless rifts.

Unfortunately for the Imperium, the territory is shared with several small belligerent territories; the Imperial Corridor Fleet has a full-time job patrolling the sector star lanes, maintaining a semblance of peace, and protecting Imperial worlds and borders.

In 1117, Emperor Varian was forced to divert the Corridor Fleet to the interior of the empire; its squadrons were needed in the continuing fight to suppress Archduke Dulinor and his rebellion. When the fleet left Corridor unprotected, its worlds were invaded by outsiders and its trade connections cut by raiders. Like dominos, the adjacent subsectors of Vland sector seceded from the Imperium to create the reformed Vilani Imperium. The loyal Spinward Marches found itself cut adrift in a sea of spacial troubles, unable to depend on Imperial reinforcements, but still bound by ties of fealty and honor to the crumbling Imperium.

Corridor itself is now a lawless province of many independent worlds; each must fend for itself against the invading outsiders, hoping that the next raid hits another system instead.



across a distance equal to the average (drop fractions) of his basic Strength and Dexterity × 0.5 meters. To convert to a gravity other than 1G, divide the distance by the square root of the local gravity in Gs.

Example: A character with a UPP of 846985 can jump across a distance of 3.0 meters on a 1G world. On a 0.1G world, he can jump across a distance of 9.4 meters (square root of 0.1 = 0.32; 3.0 V 0.32 = 9.4).

Throwing Objects For Height: When throwing objects up into the air in an attempt to get height, use the character's basic Strength value as the maximum distance in meters he can throw the object if it weighs 1 kg or less. Use a distance of Strength × 0.5 meters for objects weighing up to the character's Srength × 1 in kg. Use a distance of Strength × 0.1 meters for objects weighing up to the character's Strength × 2 (or Strength × 3 if in the military).

To convert to the appropriate value for a gravity other than 1G, divide the distance by the square root of the local gravity in Gs.

Example: A character with a UPP of 846985 can throw an object weighing 1 kg or less 8 meters straight up on a 1G world. On a 0.1G world, he throws the object up a distance of 25 meters (square root of 0.1 = 0.32; 8 V 0.32 = 25). He can throw objects weighing between 1 kg and 8 kg a distance of 4 meters (12.5 meters on a 0.1G world); he can throw objects weighing between 8 kg and 16 kg a distance of 0.8 meters (2.5 meters on a 0.1G world).

Throwing Objects For Distance: When throwing objects in an attempt to get distance rather than height, use the character's Strength value × 5 as the maximum distance in meters he can throw the object if it weighs 1 kg or less. Use a distance of Strength × 2 meters for objects weighing up to the character's Strength × 1 in kg. Use a distance of Strength × 1 meters for objects weighing up to the character's Strength × 2 (or Strength × 3 if in the military).

Example: A character with a UPP of 846985 can throw an object weighing 1 kg or less a distance of 40 meters on a 1G world. On a 0.1G world, he throws the object a distance of 125 meters (square root of 0.1 = 0.32; 40 V 0.32 = 125). He can throw objects weighing between 1 kg and 8 kg a distance of 16 meters (50 meters on a 0.1G world); he can throw objects weighing between 8 kg and 16 kg a distance of 8 meters (25 meters on a 0.1G world).

Traverse Close Machinery or Dense Underbrush: The referee may specify certain squares on the playing surface as containing close machinery (a concentration of circuitry, small machinery, pipes, and so on) or dense underbrush. A character must pay double the normal number of movement points to move through such squares.

Starship Fuel Tanks: No character may enter a full starship fuel tank containing liquid hydrogen. Immersion of a character in liquid hydrogen, even a character wearing a protective vacc suit or battle dress, results in the death of that character in the first turn of immersion. Of course, should the liquid hydrogen tank be empty, then characters may traverse it as normal.

Breaking Down Doors: A closed, locked, or inoperative sliding door may be broken down by either a character or a robot.

To break down a closed sliding door:
Routine, Strength, 6 sec.

Referee: Two characters may attempt to break down the door; if so, they can both apply their Strength as a DM to this task. Remember to roll 3D for the time duration of this task; it's going to take many combat rounds.

Mounting and Dismounting: When mounting or dismounting a vehicle, a unit must spend one entire combat round, and they begin adjacent to the vehicle the next combat round. While mounting or dismounting, the unit may not fire.

Dragging or Carrying: A character may drag or carry heavy objects (including other characters). To do so is a task:

To drag or carry a heavy object during combat:
Simple, Dex, 1 combat round (absolute).

Referee: A heavy object is any object whose mass exceeds the character's Strength × 2 (Strength × 3 if in the military). If the object's mass is less than the character's Strength × 5, then it is being carried; otherwise, it must be dragged. In all cases, a character cannot drag anything with a mass greater than his Strength × 15.

While carrying a heavy object, a character cannot move any faster than walking speed, and he must pay double the normal number of movement points per square.

While dragging a heavy object, a character cannot move any faster than walking speed, and he must pay four times (doubled twice) the normal number of movement points per square.

LINE OF SIGHT: INDOOR COVER

Indoors, three main types of cover are available: corners, consoles (or furniture), and machinery.

Corners: Doorways and bends in corridors constitute corners for the purpose of determining cover. It is, of course, possible to use such obstructions to interrupt the line of sight completely and thus be considered hidden.

A character behind such a corner may, however, lean out from behind it and fire. For targeting purposes the character is considered to be under cover, but visible, in the square into which he is leaning.

Consoles (or Furniture): Units may crouch behind consoles and thus be counted as hidden (unable to fire or be fired upon).

Alternatively, they may partially expose themselves and fire (and be fired at), in which case they are considered to be under cover, but visible, for any fire directed at them.

Machinery: A unit adjacent to machinery may fire through it and be fired upon through it.

The unit adjacent to the machinery square is considered to be under cover, but visible, unless the firing unit is also adjacent to the same machinery square in which case neither is considered to be under cover.

If neither the firing unit nor the target unit are adjacent to the machinery square through which a line of sight would pass, the machinery square becomes an obstruction, and the line of sight may not pass through it.

LINE OF SIGHT: ILLUMINATION AND DARKNESS

Combat generally takes place in an indoor or outdoor location

that is well lit. When combat takes place in darkness, vision is impaired.

Characters or robots may turn off inside lights using switches placed on walls or bulkheads near portals. The referee may specify that certain areas are in darkness due to power or system failure.

Combat outdoors at night also takes place in darkness.

Depending on the amount of background light available, the referee must decide whether the darkness is partial or total. Partial darkness is more common than total darkness. When an area is in darkness, use the visibility and spotting rules.

When in darkness, increase the difficulty of all "to hit" and spotting tasks by one level.

Darkness does not apply when the weapon, character, robot, or vehicle is equipped with vision enhancement devices.

LINE OF SIGHT: VISIBILITY AND SPOTTING

Basic combat provides some simple visibility and spotting rules in the form of the cover status: under cover, but visible, and hidden. These rules introduce a new type of cover status: under cover, not visible. This cover status means you can see the enemy, but he can't see you.

At the ground scale covered in most outdoor combat sessions, few playing areas cover an area more than several hundred meters, which is well within normal visibility ranges. As a result, the primary limitation on line of sight which provides for an under cover, not visible status is target concealment.

The indoor visibility is generally a problem only when darkness (either partial or total) exists.

The following discussion further defines how line of sight works.

Units: Characters, animals, robots, and ground vehicles do not block line of sight.

Hills: Hills block the line of sight.

Vegetation: Trees block the line of sight, with certain modifications. Units on the ground (or flying nap-of-earth) cannot see through dense trees, but can see through up to 50 meters of sparse trees (to medium range).

Observation from above is also affected by tree-covered areas.

In dense trees, the sky is considered entirely blocked by branches, leaves, or the equivalent; thus, units in dense trees may not see or be seen if the line of sight passes through this canopy.

In sparse tree areas this canopy is broken; a vehicle in the air may see though the canopy (and be seen) for a radius on the ground equal to 20 percent of the vehicle's altitude above the ground; for example, a vehicle at 250 meters altitude can see (and be seen by) a unit on the ground up to 50 meters away from the point directly below the vehicle.

Trees vary in height but average about 10 to 30 meters; the leaf canopy may begin at varying heights but should average half the height of the trees.

Undergrowth has no effect on the line of sight.

Buildings: Buildings block the line of sight. Units in buildings and who are not on the ground floor can see units not adjacent to lower obstacles. Buildings are four meters tall per story.

Smoke Screens: The line of sight terminates upon encountering a smoke screen. Smoke screens are 15 meters high.

Under Cover, Not Visible (Concealed): Terrain features which do not block the line of sight, however, may make a unit harder to see.

Characters, animals, or robots are concealed if they are in an area of trees or undergrowth. Vehicles are concealed in areas which contain both sparse trees and any kind of undergrowth (dense or sparse).

Units may also be deliberately camouflaged. If a unit is concealed at the beginning of the combat session, the referee may allow it to be counted as camouflaged. If so, it remains camouflaged until it moves for the first time.

In partial darkness, all units beyond medium range are considered concealed.

In total darkness, all units beyond short range are considered concealed.

Hidden Units: In some terrain, units may choose to be hidden. This choice is possible for characters, animals, or robots in buildings, gullies, field fortifications, directly behind walls, or just over the crest of a hill. Vehicles can choose to be hidden if directly behind hillcrests or stationary in buildings.

The decision to be hidden is made at the beginning of a unit's turn and applies until the next combat round. Units which are hiding may not be spotted; if already spotted, they remain spotted as long as they do not move. Hiding units may not spot, fire, or perform any other activities requiring observation of the area; they are "keeping their heads down."

Spotting Concealed Units: Units which have not been spotted by the enemy may be kept off the playing surface; their positions (and movements) should be recorded for later

THE SHADOW EMPERORS

When the Corridor Fleet was recalled to the Imperial capital to fight against Dulinor in the rebellion, the entire coreward flank of the Imperium was exposed to invasion and predation. Soon thereafter, the Imperial Lishun Fleet was also withdrawn. Vland sector, site of the ancient First Imperial capital, became a promontory into a sea of chaos, abandoned by an Emperor with greater troubles to deal with.

Vland declared its independence and established (reestablished) itself as an empire along the lines of its predecessor of 4,000 years ago: the new Ziru Sirka—the Grand Empire of Stars.

As with its predecessor, the government was dominated by three bureaus, virtually identical government departments, each charged with ruling a portion of the empire's territory. Each bureau was given to a Vilani megacorporation: Naasirka, Makhidkarun, and Sharurshid. Each megacorporation used its own assets to create a government for the newly granted territory.

Together, the three bureaus established a coordinating council, the Iaigsiirdi, to handle problems between the territories and bureaus. The Iaigsiirdi, meeting by computer link using veiled identifications, in turn elects its own leader, the Shadow Emperor who rules only by computer directive and answers only to the council.

verification if a dispute arises. This may be done on a small map of the area, with written descriptions, or by using small cards or markers on the playing surface in place of the unit. In the last case, also use several dummy markers to confuse the enemy.

LINE OF SIGHT: SMOKE

Line of sight terminates upon encountering a smoke screen.

Weapon Smoke Screens: Some weapons are listed as having a smoke round available. All such rounds have a specific screen length given in the Weapons table.

On the combat round of impact, one marker is placed on the playing surface in the square of impact. On the the next combat round, a second marker is placed in a square adjacent to and downwind of the first marker (use the scatter procedure if the wind direction is unknown).

Once the screen has reached its screen length, the round ceases to generate smoke, and the screen begins to dissipate. On the next combat round, remove one marker from the upwind end of the screen. On the next combat round remove another marker, and so on. Continue this procedure until the smoke screen is gone.

Fire: Brush fires and structural fires both produce smoke. In both cases the length of the smoke screen is 50 meters.

As with a smoke round, one smoke marker is added to the screen downwind of the fire each turn until the maximum length is reached. Unlike a smoke round, the screen is not removed after it reaches its maximum length but, rather, remains in place until the fire stops burning.

EXPLOSIVE DECOMPRESSION AND VACC SUITS

Interior areas of a starship and structures on vacuum or exotic atmosphere worlds are normally pressurized, and protective suits are not required.

In any situation where internal pressure is lost to a vacuum (excluding the normal use of airlocks), explosive decompression occurs. A character or animal exposed to a vacuum suffers one damage point per combat round until death occurs or the opening to vacuum is sealed to prevent further loss of pressure.

If a path of open hatches, iris valves, doors (open or closed), walls (doors and walls are not airtight), and/or breached bulkheads can be traced from a location in the ship to vacuum, then all locations along that path become vacuum, resulting in explosive decompression.

Iris valves and hatches may not be opened if there is a pressure differential (i.e., if there is pressure on one side of the portal and vacuum on the other side).

Robots and sealed vehicles are unaffected by explosive decompression.

Characters in vacc suits, battle dress, or combat armor are immune to explosive decompression. Putting on or taking off vacc suits, battle dress, or combat armor are tasks, as follows:

To put on or take off a vacc suit:
Simple, Vacc Suit, Dex, 12 sec.

To put on or take off battle dress or combat armor:
Simple, Vacc Suit or Battle Dress, Dex, 18 sec.

Any hits which penetrate the suit subject the character to the effects of explosive decompression, in addition to the damage from the hit itself.

Suit patches are available to seal holes in a suit from such a hit. Applying a patch is a task:

To apply a patch to breached vacc suits, battle dress, or combat armor:
Routine, Dex, 2 sec.
Referee: Since a combat round is 6 seconds, this task may take several rounds while a character locates a patch, prepares it, and applies it to the breach.

High Stellar vacc suits, battle dress, and combat armor are self-sealing if the penetration is low.

COMBAT IN A ZERO-G ENVIRONMENT

A starship is normally maintained at 1 G by the environmental artificial gravity system, but this system may fail under certain circumstances. When this situation arises, or when, for whatever reason, combat is conducted in open space, the following rules are used.

Handholds: Any square with an adjacent hull or wall has handholds for use in zero-G. Squares with no wall or hull surface adjacent do not. Machinery surfaces (or certain terrain types, as specified by the referee) may also be used as handholds.

Combat: When fighting in zero-G, a character has a chance of becoming disoriented. At the end of each combat round in which a (nonvehicle) unit fired a weapon or engaged in hand-to-hand combat (attacked or was attacked), the unit must also succeed at the following task:

To avoid becoming disoriented in zero-G during a combat attack:
Difficult, Zero-G Environ, Dex (fateful).
Referee: When firing a low-recoil weapon, reduce the difficulty of this task one level. If using a handhold (not possible when using a high-recoil weapon), decrease the difficulty one level. If using a handhold, the unit automatically forfeits his right to interrupt for the combat round. Units who become disoriented may not fire, make a hand-to-hand attack, or change their movement (if drifting, they continue drifting; if not drifting, they remain stationary) until they have reoriented themselves. To reorient, a unit must succeed at the same task as above, with the difficulty level set according to the level of mishap received, as follows: **Superficial Mishap:** Simple task; **Minor Mishap:** Routine task; **Major Mishap:** Difficult task.

Movement: In zero-G, a unit may propel himself along a wall using handholds at the same rate as walking. He may also propel himself across open areas by indicating a direction and launching himself in that direction.

The unit moves at either the walking or running rate (player's choice) but cannot stop, change movement speed, or change movement direction until encountering a wall or other obstruction. The unit then stops and must succeed at an avoid disorientation task before proceeding.

If a unit drifts into an obstruction at running speed and fails

the reorientation task, it receives one combat hit.

Firing and hand-to-hand combat are possible while a character is drifting.

COMBAT IN A HIGH-G ENVIRONMENT

A high-G environment is any environment in which the gravity equals or exceeds 2Gs. Combat in such a high gravity situation involves certain special considerations.

Movement: The number of movement points available to a unit for any given movement speed is divided by two. Walking is not permitted by animals or characters. Their minimum movement speed is 2; they must expend energy as if running (speed 2) in order to move.

Effects on Recoil: In a high-G environment, only low-recoil weapons may be fired while moving. A character must not move during his turn if he wants to fire medium- or high-recoil weapons. Firing a high-recoil weapon becomes hazardous; the character or robot uses High-G Environ skill as a special minus DM on the Mishap Table to help lessen a mishap in such cases.

Projectile Range and Penetration: All projectile (nonenergy) weapons have their maximum range reduced by two range bands (to a minimum of close range). All penetration range band factors are reduced by two. Thus if a projectile weapon ordinarily has a maximum range of very long and penetration of 3/3 in a high-G environment, its new maximum range is medium, and its new penetration rating is 3/1.

Hand-to-Hand Combat: For characters or robots conducting hand-to-hand combat in a high-G environment, all hand-to-hand combat tasks become hazardous (high risk of bodily injury from overexertion). High-G environ skill may be used as a special minus DM on the Mishap table to help lessen such a mishap.

THROWING BLADES AND POLEARMS

Blades and polearms may be thrown at a target using the following task:

To hit a target with a hand-thrown blade or polearm:

Difficulty, Avg of Str and Dex, Movement DM, 1 combat round (absolute, fateful).

Referee: Use the direct fire thrown difficulty profile when hand-throwing a blade or polearm at a target. The maximum range of a thrown blade is short, and the maximum range of a thrown polearm is medium. A thrown polearm has a penetration rating over its thrown range of normal pen/1 (divide pen by half at medium range).

If the weapon fails to hit the target, it scatters. Use the indirect fire scatter rules to determine scatter.

If the weapon hits an obstruction (such as a wall, closed portal, or a fence), it stops and scatters no further.

LONG-RANGE INDIRECT FIRE ATTACK

Much of the time, because of its great range, indirect fire does not have to be present on the playing surface to be able to perform its mission from several kilometers away (either in the rear of the combat location or from orbit). This section presents additional rules for handling such long-range indirect fire attacks.

Surface Placement: Before the session, the referee should draw small maps of the terrain beyond each end of the playing surface, showing roads and major obstacles. A convenient method is to draw the map on graph paper at a greatly expanded scale (depending on the distance accommodated).

The referee then informs each player how many, if any, indirect fire weapons he has and where they are located (or players may be allowed to determine some of this themselves). The weapon's position on the map will determine its range to targets on the field of battle. Weapons must be located in positions close enough for reasonable accuracy but far enough away to be safe from the enemy's shorter-ranged weapons.

Changing Location: A player may find it desirable to move his surface indirect fire weapons to a different location. Reasons for this include putting them in range of some newly located target or to move them out of a position already located by the enemy. The player may move a weapon to another location off the playing surface, or he may move it onto the field of battle. Moving units pay the same movement costs as they would moving on the battlefield; distance moved on the map depends on its scale. Units which setup or leave firing positions must roll a regular setup task.

Spotting: Units which are off the field of battle may not be spotted and may not be fired at by direct fire. They may be spotted only by counterbattery sensors and may only be fired at by indirect fire. See below.

Long-Range Fire: Once a long-range indirect fire weapon

THE SPINWARD MARCHES

The Spinward Marches are the Imperium's farthest frontier. When the Third Imperium first began its reconquest of space, much effort was spent in recontacting worlds originally part of the First Imperium or its successor, the Rule of Man. Imperial Scouts ranged outward, and in all directions they found settled worlds or established interstellar communities, except far to spinward. There, between 60 and 160, they explored Deneb and Spinward Marches sectors, finding rich empty worlds waiting to be colonized. The major colonization efforts of the Imperium (between 75 and 400) were concentrated in the only true frontier they could find: the Spinward Marches.

The Spinward Marches is a sector of 437 star systems divided along a coreward/rimward line by the Imperial border. The region is dominated by two major powers: the Imperial Spinward Marches sector and the frontier provinces of the Zhodani Consulate. In the independent territory between the two powers lie four small territories: the Federation of Arden, the Sword Worlds Confederation, the Border Worlds (a splinter state cut from the Sword Worlds during the Fifth Frontier War), and the Darrian Confederation. Each follows its own diplomatic line designed to maintain independence from both the Zhodani and the Imperium.

The Spinward Marches has been settled since the 400s and is still a frontier sector. High-tech worlds are scattered among empty, fallow worlds; there is potential for exploration, exploitation, and development for centuries to come.

(either on the surface or from an orbiting starship) receives a fire order, the weapon crew begins to carry it out; actual arrival of the fire on the field of battle is always delayed by at least one turn.

Requirements: To order indirect fire, the unit must be in communication with the firing unit and some unit (also in communication) must be able to see the intended target point. The individual who can see the target (whether or not he orders the fire) is called the observer.

Delay: During the turn the fire order is given, the indirect fire weapon does not fire, since it is receiving orders. If the range is long or less there is no delay; if the range is beyond long, there is one turn of delay for each range band beyond long. Thus, if a starship crew is ordered to fire from an orbital range of regional, the fire will begin arriving on the fifth turn following the turn of the order. The current turn is spent receiving the order, and four rounds are spent setting up the fire and giving it time to travel from the weapon to the target.

The Fire Order: The order calling for indirect fire must contain several components:

The unit firing. This may be one or more units. The various weapons of a unit may be ordered (in separate orders) to conduct different indirect fire attacks (as many as one per weapon). This capability is limited by the capacity of its fire control system. See *Vehicle Design* in the *Referee's Manual.*

Intended target point. This point may be marked on a map of the playing area or may be described with reference to an easily identified terrain feature.

Ammunition type. A single type of ammunition must be selected from among those the weapon is capable of firing. HE fire must also be declared as air burst or ground burst.

Duration. The order must list the number of turns the fire will last. Of course, fire may be canceled by an order before this time.

Turn of impact. The order must state the first turn in which the fire will arrive. This is an aid to the referee.

Conducting Fire: Resolve firing, scatter, and correcting onto the target as normal for indirect fire. Note that since scatter is a function of the distance from the firing weapon to the target location, long-range indirect fire will tend to scatter farther.

Orbiting Spaceships: Orbiting spaceships may be ordered to conduct indirect fire if they are overhead. A space vessel in a typical planetary range orbit completes one orbit once each planet UPP-size hour (for example, a space vessel orbiting a Large (size 8) world at planetary range takes 8 hours to make one complete orbit).

Two-thirds of the time, the orbiting vessel is not overhead, cannot be contacted by anything except a meson communicator, and cannot fire any indirect fire weapons except meson guns. To randomly determine if any given orbiting ship is overhead and can provide indirect fire, roll 1D for 5+.

Obviously, if indirect fire support from an orbiting vessel is considered essential to the attack, the timing of the attack is crucial.

TRACKING AMMUNITION USE

Ammunition can be largely ignored if desired, with units never needing to reload. Optionally, detailed ammunition usage can be tracked for each unit, with periodic reloading required.

Clips: The ammunition column of the weapons chart gives the number of rounds carried in a clip/belt/hopper, or whatever (hereafter referred to as simply a "clip").

The number of rounds a weapon uses when fired on full automatic can be estimated from the autofire targets the weapon may hit. If the weapon may hit 2 additional autofire targets, assume the weapon fires four rounds per autofire burst; if 3 additional targets, assume 10 rounds per autofire burst; if 4 additional targets, assume 20 rounds per burst. A weapon may always be fired on a semiautomatic setting, with only one round fired at a time.

For example, an SMG has a 30-round clip which enables it to fire 30 individual shots, 3 bursts of automatic fire (at 10 rounds per burst), or some combination thereof. A burst must contain assumed number of autofire rounds unless there are not enough rounds remaining in the clip. As long as more than one round is fired in this "final burst," the weapon qualifies for full automatic fire.

Keep an individual ammunition record for each unit. This record should include how many clips the unit is carrying, what type of ammunition is in each clip, and what type of clip is currently in the weapon. For each round fired, make a small mark by the unit's record, and when the total rounds fired equals the number of rounds in the clip, the weapon is empty and must be reloaded.

Characters and robots must observe weight restrictions and encumbrance when carrying extra ammunition.

Reloading: Most weapons take one complete combat round to reload.

The plasma gun PGMP-12 may not be reloaded in the context of a combat session. Its power pack has sufficient energy for 40 shots, after which it is exhausted. Very heavy weapons (the autocannon and VRF gauss gun) and empty clips may not be reloaded in the context of a combat session.

Ready Supply: The ammunition a weapon has immediately available to fire is termed its ready supply.

The ready supply of a character's personal weapon is whatever he is carrying. The ready supply of a crew-served weapon is whatever is carried by the crew. The ready supply of a towed crew-served weapon is whatever is carried in the towing vehicle. The ready supply of a vehicle-mounted weapon is whatever is carried on the vehicle. In addition, vehicle-mounted indirect fire weapons may have an ammunition carrier each. Finally, any rounds which have been unloaded onto the ground at a towed or carried weapon's position are part of its ready supply.

SPECIAL DAMAGE: COMBUSTION

Flammable buildings and vegetation may be set on fire by incendiary rounds, energy weapon or laser hits, or deliberate arson.

Buildings: Any building may be set on fire. Wood frame buildings are easiest to burn completely; only the interiors of other type of buildings will burn. Incendiary rounds which hit wood frame buildings ignite them automatically; other types of buildings are unaffected.

An energy weapon or laser will ignite a building if its penetration is at least 16 greater than the building's armor value.

Deliberate arson may be accomplished by characters

adjacent to a wooden building or inside any other building on the following task:

To ignite a wood frame building or the interior of any structure:
Routine, Edu, Dex, 6 sec.

Vegetation: The above task may also be used to ignite vegetation, but the referee must set the specific task difficulty for the vegetation to be set on fire; the difficulty depends on how dry the material is, its thickness, and so on.

Generally, undergrowth is easier to ignite than trees. In many cases vegetation will not ignite sufficiently to influence the combat session.

Spreading: A fire in a wood frame building initially occupies one square centered on the point of ignition (of course, there may be several such points); every combat round, one square adjacent to each square already on fire will ignite; if all adjacent squares on the same floor are already on fire, the fire spreads to a square one story up or down; if both these squares are already on fire, nothing further happens. Any other building which catches fire follows the same course. Fires in vegetation spread in a similar manner; the resulting duration of the "to ignite" task determines the number of combat rounds between turns of spreading.

Effects of Fire: Only units totally enclosed in armor with a value of 14 or more may enter or remain in an area which is on fire; others must leave in their next turn or be subject to one hit the first combat round, two hits the second combat round, and so on. Each square of fire does 10 points of damage to a wood frame building every combat round and 5 points to other types of buildings every combat round.

When the damage equals the "inoperative" level for the structure square, it collapses (see damage to buildings for how to handle a collapse); further fire damage has no effect on a nonwood frame building square. When the damage equals the destroyed level for a wood frame building square, it is reduced to nothing but smoldering ashes.

Fires also create a smoke screen. See the rules for smoke.

SPECIAL DAMAGE: DAMAGE TO STRUCTURES

Each square meter of a building has structural damage point value of 500/1000. Weapons that hit cause damage, depending on their type and penetration. If the building square reaches the inoperative damage level (the first number), the building square collapses and automatically causes 250 damage points to all adjacent building squares. The destroyed damage point value for a square indicates what it takes to totally pulverize and level the square.

All direct fire aimed at a building, or at a target inside the building, hits the building. If a building is in the danger space of indirect fire, each square in the danger space automatically suffers a hit. Units inside the building roll for hits separately.

When a square collapses, each unit inside is attacked (and automatically hit) with a penetration equal to half the building's armor value (drop fractions). Units which survive are buried.

To extricate a unit from a collapsed building square:
Difficult, Str, 6 sec.

Referee: Individuals (including the buried individual) may combine their strength DMs on this task, to a limit of plus or minus 8. For vehicles, this task is Routine.

Usually, buried units may not help each other.

After a building square has collapsed, some of the exterior wall is still standing, and the area is otherwise filled with rubble. The walls may provide concealment and cover, but there is no cover or concealment from overhead. Terrain effects are the same as for uneven ground.

Armor Values

Most structures have the following armor values when computing penetration:

Wooden Wall	4
Sandbag Wall	6
Brick or Stone Wall	8
Starship Interior Wall	8
Concrete Wall	10
Reinforced Concrete Wall	15
Heavy Steel Frame Wall	20
Log and Earthen Wall	24
Bunker Concrete Wall	28
Starship Interior Bulkhead	40
Starship Exterior Hull	60

SPECIAL DAMAGE: PENETRATION AND BREACHES

Any wall or bulkhead that is penetrated has its sealed environment integrity destroyed.

Any wall or bulkhead that is penetrated and receives 250 or more points of damage has been breached. A breach is a hole one meter in diameter and is treated as a normal portal for purposes of movement.

SPECIAL DAMAGE: USING EXPLOSIVES

Types of explosive charges are: conventional, shaped, and TDX. The Demolition Tables (in the *Referee's Manual*) lists kilograms of explosive required to penetrate any armor value.

A penetration charge is enough to penetrate the indicated armor value and break its sealed environment integrity. A breach penetrates the indicated armor value and leaves a hole one meter in diameter in the armor.

Units may move, see, and fire through a wall that has been breached. Moving through a breach is treated the same as moving through an open hatch. Of course, a breach also breaks the sealed environment integrity.

Placing A Charge: When placing explosive charges, the various types of explosives may be placed separately, each with its own fuse, or they may be joined as a single macro charge to be detonated by one fuse. However, each unique charge should be placed with a separate a task, as follows:

To place a single charge:
Routine, Demolitions, Dex, 3 min.

Referee: A conventional charge may be tamped, doubling the time to 6 min. If a conventional charge is tamped, it explodes with twice the normal damage points. Thus, a tamped "penetration charge" explodes with 30 damage points, and a tamped "breach charge" explodes with 500 damage points.

As an exception, a single nontamped charge of 10 kg or less (consisting of all one explosive type, either conventional, shaped, or TDX) may be placed using a time increment of 15 sec; this represents a prepared satchel charge.

If the charge is to be detonated by remote control (as opposed to a time-delay fuse), a specific unit, who will be able to see the charge location and is in communication with it, must be selected during the charge emplacement. The type of communication link to be used must also be specified when the charge is placed.

Any unit may defuse a charge once it is placed by rolling a successful detonation task (see below) not to detonate the charge, but to defuse it.

A charge may detonate prematurely if, after it has been placed, it receives 2 damage points of penetration 2 or greater.

To successfully detonate an emplaced charge:

Routine, demolitions, int (fateful, hazardous)

Referee: Charges may either be detonated by a time-delay fuse or by remote control.

If time-delay, the charge explodes after a set number of combat rounds at the beginning of the round.

If remote control, the charge is activated when desired during a combat round (by the unit which was preselected when the charge was placed). Interrupts of a detonation task are not allowed.

Marginal and exceptional success apply to this task. If a marginal success occurs on a breaching charge, and it fails to inflict 250 points of damage, then the breach hole is smaller than normal. It takes an entire combat round just to move one square through the abnormal breach. If a mishap occurs, the following describes what happens on each type of mishap:

Superficial: No explosion: fuse fails to detonate the charge.

Minor: No explosion. On a subsequent retry, any mishap becomes an early explosion (that is a **Destroyed** mishap).

Major: Bad charge. The effect of the explosion is far weaker than it should be: it makes lots of noise, but only causes 1D damage points.

Destroyed: Early explosion. The referee must determine the ramifications.

Effects: Demolition charges may be used to demolish structures, create breaches in walls or bulkheads, and attack units.

Demolishing Structures: The demolition tables list the penetration and damage point value of a demolition charge for each type of explosive. Demolition charges demolish buildings as explained in structure damage.

As a quick rule-of-thumb, an explosive charge with a penetration 40 is required to "bring down" a bridge. Every 15 points of damage will destroy 100 meters of a wood bridge, 30 points of damage will destroy 100 meters of a stone bridge, and 45 points of damage will destroy 100 meters of a steel girder or suspension bridge.

Breaches: The demolition tables list the number of kilograms of explosive required to breach any given armor value. A breach charge creates a hole in a wall or bulkhead one meter in diameter and is in communication with in diameter and does 250 points of damage. Marginal or exceptional success on the detonation task may cause the breaching charge to do less than or more than the basic 250 points of damage.

Units: Demolition charges may be used as mines, detonated either by time delay or by remote detonation. TDX charges are a special case and are explained below. A charge has a danger space equal to its armor penetration value in meters. Thus a charge with a penetration value of 10 has a danger space of 10 meters.

All units within the danger space use the explosive detonation "to hit" task covered under indirect fire.

Nuclear Charges: Most demolition work can be carried out quickly and effectively with tactical nuclear devices. Nuclear devices are available in the same sizes as tactical nuclear warheads and at the same costs. Each nuclear device is equivalent to its kiloton rating to the equivalent weight of conventional explosive. However, radiation effects exist; see nuclear rounds (in the *Referee's Manual*) for details.

TDX: TDX is a gravitationally polarized explosive. The explosive energy of the charge is not directed in all directions, as with a conventional explosive charge, but rather on a plane perpendicular to the direction of the local gravitational field. As such, TDX is particularly useful in creating and clearing abatis, demolishing structures, and creating breaches in normal structures.

TDX may not be used to crater roads, create ditches, or breach a horizontal surface. If used as a mine, TDX has no effect on flying vehicles (no matter how low their altitude), but is otherwise treated as the other explosive types.

SPECIAL DAMAGE: CHEMICAL ROUNDS

Some weapons can take various chemical rounds: tranq rounds or gas rounds. Robots are unaffected by chemical rounds.

Weapons which specifically list tranq or gas rounds use the characteristics as listed. Any weapon that lists a flechette round may optionally choose to fire an exploding tranq round with identical penetration and danger space characteristics. Weapons not listing flechette rounds but listing HE rounds may fire tranq rounds with a penetration of 2 and a danger space equal to that of the HE round. Also, all weapons which list HE rounds may fire gas rounds with the identical danger space size.

Tranq Rounds: These rounds place the chemical into the character or animal's bloodstream by direct contact. When tranq rounds with a danger space hit, they "burst" and spray a multitude of tranq pellets in all directions; if they penetrate, they imbed in the skin of the target character or animal. Such bursting tranq rounds are less precise than individual tranq rounds.

There are two types of tranq agents: *lethal* and *nonlethal.*

Lethal agents cause permanent damage, typically at a rate of 1 damage point per round until the character or animal is dead.

Nonlethal agents consist of two types: dose-controlled (available at tech code Avg Stellar+) and standard. With dose-controlled agents, the damage points are temporary and no longer accumulate once the unconsciousness level is reached; any further tranq damage beyond the unconscious level is ignored. With standard agents, the tranq damage is temporary, but it can go beyond the unconscious level. If the death level is

reached, the character or animal dies from an overdose of tranq.

Gas Rounds: Gas rounds create a danger space (with a diameter in meters stated on the Weapons table). Any person within the danger space is affected by the gas for as long as it remains. Gas rounds may consist of nonpersistent or persistent agents.

Nonpersistent Agents: Nonpersistent agents are effective only as long as the gas cloud itself is physically present. On the turn the gas rounds hit, the initial gas cloud appears. Outdoors, the cloud remains its original burst size and drifts downwind 100 meters per turn and each turn thereafter until it leaves the playing area; indoors, the drift is 1 square. Use the indirect fire scatter procedure to determine the direction of drift. Drift takes place at the beginning of each new combat round.

Persistent Agents: Persistent agents contaminate every area they come in contact with. Their effectiveness lasts for one day or until decontaminaed. On the turn the gas rounds hit, the initial gas cloud appears. On the next turn, an additional gas cloud of the same size is placed immediately downwind of the initial gas cloud. That area is contaminated for the remainder of the combat session.

Gas Round Effects: Vehicles which have either a sealed environment or an overpressure system are immune to the effects of a gas round attack. Characters who are protected by combat environment suits, vacc suits, combat armor, or battle dress are immune to the negative effects of a gas round attack.

All other characters can utilize protective masks (if they have access to the masks) to protect themselves from exposure to the gas from a gas round attack. Each individual who puts on its mask is protected from the gas and immune to chemical attack.

The specific types of damage which are caused by gas rounds are identical to the types of damage which result from tranq rounds (they are lethal and nonlethal; dose-controlled and standard).

COMBAT TOPICS COVERED IN THE REFEREE'S GUIDE

Vehicle design provides for the detailed design of certain weapons and combat-related devices; so by necessity, their design and use in combat are more effectively covered in the vehicle design section of the *Referee's Manual*. These combat-related topics include:

- Missiles
- Mass Driver (MD) Guns
- Chemical Propelled Round (CPR) Guns and Autocannons
- Sensor Detection and Jamming
- Vehicle Maneuvering
- Vehicle Obscuration Devices
- Starships
- Effects of Damage on Designed Weapons
- Effects of Damage on Vehicles and Starships

Certain combat related topics are also covered by the *Referee's Manual* in the world design section:

- Effects of Planetary Environment on Combat
- Effects of Weather on Combat
- Designing Planetary Defenses

THE SEEDS OF INDECISION

The Imperium was held together, before the Emperor's death, by a web of personal oaths and loyalties. Hereditary nobles held their offices at the pleasure of the Emperor; new appointees received their offices as rewards for support or good work. Potentially disloyal leaders were often granted nobility and co-opted into supporting the Imperium—into working within the system rather than rebelling. All nobles had a vested interest in supporting the Imperium. But which side do they choose when no faction is clearly right, or clearly winning? When primary loyalty cannot help, secondary loyalties must be followed, and the nobles of the Imperium have many, many secondary loyalties. As each follows his conscience, the Imperium is disintegrating.

Within the Imperium, the population also lacks clear choices. Do citizens follow their own loyalties or those of their world leaders? When interstellar stability is at stake, citizens must decide how important world peace is.

Psionics

The powers of the mind are incredible, and someday the study of these powers will enable every individual to use them as an active part of his life. Psionics, however, can be frightening to those who do not understand them, and the active or public use of this power is not well received by the general populace or the government. As a result, only a few individuals ever discover the psionic power that lies hidden in their minds.

THE PSIONIC INSTITUTE

In the face of popular and official disapproval, the secrets of psionic science are held by a dedicated group of talented individuals who operate the Psionic Institute.

Accurate information about psionics or quality training in psionics can be acquired only at branches of the Psionic Institute. This institute is wholly devoted to the study of mental powers.

Because of the prejudices which exist in Imperial human space, the Institute maintains a low profile, and it is quite difficult to locate its facilities. Any world with a population code of High Pop (9) or greater *may* have a branch established on it (throw 11+ for a branch to exist; DM +1 per level of population above 9).

Although a branch may exist on a world, it still must be located. Any character may indicate that he is searching for the local branch of the Institute:

To locate a branch of the Psionics Institute:
Difficult, Streetwise, Admin, 1 day (hazardous, uncertain).

Referee: If the search difficulty ultimately becomes Impossible (because of failed Determination rolls), the character becomes convinced that a branch does not exist on this world and gives up the search. This task is hazardous because of the anti-psionic bias that exists in Imperial human space. If a mishap occurs, the referee should implement some type of unpleasant encounter, set according to the level of mishap.

If the local branch is located, a character may inform his comrades of his success. There is some chance (throw 7+ to avoid) that the branch is some distance away and will require a long trip to reach it.

Because this task is uncertain, the Institute may not actually exist on this world. A Psionic Institute definitely exists on this world only if the referee's hidden roll succeeds.

Branches of the Institute perform two functions: they administer the examination for psionic potential, and they provide training in the use of psionic talents. Both services are provided for a fee.

PSIONIC STRENGTH

The Institute's comprehensive examination provides a measure of personal psionic strength. The process takes two weeks time and costs Cr5000. Some charity is available for truly indigent applicants:

To convince the Psionics Institute to grant a free examination:
Difficult, Int, Edu, 1 hour.

The Examination: Each character has a basic psionic potential defined by a two-dice throw.

Age lessens psionic potential unless training is undertaken. A DM of -1 is applied for each block of four years age above 18. These blocks correspond to the aging cycles. For example, a character who takes the examination at age 23 is in his second four-year block, and has a DM of -2. Throw 2D and apply the DM. The result is the character's psionic strength rating. The examination may only be taken once per character.

Psionic Strength Indicator: The personal psionic strength indicator may range from zero to 11. Ratings of 12 or more cannot be attained naturally once a character has passed beyond age 18; they may be achieved temporarily through the use of psi-drugs. The maximum possible rating is 15.

Psionic strength indicators show two things: the maximum level of activity which may be performed, and the number of strength points at the character's command for the performance of specific tasks.

Available Strength Points: Each type of activity requires the expenditure of psionic strength points for the activity and for the range at which the activity is performed. A character's psionic strength indicator is an index of the points which he or she may expend.

Expended points are regenerated over time through rest and recuperation. Psi-drugs may help to increase the number of points which are available to the character.

Aging and Deterioration: An untrained character is subject to a gradual relentless deterioration of his psionic strength indicator. When the aging point occurs (every four years) his indicator is reduced by 1. If the character has been taking anagathics, use the apparent age rather than the actual age to determine the reduction in rating for that particular character.

A trained individual is not subject to reductions through normal aging. If through aging, permanent injury, or any other cause a character (trained or untrained) has the sum of his first four characteristics (Strength, Dexterity, Endurance, and Intelligence) reduced to less than his psionic strength rating, his psionic strength is reduced to that sum.

Psi-drug abuse can also reduce psionic strength.

TRAINING

The Institute will train individuals in the use of their latent talents. Training requires four months and costs Cr100,000. Extremely talented individuals (Psi-9+) may apply for a scholarship if they cannot otherwise afford training. In such cases the Institute will take 95 percent of the character's assets and waive the remainder of the cost. (*Referee:* The Institute can, of course, read minds and will not favorably regard fraudulent or devious applications.)

The Six Possible Talents: Although there are a total of six possible areas of psionic activity, no one person will usually be capable of activity in all areas. In training, a character will learn those areas in which he has ability or potential and those areas in which he has no talent at all.

Roll two dice successively for each of the six talents listed in the Psionic Talents table. The indicated throw must be achieved in order to have ability in that area. A DM must be applied to each throw: the throws may be made in any order, but there is a DM of -1 on the first throw, -2 on the second throw, -3 on the third throw, and so on. A character who is extremely anxious to acquire Teleportation should throw for that talent first.

PSIONIC TALENTS

Telempathy:	5+
Clairvoyance:	6+
Telekinesis:	6+
Awareness:	7+
Teleportation:	9+
Special:	9+

Effects of Training: The training sessions merely acquaint the character with the possibilities of psionic talents and impart a rudimentary control over them. Experience and hard work will allow the character to learn how to use greater levels of power. The effects of time and experience are given in the descriptions of the specific talents.

Training also instructs the characters in the methods of concealing their powers and in the dangers of allowing common citizens to know of their power. When training is completed, the Institute is incapable of further assisting characters in their psionic development. From that point, all depends on experience and fortune.

It is possible for a character to have a very high psionic strength rating and, nonetheless, turn out very badly in training, discovering that he has few or no specific abilities. It is also possible to discover that a character has a rudimentary talent in a field but a less than adequate psionic strength to perform any activity.

Psionic training is not available in the services, nor is it available from any source except the Institute.

Character Format: The psionic strength indicator is listed as a skill, stated as Psi followed by the psionic strength rating. If an individual has not yet received psionic training, the Psi strength is enclosed in parentheses. Specific psionic talents are listed as skills, followed by the Psi level (the level of a psionic skill may be recorded as less than Psi if the individual is not yet fully trained in the skill).

Navy Captain

8769B8 Age 42 5 terms Cr60,000

Psi-10, Telepathy-10, Pilot-3, Admin-1, Communications-1, Brawling-1, Vacc Suit-1, Forward Obs-1, Handgun-1

Starport B, Medium Size, Thin, Dry World. Mod Pop, Low Law, Pre-Stellar

PSIONIC RANGE

Psionic activity cost increases with range. Psionic ranges are identical to ranges used in combat. Psionic range costs are one point per range band (Close is 1; Short is 2; Planetary is 10; Extreme Orbit is 12). Psionics has proven incapable of interplanetary ranges.

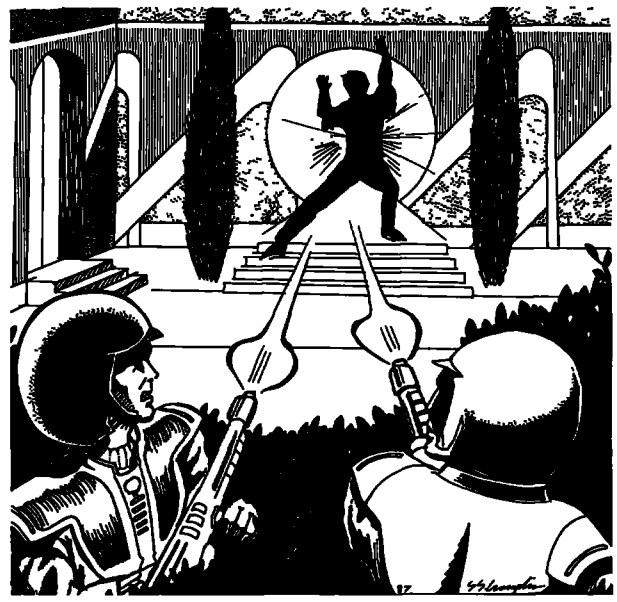
Range refers to simple straight-line distance. Psionic activity, at the ranges given, is effectively instantaneous and is not affected by intervening matter in most cases (for example, electromechanical psionic shields do interfere with psionics, but planetary masses or walls do not).

PSIONIC TASKS

Psionic tasks are an exception to the ±8 DM limit on tasks.

THE PSIONIC SUPPRESSIONS

Between 772 and 798, a series of financial, ethical, and moral scandals within the Psionic Institutes of the Imperium shifted public opinion against the Institutes. At the same time, it became clear that a good number of the Institutes were under the control of the Zhodani Consulate. In 800, the Imperium moved against the institutes, canceling their charters, jailing their leaders, and passing laws restricting the teaching or practice of psionics. These Psionic Suppressions had a profound influence on Imperial opinion. Over the course of 26 years, the Suppressions equated psionics with the Zhodani and established in the average Imperial citizen a distaste for both that continues to the present day.



There is no DM limit on psionic tasks.

Each psionic task also lists a cost in Psi strength points. The character must have these strength points available, or the task cannot be performed. Psi-drugs can be used to increase a character's strength rating. For example, Teleportation is conducted as follows:

To teleport one's self with clothes and equipment:
Formidable, Teleportation, Int.
Referee: The Psi strength cost is 0 + range.

A character with Teleportation-12 and Intelligence 7 will always succeed at this task unless a fumble is rolled. On the other hand, a character with a Teleportation-1 and Intelligence 10 can attempt this task but only succeeds on a 12. Each talent area provides suggestions for appropriate mishaps for that psionic talent.

TELEPATHY

Telepathy is the ability to contact other minds directly. In rudimentary forms, it allows the communication of feelings and emotion; in advanced forms it allows the transfer of information.

There are several types of telepathy tasks. Most telepathy tasks are uncertain. If a mishap occurs on a telepathy task, add to the Psi strength cost of the task as follows: **Superficial:** +1; **Minor:** +2; **Major:** +3; **Destroyed:** +4. In any event, the task failed to produce any results even though it still cost Psi strength points to perform.

Shield: All telepathically able characters learn how to create a mental shield which protects the mind against unwanted telepathic interference. Such a shield is automatically in force at all times and requires no strength point expenditure to maintain. Artificial psionic shields can be purchased; they are clumsy helmetlike devices which function in much the same manner.

Life Detection: The most elementary form of telepathy is the ability to detect the presence of other minds.

To perform life detection:
Routine, Telepathy, Int, 6 sec (uncertain).
Referee: The Psi strength cost is 1 + range. Life detection enables a character to sense the presence of other minds, the number of minds present, the general type of minds (animal, human, etc.), and their approximate location. Life detection is reasonably sophisticated and can "ignore" bacteria or unimportant animals in the area. It functions best in detecting intelligent minds. Shielded minds are undetectable. If an individual whom the telepath knows is "life detected," he or she will be recognized. On **Some Truth**, the character misidentifies some of the detected life forms.

Telempathy: The communication of emotions and basic feelings is accomplished by telempathy.

To perform telempathy:
Routine, Telepathy, Int, 6 sec (uncertain).
Referee: The Psi strength cost is 1 + range. This ability serves well in the handling of animals and beasts of burden, but may also be applied as a psychological weapon against humans. Sending emotions such as love, hate, fear, and so on may influence other beings. On **Some Truth**, the transmitted emotions do not have the desired effect.

Telempathy also allows the emotions and feelings of others to be read by a character. On **Some Truth**, the character misreads the other individual's emotions.

Read Surface Thoughts: The most commonly known feature of telepathy is the ability to read the thoughts of other individuals.

To read surface thoughts:
Difficult, Telepathy, Int, 6 sec (uncertain).
Referee: The Psi strength cost is 2 + range. Only active current thoughts are read, with the subject (if not a telepath) unaware of the activity. Individuals with telepathic ability cannot be read due to the presence of their natural shields. On **Some Truth**, the surface thoughts that are read contain little information of value.

Send Thoughts: Complementary to the ability to read surface thoughts is the ability to send thoughts to others.

To send thoughts:
Difficult, Telepathy, Int, 12 sec (uncertain).
Referee: The Psi strength cost is 2 + range. Any unshielded person can receive such thoughts. Telepathic individuals may close their shields against transmissions if they become bothersome or threatening. On **Some Truth**, the transmitted thought is misinterpreted.

Probe: The application of great psionic strength will enable a telepath to delve deep into the mind of a subject and then to read his innermost thoughts.

To perform a mind probe:
Difficult, Telepathy, Int, 60 sec (hazardous).
Referee: The Psi strength cost is 8 + range. An individual undergoing a mind probe is aware that his mind is being invaded, and he is very uneasy. Questioning can be used during a mind probe to force the subject to divulge specific information. The prober can easily determine deliberate untruths told (thought) by the subject. Probe cannot be used against a shielded mind.

If a mishap occurs on this task, apply it as damage to the Intelligence of the character undergoing the probe. If the character's Intelligence drops completely to zero, the character goes into a coma, and and any further mind probes are useless. If the mishap is Superficial, or Minor, the character will regain consciousness in 1D hours, none the worse for wear. If the mishap is Major, the character will only come out of the coma with medical help. If the mishap is Destroyed, the character dies.

Assault: Violence may be dealt by a telepath.

To perform a mind assault:
Formidable, Telepathy, Int (confrontation).
Referee: The Psi strength cost is 10 + range. When another telepath is assaulted, he may apply his Telepathy level as a

minus DM on this task. All assaulted individuals may apply Intelligence as a minus DM on this task. If the attack is successful, the result is automatic unconsciousness. Roll 3D on the Mishap table for the level of damage to the assaulted individual.

CLAIRVOYANCE

Clairvoyance is the general talent which allows a person to sense events at some location displaced from the viewer.

Clairvoyant abilities allow eavesdropping as well as spying and detection-free exploration of situations. While telepathic life detection will determine the presence of living minds in a closed room; for example, using Sense will determine if a room is occupied or empty. Clairvoyant activity generally cannot be sensed by others (including other psionic individuals).

There are levels of clairvoyant tasks. Most clairvoyant tasks are uncertain. If a mishap occurs on a clairvoyant task, add to the Psi strength cost of the task as explained in telepathy. Optionally, it may also be appropriate that individuals undergoing eavesdropping through clairvoyance sense they are being watched.

Direction: A character may specify the exact location at which he is applying his ability if it is out of physical sight by direction, provided he has some knowledge of the location by experience or description. This guidance assists him in performing his activity in the most efficient manner.

To perform a clairvoyant Sense:
Simple, Clairvoyance, Int.
Referee: The Psi strength cost is 0 + range.

Sense: The basic ability to sense things at some point in the distance.

To perform a clairvoyant Sense:
Routine, Clairvoyance, Int, 2 sec (uncertain).
Referee: The Psi strength cost is 1 + range. A character will become aware of the most rudimentary characteristics of a location when applying this ability. For example, the referee will give a basic description without detail: "a room containing four dogs" or "an open plain with a tree and no animals or men present." On **Some Truth**, the character is unable to perform a Direction task to get a fix on the location being Sensed.

Clairvoyance: This specific ability allows actual viewing (but not hearing) of a situation at some displaced point.

To perform clairvoyant viewing only:
Difficult, Clairvoyance, Int, 2 sec (uncertain).
Referee: The Psi strength cost is 2 + range. This task may be performed outright or be done to elaborate on some situation recently sensed. On **Some Truth**, the character is unable to perform a Direction task to get a fix on the location being Sensed.

Clairaudience: This ability is identical to clairvoyance with the exception that it allows hearing instead of seeing.

Combined Clairvoyance and Clairaudience: A character is capable of both seeing and hearing a specific situation by using this ability.

To perform clairvoyant viewing and hearing combined:
Formidable, Clairvoyance, Int, 2 sec (uncertain).
Referee: The Psi strength cost is 2 + range. On **Some Truth**, the character is unable to perform a Direction task to get a fix on the location being watched.

TELEKINESIS

Telekinesis allows objects to be manipulated without physically touching them. Telekinetic power is classified by the weight in grams that the person can manipulate.

Any manipulation is treated as if the person were physically handling the item, but physical danger, pain, or other stimuli are not present. Telekinesis includes a limited amount of sensory awareness sufficient to allow intelligent manipulation.

To perform telekinesis on an object massing less than 100 grams:
Simple, Telekinesis, Int, 6 sec.
Referee: The Psi cost for 1+ grams is 1 + range; for 10+ grams the cost is 2 + range. If a mishap occurs, the object being manipulated is somehow damaged.

To perform telekinesis on an object massing less than 10 kilograms:
Routine, Telekinesis, Int, 6 sec.
Referee: The Psi cost for 100+ grams is 3 + range; for 1+ kilograms the cost is 5 + range. If a mishap occurs, the object being manipulated is somehow damaged.

To perform telekinesis on an object massing less than 100 kilograms:
Difficult, Telekinesis, Int, 6 sec.
Referee: The Psi cost is 8 + range. If a mishap occurs, the object being manipulated is somehow damaged.

To perform telekinesis on an object massing less than 1000 kilograms:
Formidable, Telekinesis, Int, 6 sec (hazardous).
Referee: The Psi cost is 10 + range. If a mishap occurs, the object being manipulated is somehow damaged.

The Psi costs envision normal lifting or manipulation; throwing with a Strength generally equivalent to physical throwing may be performed at a double Psi point cost. Note that personal weight in most cases will not exceed 100 kilograms; a character who can perform a telekinetic task with this weight can levitate. Gravity differences do not alter the mass which can be manipulated.

Telekinetic power may not be applied at greater than very long range, and then only (as may be seen from the Range Bands table) at relatively great cost in Psi points.

AWARENESS

Awareness is the psionic talent which allows control of one's own body. Awareness covers a range of four possible abilities

described below. If a mishap occurs on an awareness task, add to the Psi cost of the task as explained in telepathy.

Awareness is not capable of affecting others and may not be used for healing or enhancing other characters.

Suspended Animation: Personal body activity may be suspended for varying periods of time.

To psionically enter suspended animation:
Routine, Awareness, Int.
Referee: The Psi cost is 3. A character with awareness may enter a suspended animation state (similar to cold sleep but without the intrinsic danger of death) by willing himself into it. Such a state continues for 7 days without need for food or water and with minimal air needs. Such a person could effectively travel in a cold sleep berth without actually undergoing cold sleep and its dangers. Suspended animation may be stopped at any time, provided external stimulus (such as a friend's voice or a mechanical alarm) is given to awaken the sleeper.

Psionically Enhanced Strength: Psi points may be converted to physical Strength points on a temporary basis.

To psionically enhance Strength:
Difficult, Awareness, Int.
Referee: The Psi cost is 1 per added point.

The character reduces his available Psi by a specific number of points and increases his Strength characteristic by that number. In no case may the number of Strength points gained exceed the character's current awareness level, and Strength may never be increased beyond 15.

Psionically enhanced Strength reaches its new level immediately, and remains at that peak for 60 minutes. After that time, it declines at the rate of 1 Strength point per minute until the normal Strength level is reached.

Psionically Enhanced Endurance: Psi points may be converted to Endurance on a temporary basis.

To psionically enhance Endurance:
Difficult, Awareness, Int.
Referee: The Psi cost is 1 for each Endurance point which is added.

The character reduces his available Psi by a specific number of points and increases his Endurance characteristic by that number. Under no circumstances may the number of Endurance points gained exceed the character's current awareness level, and Endurance may never be increased beyond 15.

Psionically enhanced Endurance reaches its new level immediately, and it remains at that peak level for a duration of 60 minutes. After that time, it declines at the rate of 1 Endurance point per minute until the normal Endurance level is reached.

Regeneration: Wounds and injuries may be healed rapidly.

To psionically heal wound points:
Formidable, Awareness, Int.
Referee: The Psi cost is 1 for each wound point that is psionically healed.

Wound points may be psionically healed by the application of this ability, exchanging one Psi point to regenerate one wound point. Healing occurs immediately (less than one minute).

Should one session of healing be insufficient, further healing and regeneration may be applied after expended Psi is recovered. Regeneration may also be applied to the growing of new limbs or organs, as well as to replacing of lost ones or to healing of unrecovered old wounds suffered prior to psionic training. Regeneration may not be used to counteract aging.

TELEPORTATION

Teleportation is a talent which allows instantaneous movement from one point to another point without regard to intervening matter. Psionic teleportation is limited to the movement of the teleported character's body and (for highly skilled teleports) his clothing and weapons.

Teleportation always involves the movement of one's body to another location. Independent items or other individuals may not be moved. A small animal could conceivably be carried as part of a personal load under the task to teleport one's self with equipment.

Teleportation involves certain requirements in order to be completely accurate, as well as to ensure obedience of the laws of physics.

Foreknowledge of Destination: A character must always have a mental image of his destination before teleporting. This image is acquired by personally visiting the location first (including just viewing it from a distance), having the mental image implanted in one's mind (by telepathy) by another person who has visited the destination, or by viewing the location through clairvoyance (a viewing task, not simply the easier task of sense plus a successful direction task).

Energy and Momentum: Teleportation involves serious restrictions on movement in order to assure the conservation of energy and momentum.

On planetary surfaces teleportation is restricted to jumps of less than regional distance.

Jumps at very distant range involve disorientation for a period lasting from 20 to 120 seconds. Jumps at distant range are hazardous; if a mishap occurs, the character will stumble or fall upon arrival. The character should demonstrate to the referee the specific effects to be expected and then how he will go about avoiding these effects before he attempts to make any jumps at ranges greater than distant.

This restriction results from the law of conservation of momentum: on a rotating planet two locations will have different rotational speeds and directions. A jump from a point on the earth's equator to its antipode would result in a total velocity difference between the character and his surroundings of over 3300 kph.

Changes in altitude (actually all movement to locations of differing gravitational potential) will result in potential energy changes manifesting themselves as changes in body temperature.

A jump of 1 km straight down will result in a temperature

increase of 2.5 degrees Celsius; this is sufficient to cause extreme fever, brain damage, and even death. A jump up will cool the body by the same amount with equally serious results.

To be safe, a jump may not involve an elevation change of more than 400 meters, and multiple jumps should not involve a cumulative elevation change of more than 600 meters in one hour. These problems may be avoided through the use of technological devices: energy compensators, heat suits, and other means. Characters may feel driven to invent such materials, commission their invention, or seek them out from those who already have them.

Teleportation calls for the range cost, as indicated on the table, to be paid in order to perform the activity, regardless of the level of the skill or its apparent difficulty.

Personal teleportation without external materials such as clothing or weapons is a level 5 skill.

To teleport one's self without clothes:
Routine, Teleportation, Int.
Referee: The Psi cost is 0+range. Jumps at very distant range involve disorientation for a period of 20 to 120 seconds. Jumps at distant range or beyond are hazardous; if a mishap occurs, the character will stumble or fall upon arrival.

To teleport one's self with clothes (no equipment):
Difficult, Teleportation, Int.
Referee: The Psi cost is 0+range. A weapon or other object of up to 1000 grams, if worn so as to be part of an individual's clothing (holstered or sheathed), may be carried. Jumps at very distant range involve disorientation for a period of 20 to 120 seconds. Jumps at distant range or beyond are hazardous; if a mishap occurs, the character will stumble or fall upon arrival.

To teleport one's self with clothes and equipment:
Formidable, Teleportation, Int.
Referee: The Psi cost is 0+range. The maximum load of weapons and other items the teleporting character may carry must not exceed the character's strength × 1 in kilograms. Jumps at very distant range involve disorientation for a period of 20 to 120 seconds. Jumps at distant range or beyond are hazardous; if a mishap occurs, the character will stumble or fall upon arrival.

SPECIAL

Although psionic activity generally lends itself to classification, some individuals defy this very classification. Individuals with special talent are capable of some activity which is not described here; this talent is dispensed by the referee after deliberation.

The special talent may include abilities not covered by this section or may be a random assignment of otherwise unreceived abilities. Some suggestions for special psionic abilities include: ability to spontaneously start fires (pyrotech), the ability to teleport others instead of one's self, the ability to perform an assault on inanimate objects, the ability to telepathically communicate with computers or robots, the ability to induce visions or hallucinations in others (either audio, visual, or combined), the ability to use awareness to affect others (to either increase or decrease characteristics), and the ability to use awareness to influence Dexterity or Intelligence.

Special talents should be made psychologically dependent on a focus in the form of some artifact or charm, which must remain in the possession of the character.

EXPERIENCE

When a character finishes his initial training, he is unable to function in his psionic skills up to the level of his psionic strength. In all talents, a character is initially at Psi skill level 1. As the character becomes more familiar with his talents (in game terms the mere passage of time is sufficient) his skill gradually increases, up to the level of his psionic strength.

To increase a psionic talent by one skill level:
Difficult, Int, End, 1 month (absolute).

THE PSIONIC INSTITUTES

Psionic Institutes are organizations devoted to research and training in the psionic sciences. Such organizations have long existed, but reproducible results made psionics a teachable, learnable science only as recently as -1000.

The term Psionic Institute is a generic one; each institution is independently organized and maintained. All such institutes are supported by that portion of the general population which has psionic talents; because the proportion is small, institutes are viable only on high population worlds.

The number of Psionics Institutes in the Imperium in 800 (when the Psionic Suppressions hit) was 65; all were suppressed. Today, every one of them has been secretly reestablished, and dozens of additional institutes have been formed since.

Referee: When an individual is rolling to increase teleportation, this task is Formidable. A character may roll this task as often as once a month for each psionic talent he possesses. This task may or may not apply to the special talent, at the referee's discretion.

RECOVERY

When psionic strength points are expended, the available points for a character are reduced. Such points are naturally recovered by a character through a process of rest and recuperation. Beginning three hours after the last psionic activity a character regains one psionic strength point per hour until the total equals the normal psionic strength rating. Such recovery is independent of physical activity. Psionic activity is defined as any psionic-related act, including the taking of psi-drugs for any purpose.

PSI-DRUGS

Chemical means are available to enhance a character's psionic strength points on a temporary basis. These drugs are as follows:

Booster: The basic psi-drug, booster is available in small one-dose pills. Booster increases an individual's available psionic strength points by +3 if taken when psionic strength is at full power, or by +2 if psionic strength is at a reduced level. Additional doses of booster have no effect if taken by a character within an hour, and the drug will never boost psionic strength points to a level greater than the normal level +3. The drug-induced additional psionic strength will wane and disappear at the end of one hour.

Double: A more potent form of the drug, also available in small one-dose pills. Otherwise identical to booster, double increases psionic power by +6 if taken when psionic strength is at full power, or by +4 if taken when psionic strength is at a reduced level.

Special: The rarest of psi-drugs, special is available only in liquid form and must be taken by injection. Special gradually increases psionic strength points to 15, at the rate of one point per hour. Psionic strength remains at this level (if unused) for four hours, and then wanes at the rate of one point per hour until psionic strength reaches zero. Normal recovery then occurs. Special has some dangers. Roll 2D on the Mishap table each time it is used, and if a Major mishap occurs, permanently reduce Psi strength by 1.

Availability: Because the general public attitude towards psionics is negative, psi-drugs are expensive and are extremely difficult to obtain. Psi-drugs must nearly always be located and bargained for by a character; they are not found in normal trade channels.

To locate a psi-drug dealer:
Difficult, Streetwise, Int, 4 hours (hazardous).

Referee: Most dealers will have only booster; throw 1D for the number of doses of booster that are available with a base price of Cr1,000. Double will be available on a throw of 10+; throw 1D-2 for the number of doses of double that are available with a base price of Cr4,000. Special will be available on a throw of 12+; throw 1D-4 for the number of doses available with a base price of Cr10,000. Prices may be higher but will generally not be lower.

If a mishap occurs, the character has talked to the wrong individual. The character is then subject to the following conditions: **Superficial Mishap:** Deportation; **Minor Mishap:** Imprisonment; **Major Mishap:** Lynching; **Destroyed Mishap:** A lobotomy.

Pitfalls: The abuse of psi-drugs can lead to the loss of psionic powers and to physical debilitation. If a character takes three doses in three days, there is a chance that a drug overdose will take place within six hours of the last dose; roll the following task:

To avoid a psi-drug overdose:
Difficult, Int, End (fateful, hazardous).

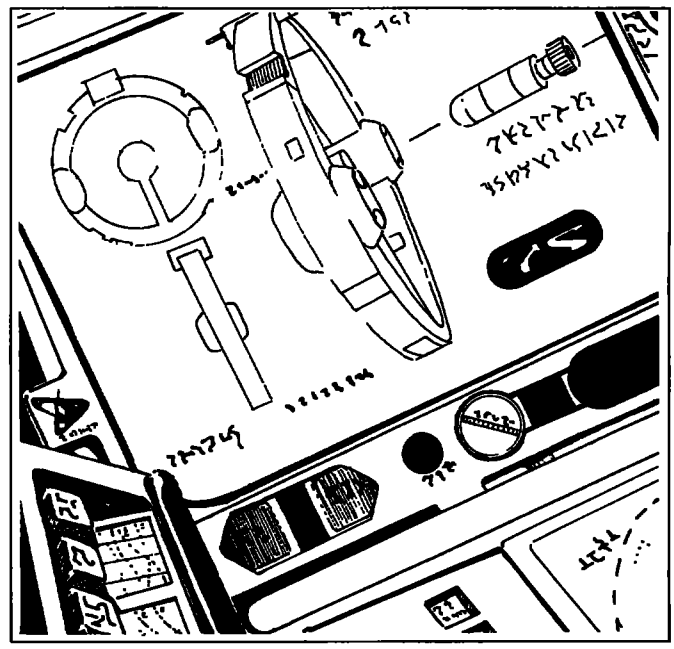
Referee: If a mishap occurs the character has overdosed and becomes seriously ill, lapsing into unconsciousness and taking hits equal to the mishap level. Upon recovery from the illness, throw 2D on the Mishap table again. On a Major mishap, the character's psionic strength rating is permanently reduced by 1.

PSIONICS IN IMPERIAL SOCIETY

The climate of public opinion about psionics is extremely negative. Individuals will find it unhealthy to admit possession of, or sympathy for, psionic powers. Persons with psionic ability will not admit their powers unless reassured that they are in no danger; this will usually involve self-revelation by a psionic talent.

Some hirelings or citizens may have psionic training or ability (throw 12 to have any type of ability in general; then determine the actual ability the individual has). There is an equal chance that the non-player character will be an informant or potential informant.

If so, roll 3D on the Mishap table, with the results being: **Superficial:** Deportation; **Minor:** Imprisonment; **Major:** Lynching; **Destroyed:** A lobotomy.



MEGATRAVELLER

Science-Fiction Adventure in the Shattered Imperium

The vast interstellar Imperium has ruled its 11,000 worlds for more than a thousand years, straining at its limits to guard its borders and keep the peace within them. Until now, the Imperial government has succeeded. But now the emperor has been assassinated, and rival forces are competing for the throne. Powerful forces are at work tearing the empire apart.

As former citizens themselves, the players must make their stand in the midst of this chaos, supporting one faction or another in the ongoing civil war. They can be wary merchants, squeezing out profits from those in need of goods; mercenary soldiers, willing to market their combat proficiency; or even valiant space-warriors, fighting for the side they feel is right. In any event, the adventuring environment is ripe for the bold traveller who seeks power or glory amid the ashes of the crumbling Imperium.

MegaTraveller is the first true updated edition of Traveller, incorporating only the most advanced rules and systems developed over the last decade, tailored to fit the chaotic environment of the shattered Imperium. MegaTraveller consists of three basic rules books.

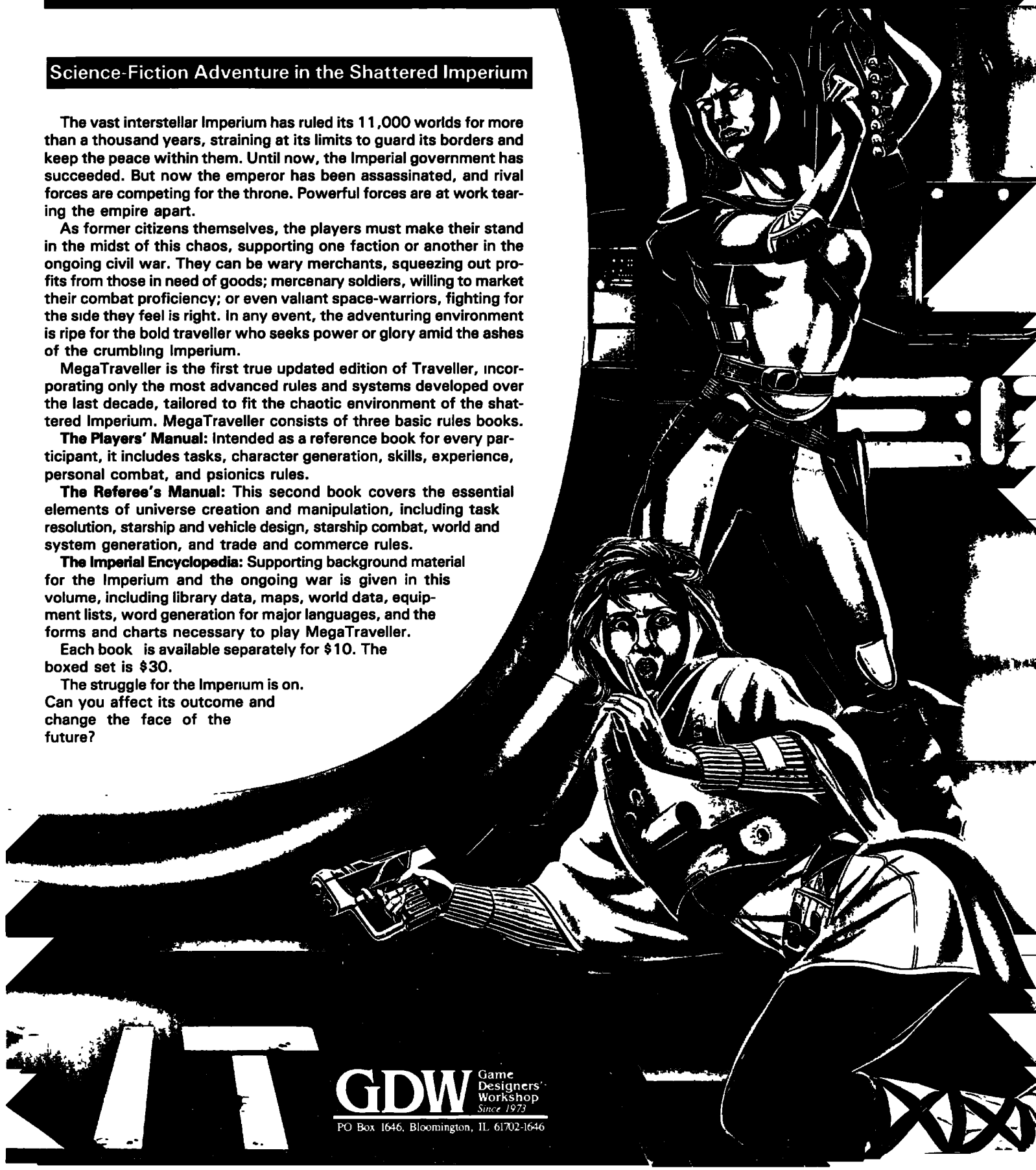
The Players' Manual: Intended as a reference book for every participant, it includes tasks, character generation, skills, experience, personal combat, and psionics rules.

The Referee's Manual: This second book covers the essential elements of universe creation and manipulation, including task resolution, starship and vehicle design, starship combat, world and system generation, and trade and commerce rules.

The Imperial Encyclopedia: Supporting background material for the Imperium and the ongoing war is given in this volume, including library data, maps, world data, equipment lists, word generation for major languages, and the forms and charts necessary to play MegaTraveller.

Each book is available separately for $10. The boxed set is $30.

The struggle for the Imperium is on. Can you affect its outcome and change the face of the future?



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CHARACTER SHEET

1 Date of Preparation

2 Character Name

3 UPP

Wounded:

	Str	Dex	End	Int	Edu	Soc
Original:						
Modified:						

4 Apparent Age

5 Actual Age ( )

6 Birthdate

7 Homeworld UPP -

8 Homeworld Summary

Starport	Size	Atmosphere	Hydrosphere	Population	Law Level	Tech Level
☐ A	☐ Asteroid	☐ Vacuum	☐ Desert World	☐ Low	☐ No Law	☐ Pre-Industrial
☐ B	☐ Small	☐ Thin	☐ Dry	☐ Moderate	☐ Low	☐ Industrial
☐ D/F	☐ Medium	☐ Standard	☐ Wet	☐ High	☐ Moderate	☐ Pre-Stellar
☐ D/G	☐ Large	☐ Dense	☐ Water World		☐ High	☐ Early Stellar
☐ E/H		☐ Exotic				☐ Avg Stellar
☐ X/Y						☐ High Stellar

9 Hits /

10 Armor Value ( ) [ ]

11 Armor Description

CAREER HISTORY

12 Career

13 Branch

14 Terms

15 Final Rank/Position

16 Retired? ☐ Yes ☐ No

17 Retirement Pay

18 Name and Location of Discharge World

19 TAS Member ☐ Yes ☐ No

20 Awards and Decorations

21 Special Assignments

SKILLS AND PSIONICS

22 Sum of Int + Edu

23 Date of Psionics Test

24 Psi Strength

25 Trained? ☐ Yes ☐ No

26 Date Training Completed

Skill	Level	ATs	Date	Skill	Level	ATs	Date

CASH AND POSSESSIONS

27 Cash on Person

28 Cash Balance

29 Monthly Upkeep

30 Weapons	Ammo	Rounds	Pen	(Block)	Damage	Max Range	Autofire	Danger Space	Signature	Recoil	Difficulty As
			/								
			/								
			/								

31 Other Possessions

The Third Imperium
Borders of the Third Imperium, Circa 1115
Each large rectangle is a *named* sector measuring 32 parsecs wide by 40 parsecs high.
Meshan
Mendan
Amdukan
The Julian Protectorate
Regina
The Spinward Marches
Deneb
Corridor
Vland
Vland
Lishun
Antares
Antares
The Empty Quarter
Deneb
The Third Imperium
Trojan Reach
Reft Sector
Gushemege
Dagudashaag
Core
Capital
Fornast
Ley Sector
Reference
Kaggushus
Riftspan Reaches
Verge
Dlan
Ilelish
Zarushagar
Massila
Delphi
Glimmerdrift Reaches
Liasdi
Libert
Former Solomani Border
Hlakhoi
Ealiyasiyw
Reaver's Deep
Daibei
Diaspora
Old Expanses
Hinter-Worlds
Occupied by the Imperium
Marlheim
Imperial Border
The Aslan Hierate
Staihaia'yo
Iwahfuah
Dark Nebula
Kusyu
Magyar
Solomani Rim
Dingir
Terra
Alpha Crucis
Spica
The Solomani Confederation
The Hive Federation
Home
Aktifao
Uistilao
Ustral Quadrant
Canopus
Aldebaran
Neworld
Langere

MEGATRAVELLER™

PLAYERS' MANUAL

In less than a minute, the fortunes of the Imperium have turned. An assassin has cut down the emperor and his heirs in one bold stroke and thrown the largest, most stable interstellar empire in history into chaos. There are many candidates for the empty throne, and without agreement on their qualifications, the worlds of the Imperium are divided in their allegiances. The assassin himself controls three rebellious sectors. The emperor's nephew has assumed the throne. Fleet battles rage throughout the empire. Alien forces, sensing weakness, have crossed the Imperium's borders. Sector after sector falls to the chaos of rebellion and invasion.

Traveller sets an ongoing drama of role-playing adventure in this shattered Imperium. Players travel between star systems, taking sides in the rebellion, fighting for their cause while fighting to stay alive. The dangers of space and the dangers of a shattered Imperium provide never-ending excitement in the far future.

The *Players' Manual*: This book is a basic compilation of **Traveller** rules and concepts for the individual player. It includes character generation, combat resolution, psionics, and tasks (the key to using all of **Traveller**'s rules systems).

Other **Traveller** Rules Books: This book is part of a three-book set which provides basic rules.

The *Referee's Manual* is a rules reference for the referee. It includes vehicle and starship design, starship combat, world and star system generation and description, animal encounters, trade and commerce, task resolution, and administration of adventures.

The companion *Imperial Encyclopedia* serves as a basic background reference for use by both the players and referees. It includes essays on the Imperium, descriptions of starships and vehicles, lists of equipment and prices, maps of territories, details of star systems, and other information valuable to players and referees alike.

Traveller is a role-playing game. **MegaTraveller** is the name of this **Traveller** rules system set against the background of star-spanning rebellion in the Imperium. Individual players assume the roles of adventurers in the universe of the far future. A referee (responsible for administering the game for the players) plots out the adventures that the players will face, constructs backgrounds and situations, and conducts the players through those adventures in exciting game sessions. Each session is a gripping adventure, where the players are able to make their own decisions about their own fate and fortune. And an infinite number of adventures are possible.

***MegaTraveller** Players' Manual:* Intended for all **Traveller** players. Intermediate complexity. Suitable for some solitaire play. Requires two or more six-sided dice (not included).

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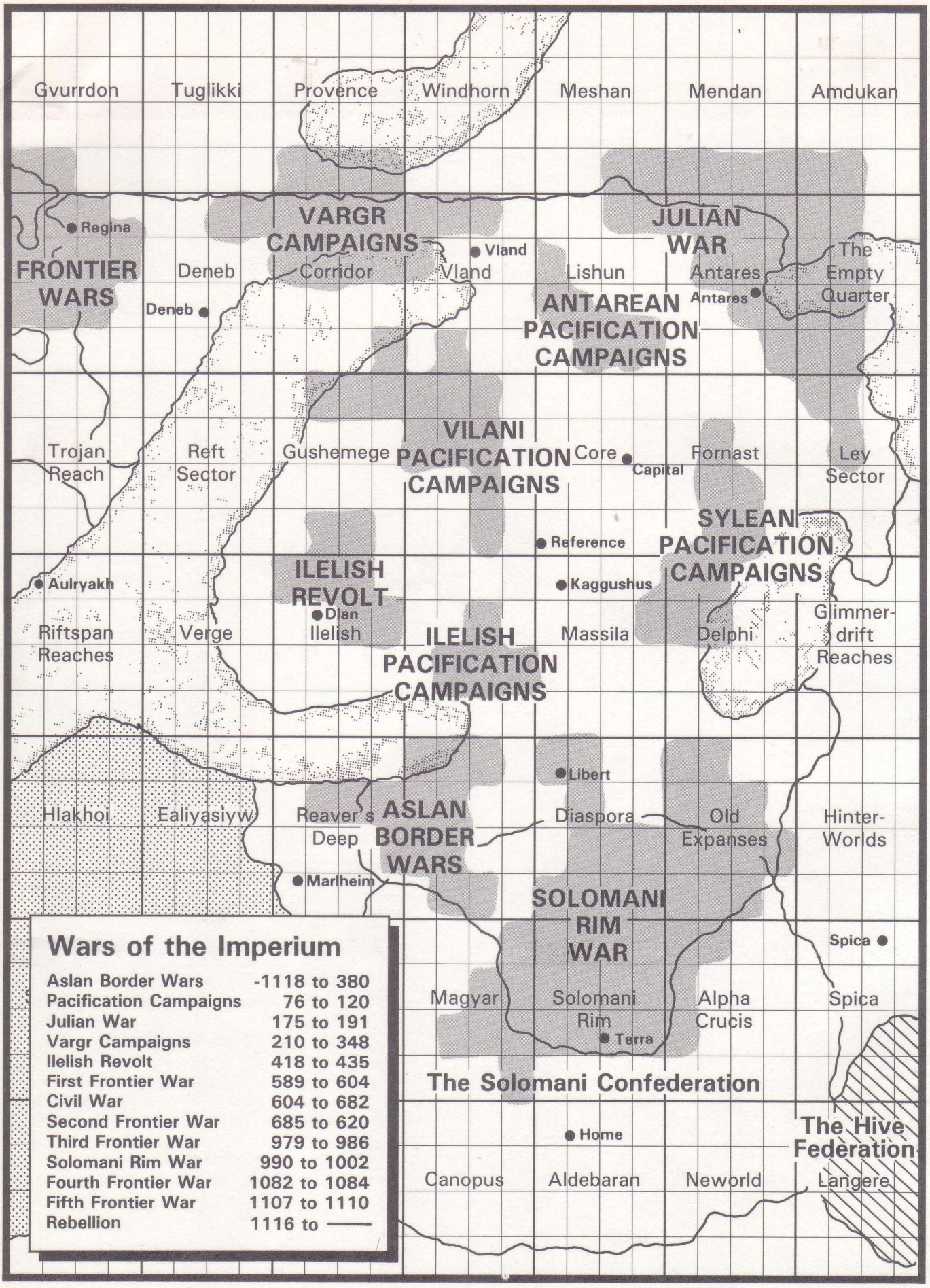
IMPERIAL ENCYCLOPEDIA

Marc W. Miller

Science-Fiction Adventure in the Shattered Imperium

GDW



Wars of the Imperium

Aslan Border Wars	-1118 to 380
Pacification Campaigns	76 to 120
Julian War	175 to 191
Vargr Campaigns	210 to 348
Ilelish Revolt	418 to 435
First Frontier War	589 to 604
Civil War	604 to 682
Second Frontier War	685 to 620
Third Frontier War	979 to 986
Solomani Rim War	990 to 1002
Fourth Frontier War	1082 to 1084
Fifth Frontier War	1107 to 1110
Rebellion	1116 to ——

Marc W. Miller

MEGATRAVELLER™

IMPERIAL ENCYCLOPEDIA

Science-Fiction Role-Playing
in the Shattered Imperium

Edited by Gary L. Thomas and Joe D. Fugate, Sr.

GAME DESIGNERS' WORKSHOP

MegaTraveller is the current edition of the rules for the **Traveller** science-fiction role-playing system. **MegaTraveller** incorporates rules changes, revisions and additions which have been made over the years in order to maintain it as a leading state-of-the-art rules system.

The following is only a partial list of all of those who have been instrumental in making **Traveller**, and now **MegaTraveller**, the role-playing game system it is today.

Paul Aoki, John M. Astell, L Ross Babcock, Bob Barger, Jolly R Blackburn, Anders Blixt, Robert Bodine, Steven Brinich, Timothy B Brown, Bobby Bryant, Dave Bryant, Roberto Camino, Rob Caswell, Winchell Chung, John W Colbert, Kevin Connolly, William Connors, James Cumber, Jim Cunningham, Liz Danforth, David R Deitrick, Ian Delaney, Marc Desmond, Keith Douglass, Steven P. Drevik, Ed Edwards, David Emigh, John M. Ford, Bryan Gibson, Gregg Giles, Trevor Graver, Jeffrey Groteboer, Leroy M. Guatney, John Harshman, Dan Hawthorne, David Heath, Jim Henley, Mike Jackson, Alexander Jamison, Stefan Jones, Chuck Kallenbach II, J. Andrew Keith, William H. Keith Jr, James B King, John Lewis, Bob Liebman, L Crede Lombard, John Marshal, Phil Masters, Jeffery May, Terrence R. McInnes, J P. McManus, Bob McWilliams, Mike Metlay, Roger Moore, John M. Morrison, Stan Mullins, Nancy Parker, Robert Parker, Daniel Perez, Herb Petro, Daniel Perez, Donald Rapp, Peter Rasmussen, Robert Reese, Matt Renner, Marcus Rowland, James Schwar, Dave Sering, Craig Sheeley, Steve Sowards, Jerry Stoddard, Chris Struble, Mark P. Suszko, J. D. Webster, Jordan Weisman, Michael Wharton, Loren K. Wiseman, Erik Wilson.

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The following **Traveller** rules and supplement sets are incorporated (in part) in the *Imperial Encyclopedia:* **Traveller,** *Mercenary, High Guard, Scouts, Merchant Prince, The Spinward Marches, Citizens of the Imperium, Azhanti High Lightning, Striker, Traders and Gunboats, Library Data (A-M), Library Data (N-Z).*

MegaTraveller
Imperial Encyclopedia
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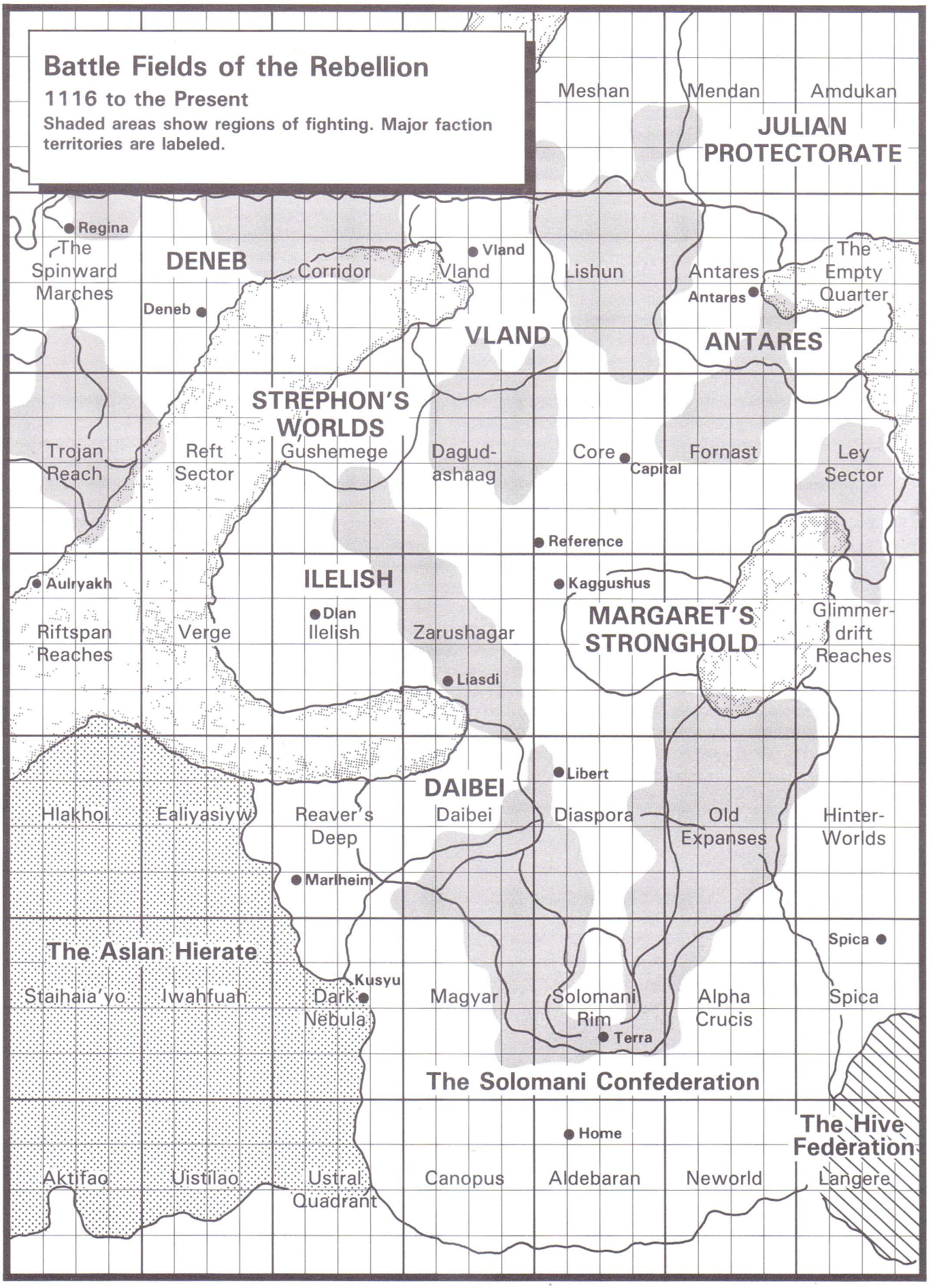

Battle Fields of the Rebellion
1116 to the Present
Shaded areas show regions of fighting. Major faction territories are labeled.
Meshan
Mendan
Amdukan
JULIAN PROTECTORATE
Regina
The Spinward Marches
DENEB
Corridor
Vland
Vland
Lishun
Antares
Antares
The Empty Quarter
Deneb
VLAND
ANTARES
STREPHON'S WORLDS
Trojan Reach
Reft Sector
Gushemege
Dagud-ashaag
Core
Capital
Fornast
Ley Sector
Reference
Aulryakh
ILELISH
Kaggushus
Dlan
Ilelish
MARGARET'S STRONGHOLD
Riftspan Reaches
Verge
Zarushagar
Glimmer-drift Reaches
Liasdi
Libert
DAIBEI
Hlakhoi
Ealiyasiyw
Reaver's Deep
Daibei
Diaspora
Old Expanses
Hinter-Worlds
Marlheim
Spica
The Aslan Hierate
Kusyu
Staihaia'yo
Iwahfuah
Dark Nebula
Magyar
Solomani Rim
Alpha Crucis
Spica
Terra
The Solomani Confederation
Home
The Hive Federation
Aktifao
Uistilao
Ustral Quadrant
Canopus
Aldebaran
Neworld
Langere

Dulinor I: Born in 1066 on Dlan/Ilelish, Archduke Dulinor Astrin Ilethian assumed the Iridium Throne of the Third Imperium in 1116.

Dulinor realized the Imperium would never regain its glory unless Strephon stepped down. In 1115, Dulinor asked Strephon to abdicate, but the emperor refused; the archduke realized that drastic measures were in order.

On 132-1116, Dulinor killed Strephon Alkhalikoi in personal combat, as required by custom, and ascended the throne as Dulinor I, Emperor of the Third Imperium.

The old regime has acted to impede Dulinor's accession to the Iridium Throne. Strephon's nephew, Lucan, has claimed the throne for himself without right. To enforce his will upon others, this pretender killed his own brother and prevented the Moot from confirming Dulinor's rightful status.

Because of the uncertainty fomented by Lucan and because his Navy interferes with free trade and communications, the Imperium must be united in its drive to crush Lucan.

—From the Library Data Service of the *Ilelish Interstellar Information Interchange.*

Dulinor: Born in 1066 on Dlan/Ilelish, Archduke Dulinor Astrin Ilethian assassinated Emperor Strephon thus reviving the "right of assassination" as a path to the throne.

Dulinor was appointed archduke to revitalize a region whose economy was faltering. While many criticized Strephon's choice, analysts agreed elevating an iconoclast promised to co-opt the man into the system.

On 132-1116, Dulinor struck, eliminating the Imperial heirs with three pistol shots, then fled to seed Imperium-wide rebellion. His brother, sector admiral of the Ilelish Fleet, formed the nucleus of the rebel navy.

The established succession procedures produced a legitimate heir, and Lucan assumed the throne. His first statement was an order to "crush Dulinor." Imperial forces have been mobilized to achieve just that end.

Because of the uncertainty fomented by Dulinor and because his navy interferes with free trade and communications, the Imperium must be united in its drive to crush Dulinor.

—From the Library Data Service of the *Imperial Data Network.*

MEGATRAVELLER

Information is controlled by those who provide it. The writers, even of encyclopedias, decide what is important and what is not. Their decisions determine what parts of history are available to the reader and what events will be lost in the mists of time.

This *Imperial Encyclopedia* is a compilation of information **Traveller** players can find illuminating and informative. Yet, taken literally, it can also be misleading and confusing. The information presented here can lead **Traveller** players on wide-ranging adventures to the ends of the Imperium and beyond. Truth is based on what the individuals believe. Two otherwise similar individuals can easily decide to support opposite sides in the struggle for the Imperium, and neither would be wrong in that decision.

A CHRONOLOGY OF THE IMPERIUM 1

This is a combined list of the important events in the histories of the major races in and around the Imperium Equivalent dates are shown side-by-side from each race's dating system Dates in the distant past (which are only approximations anyway) have been rounded off, otherwise, all dates are accurate to within one year

Imperial	*Aslan*	*K'Kree*	*Vilani*	*Solomani*	*Zhodani*	*Event*
-500,000	-560,000	-400,000	380,000 PI	495,000 BC	-220,000	Ancient cities arise.
-400,000	-530,000	-325,000	300,000 PI	395,000 BC	-170,000	Ancients thrive. Humans transplanted
-300,000	-340,000	-240,000	225,000PI	295,000 BC	-130,000	Final war (lasting 2000 yrs) destroys Ancients
-200,000	-225,000	-160,000	150,000 PI	195,000 BC	-85,000	*Homo Zhdotlas* arises on Zhodane.
-75,000	-85,000	-55,000	55,000 PI	70,000 BC	-30,000	Droyne ascendance on several worlds
-20,000	-20,000	-10,000	12,000 PI	15,000 BC	-6,000	Ancients' warbots on Vland finally run down
-15,000	-15,000	-5,500	8,500PI	10,500 BC	-3,500	Rise of modern *Homo Sapiens*
-11,000	-10,000	-2,300	5,300 PI	6,500 BC	-1,800	Flowering of Vilani culture
-10,011	-9,042	-1,543	4,547 PI	5,493 BC	-1,446 1	First Vilani space explorations
-9,900	-8,916	-1,450	4,462 PI	5,382 BC	-1,397 1	Scientific bases established in Vland system.
-9,400	-8,345	-1034	4,081 PI	4,882 BC	-1,176 1	Vilani sublight interstellar colonization
-9,310	-8,243	-959	4,013 PI	4,792 BC	-1,136.1	Vilani discover non-Vilani human civilization.
-9,235	-8,157	-897	3,955 PI	4,717 BC	-1,103 1	Vilani discover Jump Drive
-8,590	-7,421	-360	3,464 PI	4,072 BC	-817 3	Zhodani discover printing press
-8,500	-7,319	-285	3,395 PI	3,982 BC	-778 1	Zhodani develop elementary psionics
-7,980	-6,726	147	2,999 PI	3,462 BC	-548 1	First Zhodani space explorations.
-7,945	-6,686	176	2,972 PI	3,427 BC	-532 3	Plague on Zhodane
-6,800	-5,380	1,129	2,099 PI	2,282 BC	-25 2	Zhodani recovery
-6,731	-5,301	1,186	2,046 PI	2,213 BC	1 1	First Psionic Games. Zhodani calendar begins.
-6,200	-4,695	1,628	1,641 PI	1,682 BC	238 3	First Zhodani planetary missions
-6,000	-4,467	1,795	1,489 PI	1,482 BC	327 1	First Zhodani sublight interstellar flights
-5,823	-4,265	1,942	1,354 PI	1,305 BC	405 2	Zhodani Consulate established
-5,430	-3,817	2,269	1,054 PI	912 BC	579 1	Vilani develop Jump-2 drive
-5,415	-3,800	2,282	1,043 PI	897 BC	585 3	Zhodani discover Jump drive.
-5,400	-3,783	2,294	1,032 PI	882 BC	592 2	Start of Vilani Consolidation Wars
-4,698	-2,982	2,879	496 PI	180 BC	902 3	Hivers develop inferior Jump drive
-4,520	-2,779	3,027	361 PI	AD 1	981 2	Terran dating system begins
-4,404	-2,646	3,123	272 PI	AD 114	1,032 3	Vega absorbed by Vilani
-4,305	-2,534	3,206	197 PI	AD 213	1,076 2	K'kree unification of homeworld
-4,212	-2,348	3,283	126 PI	AD 306	1,117 2	Hivers discover standard Jump drive
-4,142	2,348	3,341	72 PI	AD 376	1,148 2	K'Kree discover Jump drive
-4,045	-2,237	3,422	1 VI	AD 473	1,191 2	Consolidation Wars end, Ziru Sirka founded
-4,000	-2,186	3,459	35 VI	AD 518	1,211 1	Vilani stop exploring First Zhodani core mission
-3,810	-1,969	3,618	180 VI	AD 708	1,295 1	Vargr discover Jump drive
-3,500	-1,615	3,876	416 VI	AD 1018	1,432 2	First Imperium reaches greatest height
-2,800	-817	4,458	950 VI	AD 1718	1,741 3	First Zhodani contact with Vargr.
-2,559	-542	4,659	1,133 VI	AD 1959	1,848 2	First Solomani space explorations
-2,460	-429	4,741	1,209 VI	AD 2058	1,892 1	Solomani bases throughout solar system.
-2,431	-396	4,765	1,231 VI	AD 2087	1,904 3	Solomani discover Jump drive
-2,424	-388	4,771	1,236 VI	AD 2094	1,908.1	Solomani visit Barnard's Star
-2,422	-386	4,773	1,238 VI	AD 2096	1,908 3	First contact with Vilani
-2,408	-370	4,784	1,249 VI	AD 2110	1,915 1	First Interstellar War ends
-2,400	-360	4,791	1,255 VI	AD 2118	1,918.3	Vargr pillaging starts
-2,398	-358	4,793	1,256 VI	AD 2120	1,919 2	Terran Confederation established
-2,389	-348	4,800	1,263 VI	AD 2129	1,923 2	Terran Navy uses artificially intelligent robots
-2,235	-172	4,928	1,380 VI	AD 2283	1,991.2	Nth Interstellar War starts
-2,219	-154	4,942	1,393 VI	AD 2299	1,998 3	Nth Interstellar War ends
-2,204	-137	4,954	1,404 VI	AD 2314	2,005 1	Terran Confederation ends, Rule of Man begins
-2,190	-121	4,966	1,415 VI	AD 2328	2,011.2	Aslan First World War
-2,160	-87	4,991	1,438 VI	AD 2358	2,024 3	Aslan Nuclear War
-2,136	-59	5,011	1,456 VI	AD 2382	2,035 2	First Aslan space explorations.
-2,083	0	5,055	1,496 VI	AD 2435	2,058 3	Formation of the Tlaukhu. Aslan calendar begins
-2,074	10	5,062	1,503 VI	AD 2444	2,062 3	Fleeing Vilani colonize Trojan Reaches
-2,045	43	5,087	1,525 VI	AD 2473	2,075 2	First contact between K'Kree and Hivers
-2,038	51	5,092	1,531 VI	AD 2480	2,078 3	K'Kree occupy several Hiver worlds.
-2,029	62	5,100	1,537 VI	AD 2489	2,082 3	Hiver-K'Kree War begins
-2,023	69	5,105	1,542 VI	AD 2495	2,085.2	Hive Federation established. Navy built
-2,018	74	5,109	1,546 VI	AD 2500	2,087 2	Hiver manipulations of K'Kree worlds start
-2,013	80	5,113	1,550 VI	AD 2505	2,089 3	Hiver-K'Kree War ends
-2,000	95	5,124	1,560 VI	AD 2518	2,095 2	First Zhodani contact with Vilani traders.
-1,999	96	5,125	1,560 VI	AD 2519	2,095 3	Aslan develop Jump drive
-1,980	118	5,141	1575 VI	AD 2538	2,104 2	First Aslan contact with humans
-1,802	321	5,289	1711 VI	AD 2716	2,183 1	First human contact with Hivers
-1,776	350	5,310	1730 VI	AD 2742	2,194 2	Collapse of Rule of Man. Long Night begins
-1,700	437	5,374	1788 VI	AD 2818	2,228 1	Vargr pillaging ends
-1,690	448	5,382	1796 VI	AD 2828	2,232 2	Terran Mercantile Community established
-1,658	485	5,409	1820 VI	AD 2860	2,246 3	Sack of Gashilean Vargr Enclaves settled
-1,526	635	5,519	1921 VI	AD 2992	2,305 1	Interstellar trade ceases Long Night deepens
-1,511	653	5,531	1932 VI	AD 3007	2,311 3	Solomani Traders contact Darrians.
-1,118	1,101	5,858	2232 VI	AD 3400	2,485.2	First Aslan Border War begins
-1,110	1,110	5,865	2238 VI	AD 3408	2,488 3	Old Earth Union created
-1,044	1,185	5,920	2288 VI	AD 3474	2,518 1	Aslan first cross Great Rift
-1,000	1,235	5,956	2322 VI	AD 3518	2,537 2	Zhondani Consulate reaches present size

A CHRONOLOGY OF THE IMPERIUM 2

Imperial	Aslan	K'Kree	Vilani	Solomani	Zhodani	Event
-924	1,322	6,020	2380 VI	AD 3594	2,571 1	Darrians reach TL 16 Sun destabilizes
-650	1,635	6,248	2589 VI	AD 3868	2,692 2	Sylean Federation established.
-630	1,658	6,264	2604 VI	AD 3888	2,701 1	Island sectors colonized
-399	1,921	6,457	2780 VI	AD 4119	2,803 1	Sword World colonization begins
-200	2,148	6,622	2932 VI	AD 4318	2,891 1	First human contact with K'Kree
-186	2,164	6,634	2943 VI	AD 4332	2,897 2	First Sword World confederation
-110	2,251	6,697	3,001 VI	AD 4408	2,931 1	Shudusham Concords
-30	2,342	6,764	3,062 VI	AD 4488	2,966 2	Cleon's Campaign begins
0	2,376	6,788	3,084 VI	AD 4518	2,979.3	Third Imperium established Imperial dating system begins
50	2,433	6,830	3,123 VI	AD 4568	3,001.3	First Zhodani contact with Imperial traders
60	2,445	6,839	3,130 VI	AD 4578	3,006 1	Colonization of Spinward Marches begins
76	2,463	6,852	3,142 VI	AD 4594	3,013 1	Pacification Campaigns begin
114	2,506	6,884	3,171 VI	AD 4632	3,030 1	Solomani Hypothesis proposed
120	2,513	6,889	3,176 VI	AD 4638	3,032 3	Pacification Campaigns end
148	2,545	6,912	3,197 VI	AD 4666	3,045 1	Scouts recontact Darrians
210	2,616	6,963	3,245 VI	AD 4728	3,072 2	Vargr Campaigns begin.
348	2,773	7,078	3,350 VI	AD 4866	3,133.2	Vargr Corridor campaigns end
380	2,810	7,105	3,374 VI	AD 4898	3,147 3	Peace of Ftahalr Imperial-Aslan border established.
404	2,837	7,125	3,392 VI	AD 4922	3,158 1	First Shudusham Robotics Conference.
420	2,855	7,138	3,405 VI	AD 4938	3,165 2	First Survey of Imperium completed.
426	2,862	7,143	3,409 VI	AD 4944	3,168 1	Easter Concordat absorbed into Imperium
461	2,902	7,172	3,436 VI	AD 4979	3,183 2	First Aslan contact with Zhodani.
475	2,918	7,184	3,447 VI	AD 4993	3,189 3	Empress Nicholle assassinated
489	2,934	7,196	3,457 VI	AD 5007	3,195 3	Hive capital moved to Glea
500	2,947	7,205	3,466 VI	AD 5018	3,200 3	Imperial explorations into Zhodani territory.
588	3,047	7,278	3,533 VI	AD 5106	3,239 2	Terra incorporated into Imperium
589	3,048	7,279	3,533 VI	AD 5107	3,240 1	First Frontier War starts
604	3,065	7,291	3,545 VI	AD 5122	3,246 3	First Frontier War ends Beginning of Civil War
606	3,067	7,293	3,546 VI	AD 5124	3,247 2	Plankwell murders Empress Jacqueline I
615	3,078	7,301	3,553 VI	AD 5133	3,251 2	Second Frontier War begins
620	3,083	7,305	3,557 VI	AD 5138	3,253 3	Second Frontier War ends
622	3,086	7,306	3,559 VI	AD 5140	3,254 3	End of Civil War
624	3,088	7,308	3,560 VI	AD 5142	3,255 2	Xboat system established
679	3,151	7,354	3,602 VI	AD 5197	3,279 3	Solomani power broken at court
704	3,179	7,375	3,621 VI	AD 5222	3,290.3	Solomani Autonomous Region created
718	3,195	7,386	3,632 VI	AD 5236	3,297 1	Xboat system covers entire Imperium
750	3,232	7,413	3,656 VI	AD 5268	3,311 1	Seventh Zhodani core expedition
799	3,288	7,454	3,694 VI	AD 5317	3,332 3	Crisis of '99
800	3,289	7,454	3,694 VI	AD 5318	3,333 2	Psionics Suppressions begin
826	3,318	7,476	3,714 VI	AD 5344	3,344 3	Psionics Suppressions end
852	3,348	7,498	3,734 VI	AD 5370	3,356 2	Current Sword Worlds government established
871	3,370	7,514	3,748 VI	AD 5389	3,364 3	Solomani Confederation established
940	3,448	7,571	3,801 VI	AD 5458	3,395 1	Confederation friction with the Imperium
950	3,460	7,579	3,809 VI	AD 5468	3,399 3	Solomani reintegrated into Imperium
979	3,493	7,603	3,831 VI	AD 5497	3,412 2	Start of Third Frontier War
986	3,501	7,609	3,836 VI	AD 5504	3,415 2	End of Third Frontier War
990	3,505	7,613	3,839 VI	AD 5508	3,417 2	Solomani Rim War begins
998	3,515	7,619	3,845 VI	AD 5516	3,420 3	Imperial advance to core of Solomani Sphere
1002	3,519	7,623	3,848 VI	AD 5520	3,422 3	Siege of Terra End of Solomani Rim War
1005	3,523	7,625	3,851 VI	AD 5523	3,424 1	Solomani Home Guard created
1040	3,563	7,654	3,877 VI	AD 5558	3,439 2	Destruction of Phoenix project begins
1045	3,568	7,658	3,881 VI	AD 5563	3,441 3	Destruction of Phoenix project ends
1065	3,591	7,675	3,896 VI	AD 5583	3,450 2	Second Survey of the Imperium completed
1082	3,610	7,689	3,909 VI	AD 5600	3,458 1	False War (Fourth Frontier War) begins
1084	3,613	7,691	3,911 VI	AD 5602	3,458 3	False War (Fourth Frontier War) ends
1107	3,639	7,710	3,928 VI	AD 5625	3,469 1	Fifth Frontier War starts
1110	3,642	7,713	3,931 VI	AD 5628	3,470 2	Fifth Frontier War ends
1116	3,649	7,717	3,935 VI	AD 5634	3,473 1	Strephon murdered Imperial Moot dissolved
1117	3,650	7,718	3,936 VI	AD 5635	3,473 3	Struggle for succession produces chaos

The Emperors' List

The 1500-year period of interstellar anarchy known as the Long Night ended about a thousand years ago with the establishment of the Third Imperium. The traditions of the First Imperium and the Second Imperium (the Rule of Man) remained even after centuries of disorganization, and it was only natural for a new interstellar empire to draw on its predecessors for precedent and for stability.

In a thirty-year campaign which molded public opinion at the same time that battle starships were convincing local governments, Cleon Zhunastu committed a family industrial base and a firm foundation of industrial support to the creation of an empire that would rival the glories of past ages. He succeeded in forming a government that controlled, with velvet-gloved fist, nearly a hundred subsectors: the Third Imperium.

In the 1119 years since the assumption of Cleon I, the Emperors' List has been a convenient reference for the events in the growth and the development of the Imperium. The relationship of dates and emperors serves as a mnemonic device and lends color to the data.

ASCENDING THE THRONE

There is only one legitimate means to ascend to the iridium throne· by confirmation of the Moot, that governing body composed of all nobles (baron and above) of the Imperium. In the absence of an emperor, the Moot is the validating body for the new emperor. The Moot has the power to examine the qualifications and credentials of any apparent heirs, and it makes the final decision confirming or rejecting them.

Under very exceptional circumstances, two other methods of ascendancy have been invoked by various emperors. The first of these methods, the right of assassination, was introduced by the Moot in 245 to deal with Cleon the Mad, a legitimate emperor who became insane after his confirmation by the Moot Cleon refused to abdicate and personally shot and killed those who asked him to do so. Faced with this problem, the Moot decided in high session to depose Cleon. Porfiria was chosen as Cleon's successor, and under the guidance of the Moot she exercised the right of assassination by killing Cleon and ascending to the throne.

The other method of gaining Imperial power is that used by countless usurpers in the past, which was attempted by the current usurper Dulinor. Acting without the all-important consent of the Moot, these interlopers have taken the government into their own hands by heinous acts of violence against the person of the proper ruler. While there are cases in Imperial history in which these usurpers have later been confirmed by the action of the Moot, such cases are rare, and the periods of time in which such actions took place have been marked by political turmoil and needless civil strife for loyal citizens of the Imperium.

EMPERORS BEFORE THE CIVIL WAR

Cleon I: First of the Zhunastu Dynasty and first emperor of the Imperium. Born in -57, proclaimed hereditary emperor for life by the Moot in the first year of the Imperium. Died in 53. Built the Grand Palace of Cleon, which still stands today in the Imperial Park and is a much visited monument.

Cleon II: Only issue of Cleon I; also known as Cleon the Weak. Born in 21, proclaimed emperor by the Moot in 53, abdicated in 54. In point of fact, a recent study indicates that the term weak may be an unfair description of Cleon II. Apparently unsuited to devious palace politics but still recognizing the need to consolidate the power of the fledgling Imperium, Cleon abdicated in favor of his brilliant chancellor, Artemsus Lentuli. Still vitally concerned with the welfare of his former realm, Cleon spent the rest of his long, active, colorful, and, from all accounts, happy, life on the frontier as a self-appointed (and extremely effective) one-man fire brigade.

Artemsus: First of the Lentuli Dynasty Born in -17, proclaimed emperor by the Moot in 54, died in 166 at the age of 183, demonstrating the natural longevity of the Lentuli line. Artemsus established the domains and instituted the Pacification Campaigns (76 to 120) to bring the historical territories of the First and Second Imperia into the Third Imperium

The Solomani Hypothesis (that the humans of the galaxy are all descended from one genetic stock, spread by some ancient race for reasons unknown; and that the source of that stock was Terra of Sol) was proposed in 114 and received immediate, although somewhat disinterested, acceptance

Martin I: Eldest son of Artemsus Born in 12, proclaimed emperor by the Moot in 166, died in 195. Martin had an elder sister, but she did not pursue a career in government. Martin's reach exceeded his grasp as he attempted to add the coreward Makhidkarun territories (the sectors of Meshan, Mendan, and Amdukan) into the Imperium. These three sectors united under Julian, fought the Julian War (175 to 191), and maintained their independence.

Martin II: Oldest issue of Martin I. Born in 53, proclaimed emperor by the Moot in 195, died in 244 without issue. He built the Grand Palace of Martin II, which was destroyed in 620 after a brief siege by the forces of Marava Martin II, recognizing

the growing importance of the frontier sectors of Deneb and the Spinward Marches, began the Vargr Campaigns (220 to 348) to clear the routes connecting them to the main territories of the Imperium.

Cleon III: In the dynastic crisis caused by the death of Martin II without direct issue, Cleon Zhunastu, great-great-great-grandson of Cleon II by direct first issue, appeared to be the most legitimate claimant to the throne. Born in 201, proclaimed emperor by the Moot in 244, assassinated in 245. Known also as Cleon the Mad, it appears that while his claim to the throne was flawless, he was not. His behavior in office (he resolved disagreements within his cabinet by shooting vocal opponents) soon convinced surviving members of the government that he was a homicidal maniac, and a decision to dispose of him was made and implemented in short order. The decision to depose a ruling emperor was not made lightly, but was agreed upon not only by those nobles closest to the emperor himself, but also by a secret meeting of the Moot, which ordered Cleon's assassination. Porfiria was chosen by lot as Cleon's heir, and succession was accomplished by the right of assassination.

Porfiria: Fourth in the reestablished Lentuli Dynasty, Porfiria was the oldest issue of the grandnephew of Martin II. Born in 201, proclaimed empress by the Moot in 245, died in 326. Porfiria actively pursued the Vargr Campaigns, and it was during her reign that they were essentially completed.

Anguistus: Oldest issue of Porfiria. Born in 246, proclaimed emperor by the Moot in 326, died in 365.

Martin III: Second issue of Anguistus (a preceding infant died in childhood). Born in 289, proclaimed emperor by the Moot in 365, died in an air/raft accident in 456 at the age of 167, having outlived his only issue. In memory of this deceased son, the title Martin IV was never used by an emperor.

It fell to Martin III to crush the Ilelish Revolt (418 to 435) and its challenge to Imperial authority.

Martin V: Grandson of Martin III; oldest issue of Martin IV. Born in 357, proclaimed emperor by the Moot in 456, died in 457

Nicholle: Oldest issue of Martin V. Born in 401, proclaimed empress by the Moot in 457, murdered in 475.

Cleon IV: Generally believed to be responsible for the murder of Empress Nicholle and her immediate family, Cleon IV was a distant relation in the Zhunastu Dynasty and based his claims to legitimacy on that. This interloper was the first of the nondynastic emperors and kept the Moot at bay by threats of violence against its members. Born in 423, proclaimed emperor by the blackmailed Moot in 475, assassinated in 555

Jerome: Ascended the throne by Moot election. Born in 525, proclaimed emperor by the Moot in 555, assassinated in 582.

Jaqueline I: Ascended the throne by right of Moot election. Born in 561, proclaimed empress by the Moot in 582, assassinated in 606. During the reign of Jaqueline, extensive expansion of the Rimward Fringe of the Imperium took place, which was due primarily to her economic policies which depended on cost-effectiveness. Terra of Sol was reintegrated into the Imperium in 588.

EMPERORS OF THE FLAG

Olav: First of the Emperors of the Flag. Olav hault-Plankwell, as Grand Admiral of the Marches, defeated the massive incursion of the Out-World Coalition in the First Frontier War (589 to 604). Upon return to the Imperial Core, Olav personally murdered the Empress Jaqueline I and proclaimed himself emperor by so-called right of fleet control. Born in 532, self-proclaimed emperor in 606, killed in battle in 609.

Ramon I: As Olav's chief of staff, Ramon was able to convince large portions of the fleet to attempt an overthrow of Olav In the Battle of Tricanus 5 (609), Ramon's forces were apparently defeated, but Olav's flagship was destroyed with all hands in a final closing action. Born 560, proclaimed emperor by right of Moot election in 609, murdered in 609.

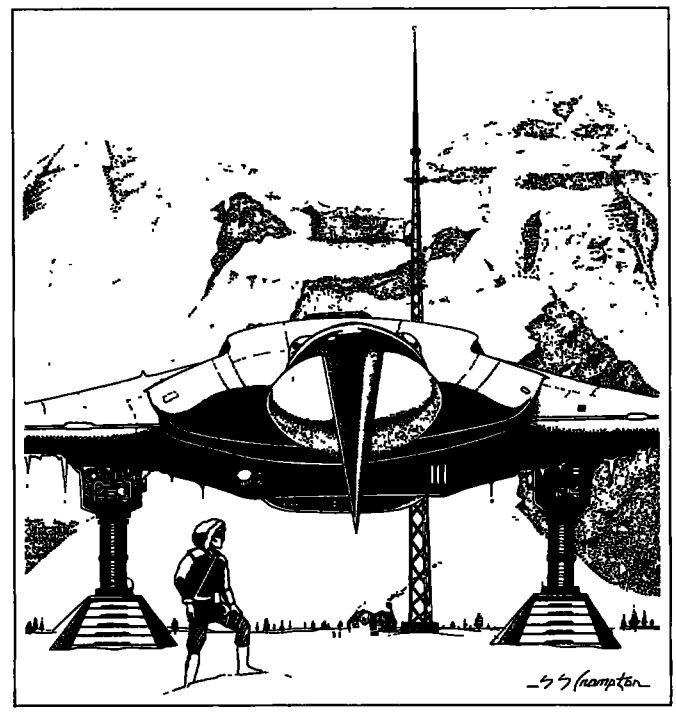
Constantus: Born 562, self-proclaimed emperor by supposed right of assassination without support of Moot in 609, killed in battle in 610.

Nicolai: Defeated the forces of Constantus in the Battle of Rakakaka (610). Born in 559, proclaimed emperor by the Moot in 610, murdered in 612.

George: Born in 558, self-proclaimed emperor by right of assassination without Moot support in 612, murdered in 613

Numerous emperors of uncertain status and unlikely heritage ruled fragments of the Imperial Core from 613 to 615. None held a sufficient balance of power to be judged truly emperor, none were supported by the Moot, and the Home Worlds had formed a temporarily autonomous state Nevertheless, no break in the Imperium is judged to have taken place as the Imperial bureaucracy continued to function without interruption.

In 615, Cleon V was finally proclaimed emperor by a close vote in the Moot, reestablishing a proper dynastic succession. Only a few years later, at the instigation of radical nobles in the Moot, Joseph attacked Cleon in battle and killed him He was proclaimed emperor by the Moot, again by a very close vote, and many nobles refused to swear allegiance to him. Over the next four years a number of men and women sat on the



iridium throne, some with the support of the Moot and some without it. Because of the lack of popular Moot support for certain emperors and empresses, their successors were in some instances able to garner Moot support even after murdering the previous ruler The same Moot could elect one man emperor and then later the same year elect his murderer as the new emperor These were not proud times for the Third Imperium.

A proper line was not permanently reestablished by the Moot until the time of Arbellatra in 629.

Cleon V: Born in 565, proclaimed emperor by the Moot in 615 after the resubjugation of the Home Worlds, killed in battle in 618.

Joseph: Born in 581, proclaimed emperor by the Moot in 618 after defeating Cleon V in the Battle of Markatch (618), killed in battle the same year.

Donald: Born in 579, self-proclaimed emperor without the support of the Moot after the defeat of Joseph in the Battle of Arakoine (618), murdered in 618

Emdiri: Born in 571, self-proclaimed empress by supposed right of assassination without support of Moot in 618, murdered in 619.

Catharine: Born in 582, proclaimed empress by the Moot in 619, murdered in 619

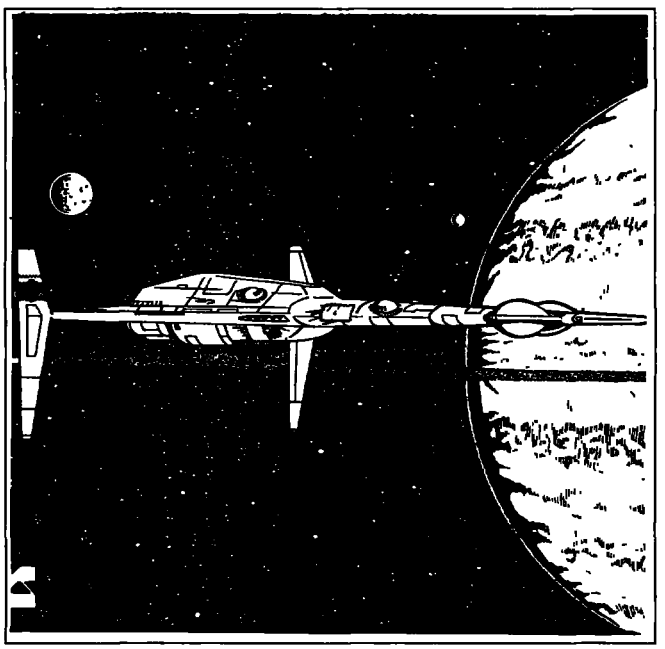
Ramon II: Born in 566, proclaimed emperor by the Moot in 619, killed in battle in 619

Jaqueline II: Born in 569, proclaimed empress by the Moot after defeating Ramon II in the Battle of the Nivzhine Belt (619), killed in battle in 619

Usuti: Born in 558, proclaimed emperor by the Moot after defeating Jaqueline II in the Second Battle of Araloine (619), killed in battle in 620.

Marava: Born in 551, proclaimed empress by the Moot after defeating Usuti in the Third Battle of Araloine (620), killed in battle in 620. Destroyed the Grand Palace of Martin II.

Ivan: Born in 580, named emperor by the Moot after defeat of Marava in the Battle of Sulgami (620), killed in battle in 621.



Martin VI: Born in 597, proclaimed emperor by the Moot after the defeat of Ivan in the First Battle of Zhimaway (621), murdered in 621.

Gustus: Born in 581, proclaimed emperor by the Moot in 621, killed in battle in 622.

Arbellatra: First of the Alkhalikoi Dynasty (and occasionally considered to be the 18th of the Emperors of the Flag). Born in 587, served as Grand Admiral of the Marches and led the defeat of the Out-World Coalition in the Second Frontier War (615 to 620). Arbellatra returned to the Imperial Core and defeated the remnants of the Central Fleet under Gustus in the Second Battle of Zhimaway (622). Proclaimed regent by the Moot in 622 pending the location of a suitable surviving heir to the throne. Proclaimed empress by the Moot in 629. Died in 666. Built the Grand Imperial Palace, a magnificent sphere one kilometer in diameter, which floated one-half a kilometer above the landscape of the Imperial Park on Capital.

Zhakirov: Oldest issue of Arbellatra. Born in 624, proclaimed emperor by the Moot in 666. Zhakirov's marriage to Antiama in 679 marked and cemented an alliance between the Alkhalikoi Dynasty and the business interests of the Imperial Core; it broke the power of the Solomani interests at court and ultimately led to the Solomani Rim War (990 to 1002). Died in 688.

Margaret I: Oldest issue of Zhakirov. Born in 684, proclaimed empress by the Moot in 688, died in a tunnel collapse without issue in 736. Margaret established the Solomani Autonomous Region in 704. Built the Consortium Trinary, three companion spheres near the Imperial Palace, in 729 to celebrate the hundredth birthday of the structure.

Paulo I: Second issue of Zhakirov Born in 684, proclaimed emperor in 736, died of natural causes in 767. Built Paulo's Annex, a companion structure to the Imperial Palace, in 740.

Tomutov I: Oldest issue of Paulo I. Born in 712, proclaimed emperor by the Moot in 767, abdicated in 768, died in 801. Built Tomutov's Palace, a companion structure to the Imperial Palace, from his own funds after his abdication. This floating sphere is used as a residence for important visitors to the Imperial Palace

Paula II: Oldest issue of Tomutov I. Paula II is perhaps best known for her steady hand at the helm during the Psionic Suppressions of 800 to 826. Born in 752, proclaimed empress by the Moot in 768, died in 836.

Tomutova II: Third issue of Paula II (preceding heirs died before ascending the throne). Born in 782, proclaimed empress by the Moot in 836, died in 908.

Margaret II: Oldest issue of Tomutova II. Born in 824, proclaimed empress by the Moot in 908, died in 945.

Styryx: Oldest issue of Tomolin (oldest issue of Margaret II, born in 901, died in 944). Born in 920, proclaimed emperor by the Moot in 945, abdicated in 989 in the repercussions following the mismanaged Third Frontier War (979 to 986).

Gavin: Oldest surviving issue of Styryx. To Gavin fell the management of the Solomani Rim War (990 to 1002), already set into motion by his father. Born in 946, proclaimed emperor by the Moot in 989, died in 1031.

Paulo III: Oldest issue of Gavin. Born in 981, proclaimed emperor by the Moot in 1031, died in 1071

Strephon: Oldest surviving issue of Paulo III. Born in 1049, proclaimed emperor by the Moot in 1071, murdered in 1116.

During Strephon's reign, the Fourth Frontier War (1082 to 1084) erupted; his delegation of war powers to Norris, Duke of Regina, is credited with bringing a speedy end to a conflict that otherwise would have been hampered by the long delays in communication between Capital and the front. Norris later became the conquering hero of the Fifth Frontier War, and in partial recognition of this, one of Strephon's last official acts was the appointment of Norris as Archduke of the Domain of Deneb, which consists of the sectors of Deneb, the Spinward Marches, Trojan Reach, and Reft Sector

SUCCESSORS TO STREPHON

The Moot has been unable to decide upon a proper successor, but claimants and pretenders have come forward.

Dulinor I: Also known as Dulinor the Usurper. Born in 1066, Strephon's murderer proclaimed himself emperor by the so-called right of assassination and then fled with his black-garbed troops to his home world of Dlan/Ilelish. Dulinor, who had convinced Strephon that he was one of his closest friends, was appointed Archduke of Ilelish in 1104, an action opposed by most nobility Dulinor's murder of the Yerlyaruiwo Aslan ambassador blamed for Aslan *Ihatei* incursions into Imperial territory.

Lucan: The nephew of Strephon by his sister Lydia, Lucan has already proclaimed himself as emperor, however, in his first act, he dissolved the Moot for one year, so his claim has not had the opportunity to be officially verified. The Moot, for its part, disputes his dissolution of their body, but for security reasons, the Moot has not been able to safely meet and conduct Imperial business. Some detractors accuse Lucan of the murder of his older brother Varian, who was killed in fighting in the Imperial Palace shortly after the murder of Strephon by Dulinor.

Margaret: The great-granddaughter of Gavin by third issue, Margaret is seen by many nobles as an easy and legitimate alternative to Lucan, although her lineage is not as direct to Strephon.

The "Real" Strephon: Appearing in Usdiki/Gushemege in 1117 and claiming that his double was the one killed in the Imperial Palace, the so-called "Real" Strephon has many adherents, who support his claim by pointing out Emperor Strephon's known interests in genetic and robotic methods for duplication of a human.

Archduke Norris of Deneb: Supported by many nobles in the Moot, Norris is highly respected for his very competent handling of the Fifth Frontier War and for his ability since Strephon's murder to keep intact an important border region of the Imperium. Because it would have been easy for Norris to declare independence for his territories, particularly since the so-called Restored Vilani Empire region now falls between the Domain of Deneb and the Imperial Core, Norris's loyalty and fidelity to the Imperium have attracted support for him from nobles.

Archduke Brzk of Antares: As the pinnacle of power in the Domain of Antares, Archduke Brzk of Antares has received attention for his handling of the disorder during the Rebellion He considered himself a candidate for the throne until 1118, when he decided the Moot would never ratify a nonhuman as emperor.

NOTES ON WORLD GENERATION

The purpose of the world generation sequence is to aid the imagination. Even the most imaginative individual soon loses brilliance in the face of creating hundreds of individual worlds.

The procedure substitutes die rolls for random imagination, allowing you to use that information to determine specific world data. Imagination may be required to explain a tech level 4 civilization in an asteroid belt or a high population world with a participating democracy for a government.

Additional notes about world generation are given below

Size: Any main world with size 0 is an asteroid belt. The code *S* refers to a small planet or satellite with a diameter less than 800 kilometers.

Small worlds are treated as size 0. They range in size from 200 to 700 kilometers in diameter (1D + 1 times 100 kilometers).

Rings: Planets may have rings occupying orbits around them. The size code *R* is used to specify a ring that occupies an orbit around a world. The individual components of a ring are usually small particles often less than 500 mm in diameter

Rings have little practical use, and they rarely have bases or settlements located on them. In most cases, the UPP will be a series of zeroes following the *R* code. However, in exceptional circumstances, you may choose to establish a small population (probably consisting mainly of miners, prospectors, or scientific researchers) in the ring.

The generation tables assume that a world is a naturally occurring solid matter sphere Alternatives to this condition are extremely rare, and they tend to have very high tech levels. These alternitives include those listed as follows:

Rosettes (Tech Level 21): Three or more equal masses (such as worlds) which are set at the points of an equilateral polygon. The correct equal angular velocities about their center of mass will result in a stable orbital configuration; no central star is required Rosettes never occur naturally.

Ringworlds (Tech Level 25): An incredibly strong band may be set rotating about a central star, which results in existance of a ringworld. Ringworlds use centrifugal force to provide a simulation of gravity. A ringworld at the distance of Earth's orbit and with a width of 1.6 million kilometers has a usable surface area of approximately three million Earths.

Sphereworlds (Tech Level 27): Using materials similar to those in a ringworld and adding gravity generators where necessary for strength and comfort, a spherical shell could be used to enclose a star. Such a shell would then trap all stellar radiation for use by the civilization With a radius of about 93 million miles, the internal surface area would equal approximately one billion Earths.

Nobles

The Third Imperium is not a democracy. Social Standing indicates not only the lifestyle and peer group for a citizen of the Imperium, but also the social weight an individual can throw around when he wants something done. High strength or intelligence is an advantage, high social standing is a similar advantage. But while noble status does accord an individual a special place in the Imperium, it also obliges certain responsibilities to prevent abuses of this power

Since Strephon's death and the subsequent division of the Imperium, nobles in some areas have fallen on hard times, and certain Imperial subjects have refused to recognize the authority of the nobility In most regions, however, the peerage continues on as it has for centuries, with an organized hierarchy of nobles constituting the upward chain leading from an ordinary Imperial citizen to the emperor on Capital

THE IMPERIAL NOBILITY

The Imperial nobility is a narrow class of persons at the upper strata of society who hold, either personally or through their family line, noble rank from the emperor. Noble rank is a mark of high social status for citizens and serves two purposes. it rewards individuals for significant achievements, and it provides social station for the political leaders within the government All but the highest noble ranks (count, duke, archduke) can be awarded in recognition of achievement or preeminence in a field of endeavor.

The nobility includes within it a subset called the peerage, which consists of all nobles except knights and baronets. Except in extraordinary situations, to hold a high office in the Imperial bureaucracy a person must be a peer (although, on the other hand, not all peers hold office)

Collectively, the peerage constitutes the Moot, the Imperial government's only deliberative body. Technically, the Moot is supreme in the Imperium, but its power is extremely limited. In practice, its deliberations are advisory to the emperor, and he is wise to heed them. The Moot has only one power: to dissolve the Imperium. When this power is brought to bear, it compels compromise between opposing factions. The Moot also has the power to confirm emperors and other nobles to their posts.

Nobility is usually hereditary Once confirmed by the Moot, a title continues to be passed down to succeeding generations. Titles need not pass through the first born (although this is the accepted practice), and individuals with several titles may divide them among their children as they see fit An individual who is a member of a close family with noble rank is usually considered a member of the nobility even though that individual may not personally hold a title.

Nobility is acquired through letters patent (patents of nobility) issued by the emperor Traditionally, appointments are published in the Holiday List (appearing on the first day of each new year) and in the Birthday List (appearing on the emperor's birthday). Additional patents of nobility for political purposes or special occasions are published when necessary.

All nobility is part of the feudal system of Imperial government. Nobles, upon receiving their patent or upon confirming their inheritance when coming of age, swear continuing loyalty to the Imperium, to the emperor, and to the emperor's successors. Failure to do so can void the patent for the generation or even permanently

Noble rank can be revoked by the emperor, personally or through the Moot Reasons for such revocation are treason, murder, kidnapping, and extortion as well as other felonies. Incompetence can also be a reason for revocation of a title Occasionally, a noble rank will not be confirmed upon inheritance (the emperor has this option, as does the Moot and the holder). The rank may then go to another member of the same family or lie dormant for the generation. Furthermore, the emperor has the option of appointing a new family to hold the noble rank, displacing the former line

All noble ranks within the peerage come from the emperor. The ability to create knights and baronets, however, is shared with the archdukes of the Imperium. The archdukes, within their domains, have an authority to create knights and baronets that it subject to disapproval only by the emperor. The purpose of these knighthoods (and baronetcies) is to allow the archdukes to create supporters and retainers for their own purposes rather than to depend on the emperor to do so The noble ranks created are not members of the Moot.

TYPES OF NOBLES

Nobles in the Third Imperium can be divided into three types. honor (achievement), rank (position), and high (service) In the Imperium, an individual is noble by having a patent from the proper authority, which confers nobility upon him.

In general, a noble's status is lower when he leaves his "sphere of influence." On "average" Imperial worlds, having normal technology and ordinary Vilani-Solomani-Imperial cultural influences, this reduction will be small but noticeable when the noble leaves his "sphere of influence." (A noble's sphere of influence is the environment in which he is acknowledged and which he affects accordingly)

Honor Nobles: Honor nobles (also known as achievement

or award nobles) receive patents from the emperor for "heroism in the military, success in civil or commercial enterprise, or innovation and discovery in the sciences." Only patents for knights, baronets, barons, and marquis may be issued for achievement, patents for counts and other high ranks are too important to be given as mere rewards

Each year on Holiday, the first day of the new year, a list of new patents is published on Capital From this tradition comes the term "holiday noble," which refers derisively to nobles serving no real administrative function in the Imperium Notwithstanding, honor nobles are the real celebrities of the Imperium; their noble rank is a recognition of an already important status within the community

Honor nobles' achievements are deemed important enough to warrant attention from the emperor or an archduke. Sphere of influence for such a noble extends as far as the achievement of the noble is considered significant Note that the measurement of this sphere of influence is not necessarily a physical distance

For example, one knighted for a discovery in gravitics might have status among other physicists all over the Imperium while having no real fame among musicians or businessmen Honor nobles sometimes travel on the interstellar "lecture and cocktail circuit", remuneration for public speaking can provide a valuable income

Rank Nobles: Patents for rank nobility are given because of a citizen's position, and all noble classes are eligible for such a patent. Members of the rank nobility belong to one of two subtypes

Local Nobility. The first subtype comprises the "local nobility," who make up the majority of those titled within the Imperium These nobles serve as Imperial representatives in systems that have a government somehow not conducive to administration by high nobility These representatives occupy "specific governmental offices" and are equivalent in social standing to barons and knights.

Patents for rank nobles are typically hereditary and remain with families of local leaders from generation to generation Essentially, the sphere of influence of local rank nobles encompasses one star system Although such nobles often have little power outside their local sphere of influence, they may be recognized by other local nobles Note that nobles of this type are members of the peerage, albeit of low precedence.

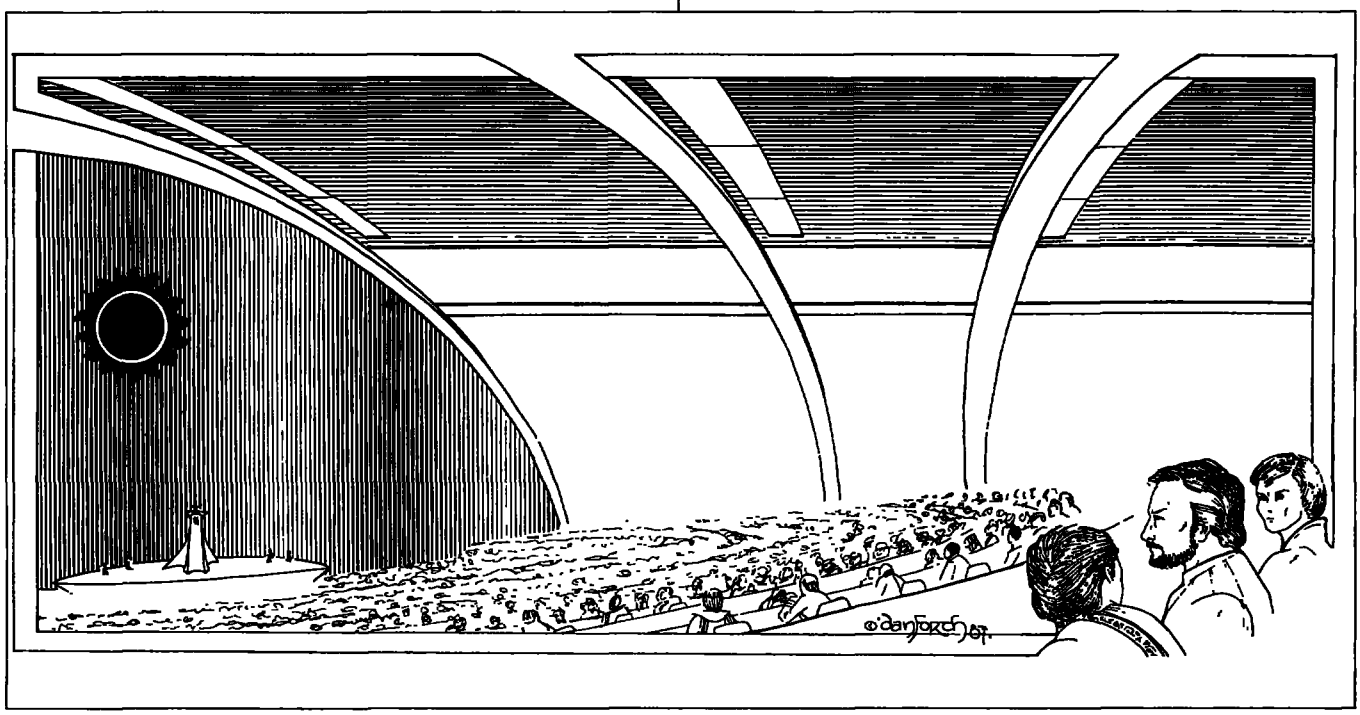
Administrators: The second subtype of rank noble comprises citizens who hold Imperial office. Often, these nobles are administrators of worlds or territories with no formal Imperial representation. Because the title is tied to a position, these patents are not hereditary Here, a noble's sphere of influence includes operational territories or influence among others within a specialized field. These patents often include a generous letter of pension to keep the noble comfortable after a career of long and faithful service.

Patents for rank nobles are awarded as needed, generally upon assumption of duties Patents may be revoked or transferred at the conclusion of duties, but use of the noble title is still allowed.

High Nobles: The high nobility is the smallest segment of the peerage, consisting of people belonging to old and powerful families entrenched in the Imperial system for generations. Because of this, these nobles are the most powerful, but they are hampered by the responsibilities of office.

The rare titles of the high nobility are given for "political support in office, victory in the military, or contributions or economic assistance from the commercial sector" beyond any reasonable expectation Patents are hereditary (upon confirmation of the Moot) and almost always include a fief or feudal estate granted by a letter of enfeoffment.

These nobles directly administer Imperial territories and are personal representatives of the emperor Members of the high nobility are trained from birth to lead, and they have enormous



personal power to sustain the awesome responsibility of holding together an interstellar community When successors to title cannot fulfill their duties, supporters or the noble family can take (often drastic) steps to see responsibilities fulfilled.

In addition to Imperial title and enfeoffment, the high noble frequently holds titles of lesser precedence, which may include other local titles A high noble's sphere of influence is essentially the area administered by his local peerage.

The high peers have precedence in the peerage and thus are the most powerful of the nobility. Even their barons are immensely powerful. They have almost direct control of entire economies. High nobles spend large amounts of time and resources developing their territories because they realize that, in the end, it is the successful management of populations that ensure continuity of the Imperium.

PROTOCOLS

The peerage regulates itself through standard codes of behavior known as protocols, which exist at multiple levels. At the Imperial level there is standardization, but within local peerages one can find a wide diversity in protocols to accommodate variant cultures and their traditions (including alien ones)

At best, violation of the protocols is a breach of taste and ethics, at worst, it may be cause for patent review, which could lead to a recommendation that a patent be revoked Recommendations from local peerages carry much weight with the emperor

Protocols aside, nobles have few obligations in terms of provision for each other, notwithstanding the payment of taxes, attendance of summits, and settlement of disputes that fall within each other's jurisdictions. Members of the peerage are largely autonomous and have few restrictions on their activities, especially if they are in a backwater.

In most cases, the intelligent noble will follow the local dictates of a peer simply out of respect and courtesy.

NOBLES AND THE LAW

The rights nobles have under local law is of major concern. Nobles are subject to all the Imperial laws any other citizen is Local laws may be another matter.

Where a noble is not acting under the auspices of a peer's local laws or of the protocols, he is accorded the rights of any Imperial citizen. With regard to personal safety, he is allowed (applying to retinue and bodyguards) to "bear arms" to his content, as long as he is armed (with respect to any peers in mind) discreetly.

Bearing arms in the presence of a superior may be a serious breach of protocol. On the other hand, cultural influences (as in the case of Archduke Dulinor and his Dlani heritage) within a peerage might dictate that a noble must bear arms in the presence of another peer. Failure to do so could be a form of disrespect, as serious a breach as bearing weapons when inappropriate

Additional privileges might include the ability to set and revoke local laws and trade policies Preferential (or occasionally free) starship passage is another noble privilege offered by some lines. Nobles may accept diplomatic gifts from neighbors, whether Imperial or alien, they may also call for Imperial justice or trial by peers. Certain rank nobles may be able to mete out Imperial justice or grant pardons As the ultimate Imperial power, a noble might even carry an Imperial Warrant

NOBLE RANKS

The lowest noble rank is knight, the highest is emperor (although the emperor and his family are not members of the Moot and in fact are prohibited from entering the Moot Spire on Capital unless invited by the body).

Several aspects of rank are governed by strict protocol, including title (the formal reference to the person in print or by reference), style (the method of addressing the individual personality), and precedence (the relative seniority of the individual among others). In addition, customary perquisites for each noble rank vary widely.

The noble title includes the allowed prefixes (such as Sir) and suffixes (such as "of Yori") to a name and the order in which they are presented.

The noble style dictates the manner in which a noble is addressed and includes such honorifics as "Your Grace" or "Your Majesty "

Precedence is accorded strictly on the basis of government position, with seniority determined by following date of patent. The date of noble rank is taken from the date of confirmation when an inherited rank is assumed.

Knight: The lowest of noble ranks is knight, which is awarded by the emperor or an archduke as an honorific rank in recognition of achievement or service· as such, a knighthood is coveted by nonnobles and is seen as more attainable than membership in the peerage. A knighthood entitles the recipient to use the prefix Sir (some females prefer Dame, but such usage is obsolete) before the name and to suffix the initials of the order of knighthood after the name

Knights are not members of the peerage and are thus not subject to all protocols. Knights instead belong to orders of knighthood and are awarded privileges according to the order. Each order has its own code (some lax, some stringent), and member knights are expected to abide by these codes (In cases where a member of the peerage also holds title to an order of knighthood, he is expected to abide by both the protocol and the code of his order, and conflicts in behavior are resolved in favor of the protocol.)

Several dozen orders of knighthood exist within the Imperium Some are restricted to specific classes of individuals, such as members of the Imperial Family, racial Aslan, racial Vargr, or other special groups. Others are awarded for specific achievement or service or for holding specific positions within the government. Still others are broadly based orders into which most new knights are inducted

The most common orders of knighthood in the Imperium are the Order of the Emperor's Guard, established in 52 and originally limited to the Emperor's personal retainers but now of wide and diverse membership, and the Order of Starship and Crown, established in 17 More exclusive orders have also been established: the Order of Hlyuea (established to honor loyal Aslan citizens), the Order of Gvadakoung (established to honor loyal Vargr citizens), and the Honorable Order of the Arrow, (established to recognize interstellar explorers). The domains each have orders named for them the Order of Antares,

the Order of Vland, the Order of Sylea, the Order of Sol, the Order of the Gateway, and the Order of Deneb. Of these, the Order of Sylea is administered by the Emperor himself (as *de facto* Archduke of Sylea); the Order of Deneb has only recently been used, as Norris is the first Archduke of Deneb to be named.

An individual accorded a knighthood for service may receive a fief of land on a single world, generally not more than 10 square kilometers.

Members of the peerage generally consider knights "separate but equal" members of the nobility, and it is considered a breach of protocol for a member of the peerage to treat a knight with disrespect.

Baronet: Intermediate between the first and second level of noble rank is the baronet. Baronet is a special form of baron awarded by an archduke of one of the domains of the Imperium. Baronets rank below barons in seniority and precedence. Although the emperor can create baronets (either as emperor or in his capacity as Archduke of Sylea), in practice they are created only by the archdukes. Baronets do not generally receive fiefs of land.

A baronetcy entitles the individual to use the prefix Baronet before one's name.

Baron: The second level of noble rank is the baron, the lowest level accorded membership in the peerage. Barons are referred to in several different styles, which include the use of prefixes to the surname (such as von, haut, or hault) and the title Baron (or Baroness for females). An individual accorded a barony for service may receive a fief of land on a single world, generally not more than 100 square kilometers. When a barony includes a fief, then the title is generally followed by the fief's name (such as Baron Solvenos).

Marquis: The third level of noble rank is the marquis. A marquis is associated with a single world (generally a large and important one with a good starport). The title consists of the world name after the title, as in the Marquis of Aramis (or, alternatively, the Marquis Aramis). An individual accorded a marquisate may receive a fief of land on a single world, generally not more than 1000 square kilometers.

Count: The fourth level of noble rank is the count, who is associated with two or three worlds within a subsector. Counts are referred to by their title followed by the individual's surname or by the name of one of the worlds within the county. An individual accorded a county may receive a fief of land on a single world, generally not more than 10,000 square kilometers.

Duke: The fifth level of noble rank is the duke, who is associated with a subsector or sector. The noble is referred to by the title followed by "of" and the subsector or sector name. The power of the duke depends on circumstances and the situation within the sector, but generally one duke within a sector rises to power and comes to be the sector duke, who is the ruler of that sector. An individual accorded a duchy may receive a fief of land on a single world, generally not more than 100,000 square kilometers.

Archduke: Each of the six original Imperial domains has an archduke exercising overall control and acting as an intermediary between the Emperor and the other levels of nobility (except for the Domain of Sylea, where the emperor is the archduke). Such nobles are referred to by the title archduke followed by the title of the domain, such as Archduke of Deneb. An archdukedom includes a fief consisting of an entire world, generally retained as a private reserve.

Emperor: Above the range of noble ranks is the emperor and the Imperial family. The emperor is the ultimate object of thousands of oaths of loyalty and fealty.

FIEFS

Patents of nobility, especially for service, may include fiefs of land. Fiefs are granted in a Letter of Enfeoffment separate from the patent of nobility. Fiefs are granted to the individual at the discretion of the emperor and remain the latter's possessions. However, the fief conveys the right to use the land, to rent or lease it out, and to collect income from it. The fief is a convenient method for the emperor to reward certain nobles.

The size of the fief depends upon how great an income the emperor wishes to award a noble and upon the location of the fief itself. A knight with a fief consisting of several hundred square kilometers of sparsely settled wilderness and one with a single hectare of the business district of a city can be considered to hold equal fiefs.

Hereditary nobles have often had the fief in their family for generations, and they have built it up in value and income potential. Some sites at Capital generate considerable income each year. Other fiefs have been administered with great care to ensure that the territory be not only valuable but also tastefully used. Still others have been exploited ruthlessly in mining or industrial pursuits. Completely separate from fiefs, a noble may own land obtained from other sources (inheritance, purchase, and so forth). These lands remain the property of their owner even if his title is revoked, and they can be disposed of separately from fiefs.

THE NOBILITY LISTS

The Holiday List is published on Holiday, the first day of the new year, and covers achievement. The Birthday List is on the Emperor's Birthday (Lucan's is day 301) and covers service. Continuing awards for position may be given any time.

RESPONSIBILITIES OF NOBLES

Honor and rank nobles are expected to conform to social conventions. Those of Cogri are blinded upon ascendency in recollection of when actions of the hereditary nobility caused hundreds of citizens blinded by the intense rays of their sun.

A culture may be prejudiced against technologies like bionics, robots, regeneration, or other medical treatments. They may have to use breath masks or wear eye patches, or use exotic technical solutions, such as powered grav chairs equipped with life support. Most nobles have the resources to purchase these devices. The Marquis of Inthe, when not in zero-G areas, must wear a delicate powered exoskeleton to counter his frail bone structure (reportedly due to inbreeding).

The upper crust of the Imperium is also expected to avoid psionics: the emperor will not publicly admit a psionic noble.

Sociocultural or religious traditions may hamper a noble. Certain lifestyles or careers may be deemed "inappropriate." A high or rank noble may not be able to travel far because of a required presence for some type of ceremony or event.

Library Data

"Library Data" is a general term used to describe the information available from a typical ship's computer using its library program In the past, library data had as its source a vast communication network paralleling that of the Xboat system that once operated throughout the united Imperium. An entire series of "hubs" amassed and organized vast quantities of data and send it out to each other. At each hub the entire collection of information could be compiled and redistributed to private customers, including starships, hotels, universities, fixed-location libraries, and hand computer services.

In the divided Imperium, library data services have diminished much as the Xboat routes have. In various areas, reliable service can still be found—sometimes taken over by a commercial firm, sometimes taken over by a local governmental body. The farther that a message or data must travel, however, the more tenuous is its consistency. And Xboat messages have difficulty travelling across borders or are sometimes lost to marauding pirates. Library data likewise is sporadic and intermittent in its arrival, which causes much of its information to have lost its up-to-the-minute flavor.

In addition, the library data "network" (pretending for the moment that the system still exists as intact as it once was) has lost contact with many of its original sources of data Researchers, historians, and journalists often fail nowadays to submit timely reports of their discoveries. Embarrassing gaps exist in many library data entries today, and severe overgeneralization has resulted in misinformation occasionally being published as apparent fact.

SMART

One of the areas of the Imperium that was first to lose its accurate library data was the area "behind the claw," Trojan Reach, the Spinward Marches, and Deneb, but thanks to the quick action of Archduke Norris of Deneb, the library data service for the region was reestablished and made as accurate and efficient as it had been under the united Imperium.

SMART, the Spinward Marches Archive Retrieval Team, was selected from historians working at the region's colleges and universities Under the direction of Eura Regnis of the Regina Center for Research, the team set to work in 1117 to restore library data service throughout the archduke's domain. Norris's mandate for this group's work has been instrumental in insuring that the Imperium, once reunited, will be able to build upon the scientific and historical legacy of its predecessors.

Regnis and her colleagues accomplished their task in only two short years, and in 1119, SMART Library Data, LIC opened its doors as a semiprivate company, guided by a board appointed by the archduke. The library data in this book was generated by one of the SMART system's computers; it was automatically summarized to provide the highlights of a number of interesting topics

Within this summary, the reader can find historical information on the Third Imperium and the events that led up to the divided Imperium today Information on all the major races of the Imperium and its surrounding environs is also here, complete with updates of alien activities since Strephon's untimely death. The most important minor races are summarized in this volume, too

Several in-depth summary supplements round out the information here, giving background information on the united Imperium, its worlds, its emperors, and its nobility; the megacorporations and major merchant lines doing business in the Imperium, the activities and organization of the Imperial Interstellar Scout Service; and a special report on recent military technology and its use by the Imperial Navy in reuniting our worlds and punishing the usurper Dulinor.

While the SMART library data is as complete as humanly possible, it must be understood that a number of mitigating circumstances have interfered with this collection. Since the revolt of Vland Sector and its neighbors, the SMART researchers were unable to establish a reliable communications link between the Spinward Marches and some of the larger fixed libraries, such as the AAB on Vland and the Imperial Library on Capital. Despite this incapability, SMART Library Data is proud of the successes it has had in producing a work that should help all loyal Imperial citizens strive toward the establishment of the united Imperium and the coronation of its rightful emperor.

A

AAB: The Argushiigi Admegulasha Bilanidin, which in Vilani means literally the "Vilani Repository of All Knowledge," is a major scientific institution located on the world of Vland. The extensive AAB facilities include a vast museum, a library, and several research centers and publishing houses. Not only does the AAB collect samples, specimens, and recorded materials from all over explored space, it also publishes an abridged 15 holocrystal encyclopedia set of its extensive data files. Known simply as "The Encyclopedia," the set contains the equivalent of 7500 extensively illustrated volumes, yet it can easily fit into a large pocket.

Amber Zone: Travellers' Aid Society classification for a nation, world, or system which presents a need for caution in

dealings and activity. The amber code may indicate chaos, upheaval, or xenophobia in local business, politics, society, or culture, or it may be applied for other reasons. Travellers should exercise caution.

Until recently, the Imperial Travellers' Aid Society considered all worlds within the Imperium safe unless specifically noted otherwise With the recent fragmentation of the Imperium, the travel zone classification of worlds has been relegated to local branches of the Society.

The Domain of Deneb branch of TAS has classified worlds outside its borders as amber zones. Travellers are advised to exercise caution, especially in areas bordering Aslan space, Corridor Sector, the Vargr Extents, and the Solomani Rim

See also Red Zone, Travel Zone.

Ancients: Highly intelligent race which gained prominence approximately 300,000 years ago

Most of what is known about the Ancients has been gleaned from archeological excavations of Ancient sites: the remains of cities, bases, outposts, and settlements of the Ancients. Scientific dating techniques have established that a "Final War" spanning a 2000-year period destroyed virtually all of the Ancients at that time

The influence of the Ancients is broadly felt in the universe Humans from Terra were transported to many worlds by the Ancients; their descendants became the Vilani and the Zhodani, as well as the 46 known minor human races. The Vargr have been shown (through genetic testing) to be descendants of genetically manipulated Terran canines (apparently, the canine stock was acquired at the same time the humans were taken from Terra). Ancient artifacts which have been discovered show a very high tech level and an equally high degree of sophistication, such artifacts often reveal new, previously undiscovered or unexploited technologies.

The Ancients were responsible for several major features within the region now occupied by the Imperium. Their warfare resulted in the large proportion of asteroid belts throughout explored space There is evidence they created the multiworld rosette ar Tireen (Knaeleng 2910, in the Vargr extents). Scattered empty cities (most severely damaged by battle) stand as evidence of their wars; most, however, are restricted areas under investigation by the Imperium and not open to the public. One notable exception is the world Antiquity (Corridor 0816). The Antiquity Ancients site is open to tourists; its fascinating museum displays many wondrous and mystifying artifacts, many of which are still in working condition.

See also Antiquity, Humaniti, Solomani Hypothesis, Vargr.

Andory (Spinward Marches 0236 C695735-9): Prime candidate for Droyne homeworld. Discovered in 802 and placed under interdiction (red travel zone) by Imperial Interstellar Scout Service.

See also Droyne.

Anglic: The official language of the Third Imperium. A distant descendent of Terran English, Anglic was the language of the Rule of Man (−2294 to −1776) Anglic remained a common interstellar language for trade and commerce during the Long Night. Its widespread use on the original worlds of the Third Imperium made it the natural language when the Imperium was established.

On many worlds, Anglic is only a second language used for system traffic control, commercial operations, and interstellar communications. Anglic is sometimes called Galanglic (for Galactic Anglic).

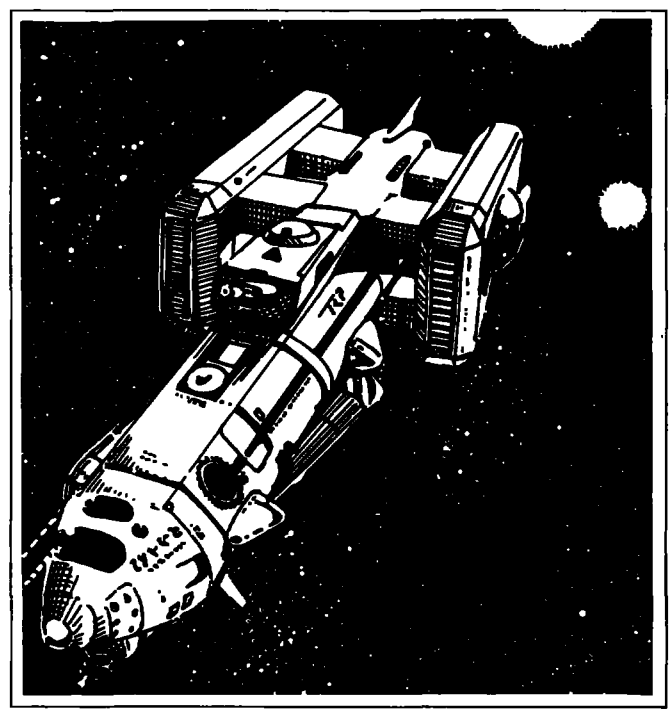
The Imperium has not been able to prevent the emergence of a wide variety of Anglic dialects. Interstellar communications, holocrystals, and recordings help to spread a uniform pronunciation of Anglic throughout the entire Imperium. Within the Imperium, any Anglic speaker can understand almost any other, but isolated communities on worlds with little contact with the interstellar trade lanes shift their speech patterns to form dialects. In addition, broad areas within the Imperium have established their own pronunciation patterns; accepted dialects include Rim (which includes Terra), Core (the central region of the Imperium), Riftian (the spinward frontiers), and Transform (the Antares region).

Antares: Trailing region of the Third Imperium. The name Antares is applied to a variety of places at the trailing fringe of the Imperium. Antares is a domain of the Imperium, a sector within that domain, and the capital of that sector

Antares, League of: The League of Antares (although it does not include the Antares system) is an autonomous region within the Imperium The worlds were originally pressed into the Imperium in 89 during the Antarean Pacification Campaign The worlds were occupied by the Julian Protectorate during the Julian War. When regained for the Imperium at the end of that war, the peace terms included a mandate that the League of Antares be given limited autonomy for control of trade, commerce, and internal affairs.

The autonomy of the League of Antares served as a model for the later establishment of the Solomani Autonomous Region

Ansing Expedition: Famous exploration of the accessible reaches of the gas giant Annikkittar in the Pretoria system in 870 to 884. Extensive use of specially designed exploration vessels, protective environment suits, and high technology



equipment allowed the Ansing Foundation of Vland to extensively map and explore the upper reaches of the gas giant's atmosphere

Antebellum: Literally, before the war. General historical term referring to the period within the Imperium before the Civil War, specifically 210 to 604.

The antebellum period was characterized by expansion of the Imperium with large-scale colonization efforts, integration of numerous regions into Imperial society, and an overall mood of growth and exploration. With the end of the antebellum period, the Imperium turned more attention inward and devoted resources to internal development and consolidation.

Antiquity (Corridor/Ian 0806 A223420-C): One of the best preserved Ancient sites in existence Discovered in 385, the site is unique in that many parts of it are still operational. The biggest problem faced by researchers has been figuring out what things did and how they worked Many items are still a mystery.

Artifact: Any manufactured object. The term artifact is commonly used to refer to any object, item, or group of related items produced by the Ancients.

Aslan: The Aslan are a race of intelligent beings with an established interstellar empire spinward and rimward of the Imperium; in addition, large numbers have settled within the Imperium

Aslan stand roughly human-sized, averaging 2 0 meters in height and weighing about 100 kg They are descended from four-limbed, upright, bipedal carnivore/pouncer stock originally adapted to a solitary arboreal existence.

The earliest Terran explorers saw in them a vague resemblance to the Terran lion, and they have been described (by Terrans) as lion-like ever since, although there is very little true similarity. The derivation of the word Aslan is unknown. There are two sexes, male and female. The most notable external difference is the increased size and mane of the former. Females outnumber males by 3·1.

Aslan have a single highly specialized dewclaw under each thumb which folds back jacknife fashion into a horny covering in the base of the thumb and palm.

A vast Aslan-dominated empire (the Aslan Hierate) lies far to rimward, but Aslan themselves have ranged well beyond its borders, with many settling within the Imperium and attaining full status as citizens. As citizens, they subordinate themselves to Imperial authority, although they have remained culturally separated from human society Aslan serve in the Imperial armed forces; they achieve nobility; they pay taxes; they run businesses.

Aslan Society: The Aslan are a warrior race, proud, noble, and devoted to those in authority above them. An individual Aslan is usually a member of a family of from 2 to 12 individuals under a patriarchal leader. Several families will combine into a pride with one family dominant. A number of prides form a clan, again with a top pride. Aside from military organizations and the ruling council (within the Hierate), the clan is the highest social-political organization among the Aslan.

A deep-seated territorial instinct causes the Aslan to have an inordinate (from a human standpoint) concern with land. For male Aslan, owning land is a major goal in life. An Aslan's stature is determined by the amount of land he (or her husband) controls, or by the amount of land owned by any higher lord the Aslan may be vassal to. The lowest classes of Aslan are landless, and provide the farmers, laborers, craftsmen, and factory workers A holder of a large territory will often grant authority over it to vassals (usually sons, brothers, or male relatives by marriage) who administer the land in his name

The sexes have very different roles in Aslan society. Males (in all but the lowest classes) are concerned mostly with military operations, acquisition of territory, and political affairs. Females are concerned with trade, industry, and the accumulation of knowledge. Upper class males have little conception of money and are literally incapable of functioning in a technological society without aid, so they are thus seldom encountered without the supervision of a wife, mother, or other female relative or employer.

For instance, a typical Aslan mercenary unit will be organized by a wealthy married female, who will then assign its operation, for a share of the proceeds, to an unmarried female relative. The battle commander and most of the troops will be unmarried males (many of them also relatives) hired with the promise of land grants (and the opportunity to gain honor and reputation in combat); however, staff, operations, supply, and intelligence officers will generally be female.

The extremely deadly nature of any combat between Aslan has led to a rigid, ritualized pattern of behavior designed to reduce conflict. Aslan are very polite, and while most have learned to be patient with non-Aslan, accidental fights still occur. Disputes between individuals are handled by the patriarchs; disputes between families are handled by the pride leader; disputes between prides are handled by the clan leader.

Aslan Calendar: The Aslan calendar is based on the period of Kuzu (the Aslan homeworld) around Tyeyo, its star. The Aslan ftahea (year) is 319.98 standard days in length

See also Aslan Border Wars, Aslan Hierate, Kuzu.

Aslan Border Wars (−1118 to 380): Series of conflicts between various Aslan clans and human systems as the Aslan expanded toward already settled human territory. The Aslan achieved jump drive late (-1999) and proceeded to expand into the available territory in their region of space. Contacts along their trailing border necessarily resulted in friction with the human systems in that region.

Because the Long Night was already well under way by the time the Aslan encountered humans, there was no central human government to resist Aslan attacks Since there was no united Aslan authority either, the sides were fairly matched, and numerous small wars erupted between Aslan clans and human splinter states, with alliances among the various powers constantly forming and dissolving.

The border between human and Aslan space remained relatively constant, with a few systems changing hands after each war. At this time some clans also launched raids into the interior of the former Imperial domains, where they conquered and settled worlds as much as 40 parsecs beyond the border.

Once the Third Imperium expanded into the region (circa 200), its superior organization and technology gradually put an end to the Aslan threat. The final treaties, known as the Peace of Ftahalr, were negotiated with all the major clans. They established a buffer zone about 30 parsecs wide between the Imperial border and the region of Aslan control There has been

no war since then (380), although the Solomani have violated portions of the zone and incorporated it into their boundaries.

See also Aslan, Aslan Hierate

Aslan Hierate: Interstellar, multisector government of the many Aslan clans. Aslan society centers on the clan. Within the Hierate, the family structure of the Aslan and the governmental structure are the same. The highest governmental functions are performed by a council of twenty-nine clan leaders chosen from amongst the most powerful clans.

"The 29" (as they are called) have quasireligious status and represent the essential unity of the Aslan race. To be chosen one of the "the 29" is the highest honor to which any Aslan can aspire. The 29 meet continuously on Kuzu to adjudicate interclan disputes and decide matters of group policy No member of the 29 speaks for the Hierate as a whole, nor does the whole 29.

There are no Hierate military forces, each clan has its own, and they rarely act in concert with those of other clans. The Hierate itself can call upon military forces only insofar as the clans themselves agree to provide such forces. Even the minor forces conveying the 29's decisions are actually under the control of individual clan leaders

Dulinor the Usurper shot and killed the Aslan ambassador from the Yerlyaruiwo clan at the same time he murdered the late emperor; this sparked Aslan reprisals in the rimward border of Trojan Reach Sector and the Solomani Rim. Officially, however, these scattered border hostilities do not constitute a state of war between the divided Imperium and the Aslan Hierate.

See also Aslan, Aslan Border Wars, Kuzu

Assassination, Right of: The first Third Imperium emperor to be shot by his successor was Cleon II, also known as Cleon the Mad. Selected by lot in a secret meeting of the High Moot, Porifia shot Cleon II in his council chambers in 245. Porifia was subsequently proclaimed empress by Moot confirmation.

During the Civil War period, several usurpers attempted to claim the throne by the right of assassination—few succeeded.

Although the right of assassination has fallen into disuse, it is generally agreed that for the method to be a valid route to the iridium throne, certain precedents must be followed: 1) the assassin must be a high noble; 2) the assassin must kill the emperor by his own hand in the presence of witnesses; 3) the Moot must approve of the new emperor, just as with any successor.

Thus, the reason for the assassination must be well founded, or Moot confirmation will likely be denied Moot confirmation can make all the difference—depending on what the Moot says, the assassin could be hailed as a courageous hero or prosecuted as a seditious murderer.

The attempt by the usurper Dulinor, Archduke of Ilelish, to claim the throne via Strephon's assassination is not seen by most loyal Imperial citizens as a legitimate claim to the throne. The Moot has not yet had an opportunity to decide on the matter.

Astrography: The science of mapping interstellar space. Basic to any science of mapping is a coordinate system. The scientific system used by the Imperium is based on rings of longitude, rays of latitude, and parsecs By convention, rays of latitude and rings of longitude are measured from a starting point at Reference/Capital, the world where the data from the First and Second Imperial Grand Surveys are stored.

This mapping system is highly Imperio-centric, and other systems are used by other peoples and races outside the Imperium This system has gained wide acceptance, however, among Imperium dominated client-states, human and otherwise. This mapping system breaks down and is prone to error beyond certain limits. It does serve admirably for a band approximately 400 parsecs wide at a longitude of 10,000 parsecs, which is a region precisely centered on the Imperium.

In ordinary discourse, a world is referred to by its name, sector, and subsector. For example, the homeworld of Archduke Norris is Regina (Spinward Marches/Regina): that is, the world Regina in Regina Subsector in Spinward Marches Sector.

B

Barracks Emperors: Collective term describing the succession of emperors springing from military backgrounds (and usually seizing the throne by force) during the Civil War.

See Emperors of the Flag.

"Behind the Claw:" A slang term used by inhabitants of the Spinward Marches, Deneb, and Trojan Reach Sectors to refer to these areas The term derives from a supposed resemblance between a claw and the Great Rift, as seen on maps of the Imperium. Inhabitants of this region feel a certain pride in this designation, and it is used to imply that they share a camaraderie and common interest The name was once used as the title of a popular news magazine with a circulation area encompassing the three sectors named above The term is rarely used by inhabitants of other areas of the Imperium

The entire area "behind the claw" is now part of the Domain of Deneb.

Belt Mining: The process of extracting useful minerals and other substances from asteroids. Asteroids fall into three basic categories, each of which is different in nature and value.

Nickel-iron asteroids are reasonably dense, high-grade sources of metal of most value to the manufacturing industry; large asteroids can be sold to local shipbuilding concerns as planetoid starship hulls

Carbonaceous asteroids are the most common planetoids and have the lowest value of all asteroids in most marketplaces. These stony chunks have the most value in systems where space colonies and large stations can make use of the variety of the useful elements—carbon, hydrogen, oxygen, and so on—that can be extracted from them.

Ice chunks are made up of various frozen volatiles, including methane, water, and the like. These "dirty snowballs" are a source of hydrogen fuel and hence support an entire specialty of "ice miners" who seek them out. In systems where gas giants cannot be used for one reason or another, a starport or space station may pay reasonably good money for ice chunks, though they will never make a belter rich.

None of these three categories of asteroid is particularly valuable, and few belters ever made a fortune strictly from discovering and mining any of these. In point of fact, there are other things to be found. Many asteroids, most particularly nickel-iron rocks, contain varying amounts of the valuable minerals, platinum, iridium, and so forth, and sometimes radioactives. Occasionally an asteroid will be discovered with an unusual configuration that makes it valuable for scientific or even aesthetic purposes. And, finally, there are artifacts, which take in the entire gamut from the flotsam of a week-old wreck to a trove left by the Ancients, and which vary in value accordingly.

Belter: Strictly speaking, one who practices the profession of asteroid prospector and miner, usually working alone or with a small number of partners. Loosely, any resident of an asteroid belt (including citizens of civilized belts such as Glisten, some of whom have never been in a spaceship).

Bilstein Yards: The Bilstein company of Glisten (Spinward Marches/Glisten) has achieved a high reputation for specialist starships of nonstreamlined types. Though constructing on a small scale compared to builders like Ling Standard, Bilstein vessels are sought after due to their attention to customers' special requirements.

Bilstein is the main supplier of private yachts to the March nobility, and this provides the bulk of their output. Occasionally, however, a class of vessels such as the Leviathan merchant cruisers are turned out, and several powered planetoid types have also been constructed.

Since Strephon's murder, Bilstein has begun retooling its lines to produce a series of planetoid warships to defend the Domain of Deneb from outside intruders

Brzk: Archduke of Antares. Brzk's great- (to the eighth) grandfather, Admiral Soegz, was a loyal supporter of Arbellatra in the final years of the Civil War.

C

Capital (Core/Capital 2118 A586A98-F): Central world of the Imperium and seat of government since its founding. Situated in the center of the Imperium, Capital's astrographical position has proven of prime importance as a communications hub, a cultural center, and an industrial focus.

Under the divided Imperium, with no emperor officially proclaimed by action of the Moot, Capital is a head without a brain, and the separate domains of the Imperium have been forced to fend for themselves under the independent leadership of their local archdukes. Once the current political turmoil has settled down and the Imperium is reunited, Capital will again take its place as the centerpiece of human civilization.

Centaurs: Common name applied to the K'kree, because of their resemblance to mythical Terran creatures.

See K'kree.

Chirper: Semi-intelligent minor race native to many worlds in and outside the Imperium.

Chirpers are omnivore/gatherers in the 25 kg class. Living in small groups with limited social organization, they gather fruits and berries, supplementing their diets with occasional small animals, which they catch and kill with crude tools.

Chirper intelligence is at the low end of the scale and ranges from a few points above animal levels to a few points below the average for humans.

Chirpers are named for the sharp bird-like chirp which characterizes their speech.

Chirpers are recognized by Imperial authorities as intelligent, and as such, they enjoy the protections and responsibilities of intelligent species within the Imperium. Most chirpers live in established reservations with only limited interchange with humans.

Church of the Chosen Ones: A fanatical Vargr sect which believes that the Ancients not only "invented" the Vargr race by genetic manipulation of Terran carnivores, but that the Ancients also returned to the Vargr several times and improved the race to the point that it could take its rightful place as the leader of this part of the galaxy. Some Church members even believe that the Ancients will return again to bring this about. The Church has waned in influence since its founding 200 years ago, but it still has followers on many worlds.

Ciencia Iphegenia (1088 to 1116): Grand Princess of the Imperium, daughter of Emperor Strephon and Empress Iolanthe. As heir to the Iridium throne, Grand Princess Iphegenia was educated from birth to eventually assume the mantle of authority for the Imperium. Her early fascination with the sciences prompted an extensive interest in the Imperial Interstellar Scout Service, which considered her its patron.

The Grand Princess died in the assassination attack of the usurper Dulinor in 1116.

Civil War (604 to 622): Fought between various factions within the Imperium for control of the bureaucracy. It had its origin in the strain on communications within the Imperium caused by the long lag times dictated by the very size of the Imperium. To cite one cause, however, would be simplistic. The diverse backgrounds of the many constituents of the Imperium had its effects, as did rivalry for power by major naval and military commanders and a lessening in the Imperium's expansionist tendencies.

The spark which started the Civil War came from the First Frontier War (589 to 604) in the Spinward Marches. Communication lags and a lack of preparedness forced the Marches to conduct most of the war on its own with little additional help or support from the Imperium. Grand Admiral of the Marches Olav hault-Plankwell forced the war to an end and found solid support for a new government Marching on Capital

with his war fleet, he forced an audience with Empress Jacqueline I, supposedly for recognition of his war effort. In the course of the meeting in 606, he personally murdered the Empress, and then proclaimed himself Emperor by right of fleet control. The ensuing power struggle lasted through 18 years and 18 emperors.

The fighting in the Civil War was of two varieties: fringe battles for power bases, and central battles for power in the Core. The fringe battles were fought throughout the Imperium as rival factions recruited forces. Once any power block built up enough strength to make a victory seem possible, the forces were moved to the Core and used to either seize power or to wrest it away from someone else

But there was also a cheaper, easier route open to many. The dynastic crisis of 244 had produced a precedent for the assassination of the emperor if he or she overstepped the bounds of legitimate activity The concept was introduced to legitimize the elimination of Cleon the Mad and was never intended for any other purpose. Nevertheless, in the turmoil of the Civil War, assassination was introduced and accepted, at least by those utilizing the technique, as a way of promoting a succession in government.

The line of Emperors during the Civil War came mostly from naval officers, and they are collectively called the Emperors of the Flag. Of these eighteen, seven were assassinated, ten were killed in battle, and one survived—Arbellatra.

During the course of the Civil War, the Outworld Coalition (of Zhodani and Vargr) saw that their defeat in the First Frontier War at the hands of Olav need not be permanent. They attacked again in the Second Frontier War (615 to 620). Their defeat in that war had greater effects than they would know. Grand Admiral Arbellatra managed the meager forces of the Imperium against the Coalition and managed to force a second defeat.

Arbellatra's strategy after the war was (like Olav) to march on the Capital and seize power. She, however, did not make the mistake of seizing the throne. Instead, she defeated the putative emperor and then took possession of power, holding it in trust for a rightful successor. She held the post of regent for seven years while a search for a member of Jacqueline's family could be found to take the throne.

In the stability that followed with her as regent, she made an impression on the Moot and succeeded in establishing a broad power base. Ultimately, the Moot approached her to take the throne herself, an end which was probably in her mind all along.

With the end of the two Frontier Wars and the Civil War, the Imperium entered a period of renewed expansion and consolidation. The express boat system was established to enhance government, commercial, and private communications; the Solomani influence in the Imperium was lessened and replaced with a more cosmopolitan policy, renewed efforts at interior development of existing Imperial territories provided a new focus for the nobles of the Moot.

See also Emperors' List, First Frontier War, Moot, Outworld Coalition, Second Frontier War.

Client State: An independent political unit which has elected (or had forced upon it) the patronage of a larger political unit. This relationship is generally mutually beneficial and is essentially commercial in nature. That is, the political or defensive ties which may be part of any patron-client relationship are ultimately intended to promote trade between the two.

Confederation: Group of independent states, worlds, or systems united for specified purposes while generally retaining more freedom of action than the members of a federation. Also a league or alliance (especially of princes, nations, states, worlds, or systems).

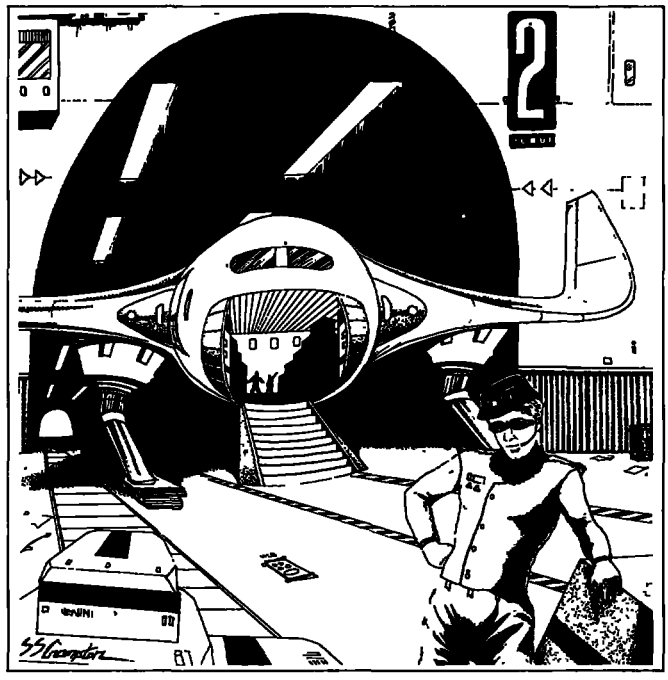
Corridor: Imperial sector containing 267 systems dramatically split by the Great Rift; 69 systems lie rimward of the Rift and 149 systems form the coreward third of the sector. Corridor is named for its role connecting old, well-established Vland Sector with the frontier sectors Deneb and the Spinward Marches. The name Corridor dates from about 140 and has displaced the old Vilani name (Eneri, rough translation: "star salad") for the sector. Corridor today is disputed territory, which lies between the so-called Restored Vilani Empire and the loyal Domain of Deneb.

Coyns: Of the rare artifacts recovered from Ancient sites, the most common are coyns, small disk of metal engraved with various symbols. Their specific purpose is unknown. It may be that the objects served as money, jewelry, psionic focuses, or for some other unknown purpose.

Original coyns have been found in various precious metals such as gold, silver, platinum, iridium, monadium, and even uranium. Sets range in size from six to thirty-eight pieces and are considered desirable to museums throughout the Imperium. Each coyn has a scrap value of Cr400 (if gold), to a museum, the value is closer to Cr4000.

Copies of sets of coyns are made of aluminum, lead, or zinc and are more frequently encountered from unscrupulous merchants or traders. Such fake coyns have a value of about Cr20 each.

Crisis of '99: Albert Croale, in his book *Almost Disaster*, presents a hypothesis that the Third Frontier War (979 to 986) occurred two centuries too late After reviewing the progress



of events in the spinward reaches of the Imperium from the antebellum period to the late seventh century, Croale then analyzes the rise of the Psionics Institutes, their growing public acceptance, and their spreading power. Finally, he presents that a straight projection of events would predict a resurgence of the Outworld Coalition, increased hostilities, and finally, a Third Frontier War.

Instead, his hypothesis as stated in his book indicates that the Psionics Suppressions (800 to 826 and beyond) were a massive manipulation of the population of the Imperium, a form of psychohistory, intended to eliminate the power of the Institutes. Preparations were ongoing for war, and the Imperium made representations of strength (in 799) to the Coalition. It backed down.

But, the psychohistory project went wrong and resulted in widespread rejection of psionics as a whole within the Imperium to the point that even the government had difficulty in using the science of psionics for its official purposes.

Currency, Imperial: The basic unit of legal tender in the Imperium is the Imperial credit. Individual worlds may issue their own currencies, and those currencies may or may not be acceptable on other worlds. Similarly, corporations and megacorporations may issue scrip, and its acceptance outside of the corporate environment is a matter of conjecture. But Imperial credits are accepted everywhere in the Imperium and in many locations outside of it.

Imperial credits are almost impossible to counterfeit because of their unique method of manufacture. Plastic fibers are combined under high temperature and pressure and extruded as a rectangular bundle of great length. The different colored fibers form the pattern of the bill. It is not printed on but actually made a part of the structure of the note. The bundle is sliced to paper thinness, and a 14-digit alphanumeric (letter/number combination) is added for uniqueness. Credit bills are issued in 10, 20, 50, 100, 500, 1000, and 10,000 credit denominations Plastic coins, manufactured in a similar manner in various shapes, are issued in quarter, half, one, and five credit denominations.

Imperial credits can be bulky in large enough quantities. Bills measure 75 millimeters × 125 millimeters; 1000 bills stand 50 millimeters high and weigh 500 grams.

Imperial credits are still legal tender in the Domain of Deneb; their acceptance in other areas of the divided Imperium varies widely.

D

Darmine: Cultural region in the Zarushagar sector Darmine had a separate but submerged cultural identity within the First Imperium and happily threw off that domination when the First Imperium fell Allowed to flourish by the Rule of Man, the community of worlds survived the Long Night with little harm.

Darmine was the major focus of the Ilelish Pacification Campaign (76 to 120).

Darrian Confederation: Group of worlds in the Darrian subsector settled by humans from Darrian (Spinward Marches/Darrian 0627 A463955-G) during the period -1137 to -927. The current capital is Mire (Spinward Marches/Darrian 0527 A665A95-B).

The Darrian Confederation contains 18 worlds within the same subsector and has a population of 17.19 billion. Darrians are humans who developed independently on Darrian. Some Solomani blood is evident from Solomani traders who encountered Darrian in -1511 and provided them with sufficient technology to explore their subsector.

See Humans.

The Darrian Confederation is a client state of the Imperium. It has had long-standing conflicts with the Sword Worlds.

Since Strephon's murder, the Darrians have reaffirmed their loyalty to the Imperium through Archduke Norris of the Domain of Deneb.

Deneb: Imperial sector containing 385 systems lying beyond the Great Rift; named for the sector's brightest star, Deneb.

Deneb sector was fragmentarily settled by both Vilani and Vargr during the latter years of the First Imperium, but major development of the sector only took place after Third Imperium Scout Service explorations located major resource worlds in quantity. Industrial worlds that exploited those resources soon created trade routes and commercial ties that linked the Imperial core with the Spinward Marches.

Deneb sector is primarily Imperial. The Imperial border runs just within the coreward edge of the sector, and scattered Vargr systems (as well as non-aligned systems and client states) lie beyond the border.

Deneb is part of the Domain of Deneb, a region loyal to the Imperium under the leadership of Archduke Norris The sector is on red alert on its coreward border and is ready to defend against alien insurgents from the Vargr Extents. Its trailing border abuts the so-called Restored Vilani Empire, a rebellious sector containing Vland; occasional hostilities have been reported.

Digest Touring Award: Outstanding journalism award offered every seven years by the Travellers' Digest magazine (a popular magazine with a wide circulation in the spinward sectors of the Imperium, available on either plastic vellum or electronic media).

The recipient, who must be a professional journalist living and working "behind the claw," is given honorary membership in the Traveller's Aid Society (worth one million credits); he or she is then expected to travel through the region during the tenure of the award and to submit a feature article about his or her latest journey once every thirteen weeks The intent of the Digest with this award is to "promote understanding of the cultural diversity within the Imperium " The most recent winner of the award, in 1114 is Silenia Stensen, a well known journalism professor from the Torri Institute on Trin (Spinward Marches/Trin's Veil).

Directions, Galactic: North, south, east, and west are insufficient terms for referring to directions within the galaxy Instead, the following conventions have achieved widespread acceptance when referring to direction·

Toward the galactic core (toward Capital from Terra) is coreward; away from it, in the direction of the rim, is rimward. In the direction in which the galaxy is rotating (toward the Spinward Marches from Vland) is spinward, and the other direction is trailing

These directions are in widespread use in describing Imperial features and businesses. For example, the Spinward Marches is a sector at the extreme spinward fringe of the Imperium;

Rimward Lines is an important interstellar transport company.

Finally, within the Imperium, the term coreward is also used to indicate the direction of Capital, the Imperial core. There is some potential for confusion if the term is accepted out of context

Domain: Group of four sectors within the Imperium under the general control and direction of an Archduke.

Droyne: Intelligent major race inhabiting scattered worlds within an area slightly larger than the region of the current Third Imperium. The Droyne are a small race derived from winged herbivorous gatherers. They vary in size depending on caste but generally stand one meter tall (large workers and warriors can be larger than humans). The history of their evolution remains a puzzle because their home world is not known with certainty

Droyne society is divided into rigid castes determined when an individual reaches adolescence. The six castes of the Droyne all serve different functions within Droyne society. Although identical at the time of caste selection, caste members develop pronounced physical and mental differences by maturity. Different genetic programs are awakened by differences in diet and environment among the various castes. Young leaders, for instance, experience a nearly 30 percent increase in brain size in the first year after casting; drones develop sexual organs; and so on The following are descriptions and definitions of the castes·

Worker· Manual labor and mundane ordinary activity are the province of the worker Workers are not too smart and are temperamentally suited to contentment with ordinary labor and subservient tasks

Warrior: Trained for combat and possessing comparatively well developed muscles and reflexes, the warrior is the security troop, the soldier, the marine, and the policeman of the Droyne culture They are common in frontier bases, and less numerous in civilized areas.

Drone: Drones have a variety of purposes in Droyne society. They perform a reproductive role which makes them both fathers and mothers to Droyne young, and they have a role in the ceremonies which determine caste for maturing young. In addition, drones comprise a sort of middle management caste, which is responsible for many of the routine functions in business, trade, and administration.

Technician: This caste is the science-oriented portion of Droyne society and is concerned with both research and practical implementation of technology.

Sport: Although the caste system of the Droyne is rather rigid, the sport is the deliberately accepted exception to caste structure. Sports are special individuals who cross caste lines to become individual scouts, messengers, representatives, hunters, prospectors, and to take other occupations that require individual initiative or separation from Droyne society for long periods of time. A sport is the most encountered Droyne away from a Droyne world.

Leader: Leaders are required to manage and direct society. They are ultimately responsible for everything that the Droyne as a whole do.

Society: There is little individual freedom in Droyne society, and as a result, society and government join into one concept. Workers work. Leaders lead. All of society is dedicated to continuing the existence that provides all members with food, shelter, and the other amenities that make life enjoyable. In addition, there is little discord in Droyne society when things are running smoothly, as each member of society has its own function to perform. Only when disaster happens is the group forced to strain.

A typical Droyne group consist of a variety of Droyne from the different castes. There will be many workers, few drones and leaders, and technicians and warriors based on current needs. Each group will also have several sports, although they may not be present; instead they may be occupied with their own solitary tasks.

This is not to say that Droyne are mindless. Leaders are quite capable and responsible; warriors have strategic and tactical senses, technicians are inventive and clever But all accept the central group as a part of their lives and work for its benefit above their own

Dulinor: Archduke of Ilelish. Assassin of Emperor Strephon (in 1116) and pretender to the Iridium Throne.

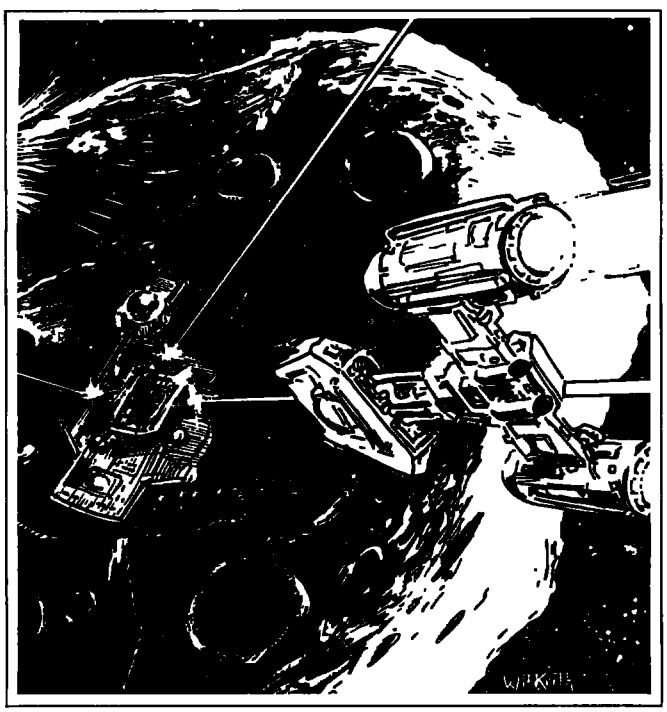
E

Emperors of the Flag: During the Civil War period (604 to 622), the Imperium was in the hands of a series of naval officers of flag (admiral) rank. These eighteen emperors achieved the throne through assassination, fleet action, political maneuvers, and general mayhem. The year 619 particularly saw six emperors serve on the throne, none of them for more than three months.

The succession of Emperors of the Flag began with the seizure of the throne by Olav hault-Plankwell in 604, which precipitated the Civil War. It ended with the naming of Arbellatra regent of the Imperium by the Moot in 622

See also Civil War

Empire: Group of independent states, duchies, nations, tribes, worlds, or systems under supreme rule of an emperor.



Express Boats: Rapid communication ships which are designed to make optimum use of jump technology in communicating information within the Imperium. Because the Imperium is so large, ordinary communication must depend on ships travelling along established trade routes, making Regina nearly 4 years out from the Imperial Core.

The express boat (abbreviated Xboat) system, established originally in 624 and expanded to cover the entire Imperium by 718, cuts this communication time by nearly 75 percent. Selected locations along major trade routes are established as sites for express stations, which are orbital facilities which service and refuel the Xboats on their communications runs.

As an Xboat arrives in a system, it beams its recorded data to the express station, which then retransmits it to an Xboat standing by for a jump outsystem. Time between jumps is almost always less than four hours and has been recorded at under seven minutes, making the speed of communication nearly the speed of jump (since Xboats carry jump-4 drives, speeds near four parsecs per week). In practice, this speed is somewhat reduced by the fact that trade routes do not follow straight lines and that not all jumps are made at jump-4. Nonetheless, the system achieves approximately jump-2.6 per week.

F

False War (1082 to 1084): The short, fourth war in the series of Frontier Wars between the Third Imperium and the Zhodani Consulate

See Fourth Frontier War

Federation: Group of states, worlds, or systems, each internally independent, joined into a union to which has been surrendered certain rights and responsibilities, most generally to do with foreign affairs.

Fifth Frontier War (1107 to 1110): Latest in the series of continuing wars between the Zhodani and the Imperium Following several years of unrest and provocation, Zhodani forces attacked across the Imperial borders while previously placed guerrillas on selected Imperial worlds began uprisings. Vargr and Sword World forces allied with the Zhodani also participated in the attacks

The armistice, signed in 1110, resulted in the loss of no worlds to the hostiles and returned to the status quo.

First Frontier War (589 to 604): The first of the modern border clashes between the Imperium and the Zhodani, which sparked the beginning of a continuing antipathy between the two major lines of humanity.

With the conclusion of the war, Olav hault-Plankwell returned to the Imperial core with his war fleet and took the reins of government, dispatching Empress Jacqueline and thus beginning the Civil War and the reign of its Barracks Emperors.

First Imperium (-4045 to -2204): The first major interstellar civilization, politically and culturally dominated by humans originating on Vland. The jump drive was discovered on Vland in -9235. Immediately the Vilani discovered a number of interfertile and technologically primitive human races on worlds within 60 parsecs. These were gradually brought to a high-technology state with Vilani help and assimilated into a loose interstellar community bound by trade and common culture.

Eventually, the client races themselves explored beyond the local sphere, contacting and trading with still more races. These new races gained their technology without being assimilated into Vilani culture; the resulting increased friction eventually resulted in a series of wars beginning in about -5400.

In response to the threat, Vland began tightening its control of its trade sphere, and finally organizing it into a centralized state in -5273 This marked the beginnings of the First Imperium, although there was as yet no emperor. During the thousand year period of the Consolidation Wars, Vland conquered and absorbed its enemies until there were no longer any civilized states on its borders (except for a portion of the Vargr Extents, isolated from the Imperium by the Great Rift).

The last war ended in -4045, and the Vilani declared the establishment of an interstellar empire to govern all Vilani territory. Known as the Grand Empire of Stars or Ziru Sirka, Vilani dating begins at this point. With no exterior threats, the Ziru Sirka lasted for nearly 1200 years; at its height, which was attained soon after the end of the wars, the First Imperium contained 27 sectors and over 15,000 worlds.

However, the cost of maintaining centralized control over this vast expanse was cultural rigidity; exploration had ceased with the beginning of the wars; now scientific research slowed to a halt, and the beginnings of a hereditary caste system began to emerge Civilization was in decline.

As long as there was no exterior threat, the Grand Empire was safe; but gradually, despite all efforts, technology leaked across the borders. New interstellar states arose, and the Imperium could no longer afford to absorb them. Gradually, the Imperium lost territory along its coreward and trailing marches. Then, in -2422, the Imperium was contacted along its rimward border by the Terrans, who had recently emerged into space. Terran expansionism led to a series of interstellar wars, which ultimately resulted in Terran conquest of the Imperium in -2204 and the founding of the Rule of Man.

First Interstellar War (-2408 to -2400): The first military engagement between the Vilani of the First Imperium, and the Solomani of the Terran Confederation. This began an on-again, off-again series of wars between the two major human races, which ended in the defeat of the Imperium and the beginning of ascendence of the Solomani.

See Nth Interstellar War.

Fourth Frontier War (1082 to 1084): Also known as the False War Short, inconclusive war fought primarily in Jewell Subsector between the Imperium and the Zhodani Consulate. The war was in the Spinward Marches with initial assaults by the Zhodani against Jewell and Regina Subsectors stalled at the borders. Its final battle, the Battle of Two Suns, 1084, was waged in the vicinity of Yres and Menorb and resulted in Imperial victory. The armistice was signed before instructions for the conduct of the war were received from the capital.

G

Galanglic: Primary language of the Third Imperium.

See Anglic

Gas Giant: A large planet with an extensive atmosphere of hydrogen and hydrogen compounds. Starships fuel themselves by diving into this atmosphere and skimming hydrogen from this atmosphere. Jupiter, in the Sol system, is an example of a gas giant.

General Shipyards: The largest starship manufacturer in Regina Subsector with yards at Regina, Efate, and Pixie. Originally a military contractor, General no longer produces ships for military use; instead it concentrates on the more lucrative commercial market. The yard at Regina is capable of producing ships up to 5000 tons, while the subsidiary yards at Pixie and Efate are limited to 600 tons per ship, and devote most of their attention to annual maintenances.

Rumors of late indicate that General may be involved in negotiating a renewed series of military shipbuilding contracts.

Glea (Centrax/Glea 2609 A667800-F): Main coordinating center of the Hive Federation since 410. Center of the Glean Cluster, an unusually rich grouping of 16 Hiver-habitable worlds which are mutually accessible by jump-1 shipping.

Good War/Bad War: The terms "good war" and "bad war" are expressions used by mercenaries to differentiate between small-scale actions within the Imperium and full-scale wars between the Imperium and outside forces.

Small scale actions are viewed as good because the Imperial rules of war are in effect, and a unit knows that it will not be subject to nuclear weapons. Good wars are usually short and not particularly bloody. A unit in a tight spot need merely surrender and activate its repatriation bonds to be removed from combatant status. Even antiguerilla actions are good, under this classification, because of the fact that although most guerillas usually observe no restraint with captured government forces, captured mercenaries can usually be ransomed to serve as a source of income.

A war is bad when no such controls are in effect, and a mercenary unit will be subject to the full horrors of war. Mercenary units are understandably reluctant to accept bad war contracts, but they may be forced into them, especially when near the border areas adjoining two or more factions of the divided Imperium.

Grand Prince: Imperial titular designation of the heir to the Iridium Throne. Under Imperial custom, the eldest son or daughter of the Emperor becomes heir to the throne at the age of 12. Elaborate ceremonies confer the title of Grand Prince (or Grand Princess) on the heir and proclaim the information to the Imperium

Great Rift: Broad expanse of space with a very low density of stars lying spinward of the main region of the Third Imperium. The Great Rift is a pronounced impediment to interstellar travel, and it constrains jumps through Corridor sector to the Spinward Marches.

The Great Rift is one of many astrographic terrain features which have provided long-term security for the Third Imperium. By its very nature, the Great Rift has made outside incursions difficult, which has made the interior of the Imperium a secure population center.

Guaran (Ricenden/Guaran 0827 A565800-F): Homeworld of the Hivers. Guaran has no special political importance, although it attracts millions of tourists annually from all over the Federation.

H

Hiver: Intelligent major race with a large federation trailing the Imperium. Hivers average 1.5 meters from ground to top of upraised head and weigh about 150 kg. Descended from omnivore gatherer/scavenger stock, they are the most alien of the major races Hivers exhibit a modified six-fold radial symmetry; the body has a calcareous internal skeleton consisting of a series of rings supporting the limbs and a fused carapace protecting the brain and internal organs

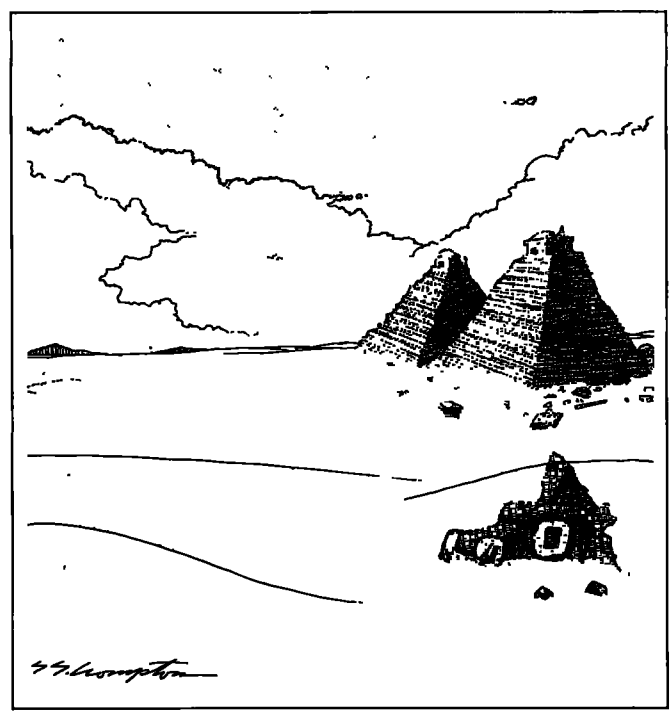
The head is a modification of one of the limbs and contains six eyestalks and six manipulative tentacles, plus paired infrared sensor organs. The other five limbs are identical (except for slight modifications of the hand opposite the head) and are used as arms and legs indiscriminately. Each limb ends in a six-fingered radial hand. Fingers are very flexible and have muscular suction cups on the lower surface about halfway to the tips. Hiver arms and hands are generally weaker than a human's but are very tough and difficult to injure.

The mouth (digestive opening) is on the lower surface of the body. There is no sound-producing organ, but hivers do have three ears placed around the neck near the head.

Hivers have only one sex. Reproductive cells are exchanged each time that hivers meet, using the modified rear hand (the process has been termed by humans "shaking hands"). The cells are kept in a reproductive pouch on the lower body surface where they conjugate and exchange genetic material Once every forty days or so, a cell will develop into a larva, which then drops from the parent's body.

Hive planets are mostly wilderness, and the larva enter the wilds, where most are killed. After about a year, survivors return to civilization, where they are welcomed into any nest and begin their education as citizens. Parental instinct in hivers is very strong, and the young are adopted by the entire nest. (Note that this instinct applies only to the year-old returnees, Hivers have no concern for the younger larvae, and in fact they consider them minor pests.)

Hiver language is a combination of arm/tentacle waving and physical contact. The written language is ideographic and is used as a standard language among the races of the Hive



Federation. Hivers talking among themselves use all three aspects of language (gesture, touch, and writing) at once, a process capable of great subtlety and sophistication, but unintelligible to the outsider.

Hivers are unique among major races in that they had a complex culture before becoming sentient. Originally, they lived in the tunnels and built-up mounds of a large (1000kg) burrowing animal. In exchange for shelter, they gave food. They farmed fungus and foraged outside for decaying vegetation and dead animals as a source of food for the fungus.

Burrowers were allowed to graze in the farm tunnels. Hivers ate the fungus and whatever fresh food they could find outside. Intelligence arose as the outside environment changed, forcing the foraging parties to travel farther to discover new sources of food and fertilizer, foragers advanced from simple scavenging and gathering efforts to complex cooperative efforts of hunting and trapping live game.

Today, fungus remains the staple of the Hiver diet; fungus growing is a highly developed art. Most buildings retain the beehive shape and large underground tunnel complexes of the original burrowers, but they are constructed by machines; the burrowers (known as snohl) are now reduced to the secondary function of keeping the tunnels clean. Hiver attachment to them is essentially nonrational; they just feel more comfortable with snohl around.

Society: Hive society is highly individualistic. The term "Hive" results from an early human misconception which stems from the appearance of the Hivers' building and tunnel complexes. Nests contain from five to five hundred individuals, who are usually centered around some common endeavor.

While one hundred is an average size for a nest (and was the size in precivilized times), larger groups may come together for some civilized purpose such as large manufacturing companies or universities. Small nests are usually spaceship crews or isolated research parties. A young hiver will spend his first fifteen years in his home nest; thereafter, nest changes may take place as often as a modern human might change jobs.

Because of the nature of their reproduction, hivers never experienced the population pressures so important to human history. The population of the homeworld is now only a few hundred million, only ten times greater than it was in prehistoric times. Predators control the young; when the adult survival rate rises, thus increasing the numbers of young produced, the predator population increases proportionately and the balance is maintained Space colonization arose not from pressure but from curiosity, with which Hivers are amply endowed.

The Hivers have colonized only those planets with climates most pleasant to themselves; if the planet has no predators that like to eat Hiver larvae, they are imported. Because of the high birth rate, a colony will rapidly fill up to its maximum population level of a few hundred million and will then stabilize. Hivers like planets of size 6 or less, with thin or standard atmospheres and unvarying climates. Hiver enclaves, for commercial or scientific purposes, are found on worlds of more extreme characteristics.

Hive industry and business excels at communications technology and robot construction. Major exports include artificial and computer languages, translators, and sophisticated electronic hardware of all types. Hiver mathematical systems are much in demand for their power and elegance.

Hive Federation: Human term for the loose interstellar community dominated by the Hivers; Hive Confederation is also sometimes used. The Hivers have only one culture and one language; the Hiver genotype (with individual variations similar in degree to differences between individual humans of the same race) is also constant.

The Federation government (if such a term is at all applicable) is mostly concerned with maintaining the uniformity of the Hiver culture and species. This is accomplished by frequent reproductive embassies from one planet to another. Members of many different nests will shake hands with everyone nearby in a sort of farewell party and will then board a large embassy ship bound for a far-off world. Once there, they will meet with as many people as possible, shaking hands and exchanging news, art, gossip, scientific information, political views, and so on for about a year. They will then return home for another year-long round of parties, discussions, and handshaking.

Most disputes among communities are handled in these embassies; others, considered too urgent or transient to wait for an embassy, are settled by judges. There is a considerable body of Hiver common law and custom, and a judge is a person who has spent years in study of the law; judges' decisions are not necessarily binding and are open to compromise, but they carry a great weight of custom.

The discovery of alien races and their integration into society required a slightly more formal organization, which grew out of the coordinating body which schedules embassies. Two additional bodies were established: the Federation Navy and a development agency.

The Hiver parental instinct was aroused by the discovery of numerous intelligent species less fortunate than themselves, and work began immediately to lift the "children" to civilization An early experience with an aggressive race led to the establishment of a system of quarantined worlds, denied entry to (or knowledge of) interstellar society.

Covert operations are in progress on quarantine worlds to modify overly aggressive cultures into acceptable members of the Federation, and several quarantined planets have been opened since the beginning of the program. So far, no quarantined race is close to achieving interstellar travel on its own; public debate continues on what to do in such a case.

The navy is the main instrument of military force. Hivers came late to the concept of war and are more comfortable with high-tech, long-range oriented violence; they dislike the personal approach of ground combat.

When ground forces are absolutely needed, other races of the Federation generally supply the troops. Federation armed forces are essentially a deterrent force and are seldom used as an instrument of policy.

Other races of the Federation are equal partners in society, although the structure of society is Hiver-generated, and those races able to adapt best to a Hiver way of life and customs have been most successful. All races participate in the embassies, although in a modified form.

Some associated species retain strong internal governments or police forces to regulate the aggressive tendencies of their members, but whatever solution is reached, all Federation

member societies are nonaggressive.

Most worlds of the Federation have communities of several species; races inhabit the worlds they find most pleasant.

Holiday Year: The year zero in the history of the Third Imperium, established by Cleon I to commemorate the establishment of the Imperium. Technically an aspect of calendar reform, the use of the year zero provides a central date point for counting years back into the Long Night and forward into the future of the Imperium

The actual advantages of a holiday year are slight: centuries begin in the hundredth numbered year instead of the first numbered year, and the number of years between any two dates can be determined by subtraction.

More importantly at the time, the holiday year was used as part of the public relations campaigns which were impressing the authority of the Imperium upon local governments. The minor requirement of changing to the new calendar was used to determine cooperation by those governments.

Humaniti (former spelling Humanity): Collective name for human races, including Solomani, Vilani, Zhodani and others.

See Humans.

Humans: Intelligent major race dominating the Imperium and several additional interstellar communities. Humans stand approximately 1.8 meters in height and weigh about 100 kg. Descended from omnivore gatherers, humans developed intelligence in response to shifting climatological factors.

The most unusual aspect of humaniti is the fact that humans are present on many different worlds and stand at various levels of development on those worlds. The Solomani Hypothesis states that Humans evolved on Terra (Solomani Rim/Sol) and were scattered to many different worlds by the Ancients for reasons currently unknown The result is that many different, parallel human races exist and coexist throughout known space.

The three most widespread human races are the Solomani (humans from Terra), the Vilani (humans from Vland), and the Zhodani (humans from Zhodane).

See also Ancients, Humaniti, Solomani Hypothesis, Solomani, Vilani, Zhodani

I

Imperial Calendar: Calendar established at the creation of the Third Imperium as a universal calendar reform Dates count from the founding of the Imperium, the year "zero " Dates before zero are negative, dates after are positive. For example, Terra discovered jump drive in -2431. The Imperium was founded in zero. Emperor Strephon was assassinated in 1116.

The year is divided into 365 standard days, which are grouped into 52 weeks of seven days each The lengths of days and weeks is a legacy of Terran domination during the second Imperium. Days are numbered consecutively, beginning with one. The first day of the year is a holiday and is not part of any week. For example, the first day (Holiday) of the year 1116 is 001-1116. The emperor was assassinated on 132-1116. The last day of the year is 365-1116.

Imperial Edict 97: This executive order is the enabling act for the use of Imperial warrants. Unusually obscure for such a wide ranging and powerful edict, it is nonetheless on file at all Imperial installations. The edict text runs to 34 pages, much of it pure legalese; when distilled down, it proves very direct, it assists the holder of an Imperial warrant with all the power you can bring to bear.

Only the emperor has the power to issue these warrants.

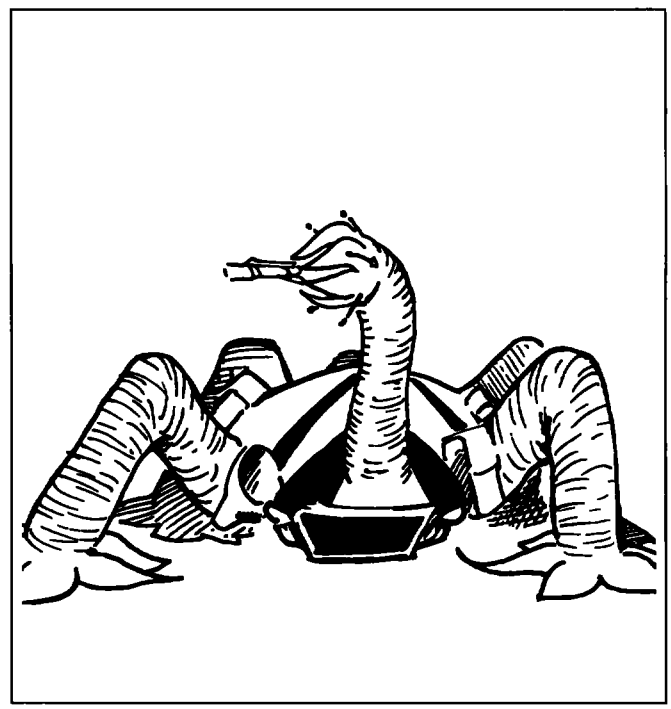
A similar edict (Imperial Edict 3097) provides limited power to the Archdukes of the Imperium to issue similar warrants, although they are limited in their duration and territory

Imperial Research Station: The worlds of the Imperium manifest a wide range of technological levels. The third Imperium has always allowed its member worlds a wide degree of latitude, and it meddles very little in local affairs. With communication limited to the same speed as transportation, a single offworld query can involve weeks, months, or even years before a reply is received In addition, the cost of offworld transportation (in both time and money) tends to limit the interchange of information, the shipment of experimental prototypes, and other such activities that are basic to the dissemination of scientific knowledge.

Most worlds have found that simply purchasing advanced technology from a neighboring world is impractical. Not only is such high technology expensive, putting it to any cost-effective use requires that the technology be understood.

Consider: as useful as Tech Level 8 solid-state chip circuits are, they cannot be used on a large scale without the knowledge of electronics or the ability to provide supporting circuits (power circuits, circuit boards, and so on), which further implies a knowledge of photo processing, and even crystal culture. In the final analysis, attempting to jump to a higher Tech Level without passing through any of the intervening Tech Levels just doesn't work: one must pass through the lower stages of technological development on the way to higher Tech Levels.

Regardless of what the individual member worlds do, there are also certain large-scale interests in the Imperium which back research projects. Such research is generally privately



backed (such as under contract by multiworld corporations), or it is sometimes performed in established Imperial Research Stations.

Private Research. On a scale as vast as the Imperium, it is often cheaper to duplicate research rather than search out and contract for technology elsewhere in the Imperium. However, trade between worlds tends to introduce new knowledge and technology to those who do not yet have it. If a certain offworld item proves useful, local companies may try to achieve the same technology with the goal of entering into local manufacture. Local manufacture has the advantage of taking into account local preferences, as well as providing local employment. It also avoids potential problems with licensing agreements and arrangements

Imperial Research: The Imperium finances research into a variety of areas. Sometimes this is an attempt to duplicate technology observed or reported in neighboring cultures and not yet within the ability of the best known science in the Imperium. Other times, the research is an area of interest expressed by some Imperial body (such as spinal mount weapons research performed by the Imperial Navy).

Imperial research stations may be located on worlds which need a boost to the local economy or in remote systems far from the potential disturbance of Imperial politics Many different stations may be located in several systems of the same region, and many different areas of knowledge may be under investigation at one time.

In general, however, one station is constructed for one purpose, and it continues in a single area of knowledge for its entire span of usefulness. Its size, personnel roster, power plant capacity, and even visibility profile are dependent on its area of investigation.

Imperial backed research may delve into many areas. Some examples include black hole research (both large-scale and mini-black hole investigation), instantaneous transmitter development (so far proving impossible), antimatter containment, new weapon development (such as disintegrator beams), black globe development, deep planetary scanning, psychohistory, mass population behavior prediction, genetic transformation of living organisms, self-aware robots and starships, stasis and time travel, personal shields, memory transfer, and total rejuvenation

The Divided Imperium· The divided Imperium is having varying effects on Imperial research stations. Some stations continue as if nothing has happened, others have been directed (under new authority) to change the focus of their research, still others have been either shut down or sacked by the local authorities for anything of value to the defense of the local realm

Imperial Rules of War: To mitigate most of the potentially disastrous aspects of armed conflict, the "rules of war" evolved as an accumulation of unwritten concepts, which were established on a case-by-case basis. The rules of war were never officially codified, both to prevent them being seen as an Imperial endorsement of war and to keep formal precedent from preventing Imperial intervention whenever the Imperium deemed it necessary.

The main aim of the rules was maintaining the economic and military well-being of the realm. They gave the Imperium the right to intervene only when local military action threatened this well-being The primary causes of instability, as viewed by Imperial analysts, have been long-term economic dislocation and excessive extraplanetary influence:

A. Long-term social or economic dislocation is suffered when a region loses its ability to carry on at its prewar level of economic activity.

B. Excessive extraplanetary influence is even more vague. Historically, the Imperium has tolerated the use of force as a necessary outlet for built-up political and social pressures. In such cases, a short war is deemed preferable to continuing tension, sabotage, political agitation, etc. However, attempts by extraplanetary forces, such as offworld governments or large commercial interests, to seize control of a world's affairs are beyond the scope of the "safety valve" rationale.

"Assistance" is tolerated so long as it is deemed appropriate to the level of legitimate interest in the affairs of the world held by the extraplanetary organization. For example, the Imperium has often tolerated the provision by megacorporations of training cadre, arms, equipment, etc., on a limited scale, and even of training fully equipped striker units to local governments. However, when it has appeared that the primary burden for the conduct of the war has been carried by an extraplanetary power, the Imperium has intervened, claiming the power is using the misfortune of a local dispute as a pretext for aggression.

Unlike the above rules, one prohibition is clear and firm throughout the Imperium: use or possession of nuclear weapons, if discovered, and regardless of size or type.

After Strephon's assassination, the Imperium's rules of war policy has taken a thorough beating. Many high level Imperial officials have abused the provisions of the extraplanetary influence concept, largely because of their growing distrust in the motives of their peers elsewhere in the Imperial government.

However, some Imperial officials view the current state of affairs in the Imperium as a valid application of the rules of war In their view, the current wide-scale struggle was inevitable: it is simply a larger scale version of the "necessary outlet for built-up political and social pressures," a key concept in the rules of war. Thus they believe "a short war is deemed preferable to continuing tension, sabotage, and political agitation "

Imperial Stationery: The Imperial family has reserved (both by custom and by law) a distinctive design for its personal stationery. Well-known throughout the Imperium through its use for routine messages and for Imperial appointments, the form is cream-colored and embossed with the Imperial Sunburst in gold. Both physical and electronic versions of the stationery are used.

Because it is used for Imperial appointments (even when issued in blank for offices in the marches) all Imperial officials are familiar with the design and can readily tell physical forgeries from the real thing. Electronic versions are data-encrypted with a special code lock and require a special hardware key to be unlocked, thus making even electronic forgeries difficult.

Imperial Sunburst: The symbol of the Third Imperium established by Cleon (the first emperor) when the empire was proclaimed. Images show him standing before the original

banner with a golden yellow sunburst against a black background, representing Capital's type G star against dark space

In 247, the Eliyoh (a nonhuman minor race) joined the Imperium. To that race the symbology was unimpressive. The Eliyoh vision centered in the far infrared, which resulted in distinction between the official colors of black and yellow being impossible. So the Empress Porfiria declared that the symbol would have no official color.

The original banner in the Imperial throne room is still black with a yellow sunburst. The Imperial Interstellar Scout Service uses a red sunburst; the Imperial Navy, yellow; the Imperial Army, black; the Imperial Marines, maroon.

Imperial Warrant: Instrument of power issued by Imperial dukes, archdukes, or the emperor. A warrant is a written or electronic document on Imperial stationery provided to trusted agents of the Imperium as a method of bypassing the bureaucracy.

Typically, a warrant is provided to an individual who uses the power it provides to accomplish some mission of interest to the issuing official Missions may include establishment of colonies in areas requiring development, the assumption of military command in the midst of a crisis, and the unilateral establishment of new noble lines to administer provinces which have suffered from war or economic collapse.

For example, the late emperor Strephon sometimes exercised his power through agents rather than directly through the bureaucracy of the Imperium. These instances were rare, although there is reason to believe that such agents are more numerous than it appears. The Imperial warrant would contain a statement similar to the example below:

"Capital. The bearer of this warrant is acting for the good of the Imperium and the Emperor. Extend him every assistance. Strephon."

See also Imperial Edict 97.

Interdiction: The Imperial practice of interdiction of worlds within the boundaries of the Imperium had long been a source of contention between liberal and conservative factions in the government. Interdictions must be approved by a member of the Imperial family, but generally such approval is given in response to a request from an interested service, which is almost always the Scouts or the Navy.

It is generally held that the Scouts recommend interdiction to shield a young or sensitive culture from the interference that trade and commerce will bring.

The Navy is held to be more vindictive in its recommendations, for they use interdiction to punish local governments or to hide its own mistakes.

In the current turmoil of the divided Imperium, various regions are reclassifying some indicted worlds as open and some previously open worlds as interdicted The Domain of Deneb, however, is honoring all Imperial interdicted worlds as before.

Interdicted worlds are awarded travel zone red ratings by the Travellers' Aid Society.

See also Red Zone.

Iolanthe (1052 to 1079): Empress of the Imperium. Iolanthe, the daughter of the senior duke of Gushemege sector, and member of a prominent Vilani noble family, married Strephon in 1079. Her primary avocation is the preservation of developing cultures within the Imperium. She was murdered, along with her husband the emperor and her daughter the grand princess, in Dulinor's assassination attack of 1116.

Iridium Throne: The symbol of the continuing line of emperors of the Third Imperium. The physical throne was originally an iridium construction on which the emperor sat. Over time, the term has come to represent not only the emperor's throne, but the office of the emperor himself.

J

Jump Dimming: The transitions to and from jumpspace are momentous occasions during an interstellar trip. Following an old Vilani superstition, the pilot of a ship customarily dims the ship's interior and exterior lights before going into jump. Historically, this custom derived from the need for most of the ship's power to be diverted into the computer and jump drive systems, so that the jump drive could be guided into creating the jump field properly. Zhodani and Solomani pilots do not follow this tradition of "jump dimming."

Lights on a ship are typically dimmed for a period of about two minutes, the lights are brought back up to full strength as soon as the ship is in jumpspace.

Jumpspace: The basic concept of interstellar travel: that of an alternate space. Theoretically, jumpspaces are alternate spaces, each only dimly understood from the standpoint of our own universe Jump is defined as the movement of matter from one point in space (called normal space) to another point in normal space by travelling through an alternate space (called jumpspace) The benefit of jump is that the time required is relatively invariant—about one week. If the distance travelled is greater than can be covered in one week in normal space, then a gain has been made Jumpspace makes possible enormous gains

Entering jump is possible anywhere, but perturbations due to gravity make it safest to begin a jump at least 100 diameters

out from a large massive body such as a world or star. Ships are naturally precipitated out of jumpspace before they get too deep into a gravity field.

Normal jumps take 168 hours (plus or minus 10 percent) to complete, regardless of the distance travelled.

Sometimes a jump goes wrong. Catastrophic failures (called misjumps) can destroy the ship and its crew. Other failures can destroy a drive or send a ship in the wrong direction. Some misjumps reduce a jump-6 to a mere jump-1, or convert a jump-1 into jump-10, 20, or higher.

K

Kedzudh, Commonality of: Loose interstellar government in the Vargr Extents. The Commonality dates from 1044, when several world governments joined together in an attempt to suppress piracy. The Commonality government has limited powers of taxation; government institutions include a small navy/police force and a university. Individual worlds conduct their own interior and exterior relations.

Kirur (Ruupiin/Thirty 1315 B863A03-F): Homeworld and capital of the Two Thousand Worlds—the interstellar empire of the K'kree. The planet's oceans are extremely shallow and the world exhibits almost no volcanic activity, which is very unusual for a world of its size. Kirur has one large continent, which was conquered in prehistoric times by the current ruling clan; Kirur is one of the most politically stable planets known

K'kree: The K'kree (once called Centaurs by humans) are among the most massive of the major races and are the only one of the major races to be descended from herbivores. An adult K'kree stands about 1.5 meters at the shoulder and between 2.0 and 2.4 meters tall when standing erect. Weight averages 550 kg. They are bilaterally symmetrical, hexapedal, and homeothermic. They bear some resemblance to the centaurs of ancient Terran myth, a trait noted by the earliest human explorers.

The arrangement of the manipulative organ (or hand) on the front limb is one of their most interesting features. Complex or cartilaginous tubes permit the fingers of the K'kree hand to telescope up out of the way when the hand is used as a weapon. Fully extended, the fingers are mutually opposable to each other and to the "thumb" which is in reality an extension of the ulna. The K'kree hand is very flexible but somewhat weaker in grasping power than the human hand.

The K'kree are covered with a short gray or black fur and with a dense black mane covering the head and neck and upper back of both sexes. Unlike Terran mammals, the young are fed partially digested, regurgitated food instead of milk. Males average 15 percent to 20 percent larger than females.

K'kree are extremely conservative in all aspects of their culture. Ceremonial military units (such as bodyguards) are armed with equipment which K'kree military technology outdated centuries ago, and (aside from modifications made necessary by the discovery of spaceflight) K'kree government has not changed significantly in centuries.

Because of their origins as plains-dwelling herd animals, the K'kree are claustrophobes; they cannot stand to be enclosed. K'kree cities are clumps of low, broad, buildings; the interior is never more than one story in height, which allows the sky to be visible. Internal building divisions are achieved with curtains or tapestries.

K'kree are extremely gregarious They are never found alone, and will quickly sicken and die if removed from other K'kree for any length of time. Receiving a trade or diplomatic delegation from the K'kree means entertaining the entire family (one or more wives, servants, scribes, assistants, etc.) of the merchant or the ambassador. The K'kree word for "my" refers to a possession of an individual's herd, not to that of an individual. Privacy and individuality are exotic and little understood concepts for the K'kree.

Society: K'kree society is divided into castes. The system is a remnant of ancient times which no longer fits K'kree culture perfectly, but the K'kree stick with it because it is traditional. There are hundreds of castes, but the distinctions are too faint for non-K'kree to understand For simplicity, castes can be divided into three general groupings: noble, merchant, and servant. It is possible for a family to rise in caste, but this is a rare occurrence.

The lowest caste, the servants, has come to include farmers, factory workers, and unskilled laborers as well as servants for all classes.

The next higher caste, the merchants, includes most skilled workers, scientists, engineers, technicians, scribes, and government administrators, as well as merchants and businessmen.

Nobles are the governmental officials (the Krurruna and others), the high military officers, diplomats, and heads of trade and manufacturing concerns. Nobles are usually garbed in much more ornate fashion than the lower castes.

Every male K'kree must serve a term in the military upon coming of age. Warriors are drawn from all castes; rank in the military is determined by the caste of origin (nobles enter the service as general officer trainees, merchants as lower officers and noncommissioned officers, etc.). Upon completing the required term of service, a warrior returns to his original caste and position. Warriors are the only K'kree permitted to bear weapons, and they are further distinguished by their peculiar flared and horned helmets They serve as soldiers, police, firefighters, and bodyguards for diplomatic and mercantile expeditions.

Female K'kree are casteless, and take on the caste of their father or husband. Females have no position in government or society other than the rearing of young.

Government: The basis of K'kree government is rooted in the traditional herd system. The basic unit of government is the herd, which consists of thousands of individuals of all sexes, castes, and ages led by krurruna (literally: bosses) under a single steppelord.

In recent times, most herds have been assigned specific geographic areas (several may be assigned to a city or a single herd may be assigned millions of hectares of farmland). A number of herds are governed by a single "lord of steppelords" (usually the ruler of a planet); and the K'kree race as a whole is ruled by a "Steppelord of the 2000 Worlds."

K'kree Calendar: The K'kree calendar is based on the period of Kirur (the K'kree homeworld) around Gzang, its star. The K'kree Pimlbigr (year) is 439.56 standard days in length.

See also Kirur, Two Thousand Worlds.

Kuzu (Dark Nebula/Kilrai' 1919 A876986-E): Homeworld of the Aslan race and capital of the Aslan Hierate.

L

Lair (Provence/Grnouf 2402 A8859B9-F): "Homeworld" and capital of the Vargr Extents Lair has never been accorded any particular status in the hearts and minds of the Vargr race, unlike worlds like Terra, Vland, Zhodane, Kuzu, or Kirur. Lair was only recently united, several sections of the planet boasted independence until only a few years ago—which is unusual for the homeworld of a major interstellar race

Lancia: Cultural region in the Gushemege sector of the Third Imperium The area was extensively ravaged during the Vilani Pacification Campaigns, and afterwards resettled from the Vland sector under an special program sponsored by Makhidkarun.

Lanthanum: A rare earth element, the first of the inner transition metals. Vital to the construction of the inner coils of interstellar jump drive units

Lesser Rift: Broad expanse of space with a very low density of stars trailing the main region of the Third Imperium. This rift is a pronounced impediment to interstellar travel, for it constrains jumps through the Empty Quarter. The Lesser Rift is lesser only when compared to the larger, more prominent Great Rift spinward of the Imperium.

The Lesser Rift, like the Great Rift, has provided long-term security for the Third Imperium by constraining access to the Imperium's borders.

Llellewyloly: Sophont race native to Junidy (Spinward Marches/Aramis 3202 B434ABD-9). Llellewyloly have five multijointed limbs which function as hands and feet interchangeably; main sensory organs are also located on the limbs. The spherical central body is covered with long, coarse hair Many body features are adaptations to the extreme temperature variations of Junidy's day.

Llellewyloly have a complex society with many dimensions of social precedence; the same individual may be entitled to high status in one situation and low status in another, and to make an error concerning propriety is a serious matter

Loeskalth: Minor human race from Gushemege sector; known only from ancient First Imperium records. During the early stages of the First Imperium the Loeskalth culture absorbed a great deal of science and technology indirectly from the Vilani and founded a small empire which embraced, at its height, most of their home subsector.

About 5400 years ago, the Vilani consolidation destroyed the Loeskalth Empire and absorbed the civilization into the mainstream of Vilani culture. An aggressive and warlike race, the Loeskalth resisted but were ultimately overwhelmed

M

Main: A grouping of systems forming a chain of worlds all reachable by jump-1. This grouping provides a sort of "corridor" allowing jump-1 capable ships to travel to any world along the chain without ever exceeding jump-1.

Many such groupings of worlds exist in the Imperium. Prominent examples include the Spinward Main in the Spinward Marches, the Vilani Main centered in the Vland Sector, The Sylean Main in Core Sector, and the Antares Main originating in the Antares sector.

Major Race: An arbitrary distinction based on the achievement of a specific intelligent race. A race which achieves interstellar travel (jump drive) through its own efforts is classed major; one which does not is classed minor.

To date, generally accepted major races include Humaniti (Zhodani, Solomani, and Vilani, but not other examples), Aslan, the Hive, K'kree, Vargr, Ancients, and Droyne

The Suerrat (a human race) are considered minor because their achievement of interstellar travel utilized generation ships Similarly, the Geonee were originally thought to be a major race, but their development of jump drive was based on recovered Ancient artifacts rather than on true racial efforts The Geonee dispute this prevailing opinion and hold the (generally unshared) view that they are of major standing.

The Droyne have been demonstrated to be major, for they have developed jump drive as far back as -7000. At present, however, they do not build or use jump drives, and remain voluntarily sequestered in their scattered systems to spinward.

Mercenary: The remote centralized government of the Imperium is possessed of great industrial and technological might, but it is also unable, due to the sheer distances and travel times involved, to exert total control everywhere within its starspanning realm

Extensive home rule provisions allow planetary governments to choose their own forms of government, raise and maintain their own armed forces for local security, pass and enforce laws governing local conduct, and regulate (within limits) commerce. Defense has been a cooperative effort of local indigenous forces, which is stiffened by Imperial naval bases manned by extremely sophisticated forces

Conflicting local interests have often settled their differences by force of arms, with Imperial forces looking quietly the other way, unable to intervene en masse. Imperial forces have been able to operate as a police force so as to not jeopardize their

primary mission of defense of the realm. Only when local conflicts threaten either the security or the economy of an area have Imperial forces taken an active hand, and then with overwhelming speed and force

In this environment, the soldier for hire has found active employment. The tolerance exhibited by the forces of the Imperium have made the hired military force a practical matter. Imperial policy has allowed the marketplace to provide military force to those who can afford it; one line of thought has been that a hired military can be more effectively controlled if it gets out of hand, as opposed to nationalistic or politically motivated military forces

The united Imperium stood ready to enforce its own standards; things have changed in the uncertain climate of the divided Imperium, however The basic restrictions against improper scales of force are no longer observed, and weapons such as poison gas or nuclear devices are being used by belligerents Matters have gotten out of hand as each archduke has done what he though was best for the defense of his local realm Imperial forces have attempted to intervene, but the wide-scale nature of the turmoil has diluted their effect and even turned Imperial forces against each other in border areas.

Minor Race: An intelligent race which has not achieved jump drive through its own efforts. For most races, this classification is appropriate. Many are contacted before they have reached a technological level capable of even considering jump drive, thus permanently prejudicing their potential.

Indeed, the shock of such classification, and the realization that this classification pervades interstellar society, is sufficient to relegate a race to a permanent role as shopkeepers and accountants. Some slump, while others violently resist the classification The fact that the categorization is informal and arbitrary, and tends to elevate those already in power has made resistance difficult, if not impossible.

Moot: The Imperial government's only deliberative body. It has few powers and even more rarely exercises them. In theory, the Moot includes all Imperial nobles of baronial or higher status, but most nobles do not find it convenient to travel to Capital, and so many of those seated hold proxy votes. Large blocks of these votes can be wielded by a single influential noble

Technically, the Moot is supreme in the Imperium, but its power is extremely limited In practice, its deliberations are advisory to the emperor, and he is wise to heed them. The Moot has only one power to dissolve the Imperium When this power is brought to bear, it compels compromise between opposing factions.

When an emperor dies, abdicates, or otherwise becomes unfit for office, the Moot becomes important as the validating body for the new emperor. It has the power to examine the qualifications and credentials of the heir apparent and, in unusual situations, to reject him

The Moot holds its sessions in the Moot Spire, which, at 1.75 kilometers high, is the tallest building on Capital. By tradition, the Spire is the only building allowed to tower above the Imperial Palace, which is 4.25 kilometers away. Elevators with gravitic compensators can speed visitors from the bottom to the top in 18 seconds. At the top of the Spire is the High Moot, where select committees hold the most private deliberations.

In the resulting turmoil after Strephon's assassination, Prince Lucan ordered the the Moot dissolved for a year in an effort to prevent any infiltrators from convincing the Moot to approve the usurper Dulinor's claim to the throne.

Monadium: Inpenetrable bluish-gray metal used as the basic construction material by the Ancients at the site on Antiquity (Corridor/Ian 0816). It has defeated all efforts to determine its exact composition; some experts believe it contains titanium. Even modern tech level 15 plasma and fusion weapons have been unable to penetrate it.

N

Naval Base: Port facility for the support, maintenance, repair, and refit of naval vessels. Planetary surface facilities are generally provided for vessels of 1000 tons or less; orbital facilities handle larger ships.

A naval base has several distinct parts to it; each part helps in the accomplishment of the overall mission of the base. The typical naval base is composed of an orbital berthing area, a surface berthing area, a maintenance section, and an administrative headquarters.

Berthing areas provide locations for ships to lay over, for a day or for months. All berthing areas include provisions for refueling from storage tanks or fuel lighters.

Maintenance sections at naval bases vary from base to base. Where such a section would be redundant to the local starport shipyard, it is small, and repairs or alterations are carried out under contract by the local facility. Where adequate facilities do not exist, the naval base itself may have a large maintenance section capable of extensive repairs and refits. Maintenance is performed on the ships on the world surface or in orbit as necessary.

The administrative headquarters handles the day-to-day operations of the base, as well as its paperwork (including the allocation of funds, distribution of personnel, and disbursement of maintenance and repair contracts).

The naval base is not a tactical unit. It has no battle forces of its own, and it does not exert control even over local system defense boats (which are under a separate command). The naval base is responsible for supporting the fleet and keeping it in optimum condition for its combat missions.

Naval Depot: Depots serve as focuses for naval efforts: supplying a fleet's every need, providing construction and repair facilities, and producing and testing experimental ship prototypes. A depot generally occupies an entire system. Facilities, material, and personnel are extensive enough to repair and resupply a large fraction of the fleet at any time. A depot may be isolated from outside contact for years at a time without serious setbacks. As depots cover large parts of a system, there is no distinction between orbital and surface berthing.

In peacetime, the main function of a depot is the design and testing of ships. A large staff of naval architects (the cream of the area) and construction personnel is maintained at every depot.

In wartime, depots serve as repair and resupply centers for the fleet. In emergencies, the depot's construction yards are sometimes pressed into service for production of military ships.

Since a depot is obviously a very sensitive installation, security is tight. An extensive array of both entry and exit codes are

employed to ensure no unauthorized vessels enter or leave the system. Contingents of marines and system defense boats are stationed throughout the system, and they are constantly ready for action.

There is usually no more than one naval depot per sector. Depots are placed in systems where they will be close enough to the expected action to be useful, but far enough back to insure that they will not be captured.

Nobility: The foundation of interstellar government within the Imperium The Imperium depends on nobles ranging from knights to archdukes to carry the chain of authority and the mantle of responsibility from the Emperor to the people.

Nth Interstellar War: Any one of an indeterminate number of interstellar wars fought between the Terran Confederation and the First Imperium during the Period -2408 and -2219.

The First Interstellar War (-2408 to -2400) marked the initial clash between Terra and Vland. The peace that concluded the hostilities was both uneasy and short. The second through seventh wars were marked by seesaw exchanges of territory, mostly confined to the Dingir and Sol subsectors. These initial wars were fought, on the Vilani side, with only the forces available to the Vilani provincial governor, the central government was preoccupied with other problems. This was fortunate for the Terrans, as Vilani power, even at this late date, was sufficient to crush the Terrans in short order had it been applied.

The Eighth War finally broke open the frontier and ended in the first major Terran victory. Finally, the Grand Imperium took notice, and dispatched major fleet elements to the area, but the time for action had passed. Terran invention of the jump-3 drive made the Ninth War a crushing victory for Terra and forced the Vilani to relinquish most of the Solomani Rim. Thereafter, the Terrans were almost constantly on the offensive.

In the centuries after the conclusion of the wars, no consensus could be reached in the academic community as to when the later conflicts began or ended; all were interrupted several times by armistices, cease fires, or shaky periods of peace (indeed, a new war would often break out along the front lines before the existence of a peace treaty could be communicated to the respective capitals).

Periods of warfare are lumped together or split apart depending on the historian's individual point of view, and a single war to one historian can be identified as two or more wars by others. The situation is complicated by the fact that records for some of the years in question are sketchy. To clarify matters, an accommodation was arrived at which simply labels all interstellar wars after the Ninth with the indeterminate variable N. Proper usage calls for the war to be defined with the actual years being discussed. Many history texts use this system to refer to all the wars except the first

The Nth Interstellar War (-2235 to -2219) ended the series when the Vilani Grand Imperium collapsed, as much from its own weight, age, and decadence as from Terran victories. The Terrans moved quickly to occupy the remaining Vilani territory.

See First Imperium, First Interstellar War, Rule of Man.

O

Octagon Society: Established in 342, the Octagon Society was the first major distressed spacefarer assistance operation to appear in the Spinward Marches. The group thrived on public contributions and on some tax revenues for 150 years; then it collapsed in the late 400s when scandals emerged over the quality of shelter construction and the disposition of certain funds.

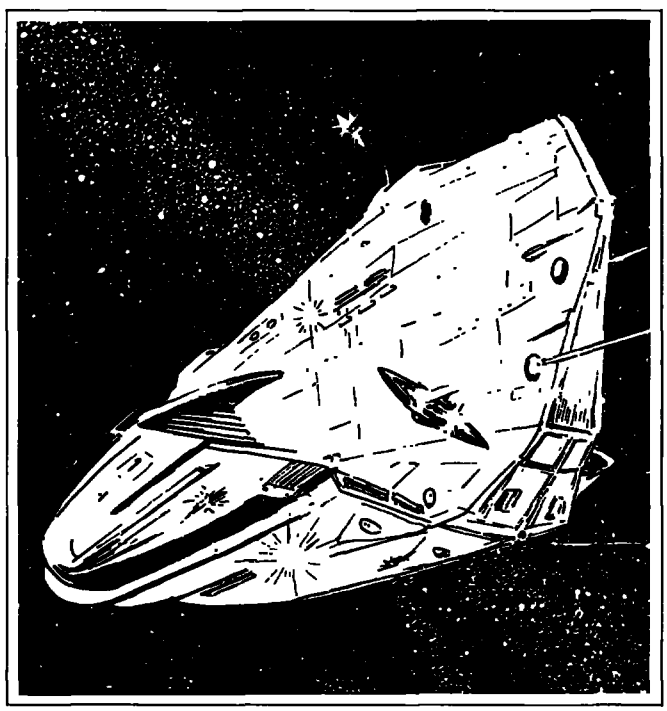
Society shelters were generally of an octagonal shape. Large hostels were established on major worlds, while smaller weather shelters were placed on frontier or unsettled worlds. The characteristic octagon-shaped buildings are still visible on various worlds, although none are still in use as shelters for distressed spacefarers.

The Octagon Society was dissolved in 499, and its assets were sold at auction

Oort Cloud: A spherical shell around most stars containing numerous small bodies of cometary material. A typical Oort cloud is about 0.5 to 1 light year from its primary and has an aggregate mass about that of Terra; density is thus extremely low. The main constituents of cometary bodies are ice and dust ("dirty snowballs"). Bodies in the Oort cloud are occasionally perturbed by collisions or by the influence of nearby stars into orbits which pass near the star; these form the visible comets. The Oort cloud is named after its discoverer, Terran astronomer Jan Oort

Outworld Coalition: Traditional name for the belligerent groups allied against the Imperium during the First and Second Frontier Wars. Commonly applied to any alliance of powers threatening the Spinward Marches and Imperial territories spinward of the Great Rift.

The original Outworld Coalition was formed in the early 500s at the instigation of the Zhodani Consulate. Vargr allegiances vacillated, but memories of the Imperial campaigns against certain Vargr states in the Corridor swayed some into membership Zhodane, as the major partner, contributed military aid and assistance (such as technicians and advisors). While some



Vargr governments contributed personnel and naval units, other Vargr remained neutral or sided with the Imperium.

The initial history of the coalition was one of continuing struggle for organization, as the Zhodani were continually occupied in establishing Vargr governments, and then maintaining them in power The intent was for the Vargr to raid the coreward edge of the Spinward Marches, especially Regina and Aramis subsectors, while the major thrust from Zhodane took Cronor and Jewell subsectors. The Vargr portions of the offensive failed dismally. Furthermore, the failure resulted in a collapse of the coalition.

The internal Imperial upheavals (the Civil War) which followed the First Frontier War (it was just called the Frontier War then) exposed a continuing weakness in the Imperium, and the Outworld Coalition reformed after a hiatus of five years. At the appropriate moment, the reformed Coalition again attacked the Marches, this time taking portions of Jewell subsector. Although the Vargr again failed to take any territory permanently, their performance as a whole was considerably improved

Traditionally, frontier wars in the Spinward Marches have involved coalitions of Zhodani and certain Vargr states. The Sword Worlds have also joined the coalition at times.

P

Pacification Campaigns (76-120): A series of economic, diplomatic, and military operations directed at forcing membership in the Imperium upon those worlds which resisted the initial efforts to annex them.

Although the campaigns were predominantly economic and diplomatic in nature, the Imperium was not averse to using force when peaceful methods failed. Imperial battlefleets and ground forces rarely failed when brought to bear.

By 120, the pacification campaigns ended, and the initial phase of the Imperium's growth came to a close.

Four specific Pacification Campaigns were undertaken, each by an archduke of the Imperium. The Vilani Pacification Campaign was targeted at portions of Dagudashaag and Gushemege sectors. The Ilelish Pacification Campaign was aimed at the Darmine region. The Antarean Pacification Campaign hit much of Lishun sector. The Sylean Pacification Campaign operated in Delphi and Fornast sectors

Peerage: The hierarchy of nobles within the Imperium.

Phoenix Project: Reported plot by Solomani guerrillas on Terra to destroy Imperial forces occupying Terra Imperial intelligence reported penetration of the project command in 1045, with subsequent compromise of its basic plans and dismantling of its structure

The Phoenix Project was supposedly born in the final years of the Solomani Rim War (990 to 1002) as Solomani leaders saw the possibility of their defeat and the loss of the homeworld to the invading Imperials The project was said to have consisted of two distinct parts: prepositioned caches of military goods to supply the coming uprising and a continuing program for the training of guerrillas

The caches were concealed in many different places on Terra in areas calculated to preclude accidental discovery over the years. Each cache contained large quantities of munitions, weapons, vehicles, and medical supplies, all of varying technological levels so as to be of use regardless of the technical knowledge of the users Each cache was hidden with its location entrusted to a single local family. These families were to form the core of the guerrilla forces when the rising was to take place

A massive Imperial counter-guerrilla effort in 1040 to 1045 was directed at the discovery and destruction of the caches and the arrest of the families entrusted with their secrets.

Persistent rumors of two additional aspects of the project—Lambda (a codeword to trigger the uprising) and Omega (the reinforcement of the uprising by offworld Solomani)—have been dismissed as baseless by Imperial officials.

Many historians believe that the extent of the plot was greatly exaggerated by Imperial authorities, and hold that it was little more than an extreme example of wishful thinking on the part of the Solomani leadership. At any rate, the Phoenix Project no longer threatens the security of the Imperium, if indeed it ever did.

Postal Union: A Group of political units associated to a greater or lesser degree for the purpose of communication among citizens, businesses, and governmental units.

Nearly all star systems are members of one postal union or another. Governments cooperate along their borders in order to allow the efficient flow of communications between them. Members of a postal union forward mail through their territories (subject, of course, to local security needs, acts of war, and so on) to the proper addresses. On the average, communication is at the speed of the fastest available transportation, which means about three or four parsecs per week.

Psionics: The criminal use of mental powers for the manipulation of matter and energy and for communication. It has been demonstrated that minds (human or nonhuman, conscious or unconscious, intelligent or unintelligent) contain some capacity to operate without apparent use of physical facilities. For an individual to seek out such training is a criminal act.

Until circa -1000, psionics was little studied in most regions except on a disorganized level (parapsychology, the occult, spiritualism, and so on). It was known and practiced among the Zhodani and by some minor races, but it was by no means widespread.

However, during the Long Night, many races, (human and others) turned introspective. As a result, many finally began to engage in serious research in psionics, which revealed much about the empirical nature of the phenomenon, although the principles involved were, and remain, little understood.

However, even though it assumed scientific validity, psionics remained a backwater science until about 650, when it underwent a tremendous burst of popularity. Psionics within the Imperium reached its peak in the latter half of the 700s. In the 790s, however, the crest of popular opinion broke with the revelation of scandals within the Psionics Institutes; the result was the psionics suppressions (800 to 826), which shifted public opinion away from support of psionics.

Psionics Institute: Any clandestine organization devoted to the illegal training of individuals in the use of psionics talents. Active Imperial campaigns to eradicate the Institute have been pursued for over 200 years.

Organizations of this nature have existed since before the advent of space travel, but they attained prominence only

during the Long Night, when reproducible scientific discoveries made psionics a teachable, learnable science.

In the Imperial antebellum period, psionics institutes were rare, and they were formed only on a few scattered worlds which, for one reason or another, had an unusually high rate of psionic talents appearing, or which encouraged psionics for social, political, or commercial reasons. In the years after the Civil War, institutes were organized on most high population worlds within the Imperium.

Psionics institute is a generic name; each such institution was independently organized and maintained. Institutes were generally supported by that portion of the population which had psionic talents; since that portion was small, they were viable only on high population worlds (approximately one billion or more).

During the psionics suppressions, the institutes' charters were revoked, and talented individuals were persecuted. In some cases, the individuals fled to assume new identities on other worlds; in others, whole families emigrated to the Zhodani Consulate or to other places beyond the frontiers of the Imperium.

Following the psionics suppressions, there were theoretically no psionics institutes remaining. In practice, however, illegal underground institutes are rumored to still remain on many worlds.

Psionic Suppressions (800 to 826): Between 772 and 798, a series of financial, ethical, and moral scandals within the Psionic Institutes of the Imperium shifted public opinion against the Institutes. At the same time, it became clear that a good number of the Institutes were under the control of the Zhodani Consulate. In 800, the Imperium moved against the institutes by canceling their charters, jailing their leaders, and passing laws restricting the teaching or practice of psionics. Many institute figures went underground to espouse their cause in a type of guerrilla war.

The Psionic Suppressions had a profound influence on Imperial opinion Over the course of 26 years, the Suppressions equated psionics with the Zhodani and established in the average Imperial citizen a distaste for both that continues to the present day. The average citizen will admit to a general dislike of psionics, and if pressed, will usually state that psionics violates a person's right of mental privacy.

Psychohistory: The science of historical prediction and macrosocial manipulation. The main thesis of psychohistory is that the actions of trillions of individuals take on a fluidity and predictability which can be compared to that of molecules in a gas. The very size of the population being dealt with factors out individual peculiarities and allows the prediction of its behavior. With the ability to predict the reaction of a population to a particular stimulus comes the ability to manipulate that population, psychohistorians reason.

Psychohistory began as a combination of public relations/advertising techniques and behaviorial science, and although its techniques have been put on a more rigorous footing, the basic principles are still not well understood A number of minor experiments have confirmed the general validity of the science, but it was also shown to be too expensive to be of any practical utility. Research continues at a small number of Imperial universities.

R

Rachele Society: Secret Vilani supremacist group founded on Pretoria/Pretoria by Zid Rachele in 992. Genocidal policies favored by the group culminated in the attempted takeover of the Pretorian government in 1010 An attempt at nuclear blackmail backfired when 26,000 people (including 1,900 Rachelean commandos) were killed by a nuclear explosion after the Society seized Imperial Scout facilities on Saki (Deneb/Pretoria) Zid Rachele disappeared in 1015 after escaping from the prison world Exile in Usani Subsector (Deneb/Usani 1928).

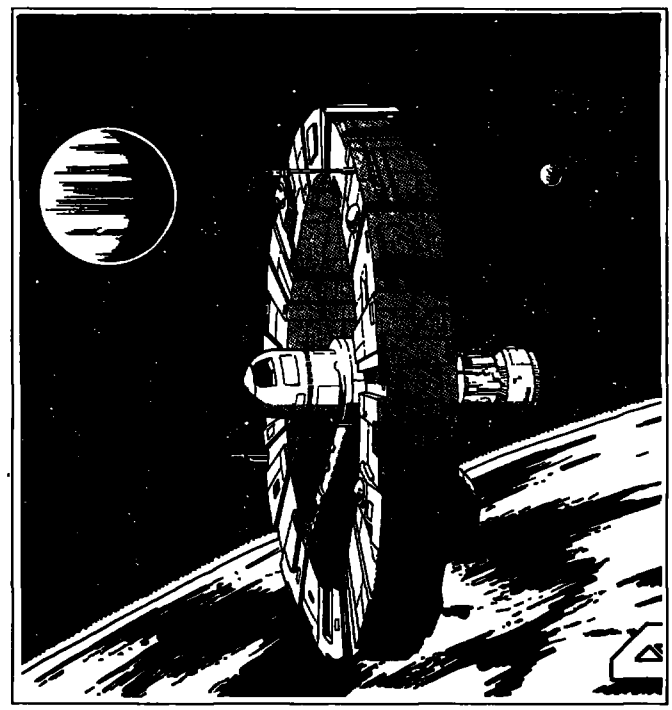
In 1103, Zid Rachele and the Rachele Society surfaced again in Lishun in a brief power play at the Dynam Naval Depot (Lishun/Masionia 1219). Rachele and his followers attempted the theft of several mothballed naval warships but were quickly defeated. Zid Rachele's vessel was destroyed in the battle.

Rachelean Revolts (1010-1011): Major uprising on Pretoria (Deneb/Pretoria) fomented by the Rachele Society, which resulted in martial law under the Imperial Navy since that time The Imperium as a rule does not interfere with local politics, but their intervention was forced when a Scout base on Saki (Deneb/Pretoria) was destroyed by nuclear weapons.

See Rachele Society.

Ramshackle Empire: Common term used during the Long Night to refer to the Rule of Man, also known as the Second Imperium. As the successor to the First Imperium, the Rule of Man took over the territories (and the problems) of its predecessor. Pro-Second Imperium histories contend that the Rule of Man delayed the inevitable collapse. Pro-First Imperium histories claim that the First Imperium was stagnant, but stable, and that the Ramshackle Empire actually precipitated the Long Night by looting subject worlds and promoting Terran superiority.

See Rule of Man



Red Zone: The Traveller's Aid Society travel zone classification for a nation, world, or system which is dangerous to travellers. In general, the imposition of a red zone classification indicates the location is quarantined, interdicted by higher authority, or at war

Quarantine indicates that a dangerous disease is present, and the danger of war is self-explanatory, but interdiction requires further discussion. Interstellar governments often find it necessary to restrict access to worlds or systems for political or military reasons, and they do so by publishing interdictions.

Enforcement of interdiction varies with the reason for the restriction. Interdiction may be imposed on a world if it is a military base or other sensitive installation, for the private reservations belonging to powerful families desiring seclusion, for developing societies which the government has elected to allow to evolve in isolation, or for valuable resource areas being saved for later development or exploitation.

Repatriation Bond: A document guaranteeing passage of an individual to a specified location upon completion of contract work or upon suspension of contract work for any reason. Repatriation bonds are guarantees given as inducements to workers who might otherwise be wary of leaving their own worlds with no assurances that they could return. They are most commonly used by mercenary units.

Repatriation bonds are usually administered by a large financial institution which holds the necessary funds in escrow.

Rule of Man (-2204 to -1776): A short-lived interstellar empire formed after the conquest of the Vilani Imperium by the Terrans. The conquered territories were under military rule from -2219 to -2204. Vilani military forces were incorporated into the Terran forces. Terran naval officers took over key posts in the Vilani bureaucracy (which was otherwise retained intact).

In -2204, the Terran Secretariat attempted to transfer control directly to Terra and to incorporate the conquered regions into the Terran Confederation. The commander in chief of the Terran Navy, Admiral Hiroshi Estigarribia, realized that the Confederation government could not possibly control the vast territories of the Vilani Imperium. He proclaimed himself Regent of the Vilani Imperium, and Protector of Terra, so both states were now united in the Rule of Man. Nearly all the fleet sided with Estigarribia both because it was composed largely of colonials, who were under-represented under the Terran Confederation government, and because of Estigarribia's careful preparation. The Confederation was dissolved without significant resistance.

The Terran fleet headquarters on Dingir became the capital of the Rule of Man The bureaucratic center of the Imperium remained on Vland, although arrangements were undertaken to gradually transfer it elsewhere.

Upon Estigarribia's death, he was succeeded by his chief of staff, who crowned himself Emperor Hiroshi II. Estigarribia, even though he did not actually assume the crown, is therefore known to history as Emperor Hiroshi I.

Hiroshi II transferred all functions of government from both Vland and Dingir to a more centrally located world, renamed bilingually Hub/Ershur. This world was to remain the capital of the Rule of Man for the next four hundred years

During the Rule of Man, large numbers of humans from Terra and its oldest colonies emigrated throughout the Imperium. People of Terran ancestry or culture (many of them assimilated Vilani) assumed positions of power on most worlds and became industrialists and administrators.

The problems of sheer size and scientific stagnation, which had brought about the fall of the Vilani Imperium, continued to plague the Rule of Man. The Vilani had coped with the problems of ruling a large empire by a rigid caste system with all citizens rooted permanently in their places, but this system could last only as long as there was no significant external threat. The Terrans did away with this system but were not able to replace it with a new social order. The destruction of the caste system swept away the foundations of society. Key industries fell apart as their workers became free to move elsewhere.

The -1776 date for the end of the Rule of Man is arbitrary, and it notes the financial collapse of the central government, which occurred when the Treasury at Hub/Ershur refused to honor a monetary issue of the branch treasury at Antares. The resulting lack of confidence within monetary circles marked the end of large-scale interstellar trade and of effective governmental power within the Rule of Man. Although the Imperium did not completely fall apart for many years, the Rule of Man had effectively ceased to exist as a viable interstellar community, and the period known as Twilight had begun.

The Third Imperium refers to the Rule of Man as the Second Imperium, which emphasizes its own roots in the Solomani-dominated Second Imperium and the Vilani-dominated First Imperium. Anti-Solomani elements emphasize the failure of the Solomani-dominated Ramshackle Empire.

Rule of Terra: Solomani terrorist group active in selected regions of Solomani/Imperial border. Violently anti-Imperial even by the standards of most Solomani political groups, the Rule of Terra seeks to force the return of all "rightful Terran property" to Solomani hands through assassination and other acts of violence.

The organization, although interstellar in scope, was apparently not a very strong organization in the beginning; some of its claimed attacks have proven to be accidents, while others were the work of different dissident individuals or organizations.

The Rule of Terra's acts, although not its goals, have been disavowed by many other Solomani groups, including the Confederation government; in return, the Rule of Terra has attacked even Solomani populations, by stating that "all who do not contribute to the Manifest Destiny of the Race are not worthy to be part of the Race."

Since the death of Strephon and the resulting Solomani incursions into the rimward reaches of the Imperium, the Rule of Terra organization has apparently mushroomed in popularity. The group has claimed responsibility for many terrorist acts along the current Solomani/Imperium border.

S

Scout Base: Port facility for the support, maintenance, and repair of scout vessels. The Imperial Interstellar Scout Service maintains a variety of scout bases scattered throughout the Imperium, with installations tending to be on less well-developed worlds with starports type D or C. Scout bases tend to be surface installations equipped with basic facilities for fueling and for minor maintenance activities oriented toward ships

of 1000 tons or less.

Scout bases are positioned in systems more out of the way than are naval bases for a reason. The scout bases serve as a source of ships carrying dispatches from the well-travelled Xboat lanes to more remote worlds.

Scout bases also have other responsibilities, and most have an administrative responsibility in addition to the maintenance and refueling of scout ships. Within a subsector, one base will hold responsibility for cartography in the subsector, another will be responsible for technical developments, and still another for contact or liaison activities. The scout base is more extensive than an Xboat station, but less comprehensive than a way station.

See Way Station, Xboat Station.

Second Frontier War (615 to 620): Fought between the Outworld Coalition and the Imperium during the period of the barracks emperors. Arbellatra (587 to 666) was named Grand Admiral of the Marches by Cleon V and led the combined local and Imperial forces to defeat the Coalition, and then he proceeded to reestablish the central Imperial authority.

Second Imperium: The successor to the First Imperium, established by the Terran Confederation Navy to rule the territories conquered from the Vilani Empire by Terra

See Rule of Man.

Sector: Mapping unit in astrography equal to sixteen subsectors. Average density 500 to 650 worlds per sector.

Sectors are named, and several synonyms are in common use, including march (or marches), region, reach (or reaches), quadrant, and matrix. The Spinward Marches, for example, is a sector.

As a rough means of comparing size (and as of 1115), the sector counts of the large interstellar states and areas of settlement are: the Imperium· 27; the Aslan Hierate: 18; the Hive Federation: 17; the Two Thousand Worlds: 14; the Vargr Extents: 14; the Zhodani Consulate: 13; the Solomani Confederation 11.

Shudusham Concords: Agreement signed by twelve worlds of the Sylean Federation at Shudusham (Core/Capital) in -110 which dealt with weaponry carried by robots. The Concords have no legal force now, of course, but many worlds have adopted similar or identical standards using the Concords as a template, and most robots produced commercially in the Imperium are designed with these restrictions in mind.

Signal GK: Abbreviation for Gashimeku Kaalariin, Vilani for "vessel in distress. The code signal GK originated on Vland as a distress signal in maritime and aviation activity, and it was one of the standard communications codes of the Vilani Imperium. When the Second Imperium succeeded it, signal GK was retained as a distress code co-equal with the Terran SOS and Mayday signals.

The Imperial Navigation Act of 103 requires all vessels, whether military or civilian, to respond to the GK, SOS, or Mayday signals, provided such response does not endanger the ship and crew of the responding vessel.

Six Races: Traditional term for the intelligent races which dominate this region of the galaxy. It appears independently in Aslan, Vargr, and K'kree literature.

There is some disagreement as to the meaning of the term and the identity of the races involved Most commentators agree that all of the six races must be major races; the candidates are Aslan, Droyne, Hive, K'kree, Solomani, Vargr, Vilani, and Zhodani. Various racially based hypotheses have emerged, but none has gained ascendancy.

Soegz: Admiral Soegz was a loyal supporter of Arbellatra in the final years of the Civil War, and he was elevated to archduke of Antares by her decree, which incidentally and simultaneously ordered the execution of the previous archduke for the treason of not supporting her.

Soegz, a Vargr and a subordinate admiral under Arbellatra, commanded a task force during the fleet actions of the Second Frontier War and late in the Civil War.

Solomani: Strictly, a member of that human race which developed on Terra from the original human stock *(H. sapiens).* The term Solomani is often used to refer to members of the Solomani race (or, more palatably to some, to members of the human race of Solomani descent) or to members of the Solomani political movement. Its original meaning is obscure, but the word seems to have originally meant either "men of Sol" or "sole men."

After the Solomani developed jump drives in -2431, Solomani humans scattered to the stars in several waves. Early colonization efforts first settled the worlds closest to Terra; the later conquest of the First Imperium and the establishment of the Rule of Man sent more Solomani humans out primarily to occupy the former Vilani controlled regions.

Solomani Autonomous Region: Area within the Imperium granted self-government through a charter from Empress Margaret I in 704. The charter granted control of the region of space within a radius of 50 parsecs of Terra (hence the name Solomani Sphere) to a Solomani governing body, which was given broad powers of authority.

For two hundred years, the Imperium effectively ignored the region and concentrated instead on its coreward frontiers.

By 940, Solomani oppression of nonhuman (and non-

Solomani) worlds forced Empress Margaret II to revoke the region's charter. After years of diplomatic actions proved fruitless, it was decided to forcibly reintegrate the region into the Imperium. Naturally, the Solomani resisted, and the Solomani Rim War (990 to 1002) began.

Solomani Confederation: In 871, the government of the Solomani Autonomous Region reorganized itself as the Solomani Confederation in an attempt to strengthen its claims to the heritage of the old Terran Confederation. Although tantamount to a declaration of independence, the reorganization was officially ignored by the government of the Imperium until the increasingly belligerent and extremist policies of the Solomani caused many border worlds under Solomani rule to petition the Imperium for redress.

The branches of the Solomani Confederation's government took the names of the government of the Terran Confederation, but the present institutions have little resemblance to those of the past. The chief governing body of the Solomani Confederation is the Secretariat. The Secretariat is presided over by the Secretary General, who is elected from its membership. The Secretary General is the chief administrative officer of the Solomani government, and while the office holds great power, it is fully accountable to the Secretariat.

Representatives to the Secretariat are appointed by the governments of the individual districts. The number of representatives each district may appoint is determined according to that district's contribution to the Solomani economy.

A district typically consists of a single world, but low population worlds or depressed areas are combined into multiworld districts. In the case of a district such as this, an election is held to determine the representative from that district. These, however, are not elections in the normal sense; the governments vote, rather than the populace. Each government of such a district is allocated votes (again, according to its economic importance), which are used to elect a representative for that district.

All government officeholders and officials must be members of the official party, the Solomani Movement. Although once waning in power and influence, the party is gaining in popularity as a result of successful Solomani incursions on the Imperium's rimward border Still, the real power in the Confederation is held by the government and its factions.

Because of the greater degree of local autonomy that exists in the Solomani Confederation, interworld factionalism exists to a much greater degree than had been allowed in the Imperium Coalitions of worlds exist outside the normal government channels which sometimes equal them in importance within a given region

For example, the Near Bootes cluster, in the Capella subsector, dominates large portions of the adjacent subsectors both economically and politically Bootean mercantile interests have traditionally favored peaceful trade with the Imperium, and their influence has been held to be largely responsible for many peace negotiations between the Imperium and the Solomani Confederation.

Another example of this factionalism is the ongoing trade war (in Solomani Rim/Kukulcan) between Kukulcan and the coalition of Thetis and Laputa The war has been causing severe damage to the economy of Kukulcan, but the Thetis-Laputa coalition has thus far been able to muster enough power to prevent effective intervention by the Confederation government.

Solomani Hypothesis: When the Solomani discovered jump drive in -2431, they also discovered that more than a dozen human races had already colonized the worlds surrounding Earth. At the time, there was no satisfactory explanation for the more than 40 genetically identical human races.

The Solomani Hypothesis, first proposed by Magis Sergei haut-Devroe (64 to 141), theorized that all of the many widely scattered human races of the galaxy originated on Terra, and he thought that they were transported to their current homeworlds by an alien race (called the Ancients) for purposes which even today remain unclear The approximate date of the scattering has been established as -300,000

When Terra was incorporated in the Imperium in 588, a small historical mission verified much of haut-Devroe's work. The hypothesis was already generally accepted by the majority of the human population in the Imperium.

More than 40 known human races have been located (and several more of them failed to adapt to their new worlds and are now extinct), only three of these human races have reached widespread prominence· they are the Vilani, the Zhodani, and the Solomani.

Most other human races accept the hypothesis but lend it no special importance. The hypothesis is used by the Solomani Movement as a basis for its claims of Solomani racial superiority.

Solomani Movement: An organization devoted to the doctrine that humans of Solomani descent are superior to all others and are most fit to rule the galaxy.

Solomani Rim War (990 to 1002): War between the Third Imperium and the Solomani Confederation during which a large portion of the Solomani Rim sector was returned to Imperial control.

Hoping to profit from Imperial preoccupation with the Third Frontier War and the disorganization which followed upon the abdication of Styryx in 989, the Solomani reasserted their control over the complete Solomani Sphere, including those portions reabsorbed into the Imperium (see Solomani Autonomous Region). The Imperium declared war in 990.

The initial phase of the war went very well for the Solomani. Although the Imperium maintained sizable fleets along the border, they were inferior in strength to the massed naval elements of the Solomani Confederation. In most areas, the Solomani regained the border worlds lost to the Imperium in the last half century and even occupied a number of worlds that had never been part of the Solomani Sphere.

However, Solomani fortunes were checked in 993 when a large invasion force attempted to regain the worlds in the Old Expanses sector; it encountered near-fanatical resistance and was repulsed with heavy losses.

The period from 993 to 998 was one of stalemate. The Solomani abandoned their plans for further expansion in order to rebuild their forces. However, their policy of inflexibly defending every border world was a constant drain on their resources, and the Solomani were not able to regain the initiative. By 998, the Imperial Navy had achieved strategic dominance as the greater industrial base of the Imperium made its power felt.

The last phase of the war, 998 to 1002, consisted of a near-continual advance by Imperial forces into the heart of the Solomani Sphere The basic Imperial strategy was to attack along two parallel axes of advance, with lesser task forces spreading out to create a huge pocket of Solomani Territory.

Although the Solomani occasionally achieved a tactical success against a task force (such as in the Battle of Kagukhasaggan in early 1002), they were unable to halt the main advances. With the liberation of the Vegan district in 1001, the Imperium gained the secure base envisioned in the reign of Styryx. The loss of the Vegan district prompted the Solomani to embark on a desperate gamble. Recalling the time when the outnumbered Terran Confederation was able to defeat the Vilani Imperium, the Solomani consolidated their remaining naval forces into a single fleet and struck at the Imperial fleet that was advancing out of the Vegan district.

At the Battle of Dingir, in early 1002, the Solomani Grand Fleet was scattered and substantially destroyed. The remnants of the Solomani fleet fell back deeper into the Sphere, and the Imperial forces firmly established themselves in Terra's own subsector

The Imperial high command decided that Terra would have to be invaded in order to end forever all claims of Solomani superiority and thus the use of Terra as a rallying standard elsewhere in the Sphere. In order to invade Terra, a sizable fraction of the Imperial forces in the Solomani Sphere were assembled into an assault force, which effectively ended the pursuit of the defeated Solomani fleet. The invasion began in the second quarter of 1002, and the hard-fought campaign lasted until nearly the end of the year.

In the end, the Imperium conquered the planet. However, the battle for Terra had consumed so much of the Imperial military's resources that the Imperial high command felt they lacked sufficient strength to resume their advance into the rest of the Solomani Sphere Accordingly, they negotiated a temporary armistice with the Solomani military commanders, who were glad to gain a respite to regroup their remaining forces. The war ended on this basis as both the Imperial and Solomani civilian governments, who were concerned with the strain placed on their economies by the protracted war, informally agreed to extend the armistice indefinitely.

Although scholars have debated the wisdom of invading Terra, some claim that the battle was a marginal if not a pyrrhic victory for the Imperium. The general consensus has been that the war as a whole was a victory for the Imperium A substantial amount of the Solomani Sphere was reabsorbed by the Imperium, and a vigorous Vegan Autonomous District was set up to oversee Imperial interests along the new border

However, much of this territory has been lost once again to the Solomani because of the turmoil following Strephon's assassination.

Solomani Security: Secret police force maintained in service to the Solomani Confederation for the purpose of maintaining state secrets, conducting espionage, and implementing political policies of the government.

Solomani Security maintains both a network of contacts which provide information from outside the Confederation and a network of informants which provide information within the Confederation. Solomani Security agents themselves are highly trained individuals capable of conducting espionage and sabotage.

Solomani Sphere: The territory governed by the Solomani as the Solomani Autonomous Region.

See Solomani Autonomous Region

Sophont: A generalized term for an intelligent life form.

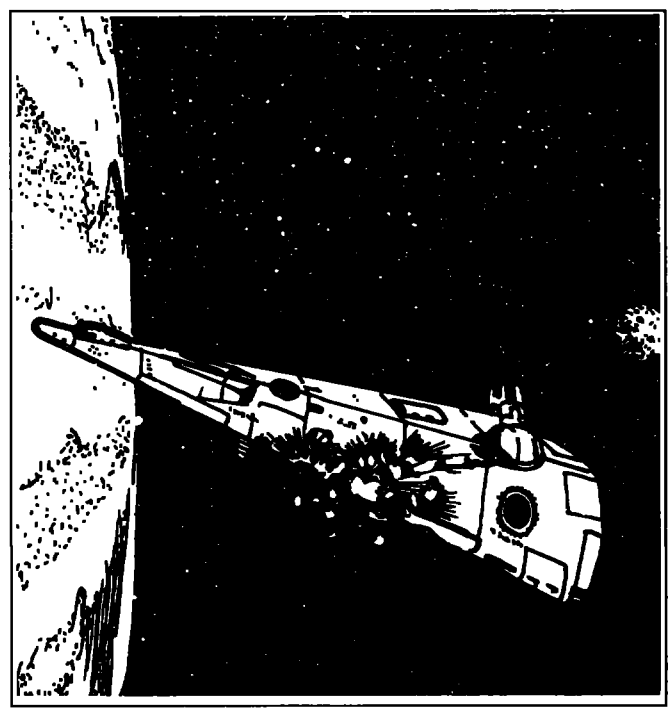
Sophontology: The study of intelligent life forms. Subsidiary branches of this science include. cultural sophontology, the comparative study of sophont societies; physical sophontology, the study of the genetic and physiological makeup of intelligent life, and developmental sophontology, the study of the various means by which life forms evolve intelligence.

Spinward Marches: The Imperium's farthest frontier sector, containing 437 star systems divided along a coreward/rimward line by the Imperial border The region is dominated by two major powers: the Imperial Spinward Marches sector and the frontier provinces of the Zhodani Consulate. In the independent territory between the two powers lie four small territories: the Federation of Arden, the Sword Worlds Confederation, the Border Worlds (a splinter state cut from the Sword Worlds during the Fifth Frontier War), and the Darrian Confederation. Each follows its own diplomatic line designed to maintain independence from both the Zhodani and the Imperium.

The Spinward Marches has been settled since the 400s and is still a frontier sector. High-tech worlds are scattered among empty, fallow worlds; there is potential for exploration, exploitation, and development for centuries to come.

Starport: Establishment for the landing, servicing, refueling, and control of starships. Starports range in quality from A (the best and most extensive) to E (the worst, little more than a spot of cleared ground)

Starports generally have two components: a surface facility and an orbital facility. The surface facility includes cargo handling installations, a landing field, control towers, and other



necessary areas. Surface starport components are frequently called Down (as in Credo Down Starport on Regina). Orbital facilities are present (usually in stationary orbit above the surface component) to enable handling of unstreamlined ships and to allow construction of heavy craft in orbit. The orbital component is often called Orbital (as in Credo Orbital Starport).

Type D and E starports have no extensive orbital facilities, but they usually have navigational satellites or similar equipment. Nonstreamlined ships at these starports must be serviced by shuttles. Starports, being the primary point at which starships interact with a system, are usually the location for shipyards and additional bases, such as scout bases, naval bases or other military installations.

Strephon (1049-1116): Forty-third emperor of the Imperium; eldest son of Emperor Paulo III (981-1071). Born 1049. Coronation 1071. UPP 768ABF. Murdered by Dulinor in 1116.

Subsector: Mapping unit in astrography. Average density: 30 to 40 worlds per subsector.

Subsectors are noted within a sector by their position using the first sixteen letters of the alphabet (A-P). In addition, they are named and may be called by a variety of synonyms for subsector, including province, cluster, or district. Imperial convention is to assign numbers to districts (for example, District 268) which are under Imperial protection because they are pending integration into the Imperium.

Superheavy Elements: Although elements heavier than uranium are increasingly unstable and radioactive (with half-lives measured in fractions of a second), quantum theory predicts an "island of stability," consisting of the elements with atomic numbers 114 to 122, which have half-lives measured in the millions of years. These superheavy elements, also called eka-metals or island metals, are generated in small amounts in supernova explosions. Only a few grams have ever been discovered in nature, which is just enough for scientists to determine that superheavies would be immensely valuable to industry if a source could be found.

Survey, First (published 420): The first comprehensive astrographic and demographic survey of the Imperium, which was performed by the Imperial Interstellar Scout Service. More than a hundred years in the making, its publication in 420 made available the Imperium's records on its component worlds for public use.

Survey, Second (published 1065): The second comprehensive survey of the Imperium, which was performed by the Scout Service, and which updated the long obsolete and incomplete data in the First Survey. The Second Survey was seventy years in compilation, went to greater lengths than the first survey, and included more world data as well as more complete astrographic data. In addition, the expansion of the Imperium since 420 had added many new worlds that had to be included.

Sword Worlds Confederation: A loose confederation of worlds in the Spinward Marches, spinward of Imperial space and coreward of the Darrians The first settlement in the region was on Gram in -399.

By circa -200 the settlement of the area was largely complete, and the first interstellar government in the region, the Sacnoth Dominate, was formed in -186 Consisting of the twenty worlds settled up to that point, the Dominate lasted until -102, when it was fractured by rebellion into several smaller states

During the ensuing centuries, various Sword World governments rose and fell; they sometimes coalesced all the worlds under a single world's domination and sometimes splintered into several small states. Contact with Imperial traders in 73 brought increased trade and had a stabilizing influence on the region, but this stability was short-lived.

The First Frontier War brought a desire for cooperation among the various squabbling worlds, and the end of the war saw the formation of the first unified confederation in centuries, which was centered on Sacnoth and which was referred to as the Second Dominate. As a result of the Outworld Coalition's victory, the Sword Worlds annexed Terant 340, Torment, Trifuge, and Cunnonic, which are all in the Darrian subsector.

The Second Dominate held power until 698, when it was overthrown by a coalition headed by Gram The Gram Coalition ruled until 788, when a short war with the Darrian Confederation resulted in the loss of the four worlds gained during the First Frontier War.

Public outrage at the mishandling of the war caused the subsequent fall of the Gram government. The replacement for the Gram Coalition was the Trilateral Alliance, a decentralized organization headed by Narsil, Sacnoth, and Durendal. The Alliance broke up in 848 due in large part to the inherent weakness of its organization, and an interregnum of essentially independent worlds lasted until Gram reasserted its influence (helped substantially by Zhodani money and advisors, rumor has it) in 852. This government has remained in control down to the present.

The government allows almost complete local autonomy. Individual worlds maintain separate military forces, pass their own laws, and completely regulate their own internal affairs. The Confederation government regulates interworld trade, handles diplomatic relations with outside powers, and adjudicates interworld disputes.

In peacetime, the Confederation government maintains a pool of high-ranking military officers (selected from the military forces of all worlds) who are trained in large unit command and staff operations.

During time of war, all military forces are confederalized and placed under a single unified command. For ground forces, divisions will be commanded by generals from the individual worlds, corps, and higher organizations by Confederation officers. The component forces of a division will be from the same world whenever possible. For naval forces, individual ships are under the command of local officers, squadrons, or higher organizations under Confederation officers.

Sylean Federation (-650 to 0): Large interstellar federation which served as the basis for the Third Imperium.

Established on Sylea in -650, the Federation grew slowly, absorbing several surrounding worlds and increasing trade and interaction between worlds.

By -30, the real power in the Federation was an industrial consortium headed by Cleon Zhunastu. Cleon, a Solomani noble of great vision, used his family industrial base and the support of other families (obtained by the persuasiveness of his personality) to obtain behind-the-scenes control of the Federation government and to begin an active campaign to increase the number of worlds under its control.

After 30 years of economic and diplomatic maneuvering (and

occasional military action), Cleon had increased the size of the Federation and extended its control to the edge of what is now Core sector. Cleon envisioned a territory larger than a single sector, however, and concluded that the tightly controlled, highly centralized nature of the government of the Sylean Federation was not suitable for a large, starspanning empire.

Cleon decided the Federation had served its purpose, and he began plans for a more suitable form of interstellar government, which would allow greater local autonomy but maintain cohesion over large distances. In addition, to restore the past glories of the Rule of Man (and therefore lay claim to all former territories of the First and Second Imperiums), Cleon proposed to revive the Imperium

This was made possible by the fact that in the closing years of the period known as Twilight, one of the last claimants to the throne of the Rule of Man had made Sylea his capital. Cleon traced the legitimacy of the Sylean Federation backwards through this emperor to the Rule of Man and (since the Rule of Man claimed to be the lawful successor to the Vilani Imperium) to the First Imperium as well.

In the 651st year of the Sylean Federation, the Grand Senate of the Federation "persuaded" Cleon to accept the Imperial crown. That year he was crowned First Emperor of the Third Imperium, and he proclaimed the 651st year of the Sylean Federation to be the Year Zero of the Third Imperium.

System: A star and its family of planets and satellites. The term *system* denotes a major world and its associated star, plus any other planets, satellites, asteroids, and other bodies.

System Defense Boat: A nonstarship specifically intended for defensive operations inside a star system. It was developed on the principle that a nonstarship (because of the increased armament made possible by its lack of jump drives) can normally defeat a starship of equal tonnage. SDBs are typically stationed at the vital points of a system (the gas giants, the asteroid belt, the major world, and so on), and they attack invading vessels according to one or more predetermined plans.

System defense boats range in size from 100 to 5000 tons and are constructed at all tech levels from eight to 15. There are hundreds of different types, which depend upon the specific mission for which they are designed

T

Terra (Solomani Rim/Sol 1827 A867A69-F): Earth. Origin world of the genetic stock from which all races of Humaniti descended, former capital of the Terran Confederation, former capital of the Old Earth Union, and former capital of the Solomani Autonomous Region. The word *Terran* (used in the past to refer to an inhabitant of this world or to a citizen of the Terran Confederation) is derived from the name of this world.

Terran Confederation (-2398 to -2204): Interstellar government consisting of Terra and its colony worlds. The Terran Confederation has its roots in the formation of the United Nations Space Coordination Agency (UNSCA) in -2499. In addition to handling mundane responsibilities that helped avoid conflict, UNSCA soon became a clearing house for space operations.

One of UNSCA's natural directions was research In 2087, UNSCA researchers in the system's asteroid belt who were looking for better drives to transport ores discovered jump drive. The first jump drives were used only in the solar system—they were too weak to be used for interstellar travel. In 2096, for various reasons, the first interstellar jump expedition travelled to Barnard's Star rather than Alpha Centauri.

Upon their return in 2097, the expedition members were hurried into a hushed meeting with UNSCA The expedition had encountered alien intelligent life—humans no less! The expedition members had encountered a Vilani prospecting outpost, an outpost on the very fringe of a vast, advanced empire controlled by alien humans. It came as quite a shock to the Terrans that many of the worlds only a few parsecs away were already claimed. Politicians echoed the popular sentiment that it was unfair for alien humans from several hundred light-years away to claim worlds near Terra Individual nations began expanding their armed forces and building starships.

Over the course of the next three decades, UNSCA and the United Nations transformed itself into a true world government, which administered the defense of Terra against the Vilani Empire. Terran colonies formed on other worlds were granted membership into the United Nations. In -2400, the UN officially changed its name to the United Worlds. Two years later, the name was changed again to the Terran Confederation. Modern historians, for simplicity, use this term exclusively.

The Terran Confederation fought a series of interstellar wars with the Vilani Imperium over the period -2408 to -2219. These wars ultimately resulted in the fall of the Vilani Grand Imperium. The Confederation was dissolved in -2204 upon the proclamation of the Rule of Man to replace the Vilani Imperium.

See also Rule of Man, Nth Interstellar War, and Solomani.

Third Frontier War (979 to 986): The long period of uneasy peace between the Imperium and the Zhodani Consulate erupted into war in 979 with simultaneous blows by the Zhodani in the Querion and Jewell subsectors. Imperial reaction was deficient, and the hostilities continued for nearly six years with little to show for it. The armistice finally signed in 986 gave each side little, and it brought about the abdication of Emperor

Terran Confederation Symbol

Styryx in 989.

Third Imperium (0 to present): Also called The Imperium. Founded in 0 by Cleon Zhunastu from the Sylean Federation in what is now Core sector. The Imperium grew swiftly during the pacification campaigns and more slowly thereafter until stability was reached in the 600's, by which time the Imperium had absorbed much of the territory of the First and Second Imperiums.

Government Structure: The Imperium can be best thought of as a form of feudal confederation. Member worlds of the Imperium agree to pay taxes and obey a few fundamental laws which the Imperium promulgates, known as the High Laws. In return, the Imperium agrees to patrol the space between the worlds, to protect interstellar trade, to encourage travel and commerce, and to arbitrate diplomatic relations between worlds Beyond this, individual worlds are left to their own devices so long as they acknowledge the power of the Imperium to rule the space between the stars.

Imperial power is present on member worlds in the form of consulates, bureaucratic offices, and bases Sometimes, larger enclaves of Imperial power are placed where they can enhance the emperor's strength.

The Imperium's territory is divided into sectors, which are in turn divided into subsectors and systems. Groups of sectors, called domains, have been created above the sector level.

During the Pacification Campaigns, Emperor Artemsus divided space into six regions, labeled them domains, and appointed an archduke over each of them. To each archduke, he assigned the continuing pacification of the domain's many systems and their integration into the Imperium. The domains were: Sylea (Core, Fornast, Massilia, Delphi), Vland (Corridor, Vland, Gushemege, Dagudashag), Gateway (Ley, Glimmerdrift Reaches, Gateway, Crucis Margin), Ilelish (Ilelish, Zarushagar, Reaver's Deep, Daibei), Antares (Lishun, Antares, Mendan, Amdukan), and Sol (Dispora, Old Expanses, Solomani Rim, Alpha Crucis). Most of the domains were never totally absorbed into the Imperium.

In 589, during the First Frontier War, a seventh domain was established· Deneb (Spinward Marches, Deneb, Trojan Reach, Reft) The intent was to appoint an archduke to be responsible for their supervision. However, the Civil War broke out before an archduke was appointed.

Following the civil war, the emperors expressed concern about individuals with powers equaling their own, so they moved to lessen the power of the archdukes in the Imperial government Because of this, no archduke of Deneb was never appointed. As a result, the domains came to have little practical significance. Each archduke did retain the power to create knights and baronets.

In the years after the Fourth Frontier War, and after the problems it presented from lags in communication, Emperor Strephon felt a strengthened archduke position could enable the Imperium to more quickly respond in defending the realm. Against the protests and opposition of some prominent members of the Moot, Strephon reestablished the domain as a level in the bureaucracy of the Imperial Navy and returned to the Domain the ability to collect taxes Still later, Strephon gave the archdukes the ability to legislate and enforce the desires of the emperor on the local level. One of Strephon's last acts before his murder was to finally appoint an archduke of the Domain of Deneb: Archduke Norris.

The Divided Imperium: With the assassination of emperor Strephon and all immediate heirs to the throne in 1116, the resulting turmoil has caused some confusion as to who will succeed Strephon to the throne. Thus, at the moment, factionalism in the Third Imperium is at an all-time high.

Even with the uncertainty of the current moment, the Third Imperium still stands. The archdukes are instituting local stopgap measures until such time as a strong central government can be reestablished.

See also Sylean Federation.

Thoengling Empire: Large, centralized state in the Vargr Extents. The thoengling Empire is one of the most stable of the Vargr states and has existed in its current form since 792. The Emperor, who has great governmental authority, is chosen for life by vote of an elected assembly; by law, no member of his family may succeed him Sons and daughters of the higher nobility are brought up at the Imperial court, where every effort is made to inculcate personal loyalty to the Emperor.

The Thoengling Empire has become a major trading partner of the Imperium and generally supports Imperial interests in the Vargr Extents.

Trade Routes: Routes which jump-capable starships travel between major worlds and which connect vital suppliers with essential markets, important government worlds with high population worlds, and strategic resources with exploiting industry. Trade routes are a natural outgrowth of economic and market pressures. When a market is no longer profitable, the trade routes bypass it.

The trade routes are typically the territory of the Imperium's largest trading companies. They maintain fleets of commercial transports and merchants who serve these tradeworlds, and they reap large profits in doing so.

But the trade routes directly serve fewer than a tenth of the worlds of the Imperium The other 90 percent of the Imperium's worlds are served by feeder lines, tramp freighters, and free traders. These smaller companies and unscheduled ships carry passengers and cargo between worlds off the main trade routes.

Travel Zone: Standard form of classification for worlds in terms of relative danger As a service to spacefarers, the Traveller's Aid Society publishes travel zone classifications which indicate the degree of danger a world presents to visitors. Standard classifications are green (no danger), amber (caution advised), and red (severe danger).

See also Amber Zone, Red Zone.

Trojan Points: In a gravitational system composed of a small body orbiting a much larger one (such as a planet and star or a moon and planet), there are two stable points lying in the small body's orbit 60 degrees ahead and behind it, and thus equidistant from the small and large bodies. These are called Trojan points (also LaGrangian points, which are abbreviated as L4 and L5)

The Trojan points of a gas giant near an asteroid belt commonly collect a cluster of asteroids. The name comes from the first such cluster discovered by Terrans at Jupiter in the Sol system; the asteroids were named after mythical heros of the Trojan War.

Twilight (-1776 to -1526): The failure of the Rule of Man triggered the collapse of most interstellar civilization. While interstellar travel and commerce continued, it was at a greatly reduced rate, and the many worlds of the Imperium turned in on themselves. The period of collapse is termed Twilight, and it lasted for two and a half centuries.

Modern historians consider Twilight to have begun in -1776 when the treasury on Hub/Ershur refused to acknowledge a monetary issue of the branch treasury at Antares, which triggered a financial collapse and the destruction of large-scale trade within the Imperium.

The end of Twilight is commonly accepted as the year -1526, when the last governmental body claiming to be the Rule of Man ceased to exist.

Twilight's Peak: Legendary or apocryphal story of lost starfarers on an unknown world who discovered fantastic structures and devices while surviving a terrifying winter. Phrased as an epic poem of execrable quality, the story is most notable only in that it is based on this fact: a task force was lost in the time period specified, and it has not been recovered or accounted for

Two Thousand Worlds: Most common name in the Imperium for the region of space ruled by the K'kree. "Two thousand worlds" is a literal translation of the K'kree T't'tkahk Xeng Kirr. The same words can also be rendered idiomatically as "universe." In times past, the words meant "night sky," for roughly two thousand stars can be seen from one hemisphere of Kirur, the K'kree homeworld. The name should not be taken to mean that there are exactly 2000 worlds in the K'kree empire.

The K'kree government is highly conservative. The current dynasty ruling the Two Thousand Worlds has been in power since prehistoric times, and the form of the government has remained unchanged except for a few minor modifications made necessary by the problems inherent in governing an interstellar empire.

K'kree expansion into space progressed very slowly after the discovery of the jump drive in -4142. The conservative nature of society and the technical limitations placed upon spaceflight by that society (K'Kree spaceships must be very large, for example) combined to inhibit early exploration and colonization.

The discovery of other sophonts caused a xenophobic reaction in K'kree society The realization that intelligent carnivores might exist somewhere in space sparked the K'kree obsession to convert the universe to herbivorism. This obsession stimulated the growth of the Two Thousand Worlds to its present size and still dominates K'kree culture. Local cultures are tolerated and other aspects of K'kree society are not heavily enforced, but all races within the Two Thousand Worlds are herbivorous

K'kree contact with the Hive Federation was soon followed by the Hiver-K'kree war of -2029 to -2013. The military technology of the K'kree proved superior in the first stages of the war. The war ended due to nonmilitary considerations, however, when the Hive Federation demonstrated a plan to radically alter the K'kree social order through the use of psychohistorical techniques and threatened to implement it. The K'kree withdrew to the antebellum borders, and the border between the two states has remained stable to this day.

The K'Kree Empire eventually stopped in its expansion. Increasing problems of administration over interstellar distances and contact with other starfaring races (such as Hivers and humaniti) have stabilized the Two Thousand Worlds at its present size.

V

Vargr: Intelligent major race derived from Ancient genetic manipulations of Terran carnivore/chaser stock, which apparently dates from approximately the same time that humaniti was scattered to the stars.

Inhabiting a region rimward of the Imperium, the Vargr were a puzzle to xenologists The biochemistry and genetic makeup are almost identical with a number of terrestrial animals, but they differ radically from most of the flora and fauna indigenous to Lair, which is the purported Vargr home world.

Researches during the early years of the Third Imperium concluded them to be the result of genetic manipulation of transplanted Terran animals of the family *Canidae*, which is almost certainly of genus *Canis* The obvious conclusion, supported by archeological evidence, is that the race known as the Ancients was responsible.

The typical Vargr is about 1.6 meters in height and weighs approximately 60 kilograms They are upright, bipedal carnivores, with rear limbs digitigrade and hands very similar in size and appearance to those of a human, although there are significant internal differences They have approximately the same physical parameters as humans and are able to use the same equipment without modification or additional instruction.

On the average their reactions are slightly faster than those of the typical human, but individuals vary widely. The Vargr senses of smell and sight are superior to those of humans.

Government: There is no central Vargr government, indeed, there is no governmental type that can be said to be "typically Vargr." Every conceivable form of governmental organization

can be found somewhere in the Vargr Extents. The only cohesive force in the Extents is a fierce racial pride which causes a slight tendency towards racial cooperation.

The higher the level of the Vargr government, the more unstable it becomes because of the difficulty of obtaining consent of all Vargr involved

Vargr in the Imperium: While only a few planets populated completely by Vargr exist within the Imperium, there are millions of Vargr citizens of loyal subject planets. Additionally, Vargr adventurers, criminals, mercenaries and traders can be found throughout the coreward reaches of the Imperium.

Society: The key elements shaping Vargr societies are a very strong centrifugal force resulting from an emphasis on consensus and informal lines of authority, and an equally strong centripetal force resulting from a deeply ingrained family-clan-tribe-nation loyalty.

Centralized authority is extremely limited at the upper levels of Vargr society, and action is based on broad coalitional concerns, with a constant splitting and rejoining of dissident factions. Traditionally, this has made it very difficult for more centralized and organized societies such as the Imperium to deal on a meaningful basis with what passes for Vargr states.

The Vargr have little respect for formal authority, and what respect they might have decreases as that authority becomes more remote Vargr tend to respect informal authority figures more, and they obey superiors who are better known to them.

The Vargr have an intensive racial pride, and they are easily insulted They are prone to enter into fights without regard to possible consequences. Vargr social organization is difficult to characterize in Terran terms, but it can be most closely compared to the Dakota Sioux of North America in the 1800s AD, if the analogy is not pressed too far.

Even among the most stable Vargr governments, a highly charismatic leader can attract followers for almost anything. The neighbors of the Vargr are constantly the subject of impromptu raids and scattered piracy by bands of Vargr (totally without government sanction, of course) who have been talked into a raid, a battle, or a war by a charismatic leader.

Vargr Campaigns (220 to 348): The series of wars, encounters, conflicts, and disputes between the Imperium and the various Vargr states in Vland, Corridor, and Deneb sectors along the coreward edge of the Imperium.

As the Imperium expanded, it initially recruited worlds which were former members of the Second and First Imperium. As its borders reached still farther, the Imperial expansion met already established Vargr states of varying sizes. The Imperium struggled for over a century to secure its territory against the Vargr; the inevitable series of conflicts which resulted are collectively called the Vargr campaigns.

Vargr Extents: The territory dominated by Vargr governments. The term Vargr Extents refers to those sectors with major Vargr populations. Extents are situated roughly coreward of the Imperium and especially coreward of the Spinward Marches, Deneb, Corridor, and Vland sectors.

Vegan: An intelligent race originating on Muan Gwi (Solomani Rim/Vega 1717 A456A86-F) and inhabiting the Vegan Autonomous District; they are named by humans after the bright star near their homeworld.

General: Vegans are upright, bipedal, and bilaterally symmetrical, and they average 2 2 meters in height. They are bisexual, homeothermic oxygen breathers with an average lifespan of over 200 years. Because of their low-gravity origin, they are physically quite weak and are unable to live on high gravity worlds.

The head serves both as braincase and as sensory appendage. Auditory organs are located in the collar-like structure around the neck. Despite external appearances to the contrary, Vegans have two eyes located inside the hood-like fleshy structure which dominates the head.

The paired eyes are covered by a transparent eyelid-like structure, which acts as a polarized light filter. This structure protects the eyes from glare, like built-in sunglasses, and also serves to keep windblown dust out of the eyes This filter can be retracted when not needed. The eyes themselves are large and pick up radiation well into the infrared portion of the spectrum, an adaptation to Muan Gwi's small red sun. Since the skull is fixed solidly in place, a Vegan cannot turn its head, but the fleshy hood containing the eyes can turn through a large arc.

The mouth is a vertical slit in the upper thoracic region with paired breathing/vocal slits on either side of it. Two mandibles are located inside the upper chest, and they grind food between their opposing sets of teeth.

Where the forearm and hand would be on a human, Vegans have three tentacles, which serve them as manipulative organs. Their legs end in broad, splayed feet, which prevent them from sinking into the soft sand.

The urogenital opening is a vertical slit located ventrally in the lower abdomen. There are no external differences between sexes

Vegans have a number of adaptations to the arid dry region of Muan Gwi where they developed. Their tall, thin bodies are designed for maximum radiation of heat. The torso is covered with a thick integument, whose convoluted surface is richly supplied with blood vessels

By increasing or decreasing the supply of blood to the integument, heat radiation from the torso can be regulated to optimum effect (more during the day, less at night). This arrangement obviates the necessity for sweating and its consequent water loss. All orifices of the body can be sealed to prevent unnecessary moisture loss.

History: The Vegans received the jump drive about -6000 from Vilani-influenced traders, and they colonized several nearby worlds before being absorbed by the First Imperium in -4404. They were severely restricted under Vilani rule, as were all races who resisted being integrated into the rigid Vilani culture. Because of this, they welcomed Terran victory in the Interstellar Wars and the advent of the Rule of Man.

The Vegan Polity prospered under the Rule of Man and survived the Long Night largely intact. However, with the advent of the Third Imperium, the Vegan area was broken into individual planetary states in accord with Imperial policy; nonhumans were treated as full citizens but, in order to cement Imperial authority, no multiworld governmental units were allowed.

Under the Solomani, the Vegans were again restricted. Human colonies were founded on many Vegan worlds to maintain Solomani influence there, and Solomani governors were

installed on all Vegan worlds After the Solomani Rim War, the present Vegan Autonomous District was formed as a counterweight to the Solomani.

Society: Vegan society is divided into hundreds of different tuhuir, which might be roughly translated as culture, philosophy, or tao. Each tuhuir has its own customs and traditions and its own interpretation of the proper way to live. The civil service which governs the Vegan District is a tuhuir which oversees and mediates among all the other tuhuir. Although rare, heretical and rebellious tuhuir do exist.

Archeology shows that the tuhuir were once separate societies and each were associated with a particular geographic location, like countries on ancient Earth. Now, however, they are mixed together in complex patterns.

Tuhuir are not hereditary; when a Vegan nears sexual maturity, he or she enters a period of search, which may last for many years. Eventually, the individual chooses a tuhuir; once made, the choice is for life. In practice, about 50 percent of all Vegans enter the tuhuir of their parents (the exact percentage varies with each tuhuir), about 0.5 percent find that they enjoy the search as a way of life and never join a tuhuir.

Vegan Autonomous District: After the pyrrhic victory over the Solomani at Terra in 1002, the Imperium found that it could not completely conquer and absorb the rest of the Solomani Sphere. The Imperial high command decided to create the Vegan Autonomous District to act as a counterweight to the remnants of the Solomani Confederation. The Vegans have complete internal control over their district, but free passage is guaranteed for Imperial citizens and goods.

Although many factors have contributed to the present peace and stability along the Solomani Rim, it cannot be denied that the creation of the Vegan Autonomous District has achieved its original purpose.

The worlds of the Vegan Autonomous District are under a single, centralized government State power is contained in a civil service and is chosen and promoted by competitive examinations.

Vilani: Human major race (*H. sapiens*) which developed on Vland from human stock placed there by the Ancients.

History: The world of Vland, while possessed of a hospitable environment, boasted an alien ecology based on its own independently evolved biology, a biology that produced proteins, sugars, and amino acids that were difficult for humans to digest and metabolize. The humans just could not use local plant and animal life for food

One of the oldest occupations in Vilani society is that of shugilii (which translates roughly as miller). The shugilii was a person who could transform raw food into edible food through special aging and chemical treatment. The shugilii task was more akin to shaman or witch doctor than of that cook. Since virtually no food on Vland was edible without some treatment, shugiliis were powerful members of society.

The alienness of Vland was reciprocal: humans were unsuitable as food for predators, parasites died because humans provided no nutrition, bacteria could not infect the human system, and even viruses were unable to invade and take over human cells. Consequently, the primitive human society found no need for medically oriented shaman. Vilani medical understanding was very slow to develop because of this.

Vilani legends are full of accounts of the wars of the gods, terrible destruction, and occasional intervention in human affairs by the gods. Legends exist of early explorers who found lands with great living stone-metal gods possessed of immense magical powers. Modern archeologists now believe these "gods" were actually great robot warriors and juggernauts used by the Ancients in the final war Apparently, the last of these machines finally ran down around -20,000.

Society: Early Vilani society was dominated by three groups: the shugiliis, the aristocrats, and the merchants. Aristocrats were the natural leaders of society, the shugiliis were the all important food processors, and the merchants controlled trade.

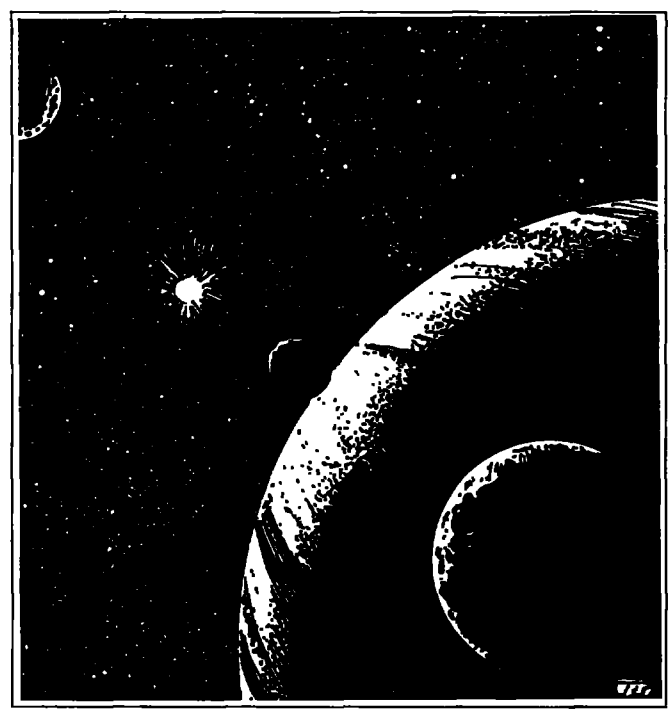
With the flowering of Vilani society (circa -11,000) and its attendant industrial revolution, each of these three forces gained power rather than lost it, each participated in the creation of the industrialized wealth of Vland.

In -9235 the Vilani made their ultimate breakthrough—one that would assure their ascendance for the next 6000 years. A research team working on the fringes of the Vland system created the first working prototype jump drive and demonstrated its effects

The Vilani found intelligent lifeforms on other worlds within 60 parsecs of Vland None of the races had progressed enough to have begun interstellar travel. The Vilani found it easy to dominate these less technically advanced races. The Vilani were able to impose Vilani culture and law on these other races among the stars. However, the Vilani conquerings were not militaristic in nature, but rather were economic subjection.

As their sphere of influence was expanding, the Vilani found it difficult to maintain control across such great distances with jump-1 as their maximum rate of travel and communication At the same time, each of the three power classes of Vilani society found itself threatened by the forces around it

Three bureaux were established, each independent of the other two, and each assigned a territory among the stars for



which it was responsible. Each of the three bureaux was effectively identical, but they initially espoused different philosophies, which were based on their origins. The bureaux maintained their own governments within their territorities.

Sharurshid, originating with the merchant class, emphasized interstellar trade. Makhidkarun, originating with the aristocracy, emphasized interstellar government. Naasirka, originating with the shugiliis, floundered after it found that it could not control food supplies on most of the worlds it dealt with, but it ultimately became a broad-line organization which emphasized energy, transport, and luxury goods.

In -5430, the Vilani finally discovered jump-2. No other race had jump-2, and the Vilani maintained a sole monopoly on jump-2 by jealously guarding its secrets from all subject races. Beginning in -5400, a series of wars to subjugate the resisting fringe cultures was waged. This period of consolidation wars lasted until -4045.

Grand Empire of Stars: In -4045, the ruling Vilani council, the Igsiirdi, declared the Grand Empire of the Stars, or in the Vilani tongue, the Ziru Sirka. The Vilani calendar starts from this date.

At first, the Empire had no emperor. Within 10 years, the chairman of the Igsiirdi (elected for life by the council) was the Ishimkarun—the Shadow Emperor—ruled through published proclamations, but never appeared in public. In -3610, the Shadow Emperor became the Emperor of the Stars, who was the absolute monarch of the Empire. Successors were elected from the Igsiirdi upon the death of the old emperor.

For nearly 1,200 years the Grand Empire of the Stars kept the peace among its star-spanning population. However, the empire insisted on cultural rigidity. Exploration was stopped by -4000. Scientific research was controlled and then stopped altogether by -3800.

The beginning of the end of Vilani domination, however, was signalled by the contact with the Terrans in -2422. By -2408 the Terrans and the Vilani were at war; by -2219 the Terrans had surpassed the Vilani technologically and were marching through the cities of Vland as conquerors, and the Grand Empire of the Stars was at an end.

Currently, Vilani is a cultural rather than a racial or national labeling, and it is applied to those within the Imperium who retain some of the old ways. Dialects of the old High Vilani language survive in certain places, along with a few fragments of Vilani culture, such as musical forms and other fine arts. Certain of the old Vilani noble families have maintained more of the old culture, particularly the families who control the Vilani megacorporations.

Vilani Calendar: The Vilani calendar is based on the period of Vland (the Vilani homeworld) around Urakkalan, its star. The Vilani Gurkala (year) is 478.72 standard days in length.

See also Vland, First Imperium.

Vland (Vland/Vland 1717 A967A9A-F): Homeworld of the Vilani, former capital of the Vilani Imperium, current capital of the Vland sector, and current capital of the so-called Restored Vilani Empire or Ziru Sirka. Vland has been a major trade and cultural center for the core/spinward regions of the Imperium.

W

War: Major violent conflict between nations, megacorporations, or races.

See Good War/Bad War, Imperial Rules of War.

Way Station: Link in the express boat network The way station is a large (for the Scout Service) base devoted to the overhaul and refit of express boats at points in their journeys. During a normal tour of duty, an express boat will jump from system to system, and occasionally change pilots, but steadily work its way farther and farther down the line.

At each stop (Xboat station), the Xboat is routinely checked, refuelled, reprovisioned, and sometimes recrewed Ultimately, however, the Xboat must undergo maintenance and possible repair after the rigors of its mission. The way station performs this function.

Way stations have stocks of scout-oriented repair and maintenance equipment, as well as trained staffs of service personnel. They are the equivalent of naval bases, although they are capable of servicing only smaller tonnage ships (10,000 tons and less) due to the size and orientation of their facilities.

X

Xboat: See Express Boat.

Xboat Station: Facility for handling Xboats at a star system. At each system served by the Xboat network, an express boat station is maintained to handle the message traffic and to manage incoming and outgoing Xboats.

Usually located near the edge of a star system, the station picks up messages beamed to it by incoming Xboats and relays the data to the local world for delivery. Messages destined for worlds farther down the line are transmitted to a waiting Xboat which then jumps for the next world in the network.

The Xboat station contains receiving and retransmission equipment; refueling and support facilities for the local staff and waiting crew are also provided. The Xboat station maintains a local office on the system's major world for the acceptance of Xboat messages, as well as to handle delivery of the messages to addresses on the world.

Y

Year Zero: The base year of the Imperial calendar and the founding year of the Third Imperium. By selecting a base year numbered zero (instead of the generally selected year 1), the Imperial dating system became a standard number line extending forwards and backwards in time.

Years before the founding of the Imperium become simple negative numbers, and the differences between dates before and after the founding of the Imperium could be determined by subtraction.

Z

Zhdant (Zhdant 2719 A6547C8-F): Capital of the Zhodani Consulate homeworld of the Zhodani people. Unlike the capitals of other empires, Zhdant is largely divided into the estates of the members of the ruling Zhodani council, which makes the world's population unusually low. Zhdant is often spelled "Zhodane" in Anglic texts.

Zhodani: Human major race *(H. sapiens)* inhabiting the Zhodani Consulate, a region far spinward of the Imperium.

The Zhodani are a branch of humaniti similar in most respects to other human races. In general, they tend to be taller

than Solomani or Vilani and lithe of build. Their most important difference is the acceptance and use of psionics

Society: Zhodani society is divided into three classes: nobles, intendants, and proles. Nobles are the enfranchised ruling class, and they receive psionic training from childhood. Intendants are managers and administrators of society, and they also receive early psionic training. Proles constitute the masses, they are forbidden the use of psionics and do not receive training.

Within this rigid class system, there are two opportunities for promotion to a higher class. All prole children are tested for psionic potential, and those showing high scores are taken from their families and adopted into the intendant class. Intendants are rewarded for great diligence, service to the state, or victory in the psionic games through the granting of noble titles.

The presence of psionics in the hands of those in power means that many aspects of society work at high efficiency. Psychology, behavioral science, communications science, and education are more refined and exact than in other societies. Educational methods are finely tuned and capable of teaching concepts rapidly and accurately. Mental deviance or criminal tendencies can be detected early and corrected with facility.

Zhodani society is generally a happy one Individuals are members of a functioning whole, and each makes a contribution to its success. The relative lack of upward mobility for the proles is offset by the possibility for their children to move upwards if they have the proper potential. The burden of responsibility imposed on the intendants is lightened by the ever-present possibility of reward through elevation to the noble classes. The nobles themselves temper their burden of authority with comfort derived from their station in life.

Morality: The Zhodani have a general distaste for other human races which do not practice psionics. Effective indoctrination and the ever-present possibility that one's mind is being read have removed dishonesty and deviance as common features of society. The Tavrchedl' (Thought Police) are a special branch of the government who are charged with maintaining right thought in the population.

Imperial citizens have a strong distaste for the Zhodani. Because the Zhodani practice psionics, an Imperial cannot be sure that a Zhodani is not invading his mental privacy at any time Imperials feel exposed and uncomfortable when they are knowingly in the presence of Zhodani.

Because of their psionic abilities, the Zhodani have the most effective authoritarian rule in history. Imperial citizens, who are used to a great degree of local autonomy, fear Zhodani conquest because of the loss of freedom it would entail.

Government: The Zhodani consulate is a participatory democracy in which only nobles are allowed to vote. Executive and judicial functions are the responsibility of a series of councils of varying sizes. Each council elects one of its number as executive officer and a number of its members as delegates to the next higher council.

A city, for example, will elect several of its council members to be representatives to the world council. The process continues upward through several layers of councils to the overall Grand Council of the Zhodani. Nominally, each member of a council serves for one olympiad (three Zhodani years), but in practice, each councilor serves until his replacement arrives and replaces him officially, or until word of his reelection to another term is received. Oftentimes, the district from which a councilor is elected will have only his relatives as voters, and his reelection is virtually assured.

Standard practice (when possible) calls for Zhodani councils to submit important questions to a plebiscite of those affected. The principle can be suspended where immediate action is required, but the official ordering the action stands responsible to the voters and must justify his actions as soon as possible

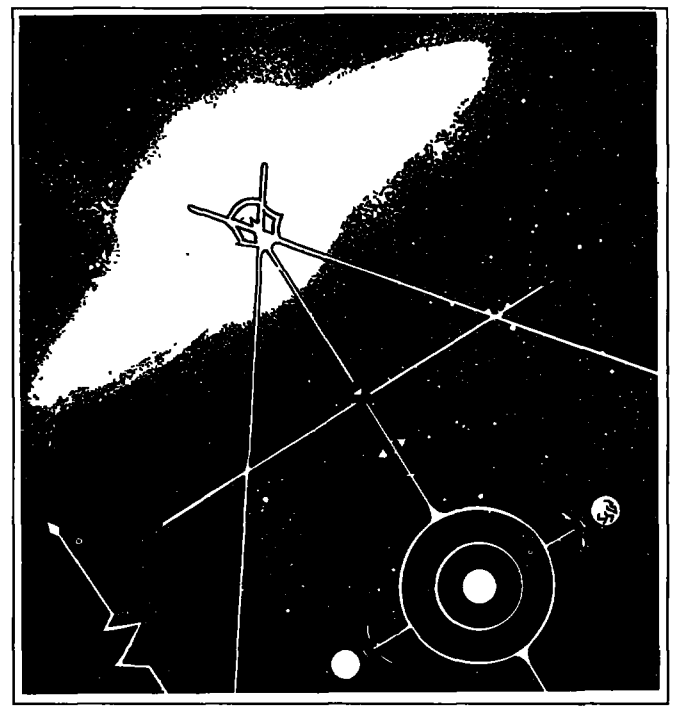
Supreme executive power is vested in three consuls; one is elected each year for a term of one olympiad by and from the members of the Grand Council. No consul may be elected twice in succession, and retired consuls become life members of the Grand Council

History: The Zhodani date their empire from the traditional date of the first organized use of psionics on Zhodane, -6731 Imperial, the year of the first olympiad. They achieved jump drive about 1300 years later, in -5415 Imperial.

The expansion of the Zhodani was gradual and uneventful. Although some states on the fringe resisted absorption into the Consulate, most were annexed peacefully. The Zhodani first came into conflict with the Third Imperium in the 500s, which started the First Frontier War in a dispute over present and future limits to settlement in the Spinward Marches area. Frontier wars over the next 600 years have failed to resolve the basic differences between the two empires.

Zhodani Calendar: The Zhodani calendar is based on the period of Zhdant (the Zhodani homeworld) around Pliebr, its star The Zhodani Chten (year) is 275.19 standard days in length. Zhodani dating uses three Chten called the Thequzdij (olympiad) A Zhodani date is written as: Olympiad Year; for example, 3173.1 is the first year of the 3,173rd olympiad.

See also Zhdant



Library Data: Referee's Introduction

As explained in the general introduction to the Library Data, the material in this book was computer-generated from library data prepared by a team of pro-Imperial citizens working under the direction of Archduke Norris of the Spinward Marches. This means, of course, that the library data is necessarily biased or incomplete in certain ways, and characters who fail to realize this might be dealing themselves trouble

The chief and strongest bias of the book is directed toward Archduke Norris, who approaches the wisdom and goodness of sainthood in the eyes of Eura Regnis and her team of researchers. Norris's role in recent events is mentioned with high praise in several entries in the library data, including his own entry, which is overly long even in its computer-summarized version

Another of the most obvious biases in the book is its strong slant toward the reachievement of one united Imperium. The archduke supports this, and the library data entries are unabashed in their nostalgic remembrance of the "good old days" of the united Imperium and its in disdain for the day-to-day difficulties of life under the divided Imperium

The library data also suffers from overgeneralization, as would any summarized report of such a wealth of information.

A

Ancients: What exactly is the secret of the Ancients? The Ancient "race" started with one individual specimen, a Droyne who found himself to have remarkable mental and psionic powers This individual, who calls himself "Grandfather," is still alive today, hiding out in his own private "pocket universe "

Grandfather was an incredible specimen of an otherwise fairly ordinary intelligent race His psionic powers enabled him to regenerate any damage, including that leading to normal aging, which rendered him virtually immortal. His mental prowess, on the other hand, fueled a burning curiosity for anything and everything that he could learn.

He started researching but realized that he needed competent assistants. He tried to fulfill this need in three different ways. The first method was that of procreation: Grandfather sired 20 children, each of whom had 20 children of their own who were all nearly as intelligent as Grandfather. With 420 offspring, Grandfather decided he had enough and stopped.

His second method was to experiment with other species of life. In his attempt to find good help, he carried humans from Terra to many other worlds in this part of the galaxy. He and his descendants also experimented with Terran canine stock, and genetically created intelligence in the race now known as the Vargr.

Last, Grandfather created a number of different models of superintelligent robots to assist him in his research. Only this last method proved successful, with living beings proving to be unreliable.

Grandfather assigned research projects to each of his children and grandchildren, and progress was rapid, with many new discoveries made by the teams of scientists on their various worlds. Grandfather, basking in the light of this success, decided to take a vacation, and travelled about Droyne space seeing all that there was to see.

When he finished with this vacation, he decided to explore the remaining frontiers of existence. He called all of his children to come and help him, but they had started on their own projects and were too busy to show up.

Grandfather started his work anyway, but he soon found that his children's experiments interfered with his own. His decision to have children long ago was an error, he realized, and now he must rectify it. He began a campaign to eliminate all of his offspring.

Naturally, the children found out about his campaign and resisted. The war of Grandfather against his children was a long and complicated one. Initially, his opponents did not understand that he meant to totally eliminate them; later, they adopted his tactics of total destruction.

The war went on for two thousand years. Staggering weapons were called into use, including planet-busters, nova-triggers, bombardment with asteroids, and such ordinary weapons as tailored plagues, poison gas, and thermonuclear devices

By the end of the war, Grandfather had beaten all of the opposing factions and destroyed all of his children (he kept careful count). The galaxy was somewhat the worse for wear; it had many new asteroid belts and quite a few ravaged worlds.

Grandfather determined that he would in the future limit himself to more easily-controlled assistants. He improved on the robots he had built before and constructed a corps of robots and androids to help him in his experiments. Then, he pinched off a pocket universe around his base world and retreated from the larger universe to pursue his studies unhindered by the concerns of the larger universe.

Who in the Imperium today knows these facts? No one knows them all, but there are a few scattered sophontologists who have come to the conclusion that the Droyne are the modern-day descendants of the Ancients, and they are somehow not as intelligent as the earlier race. The fact that the "Ancients" still exist is not known by anyone.

See also Chirpers, Church of the Chosen Ones, Coyns, Droyne, Solomani Hypothesis, Vargr

Aslan: The Aslan ambassador from the Yerlyaruiwo clan was shot and killed by Archduke Dulinor at the same time that Strephon was assassinated. While apparently an accident brought about by the rapid events in the room, it is unfortunate that many Aslan have taken this act as provocation calling for retaliation. At the same time, the shattered Imperium is not as able to defend its borders as it once was. Aslan *ihatei* (second sons, who do not inherit) have invaded the Imperial regions "behind the claw" and the Solomani Sphere in order to gain land, which is the determining element for an Aslan's social stature

Assassination, Right of: The right of assassination is certainly a legitimate means of ascending to the throne, despite the implications of the SMART library data entry. Dulinor acted entirely properly, as was his right as an archduke. Was the killing justified? Was Strephon leading the Imperium down the path to destruction? Was Dulinor capable of turning events around and restoring the Imperium to its prior glory? Who knows?

C

Chirper: Chirpers are immature Droyne who have not been casted. If Droyne do not caste, they continue development, though very slowly. Sexual differences emerge, but casteless Droyne remain small and semi-intelligent and continue to resemble immature Droyne. Those Droyne groups which have lost the ability to caste (these are fairly common) live as primitives. Chirpers are also psionic, so they are impossible to catch. A chirper may occasionally befriend a human.

Church of the Chosen Ones: Much to the Church's dismay, its teachings are incorrect Grandfather was not trying to create a perfect race, but rather a race of servants, and in this he failed miserably. Since that time, Grandfather has taken no interest whatsoever in any actions of the Vargr.

See also Ancients.

Coyns: Coyns are used in the Droyne casting ceremony, which is among the best known and most important of all Droyne rituals. Researchers were long baffled by the apparently random draw of coyns, under the direction of a leader and several drones, which ended in the choice of a caste for an immature individual. Recent research, though, has proven that the coyns that are drawn are used as focuses for concentration. The leader and drones use psionics to open the young Droyne's mind and awaken the appropriate genetic programming latent within its makeup. It has even been suggested that the draw of the caste coyn is not so random as it may appear to outsiders and that it may be selected by clairvoyance or telekinesis to match the potential discovered while probing the young candidate's mind.

Periodically, the coyns are also consulted in a ceremony which determines whether or not an individual can continue to serve his commune The coyns are believed to reveal the future of an individual—a task or voyage, a battle, and so forth—and they are hence ritually consulted on a variety of matters. What has been frequently dismissed as "random fortune-telling" has proven to be surprisingly accurate in many instances. This has been explained as everything from coincidence to luck to some form of precognitive ability, but the truth remains unknown even to the Droyne. Certainly they believe strongly in the validity of their rituals; the coyns dictate not only life, but death as well, for in most circumstances the failure of an individual to pass the favorable scrutiny of the coyns in a Ceremony of Continuation leads to a self-willed voluntary death, using psionic self-awareness to painlessly turn off both the body and the mind.

See also Ancients, Chirpers, Droyne.

D

Droyne: See also Ancients, Chirpers, Coyns.

Express Boats: Though current technology in the Imperium allows jump-6 travel, the standard means of ferrying information, the Xboats, travel only at jump-4. Publicly, the Imperium writes this discrepancy off by sighting the high cost of building new ships and the fact that many frontier routes simply do not need jump-6 service. True, the cost of jump-6 is high enough to make a universal jump-6 Xboat network inefficient. But the Imperial government also knows the power of information and maintains a variety of naval couriers which can make jump-6. Knowing vital facts before they become general knowledge is essential to a well-run bureaucracy

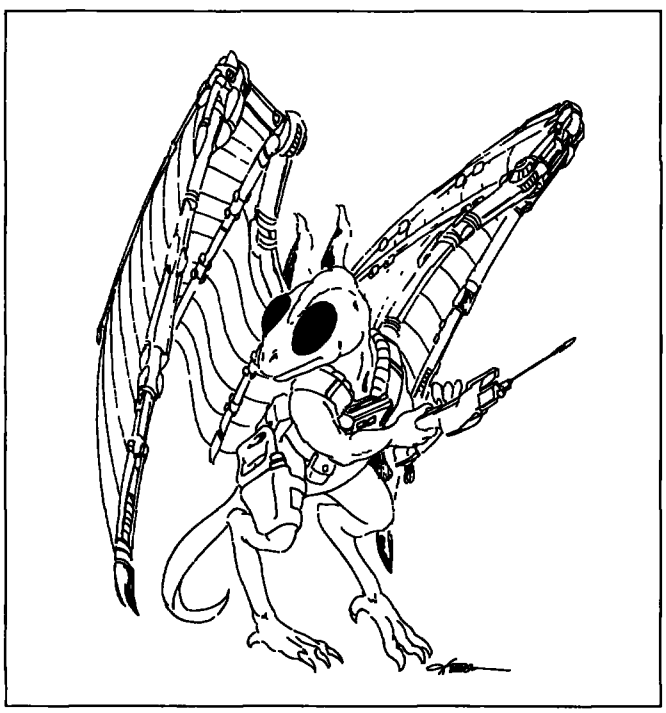
H

Hive Federation: The Hive Federation is one of the few alien governments which has not made an attempt to attack the divided Imperium. Trade between the Imperium and the Hivers has slowed down, however.

I

Imperial Rules of War: While the Imperial Rules of War strictly forbid the use of nuclear weapons by local combatants, the Imperium does retain the right to use such weapons itself

Imperial Stationery: Notice in the Library Data entry the



following phrase: "because it is used for Imperial appointments (even when issued in blank for offices in the marches)." In fact, Norris was never officially appointed by Strephon to be Archduke of the Domain of Deneb. True, he might have done so, if he had lived, but he didn't Norris used the advance notice he had in learning of Strephon's death to fill in his own appointment.

See also Express Boats.

Imperiallines: An interstellar shipping corporation serving worlds off of the main trade routes of the Spinward Marches. Most class C starports in the Marches are served by Imperiallines

Referee: Imperiallines is wholly owned by the Imperial family through a devious line of shareholders. Although it engages in real trade, the company's primary purpose is to provide a covert transport and courier system for the Imperial government. Imperiallines uses two outwardly identical ship types: type TI, capable of jump-2, and the secret type TJ, capable of jump-6.

K

K'kree: The K'kree, like the Hivers rimward of them, are not attacking the Imperium since the death of Strephon. The most likely reason for this apparent restraint is the vast distance between Imperial space and the Two Thousand Worlds, as well as the presence of client states and minor races between the two civilizations.

M

Moot, The: The Moot is not as important as the SMART library data entry implies. While the Moot does confirm emperors and high noble appointments, it did not act to confirm those emperors who ascended by the right of assassination. Is Dulinor, then, the proper emperor of the divided Imperium? Imperial law is somewhat fuzzy on this point, and there exists in the Imperium no body which has the actual power to decide the question. The answer will come *de facto* rather than *de jure*; that is, if Dulinor succeeds in reconsolidating the shattered Imperium, history may recognize him as a legitimate emperor.

If not....

P

Phoenix Project: While there were in fact caches of goods hidden to supply an uprising, this preparation was never as complete as some military theorists believed. What's more, much as squirrels do with acorns, the Phoenix leaders seem to have completely lost track of some of these caches over the years. While most of these would today be obsolete and decayed, there does exist the possibility of a valuable discovery.

Psionics Institute: Officially, all 65 of the Imperial Psionics Institutes were closed in 800 when the Psionic Suppressions hit. In fact, two of these (on Regina and Terra) continued to operate secretly under the auspices of the Imperial government Today, almost all of the original institutes have been secretly reestablished by their partisans, and dozens of additional institutes have been formed since on other worlds. The Imperial Navy also conducts secret research on psionics at several locations, including a laboratory on Vanejen (Spinward Marches 3119).

Psionic Suppressions: In the latter half of the 700s, high Imperial figures (including the Office of the Emperor and the Intelligence Agency) became convinced that the approximately 60 percent of the psionics institutes within the region spinward of the Corridor sector were being financed, at least in part, by Zhodani money. Indeed, there is a natural affinity between the institutes and the Zhodani (with their long-standing history of psionics study and training). The Zhodani were believed by many at that time to be laying the groundwork for a "fifth column" to operate in Imperial space during a war planned to break out between 810 and 820. The Imperium moved to combat this.

Evidence of scandal was uncovered (or perhaps it was merely fabricated) and released with careful attention to public opinion. Simultaneously, high level officials at the sector and subsector levels were apprised of the true situation, and both the Zhodani and the Vargr states were informed (through private channels) that the Imperium knew of the upcoming war and was prepared for it. War was averted, but the suppressions succeeded far better than even the Imperium had envisioned. Public opinion swung widely against psionics and became solidified in the form of strong local laws and customs against psionics. The suppression campaign continued for 26 years before its formal halt. Many small, local campaigns have occurred since.

The cancellation of the charters of the various psionics institutes effectively removed them from the community. They have continued to exist at all only because psionics gives such an important advantage to those who have it against enforcement officials

Sixty-five psionics institutes held Imperial charters in 800. The suppression orders issued by Paula II, which appeared over a period of 10 years, first "suppressed" the various charters, rendering them temporarily suspended and then revoked them at a later date. Sixty-five suppression orders were issued, numbers 2 through 66 (SO 1 was a general order to the realm concerning the issue), followed by 65 orders for revocation (SO67 to SO131). Of these, actual records indicate that SO 83 and SO 96 were themselves revoked by orders published elsewhere. The result is that a cursory examination of the SO files will reveal all Imperial charters of psionics institutes to have been revoked; in actuality, two institutes retained their charters under the auspices of the Ministry of Defense.

One institute, however, even now remains at its original site, at Terra (Sol 0207). The revocation order was cancelled in 1014. Another institute, which was originally sited at Regina, has now been reestablished at Wypoc (Lanth 0401), but it retains a low level recruiting establishment as part of the Navy base at Regina.

Both Imperial-chartered Psionics Institutes are under military control, and are engaged in psionics research. Their existence is of the utmost secrecy.

See also Psychohistory.

Psychohistory: The general information in the library data entry is not entirely correct. The reason large-scale psychohistory experiments are no longer conducted is due to

the unpredictable results achieved by the only sizable experiment to date, which was conducted as a part of the psionics suppressions. The unforeseen results of this experiment were so far-reaching that Imperial scientists concluded that their knowledge of the principles involved was woefully inadequate and that further study was required. Imperial research into psychohistory is undertaken at a small number of research stations and is carried out under the strictest of controls.

See also Psionics Suppressions.

R

Rachele Society: Zid Rachele died a few years after escaping from Exile, but his partisans "recreated" him with the help of a pseudoreality computer simulation. By recreating the personality of this nefarious figure, they were able to continue their racist activities, which culminated in 1103 with the failed attempt to raid the Dynam Depot. Presuming that a copy of the Rachelean software was made before its loss at Dynam, a recreated "Zid Rachele" could still surface yet again.

S

Six Races: See also Chirpers.

Solomani Hypothesis: The Solomani Hypothesis as mentioned in the SMART library data is on the whole correct, although a little incomplete.

See also Ancients.

Solomani Security: Secret police force maintained in service to the Solomani Confederation. The purpose of the Solomani secret police force is to maintain state secrets, conduct espionage, and implement political policies of the government.

Solomani Security maintains both a network of contacts which provide information from outside the Confederation, and a network of informants which provide information within the Confederation. Solomani Security agents themselves are highly trained individuals capable of conducting espionage and sabotage.

Strephon (1049-1116): In one sense, Strephon tied his own noose by reinstating the power of the archdukes after a long lapse in such power. A better leader might have recognized the signs of Dulinor's dissatisfaction and also might have foreseen the drastic plans that transpired with the emperor's sudden death.

See also Third Imperium.

T

Travel Zone: Since the breakup of the Imperium, the Travellers' Aid Society is not as efficient as it once was in classifying areas. While many worlds are amber or red zones, there are probably many more that should be now but aren't.

Twilight's Peak: The epic poem in fact describes the accidental discovery of an Ancient site on Fulacin (Spinward Marches 2613).

V

Vargr: See also Ancients, Church of the Chosen Ones.

W

War, Imperial Rules of: See Imperial Rules of War.

Z

Zhdant (Zhdant 2719 A6547C8-F): As is the case with all the homeworlds of human races, Zhdant is an Ancient site. In historic times, in addition to being the home of the Zhodani, Zhdant was also the home of a large population of chirpers. From this population of chirpers the Zhodani were able to learn their first few lessons in the previously unknown skill of psionics. All of the chirpers which made their home on Zhdant, as well as a population of them on Viepchakl, Zhdant's moon, were killed accidentally by a plague left over from the Ancient's Final War.

Zhodani: Surprisingly enough to those Imperial citizens living "behind the claw," the Zhodani have not taken any advantage of the weakened state of the divided Imperium by attacking.

The anti-Zhodani slant of the SMART library data does not bear objective consideration. In fact, in quite a few respects, Zhodani society is somewhat superior to that of other human cultures.

For example, one of the foremost values of the Zhodani society is the basic honesty that pervades everything there. Trust is an implicit assumption. Locks are extremely rare, and when locks are used, they are more likely to be safety devices to protect children than bars against theft. Walls protect individuals and items from the elements rather than from intruders. Laws deal more with appropriate action than with crimes.

Zhodani society also helps direct individuals to the most productive and satisfying pursuits available to them. Psionically based techniques are available to help each person understand his or her needs and motivations, and place each individual where his or her ability and aptitude can contribute most to personal well-being, as well as to the community as a whole.

Equipment

The vast number of physical objects in the universe and the variation in their potential costs and values defy classification; it is impossible to note and define them all. The objects in this listing are presented as indications of common qualities and values.

Each object's description is followed by its technological level, volume, weight, and price in credits. The technological level indicates local technology required to manufacture an item with the capabilities listed. Volume is given in liters, weight is given in kilograms, and price is in credits. An item with negligible weight or size can be carried or worn without difficulty.

This section may be considered a shopping list for travellers. When they originally outfit themselves for an adventure, each character may purchase or acquire items from this list in preparation for action or mishap. This list does not include weaponry or vehicles, and for the most part all items are generally available for purchase without difficulty on worlds with a sufficient technology level (on other worlds, they may be available as imports at higher prices).

Objects are in alphabetical order, generally by the basic noun used to describe the object. For example, infrared goggles, light intensifier goggles, and sun goggles can all be found in the Gs under "goggles."

A

Airlock, Portable: An inflatable, portable chamber that can be attached to the vacuum side of a bulkhead, entered, and pressurized, which allows a hole to be cut into a pressurized area without depressurization. It includes a patch held in place by pressure which seals the hole when the airlock is depressurized. Size: 500cm by 20cm by 200cm (deflated, 2000 liters), 1.5 meters by 1.5 meters by 2 meters (inflated, 4500 liters); deflated volume includes a pressurized air cylinder and an automatic pump.

TL	*Vol*	*Weight*	*Price*
9	2000 liters	6 kg	Cr1000

Air Tanks: A complete set of compressed oxygen tanks which allows independent breathing in smoke, dust, gas, or exotic atmosphere (type A and special situations) Refill: Cr10.

TL	*Vol*	*Weight*	*Price*	*Duration (hrs)*
5	5 liters	2.5 kg	Cr500	2
12	4 liters	2 0 kg	Cr400	4
14	1 liter	0.5 kg	Cr200	12

Air Tanks, Underwater: Equivalent to oxygen tanks but designed for use underwater. Tanks include regulator and breathing connections. Two tanks last 4 hours and weigh 5 kg. Refill: Cr20

TL	*Vol*	*Weight*	*Price*	*Duration (hrs)*
5	5 liters	2.5 kg	Cr800	2

Atmosphere Tester: A solid-state device with read-outs indicating the atmospheric percentages of elements present. In addition, a red light glows if the atmosphere is not breathable, and a green light glows if the atmosphere is breathable.

TL	*Vol*	*Weight*	*Price*
7	2 liters	1 kg	Cr150

Attache Case: An aluminum and magnesium carrying case similar to that used by technicians to carry precision instruments.

TL	*Vol*	*Weight*	*Price*
7	2 liters	1 kg	Cr75

Axe, Ice: An ice axe is frequently useful in making climbs in snow and ice.

TL	*Vol*	*Weight*	*Price*
3	3 liters	1.5 kg	Cr25

B

Backpack: Backpacks increase a character's carrying capacity.

TL	*Vol*	*Weight*	*Price*
3	40 liters	3 kg	Cr45

Ball, Rescue: Standard on all Imperial military vessels and on most private ships as well. When folded, the rescue ball is a cylinder 5 cm in diameter and 10 cm long. When deployed, it forms a sphere one meter in diameter which contains air sufficient to last one person for two hours. In the event of explosive decompression or other loss of air, a rescue ball allows an individual not in possession of a vacc suit to survive until aid arrives. The user pulls a lanyard, climbs inside and seals the zip closure. The ball is made of a metal-coated plastic film for ease of location by radar and contains a bottle of compressed air, a first aid kit, and a transparent window through which the occupant may observe conditions outside the ball. Rescue balls provide some protection from stellar radiation and corrosive

and insidious atmospheres for five to seven hours.

TL	Vol	Weight	Price
7	1 liter	5 kg	Cr150

Base, Advanced: Modular pressurized quarters for 6 persons, with airlock and atmosphere recirculating system Can be carried in the hold of a starship

TL	Vol	Weight	Price
8	72 kliters	6000 kg	Cr50,000

Battle Computer: Man-portable battle-coordination system, capable of collating intelligence estimates, providing approximations of enemy forces, and of suggesting tactics. It can be linked to unattended ground sensors to increase its potential, and can provide visual displays overlaid on maps when combined with a map box. When linked to a communicator, it can direct laser/maser-communication beams to ground or orbital stations, it and can automatically switch to secondary beam paths if primaries become unavailable.

TL	Vol	Weight	Price
9	28 liters	15 kg	Cr10,000

Beacon, Emergency: A combination long-range communicator and signal transponder, the commlink beacon is a very sophisticated emergency signaling device. The internal transponder monitors common emergency search-and-rescue channels (one at a time). When traffic is picked up on this channel, the device simultaneously emits a shrill warning tone to alert users to the possibility that help is at hand and transmits a coded distress signal. Some more expensive models have provision for a taped, auto-repeat distress call, instead of the automatic code signal. In either event, the commlink beacon serves as a means of establishing contact when there is any search being mounted within 500 kilometers, and then it serves to continue communications after that initial contact. The transponder operates for 30 days.

TL	Vol	Weight	Price
9	2 liters	1 kg	Cr750

Binoculars: Allows improved vision at greater distances than would unaided eyes. Weighs 1 kg.

TL	Vol	Weight	Price
3	2 liters	1 kg	Cr75

Binoculars, Electronic: Vision aid providing electronic enhancement of images. Electronic binoculars feature light enhancement and range-finding capabilities. Comes in an over-the-shoulder carrying case; a sling is also provided for separate carrying.

TL	Vol	Weight	Price
8	2 liters	2 kg	Cr750

Binoculars, Image Converter: Most night-vision devices and electronic sights either are sensitive to infrared (heat) radiation or use light intensifiers to detect their targets. Both have minor disadvantages: IR images can be camouflaged by insulation and LI requires background light to amplify. In addition, the user can only see as far as the unaided eye.

Commercially available at Tech Level 10, the image converter is sensitive to both infrared and visible light. It picks up both heat images and visible-light pictures. The converter can intensify these images, making night-vision possible, as well as magnify them up to 20 × . Both functions are completely adjustable, but high intensification will cut contrast drastically, making the resulting images unclear. Automatic polarizers cut in if the image is bright enough to blind. A laser rangefinder is also included.

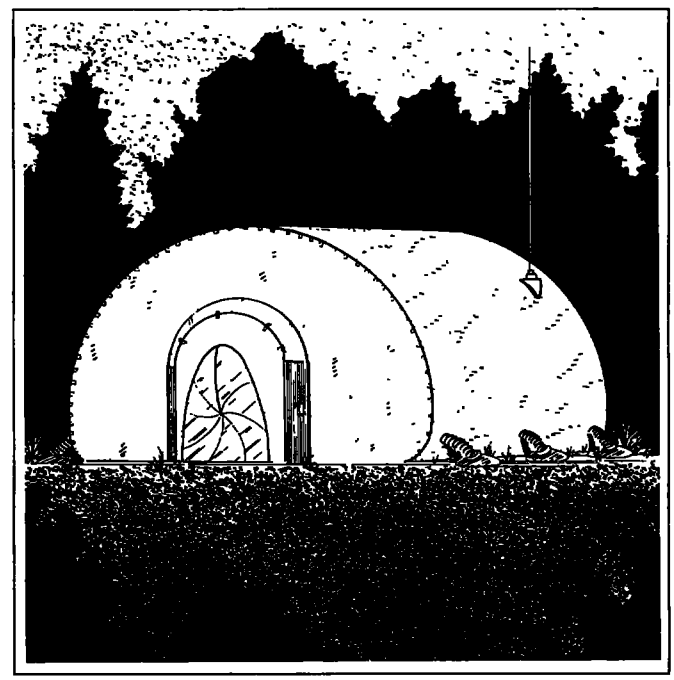
In infrared mode, personnel may be detected up to 3 km away, and vehicles at 6 km. In visible-light mode, personnel may be detected at 5 km and vehicles at 10 km. Note that physical concealment does not necessarily mean that a target is undetectable. The rangefinder is effective out to 7 km, making it useful for infantry or hunting use only.

Special hardware/software packages are available for hand computers that expand the capabilities of the image converter. When hooked up to a computer using a graphics package, the image converter can be tied into a map box (allowing others to see what the user sees), and electronic "photographs" can be stored in the computer's memory. Another package allows the computer to calculate the speed of a target relative to the user

Physically, the image converter is similar to a set of binoculars. Power packs are mounted inside the converter casing and average one week of constant use.

TL	Vol	Weight	Price
10	1 liter	1.25 kg	Cr12,000

Binoculars, PRIS: The portable radiation imaging system



(PRIS) has many more capabilities than binoculars from any previous Tech Level. The PRIS can be set to observe images in the spectral range from infrared to gamma rays. (The PRIS will not detect radio waves.) The front surface of the PRIS is transparent to all radiation; just behind it is a series of lenses tailored to various specific bands. Besides this, a tight beam laser rangefinder gives an accurate reading on the target within sight up to about 20 km, depending on conditions, with the range displayed as a digital readout in the viewfinder. The PRIS also has a built-in clock and limited memory, so the rangefinder can determine the velocity of the object being viewed by comparing its distance from the observer over time.

The unit can be calibrated to a standard self-precessing gyrocompass, in which case the bearing of the direction viewed will be digitally displayed in the corner of the viewfinder. The magnification strength of the PRIS is adjustable up to 225×. A built-in flywheel for gyro-stabilization insures a steady field of view at all magnifications.

Besides its obvious uses in the field, the PRIS also finds itself used in a variety of industrial and engineering applications. Its infrared images can be color-coded to show the ambient temperatures of objects in the viewfinder. A PRIS can therefore be found near every jump drive, to be used by engineers looking for "hot spots" on the drive housing. In other areas of a ship, the PRIS can detect problems in electrical circuits, again by finding an area of higher temperature.

TL	*Vol*	*Weight*	*Price*
12	3 liters	2 kg	Cr3500

Boots, Climbing: Sturdy hiking boots worn for long excursions. A well-chosen climbing boot is valuable in reducing the wearer's rate of fatigue.

TL	*Vol*	*Weight*	*Price*
3	3 liters	1.5 kg	Cr50

Bugs and Detectors: Bugs are near-microscopic, difficult to detect monitoring devices, which enable an individual to hear conversations or to record them for later monitoring. Typically, a bug array is packaged as a small rod containing fifty implantable bugs, together with a bug detector. Placed by touching the rod to a wall joint, light switch, or some other feature of a room, implanted bugs are not recoverable, but they can be destroyed. Bugs send a constant signal to a central monitor. Bugs, once placed, are impossible to detect without a bug detector. A detector is calibrated to detect the signals of bugs and to note their location. A bug detector can be set on one of three settings: Detect, Smother, or Destroy. "Detect" merely indicates the presence and location of a bug. "Smother" prevents a bug from sensing conversations, but allows the bug to remain active. "Destroy" actually destroys the bug which has been detected.

TL	*Vol*	*Weight*	*Price*
15	1 liter	1 kg	Cr1000

Bullhorn: A device which amplifies faint sounds, enabling a voice to carry to very long range.

TL	*Vol*	*Weight*	*Price*
5	3 liters	0.5 kg	Cr120

C

Cabin, Prefabricated: Modular unpressurized quarters for 6 persons. 2 by 6 by 6 meters. Can be carried in the hold of a starship.

TL	*Vol*	*Weight*	*Price*
6	72,000 liters	4000 kg	Cr10,000

Cable: Fine flexible plasteel cable, capable of supporting 250 kilograms. Available in 50 meter coils.

TL	*Vol*	*Weight*	*Price*
9	1 liter	3 kg	Cr100

Calculator, Hand: Provides basic mathematical calculations.

TL	*Vol*	*Weight*	*Price*
7	0.25 liters	0.10 kg	Cr10

Camera: See Recorder, Image.

Carpentry Tool Set: Includes basic tools necessary to cut, shape, and build with wood. Woodworking may include construction and repair of shelters, buildings, or furniture.

TL	*Vol*	*Weight*	*Price*
2	30 liters	25 kg	Cr300

Charges, Breaching: Breaching charges are shaped charges of plastic explosive designed to blow man-sized holes in walls. The charge is the size of a thick notebook; it has a self-adhesive panel on one side and an adjustable chemical time fuse on the other.

To operate a charge, the user peels the sheet of protective plastic film from the adhesive panel, breaks the prescored fuse strip at the desired time delay (five to 60 seconds in five-second increments), pulls the primer, and dives for cover.

Fire departments and rescue units often have a few breaching charges, which are used in an effort to free people trapped in burning or collapsed buildings. Charges made for such "civilian" use are striped dazzle yellow and black, and they usually have a fixed 60-second delay. The breaching charge contains sufficient explosive to breach an armor factor 10, and it does 250 damage points, as discussed in the *Players' Manual*.

TL	*Vol*	*Weight*	*Price*
8	2 liters	2 kg	Cr100

Clothing, Cold Weather: At low Tech Levels cold weather clothing consists of boots, pants, hooded coat, mittens, and face mask, made from animal skins sewn together. These items may be manufactured from local materials provided several large furs, properly cured, are available. At higher Tech Levels, the protection is afforded by a head-to-toe garment made of several layers of fabric around an insulating layer of fluffy fibers. Below Tech Level 7, immersion in water renders cold weather

clothing totally ineffective.

TL	Vol	Weight	Price
1	16 liters	4 kg	Cr200
6	12 liters	3 kg	Cr200
10	8 liters	2 kg	Cr800

Clothing, Desert: Rugged, lightweight clothing for use in the desert. Includes white, long-sleeved shirt; white, comfortable long pants, sturdy hiking boots, and a broad-brimmed, light colored hat. See also Suit, Desert Survival.

TL	Vol	Weight	Price
3	—	—	Cr95

Commdots: A commdot is most often found used as an adjunct to a communicator, although other uses are becoming more common. One commdot is temporarily affixed to the scalp just behind the ear; another commdot is stuck to the throat just above the Adam's apple. The microelectronics in the dots can transmit and receive for a distance of only about a meter, but this is far enough to put the dots in contact with a large, more powerful device. One can thus use a communicator or hand computer and still keep both hands free for other tasks. Commdots are powered by ultraminiature superbatteries and can be tuned by another device. Most communicators support this tuning capability.

When one desires to communicate over more than one frequency at a time or to operate more than one device, a commdot multiplexer is used. The multiplexer is a small box worn on the belt and coordinates activity between the commdot and several electronic devices. The operator can then receive or transmit only on the channels desired, and he can turn signals on or off at will.

	TL	Vol	Weight	Price
Set	10	—	—	Cr100
Multiplexer	10	.1 liters	.1 kg	Cr800

Communicator/Recorder: A miniaturized electronic device capable of receiving voice or radio input, recording it, and transmitting this information either on a given external signal or continuously. Reception and transmission is on the standard voice communication bands. Thus, the device can listen for signals and then retransmit them, or it can continuously transmit a prerecorded message. Tape length is 10 minutes; transmitter range is line of sight (it is blocked by buildings, mountains, and so on)

TL	Vol	Weight	Price	Range
11	0.1 liters	0.1 kg	Cr400	Very Distant (50 km)

Communicator: A communicator is defined as a radio transmitter/receiver combination capable of operating off an internal power source; it is portable in the sense that it need not be connected to a power supply. It may transmit and receive both voice and data. Communicators 0.2 liters and under can be worn as earpieces, which are unnoticeable to the casual observer.

TL	Volume	Weight	Price	Range
5	40 liters	20 kg	Cr225	Distant (5 km)
5	140 liters	70 kg	Cr750	Very Distant (50 km)
5	300 liters	150 kg	Cr1500	Regional (500 km)
5	600 liters	300 kg	Cr15,000	Continental (5000 km)
8	0.2 liters	0.1 kg	Cr75	Distant (5 km)
9	2.4 liters	1.2 kg	Cr500	Regional (500 km)
9	3.0 liters	1.5 kg	Cr5000	Continental (5000 km)
10	0.8 liters	0.4 kg	Cr250	Very Distant (50 km)
12	2.0 liters	1 kg	Cr1000	Continental (5000 km)
13	0.2 liters	0.1 kg	Cr250	Very Distant (50 km)
14	1.0 liter	0.5 kg	Cr500	Regional (500 km)

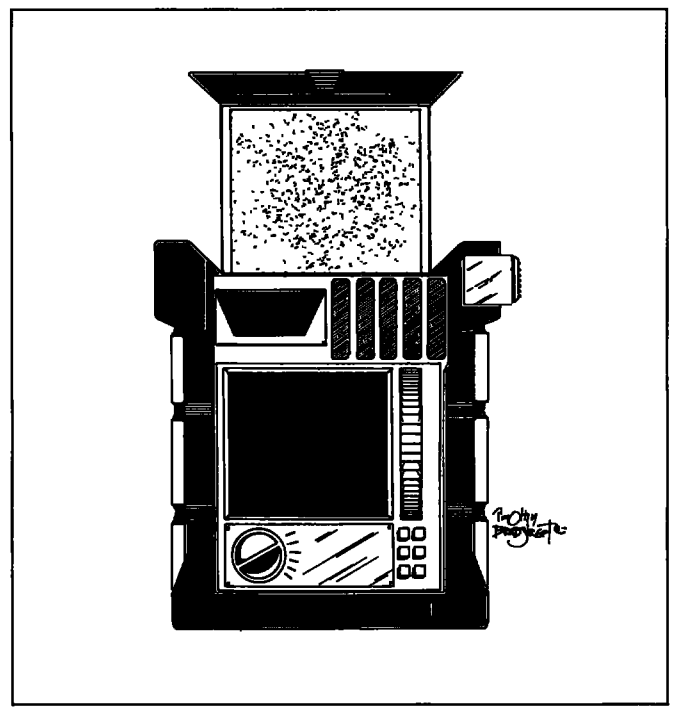
Communicator, Laser: The laser communicator is a line-of-sight device with a regional range (500 km). This distance is seldom needed on a world's surface since the distance to the horizon limits the range first, but this range often allows contact with an orbiting ship.

The laser communicator's main advantage is that it provides a tight beam and therefore a private means of communication. Sets of laser-communicators are often set up in a "repeater" network. Spaced at a horizon-to-horizon distance, the units can instantly convey a message around a world by retransmitting it from station to station.

TL	Volume	Weight	Price	Range
10	5 liters	1.5 kg	Cr2500	Regional (500 km)

Communicator, Video: The video communicator transmits a voice and two-dimensional image over a range of 500 km (regional). The unit is small enough to be carried in a pocket or hung on a belt.

The communicator has a built-in microphone and video camera for input and a small speaker and a polylucent



cuprothallium display for output. The cuprothallium display slides into the main housing when not in use, and the video camera can be switched off if desired. Commdots can be used to speak and listen if the device is attached to a belt.

By opening the unit up, interior controls can preselect five different frequencies for current use; one of these can then be chosen using the frequency selection knob on the front of the communicator. The communicator can transmit and receive simultaneously.

When used with commdots, the communicator can be used to set the commdot frequencies to itself; it will also automatically multiplex with a commdot for any of its five active frequencies.

TL	*Vol*	*Weight*	*Price*	*Range*
14	0.45 liters	0.2 kg	Cr500	Regional (500 km)

Compass, Magnetic: Indicates direction of local magnetic north, if the world has magnetic poles. May be influenced and give false readings in the vicinity of large masses of iron.

TL	*Vol*	*Weight*	*Price*
3	—	—	Cr10

Computer, Hand: Provides services of a supercomputer (equivalent to Model/1 in computing power), plus serves as a computer terminal when linked to a larger computer (such as on board a ship).

TL	*Vol*	*Weight*	*Price*
11	0.2 liters	0.5 kg	Cr1000

Counter, Radiation: Indicates presence and intensity of radioactivity in the immediate vicinity. Can be preset to give a warning signal if levels of radioactivity rise to dangerous levels. Readouts are given in specifics and in terms of danger to humans.

TL	*Vol*	*Weight*	*Price*
5	2 liters	1 kg	Cr250
10	—	—	Cr100

Crampons: Crampons are special spiked attachments strapped to boots to assist in climbs in icy conditions. Wearing crampons decreases the difficulty of crossing ice.

TL	*Vol*	*Weight*	*Price*
4	—	—	Cr20

D

Data-Display/Recorder Headpiece: This headpiece represents a significant breakthrough in holographic display technology at Tech Level 13. A small rectangle of polylucent cuprothallium provides a constant heads-up three-dimensional display for the wearer. Although useless by itself, the headpiece can be interfaced with virtually any number of Tech Level 13+ devices by using a multiplexer similar to that used with commdots. The multiplexer not only coordinates the information for the user but also synchronously records the multiple signals onto one standard holocrystal for later review.

Their use is common among bridge and engineering personnel on starships as well as smaller craft. For example, someone flying in a grav belt while using a neural activity sensor handset would find it inconvenient (to say the least) to refer to the readout on his backpack. Instead, the sensor's output is immediately displayed on his headpiece. At the same time, he can monitor his altitude, airspeed, position, and the operational status of his grav belt batteries and grav units. If he is also wearing a vacc suit, he can read off his oxygen supply and internal temperature besides.

When desired, the headpiece can be swung out of the way above the head; when the display is turned off, the cuprothallium is transparent. About three percent of the population find it difficult to focus properly on the headpiece and are unable to use the device.

TL	*Vol*	*Weight*	*Price*
13	0.1 liters	0.1 kg	Cr5000

Densitometer, Handheld: An outgrowth of gravitic technology, the remote densitometer uses an object's natural gravity to measure its density.

The densitometer records scan data in a three-dimensional matrix. The matrix is processed by the densitometer's computer to provide a 3-dimensional density map of the scanned object or region. Large massive objects (like starships) can be located out to planetary range, while smaller objects (vehicles, heavy metal deposits) can be located at very distant range or less.

TL	*Vol*	*Weight*	*Price*
14	15 liters	7 kg	Cr15,000
15	3 liters	2 kg	Cr25,000

Desert Survival Kit: A kit containing a variety of items useful in the desert. Includes a 1-liter canteen; first aid kit; salt tablets; folding shovel; plastic, watertraps, straws, and directions for building three solar stills, a knife and sheath; a signal mirror (for attracting the attention of searchers in the day-time); and a water purification kit (see below) The kit comes in a 30cm × 12cm × 12cm pack which can be worn on the back or hip or attached to a larger pack.

TL	*Vol*	*Weight*	*Price*
5	4.5 liters	1 kg	Cr450

Detector, Metal: Indicates presence of most metals, although degree of reaction depends on amount of metal present and on proximity. Weighs 1 kg.

TL	*Vol*	*Weight*	*Price*
6	2 liters	1 kg	Cr300

Detector, Stress: The linear descendant of the polygraph, the stress detector uses readings of a suspect's physical responses, voice stress, and similar phenomena to establish the individual's degree of truthfulness under questioning. It is not, however, necessarily accurate in its readings, and the

interpretation of readings is a complex matter.

TL	Vol	Weight	Price
14	2 liters	6 kg	Cr1500

Disguise Kit: Allows change of personal appearance on a temporary basis.

TL	Vol	Weight	Price
7	8 liters	5 kg	Cr1000

Dye, Water: A tube of liquid dye which can be used to highlight a patch of water (around a raft at sea or in a lake near a crash site) with a bright, easily spotted color visible from the air. The primary drawbacks of this form of signalling are the short duration of the colored patch (it lasts no more than 15 minutes in still water and much less if the water is rough or there is any form of precipitation to break it up), and the fact that it cannot be used at night.

The latter problem is offset by dyes available at Tech Level 9. These contain a phosphorescent dye equally visible in day or night. Generally, water dyes are useful only when searchers are aware of the presence of the distressed travellers and are more in need of an exact location than some signal to draw their attention in the first place. A tube provides a single dye patch of standard dimensions.

TL	Vol	Weight	Price
4	0.3 liters	0.2 kg	Cr25
9	0.1 liters	0.1 kg	Cr50

E

Echo Sounder: A device which sends out a a pulse of high-frequency sound and then reads returning echoes to give a range between the sounder and any obstruction. Low-cost models are usually effective to no more than 80 meters, and at ranges of over 40 meters they have little accuracy. More sophisticated models (available at Tech Level 7) are capable of showing a fairly detailed display of the area at which they are aimed, including animal life and other details.

Echo sounders are usually mounted aboard boats and submersibles, where they serve as depth finders. Portable models, however, can be mounted in waterproof camera housings and used by divers. They not only determine depth but also can be used to find horizontal ranges.

TL	Vol	Weight	Price
6	2.5 liters	1 kg	Cr300
10	0.4 liters	0.2 kg	Cr150

Electronic Tool Set: Necessary tools for basic assembly and repair of electronic devices such as communicators, detectors, sensors, and control instruments.

TL	Vol	Weight	Price
7	10 liters	5 kg	Cr2000

F

Filter Respirator Combination: A combination filter mask and respirator which allows breathing of very thin, tainted atmospheres.

TL	Vol	Weight	Price
5	1 liter	0.5 kg	Cr150

Flare, Smoke: These flares emit both a bright light and a pillar of colored smoke for 15 minutes after ignition. Once set off, they burn constantly and cannot be shut off. Sighting in either day or night is nearly automatic in line-of-sight. Smoke flares are specifically designed to be hand-held or implanted in the ground.

TL	Vol	Weight	Price
6	0.5 liters	0.25 kg	Cr12

Flare Gun: A flare gun is used for long-range signalling, and it has a number of applications, both civil and military. It consists of a pistol-like launcher which can fire any of several types of flares up to 50 meters. In addition to being used for signals, it can fire illuminating flares which can be used for spotting purposes at night.

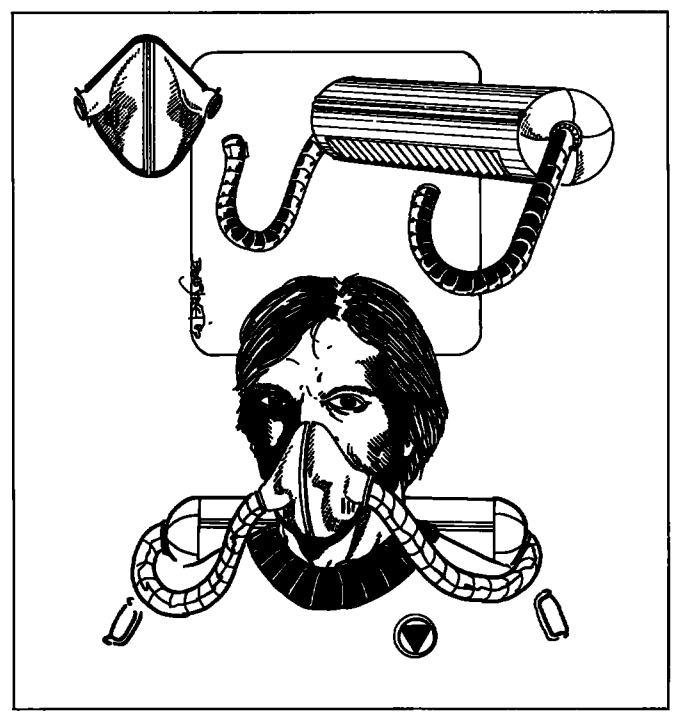
A signal flare is a standard type which provides an easily noticed trail of light (but no real illumination).

An illuminating flare for 30 seconds lights up everything in a radius of 50 meters around the firing character. Such flares are always noticed at night but have little effect by day.

	TL	Vol	Weight	Price
Flare Gun	5	1.5 liter	1 kg	Cr75
Signal Flare	5	0.1 liter	.25 kg	Cr10
Illum Flare	5	0.1 liter	.25 kg	Cr25

G

Gauge, Depth: A device for registering the pressure of water



around a diver. Several models are available, which vary in accuracy and in special features The simplest types register pressure only (forcing the diver to be familiar with the pressure/depth relationship for the specific planet). Of similar quality and price are gauges manufactured for diving on a specific world, which calibrate depth in meters (or other local measurement) rather than by pressure. In addition to concerns over reliability, characters should be aware of the danger of diving with a depth gauge calibrated for a different planet.

At Tech Level 8, a more elaborate model of depth gauge is a digital unit that records time as well as pressure and specifically processes information on decompression stops and durations.

Most sophisticated of all—at Tech Level 9—is a device which can be programmed to show pressure, decompression data, and depth in meters for any world merely by making some simple entries before diving.

Depth gauges are worn on a wrist mounting and usually require occasional battery charges for power.

TL	Vol	Weight	Price
6	—	—	Cr25
8	—	—	Cr150
9	—	—	Cr250

Gauge, Tank Pressure: A gauge showing the available air supply left in air tanks. A basic model shows this information in terms of one atm air supply (forcing the diver to convert for current depth); an advanced version can be tied in with a programmable pressure/depth gauge to give readouts of actual air supplies at specific depths.

TL	Vol	Weight	Price
6	—	—	Cr25

Gill, Artificial: Designed to extract oxygen from water, the artificial gill is a complex device which allows a virtually unlimited time underwater. A tank included in the mechanism carries a charge of nitrogen or helium, which is mixed with extracted oxygen. Exhaled carbon dioxide is eliminated, with the helium or nitrogen being recirculated. Some models have CO^2-absorbent chemicals, like a rebreather, to eliminate bubbles for covert dives.

The two chief dangers involved in using the artificial gill are anoxia and hypoxia.

Anoxia occurs in some layers of water where oxygen content is too low to allow extraction. This is normally a rare occurrence but should be watched for. Victims of anoxia must be given air within five minutes, or they will probably die.

Hypoxia occurs when a fault in the mechanism delivers an insufficient volume of the mixed gas (nitrogen or helium) to the diver. Shots of pure oxygen have an intoxicating effect and should be treated much like nitrogen narcosis. Hypoxia is based on the reliability of the gill.

The artificial gill functions only in thin, standard, and dense atmospheres.

TL	Vol	Weight	Price
8	6 liters	4 kg	Cr4000

Gill, Bionic: A surgical implanted device which enables the human body to function freely in the undersea environment. The individual breathes water as freely as air using a small intake device which is tied to the implant when a dive is made. The lungs are filled with water to equalize pressure, but water is not actually "breathed" through the lungs.

The chief danger of the bionic gill is a problem in adjusting from one environment to another; water trapped in the lungs upon resumption of air breathing can be a threat, which is primarily controlled through experience.

TL	Vol	Weight	Price
14	—	—	Cr35,000

Gill, Powered: A variant of the artificial gill, the powered gill is similar in function but quite different in actual design. Using a power pack to provide the high levels of energy required, the powered gill converts water to hydrogen and oxygen; it expels the hydrogen and combining the oxygen with a carried nitrogen supply. The powered gill has all of the same basic limitations as the artificial gill, but it is lighter. Power supply is good for 36 hours of use between recharges. Bubbles (from hydrogen, broken down by the unit) cannot be masked.

At Tech Level 13, a miniaturized refinement of the standard powered gill employs the same principles but is much smaller. It consists of a lightweight, mouthpiece-type breathing device with a small battery and a container of pressurized nitrogen attached to the unit. The unit will not accept helium, and thus it is limited by the threat of nitrogen narcosis to pressures of 3 atm or less. Total operating time is no more than 1 hour.

TL	Vol	Weight	Price
12	4 liters	3 kg	Cr5000
13	1.5 liters	0.5 kg	Cr7500

Goggles: Lightweight, plastic eye goggles which provide protection against both windblown sand or dust and sun glare.

TL	Vol	Weight	Price
5	—	—	Cr15

Goggles, Combination IR/LI: These goggles combine light intensification and infrared radiation detection in one unit and are worn like eyeglasses They allow vision in anything more than total darkness and can detect heat sources up to 50 meters away. Most types have automatic sensitivity control in the LI mode to prevent blinding by a bright light source, and they can be adjusted manually in both the LI and IR mode by a knob mounted on the earpiece.

TL	Vol	Weight	Price
9	0.3 liters	0.2 kg	Cr1250

Goggles, Infrared: Allow wearer to see exothermic (heat-emitting) sources in the dark such as animals, fires, or hot engines. The quality of vision is necessarily distorted as heat sources and not reflected light images, are being viewed. IR goggles also provide protection from windblown particles.

TL	Vol	Weight	Price
6	0.5 liters	0.25 kg	Cr500

Goggles, Light Intensifier: Allow vision by intensifying ambient light and are usable in anything less than total darkness. LI goggles may allow darkness penalties in night or combat situations to be reduced or ignored. LI goggles also provide protection from windblown particles

TL	Vol	Weight	Price
7	0.5 liters	0.25 kg	Cr500
10	0.5 liters	—	Cr400

Grapnel: A grapnel is a hook at the end of a line, which is used for attempting climbs up sheer pitches. Maximum range to throw a grapnel is about 30 meters, thus, seven separate climbs would complete a 200 meter pitch (planting the grapnel on a ledge or projection, climbing to it, then repeating). Grapnel climbing bypasses the procedure of sending up a lead climber; each climb is equivalent to a regular climb up emplaced ropes.

TL	Vol	Weight	Price
2	4 liters	2 kg + rope	Cr15

Grapnel Gun: At Tech Level 7, a grapnel launcher becomes available which doubles the range of a grapnel to 60 meters.

TL	Vol	Weight	Price
7	6 liters	10 kg	Cr100

Grav Belt: A standard-issue Tech Level 12 grav belt looks like a parachute harness with a "stiffener" that runs down the back and has a series of artificial gravity modules around the waist. The grav belt weighs about 10 kg, but once it is turned on, a neutral control setting eliminates this weight.

This configuration provides 300 kg of thrust for four hours between charges. The grav belt has a maximum speed in an atmosphere of 300 kph, a cruising speed of 225 kph, and a nap-of-earth speed of 40 kph.

TL	Vol	Weight	Price
12	25 liters	10 kg*	Cr100,000 (4 hours per charge)
15	15 liters	10 kg*	Cr110,000 (8 hours per charge)

* When not activated

H

Hammer, Rock: A rock hammer is required to set a Tech 4 or Tech 7 piton.

TL	Vol	Weight	Price
2	1 liter	1 kg	Cr10

Heatsuit: A skin-tight, head-to-toe covering which provides protection against extreme cold. A power source drives a network of heating filaments in the fabric. An internal thermostat allows any apparent temperature, negating the effects of low temperatures and wind chill.

TL	Vol	Weight	Price
8	—	—	Cr300

Heatsuit Battery: Disposable battery capable of powering a heatsuit's filaments for a period of 72 hours.

TL	Vol	Weight	Price
8	—	0.5 kg	Cr40

Heatsuit Power Pack: An energy source designed to replace the battery for a heatsuit. It powers the suit for up to 144 hours without recharging, and it is capable of recharging in one hour from any standard power source.

TL	Vol	Weight	Price
10	1 liter	2 kg	Cr500

Helmet, Transparent: A "goldfish bowl" type of helmet, this protective device has certain advantages over the protective mask. It is lighter, offers more complete protection against irritant atmospheres, and does not hamper the wearer as much as the clumsier mask The helmet can also be worn with a protective suit or vacc suit in corrosive atmospheres.

TL	Vol	Weight	Price
8	6 liters	0.75 kg	Cr30

Hoist, Climbing: This hoist is a battery-powered motor which drives a reel with 25 meters of cable. It has a hook on one side for attachment to a belt or harness and another hook on the opposite side for the cable. A rocker switch in the handle controls direction and an adjustable clutch controls speed; the reel can also freewheel. Power lasts for about one hour before the batteries need replacing. A hand brake can lock the cable in position and a centrifugal brake keeps the cable from un-

winding too rapidly

TL	Vol	Weight	Price	Capacity
8	0.5 liters	1.5 kg	Cr175	125 kg

Hoist, Jumar: A jumar is a personal hoist which makes roped ascents and descents much easier to undertake. Jumars do nothing to increase speed; they merely make the climb easier.

TL	Vol	Weight	Price
6	2 liters	1 kg	Cr50

Hoist, Mechanical: A mechanical hoist is used to haul heavy weights (supplies, people, etc) up walls and steep slopes. Hoists of this type rely on people to furnish the lift. A mechanical hoist can be built to almost any specifications, and the size of the load is limited only by the breaking point of the rope.

TL	Vol	Weight	Price	Capacity
1	20 liters+	10 kg+	Cr50+	500 kg+

Hoist, Powered: A powered hoist replaces the mechanical hoist around Tech Level 5-7. A power source (generator, engine, etc.) is required; this replaces the need for individuals to haul a load up by brute strength.

TL	Vol	Weight	Price	Capacity
8	40 liters+	25 kg+	Cr100+	1000 kg+

L

Lamp, Gas or Oil: Provides about 6 hours of light (and heat) and weighs 500 grams. Refills of oil or gas cost Cr2 each.

TL	Vol	Weight	Price
2	1 liter	0.5 kg	Cr10

Lantern, Cold Light: The flashlight provides three days of light (no heat) in continuous use.

TL	Vol	Weight	Price
6	0 5 liters	0.25 kg	Cr20

Locator, Inertial: Indicates direction and distance travelled from any pre-set starting location. Accurate to within one-tenth of the total distance travelled; may be carried on a belt or sling.

TL	Vol	Weight	Price
9	0.5 liters	1.5 kg	Cr1200

Lockpick Set: Allows picking of ordinary locks by a dexterous and skilled user. Lockpicks are illegal on most worlds; on such worlds the cost rises to Cr100 or more.

A lockpick set of a given Tech Level cannot be used against types of locks of higher Tech Levels, but it may be used against a lock of a higher Tech Level if it is equipped to deal with that type of lock. For example, a TL 6 kit cannot be used against electronic locks since these begin to appear at TL 7. However, the same kit could be used against a TL 7 deadbolt lock, albeit at a slight disadvantage; the difference in Tech Levels could be used as a DM to the success roll.

TL	Vol	Weight	Price
5	0.5 liters	0.25 kg	Cr10-100

Locks, Combination: A nested series of notched disks are rotated by a numbered out disk to points where a tumbler falls into each notch. These locks depend upon the large number of possible combinations for security. These are also available as padlocks.

TL	Vol	Weight	Price
5	0.05 liters	0.25 kg	Cr30

Locks, Electronic: Any of several types of locks that depend upon solid state circuitry to arm and disarm them. Most have an automatic locking device in the event of power failure; more expensive versions have their own power sources (either primary or backup). All electronic locks can be set to give selective access (that is to limit access of certain individuals to certain times of day, etc.).

Keypads are similar to combination locks in that a series of numbers or letters must be entered in order to open them. This lock usually takes the form of a terminal-like keyboard next to a door.

Magnetic readers recognize the coding imprinted on a magnetized strip. This coding is usually sealed in a plastic card.

Fingerprint readers contain a small sensor that recognizes the distinctive markings on the skin of a thumb pressed against a glass or plastic plate.

Voiceprint readers identify the distinctive tones of individual voices.

Retinal scanners identify the distinctive pattern of blood vessels in the retina of the eye.

Metabolic scanners are a sophisticated network of scanners and sensors which distinguish individuals by various physical and chemical characteristics (size, mass, retinal patterns, voice patterns, brainwaves, blood analysis, and so on). Some models may require a small sample of tissue (such as a hair or a drop of blood) to be deposited into the lock. More advanced versions require the user only to be near them.

	TL	Price
Keypad	7	Cr40
Magnetic reader	8	Cr50
Fingerprint reader	8	Cr50
Voiceprint reader	8	Cr75
Retinal scanner	9	Cr75
Metabolic scanner	9	Cr200

Locks, Tumbler: The first true locks, these work by moving small metal or plastic pins into sleeves measured to precise lengths. When the tumblers are moved the proper distances by a properly-shaped piece of metal, the latch is free to move. Two keys generally come with each lock; duplicates can be made for a few credits. Tumbler locks can be keyed to work for several different keys, allowing some keys to open a series of locks, others only one. Padlocks (small, readily portable versions of the tumbler lock) appear at Tech Level 5.

TL	Vol	Weight	Price
4	0.1 liters	0.25 kg	Cr25

M

Machete: Blade used in cutting vegetation to clear a path, campsite, etc.

TL	Vol	Weight	Price
4	2 liters	1 kg	Cr125

Map, Electronic: The "map box" is a compact (250 x 250 x 10mm, which expand to 1000 x 1000 x 10mm when opened) display system for computerized maps of a world. Scale may be adjusted. Most inhabited planets have mapclips (diskettes until Tech Level 13, holocrystals at higher levels) available for Cr150. When not available, two orbital sweeps of the world are required to obtain the necessary photographs to construct a map chip. Blank mapclips are available for Cr30.

TL	Vol	Weight	Price
9	1 liter	1 kg	Cr2500

Mask, Face: Various types of masks are available; they permit clear vision underwater. In addition, if chemicals in the water are particularly irritating or dangerous (by the effect of pollutants, an atmospheric taint, or some other condition imposed by the referee), a mask is necessary to prevent damage to the eyes.

The simplest types of face mask appear at Tech 5; more sophisticated models, ones that are rigged for full head coverage to permit the use of radio or other special gear, appear at Tech Level 7.

TL	Vol	Weight	Price
5	0.5 liters	0.25 kg	Cr20
7	0.75 liters	0.5 kg	Cr75

Mask, Filter: A filter set which allows an individual to breathe tainted atmospheres.

TL	Vol	Weight	Price
3	1 liter	0.5 kg	Cr10

Mask, Protective: For use in irritant atmospheres, the protective mask covers the wearer's mouth, nose, and eyes, and it hooks up to an oxygen supply, which makes it ideal for use in atmospheres containing mild amounts of ammonia, sulfur compounds, or minimal amounts of chlorine.

TL	Vol	Weight	Price
6	1 liter	0.5 kg	Cr25

Mechanical Tool Set: Includes basic tools necessary to repair and alter mechanical devices, including vehicles and guns.

TL	Vol	Weight	Price
5	30 liters	20 kg	Cr1000

Medical Kit: A modern first aid and medical treatment kit containing drugs, surgical supplies, and diagnostic materials for use by doctors and emergency medical technicians. This medical kit is sufficient for both minor and serious wounds, and it can be used for the treatment of animal injuries, radiation burns, chemical burns, poisoning, and drug overdoses.

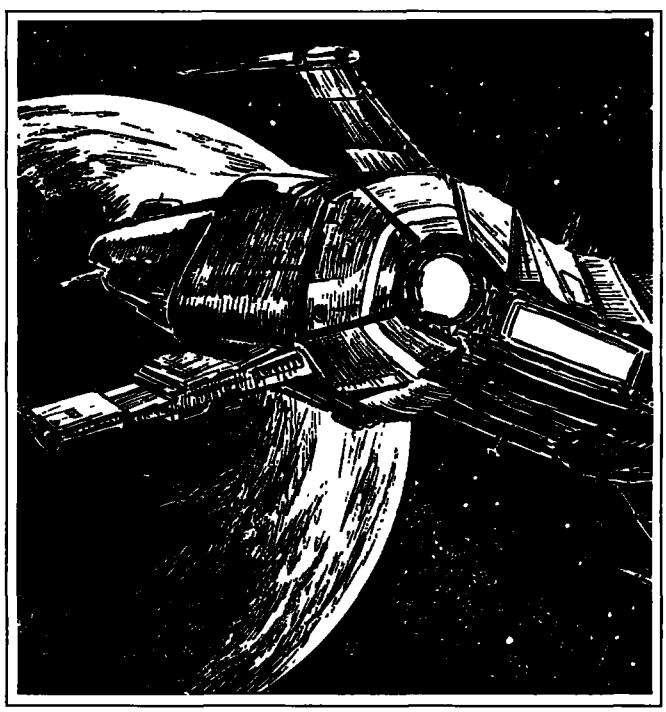
TL	Vol	Weight	Price
7	20 liters	10 kg	Cr1000

Medical Scanner, Computer: This larger, handheld version of the pocket med scanner (below) takes rapid readings just like its smaller cousin, and thus it greatly reduces the time spent on a medical diagnosis task. The larger scanner differs from the pocket version in that this handheld model includes a complete expert system diagnosis computer, which allows individuals with little or no medical skill to diagnose and treat illness and injury

TL	Vol	Weight	Price
12	2 liters	1 kg	Cr25,000

Medical Scanner, Pocket: The pocket med scanner is an indispensable device in the satchel of any physician. Medical skill is not needed to operate the scanner, but the skill is necessary to properly interpret the readings. A doctor or nurse needs only to press against the patient's chest with the small disk-shaped probe. In five to ten seconds, the scanner accurately determines body temperature, blood pressure, pulse rate, respiration rate, level of neural activity, and fluid balance. This useful device greatly reduces the time needed to make a medical diagnosis task. The scanner probe can actually be used anywhere on the subject's body, but no respiration rate is available apart from the chest site.

Once the reading is made, pressing a small button on the



device records the values in the scanner's memory. These records can be called up later for review. Setpoints on the scanner can be keyed in, so if readings reach a certain level (either high or low), the scanner beeps to alert the attending physician. Small adhesive pads are used to attach the scanner temporarily to the chest for this purpose.

The med scanner is optimized for use on a given race, so using it on members of another alien race does not work. An individual skilled in electronics and medicine could, however, try to modify a particular device to work accurately for another species. (One exception to this rule does exist· the same device can be used for humans and Vargr.)

Vacc suits at Tech Level 12 and above are designed with special contact points to allow a med scanner to be used without requiring removal of the suit.

TL	*Vol*	*Weight*	*Price*
12	0.2 liters	0 1 kg	Cr10,500

Metalwork Tool Set: Includes basic tools necessary for metalworking, welding, and shaping. Metalwork may include the construction and repair of shelters, vehicle bodywork, and alteration of metal structural items.

TL	*Vol*	*Weight*	*Price*
4	50 liters	50 kg	Cr1500

Mirror, Return: A device consisting of several mirrors in combination such that they will reflect any incoming beam exactly 180 degrees within a field of 15 degrees. Largely a curiosity, the mirror is used in laser surveying.

TL	*Vol*	*Weight*	*Price*
9	15 liters	20 kg	Cr500

Mirror, Signal: A simple hand-held mirror which can be used to reflect sunlight and thus catch the attention of a distant observer. Signal mirrors can be improvised out of any reflective material; purchased mirrors will include a small sighting hole that enables the signaller to direct the flashes of light from the mirror at a particular target such as a passing aircraft.

TL	*Vol*	*Weight*	*Price*
2	0.2 liters	0 25 kg	Cr10

Mountaineer's Kit: A general collection of useful gear applicable to most mountaineering situations. It includes any type of equipment not specifically described elsewhere which would customarily be used by climbers in sufficient quantities to be used on a climb of average difficulty.

TL	*Vol*	*Weight*	*Price*
4	4 liters	2 kg	Cr100

N

Navigator, Inertial: A small (10cm × 6 cm × 1 cm) inertial navigation computer which allows the user to backtrack on his path by "remembering" movements and turns. Switched on at the point from which the user sets out, it will allow him to find his way back later from any distance. A simple math function can also allow the user to determine a straight line distance and direction to his starting point no matter where he is.

TL	*Vol*	*Weight*	*Price*
8	0.2 liters	0.15 kg	Cr1500
10			Cr750

O

Oxygen Rebreather: A closed-circuit SCUBA system which uses a chemical charge to absorb exhaled carbon dioxide and reclaim oxygen. The system functions for 6-8 hours before a fresh charge of chemicals is required. There is little advanced warning of exhaustion of the chemicals, so dives of longer than 6 hours are risky. A charge of chemicals costs Cr100.

TL	*Vol*	*Weight*	*Price*
8	8 liters	4 kg	Cr2000

P

Parachute: The parachute is a large canopy of cloth or other material held to the jumper's body by lines attached to a harness. The simple parachute affords only a small degree of control of the direction and rate of descent, for it is largely at the mercy of wind and drift effects.

Parachutes can use either static cord release (the chute is tripped automatically as the individual jumps) or ripcord release (either activated by the individual or by an automatic device preset for a given altitude). A static cord jump must be made from a minimum of 100 meters altitude and results in immediate deployment of the chute. The ripcord deployment requires 200 meters minimum altitude, but it also permits jumps from much greater altitudes with the chute opening delayed until the 200 meter level is reached.

A basic parachute weighs 10-15 kilograms; when packed, it fits into a pack worn either on the back or the front of the jumper's body. Many parachute packs incorporate a reserve parachute for use in case of faulty deployment of the main chute.

TL	*Vol*	*Weight*	*Price*
4	20 liters	15 kg	Cr250

Parachute, Grav: Utilizing a basic grav technology, the grav chute is a compromise between the expense of grav equipment and the basic problems of regular parachutes. A simple grav module capable of nullifying a portion of the individual's body weight (but not of providing motive power, as with the grav belt) is worn as part of the chute harness; a conventional parawing is also deployed. Because the grav module can alter the effective weight of the jumper, it can be used to reduce the distance required for chute deployment by a factor of roughly three-fourths (thus chute deployment is not necessary until an altitude of about 50 meters). Varying the grav setting can also be used to alter the rate of descent, which is a particularly useful ability when staging a military raid.

The grav chute cannot fully offset body weight (normally) and certainly cannot provide lift; the small size of the power pack and the nature of the grav module itself will not permit this.

The parawing is used for steering, to back up the module in case of failure, and is necessary to check the final portion of the descent. It is virtually impossible for a jumper to miss a given target area using a grav chute.

The power pack is capable of operation for a total of five minutes. Power packs can be recharged from the usual power services or replaced at a cost of Cr500.

TL	*Vol*	*Weight*	*Price*
10	15 liters	15 kg	Cr2500

Parawing: More sophisticated than the parachute, the parawing is an airfoil-shaped chute which permits much more control of the descent. Hitting a given target area is easier with a parawing; other performance characteristics are as for the parachute.

Parawings are lighter but somewhat more expensive than standard parachutes. A ripcord release is standard for parawing chutes.

TL	*Vol*	*Weight*	*Price*
7	5 liters	5 kg	Cr400

Pitons: Pitons are metal spikes fitted with a ring at one end with (to pass a rope through), which are used in mountain climbing as a hold. Several specific types are available.

The simplest pitons (Tech Level 4) are soft iron spikes driven into rock. An advanced version, available at Tech Level 7, is of similar design but uses superior alloys.

At Tech 8, pitons have a radical design: they are not driven into rock at all, but use a quick-setting superglue to attach themselves to rock faces. Once set, they cannot be removed without using special solvents; however, use of these pitons doubles ascent speeds. The solvent weighs 0.5kg (500 applications) and costs Cr20.

The ultimate in pitons, the sophisticated devices at Tech Level 10 include a small battery pack and a powerful heating element in the tip. When activated, a sudden white-hot burst of heat helps set the piton with a minimum of effort (just steady pressure by the climber).

TL	*Vol*	*Weight*	*Price*
4	0.1 liters	0.3 kg	Cr5
7	0.1 liters	0.2 kg	Cr6
8	0.1 liters	0.2 kg	Cr6
10	0.1 liters	0.3 kg	Cr10

Psionic Shield Helmet: Battery powered helmet creating a weak electrical field at human brainwave frequencies; psionic-talented individuals perceive this as static, which prevents undesirable telepathic influences or psionic assaults. The helmet gives little physical protection, but it gives the wearer and automatic psionic strength rating of 15 (for purposes of defense against psionic assault only). Shielded individuals cannot be detected by characters possessing life detection, nor can they receive telempathic or telepathic suggestions, nor can they be probed or have their thoughts read. The electronics of a psionic shield helmet are relatively simple, but one can break down or be sabotaged; a small meter on the unit allows testing of the helmet's effectiveness.

TL	*Vol*	*Weight*	*Price*
12	0.5 liters	1 kg	Cr4000
13	0.5 liters	—	Cr4000

R

Respirator: A small compressor which allows an individual to breathe in very thin atmospheres.

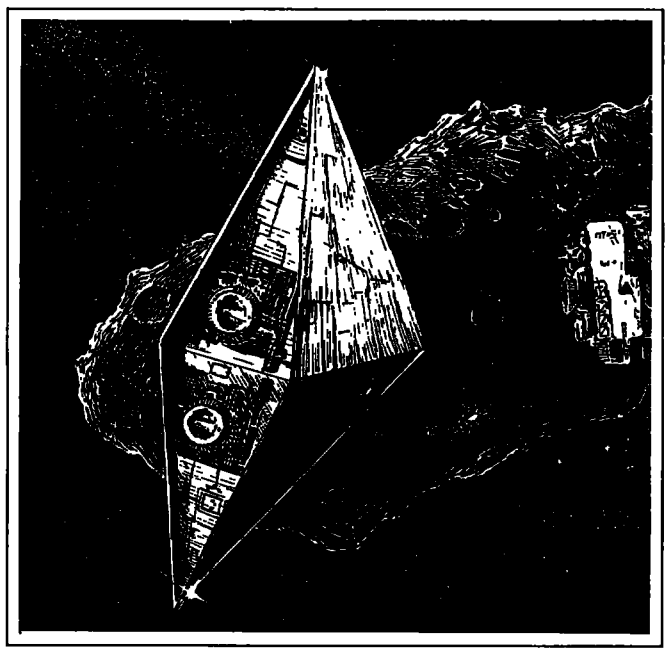
TL	*Vol*	*Weight*	*Price*
5	1 liter	0.5 kg	Cr100

Rope: Rope is a versatile tool that has no real replacement even at higher tech levels. It is the single most important element of a climber's equipment; it can be used to bind prisoners; it can add safety to water or ravine crossings. A variety of types and sizes are available; in general, however, they are all similar in reliability and price within any given tech level.

TL	*Size*	*Weight*	*Price*
5	10 meters	3 kg	Cr20
10	10 meters	1 kg	Cr10
15	10 meters	0.5 kg	Cr10

S

Satellite, Navigational: A small satellite placed in synchronous orbit over the hemisphere where exploration is taking place. It provides moment-by-moment information on the precise location of a tracking unit on the ground with an accuracy of 1 meter or less. For twice the size and price listed below, the satellite can relay the tracking unit (which would then include a TV-like viewscreen) to a plot projected on an accurate map of the region, which is created by the satellite through a combination of laser and radar mapping techniques.



A small nuclear power plant provides over a year of operation without servicing, and the satellite can be retrieved and used over and over.

TL	Vol	Weight	Price
9	300 liters	100 kg	Cr35,000

Sensor, NAS, Portable, and NAS Handset: Developed from Tech Level 12 psionic helmet theory, the neural activity sensor (NAS) was first used medically. It remotely detects the electrical activity of a life form's central nervous system and classifies it according to amount and complexity. The data system compares the activity pattern to known types of life, especially intelligent life.

The portable unit has a range of 500 meters (very long). It consists of a backpack and a handset with a retractable parabolic dish focuser. The handset in fact is not attached to the backpack, and it can be operated up to 100 m distant, which further extends the range.

	TL	Vol	Weight	Price
NAS Backpack	15	20 liters	10 kg	Cr15,000
NAS Handset	15	.5 liters	0.3 kg	Cr20,000

Shoes, Rock: Lightweight, sturdy shoes specifically designed for stability, these are very useful to lead climbers ascending walls and steep slopes where toeholds must be constantly sought.

TL	Vol	Weight	Price
4	—	0.5 kg	Cr10

"Sniffer" Bioscanner: The bioscanner "sniffer" scans for evidence of biological/metabolic activity in the area It is a highly advanced combination sampler/analyzer. The Tech Level 15 sniffer is a breakthrough in molecular analysis the device: provides both improved analysis speed and a cheaper price than sniffers of Tech Level 14 and less. Not only is the bioscanner useful for biological studies, but it also helps with regular chemical analysis. (A cheaper and smaller Tech Level 15 chemical analyzer is available, but it is not very useful for biological scanning)

The portable Tech Level 15 unit listed here incorporates both analyzer and collector into one It has two modes and corresponding equipment: one mode for mass sampling of atmospheric content and the other for minute sampling.

The evidence of biological activity must be within short range of the scanner, for anything beyond short range is undetectable. The bioscanner helps a user to recognize or categorize evidence of familiar and unfamiliar organisms, which allows ecological classification, determination of potential hazards to other life forms, and estimation of potential uses (form of food, commercially valuable).

TL	Vol	Weight	Price
15	8 liters	3.5 kg	Cr350,000

Snorkel: A snorkel is a small tube which permits the diver to submerge completely but continue to breathe as long as the end of the snorkel is above water. There are many sizes of snorkels, but since these are all under 40 cm tall, once a snorkel gets past that length, the air exchange is not sufficient to support the diver.

TL	Vol	Weight	Price
5	0.5 liters	0.1 kg	Cr5

Snowshoes: Large, somewhat awkward, but highly effective, snowshoes permit a character to increase speed over snow by 50 percent.

TL	Vol	Weight	Price
1	4 liters	1 kg	Cr60

Solar 'Vaporator: A device which collects moisture from the air, especially at night. Yield is 2 liters per 24 hours in standard or dense atmospheres, 1 liter per 24 hours in thin atmospheres, and .5 liter per 24 hours in very thin atmospheres. The 'vaporator is stored in a compact (50 cm × 20 cm × 20 cm) package, but it unfolds (an operation requiring 5 minutes) to 200 cm × 10 cm × 50 cm and stands on a tripod which takes up 1 square meter.

If the 'vaporator is not running throughout an entire 24 hour period, partial yields can be calculated by assuming that 3 times as much water can be collected at night as during the day (0.5 liter during the day on a standard on a standard atmosphere planet, 1.5 liter at night).

Solar panels provide power directly during the day and accumulate and store power for operation at night.

TL	Vol	Weight	Price
10	See above	8 kg	Cr1250

Still, Fusion: A bulky device which breaks water molecules free from material placed within it. The amount of water delivered will vary with the type of material fed to the still, but ranges from 1% for very dry sand to 70% for organic material such as wood, plants, or bodies. This percentage of weight in kilograms gives a one-to-one yield of water in liters (thus, 100 kg of sand will yield 1 liter of water). The still requires 1 hour to set up, and 30 minutes for each 10 kg of material processed; the hopper must be cleaned out after each load, which requires another 30 minutes.

TL	Vol	Weight	Price
13	150 liters	60 kg	Cr4500

Suit Air Conditioner: A cooling unit designed to function in hot atmospheres like the suit heater functions in cold.

TL	Vol	Weight	Price
8	6 liters	3 kg	Cr200

Suit, Desert Survival: Cover-all garment with shiny outer surface which prevents major water loss in the desert. The wearer is cooled through evaporation of perspiration, but a series of traps and chemical filters condenses and purifies lost body liquid and stores it as pure water in pouches within the

suit A hood, goggles, and breathing mask (which traps moisture exhaled through the nose and mouth) are included. The chemical filters must be changed once a month, at a cost of Cr50.

Besides keeping the wearer comfortable in sweltering conditions, the suit supplies one liter of water every three daytime hours, and one liter every night.

The suit has certain disadvantages At Tech Level 11 and lower, the bulkiness of the suit causes a loss to Dexterity. Also, the suit is extremely shiny, which makes it almost impossible for the wearer to sneak up on anyone, even in rocky terrain. (This last disadvantage could be an advantage for characters lost in the desert who are hoping to be spotted by aircraft)

Note that vacc suits and combat armor will also, by their very nature, provide complete protection for desert travellers, at least as long as their air supply holds out.

TL	*Vol*	*Weight*	*Price*
9	20 liters	5 kg	Cr7000
13	5 liters	—	Cr9000

Suit, Dry: The dry suit, unlike the wet suit, is a completely watertight garment. Because of this, the dry suit is considerably warmer since cold water is not circulating through the suit. Wearing clothing under the dry suit is possible and will improve the insulation value, but doing so will also further reduce movement. If the suit is ever torn, the insulation value is reduced to that of a poor wet suit within minutes. The dry suit has one additional advantage in that a buoyancy control device is not needed since the entire suit can be used as one.

TL	*Vol*	*Weight*	*Price*
7	3 liters	3 kg	Cr300

Suit, Heated: See Heatsuit.

Suit, Heated Dry: An advanced-exposure diving suit, the heated dry suit utilizes heating coils built into the suit proper to heat the diver in extremely cold temperatures. (If it's warm enough not to be frozen, it's warm enough to swim in wearing a heated dry suit.)

Disadvantages of the suit include the extreme infrared signature, which makes detection of a diver extremely easy, and the possibility of a short circuit if the suit is damaged. Batteries, worn in a belt pouch, provide six hours of operation before recharge or replacement becomes necessary. Available at Tech Level 8, the suit is of negligible weight. An improved model, available at Tech Level 10, does not short circuit when penetrated, and the batteries last 12 hours.

TL	*Vol*	*Weight*	*Price*
8	3 liters	—	Cr650
10	1 liter	—	Cr800

Suit Heater: A suit heating unit to combat the effects of low-temperature corrosive and insidious atmospheres. Without a heater, a protective suit is worthless in these conditions.

TL	*Vol*	*Weight*	*Price*
8	6 liters	3 kg	Cr250

Suit, Protective: Protects against corrosive atmospheres. The protective suit is sealed, air-conditioned, and has its own air supply (good for six hours). The suit has no water supply of its own, nor will it protect the wearer once the air supply gives out, but so long as it works, the wearer will not suffer the ill effects of the outside environment.

TL	*Vol*	*Weight*	*Price*
6	8 liters	7 kg	Cr1000

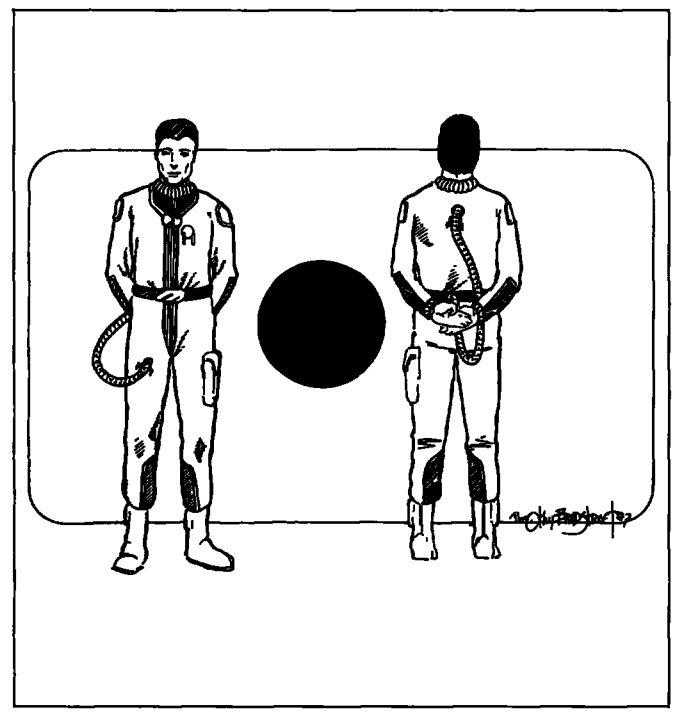
Suit, Protective, Heavy: Protects against insidious atmospheres. In other respects, it is similar to the protective suit.

TL	*Vol*	*Weight*	*Price*
7	10 liters	7 kg	Cr1400

Suit, Wet: A nylon-lined, foam-insulated neoprene outfit designed to reduce the effects of cold water. Water is permitted to soak into the suit, but the insulation is designed to keep heat loss from becoming a problem. Several types are available, which are listed here in decreasing order of protection against extreme cold conditions See also Dry Suit

	TL	*Vol*	*Weight*	*Price*
Cold Water	8	—	—	Cr100
Advanced	8	—	—	Cr75
Light	7	—	—	Cr40
Standard	6	—	—	Cr60

Survival Bubble: A large (2m diameter) plastic sphere with alternating clear and opaque panels, and a small oxygen tank (capable of supporting one person for two hours) for inflation. Access to the interior is through a conforming plastic seal which functions similarly to an air lock. The bubble can be used for life support in a vacuum (it can be moved by walking on the



inside, treadmill fashion), and it can also be used for protection against weather or as a lifeboat on a sea surface.

TL	Vol	Weight	Price
9	3000 liters	3 kg	Cr600

Swim Fins: Fins increase a diver's speed in the water without exerting extra effort.

TL	Vol	Weight	Price
3	1 liter	0.5 kg	Cr15

Swimming Equipment: Includes swim fins, wet suit, face mask.

TL	Vol	Weight	Price
3	3 liters	1 kg	Cr200

T

Tarpaulin: A canvas or waterproof cloth sheet used for temporary shelter, measuring 2 by 4 meters.

TL	Vol	Weight	Price
1	4 liters	2 kg	Cr10

Tarpaulin, Reflectorized: An aluminized sheet which reduces incoming radiation by reflection, measuring 5 by 10 meters.

TL	Vol	Weight	Price
7	2 liters	1 kg	Cr400

Tent: Basic shelter for two persons. Tent: Larger, more elaborate tents weigh and cost more.

TL	Vol	Weight	Price
2	6 liters	3 kg	Cr200

Tent, Pressure: Basic shelter for two persons, which provides standard atmosphere. There is no airlock: the tent must be depressurized to enter or leave.

TL	Vol	Weight	Price
7	30 liters	25 kg	Cr2,000

Torches: Each lasts about 20 minutes.

TL	Vol	Weight	Price
1	1 liter	0.25 kg	Cr1

Torches, Electric: Each lasts about six hours in continuous use.

TL	Vol	Weight	Price
5	1 liter	0.5 kg	Cr10

Translators, Language: With the incredible diversity of cultures and languages found throughout the Imperium and neighboring regions, computer language translators (CLTs) have become a fundamental element of interstellar trade and communication. Dozens of models of various abilities, complexity, and price can be purchased on worlds throughout the Imperium of Tech Level 9 or better.

The basis of all portable CLTs is a program package called a memclip. Each memclip contains programming for one language. Typically, these clips can be purchased with preloaded language programs for between Cr100 and Cr150. Blank memclip can be bought for Cr10 and programmed by duplicating a preloaded program.

All CLTs work in the same manner. Two entities, each with a CLT and memclips for both his own and the other's language, adjust their units until they share a common radio frequency. Each speaks in his own language and his words are translated by the other's CLT and relayed to a detachable remote speaker worn in the receiving entity's ear. With practice, anyone can learn to follow the translation as the other individual speaks.

More than 700 languages are on memclips. Programs even exist for non-aural languages. The CLT can be carried in a hip pouch or by hand. CLTs have two to eight receptacles for memclips, plus the remote speaker. Prices vary. A standard CLT can be purchased for Cr2000. More expensive units have program correction features, more complete handling of idiomatic phrases, smaller size, bone implant speakers, greater durability, and a large capacity for multilanguage conversations.

TL	Vol	Weight	Price
12	1 liter	0.5 kg	Cr2000

W

Wall Patches: Steel-backed plastic patches faced with adhesive, activated by peeling off a backing and placing the patch over a hole or leak. These will serve for several days.

TL	Vol	Weight	Price
10	1 liter	4 kg	Cr150

Water Filtration/Distillation Unit: Purifies water for drinking. The unit includes a distilling plant, filters, and purification tablets.

TL	Vol	Weight	Price
7	4 liter	1 kg	Cr75

Water Purification Kit: A bottle of 250 tablets to make contaminated water safe. One tablet in 1 liter will render water safe in 30 minutes. Tech Level = 5+. Reliability: NA at Tech Level 7 of higher; reliability equals Tech Level if tablets are over 6 months old at Tech Level 5 or 6. Weight: Negligible. Price: Cr5.

TL	Vol	Weight	Price
5	—	—	Cr5

Weight Belt: A weight belt compensates for buoyancy. The weight of the belt itself is negligible.

TL	Vol	Weight	Price
5	—	See above	Cr25

DRUGS

A variety of pharmacological developments are available to travellers for medicinal (and other) purposes.

Drug availability, reliability, and price vary considerably from world to world depending upon the local law and Tech Levels

Medicinal Drugs: Four types of drugs are useful in preventing or treating contagious diseases: vaccines, antitoxins, antibiotics and metabolics. They can generally be obtained only from a physician or with a physician's prescription on worlds with high law levels, but they are generally available at retail on worlds with low law levels. Since all are administered by injection, they must be given by a character with some skill in medicine.

Vaccines: First appearing at Tech Level 5, these help prevent illness if administered once per year by reducing both the chance of contracting a disease and the severity of any disease caught. Vaccines against a single disease are available for Cr15 per inoculation. Vaccines that prevent several similar diseases on the world where they are produced are available at Tech Level of 10 or above for Cr20 per inoculation. A separate vaccine must be taken for each disease Antiviral vaccines are available at Tech Level 10 as well.

Antitoxins: At Tech Level 6, antitoxins hasten recovery by combating poisons generated by microorganisms which have infected the patient, again by reducing both the severity and duration of illness. Antitoxins can also help if the patient is in a coma Antitoxins must be administered once a day throughout the duration of the illness at a cost of Cr20 per injection. Antitoxins are disease-specific, and each affects only one disease.

Antibiotics: At Tech Level 6, these drugs attack the microorganisms that have invaded the body and thus hasten recovery while lessening severity. While generally effective, antibiotics have drawbacks: they may not be effective against the specific microorganisms in a patient's body, and they sometimes cause allergic reactions. Antibiotics have a cost of Cr50 per injection, and they must be taken once per day during illness

Metabolics: First used at Tech Level 8, these are extremely expensive drugs similar to interferon, which are effective against a wide spectrum of diseases They function by altering the metabolism of the patient, and they enable the patient's body to resist the disease by reducing both the severity and duration of illness. They are always effective, but they are not always available, even on high tech worlds. Metabolics must be taken once per day of illness at Cr1000 per injection

Nonmedicinal Drugs: Each of the following drugs has its own advantages and disadvantages; users should be aware of the effects. For the sake of uniformity and ease of use, all are available in consistent, one-dose pill form. Other drugs not listed here may be available in a variety of forms and dosages.

If more than one drug is taken at a time, the combination may cause an adverse reaction in the individual and result in injury or death The use or possession of certain drugs may be restricted by local law

Slow Drug: So named because it makes the universe (from the user's viewpoint) appear to move more slowly, the drug achieves the effect by accelerating the user's metabolism. In effect, the user lives approximately twice as fast as normal.

Slow drug takes effect 45 seconds after ingestion and continues to function for about 10 minutes. At the end of its effect, the user receives 1D in wounds. The person is extremely fatigued, is treated as if all available combat swings have been taken, and must recover from that fatigue. A person under slow drug (because he or she is living at twice the normal rate) can make twice as many actions or move twice as far as normal.

A medical slow drug is also available, which is used to hasten recovery from wounds or illness. One dose causes unconsciousness and the passage of thirty days equivalent recovery time in one day. During this period, ordinary healing takes place. No wounds are received from the use of medical slow drug, but the individual is unconscious or semi-conscious while under its influence

Fast Drug: So named because it makes the universe (to its user) appear to move much more quickly, the drug slows down personal metabolism at a ratio of approximately 60 to 1. Users are extremely vulnerable while living at such a slow rate, but physical aging is also slowed, and the need for consumable supplies is reduced which thus allows conservation of air and food. Fast drug takes effect immediately upon ingestion, one dose lasts for 60 days, making that time appear to be only one day.

Combat Drug: Taken by fighters (usually military personnel) prior to combat, this drug increases personal strength and endurance. The effect begins 30 seconds after being taken and lasts for about 10 minutes. When the effect wears off, the user suffers 1D in wounds.

Anagathics: Drugs which counteract the aging process: supposedly, a regimen of regular monthly doses enables an individual to ignore the debilitating effects of advancing years. Because of the rarity and demand for anagathics, they are quite expensive and are often unavailable at any price. More details on the use of anagathics can be found in the *Players' Manual.*

Truth Drug: Used to compel individuals to answer interrogation truthfully, one dose is sufficient to assure truthful answers for approximately two minutes, after which the user experiences one hour of unconsciousness, and suffers 2D in wounds.

Antidotes: Available for both slow and fast drugs, these immediately cancel their major effects: the individual is returned to the normal rate of living, but still suffers any indicated recovery requirements.

DRUGS TABLE

Drug	*Per Dose*
Slow Drug	Cr500
Medical Slow	Cr100
Fast Drug	Cr200
Combat Drug	Cr750
Anagathics	Cr20,000
Truth Drug	Cr5000
Slow Drug Antidote	Cr600
Fast Drug Antidote	Cr900

VACC SUITS

The rigors of alien environments contrast with shipboard conditions. When people face extremes of temperature, pressure, and atmospheric composition, a vacc suit is the principal survival tool. At lower Tech Levels, these are unwieldy and uncomfortable, but they become lighter and more flexible with each technological advance At the higher Tech Levels, the suits provide improved armor protection At an additional cost, suits may be made self-sealing at Tech Level 13. At Tech Level 15, all suits are self-sealing. Vacc suits consist of suit, gloves, boot, and standard helmet; they protect against temperatures from +100° C to -110° C and pressures of up to 5 atm.

At Tech Level 14, tailored vacc suits become available. These include a soft helmet which is more comfortable but is wasteful of air supply: PLSS air supply duration is divided by two Other advantages of a tailored suit are style and status.

At Tech Level 10, holographic heads-up displays become common in hard-helmet suits. The display shows the condition of the suit and the current battery level and air supply.

GENERAL PURPOSE VACC SUITS

TL	Armor	Volume	Weight	Price	Encumbrance to Dexterity
9	Cloth	3 6 liters	8 kg	Cr7000	-3
10	Cloth	2 7 liters	6 kg	Cr7000	-3
11	Cloth	1 8 liters	4 kg	Cr7000	-2
12	Cloth-1	0 9 liters	2 kg	Cr7000	-1
13	Cloth-1	0 5 liters	—	Cr7000	
Self-Seal Option			1 kg	+Cr6000	-1
14	Cloth-2	0 2 liters	—	Cr7000	
Self-Seal Option			0 5 kg	Cr5000	
15	Cloth-2	0.2 liters	—	Cr9000	

TAILORED VACC SUITS

TL	Armor	Volume	Weight	Price	Encumbrance to Dexterity
14	Cloth-2	0 2 liters	—	Cr9000	—
Self-Seal Option			0 5 kg	+Cr5000	—
15	Cloth-2	0.1 liters	—	Cr10,000	—

HOSTILE ENVIRONMENT VACC SUITS

TL	Armor	Volume	Weight	Price	Encumbrance to Dexterity
8	Cloth-2	3 8 liters	35 kg	Cr12,000	-3
9	Cloth-1	3 8 liters	40 kg	Cr16,000	-3
12	Cbt armor-2	3 0 liters	40 kg	Cr18,000	-3
13	Cbt armor-1	2 0 liters	10 kg	Cr20,000	-3
14	Cbt armor	2 6 liters	25 kg	Cr150,000	-2

ACCESSORIES

Portable life support systems (PLSS) are a necessity; they can be purchased with different supplies of air. Batteries power the air supply recycler achieve capacity; a recharge lasts as long as the PLSS oxygen supply. Lighter tanks with greater pressure are available at higher Tech Levels.

PORTABLE LIFE SUPPORT SYSTEMS

TL	Type	Tanks	Duration	Volume	Weight	Price
9	A	2 std	4 hours	11	7 kg	Cr3000
9	B	3 std	24 hrs (recycle)	20	14.5 kg	Cr5000
9	C	6 std	48 hrs (recycle)	55	29 kg	Cr8000
12	A	1 HP	4 hours	7	4 kg	Cr3000
12	B	1 HP	24 hrs (recycle)	16	11 kg	Cr5000
12	C	2 HP	48 hrs (recycle)	30	18 kg	Cr8000
14	A	1 UHP	12 hrs (recycle)	1.5	0.5 kg	Cr3000
14	B	2 UHP	24 hrs (recycle)	3 5	2 kg	Cr5000
14	C	4 UHP	48 hrs (recycle)	7	3 5 kg	Cr8000

OXYGEN TANKS

TL	Type	Volume	Weight	Price	Refill
5	Standard	5	2.5 kg	Cr500	Cr10
12	High-Pressure	4	2.0 kg	Cr400	Cr10
14	Ultra High-Pressure	1	0.5 kg	Cr200	Cr10

HARD BUBBLE HELMETS

TL	Special Features	Volume	Weight	Price
8	None	14	2 kg	Cr800
14	Integral Heads-Up Display	10	1 kg	Cr1200

Miscellaneous Accessories

Magnetic grips, handheld or fastened on boots, can make movement easier in low-gravity situations.

Suit patches come in handy in the event of a vacc suit breach. They are unnecessary for small holes on self-sealing suits.

The thermal-meteoroid garment is a hooded, coverall-like garment added over the top of a regular vacc suit. It lessens the risk from micrometeoroids, and can be used to temporarily "harden" a soft suit It protects from +130° to -160°C

The long range thruster pack (LRTP) is heavy, but it provides 2G acceleration for up to 48 hours, using standard starship fuel.

MISCELLANEOUS ACCESSORIES TABLE

TL	Special Features	Volume	Weight	Price
5	Magnetic Grips	0.5 liter	—	Cr20
7	Suit Patches (pack of 5)	0.2 liter	—	Cr2
8	Thermal-Meteoroid Garment (armor 6, cloth-1)	1 liter	—	Cr400
12	Long Range Thruster Pack	65 liters	38	Cr14,000

SPECIAL PURPOSE VACC SUITS

The body pressure suit is light and comfortable (no encumbrance to Dexterity) to work in for short periods of time under mildly hostile atmospheric conditions. It can be worn under clothes but is of no benefit in pressures less than 0.43 atm (thin atmosphere) without the vacuum belt The suit protects against temperatures +50° C to -40° C and pressures up to 2.5 atm.

BODY PRESSURE SUIT

TL	Special Features	Volume	Weight	Price
10	Armor as Jack	0.2	—	Cr12,500
10	Gloves, Helmet	16		
	Air Charge (20 min)	0.75	—	Cr250
10	Vacuum Belt	2	1.5	Cr2500

Combat Equipment

All reasonable people agree that persuasion and negotiation are the preferable means of reaching agreement and compromise Once logic and persuasion fail, however, those same reasonable people find that weapons and armor constitute their primary means of achieving goals. Weapons are also essential for self-defense. Commonly available weapons, weapon accessories, and armor are described in detail here. Specific characteristics (price, Tech Level, weight) for this equipment are contained in the weapons chart.

HAND-TO-HAND WEAPONS

The following hand weapons are generally available on most worlds; their availability may be restricted, however, on higher Law Level worlds.

Natural Weapons: Natural weapons (such as hands or teeth) are an intrinsic part of the fighting individual. In addition, clubs are typically freely available

Club: Clubs cost nothing, generally weigh from 0.5 to 3 kg, and can be found in the area where hand-to-hand combat takes place. For example, a bottle may be used as a club (only once, however—after one use it becomes a dagger minus one).

Small Blades: The following edged weapons cover the range of small blades which are available. Small blade weapons are effective only at close and short range, but they may also be thrown.

Dagger: A small knife weapon with a flat, two-edged blade approximately 200 mm in length. Daggers are usually carried in a belt sheath and less frequently are concealed in a boot sheath or strapped to the forearm. Daggers are usually the last weapon of defense, and they are worn constantly. The weight of a dagger does not count against the weight load of the character.

Blade: A hybrid knife weapon with a heavy, flat two-edged blade and a semibasket handguard. Because of the bulk of the handguard, it is generally carried in a belt scabbard.

Large Blades: The following edged weapons cover the range of large blades which are available. Large blade weapons are effective only at close and short range. Large blades may not be thrown

Sword: The standard long-edged weapon, with a flat, two-edged blade. It may have a basket hilt or hand protector. A scabbard to carry the sword may be attached to the belt or to straps (or a sash) over the shoulder.

Cutlass: A heavy, flat-bladed, single-edged weapon featuring a full basket hilt to protect the hand. The cutlass is the standard shipboard blade weapon and is usually kept in brackets on the bulkhead near important locations; when worn, a belt scabbard is used.

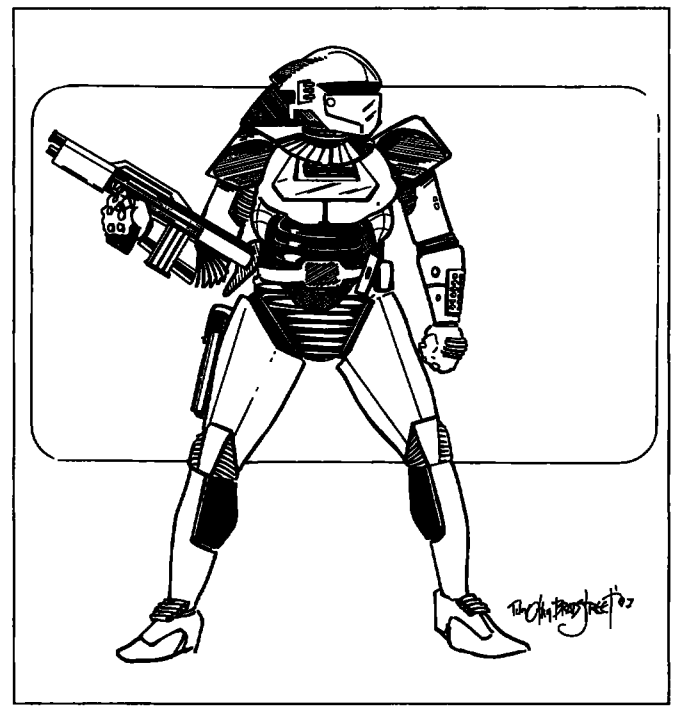
Broadsword: The largest of the sword weapons, also called the two-handed sword because it requires both hands to swing. The blade is extremely heavy and two-edged. The hilt is relatively simple, generally only a crosspiece with little basketwork or protection. When carried, the broadsword is worn in a scabbard attached to the belt; less frequently, the scabbard is worn on the back, and the broadsword is drawn over the shoulder.

Foil: The foil is a specific duelling weapon designed for fighting others also armed with foils. Also called the rapier, this weapon is a light, sword-like weapon with a pointed, edged blade and a basket or cup hilt to protect the hand. A foil is worn in a belt scabbard. (A foil is effective only at close and short range A foil may not be thrown.)

Axes: Below are the special edged weapons known as axes, which are generally available. Axes are effective only at close and short range, but they may also be thrown.

Hand Axe: A weapon with a flat-bladed head mounted on a handle. The flat head is blunt on one edge and has a sharp-bladed edge on the other. An axe is worn on the belt.

Battle Axe: A weapon with a large, flat-bladed head mounted on a hefty handle. The flat head has two sharp-bladed edges.



A battle axe is worn on the belt in a special sling made for that purpose.

Polearms: The following polearms are generally available. In most cases, they will be in the hands of non-player characters encountered in the process of an adventure. Polearms are effective at close and short range.

Bayonet: A knife-like weapon similar to a dagger or blade. When not attached to a rifle, a bayonet is treated as a dagger (or blade) and can carried in a belt scabbard. When attached to the muzzle of a rifle (not a carbine or autorifle), it transforms the gun into a polearm.

Spear: A long polearm with a pointed tip, usually of metal. Often made by the soldier himself, the spear is quite inexpensive. A spear may be thrown.

Halberd: A quite elaborate polearm featuring a pointed, bladed tip This weapon may be considered to be a combination of a battle axe and a spear. Halberds are often carried by Tech Level 2 guards.

Pike: A long polearm with some form of flat-bladed tip. Pikes are commonly carried as weapons by Tech Level 1 troops.

Staff/Cudgel: A basic stick which is used as a weapon. Staff/cudgels are easily obtained from standing trees or through the use of an unloaded long gun such as a rifle or carbine (laser weapons are too delicate to be used as cudgels more than once).

PERSONAL SLUG THROWERS

The following slug throwers are generally available on worlds of sufficient Tech Level; their availability is restricted, however, by the Law Level of the specific world. Slug throwers vary in effective range depending on their specific type; range limitations are shown in the combat charts.

All of the guns shown in this list (with the exception of the revolver) are autoloading weapons. Each automatically reloads the gun's chamber with a new cartridge after each shot. Only when the weapon's total capacity is exhausted must the shooter reload the gun with a new magazine. Although the revolver is not autoloading, it also contains a quantity of ammunition and need not be reloaded until its ammunition capacity is exhausted

Unless noted otherwise, the weapons are semiautomatic; each fires one bullet or shot with each pull of the trigger. Automatic rifles and submachineguns are fully automatic with a burst control which allows the firing of four shots with each pull of the trigger. Fully automatic fire allows special effects with higher hit probabilities and a potential for group hits as detailed in the section on special considerations.

The section on special considerations also provides details on reloading weapons which have run out of ammunition.

Weights and prices for ammunition are for loaded magazines.

Revolver: An older variety of handgun, the revolver fires bullets with characteristics which are similar to those fired by the automatic pistol but not interchangeable with them. The revolver is a repeating handgun; it fires one shot with each pull of the trigger. It is not, however, semiautomatic, which depends on finger pressure to do the reloading. No magazine is used: six cartridges are inserted into the revolver individually. Reloading takes 30 seconds.

A revolver can be fitted with a silencer and a detachable shoulder stock.

Snub Pistol: The snub pistol is a low-velocity revolver designed for use on shipboard and in a zero-G environment. It fires 10mm, 7-gram bullets at velocities of 100 to 150 meters per second. No magazine is used: six individual cartridges are inserted into the revolver separately. Reloading takes one combat round, or two combat rounds if the firer is evading. Standard rounds include a tranquilizer round, gas round, high explosive round, and a high explosive-shaped charge round to defeat personal armor. The snub pistol is a standard shipboard security weapon generally loaded with five tranquilizers and one gas round

More expensive pure combat versions of the snub pistol are available, generally in the automatic pistol configuration with extended magazines holding up to 20 rounds.

Body Pistol: A small, nonmetallic semiautomatic pistol designed to evade detection by most weapon detectors, including metal detectors and densitometers. It fires 5g projectiles at a velocity of 500 to 600 meters per second. A magazine containing six cartridges is located in the pistol handle. Body pistol ammunition is not interchangeable with the ammunition for any other types of guns.

A body pistol can be fitted with a silencer.

Autopistol: The basic semiautomatic handgun, which fires bullets at velocities of 400 to 500 meters per second. A magazine containing 15 cartridges fits into the handle of the pistol. Automatic pistol ammunition is interchangeable with submachinegun ammunition (although magazines are not).

An automatic pistol can be fitted with a silencer or a detachable shoulder stock.

Gauss Pistol: The gauss pistol is a popular weapon because of its silence and its deadliness. The gauss pistol is based on the same principle as the gauss rifle and the VRF gauss gun: an electromagnetic field accelerates the needle-like bullet down the barrel while a bias in the field imparts spin.

The gauss pistol may fire either single-round shots or four shot bursts. The pistol uses the same 4mm ammunition as the gauss rifle; however, the magazines are not interchangeable.

Carbine: A short type of semiautomatic rifle which fires a small caliber round at a velocity of 900 meters per second. A magazine containing 10 rounds is inserted into the underside of the carbine ahead of the trigger guard. Carbine ammunition is not interchangeable with any other type of ammunition.

In essence, a carbine is a short rifle which fires a cartridge of a smaller, lighter caliber. The carbine is a preferred weapon for individuals who otherwise do not handle firearms Its light weight makes it convenient and efficient. A sling usually allows the carbine to be carried on the shoulder, where it is out of the way.

A carbine may be fitted with telescopic or electronic sight and with a folding stock.

Rifle: The standard semiautomatic military arm, which fires a bullet at a velocity of approximately 900 meters per second. Longer and heavier than a carbine, it is also more effective. Standard equipment includes provisions for attaching a bayonet, telescopic sight, and a shoulder sling.

A 20-round magazine is attached to the front of the rifle's trigger guard. Rifle ammunition may also be used in automatic

rifles; rifle and autorifle magazines are interchangeable and weigh the same.

A rifle can be fitted with either telescopic or electronic sights or with a folding stock.

Autorifle: A highly refined and tuned version of the rifle, capable of fully automatic fire as well as semiautomatic shots. Normally, the automatic rifle fires in bursts of four bullets for each pull of the trigger. It may be switched to semiautomatic fire any time after firing, in which case it is treated as a rifle until switched back. Ammunition and magazines are identical to those used for the rifle

The automatic rifle is equipped with a sling (which allows the weapon to be slung from an individual's shoulder while he carries it in the ready-to-fire position), a bipod, and a muzzle brake to steady the gun while firing. (See also the ammo belt below).

Gauss Rifle: The ultimate development of the slug thrower, the gauss rifle generates an electromagnetic field along the length of the barrel, which accelerates a 4mm, 4-gram needle bullet to velocities of 1500 meters per second. The round itself consists of a dense armor-piercing core surrounded by a softer metal covering that ends in a hollow point; this combination gives the round both high stopping power and a good armor-piercing capability. Flight along the barrel is nearly frictionless, for spin stabilization is imparted in this weapon through magnetic bias

A 40-round magazine is attached behind the pistol grip, and each pull of the trigger fires one, four, or 10 rounds. The firing setting may be changed at the end of each combat round.

Standard equipment on the gauss rifle includes a battlefield sight similar to that used on the ACR, a RAM grenade adapter, gyrostabilization, and a sling. Reloading by replacement of an empty magazine or RAM grenade takes one combat round, during which the player is considered to be evading. Power is provided by a disposable power pack included in each magazine.

Shotgun: The basic weapon for maximum shock effect without regard to accuracy. The shotgun has an 18mm diameter barrel and fires shells containing either six 7mm bullets, or 130 3mm pellets. In each case, velocity for the projectiles is about 350 meters per second. A cylindrical magazine containing 10 shells is inserted under the barrel and parallel to it; cartridges are then fed automatically into the shotgun for firing. Reloading consists of replacing the cylindrical magazine and takes 30 seconds. One shot is fired for each pull of the trigger.

Magazines measure approximately 0.35 meters long by 0.02 meters in diameter and are quite clumsy to carry.

Shotguns are equipped with a sling for carrying. They may be fitted with a folding stock.

Autoshotgun: A fully automatic version of the shotgun.

SMG: A small automatic weapon designed to fire pistol ammunition. Magazines holding 30 cartridges are inserted into the weapon in a location forward of the trigger guard or in the pistol grip, depending on the design. The gun fires four rounds per pull of the trigger. Submachinegun ammunition (but not a submachinegun magazine) is interchangeable with automatic pistol ammunition

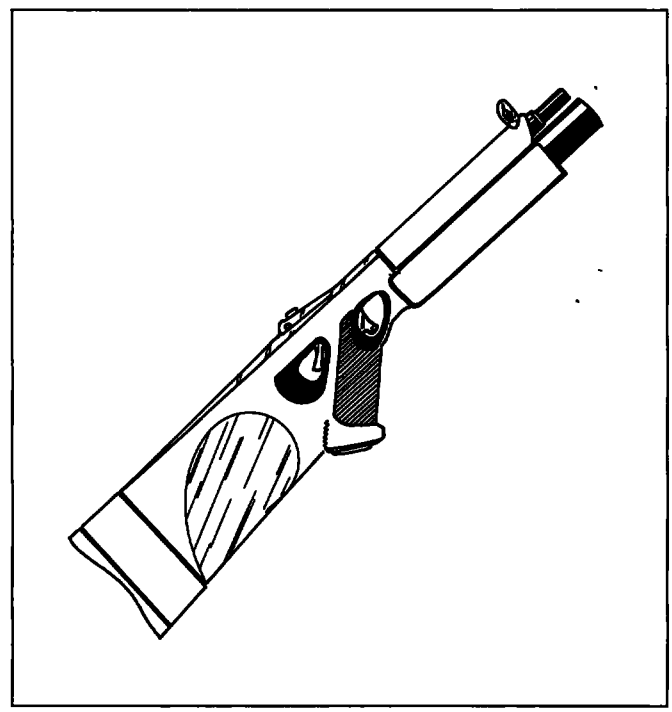
Assault Rifle: A lighter and less-expensive military version of the automatic rifle, the assault rifle fires a bullet at velocities of 900 meters per second. A magazine containing 30 rounds is inserted into the underside of the assault rifle directly ahead of the trigger guard. Reloading the assault rifle takes one combat round, during which the firer is treated as evading. The weapon may either be fired automatically (four rounds per pull of the trigger) or semiautomatically (one round per pull of the trigger). The fire setting may be changed at the end of each combat round.

The assault rifle has an integral carrying grip/sight and is generally provided with a sling as well. Belt-fed versions are not available, and special sights may not be attached without considerable modification of the basic design.

Accelerator Rifle: Designed specifically for zero-G combat, the accelerator rifle fires a small bullet at an initial muzzle velocity of 100 to 150 meters per second, and upon leaving the barrel is accelerated by a secondary propelling charge to velocities of 700 to 800 meters per second. Normally the rifle fires bursts of three rounds per pull of the trigger, but it may be adjusted to fire single rounds at the end of any firing round. A 15-round magazine is inserted in the bottom of the weapon in front of the trigger guard, and reloading takes one combat round.

Advanced Combat Rifle: A progressive development of the assault rifle, the advanced combat rifle (ACR) fires either a high explosive (HE) bullet at 900 meters per second or a discarding sabot (DS) at 1,200 meters per second. A magazine containing 20 rounds is inserted into the underside of the weapon behind the pistol grip. Reloading takes one combat round, during which the firer is treated as evading. The weapon may be fired either automatically or semiautomatically (as with the assault rifle).

Standard equipment includes an electronic battlefield sight, which incorporates both light amplification and passive IR, visual magnification, and a laser rangefinder which may also



be used as a target painting device. The weapon is also gyroscopically stabilized during firing. A sling is provided along with the weapon, and the muzzle of the rifle includes an integral flash suppressor and an adaptor for launching a RAM shoot-through grenade.

Assault Rocket Launcher (ARL): Related to the advanced combat rifle (ACR), the assault rocket launcher's barrel is merely a launch tube for the ammunition. Like the ACR, the ARL is gyrostabilized when the trigger is pulled.

The ARL fires 10mm solid fuel rocket slugs. Each slug has four pinhole-sized nozzles angled to imitate rifling and "burns" for 5 meters before momentum takes over. The use of rocket slugs provides many advantages. For example, no cartridge ejection system is needed, so the weapon can be sealed from dirt. The action and barrel do not have to withstand high pressures The weapon's chief disadvantage is its high signature.

The ARL can be fired in both automatic mode and semiautomatic mode, with each automatic burst consisting of four rounds.

Light Assault Gun (LAG): Essentially a heavy rifle, the LAG fires a 20mm, 30-gram bullet at velocities of 400 to 500 meters per second A magazine containing five rounds is inserted into the underside of the weapon ahead of the trigger guard. Reloading takes one combat round, during which the firer is treated as evading. One round is fired per pull of the trigger. Ammunition includes HE, flechette, and 20/9mm discarding sabot rounds.

The LAG is provided with a sling to assist carrying.

PERSONAL ENERGY WEAPONS

The following personal energy weapons are sometimes available on worlds of sufficient Tech Level; their availability is restricted, however, by the Law Level of the specific world. Energy weapons, like slug throwers, vary in effective range depending on their specific type; range limitations are shown on the combat charts.

Laser Weapons: Laser weapons fire concentrated beams of energy at their targets and cause damage by their intense light and heat. All laser weapons require a power source either built into the weapon directly or carried in a separate pack. (At Tech Level 17, laser weapons are powered from internal matter-antimatter pods) Laser weapons below Tech Level 13 use visible light so they can be seen by observers, while higher tech versions use invisible X-ray beams.

Laser Pistol: A pistol which functions much the same as a laser carbine or laser rifle but which has lighter weight and a much handier length. It still requires its own model of power pack (a laser carbine or laser rifle power pack cannot be used).

Laser Carbine: A lightweight version of the laser rifle, which fires high energy bolts using current from a backpack battery/power pack. The laser carbine fires a 2mm beam of energy aimed by integrated optic sights. The laser carbine is connected to the power pack by a heavy duty cable.

Laser Rifle: The standard high energy weapon, which fires high energy bolts in the same manner as the laser carbine. Heavier than the laser carbine, the laser rifle is also capable of longer sustained action and is constructed somewhat more sturdily. The power pack can provide 100 shots before recharging. As in the laser carbine, the laser rifle is connected to the power pack by a heavy duty cable. Power packs are not interchangeable between the two weapons.

High-Energy Weapons: High-energy weapons fire beams of super-heated plasma at their targets and cause damage by their intense heat and kinetic energy. All high-energy weapons require a power source

PGMP (Plasma Gun-Man Portable): The PGMP consists of a power pack carried on the firer's back, the weapon itself, and a flexible power link. The power pack powers a laser ignition system in the weapon itself which heats hydrogen fuel to a plasma state. The plasma is contained in the ignition chamber briefly and is then released through a magnetically focused field along the weapon's barrel. The high initial velocity plasma jet is 2 centimeters in diameter, but it begins to dissipate immediately. Each power pack has sufficient energy to discharge 40 plasma bolts before recharging is necessary. Each pull of the trigger discharges one plasma bolt.

PGMP-13 is a high-gain, light plasma gun designed exclusively for use with battle dress. Of similar general configuration to the PGMP-12, the PGMP-13 may only be fired by an individual wearing battle dress and only when the firer is stationary and firmly braced in one of several standard firing positions. This condition allows the suit's normal strength enhancement units to function as a recoil carriage. Instead of a conventional stock, the PGMP-13 has a recoil cylinder terminating in a computer link to the battle dress. The computer link engages when placed in the PGMP socket integral to the battle dress (placed over the upper right or upper left chest/shoulder). The weapon may not be fired unless the socket is engaged. Engagement projects crosshairs on the faceplate for targetting. The weapon may be fired every combat round. The power pack is a small fusion reactor with effectively unlimited fuel for combat purposes (but it requires periodic refueling and routine maintainance every 24-36 hours, depending on amount of use).

PGMP-14 is the final development of the light plasma gun. The PGMP-14 incorporates a gravity field generator which enables personnel not in powered armor to both carry the weapon and to fire it. The weapon's computer system automatically biases the field to provide near total recoil compensation. It is otherwise similar to the PGMP-13 in performance.

FGMP (Fusion Gun-Man Portable): The FGMP-14 is similar in design and function to the PGMP-13. The FGMP-14 differs only in that it contains the plasma slightly longer until a fusion reaction begins to take place The weapon is somewhat more powerful than a plasma gun, and it may only be used by individuals wearing battle dress.

The FGMP-15 incorporates a gravity field generator similar to that used on the PGMP-14 and a weapon system similar to that of the FGMP-14.

The FGMP-16 is an advanced, lighter-weight version of the FGMP-15 with all of its features.

Plasma Rifle: A highly advanced, very portable version of the earlier PGMP weapons.

Neural Guns: An advancement of remote neural activity sensing and psionic helmet technology, these guns remotely disrupt brain activity. Being hit by neural gun fire causes

unconsciousness (i.e., a stun), but sometimes it has other random effects instead: disorientation, mind assault, or even death. Neural weapons are available only at very high Tech Levels.

Neural weapon fire can be detected at a distance by individuals with psionic life sense ability

Referee's Note: Neural weapons are a very special type of weapon and as such are not on the regular weapon tables in the *Players' Manual*. A neural pistol has a "to hit" difficulty as a handgun, and a neural rifle has a "to hit" difficulty as a rifle—but in both cases, the maximum range is long. Neural weapons have a flat penetration of 10 over their entire range scale. If the weapon penetration is at least equal to the target armor value, handle hit damage based on the success level. On exceptional success, the target goes unconscious; on a normal success, implement a 2D mishap; on marginal success, implement a 3D mishap. Handle any mishaps as follows: **Superficial:** Disorientation of target for 1 combat round. **Minor:** Disorientation of target for 1D combat rounds. **Major:** Mind assault on target at a psionic strength of 2D. **Destroyed:** Death of target.

ARCHAIC WEAPONS

The following archaic weapons are generally available on very low-tech worlds. In most cases, they will be in the hands of non-player characters encountered in the process of an adventure.

Bola: Thrown weapon consisting of a cord with weights attached.

Blowgun: Long narrow pipe-like weapon through which darts or pellets are blown.

Boomerang: Aerodynamically designed throwing stick.

Sling: A simple loop of cord used to propel a stone or pellet over a relatively short distance.

Bows: A weapon consisting of a curved stave of a resilient material (usually wood) strung taunt from end to end and used to launch arrow bolts.

Crossbows: Crossbows consist of a bow fixed crosswise on a wooden stock with a groove for the arrow bolt.

Early Firearms: The following slug throwers are only available on low-tech worlds, and their availability, as with all firearms, is restricted by the Law Level of the specific world.

All these weapons require that the owner also carry gunpowder and properly sized lead balls; percussion weapons also require a supply of percussion caps.

Hand Cannon: Literally a small hand-held muzzle-loading cannon, it takes 30 seconds to load with powder and a ball and is fired by holding a flame to the touch hole.

Flintlock Pistol: A single-shot flint-lock pistol (with the same loading characteristics as described above).

Percussion Revolver: A six-shot revolver with each chamber individually loaded with powder ball and a percussion cap The gun may be reloaded in two minutes or the cylinder may be detached and another previously loaded cylinder may be put on in 30 seconds.

Flintlock Musket: A long smoothbore weapon relying on sparks struck from a flint to ignite the powder. It requires 18 seconds to reload When fired, the musket may misfire (using it is a hazardous task); if a misfire occurs the weapon will not fire but the firer may attempt to fire it in the next round.

Percussion Rifle: A muzzle-loading rifle relying on an explosive cap to ignite the powder Loading is the same as for a musket, but there is no chance of a misfire

ACCESSORIES

The following special accessories are generally available for the various weapons

Telescopic Sight: High-quality telescopic sights for attachment to rifles and carbines, which are used to increase their accuracy, especially at longer ranges.

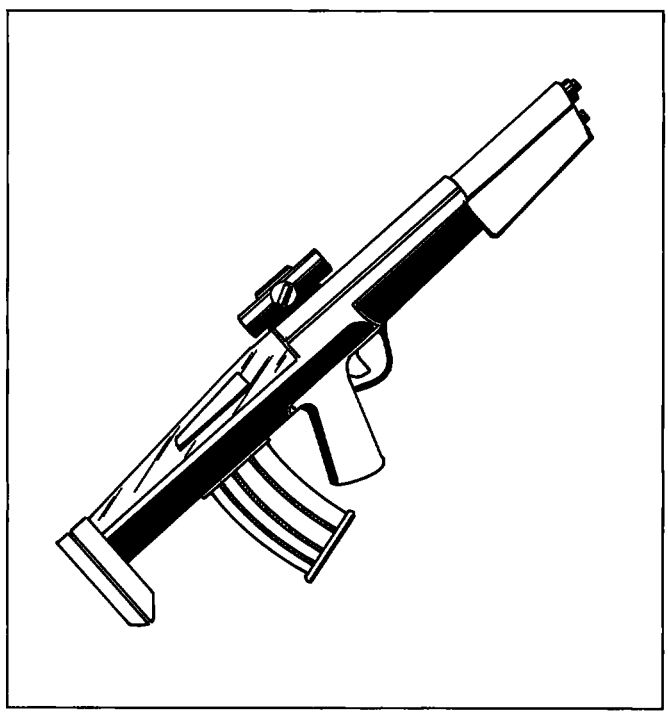
Telescopic sights are delicate, however, and may be jarred out of alignment by any violent action (such as being left untended in a moving truck, close to an explosion, or being dropped).

Electronic Sight: Electronic sights with image enhancement and low-light capabilities are available to provide the capability to see and hit in the dark. They can be damaged just as easily as a telescopic sight if handled carelessly.

Silencer: Devices are available which will muffle or eliminate the sound of guns firing, but so far they have proven practical only when applied to body pistols, revolvers, and automatic pistols. A silencer attaches to the muzzle of the pistol, which increases its total length and makes it impossible to holster until the silencer is removed Silencers are not interchangeable; one must be purchased for each specific model of pistol used.

Shoulder Stock: It is possible to produce a shoulder stock which may be attached temporarily to a pistol or revolver, which results in a crude carbine arrangement and some greater accuracy at longer ranges. The overall length of the pistol is increased by the length of the stock, and the pistol cannot be holstered. Attaching the stock (or detaching it) requires one minute.

Folding Stock: Carbines, rifles, and shotguns can be equipped with folding stocks which make it possible to reduce



the overall length of the weapon by 0.3 meters.

Tangle Net: A small rope net intended to hamper or restrain animals (difficulty as thrown)

Tranq Spray: A small aerosol can which sprays a mist of tranquilizer (see the *Players' Manual* for the types of tranquilizers available) The spray can only be used at close range and must be aimed to allow the tranq to be breathed (difficulty as handgun). Each can contains four sprays.

Plastic Knife: Ordinary dagger fashioned of heavy duty hydrocarbon plastic. When subjected to microwave radiation (as in a microwave oven), the knife becomes a misshapen blob of plastic. When subjected to a series of sharp taps, it will gradually (over about two minutes) regain its shape It cannot be detected by metal detectors, but treat as a knife in all other respects.

Machete: Blade used in cutting vegetation to clear a path, campsite, etc.; it can also be used as a weapon

Integral Laser Pistol: The integral laser pistol contains a miniaturized, disposable power pack with enough energy for only three shots. The power pack cannot be recharged. The integral laser pistol is banned by the laws of most worlds.

Ammo Belt: Versions of some rifles are available which use 100-round belts of ammunition. Reloading with a new belt requires 45 seconds.

ARMOR AND PROTECTION

The following items of armor and personal protection are generally available. The weight of personal armor and clothing is assumed to be part of the character's clothing load. Only one form of personal armor may be worn, but reflec may always be worn under clothing or armor.

Jack: A natural or synthetic leather jacket or body suit covering the torso and upper arms and legs. Jack is somewhat better than ordinary clothing or bare skin when defending against blades, it is worthless against guns.

Mesh: A jacket or body suit made of natural or synthetic leather and reinforced with a lining of flexible metal mesh similar to chain mail but lighter and stronger. Mesh reduces or stops penetration by blades and has some effectiveness against guns, it is ineffective against laser fire.

Cloth: A heavy duty body suit tailored from ballistic cloth. The fabric absorbs impact energy and distributes the blow over the body, which possibly results in bruising. Nevertheless, cloth armor is almost the best and the most versatile available.

Flak Jacket: A less expensive version of ballistic cloth armor, generally covering only the torso and groin.

Reflec: Reflective material on a plastic base can be tailored into a body suit which is effective against laser fire but ineffective against most weapons Reflec is worn under other clothing. Reflec is expensive and often difficult to obtain.

Ablat: Ablat is a cheap alternative to reflec fashioned from a material which will ablate (vaporize) when hit by laser fire. The ablation of the material carries away the energy of the laser and protects the wearer. Continued fire against ablat degrades its effectiveness, but the armor is cheap and easily replaceable. Ablat also has some value against other forms of attack.

Combat Armor: Combat armor is a complete vacc-suit-like array of metal and synthetic armor. Combat armor is strictly military and not available on the open market; it is issued to troop units and elite mercenary battalions.

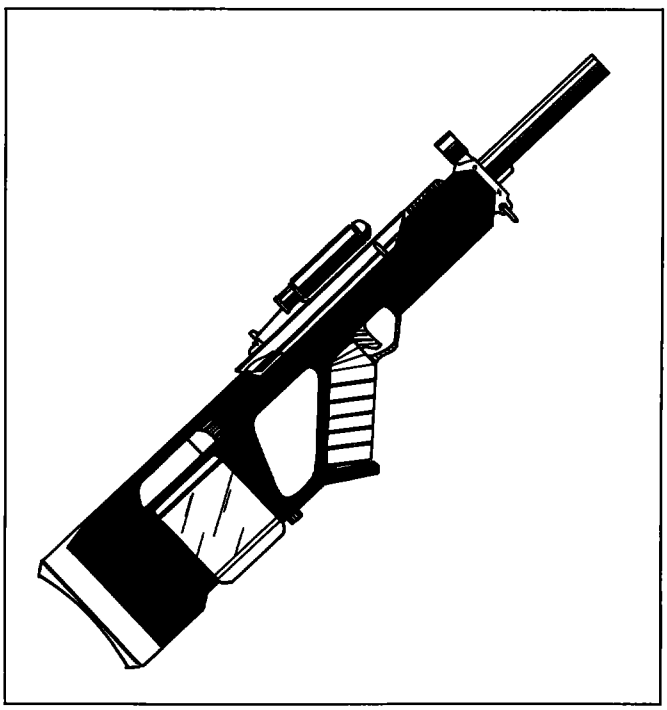
Battle Dress: The ultimate in individual protection, battle dress is an advanced and powered version of combat armor. Battle dress enhances the strength and senses of individuals wearing it with variable feedback personal controls, servo-powered limbs, and various kinds of electronic assistance. The individual wearing battle dress is effectively doubled in strength and given unlimited endurance.

Combat Environment Suit: A neck to toe air-tight suit constructed of ballistic cloth. Generally worn open at the neck and wrists, the combat environment suit can be sealed by donning gauntlets and a clear flexible plastic headpiece. The suit is a military uniform which gives complete protection against most chemical agents, tainted atmospheres, biological agents, and a moderate defense against radiation. Heat buildup in the suit is handled by a simple, solid-state cooling system that is woven into the garment and that eliminates all infrared signature except on the exposed face, hands, and heat exhaust. The heat exhaust is a very pronounced IR source, but this can be dampened by inserting a chill can into the cooling system. The chill can eliminates the signature for 45 minutes to two hours; at the end of that time, the can is used up.

The combat environment suit is the preferred type of cold weather clothing for people who have any experience with it. Because it manages heat exhaust, it is effective insulation. Light in weight, the suit is very good cold weather clothing

Chameleon Option: At Tech Level 12, a chameleon surface becomes available for the combat environment suit, combat armor, or battle dress, at an additional cost of Cr1000. It selectively bleeds heat to match background IR levels and effectively renders the wearer invisible to IR sensors.

Psionic Shield Option: Beginning at Tech Level 12, psionic shielding is available as an option for any armor at an additional cost of Cr4000. Psionic shielding protects the wearer from psionic mind reading and from psionic life sensing.



WEAPONS PRICES

Weapon	TL	Length	Volume	Unloaded Weight	Price	Ammo Weight	Ammo Price
Club	1	0 4 to 0 8	0 2 to 2 0	0 5 to 3 0	—		
Dagger	1	0 2	0 2	0 2	10		
Blade	3	0 3	0 2	0 3	50		
Sword	1	0 7 to 0 9	1 0	1 0	150		
Cutlass	3	0 6 to 0 9	1 0	1 2	100		
Broadsword	2	1 0 to 1 2	1 5	2 5	300		
Foil	3	0 8	0 6	0 5	100		
Hand Axe	1	0 3	0 5	0 5	50		
Battle Axe	2	0 6	2 0	3 0	200		
Bayonet	1	+0 2	0 2	0 2	10		
Spear	0	3 0	2 0	2 0	10		
Halberd	2	2 5	2 5	2 5	75		
Pike	1	3 0 to 4 0	2 5	3 0	40		
Staff/Cudgel	0	1 0 to 2 0	1 0	1 0	10		
Revolver 5mm	5	0 1	0 3	0 3	100	0 05	3
Revolver 7mm	5	0 1	0 6	0 6	125	0 07	4
Revolver 9mm	4	0 2	0 9	0 9	150	0 10	5
Revolver 9mm Magnum	5	0 1	1 2	1 2	300	0 12	8
Snub Pistol 10mm	8	0 05	0 2	0 2	150	0 03	10
Snub Pistol 10mm Auto	8	0 1	4 0	4 0	600	0 50	20
Body Pistol 5mm	8	0 1	0 2	0 2	500	0 05	20
Autopistol 7mm	6	0 1	0 5	0 5	150	0 20	8
Autopistol 9mm	5	0 2	0 7	0 7	200	0 25	10
Gauss Pistol 4mm	13	0 1	0 6	0 6	600	0 20	20
Carbine 7mm	5	0 8	3 0	3 0	200	0 12	10
Rifle 7mm	4	1.0	3 5	4 0	100	0 50	20
Rifle 7mm	5	1 0	3 5	4 0	200	0 50	20
Rifle 9mm	7	1 2	4 0	5 0	1,000	0 80	40
Hunting Rifle 13mm	5	1 0	4 5	6 0	2,000	1 50	60
Autorifle 7mm	6	1 0	5 0	5 0	1,000	0 50	20
Gauss Rifle 4mm	12	0 7	3 5	3 5	1,500	0 40	40
Shotgun 18mm	4	1 0	3 7	3 7	150	0 75	10
AutoShotgun 18mm	7	1 2	4 0	4 0	500	1 50	20
SMG 9mm	5	0 4	2 5	2 5	500	0 50	20
Assault Rifle 5mm	7	0 8	3 0	3 0	300	0 33	20
Assault Rifle 7mm	7	0 8	4 0	4 0	400	0 60	30
Accelerator Rifle 6mm	9	0 8	2 5	2 5	900	0 50	25
Adv Combat Rifle 7mm	10	0 7	3 0	3 0	800	0 40	10
Adv Combat Rifle 9mm	10	0 7	3 5	3 5	1,000	0 50	15
Assault Rocket Lnchr 10mm	10	0 7	3 5	3 0	800	0 50	35
Lt Assault Gun (LAG) 20mm	8	0 9	4 0	4 0	600	0 50	20
Laser Pistol-9	9	0 3	0 7	0 7	2,000	2 00	1,500
Laser Pistol-13	13	0 4	2 2	2 2	3,000	1 00	350
Laser Carbine-8	8	0 8	5 0	5 0	2,500	3 00	1,000
Laser Carbine-13	13	0 8	4 4	4 4	4,000	1 5	3,000
Laser Rifle-9	9	1 0	5 0	6 0	3,500	4 00	1,500
Laser Rifle-13	13	1 1	8.8	8 8	8,000	2 00	3,500
PGMP-12	12	0 8	6 0	6 0	10,000	3 00	2,500
PGMP-13	13	0 9	9 0	9 0	65,000	7 00	50,000
PGMP-14	14	0 8	1 0	1 0	100,000	1 60	250,000
FGMP-14	14	0 9	10 0	10.0	100,000	9 00	65,000
FGMP-15	15	0 8	1 0	1 0	400,000	2 00	300,000
FGMP-16	16	0 6	0 5	0 5	500,000	1 00	375,000
Plasma Rifle-16	16	0 7	0 8	0 5	125,000	0 50	300,000
Neural Pistol	16	0 3	0 6	0 5	225,000	0.50	30,000
Neural Rifle	16	0 5	0 8	1 5	125,000	1 00	50,000
Bola	0	1 0	—	—	10		
Blowgun Pellet	0	0 3 to 0 5	0 1	0 1	5 0	0 1	—
Boomerang Thrown	0	0 5	1 0	0 5	50		
Sling Stone	0	1 0	—	—	1 0	0 1	—
Short Bow	0	0 8	2 0	0 5	50	0 1	2
Long Bow	1	1 5	4 0	1 0	75	0 1	2
Light Crossbow	2	0 8	7 0	3 0	150	0 1	2
Heavy Crossbow	2	0.9	13 0	6 0	250	0 1	2
Repeating Crossbow	2	0 8	9 0	4 0	200	0 1	8
Hand Cannon Ball	2	0 3	5 0	5 0	50	0 2	5
Flintlock Pistol Ball	3	0 2	1 5	1 5	40	0 2	5
Percussion Revolver 6 Balls	4	0 2	1 0	1 0	150	0 3	15
Flintlock Musket Ball	3	1 5	4 0	4 0	60	0 3	2
Percussion Rifle Ball	4	1 0	4 0	4 0	100	0 3	2
Telescopic Sights	6	0 8	0 8	—	200		
Electronic Sights	9	1 5	1 5	—	2,000		
Silencer	6	0 1 to 0 3	0.5	0 5 to 0 7	200		
Shoulder Stocks	5	0 3	1.0	1 0	75		
Folding Stocks	6	—	—	0 5	100		
Tangle Net	1	0.5	0 5	—	20		
Tranq Spray	5	0 2	0 1	—	100		
Plastic Knife	9	0 2	0 3	0 35	300		
Machete	4	0 4 to 0 8	1 0	1 0	125		
Integral Laser Pistol-14	14	0 3	2 0	2 5	2,000	0 5	1,500
Ammo Belt	6	0 5	2 0	—	120		

ARMOR

Jack—
TL 1
Vol 4
Wt 1
Cr50

Mesh—
TL 7
Wt 2 kg
Cr150

Cloth—
TL 6
Vol 4 5
Wt 2
Cr250

Flak Jacket—
TL 7
Vol 2 0
Wt 1
Cr100

Reflec—
TL 10
Vol 2
Wt 1
Cr1,500

Ablat
TL 9
Vol 4 5
Wt 2
Cr75

Combat Armor-11—
TL· 11
Vol 2 9
Wt 18
Cr20,000

Combat Armor-12—
TL 12
Vol 1 8
Wt 10
Cr30,000

Combat Armor-14—
TL 14
Vol 0 7
Wt 6
Cr60,000

Battle Dress-13—
TL 13
Vol 3 8
Wt 26
Cr200,000

Battle Dress-14—
TL 14
Vol 2 7
Wt 12
Cr350,000

Cbt Environment Suit—
TL 10
Vol 6
Wt 2 0
Cr1,000

Starships, Spacecraft, and Vehicles

While it's possible for someone to walk a considerable distance if properly outfitted and in good physical shape, the best way to become a "traveller" is to ride in an appropriate craft.

Craft Classifications: Powered craft can be organized in several different ways. Here, we make the broad distinction between starships, smaller spacecraft, and vehicles.

Starships have a displacement value of 100 or more and are usually equipped with jump drives for interstellar travel. Small spacecraft range in displacement from 20 to 100 and do not have jump capability. Vehicles travelling on land, water, and in a world's atmosphere, range up to 20 displacement.

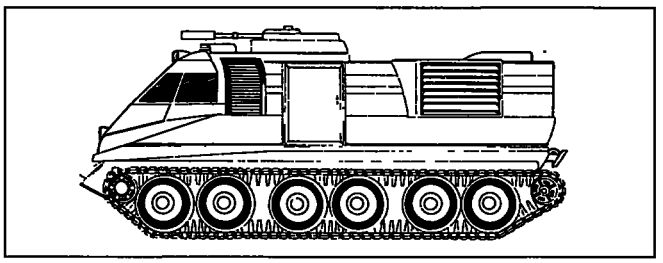
The designs listed here are standard that is, each ship type is mass-produced in shipyards throughout the Imperium, which provides economies of scale and saves the fees of a ship architect. All craft are described at Tech Level 15, the highest Tech Level commonly found in the Imperium Such vessels are manufactured, of course, only on Tech Level 15 worlds and are normally purchased there

The standard designs are also available at lower Tech Levels; use the craft design rules in the *Referee's Manual* to modify these vessels for the proper technology as needed.

GROUND CAR

CraftID: Ground Car, TL 5, Cr3100
Hull: 2/5, Disp=2, Config=4USL, Armor=4B, Unloaded=3 8tons, Loaded=5 0tons
Power: 1/2, IntCombust=0 1Mw, Duration=6hours
Loco: 1/2, Wheels Road=80kph, OffRoad=25kph
Commo: None (some have a radio receiver)
Sensors: None
Off/Def: HardPoints=1
Control: Panel=Mechanical, Environ=basic env
Accomm: Crew=1 (Operator=1), Seats=cramped x 6
Other: Cargo=1 0kliters, Fuel=0 072kliters ObjSize=small, EMLevel=moderate

The ground car is an ordinary self-powered vehicle suitable for use in civilized areas on low-tech worlds



WHEELED ATV

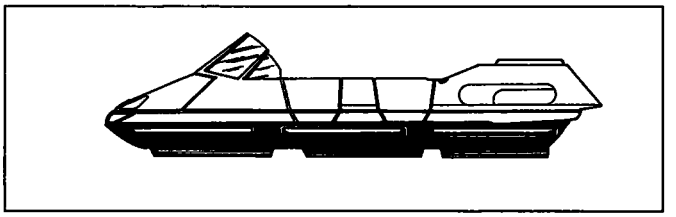
CraftID: Wheeled ATV, TL 6, Cr46,380
Hull: 9/23, Disp=10, Config=4USL, Armor=6B, Unloaded=28tons, Loaded=55tons
Power: 1/2, IntCombust=2 0Mw, Duration=4 /12
Loco: 1/2, Wheels Road=100kph, OffRoad=35kph
Commo: Radio=Regional
Sensors: None
Off/Def: HardPoints=1
Control: Panel=Mechanical, Environ=basic env, basic Is
Accomm: Crew=1 (Operator=1), Seats=roomy x 17
Other: Cargo=25kliters, Fuel=18kliters ObjSize=small, EMLevel=moderate

The wheeled ATV is a wheeled vehicle used on low-tech worlds for exploration

TRACKED ATV

CraftID: Tracked ATV, TL 6, Cr49,580
Hull: 9/23, Disp=10, Config=4USL, Armor=6B, Unloaded=47tons, Loaded=74tons
Power: 1/2, IntCombust=2 0Mw, Duration=4 /12
Loco: 1/2, Tracks Road=80kph, OffRoad=50kph
Commo: Radio=Regional
Sensors: None
Off/Def: HardPoints=1
Control: Panel=Mechanical, Environ=basicenv,basicIs
Accomm: Crew=1 (Operator=1), Seats=roomy x 17
Other: Cargo=25kliters, Fuel=18kliters ObjSize=small, EMLevel=moderate

The tracked ATV is used on low-tech worlds for exploration



OPEN-TOP AIR/RAFT

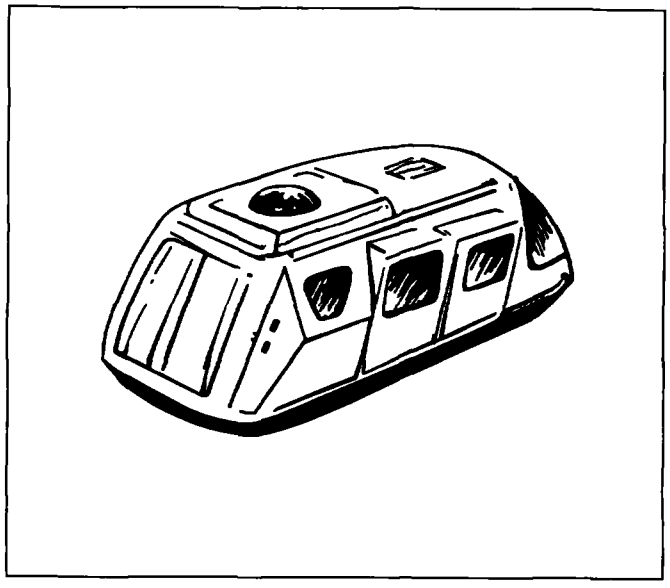
CraftID: Open-Top Air/Raft, TL 15, Cr275,000
Hull: 1 8/4 5, Disp=2, Config=4SL, Armor=4G, Unloaded=1 6tons, Loaded=7 2tons
Power: 1/2, Fusion=1 5Mw, Duration=60/180
Loco: 1/2, StdGravThrust=8 0tons, NOE=120kph, Cruise=90kph, Top=120kph
Commo: Radio=Planetary
Sensors: PassiveEMS=VDistant, ActiveEMS=VDistant, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Form
Off/Def: HardPoints=1
Control: Computer=0 x 2, Panel=holodynamic link x 5, Environ=basic env
Accomm: Crew=1 (Operator=1), Seats=roomy x 4
Other: Cargo=5 4kliters, Fuel=3 3kliters, ObjSize=small, EMLevel=moderate

Common on high-tech worlds, it is efficient and inexpensive

ENCLOSED AIR/RAFT

CraftID: Enclosed Air/Raft, TL 15, Cr389,000
Hull: 3 6/9, Disp=4, Config=1USL, Armor=4G, Unloaded=4 6tons, Loaded=18 7tons
Power: 1/2, Fusion=0 25Mw, Duration=60/180
Loco: 1/2, StdGravThrust=20 6tons, NOE=120kph, Cruise=90kph, Top=120kph
Commo: Radio=Planetary
Sensors: PassiveEMS=VDistant, ActiveEMS=VDistant, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Form
Off/Def: HardPoints=1
Control: Computer=0×2, Panel=holodynamic link×1, Special=headsUp, Environ=basic env, basic ls, inertial comp
Accomm: Crew=1 (Operator=1), Seats=roomy×4
Other: Cargo=13 5kliters, Fuel=7 9kliters, ObjSize=small, EMLevel=moderate

The enclosed air/raft is another of the most common vehicles on high-tech worlds, it has a slightly higher cost but correspondingly more comfort than the open version



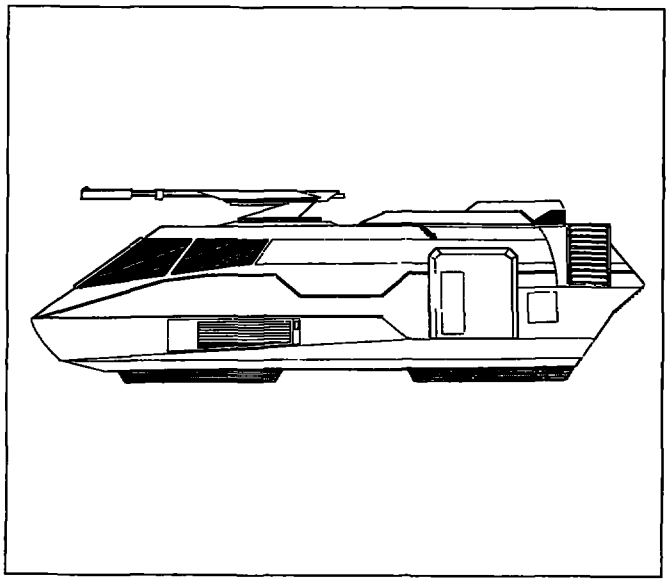
GCARRIER

CraftID: GCarrier, TL 15, MCr14 44
Hull: 7 2/18, Disp=8, Config=1USL, Armor=10G, Unloaded=20 1tons, Loaded=48 1tons
Power: 1/2, Fusion=54Mw, Duration=10/30
Loco: 1/2, StdGravThrust=53tons, NOE=120kph, Cruise=90kph, Top=120kph
Commo: Radio=System
Sensors: PassiveEMS=VDistant, ActiveEMS=VDistant, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off/Def: HardPoints=1,

	Ammo	*Rnd*	*Pen/ Attn*	*Dmg*	*Auto Tgt*	*Dngr Spc*	*Sig*	*Re- coil*
Fusion XRP-15	0	0	67/5	30	2	45	Hi	—

Control: Computer=0×2, Panel=holodynamic link×1, Special=headsUp, Environ=basic env, basic ls, inertial comp
Accomm: Crew=1 (Operator=1), Seats=roomy×14
Other: Cargo=27kliters, Fuel=13 1kliters, ObjSize=small, EMLevel=moderate

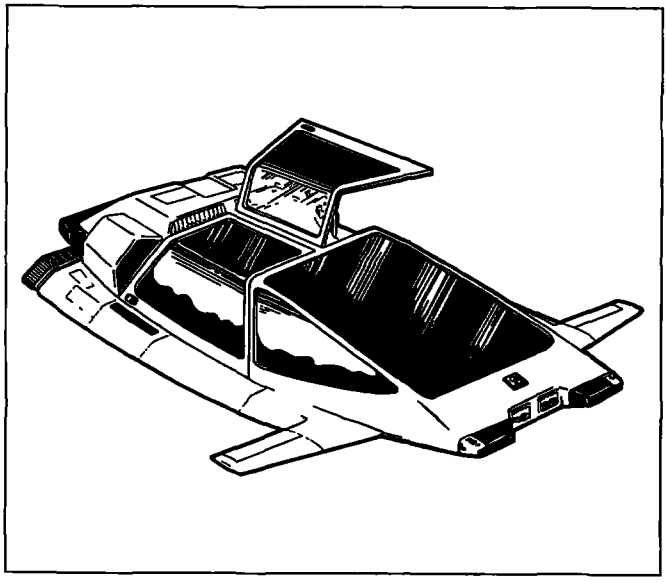
The GCarrier is an enclosed military or quasi-military grav vehicle Similar in concept to an armored air/raft, the GCarrier has a gun mount and an armored rear hatch door



SPEEDER

CraftID: Speeder, TL 15, MCr1 36
Hull: 5 4/13 5, Disp=6, Config=1AF, Armor=4G, Unloaded=19.2tons, Loaded=25 4tons
Power: 1/2, Fusion=54Mw, Duration=45/135
Loco: 1/2, StdGravThrust=52tons, NOE=190kph, Cruise=810kph, Top=1080kph
Commo: Radio=System
Sensors: PassiveEMS=VDistant, ActiveEMS=VDistant, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off/Def: HardPoints=1
Control: Computer=0×2, Panel=holodynamic link×1, Special=headsUp, Environ=basic env, basic ls, grav plates, inertial comp
Accomm: Crew=1 (Operator=1), Seats=roomy×2
Other: Cargo=2 0kliters, Fuel=58 4kliters, ObjSize=small, EMLevel=moderate

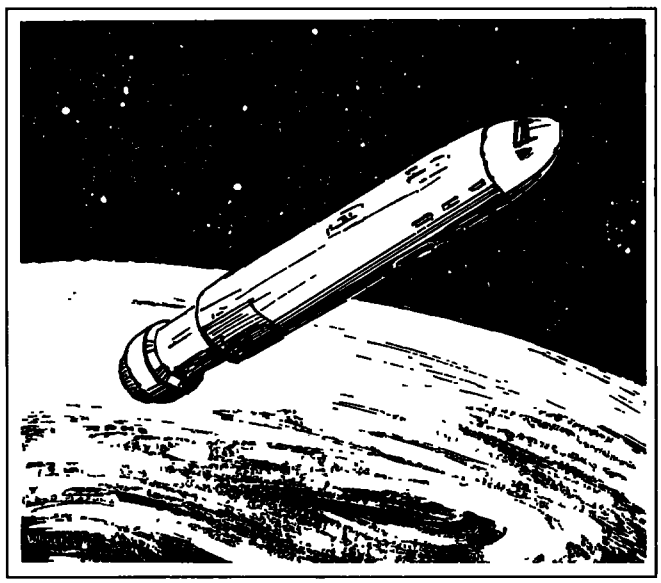
The speeder is a streamlined grav-powered craft intended for high-speed transport between points on a world surface.



LAUNCH

CraftID: Launch, TL 15, MCr9 08
Hull: 18/45, Disp=20, Config=1SL, Armor=40G, Unloaded=120tons, Loaded=180tons
Power: 1/2, Fusion=200Mw, Duration=30/90
Loco : 1/2, Maneuver=1, Cruise=750kph Top=1000kph Agility=6
Commo: Radio=System
Sensors: PassiveEMS=Interplanetary, ActiveEMS=Planetary, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off/Def: HardPoints=1, DefDM=+10
Control: Computer=2×3, Panel=holodynamic link×420, Special=headsUp, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=2 (Bridge /Engineer=1, Commander=1), Seats=roomy×20
Other: Cargo=54kliters, Fuel=70kliters, Scoops, ObjSize=small, EMLevel=faint

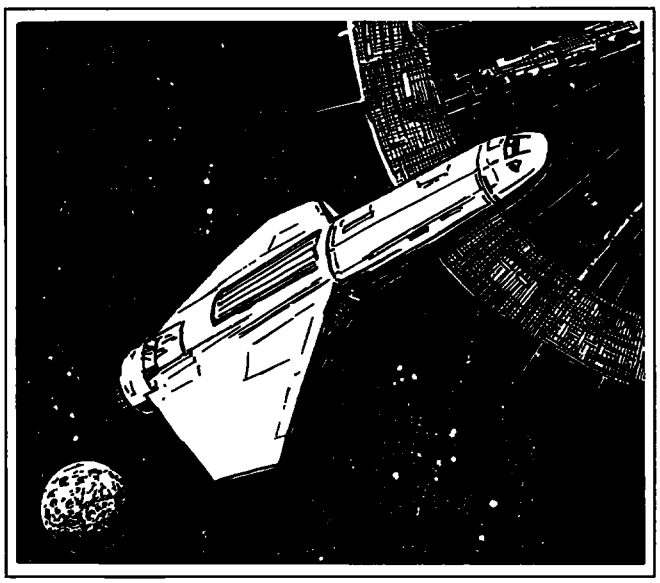
The launch is one of the smaller space-faring craft, and is often carried by another vessel to serve as a lifeboat



SHIP'S BOAT

CraftID: Ship's Boat, TL 15, MCr20 12
Hull: 27/67.5, Disp=30, Config=1SL, Armor=40G, Unloaded=350tons, Loaded=440tons
Power: 2/4, Fusion=650Mw, Duration=15/45
Loco: 5/10, Maneuver=6, Cruise=750kph Top=1000kph Agility=3
Commo: Radio=System
Sensors: PassiveEMS=Interplanetary, ActiveEMS=Planetary, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off/Def: HardPoints=1, DefDM=+8
Control: Computer=3×3, Panel=holodynamic link×25, Special=headsUp, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=2 (Bridge /Engineer=1, Commander=1), Seats=adequate×20
Other: Cargo=81kliters, Fuel=120kliters, Scoops, ObjSize=small, EMLevel=faint

The ship's boat is a small vessel ordinarily carried to perform odd jobs and minor operations for a larger ship.



SLOW BOAT

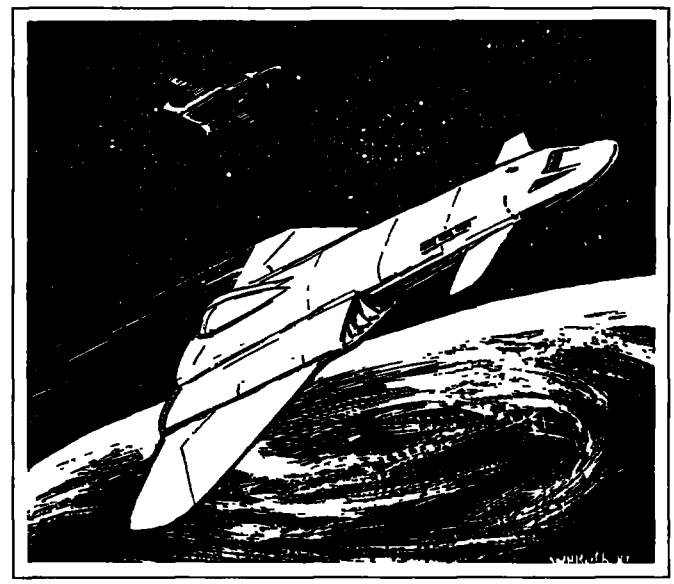
CraftID: Slow Boat, TL 15, MCr14.91
Hull: 27/67.5, Disp=30, Config=3AF, Armor=40G, Unloaded=220tons, Loaded=300tons
Power: 2/4, Fusion=450Mw, Duration=15/45
Loco: 2/4, Maneuver=3, NOE=190kph, Cruise=1925kph, Top=2565kph, Agility=6
Commo: Radio=System
Sensors: PassiveEMS=Interplanetary, ActiveEMS=Planetary, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off/Def: HardPoints=1, DefDM=+10
Control: Computer=2×3, Panel=holodynamic link×73, Special=headsUp, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=2 (Bridge /Engineer=1, Commander=1), Seats=adequate×30
Other: Cargo=81kliters, Fuel=80kliters, Scoops, ObjSize=small, EMLevel=faint

The slow boat is similar to the ship's boat but is optimized to allow convenient atmospheric travel

PINNACE

CraftID: Pinnace, TL 15, MCr21.15
Hull: 36/90, Disp=40, Config=1SL, Armor=40G, Unloaded=410tons, Loaded=550tons
Power: 3/6, Fusion=680Mw, Duration=15/45
Loco: 5/10, Maneuver=5, Cruise=750kph Top=1000kph Agility=3
Commo: Radio=System
Sensors: PassiveEMS=Interplanetary, ActiveEMS=Planetary, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off/Def: HardPoints=1, DefDM=+8
Control: Computer=3×3, Panel=holodynamic link×30, Special=headsUp, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=2 (Bridge /Engineer=1, Commander=1), Seats=adequate×30
Other: Cargo=135kliters, Fuel=120kliters, Scoops, ObjSize=small, EMLevel=faint

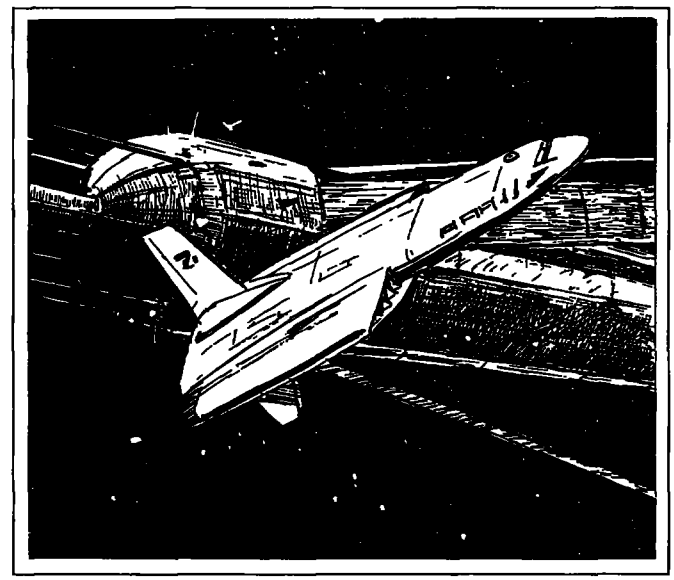
The pinnace is a larger, farther-ranging nonstarship capable of holding passengers and small vehicles



SLOW PINNACE

CraftID: Slow Pinnace, TL 15, MCr15.88
Hull: 36/90, Disp=40, Config=1AF, Armor=40G, Unloaded=240tons, Loaded=450tons
Power: 2/4, Fusion=470Mw, Duration=15/45
Loco: 2/4, Maneuver=2, NOE=190kph, Cruise=1430kph, Top=1910kph, Agility=6
Commo: Radio=System
Sensors: PassiveEMS=Interplanetary, ActiveEMS=Planetary, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off/Def: HardPoints=1, DefDM=+10
Control: Computer=2×3, Panel=holodynamic link×64, Special=headsUp, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=2 (Bridge /Engineer=1, Commander=1), Seats=adequate×50
Other: Cargo=202 5kliters, Fuel=80kliters, Scoops, ObjSize=small, EMLevel=faint

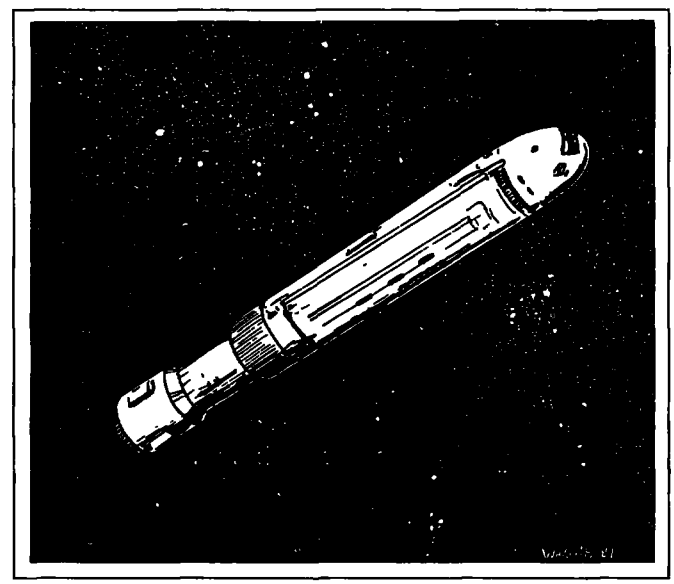
The slow pinnace is similar to a pinnace but is slower because more space is allocated for passengers and cargo, so less space is available for power plant and maneuver drives

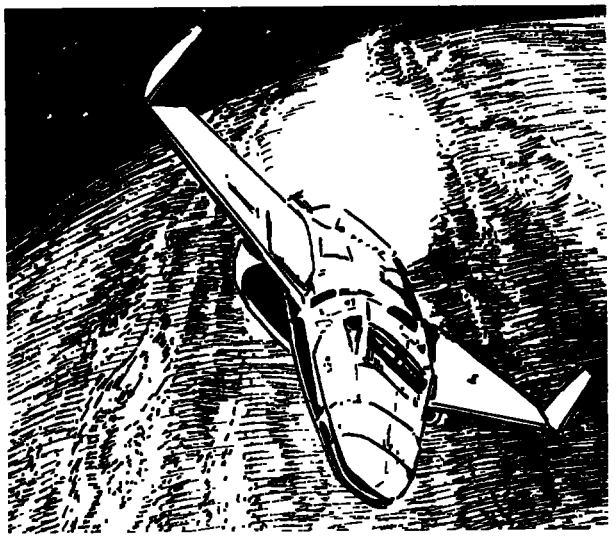


MODULAR CUTTER

CraftID: Modular Cutter, TL 15, MCr17.06
Hull: 45/113, Disp=50, Config=1SL, Armor=40G, Unloaded=430tons, Loaded=850tons
Power: 3/6, Fusion=700Mw, Duration=12/36
Loco: 5/10, Maneuver=4, NOE=190kph, Cruise=600kph, Top=800kph, Agility=3
Commo: Radio=System
Sensors: PassiveEMS=Interplanetary, ActiveEMS=Planetary, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off/Def: HardPoints=1, DefDM=+7
Control: Computer=2×3, Panel=holodynamic link×76, Special=headsUp, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=2 (Bridge /Engineer=1, Commander=1), Seats=adequate×2
Other: Cargo=405kliters, Fuel=100kliters, Scoops, ObjSize=small, EMLevel=faint

The modular cutter is designed to carry one of many modules available Three are the ATV module, which includes an operational ATV; the fuel module, which serves as a fuel skimming vehicle and storage tank; and the open module, which can be customized for passenger couches, fuel, cargo space, cabins, or staterooms

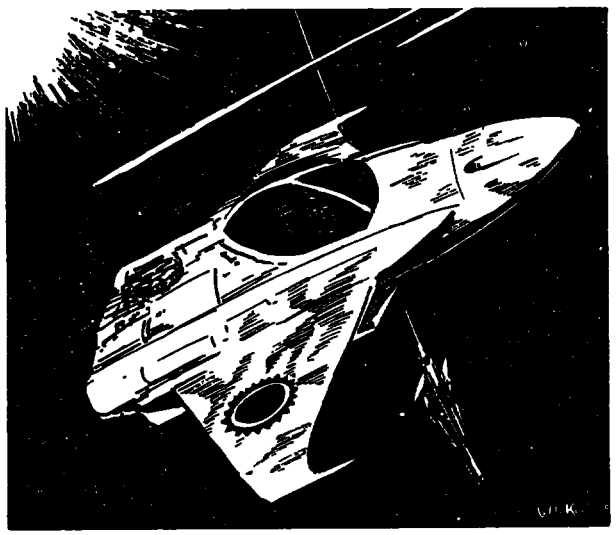




SHUTTLE

CraftID: Shuttle, TL 15, MCr28.31
Hull: 86/214, Disp=95, Config=1AF, Armor=40G, Unloaded=630tons, Loaded=1110tons
Power: 3/6, Fusion=880Mw, Duration=15/45
Loco: 7/14, Maneuver=3, NOE=190kph, Cruise=1965kph, Top=2565kph, Agility=2
Commo: Radio=System
Sensors: PassiveEMS=Interplanetary, ActiveEMS=Planetary, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off/Def: HardPoints=1, DefDM=+6
Control: Computer=2×3, Panel=holodynamic link×168, Special=headsUp, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=2 (Bridge /Engineer=1, Commander=1), Seats=roomy×100
Other: Cargo=472 5kliters, Fuel=160kliters, Scoops, ObjSize=small, EMLevel=faint

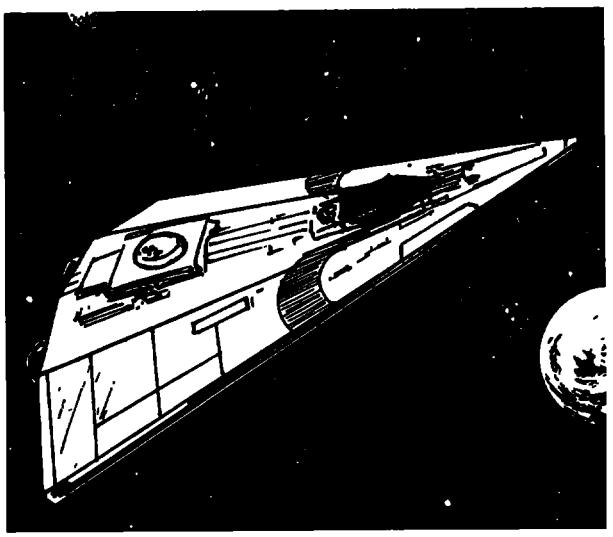
The shuttle is a larger interplanetary passenger vessel.



FIGHTER

CraftID: Fighter, TL 15, MCr14 23
Hull: 9/22.5, Disp=10, Config=3AF, Armor=40G, Unloaded=4 6tons, Loaded=18.7tons
Power: 1/2, Fusion=186Mw, Duration=5/15
Loco: 1/2, StdGravThrust=1173tons, NOE=120kph, Cruise=2835kph, Top=3780kph Agility=6
Commo: Radio=System
Sensors: PassiveEMS=Interplanetary, ActiveEMS=Planetary, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off: BeamLaser=x02
Batt 1
Bear 1
Def: DefDM=+10
Control: Computer=2×3, Panel=holodynamic link×47, Special=headsUp, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=1 (Operator=1), Seats=roomy×1
Other: Cargo=6.75kliters, Fuel=33.6kliters, ObjSize=small, EMLevel=faint

The fighter is an armed, grav-powered space vehicle often carried on larger military vessels as a subordinate craft



SCOUT/COURIER

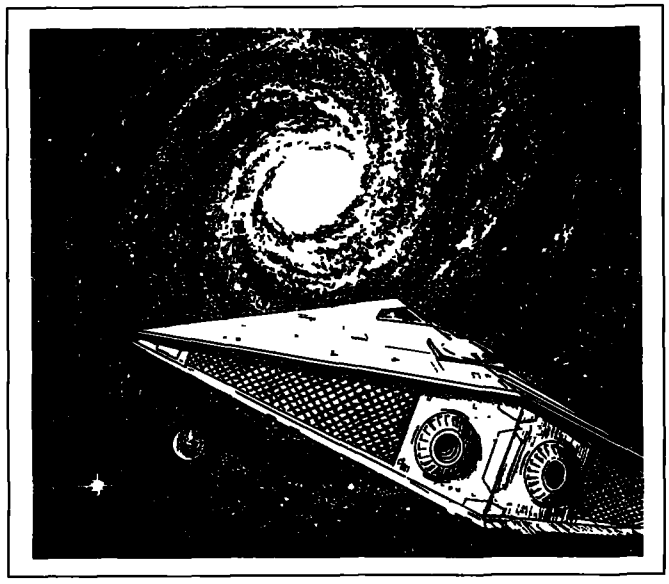
CraftID: Scout/Courier, Type S, TL 15, MCr28.938
Hull: 90/225, Disp=100, Config=1SL, Armor=40G, Unloaded=840tons, Loaded=916tons
Power: 3/6, Fusion=864Mw, Duration=30/90
Loco: 5/10, Maneuver=2, 3/6, Jump=2, NOE=190kph, Cruise=750kph, Top=1000kph, Agility=2
Commo: Radio=System
Sensors: PassiveEMS=Interstellar, ActiveEMS=FarOrbit, Densitometer=HighPen/1km, Neutrino=10kw ActObjScan=Rout, ActObjPin=Rout, PasObjScan=Rout, PasObjPin=Rout, PasEngScan=Simp, PasEngPin=Rout
Off/Def: HardPoints=1, DefDM=+4
Control: Computer=1bis×3, Panel=holodynamic link×181, Special=headsUp, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=1 (Bridge/Engineer=1), Staterooms=4, MidPsg=7 (noncommercial), SubCraft=air/raft
Other: Cargo=40 5kliters, Fuel=515kliters, PurificationPlant, Scoops, ObjSize=average, EMLevel=faint

Built by the Imperial Interstellar Scout Service for exploration, survey, and courier duties, and many are in service throughout known space.

SEEKER

CraftID: Seeker, Type J, TL 15, MCr27 317
Hull: 90/225, Disp=100, Config=1SL, Armor=40G, Unloaded=815tons, Loaded=895tons
Power: 3/6, Fusion=720Mw, Duration=30/90
Loco: 5/10, Maneuver=2, 3/6, Jump=2, NOE=190kph, Cruise=750kph, Top=1000kph, Agility=0
Commo: Radio=System
Sensors: PassiveEMS=Interstellar, ActiveEMS=FarOrbit, Densitometer=HighPen/1km ActObjScan=Rout, ActObjPin=Rout, PasObjScan=Rout, PasObjPin=Rout, PasEngScan=Rout
Off: PulseLaser=x02
Batt 1
Bear 1
Def: DefDM=+2
Control: Computer=1bis x 3, Panel=holodynamic link x 167, Special=headsUp, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=1 (Bridge/Engineer=1), Staterooms=2, MidPsg=3 (noncommercial), SubCraft=air/buggy
Other: Cargo=40kliters, OreBays=270kliters, Fuel=504kliters, PurificationPlant, Scoops, ObjSize=average, EMLevel=faint

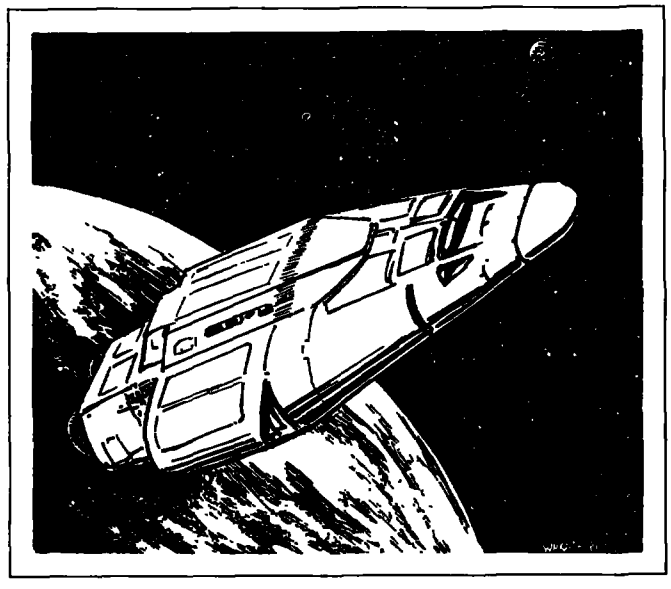
A modified type S scout/courier vessel, it is popular with belters



FREE TRADER

CraftID: Free Trader, Type A, TL 15, MCr36 915
Hull: 180/450, Disp=200, Config=1SL, Armor=40G, Unloaded=1130tons, Loaded=2280tons
Power: 4/8, Fusion=990Mw, Duration=30/90
Loco: 4/8, Maneuver=1, 4/8, Jump=1, NOE=190kph, Cruise=600kph, Top=800kph, Agility=2
Commo: Radio=System
Sensors: PassiveEMS=Interstellar, ActiveEMS=FarOrbit, ActObjScan=Rout, ActObjPin=Rout, PasEngScan=Rout
Off/Def: Hardpoints=2, DefDM=+4
Control: Computer=1 x 3, Panel=holodynamic link x 354, Special=headsUp x 2, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=4 (Bridge=1, Engineer=1, Steward=1, Medical=1), Staterooms=8, LowBerths=8,
Other: Cargo=1107kliters, Fuel=627kliters, PurificationPlant, Scoops, ObjSize=Average, EMLevel=Faint

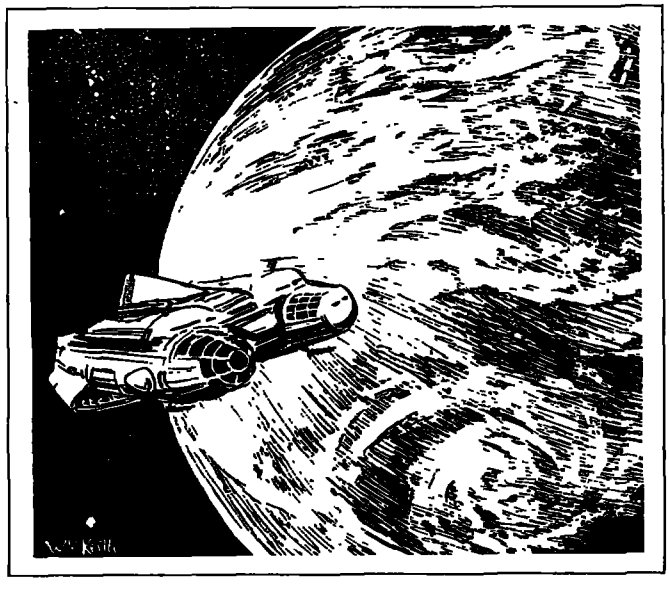
An interstellar merchant ship, it carries cargo and passengers

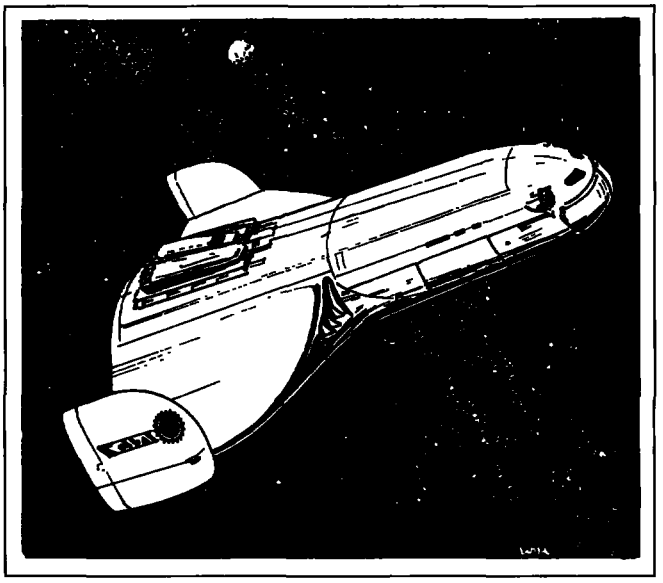


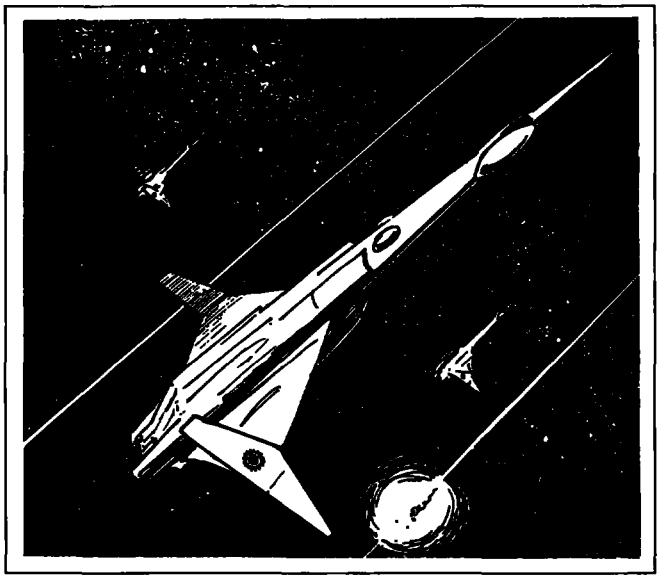
FAR TRADER

CraftID: Far Trader, Type A2, TL 15, MCr41.07
Hull: 180/450, Disp=200, Config=3SL, Armor=40G, Unloaded=1180tons, Loaded=2050tons
Power: 3/6, Fusion=738Mw, Duration=30/90
Loco: 4/8, Maneuver=1, 5/10, Jump=2, NOE=190kph, Cruise=750kph, Top=1000kph, Agility=1
Commo: Radio=System
Sensors: PassiveEMS=Interstellar, ActiveEMS=FarOrbit, ActObjScan=Rout, ActObjPin=Rout, PasEngScan=Rout
Off/Def: Hardpoints=2, DefDM=+3
Control: Computer=1bis x 3, Panel=holodynamic link x 233, Special=headsUp x 2, Environ=basic basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=3 (Bridge=1, Engineer=1, Steward/Medical=1), Staterooms=10, SubCraft=air/raft
Other: Cargo=823 5kliters, Fuel=671kliters, PurificationPlant, Scoops, ObjSize=Average, EMLevel=Faint

It can be found anywhere in the Imperium where goods are traded







SUBSIDIZED MERCHANT

CraftID: Subsidized Merchant, Type R, TL 15, MCr67.50
Hull: 360/900, Disp=400, Config=1SL, Armor=40G, Unloaded=2060tons, Loaded=4840tons
Power: 5/10, Fusion=1476Mw, Duration =30/90
Loco: 7/14, Maneuver=1, 7/14, Jump=1, NOE=190kph, Cruise=750kph, Top=1000kph, Agility=1
Commo: Radio=System
Sensors: PassiveEMS=Interstellar,ActiveEMS=FarOrbit,ActObjScan=Rout,ActObjPin=Rout,PasEngScan=Rout
Off/Def: HardPoints=4, DefDM=+3
Control: Computer=1bis×3, Panel=holodynamic link×403, Special=headsUp×3, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=5Bridge=1,Engineer=2,Steward=1,Medical=1,Stateroom=13,LowBerth=13,SubCraft=launch
Other: Cargo=2700kliters, Fuel=1071kliters ObjSize=Average, EMLevel=Moderate

This vessel meets the commercial needs of a cluster of worlds.

YACHT

CraftID: Yacht, Type Y, TL 15, MCr43 585
Hull: 180/450, Disp=200, Config=1USL, Armor=40G, Unloaded=1080tons, Loaded=1320tons
Power: 3/6, Fusion=738Mw, Duration=30/90
Loco: 4/8, Maneuver=4, 4/8, Jump=4, Cruise=2550kph (vacuum only), Top=3400kph (vacuum only), Agility=1
Commo: Radio=System
Sensors: PassiveEMS=Interstellar, ActiveEMS=FarOrbit, ActObjScan=Rout, ActObjPin=Rout, PasEngScan=Rout
Off/Def: Hardpoints=2, DefDM=+3
Control: Computer=1×3, Panel=holodynamic link×307, Special=headsUp×2, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=4 (Bridge=1, Engineer=1, Steward=1, Medical=1), Staterooms=13 (1 double stateroom suite) SubCraft=ship's boat, air/raft, ATV
Other: Cargo=148 5kliters, Fuel=536kliters, PurificationPlant, ExtraFuel=54kliters, ObjSize=Average, EMLevel=Faint

The yacht is a noble's plaything, used to entertain friends and undertake political or commercial missions

PATROL CRUISER

CraftID: Patrol Cruiser, Type T, TL 15, MCr163.53
Hull: 396/990, Disp=440, Config=1SL, Armor=40G, Unloaded=3540tons, Loaded=4390tons
Power: 15/30, Fusion=4032Mw, Duration=30 /90
Loco: 40/80, Maneuver=4, 14/28, Jump=3, NOE=190kph, Cruise=750kph, Top=1000kph, Agility=0
Commo: Radio=System
Sensors: EMMask, PassiveEMS=Interstellar, ActiveEMS=FarOrbit, Densitometer=HighPen/1km, Neutrino=10kw ActObjScan=Rout, ActObjPin=Rout, PasObjScan=Rout, PasObjPin=Rout, PasEngScan=Simp, PasEngPin=Rout
Off: Missiles=x02
Batt 2
Bear 2
BeamLaser=x02
Batt 2
Bear 2
Def: DefDM=+4
Control: Computer=3×3, Panel=holodynamic link×578, Special=headsUp×5, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=8(Bridge=2,Engineer=2,Gunnery=2, Command=1,Medical=1),Staterooms=10, LowBerths=4,SubCraft=GCarrier,30-tonship'sboat
Other: Cargo=675kliters, Fuel=2530kliters, Scoops ObjSize=Average, EMLevel=Faint

This military vessel is for customs, piracy suppression, and safety.

MERCENARY CRUISER

CraftID: Mercenary Cruiser, Type C, TL 15, MCr245.102
Hull: 792/1980, Disp=880, Config=5USL, Armor=40G, Unloaded=1130tons, Loaded=2280tons
Power: 20/40, Fusion=5382Mw, Duration=30 /90
Loco: 58/116, Maneuver=1, 29/58, Jump=1, Cruise=900kph(vacuum only), Top=1200kph (vacuum only), Agility=0
Commo: Radio=System
Sensors: PassiveEMS=Interstellar, ActiveEMS=FarOrbit, ActObjScan=Rout, ActObjPin=Rout, PasEngScan=Rout
Off/Def: Hardpoints=8, DefDM=+6
Control: Computer=5×3, Panel=holodynamic link×576, Special=headsUp×6, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=8 (Bridge=2, Engineer=3, Maintenance=1, Command=1, Medical=1), Staterooms=19 SubCraft=pinnace×2, extraModules×2, ATV×2, air/raft
Other: Cargo=1080kliters, Fuel=4097kliters, ExtraFuel=648kliters, ObjSize=Average, EMLevel=Moderate

**Note* The price of subordinate craft is not included
The merchant cruiser is built to carry small military (mercenary) units for corporate or government operations

LABORATORY SHIP

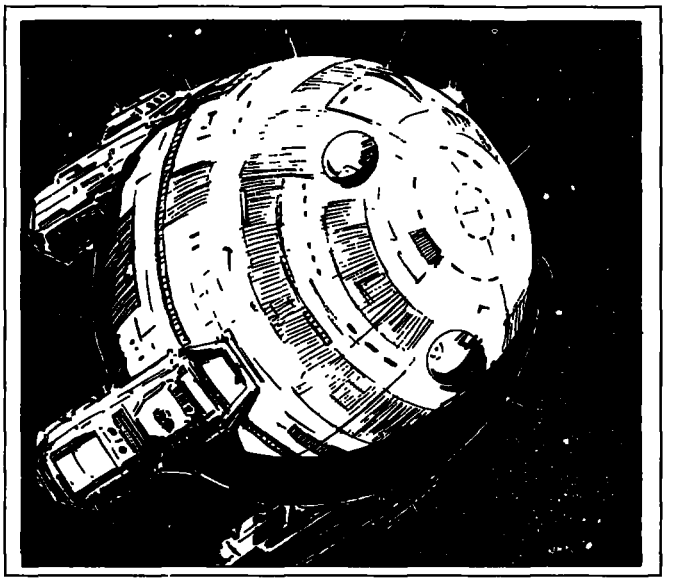
CraftID: Laboratory Ship, Type L, TL 15, MCr72 13
Hull: 360/900, Disp=400, Config=1USL, Armor=40G, Unloaded=2230tons, Loaded=2640tons
Power: 5/10, Fusion=1480Mw, Duration=30/90
Loco: 7/14, Maneuver=1, 11/22, Jump=2, Cruise=900kph, Top=1200kph, Agility=1
Commo: Radio=System
Sensors: PassiveEMS=Interstellar, ActiveEMS=FarOrbit, Densitometer=HighPen/1km, Neutrino=10kw, ActObjScan=Rout, ActObjPin=Rout, PasObjScan=Rout, PasObjPin=Rout, PasEngScan=Simp
Off/Def: HardPoints=4, DefDM=+4
Control: Computer=2×3, Panel=holodynamic link×420, Special=headsUp×3, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=5(Bridge=1,Engineer=2,Stewards=1, Medical=1),Staterooms=20,SubCraft=pinnace, air/raft×2
Other: Cargo=310kliters, Laboratory=1150kliters, Fuel=1342kliters, PurificationPlant ObjSize=Average, EMLevel=Moderate

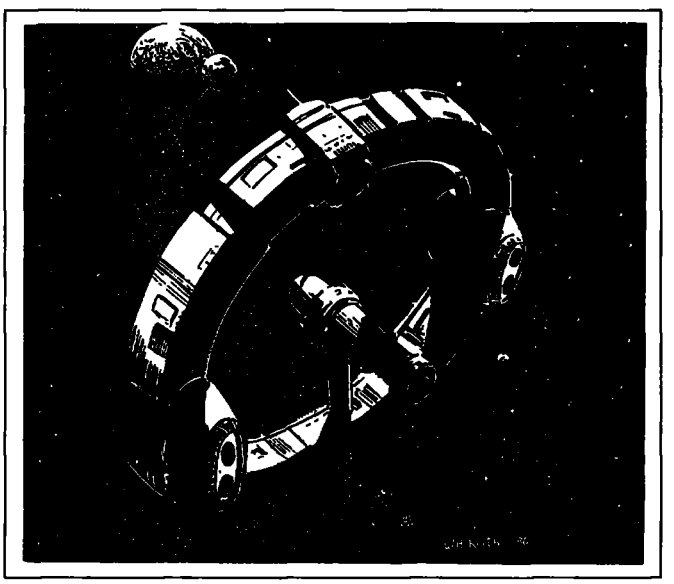
Note The price of subordinate craft is not included
A mobile base for scientific analysis, it includes a laboratory.

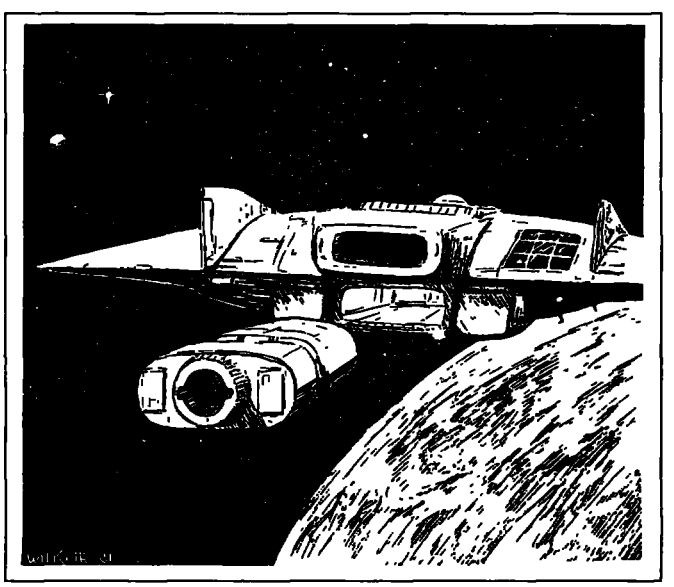
SAFARI SHIP

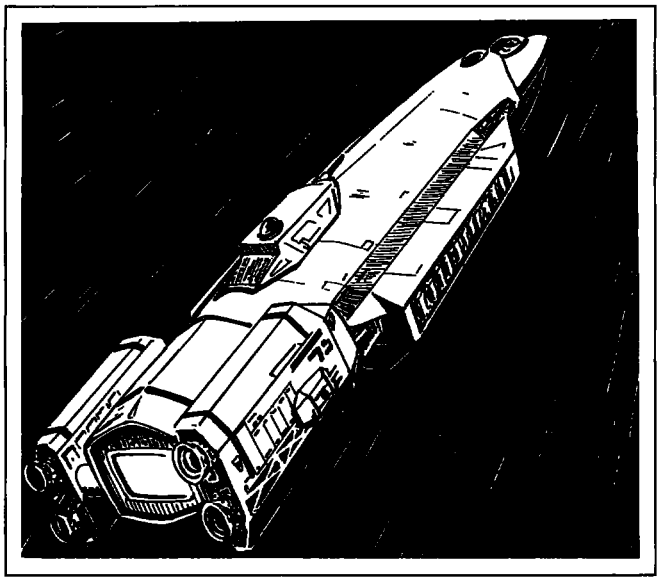
CraftID: Safari Ship, Type K, TL 15, MCr51 77
Hull: 180/450, Disp=200, Config=6SL, Armor=40G, Unloaded=1220tons, Loaded=1350tons
Power: 4/8, Fusion=1026Mw, Duration=30 /90
Loco: 4/8, Maneuver=1, 5/10, Jump=2, NOE=190kph, Cruise=750kph, Top=1000kph, Agility=2
Commo: Radio=System
Sensors: PassiveEMS=Interstellar, ActiveEMS=FarOrbit, Densitometer=HighPen/1km ActObjScan=Rout, ActObjPin=Rout, PasObjScan=Rout, PasObjPin=Rout, PasEngScan=Rout
Off/Def: Hardpoints=2, DefDM=+4
Control: Computer=1bis×3, Panel=holodynamic link×225, Special=headsUp×3, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=4 (Bridge=1, Engineer=1, Steward=1, Medical=1) Staterooms=11, TrophyLounge=95kliters SubCraft=launch, air/raft
Other: Cargo=81kliters, CaptureHold=189kliters, Fuel=775kliters, PurificationPlant, Scoops, ObjSize=Average, EMLevel=Moderate

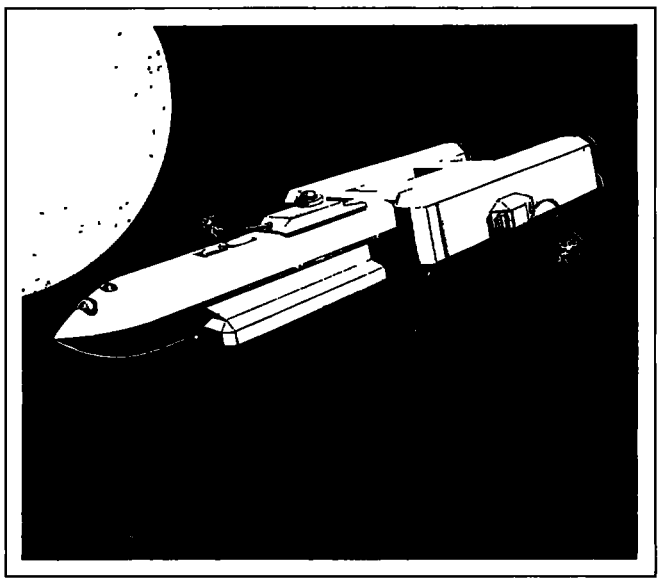
This vessel is for trophy-taking (real or photographic) expeditions.

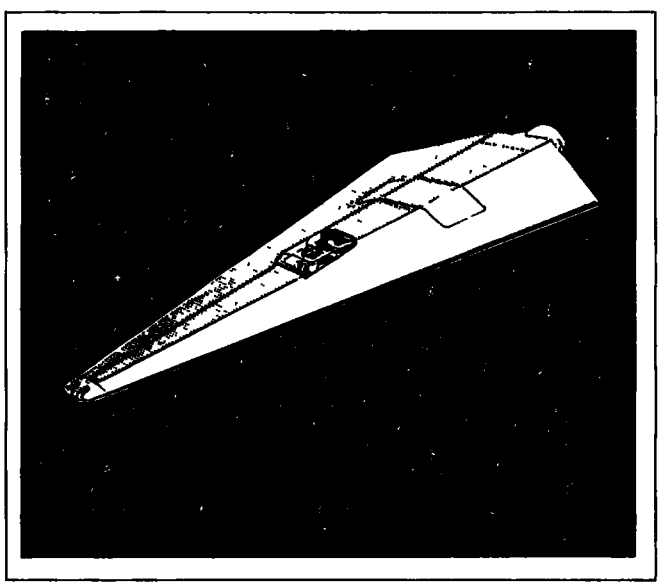












CLOSE ESCORT

CraftID: Close Escort, Type CE, TL 14, MCr301.37
Hull: 387/968, Disp=330, Config=1SL, Armor=49G, Unloaded=7080tons, Loaded=7340tons, DropTanks=1350kliters
Power: 55/110, Fusion=7400Mw, Duration=13 /39
Loco: 38/76, Maneuver=5, 16/32, Jump=5, NOE=190kph, Cruise=750kph, Top=1000kph, Agility=0
Commo: Radio=System
Sensors: EMMask, PassiveEMS=Interstellar, ActiveEMS=FarOrbit, EMSJammer=FarOrbit, Densitometer=HighPen/1km, Neutrino=10kw ActObjScan=Rout, ActObjPin=Rout, PasObjScan=Rout, PasObjPin=Rout, PasEngScan=Simp, PasEngPin=Rout
Off: BeamLaser=x04
Batt 2
Bear 2
ParticleAcel=x01
Batt 2
Bear 2
Def: DefDM=+5
Control: Computer=6×3, Panel=holodynamic link×529, Special=headsUp×5, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=10 (Bridge=2, Engineer=2, Gunnery=4, Command=1, Medical=1), Staterooms=8, SubCraft=gig
Other: Cargo=81kliters, Fuel=2500kliters, PurificationPlant, Scoops, ObjSize=Average, EMLevel=Faint

The close escort is a heavily armed ship used as a fighter aboard a larger ship or used as an independent vessel to escort convoys.

GIG

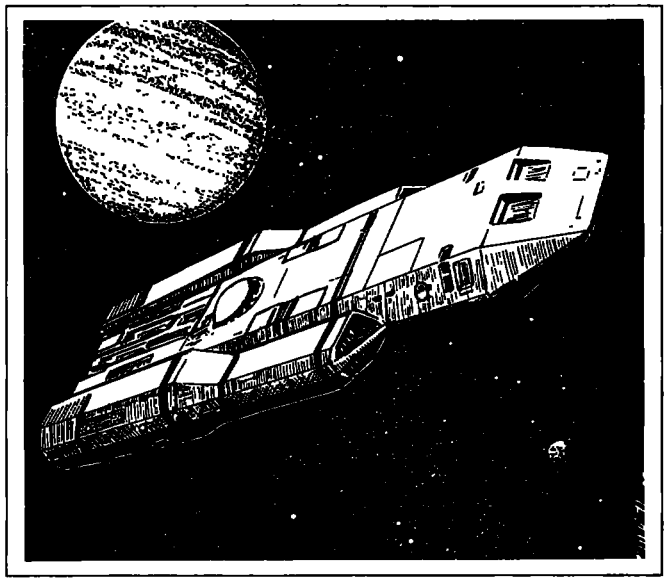
CraftID: Gig, TL 14, MCr13.78
Hull: 18/45, Disp=20, Config=1SL, Armor=40G, Unloaded=360tons, Loaded=400tons
Power: 4/8, Fusion=495Mw, Duration=5/15
Loco: 3/6, Maneuver=6, NOE=190kph, Cruise=750kph, Top=1000kph, Agility=0
Commo: Radio=System
Sensors: PassiveEMS=Interplanetary, ActiveEMS=Planetary, ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off: BeamLaser=x02
Batt 1
Bear 1
Def: DefDM=+2
Control: Computer=0×3, Panel=holodynamic link×282, Special=headsUp, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=3 (Bridge=1, Commander=1, Gunner=1), Seats=roomy×3, EmergLowBerth=2
Other: Cargo=40.5kliters, Fuel=33kliters, Scoops, ObjSize=small, EMLevel=faint

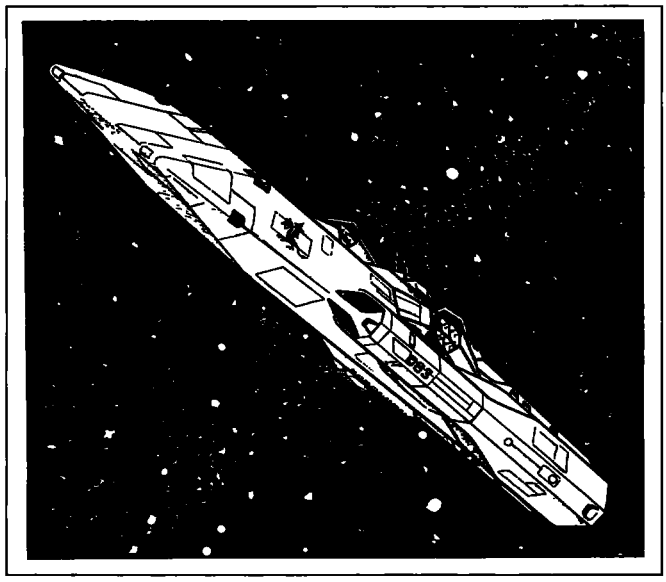
The gig is a small, armed space-faring craft and is often carried by another vessel to serve as a fighter/lifeboat

SYSTEM DEFENSE BOAT

CraftID: System Defense Boat, Type SB, TL 15, MCr311 11
Hull: 360/900, Disp=400, Config=4SL, Armor=67G, Unloaded=10,980tons, Loaded=11,150tons
Power: 32/64, Fusion=8730Mw, Duration=20/60
Loco: 61/122, Maneuver=6, NOE=190kph, Cruise=750kph, Top=1000kph, Agility=1
Commo: Radio=System
Sensors: EMMask, PassiveEMS=Interstellar, ActiveEMS=FarOrbit, Densitometer=HighPen/1km, Neutrino=10kw ActObjScan=Rout, ActObjPin=Rout, PasObjScan=Rout, PasObjPin=Rout, PasEngScan=Simp, PasEngPin=Rout
Off: Missiles=x03
Batt 2
Bear 2
BeamLaser=x04
Batt 2
Bear 2
Def: DefDM=+7
Control: Computer=5×3, Panel=holodynamic link×842, Special=headsUp×5, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=12 (Bridge=2, Engineer=2, Maintenance=2, Gunnery=4, Command=1, Medical=1), Staterooms=10
Other: Cargo=27kliters, Fuel=2100kliters, PurificationPlant, Scoops ObjSize=Average, EMLevel=Faint

The SDB is a nonjump military vessel stationed in an important system and charged with its defense, it is used for customs inspections, piracy suppression, and normal safety patrols.

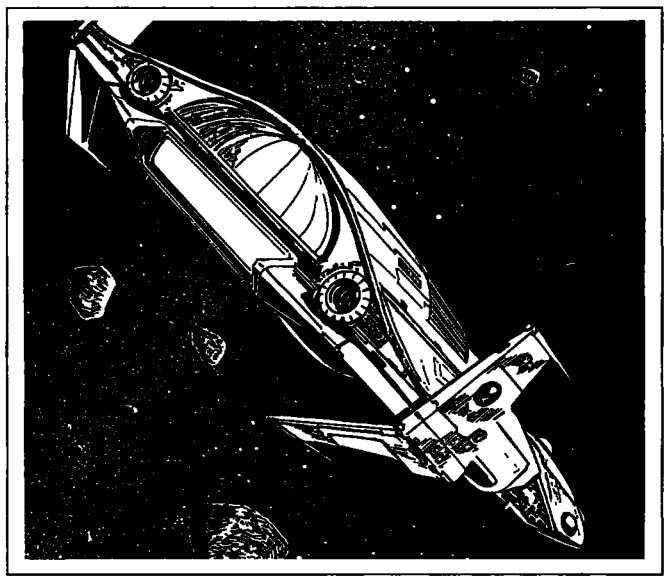




CORSAIR

CraftID: Corsair, Type P, TL 15, MCr138 74
Hull: 396/990, Disp=440, Config=4USL, Armor=40G, Unloaded=3090tons, Loaded=5310tons
Power: 17/34, Fusion=4590Mw, Duration =20/60
Loco: 29/58, Maneuver=3, 11/22, Jump=2, Cruise=2135kph (vacuum only), Top=2850kph (vacuum only), Agility=2
Commo: Radio=System
Sensors: EMMask, PassiveEMS=Interstellar, ActiveEMS=FarOrbit, EMSJammer=FarOrbit, Densitometer=HighPen/1km, Neutrino=10kw ActObjScan=Rout, ActObjPin=Rout, PasObjScan=Rout, PasObjPin=Rout, PasEngScan=Simp, PasEngPin=Rout
Off: BeamLaser=x04
Batt 1
Bear 1
Def: DefDM=+5
Control: Computer=2×3, Panel=holodynamic link×905, Special=headsUp×5, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=11 (Bridge=3, Engineer=3, Gunnery=3, Command=1, Medical=1), Staterooms=10, EmergLowBerths=5,
Other: Cargo=2090kliters, Fuel=1910kliters ObjSize=Average, EMLevel=Faint

The corsair is an armed ship, most commonly used by pirates or privateers to raid merchant spacecraft.



Travelling

Travellers do just that, they travel. Each interstellar jump places new worlds before the adventurers—exotic and far away settings for every conceivable activity from bold commercial ventures, to quests after fabled alien artifacts, to high-tech military expeditions.

Each new encounter on a world's surface can bring with it new challenges, new unsolved mysteries, or new information. Interchange with local personalities and the conflict in goals that inevitably occurs between the locals and the characters make for some memorable moments in adventuring.

Travel is fundamental to **Traveller**: both travel on the surface of a world and travel between worlds.

SURFACE TRAVEL

Travelling on a world's surface can involve everything from foot travel to high-speed grav vehicle travel. Travel can be on the ground, in the air, or over or underwater The setting can be an urban one (from rural to densly populated) or remote wilderness (from lightly populated to vast empty expanses).

The Surface Travel tables provide the referee with the basic information she needs to administer surface travel. The Surface Travel Rates table provides information about how fast different modes of transporation move. The Surface Travel Movement Guide provides a quick reference relating world hex size to movement.

SPACE TRAVEL

Travel between worlds forms the most important type of travel to be undertaken by characters. Characters can purchase individual passages aboard a vessel, they can charter a ship, and those with sufficient resources may even elect to purchase a starship.

Space travel can be of two types: *interplanetary travel* to worlds within a star system, and *interstellar travel* between star systems.

Interplanetary Travel: Worlds orbiting the same star are accessible by interplanetary travel, on ships operated by local entrepreneurs, or with a variety of small craft.

Interplanetary travel takes time. The diagram of a typical interplanetary journey shows the procedure used for moving between worlds in the same star system. The travel formulae can be used to determine time required (if distance and acceleration are known), acceleration required (if distance and time are known), and distance travelled (if time and acceleration are known)

All of the formulae use the MKS (meters, kilograms, seconds) unit system, and they assume that the ship is undertaking a journey from a standing start, that it accelerates continuously to the midpoint of the trip, and then decelerates back to a stop again. In addition, several travel times and travel distances have been precalculated for ready reference.

Interstellar Travel: Worlds orbiting different stars are reached by interstellar travel, which makes use of the jump drive. Once a starship moves to a safe sdistance from a world, it may activate its jump drive Jump drives are rated from 1 to 6, which are the number of parsecs which can be travelled in one week. Actually, making any jump takes about one week regardless of the distance travelled. Transit time to 100 diameters from a Size 8 world takes five hours at 1G.

Commercial starships usually make two jumps per month. They spend one week in jump, followed by one week in the star system, travelling from the jump point to the local world, refuelling, marketing cargo, finding passengers, leaving the starport, and proceeding to a jump point again. The week in the system usually provides some time for crew recreation and for wandering around the planet.

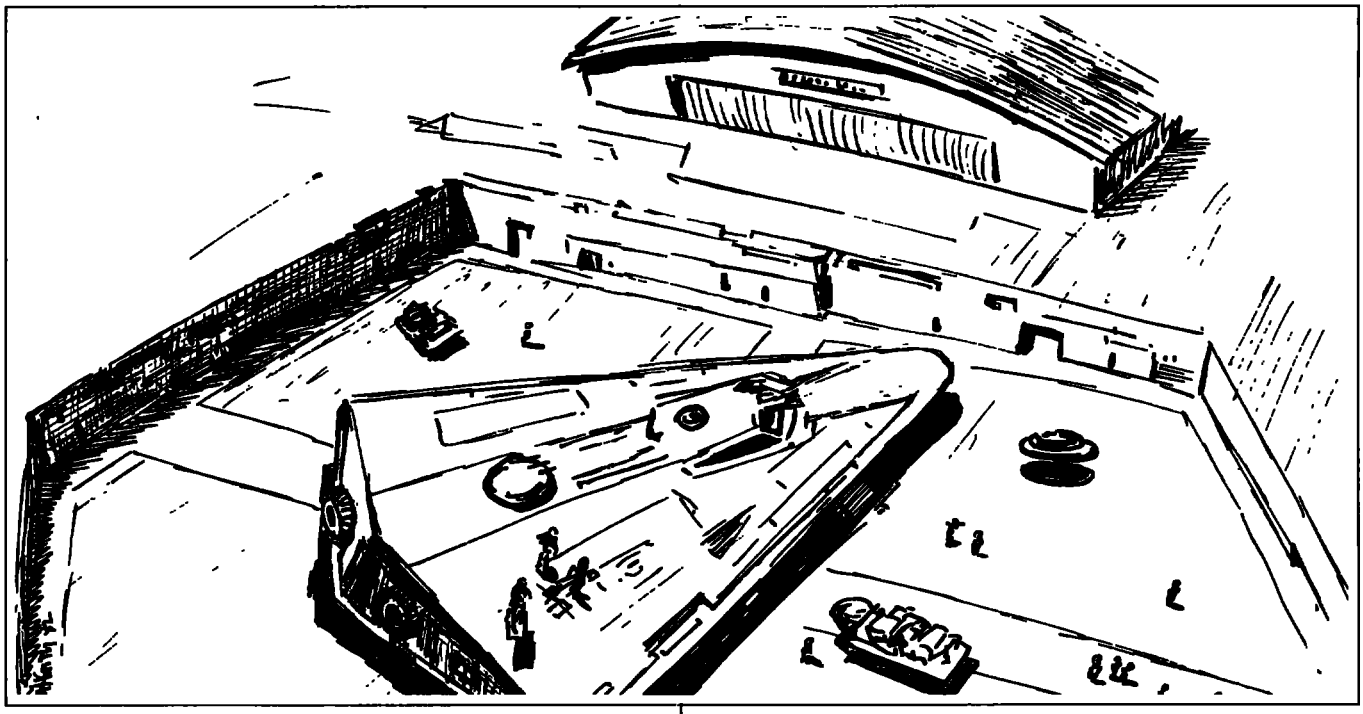
Noncommercial ships usually follow the same schedule of one week in jump and one week in a system. If haste is called for, a ship may refuel immediately and rejump right away. This allows the ship to make one jump per week but makes no provision for cargo, passengers, or local stops.

Interstellar travel is priced on the basis of accommodations; prices cover a trip from starport to starport, encompassing one jump regardless of length. There are four types of passage:

High Passage: The best method of travel is called high passage, which involves first class accommodations and cuisine. High passengers have the services of the ship's steward, entertainment, and complete attention to their comfort. There is a baggage allowance of up to 1000 kilograms. High passage costs Cr10,000.

Middle Passage: In order for starships to fill their staterooms with passengers, middle passage is offered on a standby basis, in the event that not enough high passages are sold. While middle passengers occupy staterooms normally similar to those occupied by high passengers, they do not receive the service or entertainment accorded the high paying passengers. In addition, the quality of the cuisine is mediocre. Baggage totalling 100 kilograms is allowed. Middle passage costs Cr8000.

A middle passenger may be "bumped" and the stateroom taken by a late arriving high passenger; the middle passenger's ticket is returned, but no other compensation is made. (The bumped individual could, of course, then buy a high passage



and in turn bump some other middle passenger if the extra cost seemed worth it.)

Working Passage: A starship captain with a crew shortage may hire an individual to fill the vacant position and pay not money but passage in return. Working passage may not continue for more than three jumps, or the individual is considered to have been hired for standard salary. In order to be hired for working passage, the individual must have some expertise in the position for which he or she is hired. Baggage totalling 1000 kilograms is allowed. Working passage costs nothing to the individual.

Low Passage: Transportation while in cryogenic sleep (suspended animation) is possible at relatively low cost to the passenger. The passenger is placed in a low passage berth before the ship takes off and travels the entire journey in a state of suspended animation. He does not age, and requires very little life support. Unfortunately, the low passage system involves some intrinsic dangers to the passenger, and he runs some risk of not surviving the voyage. Surviving uses the following UTP:

To survive a low passage voyage: Routine, Medical, Edu, 1 min. (fateful).

Referee: The Medical skill and Education characteristics used as modifiers to this task roll are those of the attending physician at the time of deberthing, not those of the character at risk. Various affects occur for any mishap (roll 2D): **Superficial Mishap:** The subject temporarily suffers 1D wounds for 1-6 days, after which healing is automatic; skin loses some of its tone and color for 1-6 weeks, having a gray, wrinkled appearance. **Minor Mishap:** The subject temporarily suffers 2D wounds for 1-6 days, after which healing is automatic; subject experiences motor function problems for 1-6 weeks with corresponding loss of 2 points of dexterity during that time. **Major Mishap:** The subject suffers 3D permanent wounds; the subject's internal organs are damaged; and the subject must undergo medical diagnosis and treatment to restore full health. **Destroyed Mishap:** This is not possible on a 2D mishap.

Commercial starship lines offering low berth passage typically guarantee that deberthing will be conducted by a physician of at least skill level 3; TAS advises all travellers to exercise caution when travelling low berth.

Stowaways: Stowing away on a starship is a fifth form of passage and the least advisable. Sneaking aboard a starship in order to gain passage to the next world is illegal on almost all worlds, if only because it operates to the detriment of the starship owner's economic standing. It is also often a violation of various customs regulations.

To discover a stowaway aboard a vessel:
Routine, Steward, Int, 2 min.

Referee: One attempt can be made per day. Various elaborate schemes on the part of the stowaway may allow DMs to this throw, based on the referee's judgment. Upon discovery, the stowaway must roll for the starship captain's reaction. A reaction of actively uncooperative or hostile behavior will result in spacing: the stowaway is forced out the air lock without a vacc suit. Other reactions are determined by the referee. Potential stowaways should realize that cargo holds are often depressurized during a trip.

LESSER KNOWN ASPECTS OF SPACE TRAVEL

As interstellar travel has developed, the field has developed its own dangers and customs. The following are just a few:

The Travellers' Aid Society: Individuals who have decided that they wish to pursue a life of travel and adventure may elect to join the Travellers' Aid Society in order to take advantage of its facilities and passage dividends. Members of the Travellers' Aid Society receive, as a dividend of membership,

one high passage every two months The high passage may be used, retained for later use, or sold for 90 percent of its cash value.

Membership in the Travellers' Aid Society may be acquired as a mustering out benefit using the benefits table in the navy and marine careers. Membership may also be purchased using the following task:

To be allowed to purchase a Travellers' Aid Society membership:
Routine, Admin, Int, 10 min (safe).
Referee: If a mishap occurs, the character has been "blackballed" and may not purchase a membership. Upon acceptance, the character must pay an initiation fee of Cr1,000,000. Only one application per person is allowed. Membership is for the life of the character and is not transferable.

Hijacking: Starships can be easy prey for hijackers Starship crews maintain a constant guard against hijackers, and the ship's computer can run an antihijacking program which denies access to controlled areas to potential hijackers. Passengers are required to check all weapons (except blades and daggers) into the ship's locker; they are returned at the end of the voyage.

Nevertheless, there is a chance of an attempted hijacking, for ransom or to steal the multimillion credit vessel. Roll three dice for 18+ to indicate a hijacking attempt (this throw does not apply if all passengers are player characters). When an attempt occurs, randomly determine the number of hijackers, their identities, characteristics, and weapons, and implement their attempt at some point during the voyage. They will gain complete control of the ship only after defeating all other individuals on the ship. If the antihijacking program is functioning, gaining access to the bridge uses the following task:

To fool an antihijacking program and gain illegal access to a starship's bridge:
Formidable, Intrusion, Tactics, 2 min (fateful, uncertain).
Referee: The difficulty level on this task applies when an antihijacking program is running; otherwise the task becomes Difficult. If this task fails, an alarm has sounded on the bridge, warning the bridge crew. The hijacker(s) will know they have failed to achieve surprise only if their roll fails. Success at this task allows the hijackers to enter the bridge; subsequent combat may be called for.

The results of hijacking range from release of passengers without harm to marooning on uninhabited worlds to spacing and death.

Skipping: Most starships are purchased on credit, and the monthly payments required against the multimillion credit debt are staggering. The owner or captain may decide to steal the ship himself instead of remaining under that load. Passengers have no way themselves of determining if a specific ship is in such a status. Throw 12+ to determine whether a commercial ship is of this type.

Ships which have skipped are subject to repossession attempts if detected by the authorities. Such attempts may range from the formal service of papers, to legal injunctions, to armed boarding parties.

On each world's landing with a skipped ship, a repossession attempt will occur on 3+; apply a DM of -1 per 5 parsecs distance from the ship's homeworld, to a maximum of -9. If the ship has called on the same world twice within the last two months, apply a DM of +2.

Piracy: A starship may be attacked by pirates while entering or leaving a system. Similar encounters may involve customs agents or military vessels, including blockades. The ship encounter flowchart later in this book indicates the procedure.

Gas Giants: Most star systems include in their family of planets one or more gas giants, large worlds with hydrogen or methane atmospheres. These gas giants are a valuable source of fuel for starships.

In order to refuel from a gas giant, a ship must move into orbit around it and then dive deep into its atmosphere with open fuel scoops. The procedure (called skimming) takes approximately ten hours and results in fuel tanks filled with unrefined fuel. When skimming, perform the following task:

To skim a gas giant for starship fuel:
Routine, Pilot, Navigation, 1 hour (hazardous).
Referee: The upper reaches of a gas giant's atmosphere are dangerous. Mishaps can include simple turbulence, excessive radiation exposure, collision with debris, heat damage to the ship's hull, getting caught in a swirling cyclone storm, or getting caught in the gas giant's gravity well.

Ocean Refuelling: Ships can refuel from the water oceans of any world with a non-zero hydrographic percentage. Ocean refueling may require a permit on some worlds; roll Law Level or less on 2D to determine this. If the players wish to refuel their ship illegally, they should avoid populated areas, and they will have to circumvent the local world's sensors (if any)

The process calls for the ship to land in or near an ocean and fill its tanks from the local water supply. It takes approximately four hours and results in fuel tanks filled with unrefined fuel. When ocean refueling, perform the following task:

To refuel a starship from an ocean:
Routine, Pilot, Sensor Ops, 30 min.
Referee: Mishaps, when they occur, can include water leaks, corrosion damage from sea salts, running aground, sinking, or getting caught in a hurricane storm.

STARSHIP MALFUNCTIONS

A starship can malfunction. The two major malfunctions are drive failure and misjump. The primary influencing factors are unrefined fuel and lack of maintenance.

Refined fuel is available at starports at about Cr500 per ton; unrefined fuel is available at starports for Cr100 per ton, or it can be skimmed from gas giants for free. In addition, water can be taken from oceans or lakes (if there are any on the world) and used as unrefined fuel

Military and quasimilitary starships often use unrefined fuel because it is more plentiful, and because their drives are specially built to use it. Commercial ships almost always use

unrefined fuel because it is cheaper. (A fuel purification plant is necessary to safely use unrefined fuel.)

Starships require continuing maintenance as they operate and an annual maintenance overhaul to keep them in top running order. Ships which are undercrewed and do not carry enough dedicated or full-time skilled engineers and those which avoid or delay their annual maintenance run the risk of malfunction. See the Starship Operation Flowchart for details.

THE ECONOMICS OF STARSHIP OPERATION

Operating a starship in the interstellar market requires an understanding of how trade between the stars works This includes an understanding of supply and demand control prices, as well as returns on effort and investment. Because starships are so expensive, many of the prices used when discussing them are expressed in megacredits (abbreviated MCr); a megacredit is one million credits.

STARSHIP PURCHASE

Bank financing is available to qualified individuals for the purchase of commercial startships. After the individual makes a down payment of 20 percent of the cash price of the starship, the shipyard will begin construction of a specific vessel.

Upon completion, the shipyard delivers the vessel to the buyer, and the bank pays the purchase price to the shipyard. Because the bank now holds title to the ship, the ship's purchase price must be paid off in a series of monthly payments to the bank. Standard terms involve the payment of 1/240th of the cash price each month for 480 months. In effect, interest and bank financing cost a simple 120 percent of the final cost of the ship, and the total financed price equals 220 percent of the cash purchase price, paid off over a period of 40 years.

The bank will insist that the purchaser submit an economic plan detailing the projected activity which will guarantee that monthly payments are made. Unless a character has some form of guaranteed income (perhaps large rents from some property he owns), this requirement generally rules out financed purchases of yachts, military vessels, or exploratory vessels.

Subsidies: The government may subsidize larger commercial vessels (built on type 600 hulls or larger), primarily to assure consistent service to specific worlds. These subsidized merchants are generally assigned a specific route connecting from 2 to 12 worlds of varying characteristics. The route will generally be determined before a subsidized merchant is purchased, to allow tailored design features as may be necessary.

When a subsidized merchant is ordered, the character himself must make the 20 percent down payment, with the government assuming responsibility for the payments upon delivery and taking 50 percent of the gross receipts of the ship while in service. The character is responsible for all expenses and costs of operation.

Subsidized merchants are also subject to mobilization (and use as auxiliaries) in the event of emergency or hostilities. At the end of 40 years, the vessel is completely paid off, and full title passes to the character, but the vessel remains subject to mobilization in case of government need.

STARSHIP EXPENSES

There are five basic expenses (in addition to the bank payment, if necessary) which are associated with starship operation·

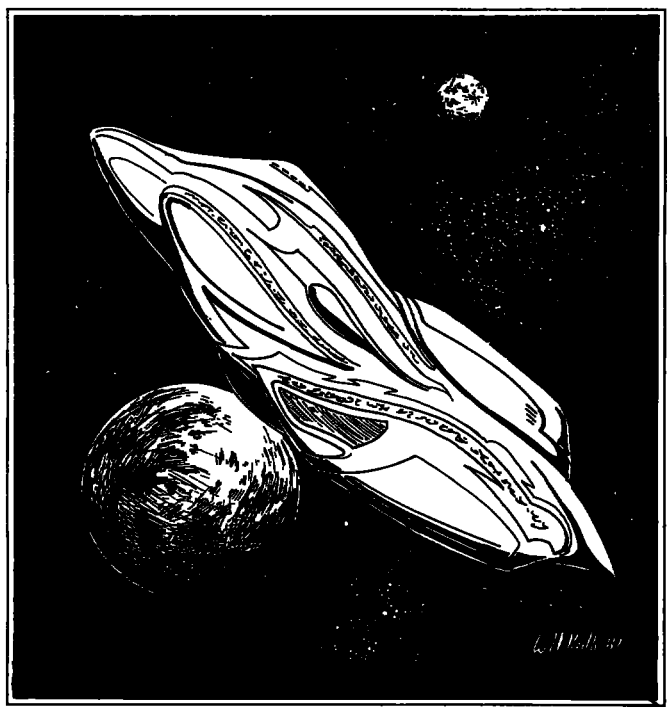
1. Fuel. Starship fuel costs Cr500 per ton (refined) or Cr100 per ton (unrefined) at most starports. Fuel consumption is based on formulae related to the size of the starship power plant and the jump drive.

2. Life Support. Each occupied stateroom on a starship involves an overhead cost of Cr2000 per trip (two weeks) made. Each occupied low passage berth involves an overhead cost of Cr100 per usage. There is a normal limit of one person per stateroom, and travelling couples or groups usually take adjoining staterooms. Military vessels or chartered ships may be used with a double occupancy system (two persons per stateroom), but this requires twice the normal cost.

3. Routine Maintenance. Annually, a starship should be given a complete overhaul in order to insure that it is kept in good working order. Such maintenance costs 0.1 percent (1/1000th) of the cash price of the ship and requires two weeks at a class A or B starport. The owner must make provision for payment of the maintenance fee when it comes due. Crewmembers generally take their vacations at this time but must still receive their salaries. The ship owners must make provision for the expected loss of revenue while the ship is out of service.

4. Crew Salaries. Crewmembers must be paid monthly. Non-player characters must be paid using the standard crew salary schedule (with suitable modifications for expertise or seniority, generally +10 percent for each level of expertise above level 1). Player characters may bargain for better pay rates, or they may elect to accept worse. In addition, player characters may participate with the owner-captain and accept shares in the proceeds of the ship's activities.

Characters who take working passage are not paid, and receive passage, room, and board in lieu of salary (continuous working passage for more than three trips results in automatic



hiring and receipt of salary). The starship captain is usually the pilot or navigator and serves as owner-aboard, drawing his pay from the profits. Not all crew positions are required on all ships, and some ships will have more than one person performing the same function. For example, a large liner may have more than one steward

5. Berthing Costs. Landing fees, handling costs, facilities use charges, and other starport fees are a common practice, and such costs must be paid as they occur. The average cost is Cr100 to land and remain for up to six days; thereafter, a Cr100 per day fee is imposed for each additional day spent in port. In some locations this fee will be higher, while at others local government subsidies will lower or eliminate it.

REVENUE

Ships generate revenue from cargo, passengers, and mail.

Cargo: Starships may inquire at a starport about the number, sizes, and destinations of cargos awaiting transportation. The referee should determine all worlds accessible to the starship (depending on jump number) and use the trade and commerce flowchart to determine available cargos.

Each cargo is a distinct shipment and cannot be subdivided, but the ship may accept or reject specific cargos based on the best fit within the cargo hold. All cargos are carried at Cr1000 per ton. Starship owners may purchase goods locally and ship them at their own expense, speculating that they can later sell at a profit. The trade and commerce flowchart illustrates the details of the speculative trading process.

Passengers: After a starship has accepted cargo for a specific destination, passengers will present themselves for transport to that particular destination. The procedure for locating passengers is illustrated on the trade and commerce flowchart.

Passengers will pay the standard fare for the class of transportation which they choose: standard fares are Cr10,000 for high passage, Cr8000 for middle passage, and Cr1000 for low passage. Passage is always sold to interested prospective passengers on the basis of transport to the announced destination rather than on the basis of jump distance. Differences in starship jump drive capacity have no specific effect on passage prices.

For example, a jump-3 starship charges the same passage price as a jump-1 starship. The difference between the two passages is that a jump-3 ship can reach a destination in one jump, while the jump-1 ship would take three separate jumps (through two intermediate destinations, which would require three separate tickets) to reach it. Higher jump numbers also may make otherwise inaccessible destinations within reach. But for two ships of differing jump numbers going to the same destination in one jump, each would charge the same cargo or passage price.

Mail and Incidentals: Subsidized merchants may receive mail delivery contracts, usually serving as an adjunct to their established routes. In order to receive mail delivery contracts, the ship must be able to dedicate five tons of ship cargo capacity to postal duty on a full-time basis; the ship must be armed; and a gunner must be a part of the crew at all times. The starship is paid Cr25,000 (which amounts to Cr5000 per ton of postal cargo area) for each trip which is made, regardless of the actual mail tonnage carried on any particular trip. The actual mail delivery tonnage will not exceed a total of five tons on each trip

Other ships may, on occasion, be approached by an individual to deliver private messages, at times through the ship's owner or captain and at times clandestinely through a crewmember. Private mail is usually intended for delivery to a specific point (such as the Travellers' Aid society building or a tavern in startown), and is generally accompanied by a Cr20 to Cr120 honorarium. A private message can be handled by the referee as the motive for an encounter; see Encounters for details

TRADE CUSTOMS

The following are standard procedures in interstellar commerce:

Delivery: Goods taken on in orbit are delivered when placed in orbit around the destination. Goods loaded on a planetary surface are delivered when off-loaded on the surface of the destination. This custom applies to cargo, passengers, and mail.

Shuttle Service: At any location with either a class A, B, or C starport, shuttles operate on a routine basis between orbit and world surface. Typical shuttle fares are sold to interested individuals for Cr10 per ton of cargo and Cr20 to Cr120 per passenger.

Charters: Nonstarships charter for Cr1 per displacement ton per hour, usually with a 12-hour minimum. Charter price for a starship is computed based on that particular starship's revenue-generating capacity. Starships are chartered in two-week blocks; the charge for chartering a starship is Cr900 per ton of cargo hold, plus Cr9000 per high passage berth and Cr900 per low passage berth. The owner of the starship being chartered pays all overhead expenses and supplies a crew for the trip.

STARSHIP ENCOUNTERS

1 Ship Type

Determine the ship type being encountered.

SHIP TYPE

Die	Type
1	Merchant (go to 2)
2	Civilian (go to 3)
3	Non-Starship (go to 4)
4	Xboat (go to 5)
5	Scout (go to 6)
6	Naval (go to 7)

2 Merchant Type Ship

Die	Type
2	Freighter (1000+ tons)
3	Subsidized Merchant
4	Nonstandard
5	Subsidized Merchant
6	Seeker
7	Free Trader
8	Subsidized Liner
9	Far Trader
10	Far Trader
11	Freighter (1000+ tons)
12	Freighter (5000+ tons)

DMs: If system only accessible by jump-2, DM+4.

Merchant Mission

Die	Type
2	Distress
3	Smuggling
4	Trade
5	Trade
6	Trade and Transport
7	Trade and Transport
8	Trade and Transport
9	Transport
10	Transport
11	Transport
12	Piracy

Note: If ship type is Seeker, replace Transport with Prospecting.

3 Civilian Type Ship

Die	Type
2	Liner (1000+ tons)
3	Yacht
4	Nonstandard
5	Yacht
6	Seeker
7	Detached Scout
8	Safari Ship
9	Mercenary Cruiser
10	Mercenary Cruiser
11	Lab Ship
12	Liner (5000+ tons)

DMs: If system only accessible by jump-2, DM+4.

Civilian Mission

Die	Type
2	Distress
3	Smuggling
4	Courier
5	Charter
6	Transport
7	Transport
8	Pleasure Tour
9	Business
10	Business
11	Business
12	Piracy

Note: If ship type is Lab Ship, replace Business with Research

4 Non-Starship Type

Die	Type
2	Bulk Transport
3	Pinnace
4	Nonstandard
5	Launch
6	Shuttle
7	Shuttle
8	Cutter
9	Tug
10	Ship's Boat
11	System Defense Boat
12	System Defense Boat

Non-Starship Mission

Die	Type
2	Distress
3	Smuggling
4	Courier
5	Charter
6	Courier
7	Courier
8	Transport
9	Transport
10	Transport
11	Transport
12	Piracy

5 Xboat Type Ship

Die	Type
2	Scout Courier
3	Scout Courier
4	Nonstandard
5	Xboat
6	Xboat
7	Xboat
8	Xboat Tender
9	Xboat Tender
10	Xboat Tender
11	Xboat Tender
12	Xboat and Tender

XBoat Mission

Die	Type
2	Distress
3	Courier
4	Courier
5	Communciation
6	Communciation
7	Communciation
8	Communciation
9	Communciation
10	Communciation
11	Communciation
12	Piracy

6 Scout Type Ship

Die	Type
2	Xboat Tender
3	Scout Courier
4	Nonstandard
5	Scout Courier
6	Scout Courier
7	Scout Surveyor
8	Scout Surveyor
9	Scout Surveyor
10	Scout Surveyor
11	Scout Cruiser
12	Scout Cruiser

DMs: If system only accessible by jump-2, DM+4

Scout Mission

Die	Type
2	Distress
3	Smuggling
4	Escort
5	Courier
6	Courier
7	Courier
8	Transfer
9	Patrol
10	Patrol
11	Patrol
12	Privateering

Note: If Scout Surveyor, replace Patrol with Survey

7 Naval Type Ship

Die	Type
2	Fuel Shuttle
3	Fighter
4	Carrier (100,000 tons)
5	Escort (5000 tons)
6	Fast Courier
7	Patrol Escort
8	Escort (1000 tons)
9	Cruiser (20,000 tons)
10	Cruiser (50,000 tons)
11	Cruiser (100,000 tons)
12	Battleship

Naval Mission

Die	Mission
2	Distress
3	Escort
4	Escort
5	Courier
6	Courier
7	Patrol
8	Patrol
9	Transfer
10	Maneuvers
11	Transport
12	Privateering

8 Ship Disposition

Die	Disposition
2	Hasty Departure
3	Hasty Departure
4	Leaving
5	Leaving
6	Standing By
7	Standing By
8	Standing By
9	Arriving
10	Arriving
11	Hasty Arrival
12	Hasty Arrival

STARSHIP OPERATING PROCEDURES 1

1 Starship Operations

Determine the ship type being operated, its capabilities, and the characteristics of the star system being travelled to

This chart illustrates the procedures for travelling to another world with a jump-capable starship.

Annual Maintenance: If the ship is in need of annual maintenance and a mishap occurs on any task, roll 3D instead of 2D on the Mishap Table.

System Crosschecks: System crosschecks should be performed on all asterisked tasks. To do so, declare the task cautious. Otherwise, the task attempt becomes uncertain, with a *warning light* event to occur at a later time if **Some Truth** is a result of the task The warning light situation produces a fateful task to avoid the problem becoming more serious

2 Power Up

If the ship has been parked for less than 8 days, the power plant may be warm started, otherwise, it must be cold started.

To warm start a starship
Routine*, Engineering, Edu, 30 sec

To cold start a starship
Routine*, Engineering, Edu, 5 min.

3 Prepare Maneuver Drive

The maneuver drive must be prepared

To prepare maneuver drive·
Routine*, Engineering, Edu, 10 sec
Referee· This task must succeed or the maneuver drive cannot be engaged.

Desperate Jump: A desperate jump can be attempted at this point, go to step 7

4 Travel To Orbit

If the ship is not already in orbit, take it from the world's surface to orbit

To pilot a ship from surface to orbit
Routine, Pilot or Ship's Boat, Edu.
Referee· The Travel Time To Orbit table shows the expected travel times

TRAVEL TIMES TO ORBIT

World	Acceleration					
Size	1G	2G	3G	4G	5G	6G
0	6m	5m	4m	3m	2m	1m
1	13m	9m	8m	7m	6m	5m
2	19m	13m	11m	9m	8m	8m
3	23m	16m	13m	12m	10m	9m
4	27m	19m	15m	13m	12m	11m
5	30m	21m	17m	15m	13m	12m
6	33m	23m	19m	16m	15m	13m
7	35m	25m	20m	18m	16m	14m
8	38m	27m	22m	19m	17m	15m
9	40m	28m	23m	20m	18m	16m
A	42m	30m	24m	21m	19m	17m

Starship Encounters: Check for a starship encounter during this journey

Desperate Jump: A desperate jump can be attempted at this point; go to step 7

5 Travel To Ten Diameters

Take the ship to ten diameters out from the world

To pilot a ship to ten diameters
Simple, Pilot or Ship's Boat, Edu.
Referee. The Travel Times to Ten Diameters Table shows the expected travel times

TRAVEL TIMES TO TEN DIAMETERS

World	Acceleration					
Size	1G	2G	3G	4G	5G	6G
0	14m	10m	18m	7m	6m	5m
1	40m	28m	23m	20m	28m	16m
2	57m	40m	33m	28m	25m	23m
3	69m	49m	40m	35m	31m	28m
4	1 3h	57m	46m	40m	36m	33m
5	1 5h	63m	52m	45m	40m	37m
6	1 6h	69m	57m	49m	44m	40m
7	1 8h	1.2h	61m	53m	47m	43m
8	1 9h	1.3h	65m	57m	51m	46m
9	2 0h	1.4h	69m	60m	54m	49m
A	2.1h	1.5h	1 2h	63m	57m	52m
SGG	3 3h	2 4h	1 9h	1.7h	1.5h	1 4h
LGG	5 8h	4 1h	3 3h	2.9h	2.6	2.4h

Starship Encounters: Check for a starship encounter during this journey.

Dangerous Jump: A dangerous jump can be attempted at this point, go to step 7

6 Travel To 100 Diameters

Take the ship to 100 diameters out from the world.

To pilot a ship to 100 diameters.
Simple, Pilot or Ship's Boat, Edu
Referee. The Travel Times to 100 Diameters Table shows the expected travel times.

TRAVEL TIMES TO 100 DIAMETERS

World	Acceleration					
Size	1G	2G	3G	4G	5G	6G
0	45m	32m	26m	22m	20m	18m
1	45m	32m	26m	22m	20m	18m
2	3 0h	1 5h	1 2h	63m	57m	52m
3	3 7h	2.6h	2 1h	1 8h	1 6h	1 5h
4	4 2h	3.0h	2.4h	2.1h	1 9h	1 7h
5	4.7h	3.3h	2 7h	2 4h	2.1h	1 9h
6	5.2h	3 7h	3.0h	2.6h	2.3h	2.1h
7	5.6h	3.9h	3.2h	2.8h	2.5h	2.3h
8	6 0h	4.2h	3 4h	3.0h	2 7h	2 4h
9	6.3h	4.5h	3.7h	3.2h	2.8h	2 6h
A	6 7h	4.7h	3.8h	3.3h	3.0h	2 7h
SGG	10h	7 5h	6.1h	5 3h	4.7h	4 3h
LGG	18h	12h	10h	9.1h	8 2h	7 5h

Starship Encounters: Check for a starship encounter during this journey

Safe Jump: A safe jump can be attempted at this point

7 Prepare For Jump

Preparing for jump consists of computing the jump coordinates and preparing the jump drive.

To compute jump coordinates
Routine, Navigation, Pilot, 2 min
Referee: This task can begin any time after the ship powers up. The navigator also designates whether the destination in the system is the mainworld, a gas giant, or some other world

To prepare jump drive for jump·
Routine*, Engineering, Edu, 2 min.
Referee· This task can begin any time after the ship powers up This task must succeed or the jump drive cannot be engaged

If the ship is using unrefined fuel (without a fuel purification plant), this task is hazardous.

If the ship is past annual maintenance, this task is hazardous. For every month past annual maintenance, increase the difficulty one level

8 Engage Jump Drive

Engaging jump drive consists of a routine procedure.

To engage jump drive·
Routine, Engineering, Edu, 2 min
Referee: This task can begin once a successful jump preparation has been accomplished

If the ship is using unrefined fuel (without a fuel purification plant), this task is hazardous.

Safe Jump: A ship at least 100 diameters out from all massive bodies, using the proper fuel, and with properly maintained drives can make a safe jump with no chance of a mishap

Dangerous Jump: If the ship is within 100 diameters of a massive body, this task is Difficult (hazardous).

Desperate Jump: If the ship is within 10 diameters of a massive body, this task is Formidable (hazardous).

Mishap: If a mishap occurs, go to step 15

9 Jumpspace

The vessel enters jumpspace and travels to the world which the navigator designated This ship remains in jumpspace for about one week (under normal circumstances)

Determine how much time the ship spent in jumpspace by rolling 1D·
1 = 6 days, 2 to 5 = days, 6 = 8 days

10 Emerge From Jumpspace

The ship emerges from jumpspace The ship emerges at the limit of the gravity well (at about 100 diameters out) of the destination world that the navigator designated in jump preparation. The ship must be taken from 100 diameters in to ten diameters

To pilot a ship in from 100 diameters
Simple, Pilot or Ship's Boat, Edu
Referee The Travel Times from 100 Diameters Table shows the expected travel times

TRAVEL TIMES FROM 100 DIAMETERS

World	*Acceleration*					
Size	*1G*	*2G*	*3G*	*4G*	*5G*	*6G*
0	45m	32m	26m	22m	20m	18m
1	2 1h	1 4h	1.2h	63m	57m	52m
2	3.0h	2 1h	1.7h	1 5h	1.3h	1.2h
3	3 7h	2 6h	2.1h	1 8h	1 6h	1 5h
4	4 2h	3.0h	2 4h	2.1h	1 9h	1.7h
5	4 7h	3.3h	2 7h	2.4h	2.1h	1 9h
6	5 2h	3.7h	3 0h	2 6h	2 3h	2.1h
7	5 6h	3.9h	3 2h	2 8h	2 5h	2.3h
8	6 0h	4 2h	3.4h	3 0h	2 7h	2.4h
9	6 3h	4 5h	3 7h	3 2h	2.8h	2 6h
A	6 7h	4 7h	3.8h	3 3h	3 0h	2 7h
SGG	10h	7.5h	6 1h	5 3h	4.7h	4 3h
LGG	18h	12h	10h	9 1h	8.2h	7 5h

Starship Encounters: Check for a starship encounter during this journey.

11 Travel From Ten Diameters

Take the ship from ten diameters in to orbit

To pilot a ship in from ten diameters
Simple, Pilot or Ship's Boat, Edu
Referee The Travel Times from Ten Diameters Table shows the expected travel times

TRAVEL TIMES FROM TEN DIAMETERS

World	*Acceleration*					
Size	*1G*	*2G*	*3G*	*4G*	*5G*	*6G*
0	14m	10m	18m	7m	6m	5m
1	40m	28m	23m	20m	28m	16m
2	57m	40m	33m	28m	25m	23m
3	69m	49m	40m	35m	31m	28m
4	1 3h	57m	46m	40m	36m	33m
5	1 5h	63m	52m	45m	40m	37m
6	1 6h	69m	57m	49m	44m	40m
7	1 8h	1.2h	61m	53m	47m	43m
8	1 9h	1.3h	65m	57m	51m	46m
9	2 0h	1.4h	69m	60m	54m	49m
A	2 1h	1.5h	1 2h	63m	57m	52m
SGG	3.3h	2.4h	1 9h	1.7h	1 5h	1.4h
LGG	5 8h	4 1h	3 3h	2.9h	2 6	2 4h

Starship Encounters: Check for a starship encounter during this journey.

12 Travel From Orbit

The ship is in orbit. Unstreamlined ships deliver cargo to orbiting stations if the world has a type A or B starport Small craft and streamlined ships can descend to the world surface

To pilot a ship from surface to orbit.
Routine, Pilot or Ship's Boat, Edu.
Referee The Travel Times from Orbit table shows the expected travel times

TRAVEL TIMES FROM ORBIT

World	*Acceleration*					
Size	*1G*	*2G*	*3G*	*4G*	*5G*	*6G*
0	6m	5m	4m	3m	2m	1m
1	13m	9m	8m	7m	6m	5m
2	19m	13m	11m	9m	8m	8m
3	23m	16m	13m	12m	10m	9m
4	27m	19m	15m	13m	12m	11m
5	30m	21m	17m	15m	13m	12m
6	33m	23m	19m	16m	15m	13m
7	35m	25m	20m	18m	16m	14m
8	38m	27m	22m	19m	17m	15m
9	40m	28m	23m	20m	18m	16m
A	42m	30m	24m	21m	19m	17m

Starship Encounters: Check for a starship encounter during this journey.

13 Refuelling

The ship may be refuelled when fuel is available

Gas Giant Refuelling: If the ship is streamlined or airframe and is in orbit around a gas giant, it can skim the gas giant's atmosphere for fuel

To skim a gas giant for starship fuel·
Routine, Pilot, Navigation, 1 hour (hazardous).
Referee Mishaps can include simple turbulence, excessive radiation exposure, collisions with debris, or heat damage to the hull

Ocean Refuelling: If the ship has reached the surface of a world with a non-zero Hydrographics percentage, it can obtain fuel from an ocean.

To refuel a starship from an ocean
Routine, Pilot, Sensor Ops, 30 min.

Starport Refuelling: Starports offer refuelling services Refined fuel (at type A and B starports) costs Cr500 per kiloliter, unrefined fuel (at type A, B, C, and D starports) costs Cr100 per kiloliter

14 In System Transfer

A ship may need to move from a world to a gas giant or from a gas giant to a world. After moving out to 100 diameters, a ship can transfer within a system

To transfer insystem:
Simple, Pilot or Ship's Boat, Navig, 5 hrs

15 Jump Mishaps

If a mishap occurs when the jump drive is engaged, handle it as follows

Superficial: A jump relativity error occurs. The ship remains in jumpspace 1D+4 days (from 5 to 10 days) before emerging in the destination system, otherwise unharmed

Minor: A jump relativity error occurs, but when the ship emerges in the destination system, it is 1D times 8 hours from the destination world

Major: A jump relativity error occurs. When the ship emerges from jump, it discovers that it has misjumped

Throw 1D for the number of dice to throw Then throw that number of dice for the distance (in parsecs or map hexes) the ship travelled Finally, throw 1D for the direction of the misjump.

Destroyed: The ship is destroyed.

16 Crew Settlement

The crew of the ship is paid every month. Assuming one week in jump and one week in system, they are paid approximately every two jumps.

The following are typical salary schedules

Bridge Crew: Cr500 times BRN plus 10% for each level of Pilot or Navigation or Leader skill

Engineering Crew: Cr500 times BRN plus 10% for each level of Engineering skill.

Maintenance Crew: Cr500 plus 10% for each level of Admin or Mechanical skill

Command Crew: Cr1000 times BRN plus 10% for each level of Pilot or Leader

Gunners: Cr500 plus 10% for each level of any applicable Gunnery skill.

Flight Crew: Cr1000 plus 10% for each level of Pilot or Ship's Boat skill.

Ship's Troops: Cr500

Stewards: Cr500 times Steward skill

Frozen Watch: Cr500.

Medical Crew: Cr500 times Medical skill.

Note: BRN is the Basic Rank Number from character generation· Merchant 4th Officer and Naval Ensign are Basic Rank Number 1

Spinward Marches Data

This listing provides basic information about the worlds of the Spinward Marches The text listing is divided into eight columns

Hex: Hex indicates the hex number location of the system in the Spinward Marches. The first two digits indicate the column of hexes on the map; the second two digits indicate the row.

UWP: The Universal World Profile for the mainworld of the system

B: The B column indicates bases which may be present in the system. The meanings for the base symbols are given in the notes at the end of the text.

Remarks: Trade classifications and remarks are given under Remarks.

Data: Data consists of three digits followed by a two letter allegiance code. The three digits may be preceded by a travel zone code (A for Amber; R for Red). The three digits indicate successively the population multiplier, the number of planetoid belts in the system, and the number of gas giants in the system.

Allegiance: The identification of the government which controls the system is provided by allegiance. The meanings of the abbreviations are given at the end of the text.

Stars: The spectral classes and sizes of the stars in the system are provided under the headings Star1, Star2, and Star3.

BASES

The following abbreviations are used for bases· A—Imperial Naval co-located with Imperial Scout. B—Imperial Naval co-located with Imperial Scout Way Station. G—Military Garrison. M—Non-Imperial Military. N—Imperial Naval S—Imperial Scout. W—Imperial Scout Way Station. Z—Zhodani Naval

REMARKS

The following abbreviations are used for trade classifications: Ag—Agricultural. As—Asteroid Belt. Ba—Barren. Desert World. Ic—Ice-Capped. In—Industrial. Hi—High Population. Lo—Low Population. Na—Non-Agricultural. Ni—Non-Industrial. Po—Poor. Ri—Rich. Va—Vacuum. Wa—Water World.

In addition, the following remarks are used· An—Ancient Site. Ex—Exile Camp. Pr—Prison. Re—Reserve. RsA—Research Station Alpha. RsB—Research Station Beta. RsG—Research Station Gamma. RsD—Research Station Delta. RsE—Research Station Epsilon RsZ—Research Station Zeta. RsH—Research Station Eta. ☆—Subsector or Local Capital. ★—Imperial Sector Capital

ALLEGIANCE

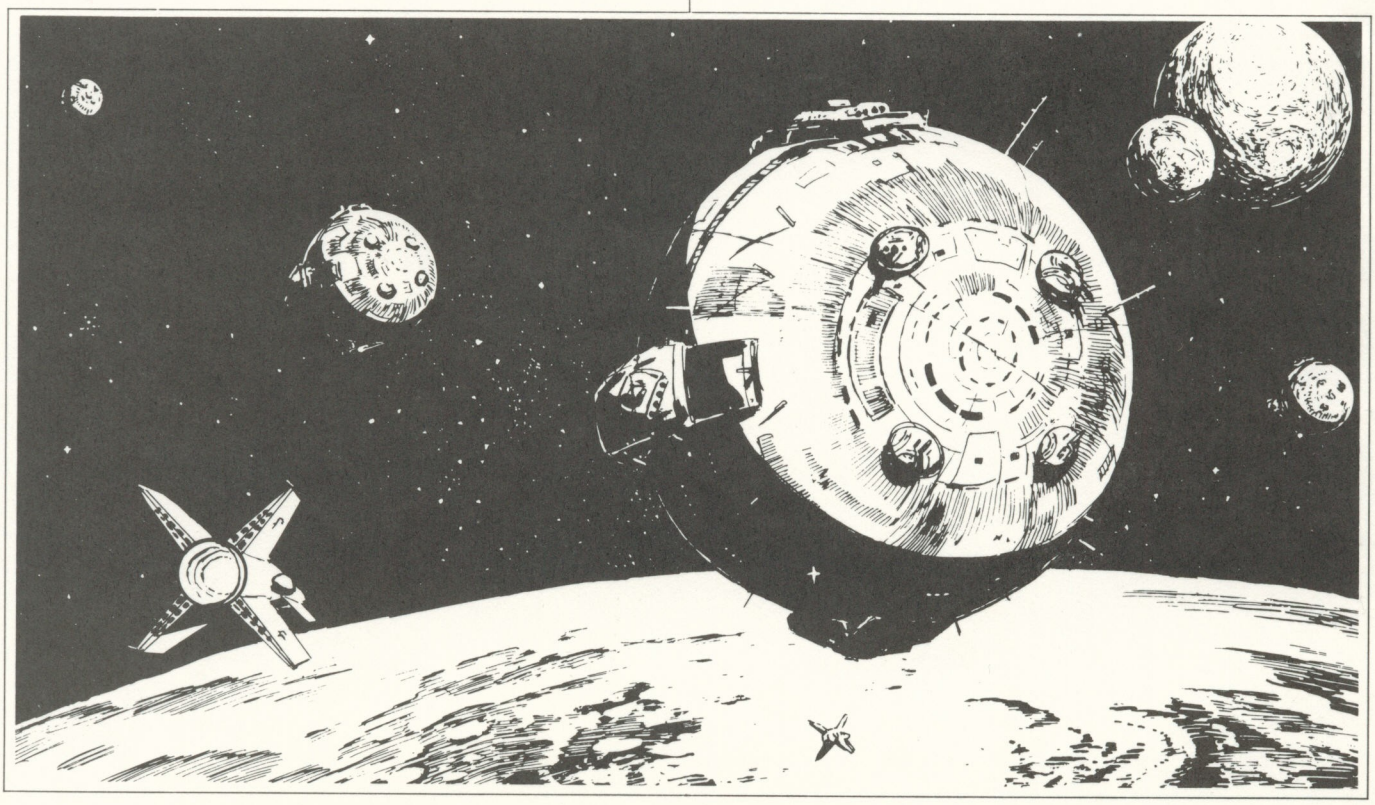
The following abbreviations are used for allegiances: As—Aslan New Lords Bw—Border Worlds. Cs—Client State (of the Imperium) Da—Darrian Confederation. Dr—Droyne World. Fa—Federation of Arden. Im—Imperial. Na—Non-Aligned (Human) Sw—Sword World Confederation. Va—Vargr. Zh—Zhodani.

Hex	UPP	B	Remarks	Data	Star1	Star2	Star3
0101	C330698-9	A	Na Ni Po De	613Zh	M9 V		
0102	C1207B9-A		Na Po De	603Zh	G8 V	M1 D	
0103	B263664-B	Z	Ni Ri	910Zh	M1 V	M4 D	
0104	C366243-9		Lo Ni	520Zh	F1 III		
0108	D8B2889-5		Fl	824Na	A8 IV		
0111	B310598-8		Ni	933Na	K8 VI		
0114	C6B6431-A		Ni Fl	123Na	G4 V	M4 D	
0115	EA95124-4		Lo Ni	910Na	M0 III		
0122	D150441-4		Ni Po De	210Na	M3 V	M2 D	
0129	E62556B-4		Ni	210Na	K9 V	M9 D	
0130	A2008CB-A		Na Va	210Na	M1 V	M5 D	
0133	B564500-B	N	Ag Ni	A503Im	M0 V		
0139	B130300-B	N	Lo Ni Po De	A920Im	G3 V	M1 D	
0140	E687200-0		Lo Ni	702Na	K7 V		
0202	C868586-5		Ag Ni	801Zh	G5 V	M3 D	
0212	C436635-6		Ni	720Na	A9 V	K8 VI	
0215	E766674-4		Ag Ni Ri	903Va	A0 IV	M6 D	
0218	E200100-8		Lo Ni Va	812Na	K2 V		
0223	B321588-B		Ni Po	701Da	M0 V	M3 D	
0230	D833000-3		Lo Ba Ni Po	504Na	F8 V		
0231	EAA5543-7		Ni Fl	910Na	A2 V		
0236	C695735-9		Ag An	R603Dr	F3 V		
0240	E754401-8		Ni	924Na	G2 V		
0301	C686648-8		Ag Ni Ri	201Na	M1 V	M0 D	
0303	B21169B-C	Z	Na Ni Ic	801Zh	M9 D	M9 D	
0304	A6369A5-D	Z	Hi ☆	810Zh	M8 V		
0307	B4337CA-A	Z	Na Po An	810Zh	F7 V	M9 D	
0311	B46258A-8		Ni	323Na	F3 V		
0321	C233898-A	G	Na Po	623Na	G0 V		
0325	B354443-7	M	Ni	834Da	F0 V		
0326	C332652-9		Na Ni Po	423Da	M5 V		
0332	E22159B-6		Ni Po	310Im	F5 IV		
0333	B9998A6-A	B		A514Im	M6 V		
0336	C593634-8		Ni An	R920Dr	F6 V	M3 D	
0340	E88A46A-4		Ni Wa	210Na	M3 V	M1 D	
0412	B200310-A	Z	Lo Ni Va	701Zh	M3 V	M3 D	
0414	C400546-8		Ni Va	810Na	K1 VI	M6 D	
0416	E8C69AA-5		Hi Fl RsD	910Cs	M9 V		
0421	E897977-A		Hi In	223Da	M9 V		
0425	C554769-8		Ag	701Da	M1 V	M3 D	
0426	B444831-9	M		401Da	G3 V	M8 D	
0427	B566777-9		Ag Ri	420Da	K8 V	M9 D	
0429	E453123-6		Lo Ni Po An	410Na	F7 V		
0430	C774622-5		Ag Ni	310Cs	M5 V	M3 D	
0433	B792785-9	N		A810Im	M8 V	M5 D	
0440	D100133-7		Lo Ni Va	A202Na	G3 IV	M6 D	
0503	D648500-8		Ag Ni	610Na	M8 V		
0511	C786342-9		Lo Ni	812Na	M7 D		

Hex	UPP	B	Remarks	Data	Star1	Star2	Star3
0512	E596400-4		Ni	205Zh	K8 V		
0518	D445436-3		Ni	810Cs	K9 V	M7 D	
0526	D765657-3		Ag Ni Ri	103Da	F4 V	M7 D	
0527	A665A95-B	M	Hi ☆	110Da	M6 V		
0528	E54779B-5		Ag	901Na	K3 V	M0 D	
0530	E42158A-8		Ni Po	510Na	K4 V		
0532	D574654-7		Ag Ni	A410Cs	F2 V	M6 D	
0533	C460642-4		Ni Ri De	323Im	F6 V	M7VI	
0534	A767768-C	A	Ag Ri	A410Im	M7 V		
0538	B455741-7	N	Ag	A910Im	M0 V	M1 D	
0539	C535225-9		Lo Ni RsZ	601Im	M7 V	M2 D	
0601	E975776-6		Ag	323Na	F1 V		
0605	C665658-9		Ag Ni Ri	410Na	M0 V	M1 D	
0607	E883401-7		Ni	910Na	F0 V		
0608	A211666-C	Z	Na Ni Ic	410Zh	A4 D		
0610	B756779-A	Z	Ag	111Zh	F4 V	M0 D	
0613	B869554-C		Ni	901Zh	G8 V	M5 D	
0614	B254788-9	Z	Ag ☆	804Zh	M6 V		
0618	EA8A799-6		Ri Wa	320Cs	M1 V		
0620	E887573-6		Ag Ni	501Da	K5 V	M9 D	
0622	D1405A7-9		Ni Po De	523Da	G0 V	M5 D	
0624	A333644-D		Na Ni Po	710Da	M6 V		
0625	X893000-0		Lo Ba Ni	R710Da	M1 V		
0627	A463955-G		Hi	225Da	G1 V	M1 D	
0632	C754766-7	S	Ag	523Im	F8 V		
0637	C31479B-9		Ic	210Im	M8 V		
0638	E779454-7		Ni	A601Im	M6 D		
0703	E334662-5		Ni	320Na	F6 V		
0704	E738475-7		Ni	820Na	K5 V		
0705	A886865-C	Z	Ri	121Zh	G2 V		
0710	E7667A8-2		Ag	801Na	M9 V	M2 D	
0712	C592320-8	Z	Lo Ni	402Zh	M5 V	M8VI	
0717	B243653-C		Ni Po	210Cs	M9 V	M1 D	
0720	E336AAA-C		Hi	110Da	G6 V	M1 D	
0721	X233231-4		Lo Ni Po Ex	R820Da	G1 V		
0723	C446556-9		Ag Ni	210Da	M5 II		
0724	B2326BB-C	N	Na Ni Po	620Da	G0 IV		
0727	C140200-A	M	Lo Ni Po De	434Da	M7 V		
0729	D326258-6		Lo Ni An	821Na	F7 V	M7 D	
0731	E224564-8		Ni	801Na	M8 V	M3 D	
0732	A887798-C	N	Ag Ri ☆	201Im	M9 V		
0739	E5136A7-4		Na Ni Ic	701Na	M8 V	M1 D	
0805	D525688-6	Z	Ni	A603Na	G4 V	M6VI	
0807	E845300-3		Lo Ni	910Na	G8 V	M7 D	
0808	B532720-B	N	Na Po	A401Im	M2 V		
0810	E9C3300-9		Lo Ni Fl	103Cs	F8 V		
0820	C110588-8		Ni	601Da	M6VI	M0 D	
0822	E65767A-3		Ag Ni	502Da	M0 V		
0830	B854123-9		Lo Ni	A822Cs	M2 V		
0834	E888421-7	S	Ni	A510Cs	M8 V	M7 D	
0837	E747569-7		Ag Ni	210Na	G8VI	M8 D	
0838	D786799-5		Ag Ri	701Na	M3 V	M3 D	
0840	E100316-9		Lo Ni Va	821Na	M0 V		
0901	E7A1522-8		Ni Fl	923Na	F8 III		
0902	C7B3386-9		Lo Ni Fl	502Na	K8 V	M4 D	
0904	B766766-A	Z	Ag Ri	A424Zh	M2 V		
0909	C372510-A		Ni	A420Cs	K2 V		
0911	C796746-5		Ag	510Na	G2 V	M4 D	
0912	E201300-8		Lo Ni Va Ic	520Na	F7 V		
0915	B200545-9		Ni Va	204fA	M3 V		
0919	X6B0000-0		Lo Ba Ni De	R020Na	M4 V		
0921	B463747-9	M	Ri	313Sw	M2 V		
0922	B386887-A	M	Ri	323Sw	K2IV	M3 D	
0927	B574A55-A	M	Hi In	224Sw	M0 II	M6 D	
0930	A623514-B	B	Ni Po	710Im	F8 V		
0931	B7A7402-A		Ni Fl	210Na	K7 V	M3 D	
0938	D12035C-A		Lo Ni Po De	823Na	F0 III		
0940	D553774-6		Po	901Na	M2 V	M2 D	
1004	C565673-8		Ag Ni Ri	A223Cs	F3 V	M5 D	
1005	B400445-B	S	Ni Va	201Im	M1 V	M3 D	
1006	B766555-B	S	Ag Ni	534Im	M1VI		
1010	D130546-7		Ni Po De	622fA	M8 D		
1011	C5549CB-8		Hi	810Fa	M4 V	M5 D	
1018	C200100-9		Lo Ni Va	101Im	M9 V	M4 D	
1020	C575677-6		Ag Ni	A910Im	M4 V	M7 D	
1022	B364685-B	M	Ag Ni Ri	A211Sw	K2 V	M8 D	
1026	B985855-B	M	Ri	222Sw	F2 V		
1031	E532000-8		Lo Ba Ni Po	310Na	M9 V	M1 D	
1037	C433520-A		Ni Po	724Na	M8VI		
1040	C503758-A		Na Va Ic	320Na	K3 V		
1102	C566A99-9		Hi	A214Zh	M7 III		
1103	B672899-A	Z		A901Zh	M8 V		
1106	A777999-C	A	Hi In ☆	623Im	G7 V		
1110	C792668-8	G	Ni	624Fa	F0 V		
1116	A200436-A	N	Ni Va ☆	110Im	M2III	M3 D	
1118	B978868-A	S		912Im	M3 V		
1119	A593943-A		Hi In	820Im	G5 V	M8 D	
1121	B530544-A	M	Ni Po De	522Sw	A5 V	G0 D	
1123	B464778-A	M	Ag Ri	A201Sw	M3 V	M9 D	
1126	B8A6733-A	M	Fl	401Sw	M7 V	M7 D	
1130	E25059B-4	G	Ni Po De	710Sw	M9 V		
1131	E5936A7-2		Ni	520Na	M7III		
1132	D000300-9	S	Lo Ni As	811Cs	M0 V		
1133	C438679-9		Ni	320Na	F0 V		
1138	B584620-A		Ag Ni	202Cs	K9 V		
1201	E410644-6		Na Ni	312Zh	K2 V	M3 D	
1204	A368685-A	A	Ag Ni Ri	603Im	M6III	M0 D	
1209	C473464-7		Ni	410Fa	M0 V		
1210	E5656B9-4		Ag Ni	710fA	M5 V		
1212	E53668A-5		Ni	920Na	M6III		
1213	E400220-5		Lo Ni Va	A401Cs	K6 V	M0 D	
1214	D955000-2		Lo Ba Ni	610Im	F1 V	M4 D	
1216	D5A4420-4		Ni Fl	210Im	M9III		
1217	E446845-6			402Im	M8 V		
1221	B444779-8	M	Ag	432Sw	G3IV	M4VI	
1223	A895957-B	M	Hi In ☆	603Sw	F2 D	M2 D	
1225	B324755-A	M		402Sw	M5 V		
1232	C544338-8	S	Lo Ni	302Cs	M5 V		
1233	E5A1422-6		Ni Fl	610Na	M8 V	M2 D	
1237	B628943-D	S	Hi In	101Cs	F1 V	M6 D	
1238	C6678D8-6			A701Cs	M7 V		
1305	D591314-2		Lo Ni	A501Im	M6 V	M0 D	
1307	B592655-A	S	Ni	623Im	M9 V		
1311	B511411-C		Ni Ic	201fA	K8 V	M5 D	
1315	E472300-8	N	Lo Ni	110Im	F5 V		
1320	D888588-7		Ag Ni	820Im	A8 V	M1VI	
1324	B637735-A	M		701Bw	M4 V		
1325	B775956-C	M	Hi In	801Bw	F9 V	M8 D	
1329	B365776-A	S	Ag Ri	710Im	F7 V	M0 D	M4 D
1331	E227633-8		Ni	801Na	M7 V		
1332	X600000-0		Lo Ba Ni Va	R011Na	K8 V		
1337	E9B2000-8		Lo Ba Ni Fl Rs	H321As	M3III		
1339	B361851-C		Ri	923Na	M0 D		
1340	B68468B-5	N	Ag Ni Ri	710Cs	M2 V	M2 D	
1401	B638665-8		Ni	A910Zh	K0 V		
1402	A200400-B	Z	Ni Va	A415Zh	M3 II	M0 V	
1411	E67A612-7		Ni Wa	503Na	M8 V		
1413	B739573-A	N	Ni	324Im	M2 V		
1417	E567353-5		Lo Ni	910Im	M0 V	M1 D	
1424	B685686-A	M	Ag Ni Ri	610Bw	M4 V		
1429	E344110-8		Lo Ni	A602Im	M6 V		
1430	E000514-A		Ni As	924Im	M7VI		
1433	E7A5747-6		Fl	602Na	M5VI	M2 D	
1434	C466662-7	S	Ag Ni Ri	A310Cs	M0 V	M2 D	
1435	B8B5883-9		Fl	610As	F2 V		
1436	E333532-9		Ni Po	820As	F9 V	M1 D	
1510	E722000-8		Lo Ba Ni Po	801Na	M9 V	M8 D	
1511	C674321-8		Lo Ni	A210Cs	M9 V	M5 D	
1515	C334867-7			501Im	K9 V	M5 D	
1519	X3437C7-2		Po	R520Im	F5 II	M1 D	
1520	E567000-7		Lo Ba Ni	434Im	G6 II		
1522	B958412-A	M	Ni	201Bw	M4 V	M8 D	
1523	B687334-B	M	Lo Ni	714Bw	M1 V		
1524	B666553-A	M	Ag Ni	501Bw	M4 V	M9 D	
1525	B645896-A	M		302Bw	M0 V		
1526	B354623-A	M	Ag Ni	301Bw	M7 V	M1 D	
1529	E655000-7		Lo Ba Ni	324Bw	M8III		
1531	E885000-0		Lo Ba Ni	025Na	F8 D	M5 D	
1532	B426467-8	N	Ni	201Cs	M4 V	M5 D	
1533	D3129B8-A		Hi Na In Ic	610Na	M9 V		
1537	B262732-B	S	☆	610As	G1 V		
1604	D322A88-8		Hi Na In Po	110Im	M5 V		
1607	X664100-0		Lo Ni	R222Im	K6 V		
1611	C887624-8		Ag Ni	710Im	G5 V	M8 D	

Hex	UPP	B	Remarks	Data	Star1	Star2	Star3
1626	E529000-9		Lo Ba Ni	714Bw	F0 V		
1627	E201000-9		Lo Ba Ni Va Ic	510Bw	M3 V		
1628	E568000-0		Lo Ba Ni	301Bw	F4 D		
1631	C7B1462-5		Ni Fl	A601Cs	K8 V	M5VI	
1632	E21178A-7		Na Ic	920Cs	M2 V		
1634	C769873-4		Ri	913As	M0 V		
1635	A800231-A		Lo Ni Va	720As	F0 V		
1637	B9A2469-C	A	Ni Fl	301As	M6 V		
1705	A646930-D	B	Hi In	800Im	K4 V		
1706	B46789C-A		Ri	410Im	M7 V	M7 D	
1711	B45589A-A	N		110Im	M2 V	M4 D	
1719	A879533-B	A	Ni ☆	710Im	F5 IV	M9 D	
1721	C200200-C		Lo Ni Va	610Im	K2 V		
1727	B756486-B	S	Ni	A502Im	M2 V		
1728	C328342-7		Lo Ni	120Im	M6 V		
1729	C14078A-9		Po De	902Im	M1 V	M7 D	
1731	A400404-B		Ni Va	124Im	F8 V		
1733	E110430-6		Ni	902Im	M4III	M0VI	
1736	D140466-7		Ni Po De	A724As	G3 V		
1737	BAC6567-7	N	Ni Fl	521As	F8 V		
1739	C86A410-9		Ni Wa	401As	M9 V		
1802	BAC6773-7		Fl	335Im	G5 V		
1803	C652998-7		Hi Po	310Im	M5 II		
1805	B439598-D		Ni	320Im	M9 V		
1806	E676126-7		Lo Ni	224Im	A1 V	M1 D	
1807	E888787-2		Ag Ri	834Im	G3 V		
1808	E893614-4		Ni	312Im	G0 V		
1809	C776977-7		Hi In	A701Na	M5 V		
1810	C799663-9	S	Ni	323Im	M0 V		
1811	D100535-A		Ni Va	201Im	A4 III		
1815	B211455-A	N	Ni Ic	303Im	F8 V	M3 D	
1817	X697772-2		Ag	R112Im	M6 V		
1822	D5448BA-6	S		313Im	M5 D		
1824	A57189B-B	N		801Im	K8 V	M8 D	
1825	B000544-B		Ni As	512Im	G5 III		
1826	A774102-E		Lo Ni An	610Im	F7 V		
1836	E150852-6		Po De	810As	M7 V		
1903	A100103-D	N	Lo Ni Va	901Im	M1 V	M0 D	
1904	A8B3531-D	S	Ni Fl	601Im	M7 V		
1909	C200423-7	S	Ni Va	A320Im	K6 II	M6 D	
1910	A788899-C	A	Ri ☆	703Im	F7 V	M8 D	M6 V
1912	B674632-9	S	Ag Ni	204Im	M8VI		
1916	X587552-4		Ag Ni	R922Im	F9 V		
1918	X6266AB-3		Ni	R314Im	K6 V	M0 D	
1920	B120410-D	N	Ni Po De	312Im	M3 V	M0 D	
1924	E360697-5		Ni Ri De	924Im	M6 II	M9 D	
1927	C766846-8	S	Ri	715Im	M7 V		
1932	C8B5546-6		Ni Fl Pr	302As	M7 V		
1934	A626464-B		Ni	A703As	M0III	M2 D	
1935	C783511-9		Ni	210As	K9 V	M0 D	
1937	B45467A-9		Ag Ni	423As	G3 V		
1938	B837866-B	N		704As	F8 V	M0 D	
1939	C573645-3		Ni	923As	G7 V		
2005	B384879-B	S	Ri	620Im	G4 V	M3 D	
2007	C77A9A9-7	S	Hi In Wa	A323Im	F9 V		
2011	E9C4547-8		Ni Fl	A922Im	M3 V		
2024	C512799-8	S	Na Ic	901Im	M0 V	M7 D	
2035	B443987-9		Hi In Po	A214As	G6 V	M2 D	
2036	A000986-F	A	Hi Na In As ☆	821As	K9 V		
2038	C639422-B		Ni An	704As	F4 V	M3 D	
2106	X355423-1		Ni	R501Im	M5VI		
2110	C360757-A		Ri De RsB	713Im	F1 V		
2111	E459000-9		Lo Ba Ni	R822Im	K5 V		
2112	D9957AA-6		Ag	501Im	M0 V		
2124	A995984-D	A	Hi In ☆	810Im	M3 D	M7 D	
2125	B984510-B	S	Ag Ni	A723Im	G4 V	M1 D	M1 D
2128	X978310-1	.	Lo Ni	R320Im	M0 V		
2129	C330737-9		Na Po De	910Im	M7 D	M5 D	
2132	E222447-6		Ni Po	220As	K3 V		
2134	C541636-5		Ni Po	910As	M4III	M0 D	
2137	E48569A-2		Ag Ni Ri	921As	G3 V	M3 D	
2138	C3378A6-A	S		920As	F4 V		
2140	B450456-B	A	Ni Po De	112As	M5 V	M3 D	
2201	C979500-A	S	Ni	920Va	M2 V		
2202	A663659-8		Ni Ri	622Va	M7 V		
2204	D88349D-4		Ni	701Im	M0 V	M2 D	
2205	C411988-6		Hi Na In	600Im	M6 V	M5 D	
2207	EAC28CC-9		Fl	703Im	F0 V		
2212	CAA5345-8		Lo Ni Fl	102Im	M8 V		
2215	B150679-A		Ni Po De	A721Im	M3 V		
2224	C463325-9		Lo Ni	601Im	M8 V	M6 D	
2228	B775833-A	W		922Im	M2 V		
2231	D868772-5		Ag Ri Re	924As	M7 V		
2232	E4359CA-7		Hi	314As	M7 II	M9VI	
2233	C7B5975-B		Hi Fl	621As	K5 V		
2234	C100598-B		Ni Va	924As	K3 V		
2236	D120636-5		Na Ni Po De	A301As	M5 V	M2 D	
2237	C795300-A	S	Lo Ni	A510As	F8 V		
2303	C7C6503-7		Ni Fl	220Va	M8VI		
2306	X000742-8		Na As	R714Im	M4 V		
2308	X766977-4		Hi	R723Im	M9VI		
2309	E7B4643-5		Ni Fl	824Im	K9 V		
2311	D232866-8		Na Po	610Im	M1 V		
2313	C53A313-A		Lo Ni Wa	720Im	G4 V		
2314	D691142-5		Lo Ni	802Im	M4 V		
2317	C100576-A		Ni Va	A710Im	M7 V		
2319	B324659-A	A	Ni	112Im	A9 V		
2321	B365300-8		Lo Ni	323Im	M6 V		
2322	X554220-0		Lo Ni	R801Im	M8 V	M6VI	
2323	B310100-B	S	Lo Ni	501Im	M5 V	M8 D	
2324	B747748-A	N	Ag	610Im	M9 D		
2325	C575101-A		Lo Ni	503Im	K5 V		
2327	A745988-D	N	Hi In	920Im	M5 V	M4 D	
2331	E563576-2		Ni	210As	M0 V		
2334	A41489D-C		Ic	904As	F3 V	M3VI	
2336	A756656-C	A	Ag Ni	820As	A5 V		
2402	B687745-5		Ag Ri	734Va	K6 III	M8 D	
2405	E2718CA-3			812Im	G5 III	M9 D	
2406	CA5A588-B		Ni Wa	801Im	M9 V	M9 D	
2408	E230AA8-8		Hi Na Po De	323Im	G7 V		
2410	B575776-9	A	Ag	423Im	F8 V		
2411	C792348-7	S	Lo Ni	213Im	M3 III	M2 D	
2414	C465540-9		Ag Ni	614Im	M3 V		
2415	E481542-3		Ni RsE	901Im	M9 V		
2416	C564112-4		Lo Ni	701Im	F2 V	M3 D	
2417	B55A858-B	S	Wa	202Im	F6 V	M5 D	
2418	B5245A9-7	N	Ni	A301Im	M9 V	M8 D	
2419	CA6A643-9		Ni Ri Wa	432Im	M1 II		
2420	C2237C7-9	N	Na Po	601Im	M1 V	M0VI	
2425	E000347-8		Lo Ni As	813Im	M7 V		
2426	EAB6311-5		Lo Ni Fl	904Im	F1 V		
2509	A655241-9	N	Lo Ni	603Im	F3 V		
2510	C9A769D-4		Ni Fl	202Im	M5 V		
2512	C449433-9		Ni	502Im	A0 V	K9 D	
2514	C483103-6		Lo Ni	203Im	M9 V		
2519	E9C5677-7		Ni Fl	224Im	K5 V		
2520	B632520-7	S	Ni Po	410Im	M0 V	M7 D	
2521	B6449B9-8		Hi In	721Im	F3 V		
2523	B485697-6		Ag Ni Ri	812Im	M9 V		
2527	E500343-4		Lo Ni Va	903Im	K0 V		
2534	C462667-8		Ni Ri	402Im	M4 V		
2536	A300550-B		Ni Va	303As	F4 V	M7 D	
2537	A450457-A	S	Ni Po De	523As	G0 V		
2538	E566335-2		Lo Ni	214As	M6 V		
2539	E4305AD-5		Ni Po De	322As	F8 II		
2540	B659772-6			924As	M5 V		
2602	X895674-8		Ag Ni	R222Va	M0 V		
2607	EA88544-A		Ag Ni	724Va	F3 V		
2612	B000453-E	N	Ni As	911Im	G8 V	M8 D	
2613	A674210-D		Lo Ni	810Im	G3 V		
2620	C8879AB-9		Hi An	204Im	F4 V		
2621	A633656-A		Na Ni Po	620Im	M3 V		
2624	B658663-8	A	Ag Ni	304Im	F7 V		
2627	C534477-8		Ni	401Im	M3 V		
2632	X895674-8		Ag Ni An	R201Im	F3 V	M0 D	
2637	C00059C-C		Ni As	212As	M5 V		
2638	E75A798-5		Wa	910As	F4 IV		
2639	C525567-9		Ni	602As	M6 V		
2701	B646589-A		Ag Ni	503Va	M2 III	M4 D	
2706	E66A224-C		Lo Ni Wa	510Va	M5 V	M7 D	
2708	C669452-A		Ni	420Va	M0 V		
2712	A325579-A	N	Ni	401Im	M5 V	M3 D	
2715	A867A74-B		Hi	201Im	M1 V	M9 D	
2716	A434934-F	A	Hi ☆	810Im	M2VI		

Hex	UPP	B	Remarks	Data	Star1	Star2	Star3
2720	C86A215-7		Lo Ni Wa	705Im	M9 V		
2726	C579221-9		Lo Ni	910Im	M7 V	M2 D	
2728	A5437BF-B		Po RsA	401Im	M2 V	M0 7	
2731	B678324-7		Lo Ni	520Im	K0 V		
2733	A4638BD-B			934Im	M7 V		
2735	D894586-7	S	Ag Ni	311Im	F0 V	M0 D	
2739	C4439DF-7	S	Hi In Po	423As	M7 V		
2811	E365432-5		Ni	622Im	G4 IV		
2812	C6B199C-B		Hi Fl	A421Im	G6 V		
2814	A560565-8	N	Ni De	913Im	F9 IV		
2818	X573000-0		Lo Ba Ni	R701Im	K2 V		
2824	C22048C-9		Ni Po De	510Im	G9 V	M2 D	
2827	C675100-5	S	Lo Ni	724Im	F9 V		
2828	B534420-8	N	Ni	123Im	K1 V	M2 D	
2830	C415346-7	S	Lo Ni Ic	101Im	M6 V	M7 D	
2832	E695244-5		Lo Ni	801Im	M5 V	M1 D	
2833	D567530-3		Ag Ni	503Im	M1 V		
2834	B790630-6		Ni De An	410Im	F5 V		
2839	C625563-7	S	Ni	201As	M5 V		
2905	C669452-A		Ni	425Va	G2 V		
2906	C427402-B		Ni	804Va	M8 V		
2908	E25672C-7		Ag	A701Im	M6 V	M3 D	
2912	A245543-B		Ag Ni	824Im	F3 D		
2913	B434456-9	A	Ni	201Im	M2 VI		
2918	B000676-9		Na Ni As	620Im	G6 V	M3 D	
2924	C367300-8	N	Lo Ni	A201Im	M4 V	M7 D	
2927	A201511-B		Ni Va Ic	122Im	F1 V		
2930	C553352-A	S	Lo Ni Po	803Im	K2 V	M7 D	
2933	E99467A-6		Ag Ni	303Im	M7 III	M9 D	
2934	B555448-7		Ni	301Im	M8 V		
2935	B544433-6	N	Ni	305Im	M5 III	M9 V	
2936	A5525AB-B		Ni Po	535Im	M3 III		
2940	D534443-8	S	Ni	804As	M1 III		
3001	C775300-7		Ni	411Va	F4 V		
3002	C9A489A-7		Fl	712Va	M9 V		
3003	B98A422-B	S	Ni Wa	612Va	K2 V		
3004	X994542-6		Ag Ni	R320Va	M9 V		
3005	B657974-6		Hi	210Va	G0 V		
3008	C4766D7-4		Ag Ni	201Va	K9 V	M1 D	
3010	B98A510-B	N	Ni Wa	502Im	G1 V	M9 D	
3015	B895646-5		Ag Ni	923Im	G1 V		
3016	E869569-3		Ni	A224Im	F6 V		
3017	E7A0614-3		Ni De	820Im	G5 V		
3019	X372215-4		Lo Ni	R534Im	G9 V		
3020	C301340-B		Lo Ni Va Ic	201Im	M6 V	M7 VI	
3021	C410468-7		Ni	114Im	M1 III	M7 D	
3022	C994100-A		Lo Ni	502Im	M7 V		
3024	B6548D9-7			810Im	K6 V		
3025	A354A87-C		Hi	202Im	M0 V		
3026	E410335-7		Lo Ni	701Im	F0 V	M5 D	
3029	A511965-E		Hi Na In Ic	A320Im	M1 V	M0 D	
3030	C97A443-8	S	Ni Wa	801Im	M8 V	M6 D	
3032	B252665-B	B	Ni Po	201Im	M0 V	M9 D	
3035	B985588-6		Ag Ni	510Im	K9 V		
3038	C110530-9		Ni	902Im	M2 V		
3039	AA95365-B		Lo Ni	201As	M3 V		
3040	D76A579-9	S	Ni Wa	901Im	F4 V	M0 VI	
3102	BAC5634-A		Ni Fl	A811Va	M1 V		
3103	B444448-A	S	Ni	A735Va	A8 III	K6 D	
3104	C222200-C		Lo Ni Po	910Va	G4 V	M7 D	
3107	X427402-D		Ni	R701Im	F8 V		
3110	A6B0556-B	A	Ni De ☆	710Im	M9 VI		
3111	B879610-9		Ni	610Im	M3 V	M4 D	
3112	B864310-8	N	Lo Ni	822Im	M3 V		
3114	X575000-0		Lo Ba Ni	R920Im	M0 III		
3118	B35879A-6		Ag	623Im	M1 V		
3119	C686854-5		Ri RsG	520Im	K1 V	M0 D	
3123	D120203-6	S	Lo Ni Po De	920Im	M5 V	M1 D	
3124	AA99AC7-F	A	Hi In ★	112Im	M5 V		
3138	X89556A-3		Ag Ni	R404Im	M5 V		
3139	B544642-5	S	Ag Ni	723Im	F9 IV		
3202	B434ABD-9	W	Hi	310Va	F7 V	M9 D	
3207	C000632-9		Na Ni As An	223Im	F3 V		
3209	B582211-8	N	Lo Ni	A801Im	M2 VI	M6 D	
3210	C9A8542-8		Ni Fl	A233Im	G4 D		
3212	A576257-C	A	Lo Ni	920Im	F0 V		
3216	D4209CC-A	S	Hi Na In Po De	224Im	F4 V		
3218	C230411-B		Ni Po De	801Im	M6 V	M2 D	
3220	C787566-5		Ag Ni	332Im	A5 V	K4 D	
3223	C512311-7	S	Lo Ni Ic	710Im	M5 V		
3228	C647346-9		Lo Ni	A423Im	K7 V		
3233	B1107A7-8		Na	913Im	M9 V		
3235	A894A96-F	A	Hi In ☆	101Im	M0 V		
3236	C645747-5		Ag	A110Im	A1 V	M6 D	



MEGATRAVELLER™

IMPERIAL ENCYCLOPEDIA

The Imperium survived for more than a thousand years. In less than a minute, it has shattered. An assassin has cut down the emperor and his heirs in one bold stroke, throwing the largest interstellar empire in history into chaos. There are many candidates for the empty throne, and the worlds of the Imperium are divided in their allegiances. By a curious twist of fate, the assassin himself now controls three rebellious sectors. The emperor's nephew, considered by many to be a murderer himself, has assumed the throne over the objections of the Imperial Assembly. Star fleet battles rage throughout the disputed territories. As sectors are stripped of their fleets to fight in the rebellion, imperial territory is invaded by alien forces sensing weakness and plunder. Sector after sector secedes from the Imperium to manage its own defense. Sector after sector falls to external forces.

And on this stage of rebellion and interstellar chaos, **Traveller** sets an ongoing drama of role-playing adventure....Players travel from star system to star system, taking sides in the rebellion, fighting for their cause while fighting to stay alive. The dangers of the interstellar environment combine with the dangers of a shattered Imperium to challenge players and referees, and provide never-ending excitement in the far future.

The *Imperial Encyclopedia*. This book is a reference for both players and referees. It includes essays on the Imperium and other interstellar empires, descriptions of starships and vehicles in common use throughout known space, lists of equipment available on the open market and its prices, maps, and other information valuable to players and referees alike.

The **Traveller** Rules Books. This book is part of a three-book set which provides the basic rules and background for playing the game.

The companion *Players' Manual* is a basic compilation of **Traveller** rules and concepts for the individual player. It includes coverage of character generation, combat resolution, psionics, and tasks.

The companion *Referee's Manual* is a rules reference for the **Traveller** referee. It includes vehicle and starship design, starship combat, world and star system generation, animal encounters, trade and commerce, task resolution, and the administration of adventures.

Traveller is a role-playing game. **MegaTraveller** is the name of this **Traveller** rules system set against the background of star-spanning rebellion on the Imperium. Individual players assume the roles of adventurers in the universe of the far future. A referee (responsible for administering the game for the players) plots out the adventures that the players will face, constructs background situations, and finally conducts the players through those adventures in exciting game sessions. Each session is a gripping adventure where the players make their own decisions about their fate and fortune. And an infinite number of adventures are possible.

MegaTraveller *Imperial Encyclopedia*. Intended for all **Traveller** players and referees. Contains background information and supporting data for playing **Traveller**.

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MEGATRAVELLER

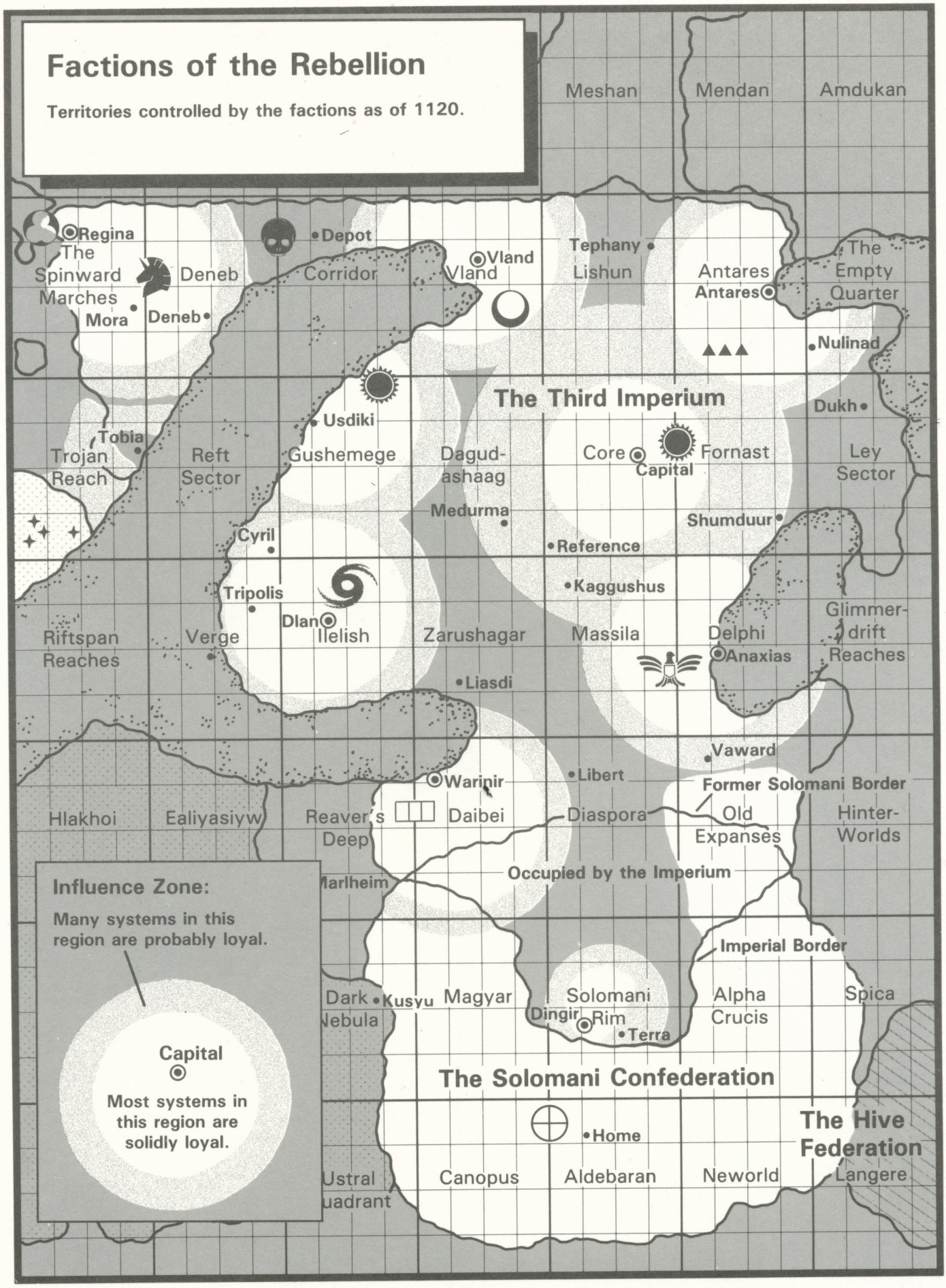
REBELLION

SOURCEBOOK

Marc W. Miller

Science-Fiction Adventure in the Shattered Imperium

GDW


Factions of the Rebellion
Territories controlled by the factions as of 1120.
Meshan
Mendan
Amdukan
Regina
The Spinward Marches
Deneb
Mora
Deneb
Depot
Corridor
Vland
Vland
Tephany
Lishun
Antares
Antares
The Empty Quarter
Nulinad
The Third Imperium
Dukh
Usdiki
Tobia
Trojan Reach
Reft Sector
Gushemege
Dagud-ashaag
Core
Capital
Fornast
Ley Sector
Medurma
Shumduur
Cyril
Reference
Kaggushus
Tripolis
Dlan
Ilelish
Zarushagar
Massila
Delphi
Anaxias
Glimmer-drift Reaches
Riftspan Reaches
Verge
Liasdi
Vaward
Warinir
Libert
Former Solomani Border
Hlakhoi
Ealiyasiyw
Reaver's Deep
Daibei
Diaspora
Old Expanses
Hinter-Worlds
Occupied by the Imperium
Marlheim
Influence Zone:
Many systems in this region are probably loyal.
Capital
Most systems in this region are solidly loyal.
Imperial Border
Dark Nebula
Kusyu
Magyar
Solomani Rim
Dingir
Terra
Alpha Crucis
Spica
The Solomani Confederation
Home
The Hive Federation
Ustral Quadrant
Canopus
Aldebaran
Neworld
Langere

Marc W. Miller

REBELLION

SOURCEBOOK

MEGATRAVELLER™

Science-Fiction Role-Playing
in the Shattered Imperium

GDW

Rebellion Sourcebook is a compilation of data and background about the Rebellion that is currently sweeping the Imperium of the **MegaTraveller** universe.

The History of the Imperium Working Group (HIWG) is a support organization dedicated to exploring the future history of the Imperium and the ramifications of the Rebellion on that history. Some of the information in this sourcebook is based on HIWG's work Special thanks are due to Ed Edwards, Mike Mikesh, Gregg Giles, and Jefferson Swycaffer.

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MegaTraveller
Rebellion Sourcebook

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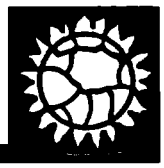

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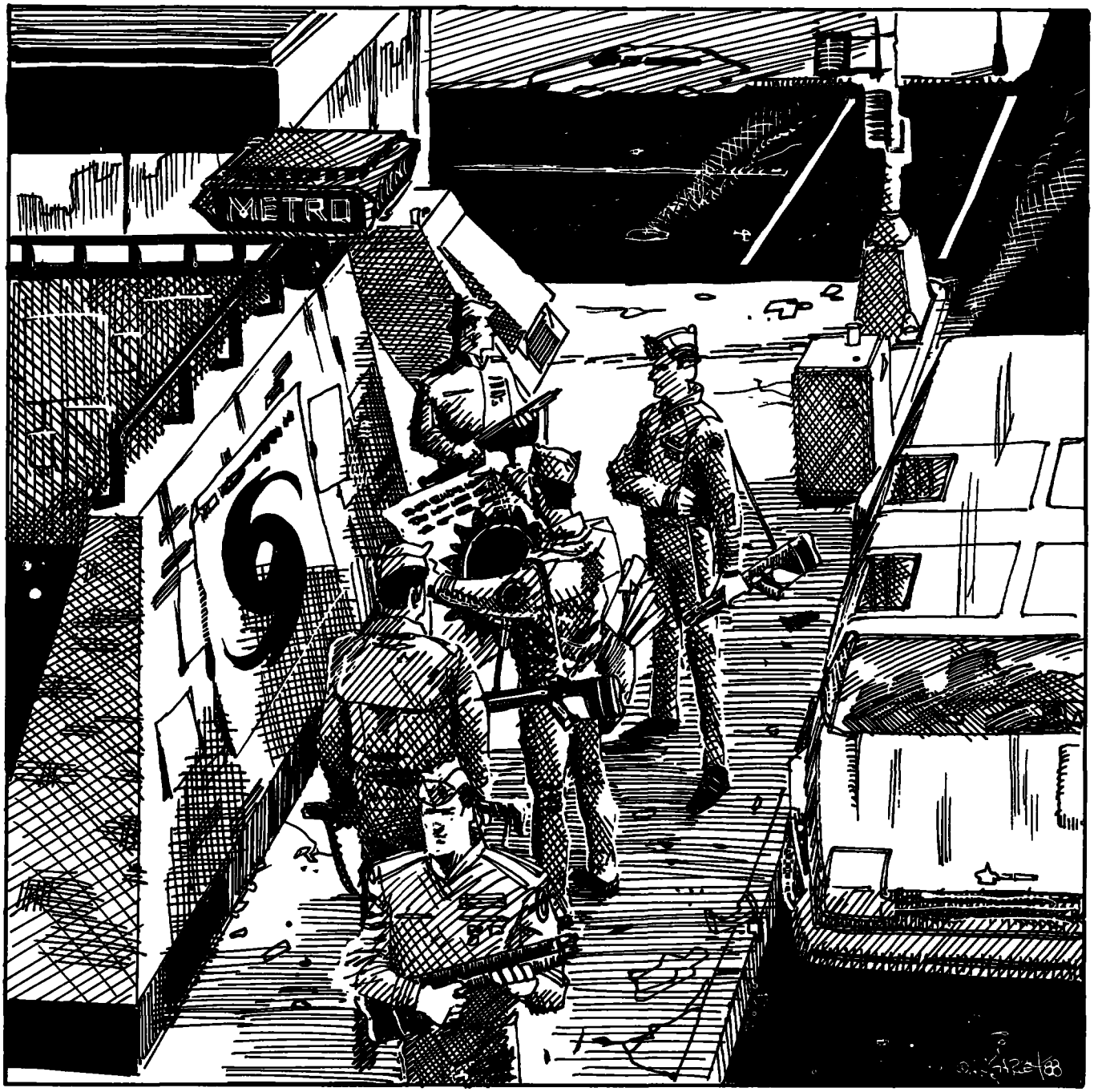
METRO
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The vitality of the newly founded Imperium was evidenced by its rapid expansion and economic growth. The time was right for a new empire; the human populations of the territory wanted and needed this vast interstellar government. The Third Imperium was an expression of the people who populated it: strong, vital, ambitious.

A thousand years later, the strength and vitality of the human populations were missing; all that remained was the ambition, and that ambition was channeled inward. No longer did the population see expansion as the means to a better future; leaders looked at redistributing the wealth of the Imperium and at carving out petty duchies within the known boundaries of the empire.

Against this background, it was inevitable for some small stimulus to trigger the fall of the Imperium. And once that happened, there was no turning back.

In the founding days of the Imperium, great men dreamed great dreams...and achieved them. In the last days of the Imperium, petty men dreamed petty dreams...and achieved them too.

REBELLION

SOURCEBOOK

The assassination of Emperor Strephon triggered a chain of events that echoed throughout the Imperium. The Rebellion, encompassing a number of distinct factions, each with their own aims and ideologies, became the dominant factor in every relationship within the empire No activity could ignore the Rebellion and its effects on Imperial society

This *Rebellion Sourcebook* contains the basic history and background of the Rebellion and its effects on **MegaTraveller** adventures. Referees and players can use it to enhance their role-playing activities within the Imperium and its Rebellion.

The Assassination

The Imperial palace is not strictly *on* Capital. It hangs over Capital like a gigantic steel ball. Access is strictly controlled, the antigravity palace is in reality a safe, secure fortress for the Imperial family.

But Strephon's assassin was invited in. The Archduke of Ilelish was one of the Imperium's highest ranking nobles He was elevated to Archduke by Strephon himself in 0000; he stands as one of five Archdukes within the Imperium. And he brought his ceremonial magnum revolver with him

The Throne Room: The Long Hall stretches 100 meters from the Visitors' Entrance to the throne room Its floor is a crimson slidewalk flanked by glowing crystal pillars, while atop the pillars are the banners of the 20 sector Dukes whose fiefs make up the Third Imperium. When the Emperor holds court, the pillared area is filled with nobles and guests eager to witness the most important social events of the year.

At the far end of the slidewalk is the Octagon—the throne room itself In the center of the octagonal room is a triangular marble dias which supports the Iridium Throne. Behind the throne stand the standards of the Imperium To the left is the crest of the Emperor's family, to the right is the crest of the Empress's family, in the center (and twice the size of the other two standards) is the Imperial sunburst.

Behind the throne is a grand vista of the skyline of the city below, which is actually a projected holographic image display. Image projectors can project information, data, or pictures for the court or the Emperor as desired.

The Iridium Throne: The shining Iridium Throne is often considered synonymous with the Emperor. The throne is a teardrop-shaped hemisphere mounted on a powered rotating base. All possible comforts are provided for the Emperor by this throne, as well as a fair degree of armor protection. Traditionally, the Emperor sits in his Iridium Throne and receives the new nobles of the Imperium, entertains guests and ambassadors, and views recorded messages from high ranking nobles requesting aid or assistance

THE IMPERIAL GUARD

The Imperial Guard consists of 11 regiments of highly trained, superbly equipped troops dedicated to the protection of the Emperor and the Imperial palace Accepted as one of the elite formations of the Imperial armed forces, the Imperial Guard is a respected unit with a long and honored tradition.

One purpose of the Imperial Guard is to provide a symbol of political unity for the Imperium One regiment is drawn from each of the seven Domains of the Imperium, with each serving a one month tour of duty as honor regiment in rotation.

The current honor regiment is the Ilelish Guard, drawn from the Domain of the Archduke of Ilelish.

DULINOR'S AUDIENCE

The Archduke Dulinor procured a scheduled audience with Strephon Such a meeting on a formal basis conveyed that a very important, formal matter was to be discussed. Speculation at the time was that Dulinor would request some form of special assistance for his Domain, probably economic development assistance Dulinor was well-known as a champion of the masses

Strephon's day was filled with audiences. By tradition, nobles and guests were received in order of their social or noble rank, with the lowest ranks first. Before lunch, the mundane details were taken care of: Businessmen received Imperial appointments Various noble titles were awarded to members of the court. Inherited titles were confirmed; having a title confirmed by the hand of the Emperor was a high point in the social whirl of Capital.

After lunch, more important matters were handled Higher ranking nobles provided formal reports of conditions, problems, even court trials throughout the Imperium. Most of the business was noted and deferred for later consideration and decision

As the next to the last order of business for the day, the Aslan Yerlyaruiwo ambassador presented his credentials to the Emperor. The Emperor, in an impromptu gesture, mentioned to the ambassador that there remained only one order of business left in the day, and invited him to join the Imperial family on the dias while it was handled. Then the Emperor and the ambassador would be able to retire to private chambers for a continued discussion of Imperial-Aslan affairs

Dulinor presented himself at the appointed time and strode the long crimson slidewalk to the throne room He stopped proudly before the Emperor, greeted him calmly and with friendship, and then stepped forward. The Emperor rose to greet him, stepping forward himself. At that point, Dulinor swept back his black cape, drew his magnum revolver, and began firing. His first shot hit the Emperor, killing him instantly. His second shot hit the Empress, killing her instantly. By this time, some members of the court were beginning to scream. The more prudent were dropping to the floor. The honor guard

stepped from its position near the walls of the throne room.

Dulinor kept firing. His shots were in a timed sequence The next was intended for the Grand Princess, but the Yerlyaruiwo ambassador took the bullet. The fourth shot killed Ciencia Iphegenia Dulinor stopped firing and looked at the chaos.

The gunfire continued. The Ilelish Guard, forewarned, was picking off the military guard Investigation would reveal that only the Ilelish Guard had live ammunition, an arms room sergeant had substituted dummy rounds for the rest

Dulinor let the gunfire stop He then stepped to Strephon's body, stripped off his crown and picked up his scepter, and walked to the Iridium Throne. Someone screamed and lunged from the crowd; a guard shot him dead. Dulinor sat on the throne and said, "I hereby proclaim myself Dulinor I, Emperor of the Eleven Thousand Worlds of the Third Imperium, by right of assassination All loyal citizens shall hear me and obey "

Dulinor then rose and stepped down from the dias. He was met by a cameraman who gave him the holocrystal from his video camera. He was then immediately flanked by Imperial Guards who whisked him from the room.

AFTER THE FACT

Video cameras routinely broadcast the events of the throne room throughout the palace The assassination was carried live on the palace network, but a small computer monitor on the circuits prevented it from being sent outside the palace. This pre-planned step by Dulinor kept those outside the palace in the dark for crucial minutes.

Inside the Imperial palace, the Ilelish Guard began its own pre-planned steps to take control. The plan was that the other guard units would be locked in their barracks while the Ilelish Guard seized control. A string of accidents frustrated that plan.

An officer in the Household Cavalry had an accident, bumped into a cart, and accidentally discharged his ceremonial submachinegun. Such an accident would normally be a disciplinary offense, but in this case, the cartridge in the gun failed to discharge· It was a dummy. The officer reported the offense, an unusual problem, to his superior. They investigated, confirmed that many of the cartridges were dummies, and took steps to remedy the situation. By then, it was 1500 hours.

When the Ilelish Guard triggered the computer to isolate the other guard units, they were already out and on alert Dulinor, in the company of his personal guard, faced at least three small pockets of guards before he reached the Imperial residence. It soon became clear that he would have to leave the palace.

FLIGHT

A contingency plan was implemented. Dulinor and two aides changed into Imperial Navy uniforms Another guard donned a black cloak (to better appear to be Dulinor). Some of the Ilelish Guard switched insignia to look like members of the Household Cavalry. While the main body of Ilelish Guards barricaded themselves in the Imperial residence on what they knew to be a suicide mission, the assassin slipped away.

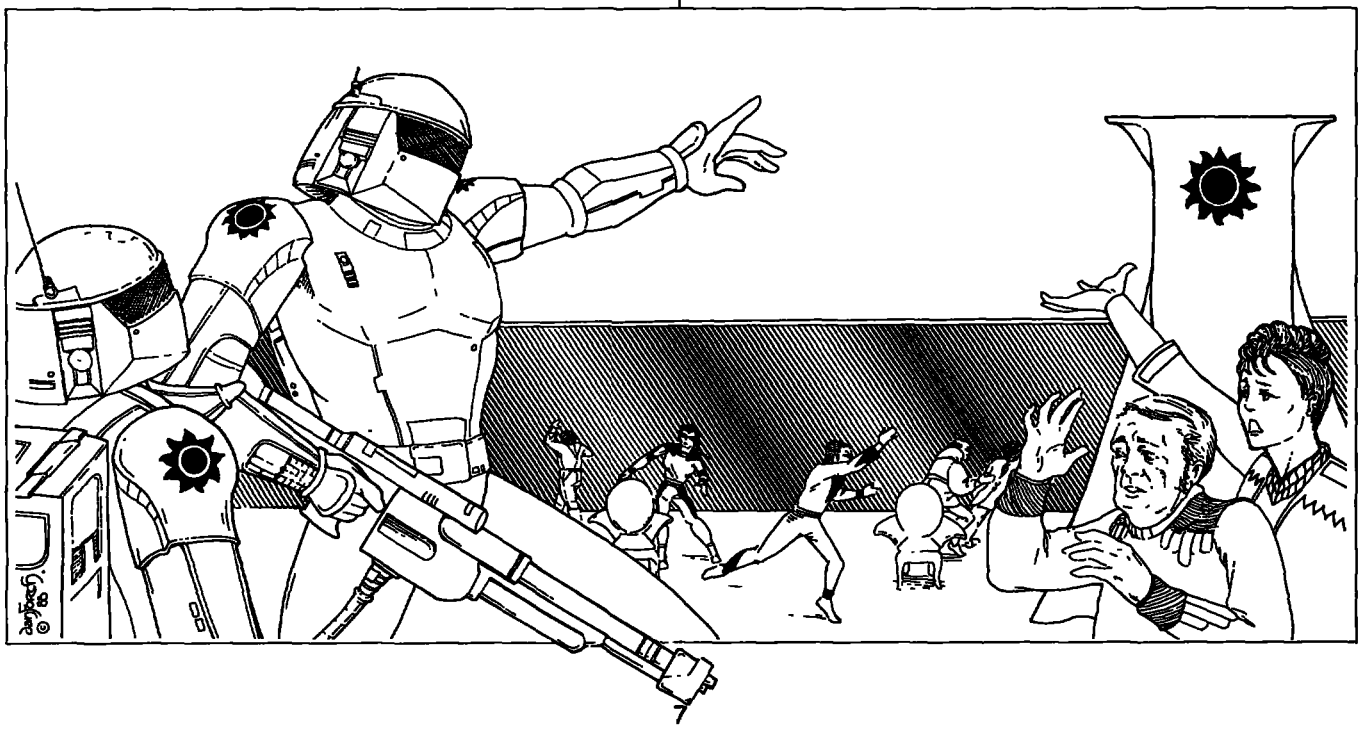
Dulinor and his escort made their way to the Aircraft Operations Center Taking charge by force of will and apparent rank, Dulinor hustled several officers, including himself and two aides, into an air/raft and dropped the 500 meters to the palace grounds. The air/raft entered a concealed shaft and continued to the Naval Central Command Complex beneath the palace.

One of Dulinor's aides reported the assassination to a guard commander in the complex and slipped away. Dulinor and the aides proceeded to the starport where they boarded a waiting cutter for orbit. Within two hours of the assassination, Dulinor was bound outsystem en route for Ilelish.

The Ilelish Guard fought on for two days. Parts of the palace were gutted by the efforts of the Imperial Marine Guard to dislodge the assassin and the Ilelish Guard. Even when the siege ended, it was not immediately clear whether the assassin had fled or had been killed in the fighting.

In the coming months, it would become very clear that the assassin was still alive.

On Capital the immediate search began for the Emperor's heir



Two Stories

The twin Princes, Varian and Lucan, are Emperor Strephon's nephews Their mother, Lydia, was Strephon's younger sister. The twins, born five minutes apart in 1094, have lived in the Imperial palace since their parents' death in 1108

The twins' status as Princes was always considered a pleasant convenience; neither expected to ever ascend the throne The Alkhalikoi line proceeded through the Grand Princess, bypassing the twins and their branch of the family Only in the event that Strephon, Iolanthe, and Iphegenia all died would the twins be in line for the throne.

Dulinor's plan to assassinate Strephon necessarily included steps to eliminate any other potential heirs to the throne within the Alkhalikoi line Dulinor himself would kill Strephon, the Empress Iolanthe, and the Grand Princess Ciencia Iphigenia in an audience at the throne room. Dulinor's naval aide would locate and kill Lucan and Varian wherever they were in the palace Dulinor's seneschal was prepared to find and kill the Empress and the Grand Princess if they did not attend the audience. The Ilelish Guard, deliberately stocked with soldiers loyal to Dulinor, would seize control of the palace. If the plan worked perfectly, the Imperial palace would be in Dulinor's hands by the end of the day; there would be no immediate heirs to the throne to contest Dulinor's claim; and a new era of enlightenment and prosperity would dawn on the Third Imperium.

THE PLAN TO ELIMINATE THE TWIN PRINCES

Some facts are known. Five people were in the twin Princes' apartments just before the assassination Varian, Lucan, Elia (Varian's female acquaintance), an armed bodyguard (a standard assignment), and Sublieutenant Trace Windhook (an Imperial Navy intelligence officer helping plan for an upcoming excursion). The apartments themselves consisted of a large central room with several adjoining private rooms A sunken center area, plush furniture, and numerous doorways made the whole complex ideal for lavish parties.

Dulinor's naval aide, Sublieutenant Volante Imprey, located the whereabouts of Lucan and Varian in the complex, and at the appointed time, he called on the two of them Security cameras recorded his actions as he entered at precisely 1517, which was the the exact time that Strephon was being assassinated.

The security cameras inside the twin Princes' apartments, like most security cameras in living areas for the Imperial family, do not feed directly to a central recording and monitoring station. Instead of feeding to a central recording and monitoring station, they have an image cassette that must be physically removed from the cameras to be scanned (Note that the cameras do feed alarm and exception signals to monitoring guard stations.) The cameras and their cassettes inside the twin Princes' apartments were destroyed in the ensuing violence.

The two Princes were known to be arguing loudly just prior to the assassination. A guard passing in the corridor heard the exchange when the door to the complex was opened momentarily The twins were known to periodically have loud, heated arguments.

What happened in those minutes after the naval aide entered the apartments has been a matter for widespread conjecture, with a wide variety of speculations being made Lucan has made a public statement Varian, Elia, the bodyguard, and Imprey are dead. Windhook, at this time, has not been apprehended

LUCAN'S STORY

Lucan's story was released as a prepared statement by the Imperial Office of Information on 133-1116. It has been widely disseminated throughout the Imperium

The day of terror began ordinarily enough. Lucan and Varian were preparing for their series of courtesy visits and audiences that generally characterize their usual day in the palace A

wide variety of guests and callers began to appear in mid-afternoon.

When Imprey burst into the twin Princes' apartments, he tripped on a loose rug. His pistol discharged as he fell, killing a guard in the room. Both Lucan and Varian dove for cover immediately; Elia froze for a moment and then collapsed with fright. Windhook began grappling with Lucan, and at first, Lucan thought it was a gallant naval officer trying to protect him When Windhook's hands wrapped around his throat, Lucan realized there were two assassins in the room. Lucan struggled and managed to knock Windhook out. During that time, Imprey recovered and fired a few more wild shots, then began stalking the two Princes. While Imprey searched the room's alcoves and recesses, Lucan hid quietly beneath the bed. As soon as he had a chance, Lucan dashed for the dead guard and snatched up the SMG Calling to Varian to "Run for it!" he waited until he heard a door slam (that slam later turned out to be Windhook leaving), then stood up and sprayed the assassin with 9mm slugs Then he, too, dashed out of the room.

By this time, the alarms could be heard sounding all over the palace. Strephon was dead, Dulinor was on the video screens claiming the throne. Marine guards came in and took charge of the emergency situation, hustling Lucan off to safety immediately.

The twin Princes' apartments were cleared by Marine guards later. There they found four bodies: the naval aide (who was killed by a 9mm slug to the head), the guard, Varian, and Elia (these three all dead from 7mm slugs). The assassin had gotten Varian before Lucan could save him. Windhook is still missing.

WINDHOOK'S STORY

Windhook's story was transcribed privately by a computer information agency at Inarli in Corridor Sector. It has been widely disseminated throughout the Imperium.

Windhook was assigned to coordinate routine protocol on an excursion the twin Princes were scheduled to undertake later in the year. His duties amounted to carefully filling out a questionnaire dealing with the Princes' preferences for environment, food, drink, entertainment, and comfort The process was expected to take about an hour.

Windhook arrived slightly before 1500. As he entered, he heard heated words being exchanged between Varian and Lucan; from what he could hear, Lucan was apparently distressed because Elia had decided to leave Lucan and become Varian's female acquaintance. Windhook waited uncomfortably by the main door until the exchange ended. Meanwhile, Sublieutenant Imprey arrived. Because Windhook and Imprey knew each other, they exchanged pleasantries while they waited When the naval aide burst into the twin Princes' apartments, he started firing immediately, forcing everyone—Lucan, Varian, Elia, and a guard in the room—to dive for cover. The guard responded with a hail of slugs, one of which killed Imprey. As the four stood over the dead body, wondering about why this had happened, the video screens flashed coverage of Dulinor's assassination of Strephon then in progress Lucan realized the potential of the situation immediately. He quietly picked up the assassin's pistol and calmly shot the SMG-armed guard first, and then Varian, then Elia, and last he took a shot at Windhook. Naturally enough, Windhook evaluated the situation and realized the danger quickly enough to flee before he was killed

Catching the coverage of Strephon's assassination as he ran down the halls, Windhook knew immediately that his life was effectively forfeit. He then made his way directly to the Administrative Offices, already in an uproar, and just stood around looking important. Eventually (after maybe 10 minutes), a naval commander grabbed Windhook's shoulder and told him to personally carry a bundle of orders to the Aircraft Operations Center sealing the palace off. Windhook took two marines with him and made his way down 20 floors. He reached the Aircraft Operations Center without incident Strangely, it seemed to be operating normally during the crisis. Some officers stood around acting numb, but no one was doing anything out of the ordinary.

Windhook decided to take advantage of the situation. He did not deliver the orders to seal off the palace to the Aircraft Operations Center. Instead, he joined a party of three naval officers, gave orders to his marine companions to go on a wild goose chase, and commandeered an air/raft. The four of them then flew down to the Naval Central Command Complex located underground, directly below the palace. From there, he made his way to the starport, made use of a computer terminal to write (forge) himself some orders, and boarded an Imperiallines-type TJ cruiser bound for the Imperial border, hoping to live long enough to reach it Within a few weeks, he had switched ships four times and used every trick that Naval Intelligence had ever taught him, hoping against hope that a young naval lieutenant could hold out against what must be the whole Imperium chasing him

Which story is true? Only two men alive know....

The Rebellion

The moment that the rebellion started can be determined quite specifically Video cameras recorded the event; precise timers noted exactly when the first shot was fired.

At 1517 hours on 132-1116, Dulinor, the Archduke of Ilelish, fired four shots from his personal sidearm, and in succession, assassinated the Emperor Strephon, the Empress Iolanthe, the Grand Princess Ciencia Iphegenia, and the Aslan Yerlyaruiwo ambassador The throne room was in immediate turmoil.

1116

The year the news of the assassination spread throughout the Imperium

Archduke Dulinor fled Capital immediately, retreating to his own territories in Ilelish where he had already prepared an uprising to support his claim for the throne. In the days immediately following the assassination, the Emperor's nephew Lucan took power, declared a state of emergency, and crowned himself Emperor. When the Moot opposed such swift action, he dissolved the assembly and took steps against those nobles who were outspoken in opposition to him.

Lucan also dispatched fleets in pursuit of Dulinor, and broadcast messages to all parts of the Imperium condemning Dulinor and calling for support of Imperium against all of its enemies.

Most of 1116 was taken up in the transmission of the news from Capital to all parts of the Imperium As the news was absorbed, the many constituent factions of the Imperium made choices for the next course of action

1117

The year the basic factions established themselves

Solomani fleets on the Imperial border crossed it as soon as official word of the assassination reached them. Their advances into Imperial territory were resisted, but the Solomani border was pushed forward some 20 parsecs. Terra was recaptured by the Solomani. Imperial forces were forced to consolidate in the Vegan Autonomous Region, surrounded by Solomani fleets.

Dulinor's fleets clashed with Lucan's fleets, establishing a battle line about midway between Capital and Dlan. Numerous clashes produced tremendous attrition in both sides' fleets, and by mid-year, they had settled into a firm stalemate.

A confidential message was circulated throughout the Imperial fleets by supporters of Margaret Critical of Lucan, it promised the support of the Moot for a faction that supported Margaret as the legitimate heir to the throne. Despite steps by Lucan's security forces, several crucial fleets sided with Margaret in a concerted withdrawal from the battle lines. Margaret's mutiny stripped six fleets from Lucan's control and then allowed her to establish a secure stronghold in Delphi sector

In order to reinforce the fight against Dulinor, Lucan made a deliberate decision to strip (on a strictly temporary basis) the frontiers of fleets. Corridor, Lishun, and Old Expanses all received their orders early in the year. Old Expanses was, by this time, under attack from the Solomani (although Lucan was not yet aware of the fact); when the fleet was withdrawn from the sector, the nobles of Old Expanses saw no alternative but to surrender. By late in the year, the Solomani had completely taken over more than 16 subsectors of border territory. Lishun Fleet withdrew and transferred to the battlefront in Zarushagar and Dagudashaag sector. For a few months, Lishun remained stable, but it was then rocked with a succession of Vargr invasions; as the Vargr saw little or no resistance, they became bolder and bolder, pushing their incursions nearly to the edge of Core sector itself. Corridor Fleet left that sector about mid-year. Always subject to Vargr raids, after the withdrawal Corridor felt the sting of Vargr plunderers almost immediately. Along with the raids came the cutting of both the trade and communications routes to the Spinward Marches and the frontier.

Dulinor mounted a strong offensive intended to cut support for Lucan while at the same time building support for himself Several fast fleets were dispatched into Lucan's territory to function as commerce raiders and strike cruisers. They spent their time disrupting trade by raiding merchant shipping and by making strikes against High Population worlds supporting Lucan They served their purpose by diverting many of Lucan's sorely needed fleets from the front line in an extended chase of the raiders.

In mid-year, announcements were made that Strephon was alive at the Imperial vacation palace in Gushemege. Loyal citizens were called upon to support Strephon in organizing forces to destroy Dulinor and unseat Lucan. Both Dulinor and Lucan took extensive steps to suppress news of Strephon's return.

Fleets in the Domain of Deneb were transferred to reinforce the Domain's coreward borders in order to control Vargr corsairs. At about this time, Aslan ihatei fleets on the borders of the Spinward Marches found that territory unable to resist

intrusions, and Aslan ihatei began settling on hospitable border worlds Fleets under Norris command attempted to halt these invasions, but the fleets were spread thin by earlier deployments.

1118

The year each faction struggled to strengthen its own position while weakening all the others

Vland naturally felt threatened by the advances of Vargr in neighboring Lishun and Corridor sectors When Lucan demanded a portion of Vland's fleets to reinforce the assault on Dulinor, Vland solidly refused and declared its independence. Vland recreated its traditional government—the Vilani Empire

Antares, under Brzk, found itself fighting a losing battle against Lucan's forces and negotiated an alliance with the Julian Protectorate just beyond the Imperial border. Within months, this relationship was transformed into an absorption into the Protectorate Lucan's forces were compelled to back off.

Lucan, while searching for additional fleets to reinforce his battle lines against Dulinor, ordered Daibei fleet to transfer to Zarushagar sector. The sector nobles refused this order and announced that they too would take an independent and neutral path

1119

The year the Rebellion settled down to a dedicated battle to the death between Lucan and Dulinor.

Other factions contributed their forces to resolving squabbles between them, picking away at Lucan or Dulinor or both, or just trying to survive the chaos that was enveloping the empire.

THE LONG-TERM REBELLION

Each faction of the Rebellion quickly established a base of power. At and within a reasonable radius of that established base of power, the faction could expect to hold a fairly solid base of power That reasonable radius, computed based primarily on travel times, works out to about 20 parsecs for each faction

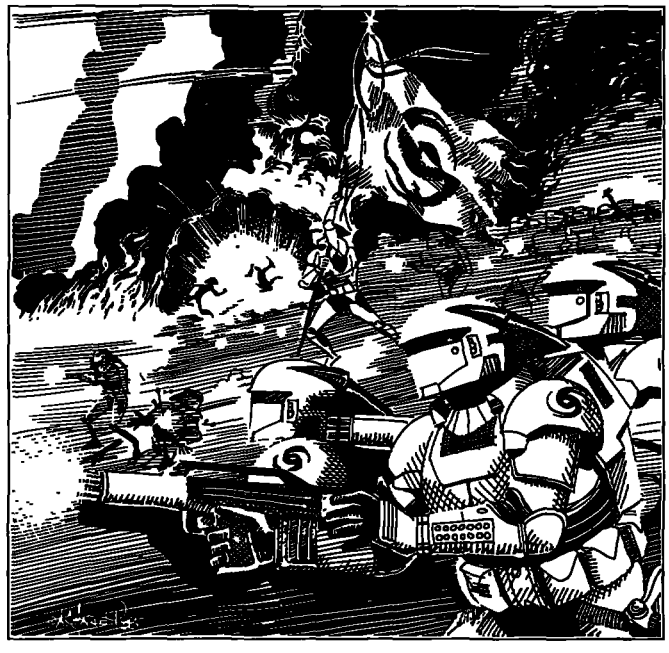
Beyond 20 parsecs from a faction's base of power, controlling and directing worlds becomes quite a difficult proposition for the faction. Fleets need orders; armies need supplies and support; and, in addition, attacks need coordination. And the farther the battlefields are moved from the base of power of the faction, the more difficult they are to direct and control. Losing battles is expensive, but on the other hand, so is winning them Even committing fleets and forces uses up resources that might be needed by the faction more desperately later. The least expensive course of action is to cautiously prepare, building strength while waiting for the other side to make a mistake

Beyond the roughly 20 parsec radius of power, the territory of the Imperium became a no man's land, left alone, completely to its own devices. Commerce raiders swept through the subsectors looking for merchants that they could commandeer. And raiders struck out at small, sparsely populated worlds in campaigns meant to force the allegiance of these worlds to swing to one faction or another.

Stuck among the systems of the no man's land were the prizes of the Rebellion: Those were the highly valued High Population worlds. Together the High Population worlds represented the key to the Rebellion Control of the High Population worlds of the Imperium represents control of more than 90 percent of the empire's population. The faction that controls the High Population worlds controls the citizens that make up the Imperium. Controlling worlds alone is useless unless the technological innovators, the consumers, the markets, and the labor forces of the High Population worlds are also controlled

In 1119, the basic boundaries of the factions were drawn. Factions then settled in to the protracted campaign to control the hearts and the minds of the people of the Imperium. The final outcome of the Rebellion depended on which factions managed to gain control the High Population worlds of the Imperium.

Campaigns against the High Population worlds changed the nature of rebellion warfare. Star fleets can continue to fight for space lanes forever, but to gain control of a High Population world, it is necessary for a faction to find a way to control the hearts and minds of the people who inhabit that world On some worlds, the threat of space bombardment is frightening enough to produce sincere pledges of loyalty from inhabitants and give the faction control...pledges which last until the next space fleet arrives On some worlds, loyalty can be bought by the highest bidder. And on some worlds, loyalty can be won by a superior philosophy. But no matter what method is used, on all worlds loyalty must be won in some way, whether by space fleets, money, or by rhetoric These campaigns for the individual worlds of the Imperium are the focus of the Rebellion. The ultimate winner of the Rebellion will be the faction that can successfully wage campaigns for the hearts and minds of the people of the Imperium. (Indeed, if one faction can ever possibly even hope to be successful in capturing every heart and every mind in the empire.)



One Clear Choice

The Imperium has, over the centuries, built its power by being the best possible choice for anyone and everyone within its jurisdiction Imperial citizens receive benefits that are impossible to attain anywhere else Imperial corporations pursue profitable enterprises within the framework of a peaceful empire dedicated to encouraging trade and commerce. Imperial nobles wield power over the largest human government ever.

Political scientists acknowledge that there can hardly be unanimous agreement about government among 15 trillion citizens across hundreds of parsecs. Too many diverse interests and too many individuals make perfect agreement impossible. But the Imperium has established itself as the dominant government of human space by providing a reasonable environment for active trade, peaceful settlement, and technological progress. Clearly the majority have elected to support the Imperial government, whether actively or passively, because there is no clear choice of an alternative While many governments could be worse, no one can agree on one that would be better.

THE IMPERIAL CHOICE

The Imperial choice is acknowledged as preferable throughout the spectrum of Imperial society.

Nobles: The pinnacle of Imperial power is the Emperor. All nobles within the Imperium ultimately owe their allegiance and their loyalty to that one person. The nobles support the Emperor because he is the source of their fortunes, their security, their power, their glory, their very livelihoods. Many nobles inherited their titles, others received them as direct grants from the Emperor. Noble titles are awarded for merit, as a reward for favors or support, as endowments, or just by Imperial whim They are rewards for actions and behaviors that support the Imperium

A common practice is to give vocal dissidents noble rank and to co-opt them into working within the system. The Imperium opens its arms and its upper ranks to include a broad spectrum of philosophies and ideologies within its borders. As a result, every noble has one clear choice when he or she is called upon to choose, and that choice is the status quo.

Commerce: Businesses operating within the Imperium operate within a system that encourages capitalism, competition, return on investment, and profits. Government interference in business is limited and intended to create more business rather than restrict it. Every business has one clear choice, and that choice is the status quo.

Citizens: The influence of the Imperium on the lives of its citizens is pervasive, but not obtrusive. The Imperium puts no great burden on the average citizen: Taxes are built into the price structure of goods and services; Imperial laws and courts are just and fair; Imperial services are reasonably efficient. Citizens rarely even consider alternatives to the Imperial system.

Everyone gains when the existing power structure is supported: the noble, the people, the government, business interests, everyone.

The structure of the Imperium is designed to provide clear choices. When called upon to choose, the nobles support the Emperor When the Emperor dies, the successor is determined by heredity. Clear choices give clear answers.

ALTERNATIVES TO A CLEAR CHOICE

But what happens if there is no clear choice? Under the thin veneer of clear choices, the component worlds, nobles, businesses, and citizens of the Imperium harbor a maze of conflicting priorities and allegiances Divergent ideologies, loyalties, racial backgrounds, technological prejudices, and millions of preferences all lie beneath this surface layer of one clear choice Within the framework of the one clear choice of the Imperium, all of those preferences and conflicts are slowly worked out by a process of compromise and negotiation. But when the one clear choice is eliminated, each individual follows his or her or its own conscience

The result is anarchy

If Dulinor had killed only Strephon, the one clear choice would be the Grand Princess Ciencia Iphegenia. A simple succession ceremony would have established the new Empress. A vendetta against Dulinor would have begun, with the renegade Archduke ultimately hunted down and executed. The Imperium itself would have continued as before

If Dulinor's plan had succeeded, the one clear choice would have been Dulinor A more elaborate succession ceremony would have elevated him to the throne governing 8976 star systems The reins of power would have changed, but the Imperium itself would have continued as before

Instead, circumstances intervened. The plan to eliminate the two Imperial nephews—Varian and Lucan—failed. Unforeseen resistance in the Imperial Palace forced Dulinor to flee Capital before his succession was fully implemented The circumstances of Varian's death pointed to Lucan rather than Dulinor. Suddenly, there was no one clear choice to hold the Imperium together

THE NOBLES' CHOICES

In the face of no clear choice, every noble in the realm was thrown upon his own conscience to decide what was best for the Imperium, for himself, and for his own causes. Unless and until one clear choice emerged, every noble would continue to make those choices that reflected a greater and greater divergence of preference and loyalty.

Solomani: Solomani nobles, originally created to garner their participation within the framework of Imperial government, found their loyalty to the Solomani cause reemerging as their one clear choice. Nobles from nonhuman races found, as the Imperium that protected their minority status collapsed, that their one clear choice was a path of independence or neutrality Nobles in the sectors dominated by Dulinor were confronted with a choice of resisting Dulinor's power structure and surrendering their own power, or of acquiescing and supporting the Archduke. Although decisions were made both ways, the majority found one clear choice was bending with the wind.

Lucan: Lucan, rumored to have killed his twin brother in order to himself ascend the throne, seized power quickly enough to assure the loyalty and the support of the Imperial Guard and much of the armed forces on Capital. At the seat of power of the Imperium, nobles found their own one clear choice was to support the man who held the reins of power.

As Lucan gave orders to seek out and destroy Dulinor, the might of the Imperium was shifted into a campaign to crush the rebellion. Because of Dulinor's resources and advance planning, the crushing blows were thwarted or parried. Lucan was forced to divert Imperial fleets from the frontiers in order to continue the battle. When he transferred the Corridor Fleet, it stripped that sector of its defenses against the Vargr beyond the border. When he transferred the Lishun Fleet, he effectively reduced the Imperial defense against the Vargr by half.

Dulinor: Dulinor made his own choice long ago. Driven by a strong sense of duty and a commitment to the Imperium, he made it his own goal to improve the clear choice of the Imperium for every citizen. Over time, the conservatism of the nobles and the slow pace of Imperial response forced him to conclude that the Imperium could be better under his own rule. In a rare move within the structure of the Imperium, Dulinor chose against the Imperium.

Margaret: The rise of Lucan produced profound doubts in the minds of many Imperial nobles about the future of the Imperium. They cast about for a clear choice for a viable Emperor (or Empress) and settled on Margaret as their candidate. Margaret accepted the mandate as her own expression of a clear choice.

Vland: Vland sector, home of the ancient capital of the First Imperium, faced the possibility that its own fleet would be transferred, making it vulnerable to Vargr invasions. The sector found its own clear choice and seceded from Imperial authority to create (or recreate) the glory of the First Imperium.

Antares: The Archduke of Antares originally believed that he was the Moot's one clear choice to succeed the slain Emperor. Subsequent events convinced him that the Moot would never select a nonhuman as Emperor. At the same time, Lucan stripped Lishun sector of its fleet, leaving Antares' border vulnerable to outside threats. Archduke Brzk found his one clear choice was to declare independence for his sector, joining it with the more stable Julian Protectorate just across the border. The nobles of the sector, familiar with Brzk as a superior, found one clear choice was to follow his lead

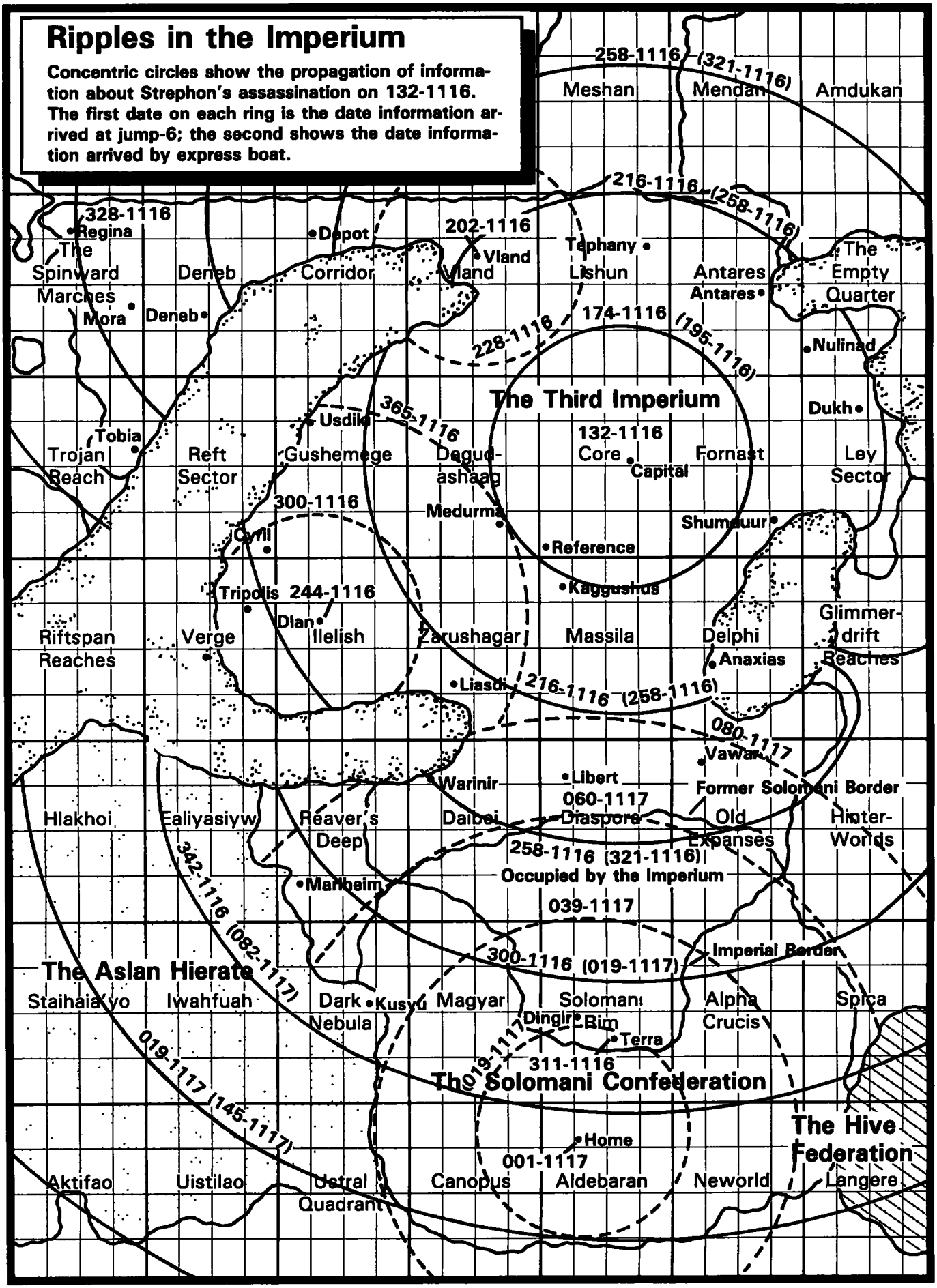
Daibei: Daibei sector found itself caught between the advances of the Solomani, the threat of Dulinor, and the possibility that Lucan would withdraw its fleet. In pursuit of security for the sector, the majority of Daibei's nobles elected armed neutrality. Their one clear choice, like so many others, found them rejecting the Imperium.

Norris: And on the farthest borders of the Imperium, the Spinward Marches sought its own one clear choice Its clear leader, Norris, the newly appointed Archduke of Deneb, plainly declared his own loyalty to the Imperium while avoiding a declaration of which leader of the Imperium owned that loyalty. Yet even in the face of an unswerving loyalty to the Imperium, the interests of the Archduke, his followers, and his Domain began to diverge from the interests of the Imperium from the first day of the Rebellion.

OTHERS' CHOICES

Businesses, political leaders, and ordinary citizens are influenced by the same factors that influence the nobles of the Imperium. Business, in pursuit of profit and stability, clearly chooses the stability of the Imperium. The collapse of the Imperium, however, forces business to follow the lead of the nobles. Whatever political stability follows from the nobles' choices is at least better than active opposition to the new status quo. Similar considerations apply to political leaders and to ordinary citizens.

The rebellion is a contest between the factions of the Imperium as they struggle to become the one clear choice everyone in the empire can agree on Time, violence, argument, persuasion, and exhaustion will make all citizens accept the final result What that final result will be—a unified empire under Lucan, Dulinor or Margaret, or a fragmented empire with any number of pieces—remains for the future to reveal


Ripples in the Imperium
Concentric circles show the propagation of information about Strephon's assassination on 132-1116. The first date on each ring is the date information arrived at jump-6; the second shows the date information arrived by express boat.
258-1116 (321-1116)
Meshan
Mendan
Amdukan
216-1116 (258-1116)
328-1116
Regina
The Spinward Marches
Mora
Deneb
Deneb
Depot
Corridor
202-1116
Vland
Vland
Tephany
Lishun
Antares
Antares
The Empty Quarter
174-1116
(195-1116)
228-1116
Nulinad
The Third Imperium
Dukh
365-1116
Usdiki
Tobia
Trojan Reach
Reft Sector
Gushemege
Daguc-ashaag
132-1116
Core
Capital
Fornast
Ley Sector
300-1116
Medurma
Shumauur
Cyril
Reference
Kaggushus
Tripolis
244-1116
Dlan
Ilelish
Zarushagar
Massila
Delphi
Anaxias
Glimmer-drift Reaches
Riftspan Reaches
Verge
Liasdi
216-1116 (258-1116)
080-1117
Vawar
Warinir
Libert
060-1117
Diaspore
Former Solomani Border
Hlakhoi
Ealiyasiyw
Reaver's Deep
Daibei
Old Expanses
Hinter-Worlds
258-1116 (321-1116)
Occupied by the Imperium
342-1116 (082-1117)
Marheim
039-1117
Imperial Border
300-1116 (019-1117)
The Aslan Hierate
Staihaia'yo
Iwahfuah
Dark Nebula
Kusyu
Magyar
Solomani
Alpha Crucis
Spica
Dingir
Rim
Terra
019-1117
311-1116
The Solomani Confederation
019-1117 (145-1117)
The Hive Federation
Home
001-1117
Aktifao
Uistilao
Ustral Quadrant
Canopus
Aldebaran
Neworld
Langere

Ripples Through the Imperium

The Rebellion, once triggered, spreads throughout the Imperium like the ripples of many stones thrown into a pond. Emanating outward from Dulinor's four pistol shots on 132-1116, the ripples washed over each of the worlds of the Imperium in succession. And from each of those worlds, the reactions to the assassination then swept outward again, until the entire structure of the empire was awash with the ripples and currents of the Rebellion.

Unlike ripples on a pond, however, the news of the assassination and of the rebellion travelled out at different speeds to different places. Official word travelled at one speed; an advance warning was reached somewhat faster; Dulinor's forces had a notion, before the assassination even occurred, that an Imperium-shattering move was afoot. Since knowledge is power, foreknowledge is greater power.

INTERSTELLAR COMMUNICATIONS

Word of the assassination was spread by three primary means: the public express boat routes, the Imperial Navy's Couriers, and the Imperiallines covert Signal TJ transport network In addition, news travelled on commercial liners and transports in the course of ordinary trade

Express Boats: The entire Imperium is crisscrossed by a network of express boats which carry electronic mail and information for businesses, governments, individuals, and news services. Operated by the Imperial Interstellar Scout Service (and in effect an interstellar postal service), the express Boats help bind the Imperium together by speeding the flow of information at the fastest practical speeds.

Express Boats (xboats) travel standard, established routes within the Imperium They carry electronic messages using special transmission systems. Stations for the deposit and delivery of xboat messages are maintained on most worlds along the xboat routes.

The standard xboat routes are travelled at jump-4—four parsecs per week A message from Capital will reach Vland in 19 weeks; it will reach the Spinward Marches in 51 weeks.

Speeds greater than jump-4 are available, but they are increasingly more expensive at jump-5 and jump-6 (speeds greater than jump-6 are theoretically impossible). The cost of a jump-6 xboat network is high enough to make a universal jump-6 xboat network inefficient. But there is another reason. Because knowledge is power, the Imperial government realized long ago that establishing a jump-5 or jump-6 network would mean giving up the ability to receive information early. Knowing vital facts before they become general knowledge is essential to a well-run bureaucracy.

So the Imperial bureaucracy routinely dispatches information along secret, government-only courier routes to selected high-level nobles within the Imperium. Such dispatches provide bureaucrats and nobles with advance word of important developments before the news becomes general knowledge

Two distinct, partially duplicated, jump-6 networks are maintained by the Imperium the Naval Couriers, and the Imperiallines Signal TJ System.

Naval Couriers: The Imperial Navy maintains a force of jump-6 ships which represent the best technology the Imperium can buy. Theoretically part of the Imperial Navy's force structure, Fleet Couriers are carried on the rolls as tactical couriers which relay information between squadrons of the fleet. An overstrength of the Fleet Couriers makes some of them always available to carry government dispatches to the worlds of the Imperium.

Naval Couriers carry dispatches for the navy and for the Imperial bureaucracy. Couriers can carry a few tons of cargo, and maybe a passenger or two, but their primary function, like xboats, is to carry information.

The Imperial Navy, in its own effort to speed up the flow of information being carried by its couriers, created a clandestine refueling station deep within the Great Rift during the 800s. Located six parsecs from Ashishinipar (in Corridor sector), the station and its shortcut allows a jump-6 Fleet Courier to carry dispatches from Capital to Regina in two weeks less than carrying them along the normal route through Vland and around the edge of the Rift.

Imperiallines Signal TJ System: Imperiallines is a tramp freighter operator with trade stations located at many type C starports throughout the Imperium. The company maintains a low profile as the operator of a fleet of jump-2 frontier transports carrying cargo from outlying systems to the major trade route worlds.

Type TJ Frontier Transports operate at the direction of the Emperor, or, more properly, they operate at the direction of his agents. TJs can carry hundreds of tons of cargo, up to a dozen passengers, and gigabytes of electronic messages They can simply carry messages, but the frontier transports are also designed to carry equipment and agents in the service of the Imperium

Imperiallines is owned, through a morass of untraceable interlocking companies and holders, by the Office of Personal Transportation of the Imperial Household Although a profit-

making enterprise in its own right, Imperiallines is the Emperor's own secret courier network.

The company's fleet is ostensibly composed of hundreds of jump-2 type TI Frontier Transports. Each 2000-ton ship carries about 1100 tons of cargo. Actually, about half of the ships are a variant jump-6 type TJ. Externally identical to the type TI, the type TJs carry less than 300 tons of cargo and load more fuel. Mingled in with the plodding type TIs, the TJs are virtually impossible to monitor and track.

THE WORD SPREADS

When Strephon was assassinated on 132-1116, word of the deed went out immediately.

The Imperial Navy immediately sent out word by its fleet couriers to all the naval bases within six parsecs of Capital, from those bases, fleet couriers then proceeded to all naval bases within six parsecs of them; the chain continued until every Imperial naval base was notified of the death of the Emperor. As each naval base was informed, its intelligence section immediately notified the base commander, who in turn notified fleet and squadron commanders High ranking Imperial nobles were also provided with the information. But no general announcement was made. Instead, naval and noble leaders with the information used it to prepare an official announcement for the general public that would inevitably come on the official news services.

The Imperiallines TJ system reacted with the same speed that the navy did Primed and ready for any major emergency, the TJ system provided immediate notification to its own operators and to the many clandestine projects that it was supporting at the time of the assassination.

The news services filed stories and dispatched them immediately on the xboat network. As the story broke on each world, governments declared official periods of mourning and made vague pronouncements about the future.

A Typical Notification: When Strephon was assassinated on 132-1116, hundreds of ships left Capital with news of the Emperor's death. The news eventually reached Regina, 130 direct parsecs from Capital.

Imperiallines TJs radiated from Capital to the company offices throughout the empire. Individual ships were assigned a sequence of offices to notify. One ship was assigned to transport a notification to Regina and the Spinward Marches. Because its route was selected for the greatest possible speed, it arrived at Depot in Corridor on 251-1116, having bypassed Vland to take a slightly faster route. Proceeding directly through Corridor and Deneb sectors, it arrived at Regina on 328-1116. The journey took 196 days and averaged jump-4.64.

Naval Couriers began notifying naval bases immediately Many possible chains of notification existed; the swiftest notification travelled across the Great Rift, passed through Deneb on 286-116, and arrived at Regina on 342-1116. The trip took 210 days and averaged jump-4 33

Express boats relayed the message from system to system along the established routes The first xboat news of the assassination arrived at Vland on 265-1116, at Depot in Corridor on 349-1116, at Deneb on 54-1117 and at Regina on 124-1117. The news arrived 357 days after the assassination (an average of jump-2.55). It was announced on that date.

THE USURPER'S PLANS

Dulinor cheated. He already knew about the assassination. When he left for Capital and his fateful audience with the Emperor, he already knew his plans. Files of announcements and releases were already stored and ready for the trigger signal. When he fled Capital with his squadron, he had absolute knowledge of what had happened. For Dulinor, knowledge was an advantage to be used.

Dulinor fled Capital aboard his squadron flagship, the Sargon, a jump-6 cruiser assigned to the Ilelish sector fleet. He reached the first worlds of the Domain of Ilelish after seven weeks of continuous jumping, as he entered his domain, he rendezvoused with a prepositioned squadron at Urak (on 182-1116). As his squadron jumped through the Domain of Ilelish toward Dlan, individual ships split off to visit major worlds and release Dulinor's proclamation announcing the demise of the Emperor and his own assumption of the throne When Dulinor arrived at his estates on Dlan (on 244-1116), he formally announced himself as Emperor; the announcement was made far before any possible Imperial announcements could be.

Dulinor's first announcements gained him considerable advantage. Citizens tended to believe what they heard from the news services In the absence of any contradictory reports, the citizenry was naturally led to believe the accuracy of Dulinor's announcements. In the early days of the Rebellion, most citizens of the Domain of Ilelish believed Dulinor to be the reigning Emperor Express boat news carrying Lucan's version of the assassination began appearing in the Domain of Ilelish about 210-1116 It would have reached Dlan, at the center of the domain, about 330-1116, but Dulinor's forces intercepted the news and suppressed it In some parts of the domain, the Express boat network never carried any alternative coverage of the assassination Lucan was portrayed as the usurper, and Lucan's forces were shown as rebels against Dulinor's rightful reign.

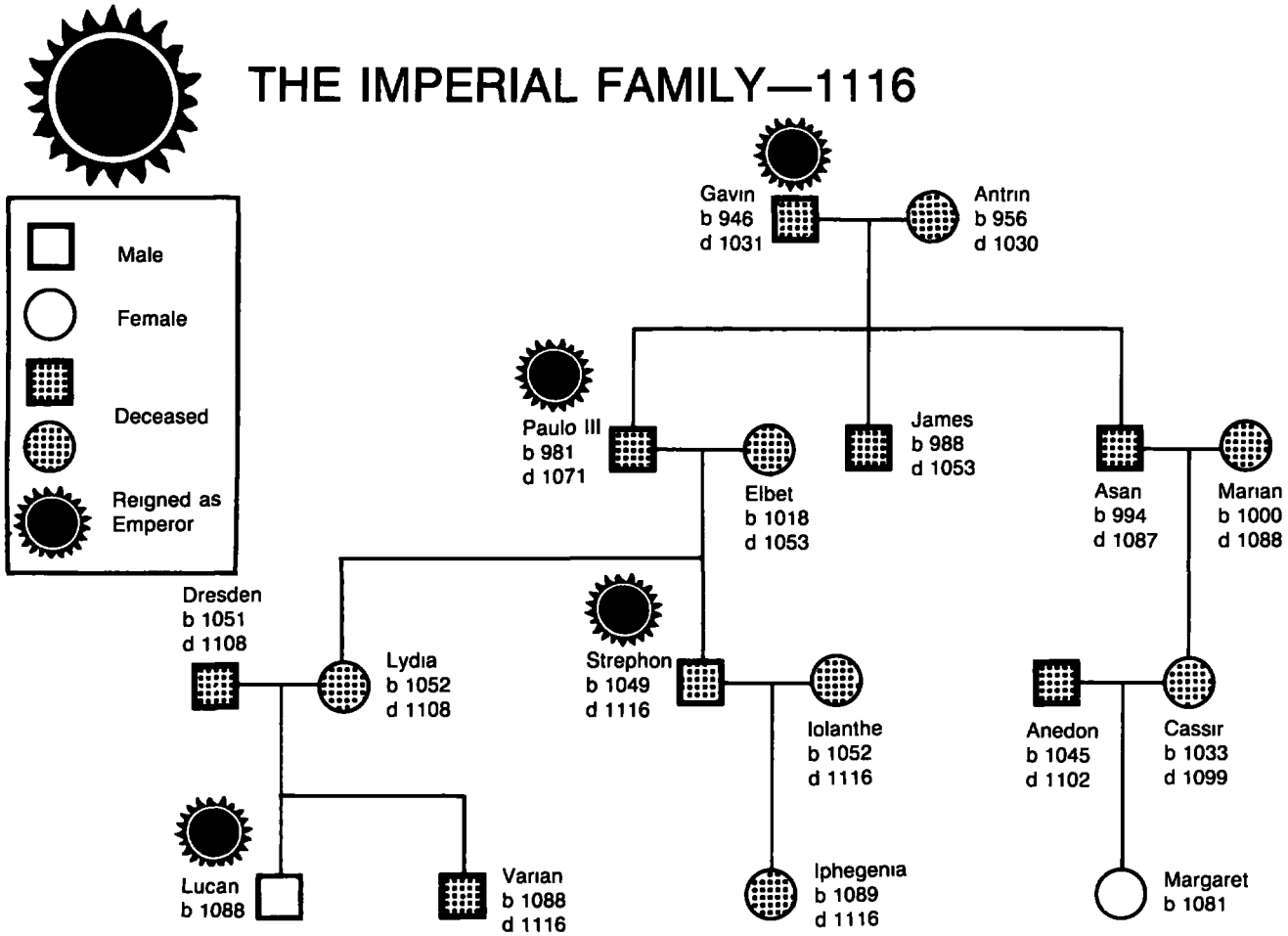
Control of information was a critical part of Dulinor's plans. By predetermining what information was available, he was able to shape public opinion and public support of his own reign. With the advantage of 10 weeks (more in some parts of his domain), he entrenched himself before any contradictory statements were ever heard

Dulinor used his time advantage to consolidate his position. Dependable news of Dulinor's actions made its way back to Lucan, but it took time in doing so A good, solid picture of Dulinor's plans and actions was clearly available to Lucan and his naval staff by about 045-1117.

THE SOLOMANI FRONT

The instant Strephon died, several independent Solomani agents on Capital each made his own way to the central starport and began the urgent journey to the Solomani Confederation. The news that the Emperor was dead was an important fact that could influence the course of Solomani policy for years to come.

The first secret reports reached Terra on 311-1116, and the Solomani capital of Home on 001-1117 Solomani agents, as well as Imperial leaders, received the news at about the same



THE IMPERIAL FAMILY

The throne of the Imperium normally passes to the senior heir of the Emperor when he dies. In the case of Strephon, however, his senior heir was killed at the same time he was Naturally enough, some discussion of the merits of other heirs' claims has followed in the wake of his death.

Ciencia Iphegenia: Only child and daughter of Emperor Strephon and Empress Iolanthe.

The Grand Princess was the perfect candidate for the throne. Her very title of Grand Princess, traditionally bestowed on the acknowledged heir of the Emperor when he comes of age, declared to the Imperium and to the universe that she was accepted in Imperial society as the successor to Strephon when he died.

Because Strephon died before Ciencia Iphegenia, the mantle of the Imperium theoretically passed to her despite the fact that there was no time for an acknowledgement or a coronation. If Ciencia had herself had heirs, they would then have a priority claim on the throne Unfortunately, the Grand Princess was unmarried and died childless.

Varian: Elder of twin nephews of the Emperor Strephon. Son of Duke Dresden and Princess Lydia.

After the Grand Princess, the next living candidate for the throne was Prince Varian. As the Emperor's nephew (son of the Emperor's younger sister Lydia), Varian was always aware of the thin thread that could lead him to the throne. He also knew that there was little, if any, chance of him really assuming the throne As with the Grand Princess, if Varian had had heirs, they would have had a priority claim to the throne, but he died unmarried and childless

Lucan: Younger of twin nephews of the Emperor Strephon. Son of Duke Dresden and Princess Lydia.

Prince Lucan stood third in line after Varian. Birth five minutes later forever put him behind his brother

Margaret: First cousin, once removed of the Emperor Strephon Margaret shares the same great-grandfather (the Emperor Gavin) with Emperor Strephon.

The Duchess Margaret (not close enough to the throne to be a princess) lives far from the social whirl of the Imperial court. Regardless of her relatively high noble rank, she would be competing with archdukes and admirals for a dominant social position She has chosen to be a big fish in a smaller pond, holding court in the social circles of Delphi and Massilia sectors. Her marriage to Count Blaine Trulla Tukera (Tukera Lines family) has assured her of wealth and him of influence. They make a great couple at the pinnacle of society across the two sectors.

time, but by tacit agreement, neither made a public announcement.

News of Strephon's assassination was received with great interest by all three powers within the Solomani government. The Solomani Confederation Navy and Army saw great potential in a military campaign against the Imperium, especially against an empire already divided by an internal struggle over succession the the throne The High Council of the Solomani Party agreed that weakness in the Imperium should be exploited Solomani Security, always rabid in pursuit of its mission of "maintenance and protection of the Solomani Cause against all enemies," already had plans in place to invade the Imperium and recover the territory of the old Solomani Autonomous Region

Each of the three powers undertook independent planning in response to Strephon's assassination As each revealed its plans to the other two, they all realized that they were in accord Chairman Trinoch, head of the Solomani Party, emerged as the charismatic shaper of the plan and leader of the offensive.

The xboat channels arrived at Terra on 037-1117 and at home on 117-1117 Solomani fleets had received orders "to be opened only in the event of the Emperor's death." The news of Strephon's assassination was the signal for a broad front advance into Imperial territory along the Solomani border. Within weeks, Solomani fleets crossed the border, pushing Imperial border fleets back an average of two subsectors

Daibei: Many of the retreating Imperial fleets accumulated in Daibei sector By the end of 1117, the Solomani could advance no farther. The temporary border was only slightly short of the Solomani goal—the old Solomani border

The Solomani Rim: The first Solomani move was retaking Terra and driving the Imperial fleets out. Imperial forces rallied in the Vegan Autonomous Region and established defenses for the connecting links between Vega and the Imperial capital.

The Old Expanses: Late in 1117, Solomani fleets had moved into portions of the Old Expanses Sector, steadily pushing the border coreward. By the end of the year, approximately a third of the sector was under Solomani control.

THE EARLY DAYS OF THE REBELLION

Throughout much of 1117, the course of the Rebellion was shaped by the two great confrontations ongoing within the Imperium Dulinor's insurgence within the Domain of Ilelish, and the Solomani attacks on Imperial territory within the Domain of Sol. Both were characterized by massive fleet movements, disruption of interstellar trade, and widespread destruction of installations and supporting industry.

In the initial days of this fighting, the local fleets and squadrons of the Imperial Navy bore the brunt of the losses and the responsibility for the fighting Both the Solomani and Dulinor's forces knew their mission and their strategy, while Imperial forces necessarily had to fight in the dark; the new Emperor had not yet even been notified of the fighting, let alone given any specific orders

By about 090-1117, Lucan was well aware of Dulinor's rebellion and of his control of the Domain of Ilelish Imperial fleets were already mobilized and fighting against Dulinor's forces. Dulinor, with the advantage of prior planning and quick reaction times, was winning in his campaign to control Ilelish. He was also succeeding in some parts of neighboring sectors. And even as those forces fought, the ripples had not yet reached some of the borders of the Imperium.

Lucan's response to Dulinor was the first crucial misstep of his reign. Lucan panicked.

He ordered two of the strongest fleets in the empire (Corridor Fleet and Old Expanses Fleet) transferred to Core sector to reinforce the effort against Dulinor. When the orders were issued on 095-1117, he still had no idea of the problems it would cause

The transfer order reached the Old Expanses on 224-1117. The Sector Admiral, never questioning his orders, began immediate preparations for the relocation, with the first squadrons leaving within a week Over the course of the next 60 days, every possible ship was dispatched. The defense of the Old Expanses was left in the hands of the reserve squadrons of the Navy. In the face of continued Solomani fleet actions, a rise in Solomani political activity in the sector, and being left defenseless by the Emperor, the sector Duke negotiated a voluntary incorporation into the Solomani Confederation.

The transfer order reached Corridor on 221-1117 Corridor Fleet, vastly overstrength for the territory it patrolled, was staffed by personnel from throughout the Imperium. Its mission, one it had pursued for centuries, was to protect the passage through Corridor of Imperial commerce and communications Although abandoning that mission was difficult, the Emperor's transfer order made it clear that a higher mission was being assigned· to help save the Imperium from the rebel Dulinor. Corridor Fleet assembled at Depot on 242-1117 and began a long convoy to Core sector. The defense of the sector was left to a scattering of reserve squadrons Peace, even without the massive Corridor Fleet patrols, continued for a time Late in the year, several Vargr raiding expeditions made tentative forays into the sector When they met only minimal opposition, they grew bolder and others followed. Express boat traffic came to a halt. Merchant ships cancelled their scheduled routes through the sector By the end of 1117, Corridor sector was in chaos

The Nature of Rebellion

Rebellion is a struggle against established government; its purpose is to wrest control of the government from those in power and to shift that power to new holders The means of rebellion are varied: It is possible to take control of the government in a bloodless coup; control can be seized by military action; or the people themselves can rise up and throw out the current government

Classical rebellion is a form of warfare. Armies and navies fight for control of specific places or populations. Once they take control, they can exert the power of a government even as they struggle to extend their reach to more and more territory. Ultimately, the factions of the rebellion reach a point where further struggle is pointless, one may be a clear winner, or several may agree to an uneasy peace.

Definitions: The purpose of the following definitions is to help provide a better understanding of the technique and nature of the Rebellion.

Rebellion: An uprising intended to change or overthrow an existing government.

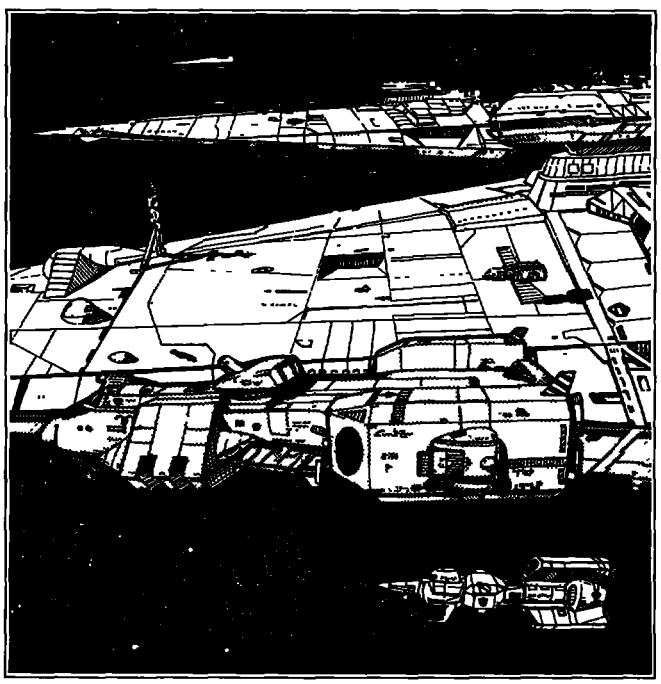
Faction: A cohesive group characterized by allegiance to a specific cause. The existing government is a faction; more than one rebel faction may also exist

Loyal: Those firm in their allegiance to the existing government.

Rebel: Those who owe allegiance to a faction other than the existing government.

THE REBELLION IN THE IMPERIUM

Regardless of the form or structure of government, the ultimate power of the Imperial government lies with the people. If the people accept their government, there is little that can be done to tear it down On the other hand, if the people object to their government, all of the alternatives become possible



The assassination of Strephon opened the door to rebellion by making possible a variety of alternative governments. Dulinor's claim to be the new Emperor, where it was accepted, made it possible for his forces to become the government of Imperial territory. Lucan's claim to be the new Emperor, because it was accepted by some of the citizenry, made it equally possible for his supporters to control parts of the Imperial government. Where people rejected both Lucan and Dulinor, it became possible for others to step into the power vacuum and seize power.

Lucan considers Dulinor's actions a rebellion against the established Imperium as led by Lucan, every other faction which does not accept Lucan as Emperor is also engaged in rebellion. Dulinor considers (or at least publicly states) that Lucan is a rebel against the Imperium as led by Dulinor; as with Lucan, Dulinor considers everyone who does not accept his authority to be a rebel.

Other factions use the term rebellion as a convenient label Vland more properly considers its action a revolution to re-establish its lost glory. Daibei cares little for the precise term used; its war is one of survival. Outsiders such as the Vargr and the Aslan do not consider themselves actually part of the rebellion; they are chewing on the edges, taking what they want from a weakened prey.

THE AIMS OF REBELLION

There is one major goal for rebellion: to seize control of the government. Everything else the rebels do is a means to that single end. Rebel star fleets which rain destruction down onto a world do so in order to force it to accept the rebels; loyal star fleets use the same means to force a world to reject the rebels

Armies which attack or hold cities do so to keep control of population. Rebels who resist the government do so to make the government give up in a struggle that costs too much in money, lives, time, or ethics. Ultimately, every action that rebels or loyal forces take is directed toward seizing or holding control of the government.

Seizing control of a government is a difficult task. It can't be achieved simply by holding a building or a military camp or a city. Instead, the seizure must convince the citizens themselves that the rebels have the power to govern, and that resistance is not worth the effort. Indeed, rebels are saying to the existing government that the rebels are more capable of governing; if enough citizens side with the rebels, control of the government naturally passes to the rebels

Subordinate Goals: In a rebellion many people are involved, and their own view of the struggle's goals may diverge from the simple one of seizing control of the government. Citizens under an oppressive government may feel themselves wronged; their own need for revenge becomes confused with the goals of the rebellion Some see the chaos of the rebellion as an opportunity to make money; they become profiteers anxious for the struggle to continue so that they can continue to make money Some less obvious profiteers see the rebellion as an enhancement to their careers; they have the opportunity to advance in rank and prestige, and they realize that the potential for advancement remains only as long as the struggle continues.

Keeping Score: Although a rebellion is aimed at seizing control of the government, the path to victory is not an easy one. The final result is achieved only after a long series of steps that establish the ability and the power of the successful faction.

During a rebellion, every faction needs to keep score by tallying its victories and its defeats Too many defeats cause a faction's supporters to lose commitment and search for someone else to support; victories draw new supporters

STRATEGIES OF THE REBELLION

The single goal of every faction in a rebellion is control. The existing government begins with a decided advantage because it has control of most aspects of government and can expect to keep control if no specific effort is made to take that control away. Rebel factions, on the other hand, can operate in secret to plan their moves, and they can decide to strike at specific targets at a time and place of their choosing

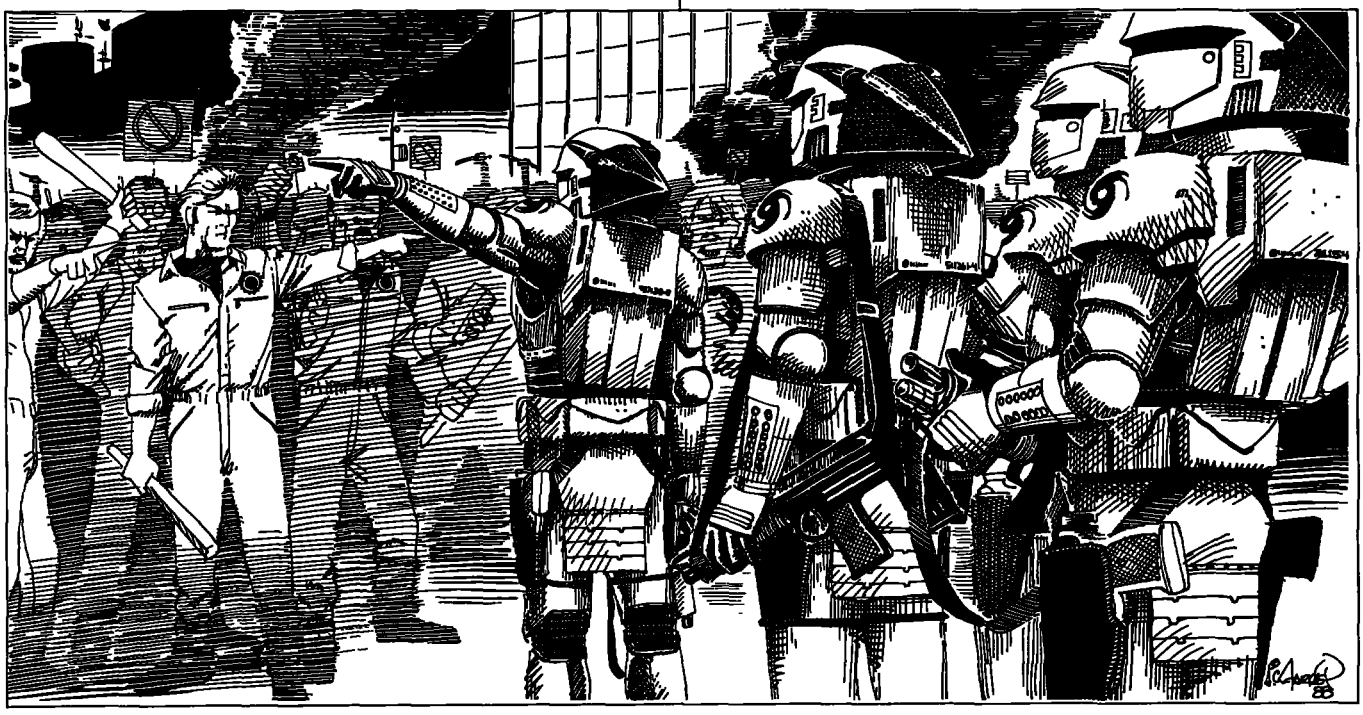
There are at least four specific objectives which factions must attempt to control If the objective is important enough, control of it is sufficient to provide control of the government. More likely, as control of all four objectives shifts into the hands of a faction, control of the government follows.

Resources: Resources include raw materials for industry, food production facilities, and factories for production of goods. Control of resources provides economic power to a faction. When a faction controls resources, it has a base which produces income to support other actions, and it has access to production facilities which can equip and support its members.

Pathways: Pathways include routes by which resources are shipped, information is transmitted, and population moves. Control of pathways provides a measure of control over the movement of resources, information, and population, and that control can be used to influence, restrict, or prohibit access

Information: Information includes data about events, technology, commerce, industry, and history. Control of information allows that information to be manipulated, slanted, or restricted, and can be used to influence the perceptions of the population.

Population: Population includes all of the citizens who are subject to the existing government. Control of all population effectively confers control of the government, but rarely is a faction able to obtain such a broad measure of control. Instead, power transfers to a faction when it controls a sizable fraction



of the population and is able to convince enough of the remaining population not to resist the faction.

The interaction of these four controllable aspects of society is an interesting challenge to any faction striving for control Population is ultimately what must be controlled by a faction. When a faction controls population, it controls the basic source of power for government, and no government can rule for any length of time if the population does not accept (not necessarily support, just accept) the government Control of resources can be used to apply pressure to population to accept a faction. The approach may be a negative one in which resources are withheld (a siege is a good example of withholding resources in order to pressure a population), or the approach may be a positive one (e.g , bribes). Control of information makes it possible for a faction to influence population, through the falsification, slanting, providing, or withholding of information, a population can be influenced to support a specific faction.

Control of pathways is a shortcut to the control of both resources and information; if a faction controls pathways, then it is capable of allowing or restricting the flow of resources and of information, without actually controlling them

TACTICS OF THE REBELLION

While the strategies of rebellion define what a faction must control in order to ultimately win, they do not spell out what must actually be done. The tactics of rebellion are manifold· They may be direct or subtle, or they may be threatening, overtly violent, or totally inoffensive. Any action which will ultimately bring support to a faction is an acceptable one.

Votes: A vote is a specific way that the preference of the population can be determined. It is an expression of control of the population, rather than a method of controlling population. A winning faction can point to the results of a vote as support for its side. If the vote is not clear-cut, those factions which receive relatively high fractions of the total vote can all claim that they are backed by the population

A faction which has a great measure of control of a population can call for a vote and use the results to further reduce opposition by other factions. When a clear-cut vote establishes a faction as in control of the population, the power base of other factions effectively collapses.

In a very real sense, a strong vote in favor of a faction establishes it as the population's single clear choice and thus eliminates further conflict for that population.

Sieges: A siege is the use of military might to control resources Armies or armed forces can besiege a city or a community, denying them access to such resources as food, water, or air Navies can besiege whole worlds

The purpose of a siege is to control a world (sometimes it is restricted to controlling a community). By controlling resources, the attacking faction seeks to force the world to surrender and to accept the faction Controlling the world may provide control of the population, it may instead provide control of pathways (if the world is on an important route), resources (native to the world), or information

An example of a siege involves a space fleet restricting or denying access to a world By cutting off trade and resupply, a sieging space fleet may force a world to surrender.

A siege is rarely possible against High Population worlds because they tend to be self-sufficient

Strike: A strike is an application of force to destroy (rather than control) resources, information, population, or opposing forces

The purpose of a strike is to eliminate things which a faction cannot control in order to deny control of them to other factions

An example of a strike involves a space fleet attacking a planetary industrial center By destroying the center, it denies the resource to another faction. A subsidiary benefit of a strike may include pressure on a population to accept the attacking faction in order to avoid further strikes.

Raid: A raid is a strike characterized by surprise

The purpose of a raid is to eliminate things which a faction cannot control in order to deny them to other factions. Some raids are instead concerned with achieving control, even if only temporarily.

An example of a raid involves a small force which attacks an enemy position. The raid's mission may be to destroy enemy forces, or it may be to kidnap an enemy leader

Patrol: A patrol is an application of force to control a pathway

The purpose of a patrol is to establish control of one or more pathways, or failing that, to deny control of the pathway to the enemy.

An example of a patrol involves a space fleet which regularly travels along a pathway and drives off any enemy or unfriendly forces which may be present.

Demonstration: A demonstration is a display of force intended to convince a population (or its leaders) of the strength of a specific faction.

The purpose of a demonstration is to achieve a goal without engaging in battle. If the opposing side can be convinced of the futility of opposition, the result can often be gained without engaging in battle.

An example of a demonstration is the destruction of a small

asteroid using nuclear missiles; when the opposition understands that the attacker has the ability and the motivation to use its available force, it may surrender or negotiate instead

Bluff: A bluff is a false display of strength. When a faction does not have sufficient strength to actually win, it may instead choose to act like it has the strength.

The purpose of a bluff is to avoid a conflict (by frightening off the opposition) or to delay a conflict (until sufficient strength is available).

An example of a bluff involves a demonstration in which the observed actions have been faked

CONTROL OF HIGH POPULATION WORLDS

Within the Imperium, the vast majority of population lives on or over the surfaces of its High Population worlds Fewer than 10 percent of the empire's worlds (actually about 8.3 percent) have population levels of nine (equivalent to billions) or A (equivalent to 10 billions) Yet these worlds easily account for more than 90 percent of the population of the Imperium. High Population worlds hold the billions of Imperial citizenry, all the other worlds taken together account for an average of 342 million each, with most having far fewer inhabitants

As the domiciles of the majority of Imperial population, the High Population worlds of the Imperium are a vital key to its control Population provides a vast pool of technological and market resources Assuming intellectual ability occurs evenly throughout the population, it is concentrated on High Population worlds just like population is. A concentration of population also produces a concentration of consumers and a vast market for goods and services Finally, the concentration of population produces a correspondingly large tax base which helps to support the Imperium as it provides governmental services.

The Imperium is not an empire of empty worlds· It ultimately derives its power and its authority from the citizens it governs. High Population worlds are a vital key to the control of the Imperium because they represent the vast majority of the citizens of the Imperium. A faction which controls no High Population worlds has no power base among the citizenry; a faction which controls only the High Population worlds of the empire controls enough population to enable it to claim control of the Imperium.

Methods of Controlling High Population Worlds: High Population worlds control themselves. It is the consensus of opinion of the total population that dètermines what faction the world supports in the Rebellion. Until the consensus accepts and backs a specific faction, the world remains in an uneasy state of neutrality, buffeted by the efforts of various factions to control it.

Factions trying to control a High Population world face massive obstacles to their success, the process is necessarily dedicated to controlling the hearts and the minds of the people. If the ideology of the faction is not at least palatable to the world, it will never be accepted. Assuming there is some potential that the world will accept the faction's ideology, there must follow a campaign to convince the world to actively choose the faction as its preference.

Campaigns can take any number of approaches. A faction may promise advantages in trade or markets. Leaders may be promised rewards or benefits. The ideology of the faction may be revised or deliberately distorted in order to present it in the best possible light The faction may institute terrorism attacks in order to force acceptance as the lesser of two evils. Information may be manipulated, or news managed in order to convince or to trick the population into supporting a specific faction. A campaign may concentrate on a majority fraction of the population and promise it benefits at the expense of minorities. Minorities may be singled out and promised better status in return for support of a specific faction All campaigns on a High Population world have a single purpose. to convince the population to support a specific faction.

The Campaign on Shagipka: Shagipka lies only three parsecs from Dlan and was one of the first worlds to which Dulinor directed his attention Dulinor's campaign on Shagipka/Ilelish (1321 B671989-E) began as soon as the Archduke arrived on Dlan. After the assassination of Strephon, Dulinor proceeded directly back to Dlan in order to make his own announcement of his succession to the throne. Shagipka received the news within a week of its release on Dlan. At the same time, Dulinor established controls on the new stories carried on the xboat network, effectively precluding anyone on Shagipka from hearing differing views Shagipka's civil service bureaucracy was already accustomed to receiving notifications, orders, and instructions from Dulinor as a member of the Imperial nobility His statements to the government now carried with them a ring of authority; at the same time, Dulinor's cutoff of opposing views made it difficult for Shagipka's government to actively oppose him.

Dulinor's campaign also made it clear to the government that there was no clear alternative to the acceptance of him. Fleet maneuvers showed that Dulinor controlled all naval forces in the region Dulinor instituted a small levy on goods imported to Shagipka and ordered that a tax stamp with his likeness and the words Emperor Dulinor I be attached to every incoming

shipment The bureaucracy incorporated the procedure into its own list of procedures and almost naturally accepted the transition from Strephon to Dulinor. Most other activities continued as usual. The population was not presented with a choice so much as an accomplished fact. Because the population already knew and accepted Dulinor as their own Archduke, they were able to accept his elevation to Emperor.

The Campaign on Shunim: Shunim is a colony of Shagipka, lying two parsecs away. Dulinor's campaign on Shunim/Ilelish (1323 C768966-B) made use of his previously acquired control of Shagipka to extend his circle of power. Because Shagipka already accepted Dulinor, it was a natural process to assign to the Shagipkan bureaucracy the task of assuring Shunim's loyalty to Dulinor.

The major emphasis on Shunim rested on Dulinor's basic thesis, stating that the Imperium should do more for the individual worlds of the empire For Shunim, this struck a responsive chord with its promises of more attention to the needs of the people. At the same time, the restriction on incoming information made it nearly impossible for any opposing views to be considered on the world Dulinor gained the upper hand by shutting out the competition before it could start.

THE VAST SPACE BETWEEN THE STARS

The traditional territory of the Imperium has been the vast spaces between the stars Its star fleets, although based on worlds, are charged with patrolling star systems and between star systems to maintain order, to protect trade and commerce, and to provide security The very fact that the Imperial star fleets patrol space between the worlds prevents most of the potential piracy, raids, and invasions.

The competing factions all considered control of the trade and communications routes between the stars to be of paramount importance. Those with large star fleet assets employed them to deny regions to other factions, and to wrest new regions from opposing factions Those with smaller star fleet assets had to be content with harassing other factions and occasional raids of commerce.

Star fleets provide great benefits to those factions that control them. Their very basic purpose is to provide transportation between systems. Beyond that, the fleets allow a faction to attempt to control pathways and information; they can be used to deny pathways, information, and resources to other factions. Fleets are essential for the conduct of sieges against worlds They are necessary in order to conduct strikes and raids Star fleets are used to patrol space and to keep opposing factions away

The Campaign Against Duumur: The industrial world of Duumur/Dagudashaag (2529 C5299BB-E) lies somewhat off the main trade and communications route of the Imperium. Duumur has an extremely profitable industrial base, made possible in part by the ability to dump waste heat and pollutants into the environment. On the other hand, Duumur is dependent on imports for a large fraction of its nutrients and organic raw materials.

At one time, the world was ruled by a flamboyant dictator who helped direct its industrial output toward profitable markets within the sector. When he died, his successor proved to be much less flamboyant and somewhat less effective. At the same time, the mood of the world population turned inward and isolationist.

As the news of the Rebellion unfolded, the population of Duumur took a neutral stance, although portions of the population declared support for Dulinor, Lucan, or Margaret, the majority remained undecided. The government, reflecting this majority stance, continued its taxation payments to the Imperium but also allowed open media access to all factions of the Rebellion.

Emperor Lucan, when informed of Duumur's lack of total support, ordered the world to stop its treasonous tolerance of anti-Lucan propaganda When the world government made half-hearted attempts to halt the broadcasts and failed, Lucan ordered the Navy to take steps of its own.

The Imperial Navy had no capability of invading and occupying a world, so it settled in for a siege of the world by deploying the Imperial 219th Fleet to halt all access to the world. The plan was to force the government into submission. Squadrons of the fleet monitored surface broadcasts and systematically destroyed any communicator broadcast stations which produced anti-Lucan (or pro-anyone else) propaganda. At the same time, pro-Lucan propaganda was produced and broadcast by the fleet in orbit above the world.

The result was a strengthening of support for other factions. Factions supporting Margaret, Dulinor, Vland, and Varian have gained strength on Duumur A full fleet supporting Lucan was tied down in orbit around one world Blockade runners made immense profits smuggling past the blockade. The siege itself continues

The Campaign Against Trill: As worlds lie farther and farther from the centers of factional power, each faction is less and less able to force its will on them Instead, campaigns must be fought for the hearts and minds of the citizens, even as parallel campaigns by opposing factions are tolerated. Trill/Gushemege (2029 A784977-F) is a balkanized industrial world lying near the Great Rift. Trill's many distinct nations all jealously guard their own independence, in addition to their borders; differences existing between the nations make it possible for a variety of factions to be supported by a variety of nations.

Trill has 15 major nations (each with a population of about 100 million). Factions supporting Lucan, Dulinor, Margaret, and Vland have managed to gain a foothold in at least two nations each; the others remain undecided and open to persuasion. The reappearance of Strephon produced immediate support for his faction in four nations, but there was no clear consensus of support for one specific faction as of 1118.

Each faction makes use of its foothold on Trill to propagandize neighboring uncommitted nations. Since no faction holds a clear advantage, all must force themselves to tolerate the existence of the others. Even-pitched battles and military campaigns on Trill are forced to observe and respect national borders or risk retaliation by the offended country and alienation from other nations.

Were Trill closer to a specific faction's base of power, it might be able to blockade and besiege the planet. Trill however, lies far enough from every major faction to make laying siege a difficult proposition; in addition, Trill's nations' own spacecraft could provide enough resistance to break a siege.

THE FIGHTERS' INVOLVEMENT

Massive campaigns to control High Population worlds require hundreds of ships and millions of fighters. No one fighter can hope to single-handedly win a world for his faction Yet each fighter must do his part in order for the ultimate battle to be won

Those parts are myriad and include:

Participation in Battles: Any soldier must necessarily participate in battles for his faction They may be defensive battles protecting vital assets, or they may be assaults intended to take territory from the enemy. They may be quick surgical strikes that will eliminate a vital strong point, or they may be long-range intrusions into enemy territory. All battles ultimately support a faction by their victory or hinder it with their loss Major factions such as Dulinor or Lucan will constantly commit their forces to a series of space battles which require starship operations and continually replaced crews. Some campaigns on world surfaces will require soldiers in all manner of military units.

Espionage: Vital information about enemy factions can help shape the course of a faction's strategies and actions Finding, recording, and transferring such information to faction representatives is a vital activity for any faction supporter. Every faction needs agents who can find information and return it to their headquarters, information must be gathered about even friendly factions.

Covert Operations: Some fighters will be called upon to fight in secret, attacking, raiding, or sabotaging the assets of other factions in order to remove them from the fight at a crucial time Such operations are best mounted in secret so that responsibility cannot be traced.

Disinformation: Necessarily, some activities during the Rebellion will be aimed at either misleading or misdirecting a faction Direct lies, if they are repeated long enough and loud enough, have a way of becoming the truth Some fighters may be called upon to repeat these lies (disinformation) in support of the faction's goals.

Courier Duty: Carrying messages for a faction is essential if that faction's activities are to be coordinated Courier duty is dangerous and difficult, but someone has to do it Information is the key to many aspects of the Rebellion; couriers are required to carry messages from place to place within a faction's territory or between factions.

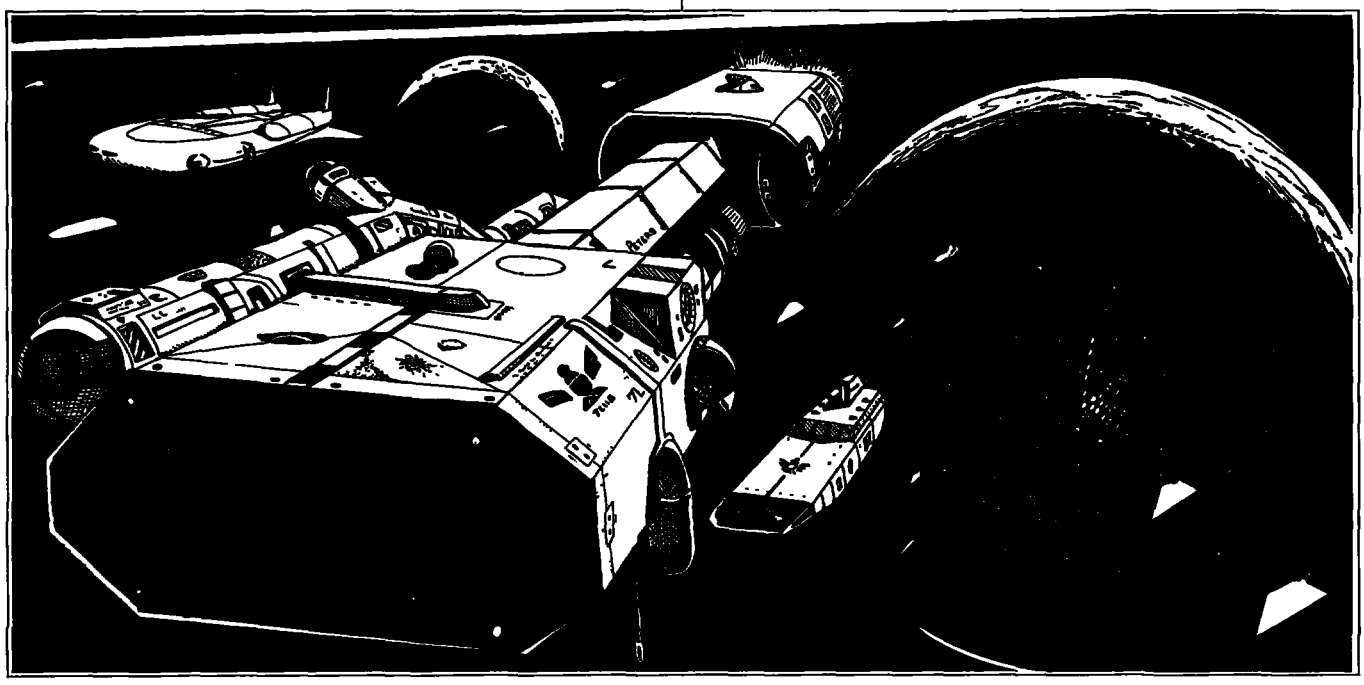
Strikes: Some factions have special missions that they feel must be undertaken; fighters must be ready to answer the call of their faction.

Recruiting: New fighters must be found for every faction Recruiting new ones is an ongoing problem and priority

Winning the Hearts and Minds of the People: Every faction is dedicated to winning the hearts and minds of the people, especially on High Population worlds. Specific campaigns on contested High Population worlds range from political campaigns involving advertising, public relations, and voting, to military campaigns intended to eliminate the opposition Fighters for a faction must be ready to become involved in such campaigns when required.

Nail Missions: For want of a nail, the shoe was lost; for want of a shoe, the horse was lost, etc. Every faction has detailed plans for detailed campaigns that require support in the way of information, equipment, and personnel An especially important priority is the nail mission: the operation in search of a vital person, bit of information, or piece of equipment. If this *nail* is found and returned in time, the faction's project can be successful. But if it isn't found and returned in time, a crucial battle could be lost

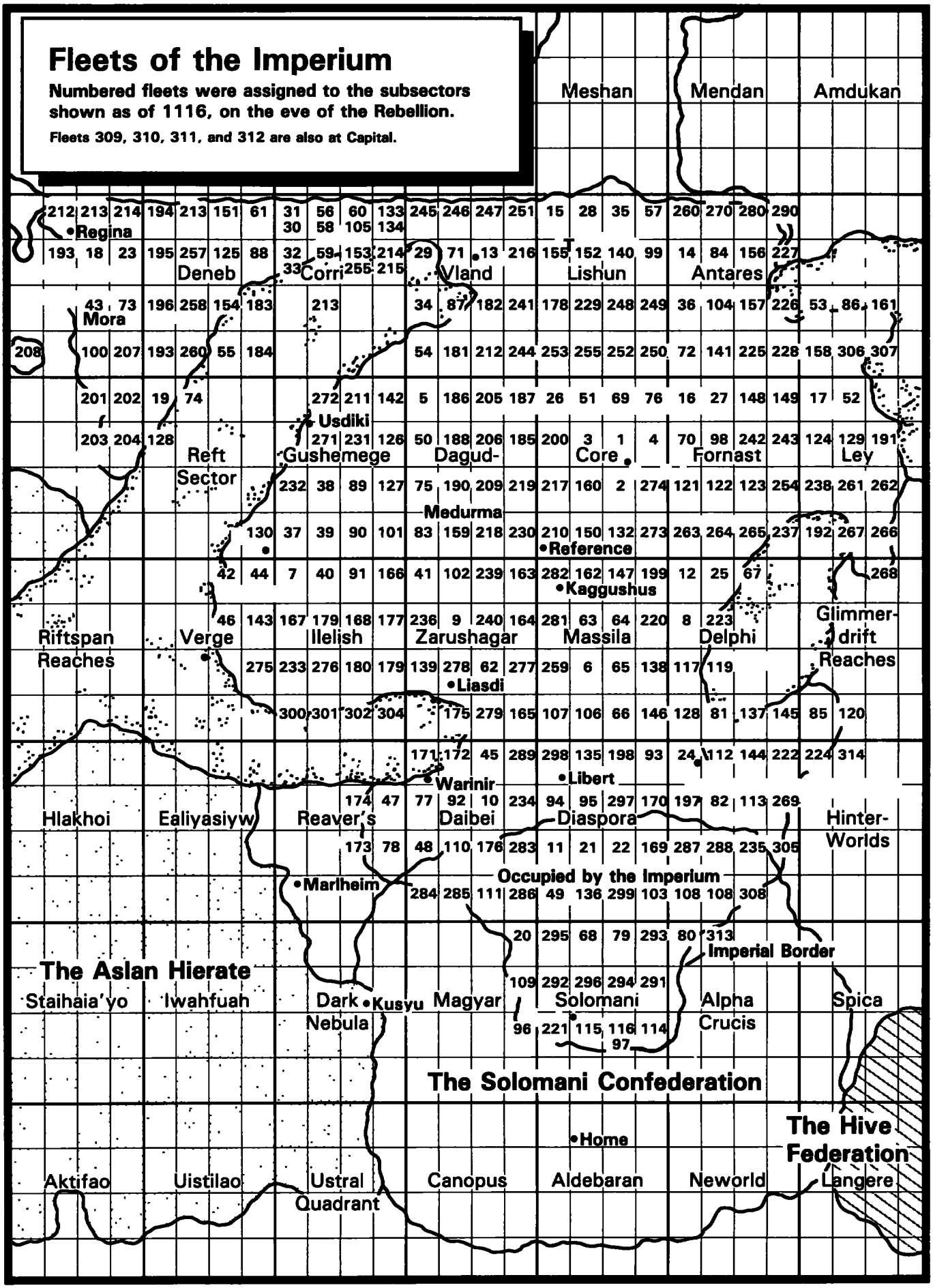
For example, a campaign against the Vargr in Deneb sector may require a battleship which is now undergoing repairs; those battleship repairs need a vital part which is available only on its sister ship, in the hands of Dulinor's forces 85 parsecs away. The nail mission is to find that sister ship, steal the repair part, and return to the shipyard before it is overrun by invading Vargr



Fleets of the Imperium

Numbered fleets were assigned to the subsectors shown as of 1116, on the eve of the Rebellion.

Fleets 309, 310, 311, and 312 are also at Capital.



Imperial Fleets

Organization is essential to the star-spanning Imperial Navy; command control is best exercised when orders flow down through levels of organization. The Imperial Navy has established several levels of organization in order to better control and coordinate the operations and activities of its numerous ships At their lowest level, Imperial ships are organized into squadrons (from three to 10 similar ships) Squadrons are grouped into permanent numbered fleets (usually three to 10 squadrons per fleet), although squadrons or individual ships may also be detached into temporary task forces for specific missions. Numbered fleets (usually within a single Imperial sector) are grouped into named fleets.

The channels of command within the Imperial Navy are exceptionally clear at the lowest levels of the fleets, and exceptionally cloudy at the highest levels.

The captain of each ship has complete control of its crew and its operations; he or she answers only to the squadron commander Each squadron commander controls every ship in the squadron, and answers only to the numbered fleet admiral

Admirals, whether they command numbered or named fleets, or work in the halls of the Naval High Command, must consider more than simple naval strategy in their orders and decisions. Most admirals are nobles, and they must consider the twists and turns of the noble hierarchy and protocol when they act Admirals must answer to several different authorities: the Duke of the subsector in which a fleet is located, the Duke of a sector in which a fleet operates, the Archduke of a domain in which the fleet is assigned. Technically, only higher ranking naval officers can give orders; as a practical matter, nobles insinuate themselves into the channels of command A good admiral knows when to follow which orders, and how to gracefully avoid the orders he shouldn't follow.

FLEETS

Each sector of the Imperium theoretically has a group of fleets numbering about 1000 ships. This number includes combat vessels such as cruisers, carriers, battleships, and some escorts; it does not include auxiliaries, support ships, and scouts

The term *fleet* is used in two distinct ways: A *numbered* fleet is a group of several squadrons; a *named* fleet is an assembly of two or more numbered fleets. For example, the Imperial 16th Fleet consists of the 172nd Battle Squadron, the 231st Cruiser Squadron, and the 858th Escort Squadron. The Imperial Corridor Fleet (appropriately stationed in Corridor sector) is composed of the Imperial 16th, 27th, 41st, and 70th Fleets.

Numbered Fleets: The Imperium has about 320 numbered fleets (approximately one for each subsector within the empire). A numbered fleet, depending on its mission, may have between two and 10 squadrons amounting to between 50 and 200 ships Numbered fleets are commanded by fleet admirals. A numbered fleet may have a descriptor (which does not count as a name) in its designation for example, the 19th Battle Fleet, the 1st Provisional Fleet, and the 99th Penetration Fleet.

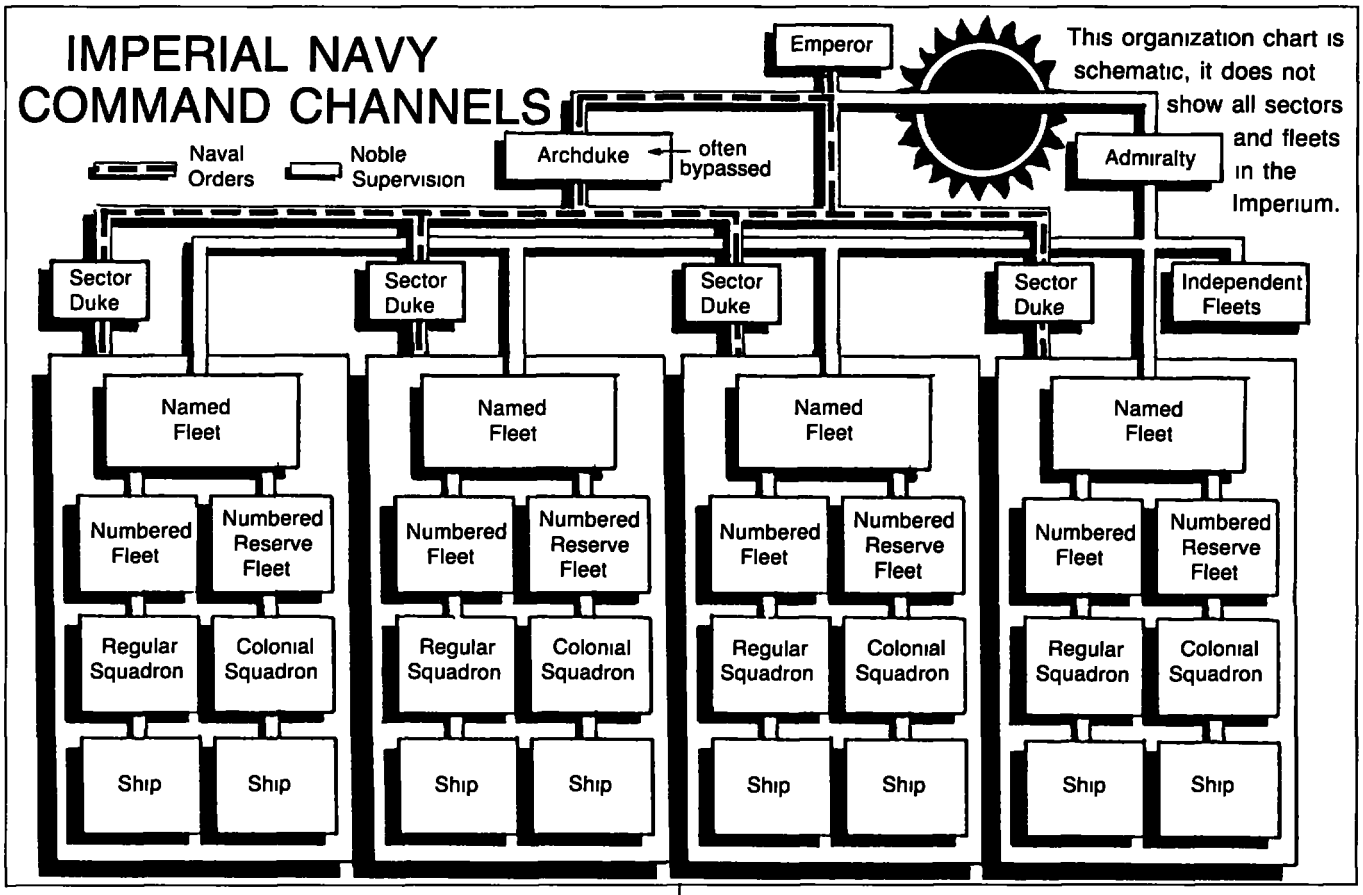
Numbered Reserve Fleets: The Imperium also has about 320 numbered reserve fleets (also approximately one for each subsector within the Imperium). Reserve fleets are equipped with obsolescent—but still useful—starships which have been retired from front-line Imperial service, they are staffed by personnel serving in the Reserves (technically in the service of the Imperium, but without the status of strict Imperial Navy duty).

Reserve fleets are usually numbered in a sequence beginning with 1001 (for example, the 1077th Reserve Fleet). Reserve fleets are technically considered part of the forces of a named fleet, but are rarely moved out of their original subsector.

Named Fleets: The Imperium has 28 named sector fleets which range in size from two numbered fleets to more than 20. In the standard naval organization of the Imperium, each sector has a named fleet which is composed of one numbered fleet from each subsector. The Alpha Crucis Fleet, which contains the 80th Fleet and the 313th Fleet, is little more than a standing support organization and a command structure that channels orders from the navy to the numbered fleets in the Alpha Crucis sector patrolling the border. The Corridor Fleet, actively engaged in border protection along the contested border with the Vargr in Corridor sector, is an active fleet with 16 numbered fleets under its command.

Special Fleets: Doctrine also provides for the creation of named fleets at any time; such special fleets carry names that denote their function or their mission. Specially named fleets are a common way of deploying and controlling large numbers of ships Dulinor has brought together large numbers of ships under the name Loyal Fleet; Lucan, intent on finding and destroying Dulinor, has created the Vengeance Fleet.

Rebellious Fleets: The participating forces in the Rebellion, regardless of their loyalty or allegiance, all started with the same organization. Over time, each of the factions may find



newer or better organizations for their naval units, but they all base their organization on Imperial tactics, training, and doctrine Thus, it is not unusual to find two mirror-image units (for example, the 167th Fleet and the 217th Fleet) on opposite sides of the Rebellion, their allegiance was determined by the vagaries of location, in addition to the choice of their commanders

SQUADRONS

Starships are rarely employed alone in battle. Instead they are assigned to squadrons which group ships together for mutual support. Squadrons consist of two or more ships of the same type and class, plus any supporting ships which can provide support, escort, or reinforcement. Supporting ships are usually not involved in the tactical operations of the squadron and are often ignored when figuring ship totals.

Large squadrons will have many auxiliary ships, depending on strategic and tactical needs, they may be refueling ships, troop shuttles, fleet couriers and courier tenders, command ships, intelligence processing ships, transports, or repair stations

Individual ships are capable of jump and maneuver on their own, and they are not permanently tied together. It is possible for a commander to split a squadron, especially for simple errands, routine port calls, or to spread forces over a large area. But division of forces also removes ships from the control of the squadron commander and weakens any strategic or tactical advantage he might have Consequently, squadron-splitting is a peacetime occurrence. In time of war, the squadron is the basic unit of naval force

Squadron Types: There are many types and classes of ships. The Imperial Navy has, however, established only five basic squadron types within its organization: BatRons, CruRons, ScoutRons, AssaultRons, and TankRons.

BatRons (Battle Squadrons) are formed from battleships or battleriders and are intended to meet the best of the enemy fleet, engage it, and destroy it. Their purpose is battle. Battle squadrons are usually reinforced with large numbers of auxiliary ships, including refueling shuttles, troop transports, and small escorts. In addition, they are accompanied by a large number of fleet couriers to allow the fast transfer of information and battle intelligence to higher commands.

CruRons (Cruiser Squadrons) are organized from cruisers and are intended to support the BatRons in space combat. In one-on-one battles, cruisers can never win against battleships; sufficient numbers of cruisers, however, can overwhelm a battleship. CruRons are occasionally called upon to support BatRons by holding off some enemy battleships or CruRons early in a battle. CruRons have a secondary mission to support planetary surface operations once the space battle has been won, they are the ships that bombard the planetary surface and cover the invading AssaultRons. CruRons are accompanied by a variety of auxiliaries including shuttles, transports, and fleet couriers. Every CruRon is assigned a bulk ordnance carrier to resupply its needs for bombs and missiles.

ScoutRons (Scout Squadrons) are composed of the ships assigned to the Imperial Interstellar Scout Service. When necessary, Scout Service ships normally assigned to

exploration, communications, or cartography are diverted to defensive or reconnaissance duties. ScoutRons are heterogeneous; they are composed of a wide variety of ships suited to a wide variety of purposes

AssaultRons (Assault Squadrons) are composed of troop transports and measure their capacity in hundreds of battalions. They have a mission to carry troop units from point to point and to deliver troops from orbit to a disputed planetary surface.

TankRons (Tanker Squadrons) are a special type of squadron whose mission is dictated by technology. Strategic requirements from time to time require the transfer of squadrons along courses that cannot provide fuel for the ships. TankRons are positioned to refuel squadrons on such routes, or they may accompany a squadron on such a route.

HIERARCHY OF SQUADRONS

Squadrons are classified according to their position within the hierarchy of the Imperium. Regular squadrons are frontline units equipped with the best possible ships and personnel. Colonial squadrons are equipped with obsolescent (but still serviceable) ships and with personnel having somewhat less training and experience. System squadrons are not jump-capable. Instead, they are equipped primarily with system defense boats and monitors, and staffed by entirely local personnel

Regular squadrons are assigned to the numbered fleets of the Imperium and are based at naval bases within the Imperium.

Colonial squadrons are assigned to the numbered reserve fleets of the subsectors. They are based at worlds which can provide personnel and technology to support them: worlds with tech code Early Stellar+ (Tech Level 9+) and High Population (Population 9+).

System Squadrons are not assigned to any fleet. Instead of such an assignment, they are based in a home system with tech code Early Stellar (Tech Level 9+) and Moderate Population (Population 4+).

OTHER STAR-FARERS

Many variations of the Imperial model are used for naval organization by other star-farers.

Aslan: Aslan starships often operate independently within their established territory Their organization of starship units is influenced primarily by their own needs and missions. Although it is possible to see their organization in terms of Imperial fleets and squadrons, it is important to note the distinctions

When ships venture beyond the safe interior of their borders (including venturing beyond clan borders into other clan territory), they are organized into *hryo* (literally, this means "six," but the common translation is squadron) which usually has six ships, but may range in size from two to 12. Hryo are organizations or command structures established to ensure that proper orders are given and missions are carried out Unlike Imperial squadrons, hryo are heterogeneous: They may contain any type of ship, and usually contain several different types of ship. A single hryo might include two clan transports to carry personnel and goods, two cruisers to provide protection, and two scouts to provide reconnaissance in new systems. Hryo are identified by the name of the hryo commander, typically an Aslan space officer captain.

The ultimate source of authority for the Aslan lies with each individual clan. Starship command is awarded by the clan to powerful individuals who have a purpose and proper training or experience; command of a hryo is also awarded by the clan leader

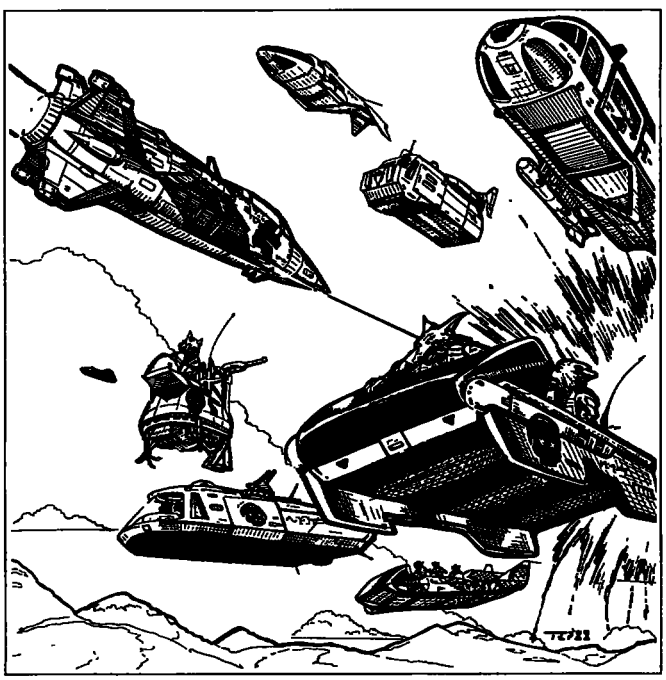
Aikoho (translated as fleet, the word means "many ships") is a general term for a large number of ships. It may include any number of starships, all of which are themselves organized into any number of squadrons. An aikoho is created only when there is a specific purpose for it. Aslan doctrine sees the need for only three types of fleet· the battle fleet, the trade fleet, and the migration fleet (also called an ihatei fleet).

Most clans have standing battle fleets to defend their worlds or important trade centers. Additional battle fleets are created when called for by hostilities or strategy. Each battle fleet is commanded by a single Aslan Fleet Admiral who answers to a Clan Admiral. The Clan Admiral himself answers to the *ko*, the head of the clan

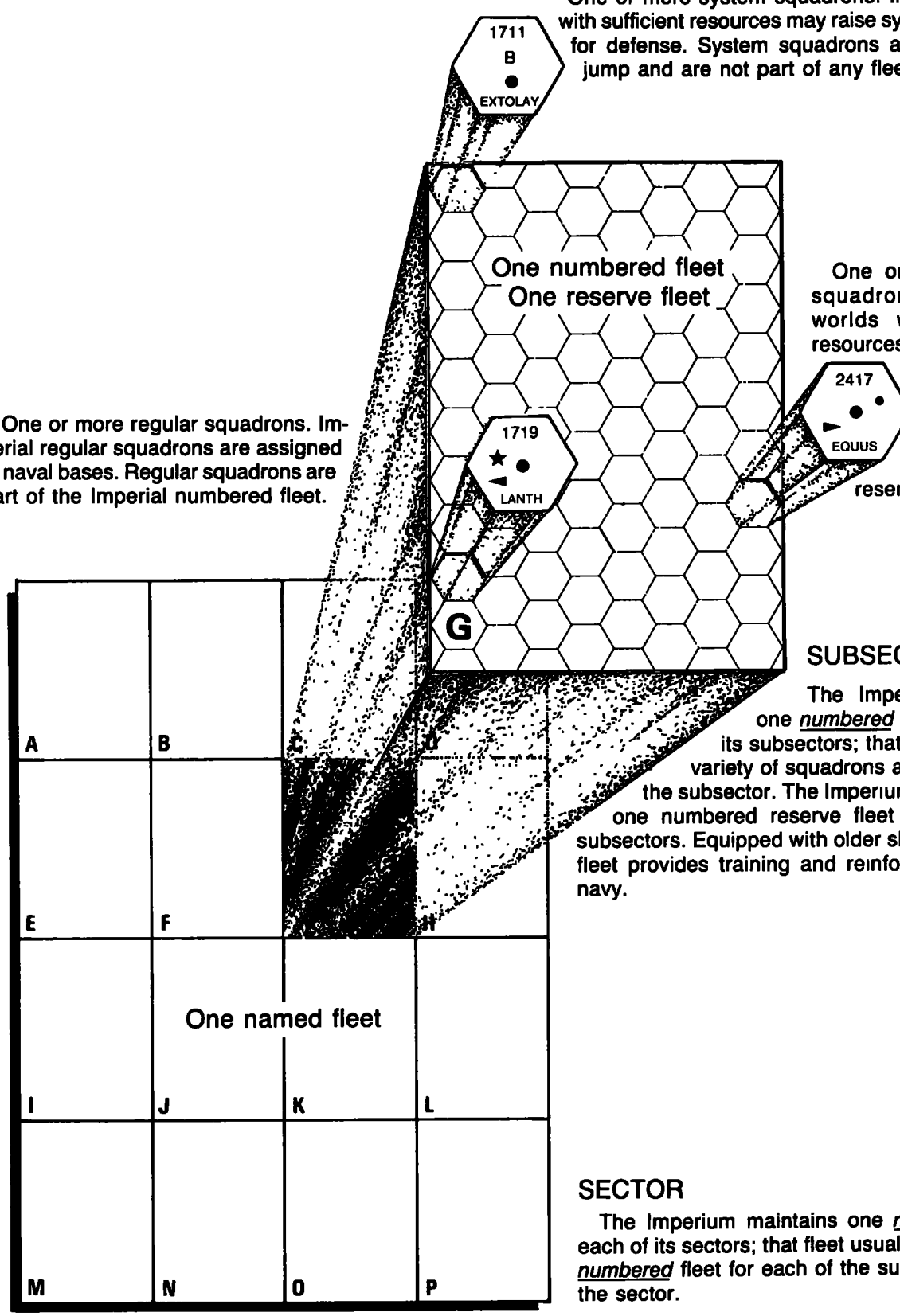
Trade fleets consist of transport and merchant ships along with enough armed ships to support and defend the cargo carriers Each trade fleet is managed by a director because its emphasis is more mercantile than military; the armed squadrons within the trade fleet are commanded by Admirals or Captains, depending on their size and strength.

Migration fleets carry excess population in search of new worlds to settle and exploit. These are the instrument by which the Aslan clans expand their territory. Ihatei fleets are raised by the clan, with their ships and equipment paid for by the families of those who will travel with it The ihatei fleet is commanded by a single Clan Admiral answerable only to the ko; since the fleet will travel outside clan territory, the Clan Admiral becomes answerable to no one as long as he continues to respect the principles and reputation of the clan.

Migration fleets are themselves organized into trade and



IMPERIAL FLEETS AND SQUADRONS



One or more system squadrons. Individual worlds with sufficient resources may raise system squadrons for defense. System squadrons are incapable of jump and are not part of any fleet.

One or more colonial squadrons. Individual worlds with sufficient resources may raise their own colonial squadrons. Colonial squadrons are part of the reserve fleet.

One or more regular squadrons. Imperial regular squadrons are assigned to naval bases. Regular squadrons are part of the Imperial numbered fleet.

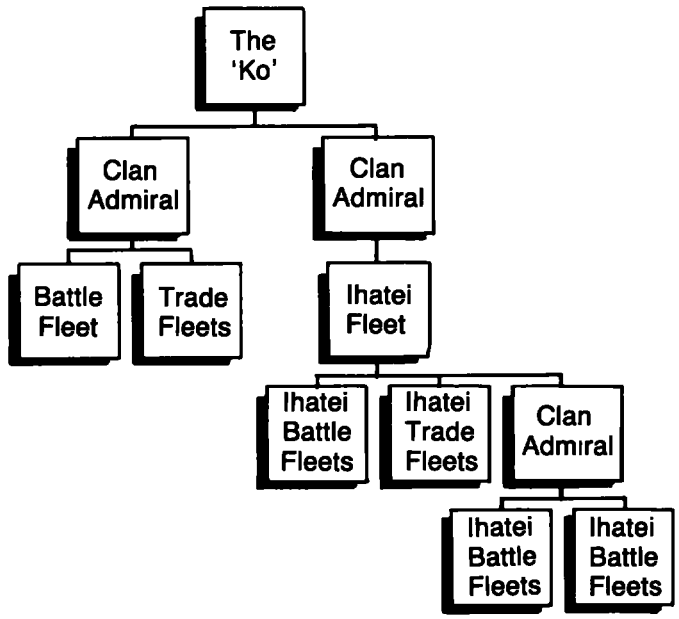
SUBSECTOR

The Imperium maintains one *numbered* fleet for each of its subsectors; that fleet contains a variety of squadrons at naval bases in the subsector. The Imperium also maintains one numbered reserve fleet for each of its subsectors. Equipped with older ships, the reserve fleet provides training and reinforcements to the navy.

SECTOR

The Imperium maintains one *named* fleet for each of its sectors; that fleet usually contains one *numbered* fleet for each of the subsectors within the sector.

ASLAN NAVAL ORGANIZATION



battle fleets with their associated command structure.

When an ihatei fleet arrives at a world suitable for settlement and colonization, it transfers much of its cargo and personnel to the world surface and the process begins. The ihatei fleet remains in existence; however, its battle fleet component provides defense for the new settlement, while the trade fleet provides commercial support and establishes trade channels.

In time, the settlement will produce its own ihatei, and they will venture in search of new worlds to conquer with their own ihatei fleet. The colony will support it by providing ships and some financing; a new Clan Admiral (answerable to the present Clan Admiral) will be appointed

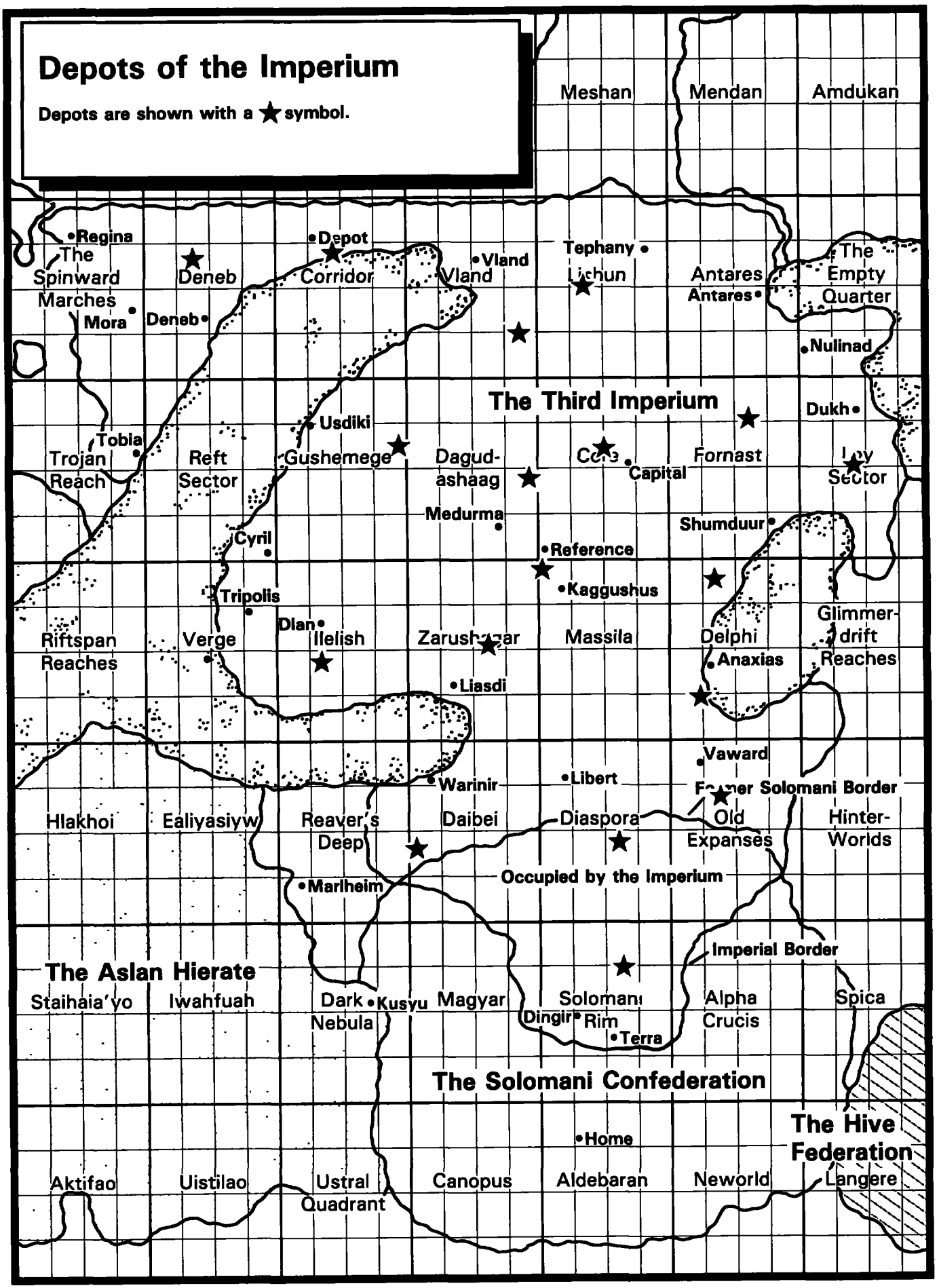
Vargr: The nature of Vargr society and psychology make it difficult for groups of Vargr to maintain a loyalty to, and an association with, specific leaders for any appreciable length of time. Vargr loyalty constantly shifts as newer or stronger personalities rise in power. As organizations (such as squadrons or fleets) grow larger, there is a natural tendency for them to be pulled apart by rivalries for leadership within the group. As a result, Vargr rarely create formal ship organizations which are larger than the squadron.

Ship commanders are powerful individuals in Vargr society, squadron commanders are even more powerful. But both types of commander are in a constant struggle to maintain their positions. As an individual becomes more powerful, others naturally (and in Vargr society quite acceptably) try to take over that position. Ship commanders are under great pressure to produce benefits for their followers; squadron commanders are under similar pressure. Rarely does a Vargr have enough personal charisma to be able to hold a fleet of several squadrons together.

As a result, the largest Vargr ship unit is the independent squadron. Its commander is an independent leader, answering to no higher authority. At the same time, he is responsible to his subordinates and his supporters for results: He must produce victories and their resultant plunder or booty, or someone else (who can produce) will replace him.

Zhodani: Zhodani naval organization is the closest in form and substance to Imperial naval organization. Ships are organized into squadrons, squadrons are grouped into subsector-based fleets; subsector-based fleets are organized into sector-based fleets. The five basic squadron types remain the same.

The Zhodani add only one innovation to the Imperial scheme of naval organization, that being a sixth type of squadron, the command squadron. A command squadron consists of several very fast couriers; each courier carries a single telepath who can relay quickly the conceptual commands of fleet commander to the squadron commanders in a system. The telepath may be briefed by the fleet commander before the battle and then carries the concepts to the squadron commanders, or he may actually relay on-the-spot commands from a fleet commander operating in the same system. Using psionic talents allows the fleet admiral to quickly and efficiently instruct his subordinates as to strategy, logic, and supporting priorities for a specific naval operation.


Depots of the Imperium
Depots are shown with a ★ symbol.
Meshan
Mendan
Amdukan
Regina
The Spinward Marches
Mora
Deneb
Deneb
Depot
Corridor
Vland
Vland
Tephany
Lichun
Antares
Antares
The Empty Quarter
Nulinad
The Third Imperium
Dukh
Usdiki
Tobia
Trojan Reach
Reft Sector
Gushemege
Dagudashaag
Capital
Fornast
Sector
Medurma
Shumduur
Cyril
Reference
Kaggushus
Tripolis
Dlan
Ilelish
Riftspan Reaches
Verge
Zarushagar
Massila
Delphi
Anaxias
Glimmerdrift Reaches
Liasdi
Vaward
Warinir
Libert
Former Solomani Border
Hlakhoi
Ealiyasiyw
Reaver's Deep
Daibei
Diaspora
Old Expanses
Hinterworlds
Occupied by the Imperium
Marlheim
Imperial Border
The Aslan Hierate
Staihaia'yo
Iwahfuah
Dark Nebula
Kusyu
Magyar
Solomani Rim
Dingir
Terra
Alpha Crucis
Spica
The Solomani Confederation
The Hive Federation
Home
Aktifao
Uistilao
Ustral Quadrant
Canopus
Aldebaran
Neworld
Langere

Imperial Navy Depots

The focus of the Imperial Navy's base and support system is its network of depots. The navy maintains 19 depots (with one exception, one per sector) to support its fleets.

Naval depots are huge harboring areas for starships, naval personnel, and supporting services. A depot typically encompasses an entire star system and has an unlimited capacity for starships. The navy provides three distinct types of services to its ships at depots: maintenance (which includes upgrade, repair, overhaul, and even construction), personnel services, and training.

Maintenance Services: A major focus for each naval depot is the maintenance of the navy's starships. Ships are brought to the depot for periodic inspection, annual overhauls, upgrades and installation of new equipment, and repair of damage incurred in the course of operations In peace time, routine maintenance services are a valuable activity, in time of war, the service is invaluable. Depots stand constantly available to repair and return to service battle-damaged ships in a minimum time.

Depots keep on hand a stock of repair and replacement parts that would be unavailable at any one place anywhere else in the Imperium.

Personnel Services: Depots are a natural assignment for large numbers of naval personnel All skills that the navy needs are required at a depot. Support services, administration, dependent support, housing, recreation, and technical services are all needed on a continuing basis at the depot With such a large staff available, a depot becomes a natural replacement center, providing crew rotation and replacement from its own assets as they are needed

Training: Each depot is naturally given the task of providing training for naval personnel. Because of the many different services a depot provides, it is uniquely suited to training personnel for those services. As a result, a depot maintains an extensive training establishment, providing in-depth training for all aspects of starship technology.

In addition, the vast areas of the depot system (because they are exclusively available to the navy) lend themselves to tactical training in the use of starship weaponry, and to squadron and fleet maneuvers which hone the skills of crews.

DEPOT FLEETS

Typically, each depot maintains three fleets (each of several squadrons) on station: a training fleet, a mothball fleet, and a defense fleet.

The Training Fleet: In order to provide proper experience for new or transferred crewmembers, a depot maintains a training fleet equipped with ships commonly encountered in the sector. In addition, the fleet contains adversary squadrons trained in the tactics to be expected from potential enemies that the navy will encounter Adversary squadrons are pitted against Imperial squadrons that call at the depot for training. The adversary squadrons of depot training fleets are generally considered to be the best trained and most effective squadrons in the Imperial Navy.

The Mothball Fleet: Depots are used for storage of obsolete or obsolescent naval vessels that cannot be economically operated, but which retain some value for the moment. As starship classes are retired from service, some are transferred to the reserve fleets while others are stored until a use for them can be found or until they are scrapped. Because a depot encompasses an entire system and is under the complete control of the navy, it is an ideal secure storage location for such ships.

Most ships in the mothball fleet have been subjected to a preservative treatment to minimize the effects of age and wear. The fleet's ships can be returned to service after a period of preparation (usually a couple of weeks) Some ships are assigned to cannibalization squadrons, and they are slowly scrapped as parts are taken from them to refit or repair other ships still in service. Finally, some of the ships in the mothball fleet are actually repair and refit auxiliaries which provide basic services to the fleet.

The Security Fleet: The depot's security fleet has the mission of defense of the depot from all possible dangers The fleet maintains system defense boats, early warning squadrons, and normal battle squadrons which provide comprehensive security for the system.

WAR OF THE DEPOTS

In times of peace, the depots of the Imperium are able to relax and enjoy an almost lazy existence. The Imperial depots are located at a distance far enough away from the Imperial borders that they are rarely threatened by any external forces. The depots have serviced the fleets of the empire in a routine rotation sequence that rarely varies. Only the occasional war has upset the routine of the depots, but even then, the disruption is short-lived. Some Imperial civil servants have lived their whole lives without the depot they work for ever going on alert.

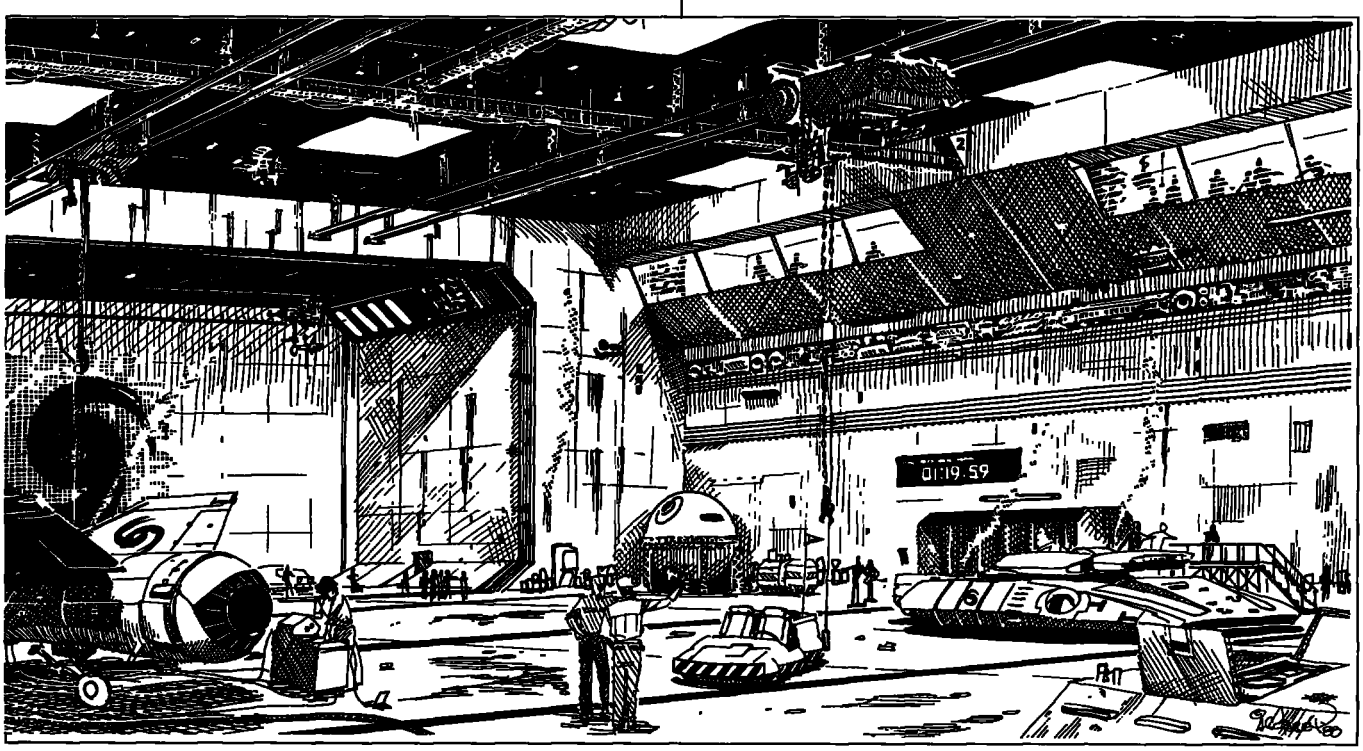
DEPOTS OF THE IMPERIUM

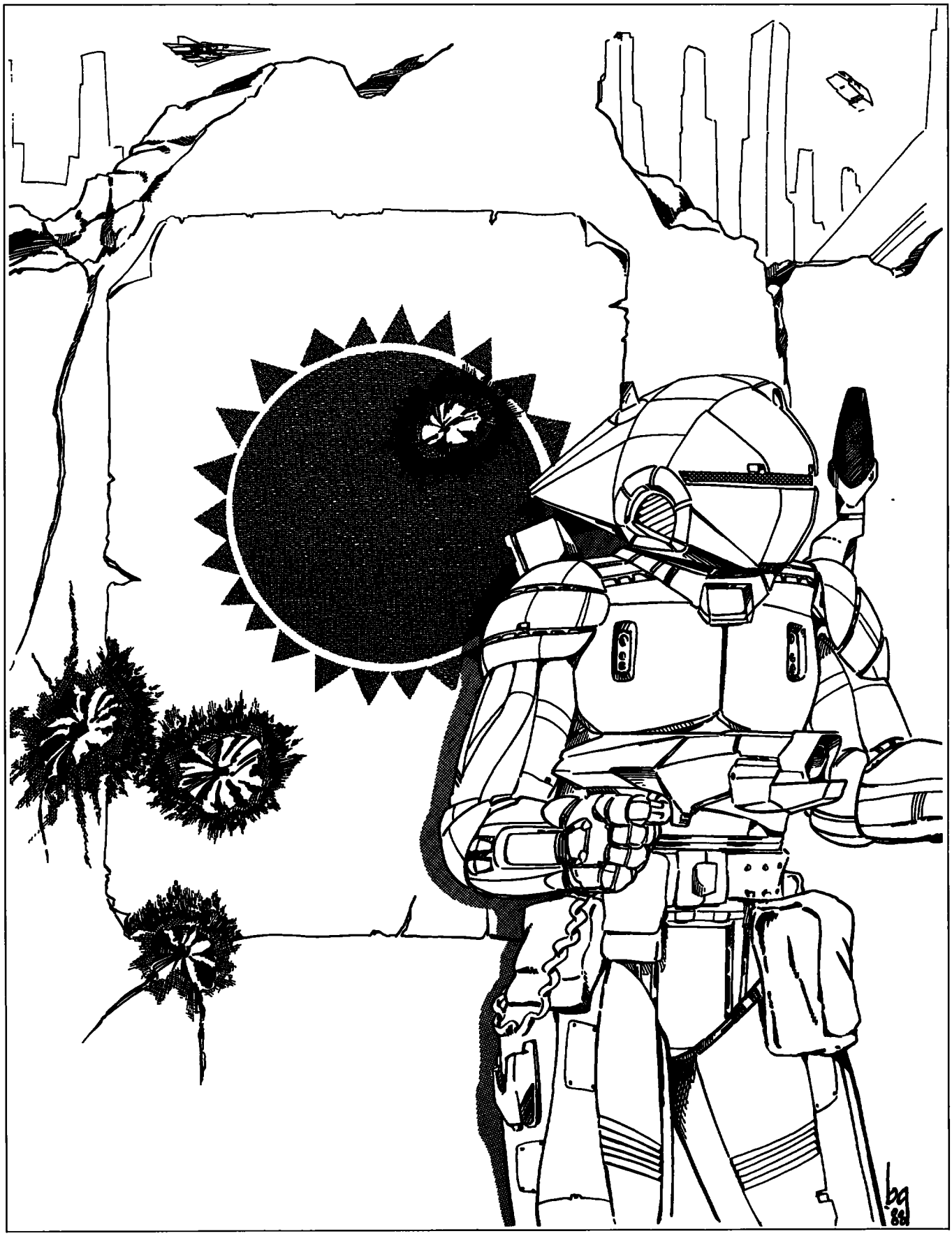
Imperial depots are traditionally named for the sector in which they are placed; for example, the Imperial depot in Corridor sector is named Depot/Corridor

Name	*Hex*	*UWP*	*—*	*Remarks*	*Allegiance*	*Gas Giant?*
Depot/Deneb	1613	A100644-G	D	Na Ni Va	No	
Depot/Corridor	1511	A686354-F	D	Lo Ni	—	G
Depot/Vland	2728	A594677-9	D	Ag Ni	Vl	
Depot/Lishun	1219	D788367-7	D	Lo Ni	—	
Depot/Antares	2021	B544556-C	D	Ag Ni	An	
Depot/Gushemege	3016	A3406AB-E	D	Ni Po De	St	
Depot/Dagudashaag	3121	A310244-D	D	Lo Ni	Im	
Depot/Core	1518	A86A422-F	D	Ni Wa	Im	
Depot/Fornast	1811	A878210-A	D	Lo Ni	Im	
Depot/Ley	1420	A453532-A	D	Ni Po	Im	
Depot/Ilelish	1022	B362558-C	D	Ni	Il	
Depot/Zarushagar	1920	A6888CF-6	D		—	
Depot/Massilia	0301	B78A777-C	D	Wa Ri	Im	
Depot 1/Delphi	0832	A583447-A	D	Ni	Ma	
Depot 2/Delphi	1205	A787200-A	D	Ni	Ma	G
Depot/Daibei	0326	A9B9520-F	D	Ni	Da	G
Depot/Diaspora	2018	C000765-D	D	As Na	—	
Depot/Old Expanses	1213	A00055A-F	D	As Ni	So	
Depot/Solomani Rim	1911	A00066D-F	D	As Ni Na	So	

Allegiance Abbreviations: — = No continuing control. An = Antares. Da = Daibei Il = Ilelish. Im = Imperial. Ma = Margaret. No = Norris. So = Solomani. St = Strephon. Vl = Vland

The Rebellion has changed all that. Depots, with the ability to service the war fleets of the Imperium, have become not only vital support elements for every faction of the Rebellion, but they have also become battlefields which are constantly fought over by a large number of both raiding fleets and invading forces

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The Armies of the Imperium

Once civilization reaches beyond the bounds of the planetary surface, the nature of armed forces changes Interstellar navies rise in importance because they can control the means of access to star systems and new worlds. The role of the army changes significantly in the process.

Most armies are defensive in nature. Their purpose is to resist invasion and to keep the peace on a specific world. A select part of an army is given the mission of offensive operations; these special units are the ones that undertake invasions of other worlds.

THE ORGANIZATION OF ARMIES

Armed forces are organized into successive layers of military units Each layer provides a span of control over a number of subordinate units. Generally, a unit can control several (from three to seven) subordinate units.

Armies: An army is composed of several corps. It is commanded by a general. An army is a command structure which rarely leaves its world.

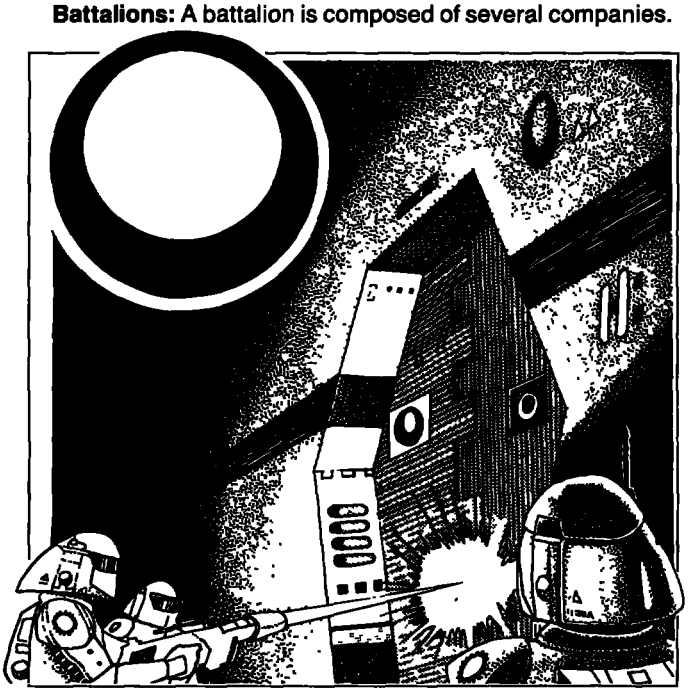
Corps: A corps is composed of several divisions. It is commanded by a lieutenant general.

Divisions: A division is composed of several brigades or several regiments. It is commanded by a major general.

Brigade: A brigade is composed of several regiments or several battalions. It is commanded by a brigadier general.

Regiment: A regiment is composed of several battalions. It is commanded by a colonel.

Battalions: A battalion is composed of several companies.



It is commanded by a lieutenant commander A battalion is the basic military unit in the Imperium. It contains approximately 500 men.

Companies: A company is composed of several platoons. It is commanded by a captain.

Platoons: A platoon is composed of several squads. It is commanded by a second lieutenant or a first lieutenant.

Squads: A platoon is composed of several soldiers. It is commanded by a sergeant. The squad is the smallest military unit.

TYPES OF MILITARY UNITS

A wide variety of military units are possible, but most are specialized organizations with specialized missions. For the broad spectrum of military missions, there are only four military unit types: infantry, armor, cavalry, and special units.

Infantry: Infantry units are composed of soldiers who fight with individual weapons. An infantry unit depends on the skills of its soldiers to execute basic tactics in order to achieve its mission. Although the concept of the individual soldier may seem outmoded in a technological society, the most dependable way of seizing and holding territory remains the use of the individual soldier: the infantry.

Originally, infantry units were also called foot units because their transportation was walking. Higher tech level infantry units are provided with transportation so they need not walk to the battle. Tech code Industrial and Pre-Stellar infantry may (about half the time) be motorized (with transportation provided by wheeled trucks). Tech code Early Stellar infantry is generally half-motorized and half-equipped with grav vehicle transportation. Tech code Average Stellar and higher is equipped with grav vehicle transportation.

If the transportation equipment of the infantry is provided with armor, the unit is called armored infantry.

Specialized infantry may be equipped with individual grav belt transportation, with legged vehicles for operations on extremely rugged terrain or in restricted environments, or with individual armored suits for greater protection.

Cavalry: Cavalry units are composed of soldiers who are provided with fast, cross-country vehicles The name originates with the use of horses to provide mobility, but current usage

ARMY UNITS OF THE IMPERIUM

TROOP UNITS

Troop units can be uniquely identified by their size, type, mobility, and identification. Combat factor and Tech Level may sometimes be important The troop unit may be shown in words or in symbols.

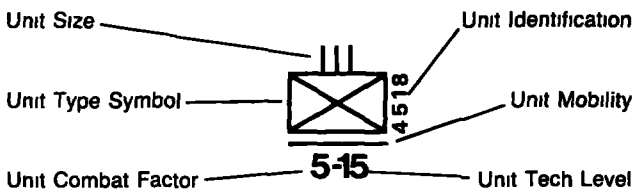
Descriptions: A troop unit being described in words should include everything necessary to uniquely identify it A typical description would be.

4518th Imperial Lift Infantry Regiment

This description includes identification, mobility, type, and size (the Imperial indicates allegiance and is part of the identification).

Symbols: The Troop Unit Format shows how a troop unit would be described using symbols

TROOP UNIT FORMAT



TROOP UNIT SIZES

Symbol	*Unit Size*	*Relative Strength*
II	Battalion	1 to 2
III	Regiment	3 to 7
X	Brigade	10
XX	Division	20
XXX	Corps	50 to 100
XXXX	Field Army	500

Troop unit size symbols are placed above the troop unit symbol box and centered.

TROOP TYPES AND MOBILITY

Symbol	*Type*	*Mobility*
	Infantry	
	Armored Infantry	
	Cavalry	
	Armored Cavalry	
	Tank or Armor	
	Marine	
	Jump Troop	
		Lift or Grav
		Motorized
		Foot (no symbol)

The troop unit symbol is placed within the military symbol box; the troop mobility is usually placed under the box

EXPECTED TROOP STRENGTHS ON A SPECIFIC WORLD

This table allows the computation of the specific number of battalions which a world may have as military units Each battalion has a combat factor of 1, the relative strength factor of larger military units is expressed in terms of battalions, so larger units may be created from those generated by this table For example, a world with 10 battalions (from this table) could be expected to have them organized into a brigade (strength = 10) of two regiments (strength each = 5) of five battalions each

In order to use this table, the specific World Population and Tech Level must be know

	Population										
TL	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*A*
0	–	–	–	–	–	–	–	1	10	1C	1K
1	–	–	–	–	–	–	1	5	50	5C	5K
2	–	–	–	–	–	1	5	50	5C	5K	50K
3	–	–	–	–	1	10	1C	1K	10K	50K	100K
4	–	–	–	–	1	10	1C	1K	2K	20K	200K
5	–	–	–	1	2	3	30	3C	3K	30K	300K
6	–	–	–	1	2	3	30	3C	3K	30K	300K
7	–	–	–	–	1	2	20	2C	2K	20K	200K
8	–	–	–	–	1	2	20	2C	2K	20K	200K
9	–	–	–	–	–	1	15	150	15C	15K	150K
10	–	–	–	–	–	1	15	150	15C	15K	150K
11	–	–	–	–	–	1	12	120	12C	12K	120K
12	–	–	–	–	–	1	12	120	12C	12K	120K
13	–	–	–	–	–	1	10	1C	1K	10K	100K
14	–	–	–	–	–	–	7	70	7C	7K	70K
15	–	–	–	–	–	–	5	50	5C	5K	50K
16	–	–	–	–	–	–	5	50	5C	5K	50K

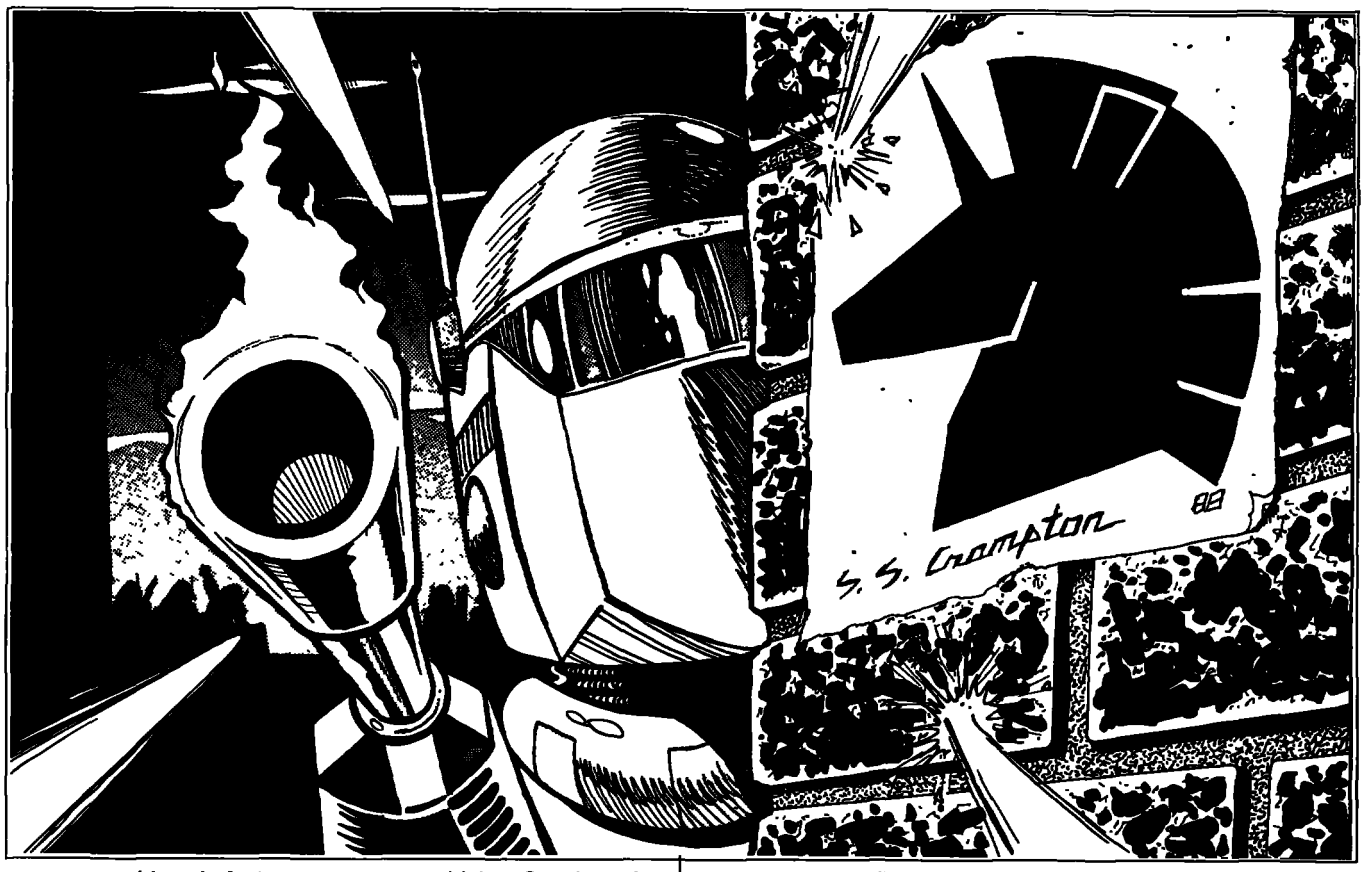
Symbols: Letter codes indicates numbers in the following sequence: C = 100, K = 1000 For example, an entry of 1C in the table above means 100, an entry of 100K means 100,000

Note: If the world has a hostile environment (Atmosphere 0, 1, 2, 3, 4, 7, or 9+) shift the Population column one to the left (effectively reducing the number of battalions present)

UNIT IDENTIFICATIONS

Identifications for troop units are ordinarily numbers which range from single digits to four (or even five) digits. The numbers are assigned arbitrarily by the Imperial bureaucracy as the units are raised, as a result of mixing and transfers, the numbers are scattered throughout the Imperium in no particular order, although lower numbers tend to be closer to the core, and higher (4-digit) numbers tend to be on the borders Each size unit (battalion, regiment, brigade, division, corps, and field army) has its own seqence of numbers

When generating or determining military unit identification numbers, randomly generate the number



overs any soldiers in fast, cross-country vehicles. Cavalry units are used for scouting and reconnaissance, guarding the flanks of the infantry, and fast reaction forces.

Cavalry units at the lowest tech codes are transported by animals such as horses. As technology advances, horse substitutes become available. At tech code Industrial and Pre-Stellar, cavalry is motorized (with transportation provided by wheeled trucks). Tech code Early Stellar cavalry is generally half motorized and half equipped with grav vehicle transportation. Tech code Average Stellar and higher is equipped with grav vehicle transportation.

If the transportation equipment of the cavalry is provided with armor, the unit is called armored cavalry.

Armor: Armor (or tank) units are composed of soldier crews who operate fighting vehicles. Tanks initially appear at tech code Industrial when they maneuver on treads. About half of tech code Early Stellar tanks are grav vehicles. All tanks at tech code Average Stellar or above are grav vehicles.

Special Units: Specialized units trained for assaults, special operations, or invasions are given a number of different names.

Marines are units normally assigned to squadrons or fleets in order to give them a military reaction capability. They are under navy jurisdiction.

Commandos are specially trained for the conduct of raids. They are under army jurisdiction.

Jump troops are specially trained units assigned to planetary invasions. They are lightly armed infantry, generally equipped with battle dress and whatever support weapons can be man-carried.

Artillery: The task of providing remote firepower support to units in battle falls to the artillery. Independent artillery units are not normally encountered; their strength is assumed to be part of the units they are assigned to support. For example, an infantry battalion normally has a platoon or a company of artillery fire support assigned as an integral part of it.

IMPERIAL FORCES

The Imperium maintains standing military forces in order to provide security for its bases and governmental offices, and in order to maintain peace and order. Imperial forces range in size from armies to platoons. Higher level units (armies, corps, divisions) coordinate with local popular forces and include them in their span of control Lower level units make up the reaction forces of the Imperium and are generally mobile units which can respond quickly when trouble flares up.

Imperial Forces in the Rebellion: Technically, the armed forces of the Imperium owe their allegiance to the Emperor. However, because there is a dispute as to who the Emperor is, each Imperial unit commander is forced to decide that unit's ultimate loyalty. That decision is influenced by superior unit commanders' decisions, by the decisions of other Imperial units on the same world, and by the preferences of the members of the unit.

Once an Imperial unit has declared its preference, individual members of the unit may proceed according to the dictates of their own consciences. Some will desert rather than serve a faction they disagree with Others will serve quietly until an opportunity presents itself, and then they will take some action in support of their preferred factions: sabotage, betrayal, subversion, or espionage.

The result is a distinct lack of dependability in Imperial military units. Commanders are forced to carefully analyze the preferences of their subordinates and carefully assign dependable units to crucial missions. Many Imperial military units become defensive in nature, content to occupy bases until the end of the Rebellion is in sight.

On the other hand, Imperial units which have declared themselves for a specific faction are used as much as possible, precisely because they have declared their loyalty Factions deploy those units wherever they can in order to achieve the best possible results.

POPULAR FORCES

Popular forces are reserve troop units raised from the local population. Their purpose is clearly the defense of the population and territory of a specific world, and their training is directed toward that mission

Although all popular forces are provided with basic training in the military sciences, they are given specialized training in areas that are appropriate to their specific world. For example, on a frontier world, some popular force units would be trained in combat engineering and would be able to use that training in the construction of roads, bridges, and other improvements in the world's infrastructure.

On a vacuum world, some popular force units would be trained in vacuum rescue operations; their expertise would be useful in disaster relief.

On a water world, some popular force units would be trained as aquatic marines and others as naval troops; their experience with operations on and under the seas suits them to undersea missions, to control of the seas and transportation choke points, and to sieges.

On a High Population world, some popular force units would be trained for antiterrorism operations They are suited to operations against dissident elements which naturally arise in a high population environment.

Popular forces are raised on a specific world and rarely leave that world

Popular Forces in the Rebellion: Most populations are split in their support of various factions of the Rebellion, popular forces reflect that same split If a world is solidly in support of a specific faction, then its popular forces share that allegiance. Where a world is undecided, the popular forces are also split in their loyalties.

MERCENARY FORCES

Military force is often in demand for the protection of merchant corporations, industry, or new colonies. Because of the size of the Imperium, it is not always possible for Imperial forces to respond when trouble strikes, and a specific world may not have enough population to provide popular forces.

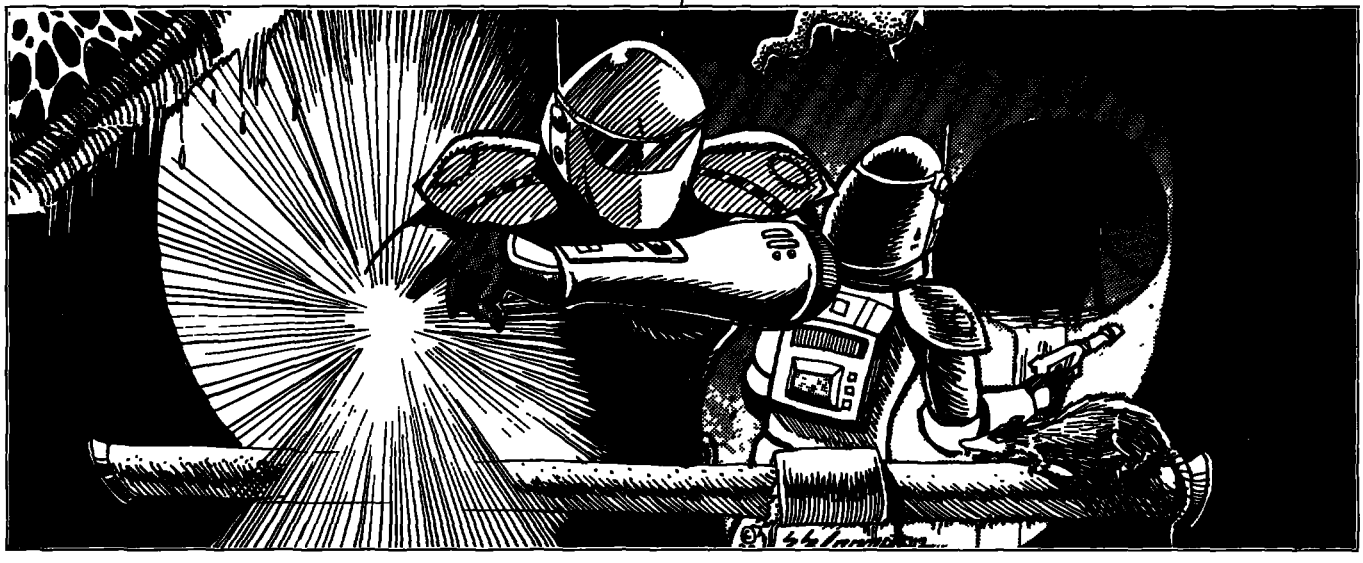
To fulfil this need for troops, the mercenary unit has been created Mercenary units are small military units staffed by military veterans and available for hire to the highest bidder. Because such units are experienced and able to move quickly, they are often hired as an expedient alternative to raising citizen units. Most mercenary units are no larger than companies or battalions. They provide their own basic equipment; however, any special mission needs are supplied by their employers.

Mercenaries in the Rebellion: The chaos of the Rebellion has created a thriving market for military units In addition, some military units have decided they cannot support the faction they are initially placed under; they have fled their assignment and are now hiring themselves out to causes they support (or at least do not actively dislike).

EXPECTED OPPOSITION

Travellers within the Imperium can expect to encounter armed forces; the Armed Forces of the Rebellion tables show a method of computing the expected size of the military forces a world will have

Unit Identifications: Because of the large numbers of military units to be encountered within the Imperium, the military hierarchy assigns permanent numbers to each unit in order to better identify it. Generally, low numbers identify older, more elite units; higher numbers identify newer, less experienced units. There is an extensive overlap in assigned unit numbers, and it is not uncommon to encounter distinctly different 100th Tank Battalions on several different worlds.



Agencies

Once the nature of the Rebellion becomes clear to the participants, it will also become clear that not all aspects of the conflict can be resolved by navies and armies. Much of the fight for the hearts and the minds of the people will have to be fought with information systems, public relations campaigns, advertising, and dirty tricks. Much of this sort of activity is traditionally the realm of the intelligence agency—the spy network.

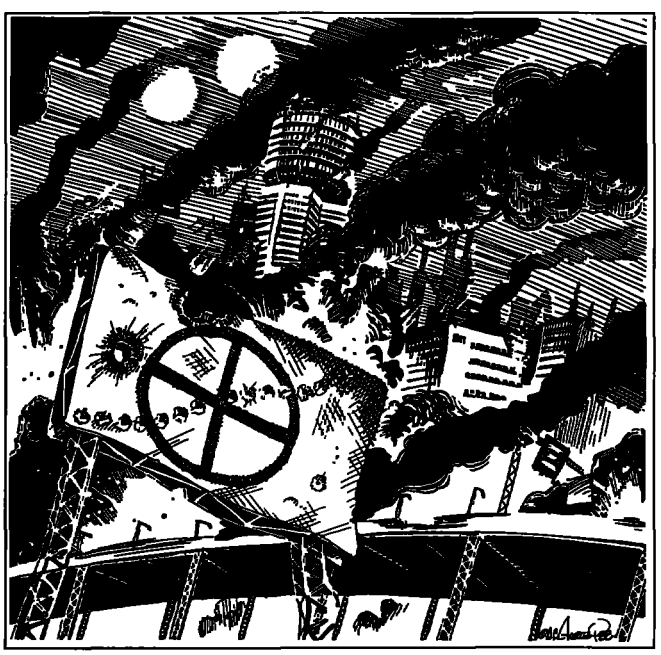
But the strategies of the Rebellion call for more than a band of spies capable of digging out specific bits of information, and more than a band of saboteurs who can blow up bridges or factories belonging to the opposition. Instead, they need powerful organizations that can shape public opinion and bring it carefully into a direction and to a degree that will assure support for a specific faction. These agencies must combine the abilities of psychologists, advertising agencies, intelligence networks, censors, and scores of other organizations

But every faction had to start somewhere. Their usual starting point is the existing intelligence agency.

THE NEW MANHATTAN PROJECTS

When the fate of an interstellar government hangs in the balance, almost any price could be paid for a result that favors your own side As soon as it becomes clear that navies and armies will not succeed in gaining control of a world, the leader of a faction turns to his intelligence agency and asks, "What will work?"

Their answer determines the next step in the campaign for control of the Imperium. Massive amounts of money can produce answers to almost any problem Given the circumstances, the present problem is to control the High Population worlds of the Imperium There are hundreds of ways to achieve that end, but only a few will work on any specific world.



The new Manhattan Project, by whatever name it goes by, is dedicated to finding those specific methods to achieve that end on worlds

AGENCIES

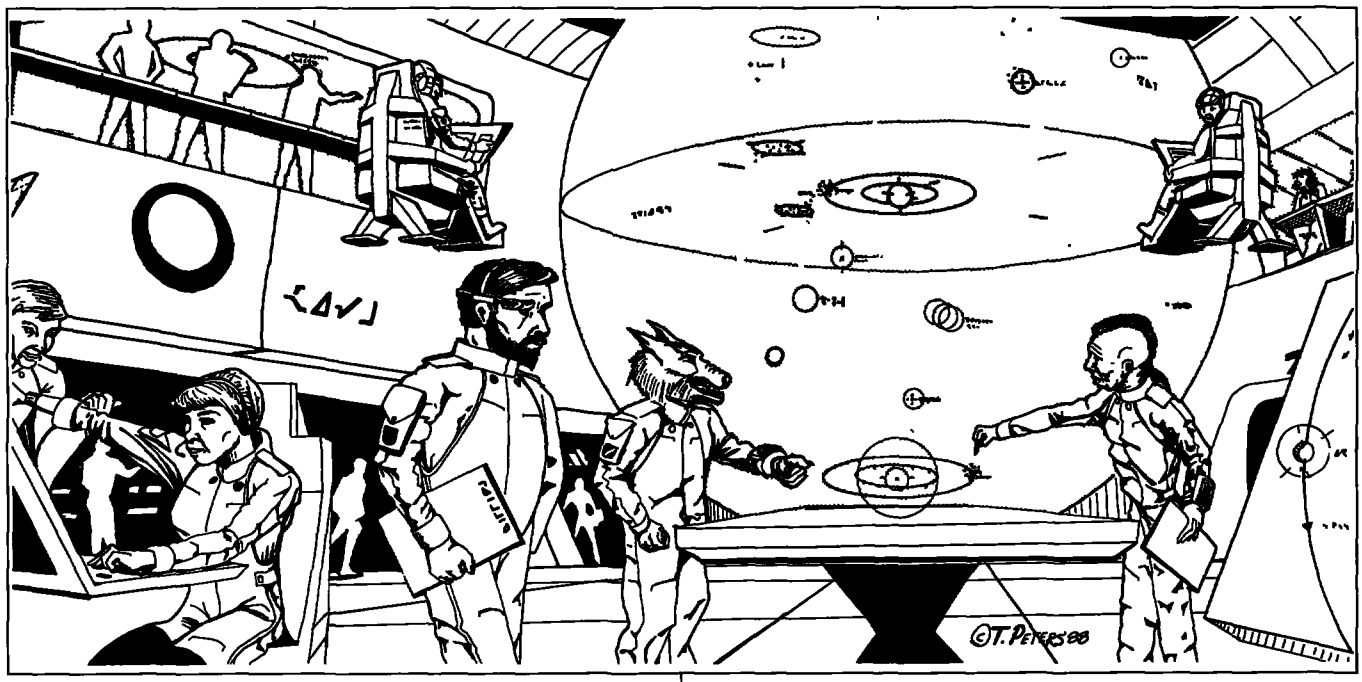
Each faction has an intelligence agency which serves the purpose of being responsible for its own version of the new Manhattan Project.

Antares: Brzk maintained a minor intelligence network in order to better understand and be able to react to situations within his Domain, but when he declared independence for his Domain, he immediately established a stronger agency capable of providing widespread information, as well as undertaking covert operations Brzk's Trasilon is a biracial organization which includes both humans and Vargr as full participants. Brzk also has the ability to gain access to the intelligence organizations of each of the confederations within the Julian Protectorate.

Daibei: Daibei began with the least available assets and took two steps to remedy that problem. First, the nobles of the sector joined together and pooled their information in an effort to root out every possible intelligence agency operative they could find SolSec, INI, and even megacorporation agents were found and compromised, then either forced out of the territory or allowed to participate in a new intelligence network That new intelligence agency was a sham. The real agency was established by the University of Warinir using the best technology available in the areas of computer and psychological methods.

Using its cover name, the psychology department of the University of Warinir specializes in large scale public relations campaigns designed to change opinions in favor of a specified faction.

Dulinor: Originally, Dulinor's agency was a part of the Imperial Naval Intelligence. When Dulinor began preparations for his assassination, he recruited most of INI within his sector and



left an ineffective surrogate in its place. That surrogate still exists now, feeding incorrect information to Lucan and his parts of INI.

Dulinor's intelligence network proved especially skilled in manipulating information in order to achieve the required results

Lucan's Imperium: Lucan retained some of the most powerful intelligence agencies in human space Indeed, he controls two of them Imperial Naval Intelligence (INI) and the Imperial Ministry of Justice (MOJ).

The INI can draw on the assets of the entire Imperial Navy and is primarily concerned with military intelligence; it tracks starship and troop operations, and can mount intelligence-gathering activities into all parts of the Imperium.

The MOJ is primarily concerned with Imperial society; it has contacts with the court systems of the worlds of the empire, and it has an intelligence network which concentrates on criminal activity. The MOJ is expecially valuable when dealing with the criminal elements of the empire and can offer great rewards (in terms of amnesty or pardon) to those who support Lucan.

Margaret: As a noble, Margaret did not either have or maintain her own intelligence agency. As her faction rose in strength, she was able to attract to her side the Vemene, the covert security agency for Tukera Lines With operatives located all along Tukera's routes throughout the Imperium, the Vemene provided a perfect, ready-made agency for a newly powerful noble.

Norris: Norris' intelligence agency is the remains of Naval Intelligence in the Domain of Deneb, now called Deneb Imperial Naval Intelligence (DINI). The organization was provided with nearly unlimited assets during the Fifth Frontier War, and it still retains them today. Because of the cosmopolitan nature of the Imperial Navy and the Spinward Marches region, DINI is capable of supplying Aslan and Vargr agents as well as human ones The major objective of DINI is to strive to predict operations by Vargr and Aslan located on the borders of the Domain, and to mount operations which will frustrate or prevent those Vargr and Aslan activities.

Solomani: SolSec has always been the Solomani intelligence agency; it has agents in all parts of Solomani society, and in many parts of neighboring Imperial society. Because SolSec monitors have their own independent careers throughout society, SolSec is able to call upon expertise in widely diverse fields.

Strephon's Imperium: Strephon reappeared in Gushemege sector and brought together what he could of the available assets in order to create a new intelligence agency. Existing INI forces had already been pressed into the service of Lucan's Imperium. Instead of using these forces, Strephon turned to the Imperial Interstellar Scout Service assets in the sector. And after winning the allegiance of the Imperial Interstellar Scout Service, Strephon charged them with winning the High Population worlds for him

Vargr: There is no centralized Vargr intelligence agency in existence.

Larger Vargr governments maintain their own intelligence agencies, and the constantly shifting loyalties of the Vargr make it possible for each agency to keep agents in the employ of most other such Vargr agencies. Some Vargr agents are also in the employ of Imperial agencies.

Vland: The Vilani Empire makes use of three intelligence agencies. Naasirka, Sharurshid, and Makhidkarun maintained a protective security agency, and each megacorporation transformed its agency, turning it into a full-service intelligence agency.

Zhodani: The Zhodani make use of two intelligence agencies: These include the Tavrchedle' and SORAG. Tavrchedle' is primarily an internal attitude and security police; its responsibility is internal order within the Zhodani Consulate. It is charged with locating and removing agents of external powers from the Zhodani Consulate.

Factions of the Rebellion

Faced with no clear choice of action, the hierarchy of the Imperium and the governments of its neighboring empires each chose its own course once the news of Strephon's assassination arrived At least factions can be recognized as fighting for some territorial or ideological cause.

THE FACTIONS

There are 13 competing factions.

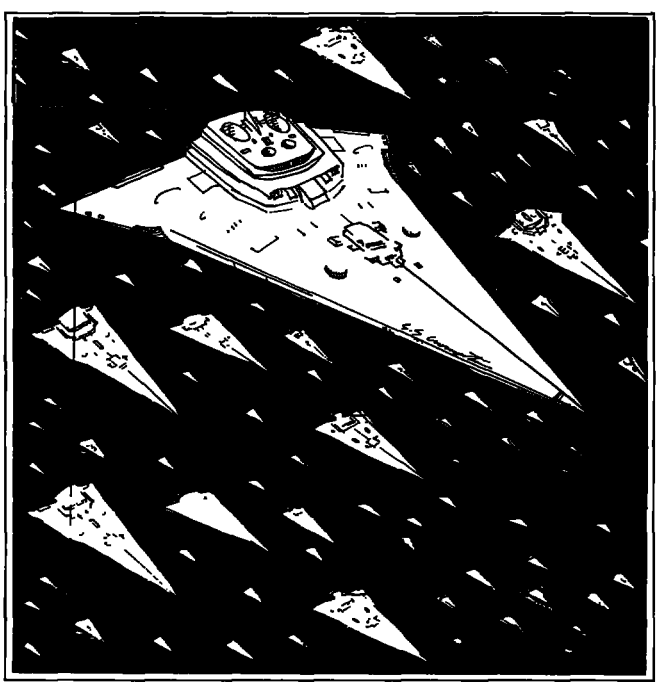
Lucan: Lucan is technically the legitimate heir to the throne of the Imperium. He holds the reins of power and controls the existing Imperial bureaucracy.

Margaret: Questions about Lucan's fitness to hold power caused some nobles within the Moot to look for an alternative. Margaret is an alternative heir to Strephon and is supported by a large fraction of the nobility.

Dulinor: Dulinor claims the throne of the Imperium by right of assassination. He was forced to flee Capital after killing Strephon, but he has created for himself a base of power in Ilelish sector

Antares: Brzk, Archduke of Antares, presented himself as an alternative candidate for Emperor and considered himself a worthy choice Ultimately, however, he realized that the Moot would not accept a nonhuman on the throne of the Imperium, and declared his Domain independent in order to preserve it.

Daibei: Daibei sector stood fast against mounting Solomani invasions as news of Strephon's death arrived and ultimately turned them back. When Lucan ordered Daibei's fleets transferred to the fight against Dulinor, Horvath (senior Duke of Daibei sector) assembled a council of nobles and established an independent and neutral region of Daibei



Vland: Lucan withdrew Imperial fleets from Corridor and Lishun sectors to mount an increasing offensive against Dulinor. Vargr raiders moved into the vacuum, plundering Imperial worlds When Vland's fleets were ordered withdrawn, Vland balked and declared its independence. The sector is now governed by the Ziru Sirka—the reestablished Vilani Empire.

Strephon: Although reported killed in the assassination of 1116, the man Dulinor killed was actually a double; Strephon survived and was spirited away by loyal Imperial Navy officers. He now continues his rule as well as a campaign to exert it throughout the Imperium from a base of power in Gushemege sector.

Varian: Many people believe Lucan killed Varian (his older brother) in order to become emperor himself. A quiet, determined group of nobles had taken the martyred Varian as their leader, and revenge on Dulinor and Lucan is their cause.

Norris: The recently named Archduke of Deneb has assumed the reins of government of the frontier sectors of the Imperium and holds them in trust for the ultimate winner of the Rebellion. In the interim, he fights a delaying action against the Aslan, Vargr, and Zhodani.

Aslan: Landless Aslan ihatei in search of territory have sensed weakness in the decaying Imperium and are invading Imperial border regions.

Vargr: Vargr governments and corsairs alike were held out of Imperial territory only by continuous fleet patrols. When the fleets were withdrawn by Lucan, the Vargr found it easy to cross the border to plunder and loot

Zhodani: The Imperium had long been a threat to Zhodani security and territorial integrity. The collapse of the Imperium provides an ideal opportunity for the Imperial threat to be eliminated once and for all

Solomani: As soon as word of the assassination reached the Solomani Confederation, plans were laid for large-scale fleet movements across the Imperial border in order to reclaim territories lost to the Imperium more than a century before. Of especial importance was the need to retake Terra itself from Imperial hands.

FRIENDS AND ENEMIES

Each faction in the Rebellion has the opportunity (on the basis of goals and ideology) to choose its enemies and to choose its friends. Enemies become a priority for attack and defeat; friends can be depended on for assistance and support.

The stakes of the Rebellion are too high for very many friendships to form. When the leaders of two factions both want to end up as Emperor, it is difficult for either to consider an alliance, no matter how profitable and no matter how temporary On the other hand, the goals of the factions are contradictory enough so that a great many factions are direct enemies.

The Friends and Enemies table shows the relationships between the factions of the Rebellion. If an enemy symbol is shown, the two factions are in direct enough conflict that they will not form alliances and will not cooperate even temporarily against other factions If a friend symbol is shown, the two factions consider their goals related enough to permit routine, continuing cooperation against others. If no symbol is shown, the two factions consider their goals diverse enough to allow temporary alliances to pursue results that will benefit both.

CONSEQUENCES OF THE REBELLION

The Rebellion has shattered the Imperium Its effects are far-reaching and difficult to recover from. Some effects are obvious, but others will become apparent only with time. One thing is known for certain: The stable, safe Imperium that had existed for a 1000 years has now been changed forever.

Polarization of the Imperium: The first three years of the Rebellion saw violent reactions to the death of Strephon. Dulinor's rebellion against the authority of the Imperium, and his claim to be the true Emperor reverberated throughout the empire. Where some proclaimed allegiance to Dulinor, others sided with Lucan, and still others found it in their best interest to make their own way and proclaimed their independence The very rise of the factions, however, produced an ongoing conflict within the Imperium· the polarization of the peoples and the worlds of the empire into many independent, rival camps. This polarization will not soon wither away

Devastated Worlds: The first three years also saw each of the factions attempting to consolidate its hold on the worlds within a reasonable radius of its base of power. Many worlds could be recruited simply because they saw the futility of resisting in the face of massive power; those that did resist were bludgeoned into submission

On an interstellar scale, the bludgeons were used as small asteroids. The messes they make are cleaned up by armies. The result is a number of devastated worlds within the borders of the Imperium.

Disrupted Trade: The battles fought for worlds and trade lanes make the normal course of business extremely risky and very expensive. Prudent businesses find it profitable to avoid areas in conflict; they stay to safe sidelines. The result is a severe disruption in trade. Even when businesses do operate in the battle zone, they charge higher prices. No matter what happens, the Rebellion will produce disruptions in trade.

Invasions from Outside: The Rebellion shows the ordinary observer that the Imperium is no longer the strong, secure empire that will not tolerate outside interference. The security that the Imperium has worked so long to provide vanishes overnight when there is no longer the dedicated command structure and the caring Emperor to provide it.

Rimward, the Solomani saw the potential for invasion. Coreward, Vargr continued, and they stepped up the plunder campaigns they had always made. Spinward, the Aslan saw potential without rival for acquiring new territories for their landless ihatei.

Lucan

Young Lucan Martin III Alkhalikoi never expected to be Emperor The branches of the family tree spread too far for the throne to devolve to him As a result, Lucan was never trained to be an Emperor. He was raised as a noble son—and a younger son at that—to expect comfort and deference, he never learned the responsibilities of command or the accountability of office He was spoiled as a child, deferred to as an adolescent, and politely ignored as a young adult When his parents died, the Emperor provided both Lucan and Varian with income and apartments at the Imperial palace; no one, however, provided the firm hand and gentle understanding that would shape the man into a responsible adult.

That spoiled brat now sits on the throne of the Imperium. The ramifications are obvious.

The Emperor is the supreme head of the Imperium. Chains of allegiance and fealty stretch up from the lowliest citizen, the lowest knight, through a network of officials, bureaucrats, and nobles, to the person of the Emperor. The Emperor establishes, by his demeanor, by his actions, and by his tone, how he expects his subjects to act. Tradition has always been that honor is a paramount quality within the Imperium Individuals are expected to act honorably, with respect even to their adversaries; honor and justice should guide the hand of every person acting for the Emperor.

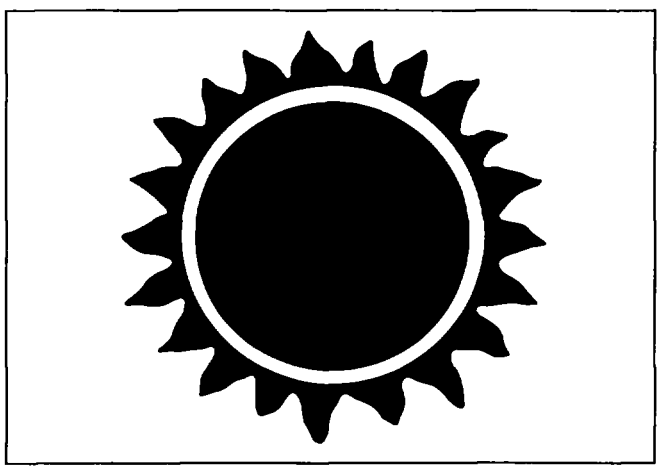
Lucan changed that concept his second day on the job. The order to stop Dulinor's cruiser as it left the Capital system reached a system defense boat squadron commander just as Dulinor arrived at the system jump point. The commander, unclear about the identity of his target (and well within regulations) held his fire. Dulinor sacked the man, stripped him of his rank, and exiled him to the frontier.

His brief comment established quite clearly to the Imperial Navy what was expected of it "I don't care what you do. I just want results. If you can't give me results, then get out." Faced with a choice of losing rank they had worked decades for, most of the Emperor's admirals chose to stay When they addressed their staffs and their subordinates, they conveyed the same philosophy. Within months, every person in the Imperial Navy knew that any means were justified if the end was achieved.

LUCAN

The Third Imperium has not been destroyed by the Rebellion—merely shattered The largest remaining piece is still the Third Imperium. It needs a strong, powerful leader who can help put the pieces back together Lucan probably isn't the man to do it.

Name: Technically, Lucan's faction continues to call itself the Third Imperium. Opposing factions call it Lucan's Imperium.



Leader: The Emperor Lucan is titular and actual head of the Third Imperium.

Territory: Although it claims all territory formerly under control of the Third Imperium, Lucan's Imperium actually controls the sectors of Core, Fornast, Ley, and parts of Massilia and Dagudashaag

Constituents: Lucan's Imperium counts as its supporters all citizens of the Imperium within its territory It depends on some Imperial citizens in other territories to also provide support

IDEOLOGY

Any means justify the end

In one sense, Lucan is the easiest of the many factions to follow His personal claim to be Emperor is supported by the facts and by tradition. Lucan represents the status quo; he is the standard against which other factions are judged Lucan also represents the easy choice· Because he is at the head of the government which existed under Strephon, he is the automatic choice which requires no decision

Lucan's supporters say that a citizen who uses the facilities of the Imperium becomes a supporter of Lucan. In reality, most Imperial citizens in Lucan's territories use the Imperium because they have always used the Imperium. They accept his rule because they see no available alternative

The philosophy of Lucan's faction is easily summed up as:

Any means justify the end. Lucan, in his personal behavior, had (probably) killed in order to win the throne. He expects no less a dedication from his supporters in the current struggle to end the Rebellion and to unite the Imperium under his rule.

Lucan's philosophy has several effects on his supporters as his philosophy is absolute· Those who cannot support it also cannot change it They must do as they are told, or they must get out. In the early months of the Rebellion, as Imperial officers, troops, and bureaucrats learned what was expected of them, many deserted. Those who remain are prepared to use any means to achieve their orders.

Lucan's philosophy is also fickle. It comes directly from the Emperor. When he changes his mind, everyone must follow immediately Followers are careful to cover themselves, documenting that they are following their commander's lead

THE IMPERIAL SYMBOL

Emperor Lucan, at the head of the existing Third Imperium, retains the right to make use of the classic Imperial sunburst. The sunburst was adopted as the Imperial symbol when Cleon I established the Third Imperium in the year zero.

IMPERIAL STRENGTHS AND WEAKNESSES

Lucan's Imperium began with the assets of the Imperium, losses and defections have reduced those assets, but the empire remains a strong force

Strengths: Lucan's Imperium claims three major strengths: the navy, the Imperial bureaucracy, and tradition.

The Imperial Navy under Lucan numbers less than 200 fleets. Of these, he counts 104 numbered fleets (many withdrawn from border sectors), 67 reserve fleets, 18 depot-based fleets, and four Imperial reaction fleets based at Capital.

The Imperial bureaucracy, an efficient support for the empire for more than 1000 years, was already in place when Lucan assumed control. The fact that Lucan's Imperium was a continuation of existing government made the transition easy.

Tradition is a strong force in Lucan's Imperium Allegiance requires no citizen decision They are part of the Imperium unless they make an active decision against the empire.

Weaknesses: Lucan faces threats on all sides, and his Imperium is weakened by two conditions: a central position and a widespread rejection of Lucan.

The territory held by Lucan is surrounded by territory under the control of other factions, so Lucan must maintain defenses on all fronts in order to keep other forces from encroaching His forces are the strongest, but he also has more territory to defend and more adversaries to defend against.

Lucan is also the subject of extensive criticism. The details of his brother's death make him out a murderer, no better than Dulinor, and to many people, worse. Lucan's authoritarian personality and newfound Imperial manner are also poorly received and do not help recruit allies to his cause.

ALLIES

Two major territories within the Imperium have declared unconditional allegiance to Lucan· the Domain of Gateway, and what remains of the Domain of Sol.

Tranian, Archduke of Gateway, rallied early to the side of the new Emperor Already present at Capital when the assassination occurred, Tranian participated in the preliminary search for the appropriate and legitimate heir to Strephon and made the pronouncement himself that Lucan was the proper heir Apparently motivated by nothing so much as honor and a desire to pursue the legally correct course, he helped install Lucan at a time when the confusion created by Dulinor threatened the peace and order not only of Capital, but of the Imperium itself.

Once Tranian had sworn fealty to Lucan, he felt there was no going back on his word. The loyalty and support of Tranian brings Lucan dozens of fleets, hundreds of worlds, and billions of subjects. Lucan, in turn, has magnificently rewarded this one of only two Archdukes to support the Imperium

Adair, Archduke of Sol, never even considered not supporting Lucan. The Domain of Sol was threatened by Solomani forces long before the assassination; when word of Strephon's death was made public along the Solomani border, their forces swept across in a concerted action that meant premeditation and planning. With Imperial forces pushed back from Terra and all along the border, it was quite clear that they could never survive without support from the main body of the Imperial Navy. Adair pulled back to the defensible Vegan Autonomous Region, giving ground only when necessary, and making the Solomani pay dearly for it. Within his defensive perimeter, he sent out his appeals to Lucan, asking, begging, demanding more forces, but always acknowledging Lucan as the legitimate Emperor. When every other Archduke but one did not support him, Lucan had to be pleased...annoyed as well, but pleased.

Lucan's Imperium

Lucan, controlling the Imperial bureaucracy, has drained border sectors of their fleets to crush Dulinor.

Dulinor

The assassin Dulinor began the Rebellion with his actions in the Imperial Palace on 132-1116.

Faction Name: Dulinor, by announcement in 1116, stated that he was the Emperor and titular head of the Third Imperium. Between 1116 and 1118, he referred to his empire as the Third Imperium or simply the Imperium. In early 1119, he formally named his government the Federation of Ilelish. Opposing factions generally call the faction Dulinor's Imperium, or simply refer to Dulinor.

Leader: Archduke Dulinor Astrin Ilethian rose to the highest levels of the nobility in the Domain of Ilelish with the approval and the support of the Emperor Strephon. As Archduke, he built for himself a strong following in the sectors of Ilelish and Zarushagar, and was readily accepted as the leader of the region when he assassinated Strephon and seized the throne for himself.

Territory: Dulinor's Imperium encompasses 36 subsectors centered roughly on Dlan, Dulinor's capital of the Domain of Ilelish. The territory includes nearly all of Ilelish sector and portions of Gushemege, Verge, and Zarushagar sectors.

Constituents: In addition to solid support within the territory of Dulinor's Imperium, Dulinor claims as his constituents a broad spectrum of Imperial citizens who want a deeper involvement of the Imperium in the affairs of its component worlds

IDEOLOGY

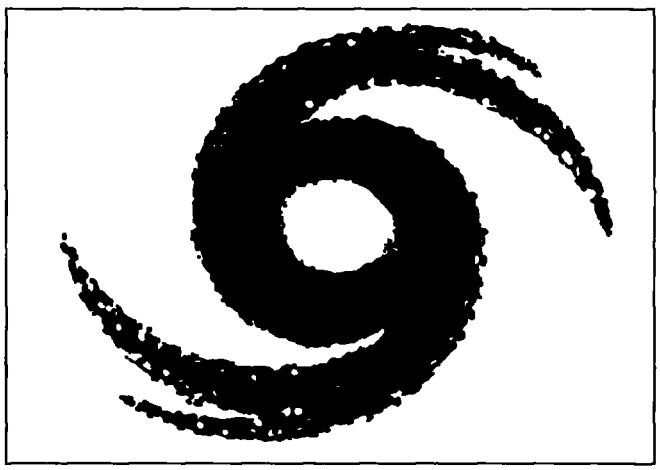
The Imperium must extend its benefits to its worlds, not merely to the space between worlds.

Unlike many nobles in the Imperium, Dulinor had a deep-seated feeling of responsibility for the masses of the empire. As he rose in noble rank, he developed a strong sense of purpose: to provide the greatest possible benefit for the greatest possible number of Imperial citizens.

Although the Imperium includes more than 8000 worlds, each has its own government. The Imperium rules the space between the stars; its effects are felt on worlds only through the channels of the independent governments on those worlds. Dulinor wants to exert more influence on those governments, charging them with more democratic, responsive policies

DULINOR'S SYMBOL

The Imperial symbol shows a single star, yet the Imperium is a unity of many stars. Dulinor selected, as the symbol for his advanced form of the Imperium, the galaxy itself, representing millions of stars considered together as a single unit.



DULINOR'S STRENGTHS AND WEAKNESSES

Dulinor's plan assumed that he would take over the Imperium intact. When that part of the plan was frustrated, the survival of his Imperium hinged on the strength and the weaknesses of his faction.

Strengths: Dulinor claims three basic strengths for his empire: the element of surprise, a moral appeal to individuals who want more involvement of worlds in the empire, and an easily defensible territorial position

Dulinor's first advantage was the benefit of surprise. He was able to act and then broadcast the first news of his actions before objective accounts could be disseminated. His own accounts, slanted to his best advantage, ensured that citizens within the Domain of Ilelish knew and sympathized with Dulinor's principles.

At the same time, Dulinor's principles themselves had a broad appeal. The tradition that the Imperium left world surface affairs to its component world governments meant that there was a broad disparity in citizen rights and privileges. The appeal of consistent and liberalized treatment of citizens within the Imperium was obvious to most, and gained an immediate acceptance. Dulinor's campaign proposed a gradual transformation of the worlds of the Imperium into liberal democracies.

Dulinor also enjoyed a territory that was easily defensible. Backed up against the vast voids of the Great Rift, it effectively shields his territory on two sides, reducing the frontage that must be defended against retaliatory attacks.

Weaknesses: Dulinor crippled the appeal of his faction by his murder of Strephon. Although there were well-documented precedents for his actions, and the dramatic changes he

planned for the Imperium required that there be extensive shifts in the Imperium, a broad public reaction against the murder worked against acceptance of him as a leader.

DULINOR'S HOMEWORLD

Dulinor's homeworld of Dlan/Ilelish (A8D1ADE-G) is a religious dictatorship, with its society shaped in great measure by the beliefs of its population. Virasa, the primary religion of Dlan, believes that a knowledge of God is impossible during one's normal life, that discussions of the existence of God or of his attributes is fruitless. Nevertheless, Virasin have extensive beliefs in the afterlife and its nature. They are taught that in the paradise of the afterlife, all knowledge will be theirs. By logical extension, great knowledge is equated with paradise, and Dlan supports a highly technological society patterned in large part on the Virasin concept of heaven.

Virasins believe only they will reach paradise; nonhumans and nonbelievers can only hope to sit outside the entrance to paradise for all eternity. Local custom dictates that nonbelievers on Dlan wear black in recognition of their unfortunate status Believers and nonbelievers are governed by different laws, but the distinctions apply primarily to allowed occupations and to taxation. Violent death is repugnant to Virasins, so military occupations are restricted to nonbelievers; lower tax rates for nonbelievers make up for the restricted occupations of the military and the police. By extension, Dlani military and police forces wear striking black uniforms.

Dulinor, born on Dlan and holder of a hereditary fief as a noble, is not a Virasin. Because of his background and his participation in Dlani society, he easily and naturally follows its clothing customs, and typically wears black.

THE ILELISH REVOLT

Dulinor's territory of Ilelish revolted once before.

Imperial authority met its first great challenge from within when, in 418, the world of Ilelish declared its independence from the Imperium and called for its sister worlds within Ilelish and Verge sectors to join in the establishment of a new order.

The problem had been a long time coming. The population of the Imperium was concentrated (then, as it is now) on High Population worlds that comprise fewer that a tenth of the available worlds. The focus of the expanding Imperium, however, was on increasing the number of worlds under its authority; because expanding frontiers was first priority, meeting the needs of High Population worlds fell somewhat lower on the list. After decades of neglect, the High Population worlds of Ilelish sector (and led by Ilelish, then the capital of the sector) began negotiations in 399 with the central Imperial government for the establishment of an autonomous region in Ilelish sector The population centers uniformly felt that greater control over their own interstellar trade was the key to greater profitability.

Emperor Martin III refused. Although the precedent of the League of Antares existed, Martin III and his advisers saw no pressing need to relinquish Imperial authority simply to relieve economic depression within the empire.

In 418, Ilelish declared its independence from the Imperium; it was joined by 12 other High Population worlds within a year. By 420, the revolt had spread to six subsectors.

Dulinor

Dulinor, the Emperor's assassin, has retreated to Ilelish to rally forces for his own drive for the throne.

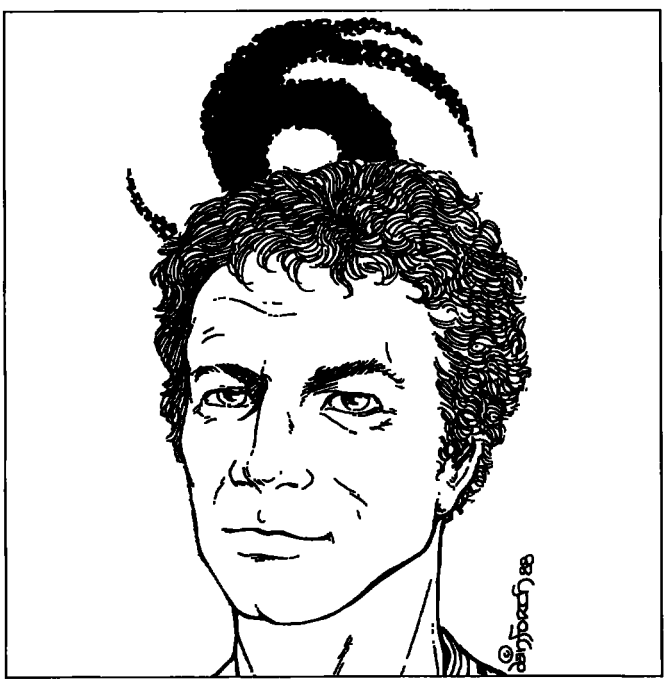
In 420, Martin III acted by imposing a blockade around the insurgent territory. Squadrons were mobilized from throughout the Imperium in order to fill out the siege lines. As the noose drew tighter, the density of ships in the line increased. As each world fell to the siege, the inevitability of Imperial victory became stronger.

The Imperium was patient in its campaign. It minimized its own losses by avoiding confrontations At the same time, its own overwhelming fleet force made confrontations rare. Instead, the revolt was slowly and carefully ground down.

The last world to fall was Ilelish itself When it did, in response to a demand for unconditional surrender in 435, the Imperium mandated the evacuation of all population in the lush equatorial zones, and then scrubbed the zones of their flora and fauna. Seven hundred years later, the equatorial zone of Ilelish remains a sterile desert. The capital of the Ilelish sector was shifted to Dlan, a High Population world which remained loyal to the Imperium.

The Ilelish Revolt challenged the central authority of the Imperium: In the face of the overwhelming assets of the Imperium, no part of the empire has any hope of seceding.

But the revolt also showed how the Imperium could flex its muscles. Squadrons and fleets stationed near the trouble spot would respond first. Where possible, world surface actions were avoided. As time passed, the Imperium mobilized and transferred fleets from more distant regions and used them to reinforce the trouble spots The Imperium was slow to respond, but it responded inexorably



Margaret

Margaret represents the moderate forces of the Imperium. Lucan's ascension to the throne happened too fast, without consultation of the nobles, and without proper analysis of the charges of misconduct levelled against the prince Many nobles naturally grumbled and talked of supporting an alternative candidate.

Once Lucan was actually on the throne and started giving orders, more nobles rallied to the moderate cause. Lucan's haste in taking the throne was criticized by Duke Simalr of Ushra, who added that under the circumstances, Lucan would require approval by the Moot before becoming Emperor. Lucan issued an order dissolving the Moot for one year. Duke Simalr protested the order as invalid. Lucan placed Simalr under house arrest. Nobles, seeing discretion as the better part of valor, avoided the Moot the next day, and it failed to convene for lack of a quorum Those nobles who could decided the time had come to return to their fiefs. Lucan was left with control of Capital.

But the moderates gained ground. The search for an alternative heir to the throne turned up Margaret. Many conceded that her claim was subordinate to that of Lucan, but if Lucan should die or be dethroned, Margaret could legitimately succeed him, and the Moot in clear conscience could approve the action.

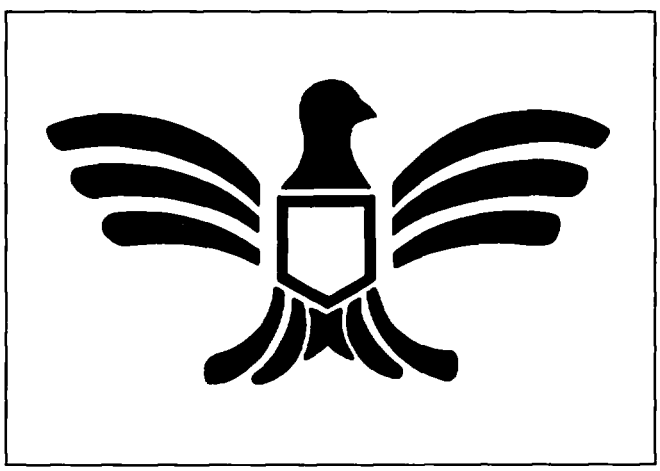
MARGARET'S FACTION

Lucan issued an order for Margaret's arrest, but she had already left for her estates in Delphi sector. The arrest order produced even more support for Margaret as pretender. By the time Margaret had arrived in Delphi, she had a strong base of power with support from nobles in all parts of the Imperium.

Name: The faction that follows Margaret has adopted her name for their cause. They are referred to as Margaret's forces, as in Margaret's Fleets, Margaret's Faction, or simply Margaret. Alternative designations include the Pretender, and the Empress.

Leader: Margaret is the personal leader of the faction. She has extensive assistance from a staff of nobles and experts who advise her on possible actions and plan out her faction's operations. All policy decisions are decided by her personally, but she leaves their execution to staff and subordinates.

Territory: Margaret's noble fiefs are located in Delphi sector, and as a Duchess of the Imperium, she already has extensive political power in the region. Her estates, located at Anaxias, deep in the Delphi Rift, are virtually unapproachable to most naval operations, making her base of operations safe and secure. Most of the sector declared itself for Margaret by mid-1117, as had several subsectors in the neighboring Massilia sector.



Constituents: Beyond Margaret's territorial subjects, she claims a sizable proportion of moderate nobles who agree with her philosophy. The fact that Margaret's territory is so close to Capital and its territory provides a steady stream of defectors fed up with Lucan.

IDEOLOGY

A return to the stability of the classic Imperium.

Margaret represents the classic values of the Imperium. The forces which support her fervently wish that the clock could be turned back and the chaos of the Rebellion could be totally avoided.

The Imperium of recent years was an efficient, well-run government that encouraged trade, industry, exploration, and stability. Large corporations were especially prosperous under the empire's protection; they were profitable, and they in turn provided employment to citizens and spread their prosperity throughout the Imperium.

The Rebellion has changed that, shifting the very foundations of profitable business into unstable sand. While each faction demands support from the corporations within its territory, Margaret represents the specific views of most businesses in the Imperium· a return to normalcy.

MARGARET'S SYMBOL

In 1031, Paulo III ascended the throne. One of his first acts was an award of a duchy in Delphi sector to his brother Prince

Asan. Most analysts agree that the move was intended to remove a possibly competitive brother from the intrigue of the Imperial court. When Prince Asan almost married Marian, the daughter of the Delphi's senior duke, he established his family line as the senior one in the sector To commemorate the marriage and to establish it as distinct from the Imperial family, Asan adopted the bird of prey as the family symbol. Margaret has used the symbol to represent her faction.

TUKERA LINES

Margaret is married to Count Blaine Trulla Tukera, one of three sons in the upper reaches of management for the Imperium-spanning Tukera Lines. The marriage provided Margaret with a loving husband and devoted friend before the assassination of Strephon; the fact that much of the power of Tukera could be placed in Margaret's control provided her with additional support when it became apparent that she was a pretender to the throne of the Imperium

Margaret, seeing the assassinations of Strephon and Varian, understood enough history to realize that a new Long Night was a definite possibility. She also knew that her own personal and family fortunes, her reputation in her home territories, and her experience with economic management could together be applied to delaying or avoiding such a catastrophe. Instead of raising great howling war fleets to conquer territory, Margaret is emphasizing the Imperial infrastructure.

Margaret is a transportation fan; her goal is to keep the ships moving, and as a result, to maintain the status quo. Food shipments from agricultural worlds to high population worlds help to save lives Machine parts shipments from industrial worlds to less-industrialized worlds save no fewer lives. Without transportation, Imperial territory is a vast domain of isolated worlds, each independent of the other, and each unable to interact with the other in any way.

Military ships are necessary; Margaret's Faction realizes the need and has acted upon it. Someone has to convoy the transport fleets through danger spots and choke points. But war fleets are useless. They destroy more than they ever can save, and Margaret's forces are committed to saving lives and worlds

Margaret intends to be a threat to no one. She seeks to build an island of stability where the mail still goes through. Her plan is to show the other participants in the Rebellion that a healthy, well-managed economy is a far greater treasure than the throne of the Imperium. She talks a lot about input-output structures and payoff matrices; Dulinor killed Strephon, but what did he really gain? And what did the peoples of the Imperium gain? Margaret is going to manage her territory and show everyone else that nurturing a realm is a greater task with greater rewards than is conquering it

If Margaret's strategy works optimally, she will be able to remain neutral in the coming succession wars; she'll be able to quietly rejoin the Imperium (on her own terms) once the dust settles Margaret is not without ambition, she would like to be Empress, but she doesn't want to rule for only a few weeks. Instead, her success (if she can achieve it) would be a testimony to her potential at a higher level. But if her strategy works at a less than optimum level, Margaret understands that she may have to devote the wealth of her region to allying with

Margaret

Margaret, supported by moderates in the Moot, has established a base of power in her own Massilia sector.

and supporting other factions. And if her strategy fails, Margaret knows that she may be forced to cut back, quietly abandoning entire star systems to their fate so that at least a skeleton of civilization can be preserved.

Margaret is naive. Her devotion is to transportation and to its preservation. Trade war she understands, but not true warfare and intrigue. She tends to underutilize (and underfund and underrate) espionage, covert operations, and even normal reconnaissance and scouting in pursuit of her goals. The enemies' plans and operations far beyond her borders are none of her affair. She believes (somewhat lamely) that what she needs to hear will come to her in due time.

Even within her own territory, Margaret underrates and underutilizes the intelligence assets she has. Spying is avoided. Instead, a careful search of public records—births, deaths, arrest and conviction statistics, letters written to district nobles in protest, and so on—is sufficient to find and track trends.

Margaret is unquestionably competent when it comes to managing an economy, but she is also somewhat nearsighted. She sees the trees, but only in economics can she see the forest. If some essentially irrational event creates a disruption (a religious upheaval, a political schism, or a racial or nationalist sweep of unrest), she will be slow or imprecise in reacting.

Margaret is proceeding slowly and diplomatically in absorbing former Imperial assets. She is bringing starports under her control and taking over naval and scout bases. She is working to make her territories survive the Rebellion; if she can do things right, they may even come out on top.

Varian

Prince Varian was eligible to ascend the throne at 1517 on 132-1116; he died at 1520 on the same day Although the prince never formally became Emperor, he did become a martyr. A great many people in the Imperium were shocked that an Archduke would assassinate the Emperor; they were appalled that a Prince would kill his brother in order to win the Imperial Throne.

Varian's death was discussed in detail by a number of nobles in the aftermath of the assassination. It became clear after a few days that Lucan would not tolerate a detailed investigation of the circumstances of Varian's death, and at the same time, that Lucan was indeed involved in his brother's death. Once convinced that a murderer sat on the Imperial Throne, the small circles agreed that honor required measures to avenge the deaths of Varian and of Strephon.

At the same time, direct action was impossible. Security for Lucan and for Dulinor made any retaliatory measures impractical. Instead, the nobles pledged their own honor to a long-term mission to eliminate Lucan and Dulinor, and to restore the Imperium to the honor it deserved.

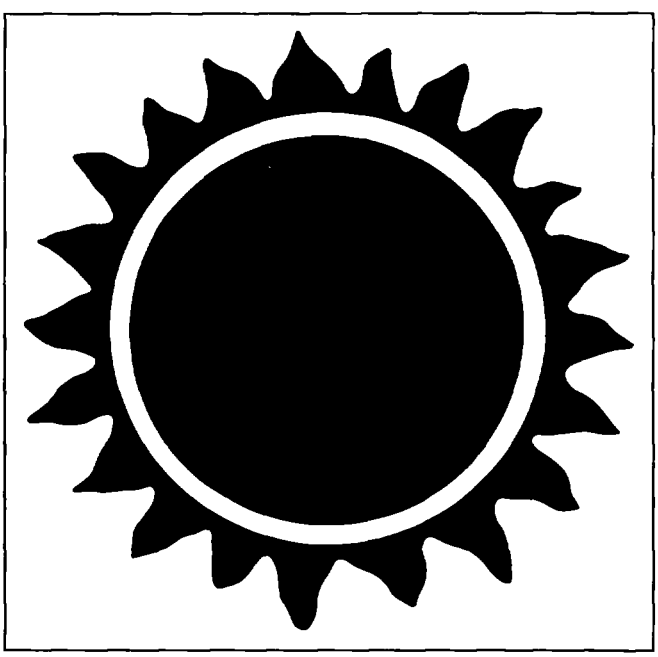
THE BROTHERS OF VARIAN

Realizing that achieving their goal would require stealth and long-term planning, the group established a system of recognition symbols, made preliminary plans for the future, and dispersed into the Imperium to recruit new adherents and to work against both Lucan and Dulinor.

Name: The band of nobles elected to call themselves the Brothers of Varian Often the faction is simply called Varian.

Leader: The most visible leader of the Brothers of Varian is Duke Simalr of Ushra. Shortly after being placed under house arrest on his estates in Capital, he fled. No specific leader controls the Varian faction.

Territory: The Brothers of Varian claim no specific territory.



Constituents: The Brothers of Varian appeal to honorable individuals who were shocked by the murders of Strephon and Lucan.

IDEOLOGY

Honor and justice.

For centuries, the nobility of the Imperium has been trained to consider honor the greatest of all human traits. Since communications between worlds and within the government can take weeks, months, or years, the nobles of responsible government must depend on each other's honor to see that jobs are done, orders are carried out, and results are achieved.

The importance of honor is similarly encouraged in non-nobles within the Imperium. The concept pervades Imperial society. Naturally enough, the assassination of Strephon produced a tremendous outcry, honor cried out for justice. Normally, justice would be provided by the Emperor's successor, but many consider Lucan as tainted with dishonor as Dulinor.

In the search for honor and justice, many in the Imperium have rallied behind Varian, selecting the dead prince as a symbolic martyr of honor and justice. They see him as a symbol of the priority confronting the Imperium—justice for Strephon and Varian through apprehension and trial of their assassins.

VARIAN'S SYMBOL

Varian's faction is an invisible, informal one. It has no symbol, and Varian's followers routinely attach themselves to some other faction (depending on expedience and convenience)

AVENGING VARIAN

The Brothers of Varian exist unobtrusively throughout the Imperium. Most claim some other allegiance. When the situation is ripe, each can strike a blow to avenge the fallen Prince—anything from misdirecting a fleet to an empty system when it is vitally needed on the war front to misfiling information essential to winning the allegiance of a High Population world.

Strephon

In mid-1117, the Emperor Strephon stepped out onto the balcony of his vacation palace on Usdiki in Gushemege sector and waved to the crowd. The response was so thunderous that he was unable to deliver his prepared remarks

News that the Emperor had survived Dulinor's attack was greeted with joy. The Imperial depot in Gushemege, under pressure from both Dulinor and Lucan to declare for them, welcomed the news of Strephon's survival and declared for him. Throughout the sector, fleets were relieved that the real Emperor was alive Dulinor lost seven fleets, and Lucan lost ten as they crossed the battle lines to join Strephon's forces. Dulinor and Lucan both placed severe restrictions on information passing through their territories, and news about Strephon was generally contained in the Gushemege sector. Both Dulinor and Lucan placed embargoes on Gushemege sector and committed forces to destroy Strephon.

THE PUZZLE

The first question raised was· "How can this be Strephon?" Strephon answered it candidly.

"In the course of handling Imperial affairs, the demands on an Emperor's time are many. Sometimes, they become too great, and it is imperative that the Emperor be allowed a respite. At the same time, citizens and dignitaries expect to see the Emperor, and are not easily persuaded that they cannot. An innocent ruse is necessary at times like these, and I have for years employed a double to take my place at ordinary events.

"On the day of Dulinor's actions against me, I was (fortunately for me, unfortunately for my double) aboard the cruiser *Amedon* en route to the Imperial depot in Core sector. Dulinor killed an innocent actor trained to imitate me at court functions.

"When word of the assassination reached us at Depot/Core, the crew of the *Amedon* rallied to protect me, spiriting me to my vacation palace here.

"I have seen the chaos that Dulinor has caused, and I have seen the foul deeds that my so-called successor Lucan has done in the name of the Imperium. All of this must end. The time has come for all of the Imperium to rally to the banner of Strephon!"

The second question raised was: "Is this really Strephon?" Several answers were forthcoming.

Dulinor privately dismissed the reappearance of Strephon as the work of an impostor.

"The man who routinely impersonated Strephon is now playing the part of his life. Who would believe that a mere actor would have the audacity to think that we would believe that he is the Emperor Now his claims insult the memory of Strephon. I loved our former Emperor; I was forced to kill him for reasons of state and for the greatest good of the greatest number. For this impostor to claim that he is Strephon is an insult!"

Lucan privately dismissed the reappearance of Strephon.

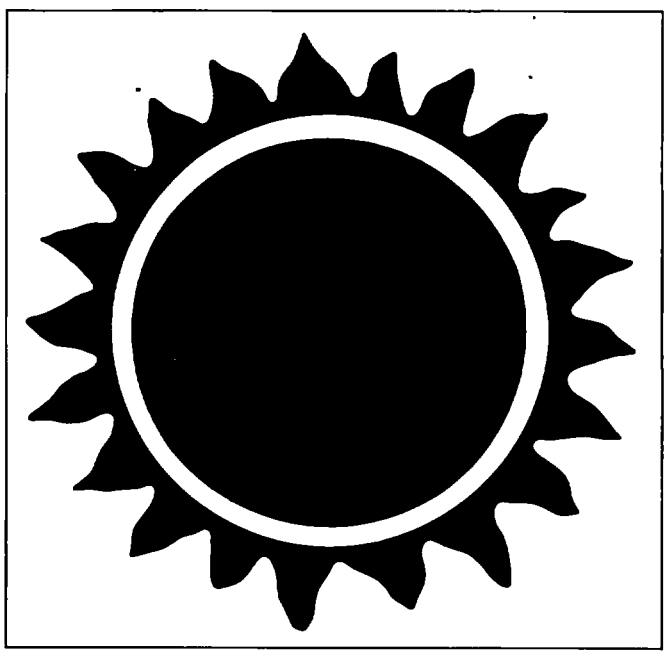
"We know Strephon sometimes used a robot to impersonate himself at routine functions And we know one of them is now missing Sources tell me this thing that claims to be Strephon is a robot. Heaven help us when his batteries run down!"

IDEOLOGY

Strephon represents the fervent dream of millions of Imperial citizens. that the Rebellion had never happened After months of disruption and conflict, the man that everyone thought was dead has presented himself as alive Impossible as that might seem, many are prepared to accept and to believe because Strephon holds out the potential of a return to the old days

STREPHON'S SYMBOL

Strephon uses the symbol of the Imperium as his own symbol The confusion is unavoidable; no other symbol would be acceptable to the man who claims to be the true Emperor.



Vland

The ancient Imperial capital of the Vilani empire was Vland. When that empire fell, collapsing of its own weight, Vland became a regional capital under the Rule of Man. When the Rule of Man fell, Vland remained a shining center of technology and culture against the darkness of the Long Night. When the Third Imperium was founded and expeditions were sent out to recruit new worlds for its expanding empire, Vland was one of the first to join.

But being a regional capital had always been a blow to Vilani pride. These people were the first human race to discover jump drive and the first to create an interstellar empire. After centuries of being submerged in the Third Imperium, Vland was ripe to revive and regain its lost glory.

The Bureaux: The old Vilani empire divided the duties of government among three bureaux, each charged with responsibility for a specific territory. When the empire fell, the bureaux were transformed into giant corporations which survived to the present as the megacorporations Makhidkarun, Naasirka, and Sharurshid. All three are major economic forces in the Imperium, even as they continue to cherish their ancient heritage

Lucan's Mistakes: Lucan considered his withdrawal of the fleets from Corridor and Lishun absolutely necessary if he were to defeat Dulinor. The risk to Vland and the sectors bordering on Vargr territory was a calculated one: If Dulinor could be defeated quickly, and if the Vargr could be held at bay, the damage to the Imperium would be minimal.

Dulinor refused to allow a quick defeat; the Vargr quickly found the weaknesses on the border; Lucan needed more and more fleets to fight against Dulinor. When he requisitioned the Vland Fleet, the sector rightly saw it would be left defenseless. It refused.

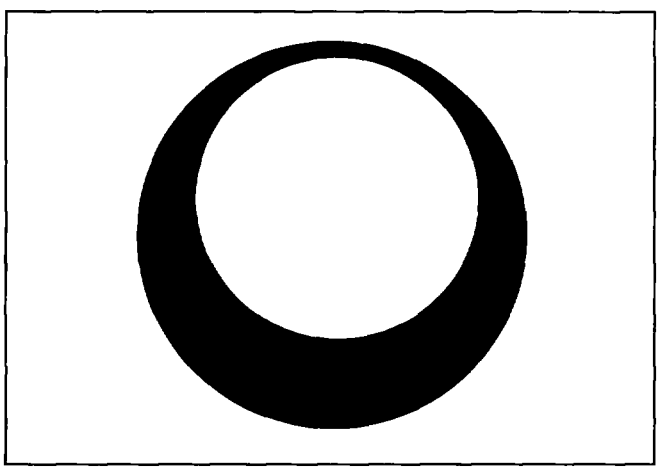
Refusal of an Imperial order is clearly rebellion, and Vland took up the banner with great energy. The submergence of Vilani pride within the Third Imperium was tolerable when the Imperium worked; when it acted against the Vilani, it became intolerable.

The Vilani Empire Model: It seemed only natural to establish the new government of Vland sector using the Vilani empire as a model. Makhidkarun, Naasirka, and Sharurshid were invited by the Archduke of Vland to reestablish their old territories, which divided the sector equally between them The megacorporations each elected members of a central ruling council called the Igsiirdi, which in turn elected the Ishimkarun—the Shadow Emperor They selected Archduke Ishuggi, who then retired to the Vilani Imperial Palace to rule in the ancient manner: by proclamation.

The heads of Makhidkarun, Naasirka, and Sharurshid became the Karunii—the Petit Emperors—each supreme in his own territory.

THE REESTABLISHED VILANI EMPIRE

The new Vilani empire traces its roots back thousands of years to the original interstellar human empire.



Name: The Vilani name for the Vilani empire is Ziru Sirka, which translates as Grand Empire of Stars Once it had fallen, to be replaced by the Rule of Man, it was often referred to as the First Imperium. Rather than give their new empire a number, the Vilani prefer to call their government either Ziru Sirka or Vilani empire. Outsiders often call it the Reestablished Vilani empire.

Leader: Ishuggi, Archduke of Vland, was instrumental in leading his sector to independence. The megacorporations responded to his call and elected him Ishimkarun.

Territory: The governed territory of the Vilani empire is Vland sector. Technically, the empire has claims to all territory which was at any time part of the original Vilani empire.

Constituents: In addition to its territorial citizens, the Vilani empire appeals to any humans who were raised in the Vilani culture. Pure Vilani blood means very little; millenia of intermarriage and widespread colonization make pure Vilani blood a rarity and difficult to prove

In addition, the many employees of Makhidkarun, Naasirka, and Sharurshid have long had a corporate loyalty to their

companies, that loyalty is potentially transferable to the new Vilani empire.

IDEOLOGY

Resurgence of former glory

After centuries of submergence within the Imperium, the opportunity for the Vilani to regain their lost empire has finally come. As long as the Third Imperium ruled, the Vilani were forced to accept their position within the broad spectrum of Imperial races. Even though they enjoyed prosperity and stability throughout that period, they had no special place in the scheme of things.

Presented with the twofold opportunity of the collapse of the Imperium and the need to defend themselves against aggression from neighboring Vargr, the reestablishment of the Ziru Sirka (the original First Imperium) is an expression of Vilani pride and ambition.

VILANI SYMBOL

The ancient symbol of the Vilani empire was an eclipsing star. The two superimposed disks of the symbol are well-known throughout the Imperium as representing the Vilani people and the Domain of Vland. Adoption of the symbol was used to reinforce the concept that the Vilani empire had, at long last, returned.

THE MEGACORPORATIONS

The incorporation of Makhidkarun, Naasirka, and Sharurshid into the Vilani empire had wide-ranging results throughout Imperial territory Initially, all 13 of the Imperial megacorporations were allowed to continue their operations, subject only to some supervision by local authorities

When Vland left the Imperium, however, secret announcements were sent to bases and stations belonging to Makhidkarun, Naasirka, and Sharurshid throughout the Imperium, ordering a major and immediate transfer of assets to Vland sector Liquid assets, starships, trade secrets, and anything immediately moveable were to be sent immediately; employees were to be given the opportunity to transfer as well. Anything that couldn't be moved was to be abandoned or sold at fire sale prices

By the beginning of 1119, most of the assets of the three megacorporations had been disposed of; fleets of ships (including armed fighting ships commonly used to escort transports) had made their way through one or more enemy territories to safety in Vland. Regions served by these three megacorporations were crippled industrially, or left without service.

Outreach: From its position on the edge of the Imperium, the Vilani empire turned its back on its main body. Instead, using its vast merchant fleets, escorted by any available armed ships, Vland began an extensive trading program with the territories beyond the borders. This outreach served two purposes· It opened new markets and provided an economic bonus to the empire; and it served to reduce tensions with the Vargr raiders across the border. The active trade program changed Vland from a faceless enemy to an active trading partner Familiarity helped defuse tensions

The benefits of trade for both sides produced a powerful incentive to peaceful coexistence. At a time when the Imperium was faltering as a supplier of manufactured goods, the Vilani Empire was able to step into the void and fill the basic trade needs of the Vargr sectors adjacent to Vland. In some ways, Vilani relations with its Vargr neighbors improved as a result of the Rebellion. Previously, the Vargr had directed their raiding indiscriminately against the Imperium, and only coincidentally against the Vilani. At the same time, the Vilani saw the Vargr across the border as a threat to the Imperium and thus a threat to the Vilani themselves

When the Rebellion divorced the Vilani from the Imperium, it became possible for the Vargr to distinguish between Vilani and Imperial, and at the same time, it was possible for the Vilani to see more than the plundering, lawless Vargr corsairs. With that changed perception, it became possible for the Vargr and the Vilani to develop greater trade links, and in the process reduce tensions across the border.

Vland and the Imperium: The Vilani secession from the Imperium came as a blow to Lucan; it cost him sorely needed fleets, and it also removed a powerful sector from his own control But Lucan has been able to tolerate the loss of Vland only because Vland has posed no direct threat to his empire. Faced with active contention by Dulinor, Antares, and the Solomani, Lucan is able to tolerate an independent Vland for the moment, biding his time until he has the strength and the security to make a bold stroke to recover the lost territories of Vland.

Vland

Vilani megacorporations have joined forces to reestablish the Ziru Sirka, the Vilani Grand Empire of Stars.

Antares

When the Third Imperium first established itself, it expanded to encompass as much former Imperial territory as was possible. Some territories saw the new Imperium as a boon to their economic and technological futures; they welcomed the new government with open arms. Others saw the new empire as a conqueror or an outsider, and they resisted.

Initially, the growing Imperium bypassed areas unwilling to join the empire. As time passed, some worlds saw the benefits they were missing and voluntarily petitioned for inclusion But several major regions (some approaching a full sector in size) had, 70 years after the establishment of the Imperium, become impediments to the continuing expansion and consolidation of the empire

Emperor Artemsus (−17 to 166) determined that the Third Imperium would encompass the historical territories of the First and Second Imperia, and he began his Pacification Campaigns to accomplish that end. He created the Domains and their Archdukes, charging each Archduke with the reduction of resistance within his territory. The Archduke of Antares pacified Lishun sector. The Archduke of Vland pacified Dagudashaag sector. The Archduke of Ilelish pacified Zarushagar sector. The Emperor himself took on the pacification of Fornast and Delphi sectors. Between 76 and 120, the empire devoted itself to bringing under its mantle all worlds which lay within the former borders of the First and Second Imperia.

THE JULIAN WAR

Artemsus' Pacification Campaigns had one notable failure: They did not incorporate the coreward sectors of Meshan, Mendan, and Amdukan into the Imperium His son, Martin I, took upon himself the mission in which his father had failed

The three sectors of Meshan, Mendan, and Amdukan were, during the First Imperium, the responsibility of a Vilani government bureau, Sharurshid. In the guise of an interstellar megacorporation, Sharurshid still exists, but it long ago lost responsibility for government of the sectors. Under the Second Imperium, the territory was self-governing, presided over by a small bureaucracy imposed by Terra. Large migrations of Vargr passed through the region; many worlds acquired and retained Vargr populations as a result.

When the Second Imperium collapsed, the three sectors survived as a number of confederations, each itself a member of a larger confederation of confederations. All were dominated by humans and Vargr The Long Night was less dark in this region than elsewhere; its citizens were reasonably content with the progress and achievements of their culture. Confronted with demands from the Third Imperium that they join the new government of the Third Imperium, they resisted—culturally, diplomatically, and militarily.

Martin I, frustrated after nine years of negotiation, mobilized the Imperial fleets in 175 and attempted to integrate the three sectors by force. In the first three years of the war, the Imperial fleets pushed deep into Mendan sector, capturing the capital world of Lasla and several important industrial worlds but never succeeding in crushing the people's will.

On Asimikigir, the capital of one of many confederations within Amdukan sector, a minor bureaucrat within the naval acquisitions directorate rose to power by increasing naval procurements. Production increased employment, and sparked technological research and development; sales to beleaguered border confederations produced profits and prosperity; the readiness to help produced political power.

By 178, Julian had risen to power within the Asimikigir Confederation and had gathered around him an alliance of neighboring confederations. He then took the bold stroke of establishing a protectorate: a confederation of confederations. Its purpose was to resist the advances of the Third Imperium.

For seven years, the Julian Protectorate fought sporadic battles along the Meshan and Mendan borders, doing its best to push back the Imperial fleets. However, in 185, concentrated and mobilized Protectorate fleets crossed the rift of the Empty Quarter in an end run against Antares, and as a long-range raid against the Imperial naval depots in Antares and Ley sectors. With two major Imperial depots virtually destroyed, the Imperium was forced to rethink its strategies, withdrawing fleets

from the frontier to defend interior communications lines.

The Protectorate fleets then turned their attention to the Antares Cluster, 12 worlds lying rimward of Antares. Because the worlds were behind the lines, they were relatively undefended; they fell after only a brief campaign. Using these worlds as a base of operations, the Protectorate fleets carried the war into the Imperium

The Imperium narrowly lost several battles to regain the Antares Cluster but ultimately proved unable to dislodge the Protectorate. By 190, Emperor Martin I was convinced that the Protectorate worlds could never be forced into the Imperium, and he abandoned the fight.

It took until 191, however, for the war to end. Julian insisted on retaining a hand in the Antares Cluster. By way of compromise, the cluster was established as the League of Antares and given an autonomous status within the Imperium. While the League acknowledged the supremacy of the Imperium, it retained its own rights to negotiate diplomatically and to maintain its own armed forces

THE ARCHDUKE OF ANTARES

Every Archduke understands how close to the top of the Imperial hierarchy he stands. When Strephon was assassinated, the Archduke of Antares understood that the protocol of hereditary succession meant that one of Strephon's heirs would advance to the Imperial throne. When it became clear to him that Lucan had murdered his own brother to succeed to the throne, Archduke Brzk of Antares came to the conclusion that he himself was a suitable candidate for the throne; he began a quiet campaign within the Moot to line up the necessary support.

Because Lucan was already on the throne and had already dissolved the Moot temporarily, Brzk found himself in a delicate position; he was trying to create support for himself as a successor to Strephon, and that action could be considered treason to Lucan as reigning Emperor Brzk was forced to work quietly and slowly in order to not offend Lucan (and especially not to tip Lucan off).

But as he worked, Brzk encountered a totally unexpected problem: blatant anti-Vargr prejudice. He found that human nobles, by far the majority in the Moot, would not even consider placing a nonhuman on the throne of the Imperium The reasons given for their feelings were numerous. Some felt it would be a bad precedent. Others wanted an Emperor who represented the majority race of the empire Others said they felt Brzk was not the best choice possible. But regardless of the reasons he was given, Brzk soon became convinced that the Moot would never support a Vargr or any other nonhuman on the throne of the Imperium. Faced with the reality of the situation, Brzk elected to take his domain of Antares and chart his own course with it.

In 1117, Emperor Lucan ordered Brzk to mobilize his fleets and transfer at least half of them to central Imperial control in order to fight the usurper Dulinor. Professing obedience, Brzk returned to Antares and began the process of mobilization.

Name: The Domain of Antares declared its independence on 302-1117 and adopted the name League of Antares. By 012-1118, the League of Antares announced that it had joined the Julian Protectorate as one of its member confederations.

Antares

Archduke Bzrk of Antares has declared his sectors independent and aligned with the Julian Protectorate.

As a member confederation, it retained its own name as well The territory is often called Antares.

Leader: The acknowledged leader of the League of Antares is Brzk, Archduke of Antares, a Vargr who traces his ancestry through many generations of Imperial citizenship He is powerful and committed to justice and treatment of intelligent species.

Territory: The League of Antares encompassed 12 systems in subsector K of Antares sector. When Archduke Brzk declared independence, the League expanded to encompass nearly all of Antares and the Empty Quarter sectors. The Julian Protectorate also encompasses the sectors of Amdukan and Mendan.

Constituents: The citizenry of Antares and Empty Quarter are natural constituents for the League of Antares. In addition, the League is a champion for peace and order in Lishun sector.

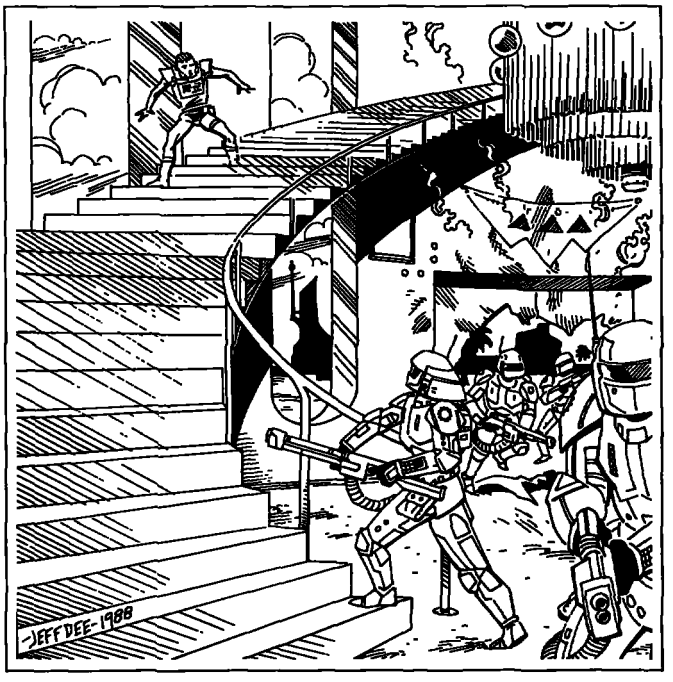
IDEOLOGY

Vargr and humans are natural partners.

Archduke Brzk is a champion of human-Vargr partnership. The human dominance of the Imperium has made Vargr along the Imperial border reluctant to accept the concept: Vargr raiding across the border discourages human confidence.

ANTARES' SYMBOL

The traditional symbol for Antares has been in use for more than 5000 years, but interpretations have changed Classically, the symbol represented a mountain range on Gaakish, the Vilani capital world for the region. As the Vargr population increased, Vargr came to see the triangles as Vargr claws.



Norris

For centuries, the Spinward Marches have been a vital frontier of the Third Imperium. Settled early in its history, it provided one of the few unpopulated frontiers available to the empire. Despite the fact that the Marches were surrounded by a variety of interstellar governments, they lay relatively empty until the outward thrust of the expanding Third Imperium reached them. In the first centuries of the Imperium, a number of worlds were settled in the Spinward Marches, and the region quickly became an important part of the empire.

During the early years of the empire, the frontier was a peaceful place, relatively secure and stable, while the Imperial interior was wreaked with pacification campaigns and ugly little wars. The emphasis changed as Imperial settlers in the Marches expanded outward into Zhodani space, prompting a succession of Frontier Wars which turned the border with the Zhodani Consulate into an armed camp.

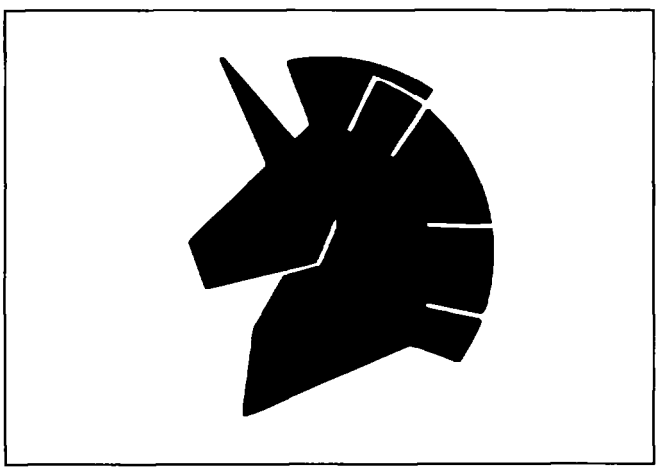
Throughout the history of the Spinward Marches, the narrow access lane through Corridor sector has been a vital link between the Marches and the Imperial core. Passing as it does between two rifts, Corridor is easily blocked, necessitating continuous patrols by the massive Corridor Fleet in order to keep it clear of Vargr raiders. When Lucan withdrew Corridor Fleet in order to reinforce his war against Dulinor, he cut off all commercial access between the Marches and the rest of the Imperium, effectively abandoning all the sectors beyond Corridor until some time after he could defeat Dulinor.

THE ARCHDUKE OF DENEB

Soon after the last Frontier War with the Zhodani, it became apparent that Norris, Duke of Regina, had been a powerful force in the prosecution of the war Many experts agreed on this, and one of Emperor Strephon's last official acts was to elevate Norris to fill the vacant position of Archduke of Deneb.

Norris' elevation to Archduke automatically positioned him as the most powerful of the Imperial nobles in the four sectors of the Domain of Deneb: Spinward Marches, Deneb, Reft, and Trojan Reach. If the appointment had not been made, there would have been no clear central authority in the region when Strephon was assassinated, and it would have quickly fragmented into small, relatively weak interstellar states

Name: The Domain of Deneb is technically a part of the Third Imperium. Because it is cut off from the main body of the empire, it has been forced to follow an independent course while waiting until it could be reunited with the Imperium The region is called Deneb and, less often, the Spinward Marches.



Leader: Norris Aella Aledon is Archduke of Deneb. For most of his life he has been only Duke of Regina, inheriting the title from his father. His full title is Duke Commander Sir Norris, of Regina, Count Aledon, Marquis of Regina, Baron Yori.

Territory: The Domain of Deneb includes all Imperial territory in the Spinward Marches, Deneb, Trojan Reach, and Reft sectors. Curiously, its territory reaches across the Great Rift and includes portions of three subsectors adjacent to Gushemege, Verge, and Ilelish sectors. There is no practical way, however, for the Archduke of Deneb to exercise any control over this small portion of his domain.

IDEOLOGY

Loyalty.

Norris knows that the Imperium was the best thing to ever happen to humanity. It provided stability, prosperity, and expansion for humanity, and extended those qualities to the other races who also participated in the Imperium. Faced with making a choice, Norris publicly announced that he remained loyal to the Imperium and its founding principles

In doing so, Norris committed the government of his Domain of Deneb to a course that supported the Imperium but did not single out the specific leader or faction who represented the Imperium.

Although publicly committed to loyalty to the Imperium, Norris discovered from the very first day that the interests of his own Domain of Deneb were diverging from the interests of the Imperium Inevitably, Norris was forced to transform his concept of loyalty to the Imperium to loyalty to his subjects. While

he continues to applaud and imitate the Imperium, his government of the Domain of Deneb is committed to the defense and the betterment of the citizens of the Domain of Deneb.

NORRIS' SYMBOL

Although the Domain of Deneb was established in 76, it was not given an Archduke at that time, and the title has lain dormant. When the title was awarded to Norris, it carried with it a variety of prerogatives; one of these was the designation of a symbol for the Domain of Deneb. Norris chose the unicorn.

A constellation in the Spinward Marches is sometimes called the Unicorn, and the symbol has long been used by the Norris family as a symbol for the Spinward Marches territory, which it controls as fiefs. When presented with the opportunity, Norris decided the unicorn would be appropriate as the symbol of the new Domain of Deneb

WEAKNESS AND STRENGTH

Perhaps Norris's greatest weakness will ultimately prove to be his greatest strength The Domain of Deneb has always been a distant part of the Imperium, connected by a tenuous link through Corridor sector. That link was essential because of the Zhodani threat to the Domain's security.

With the collapse of the Imperium, it has become obvious that the Zhodani are content to allow the Domain to coexist in peace with them Once the mighty backing of the Imperium was removed from the Domain, it no longer posed a threat to the Zhodani, and they were able to tolerate its existence.

If Norris can resolve the other problems that face his Domain, he has a genuine chance of keeping it together as a viable interstellar government Those problems, however, are major ones:

Norris

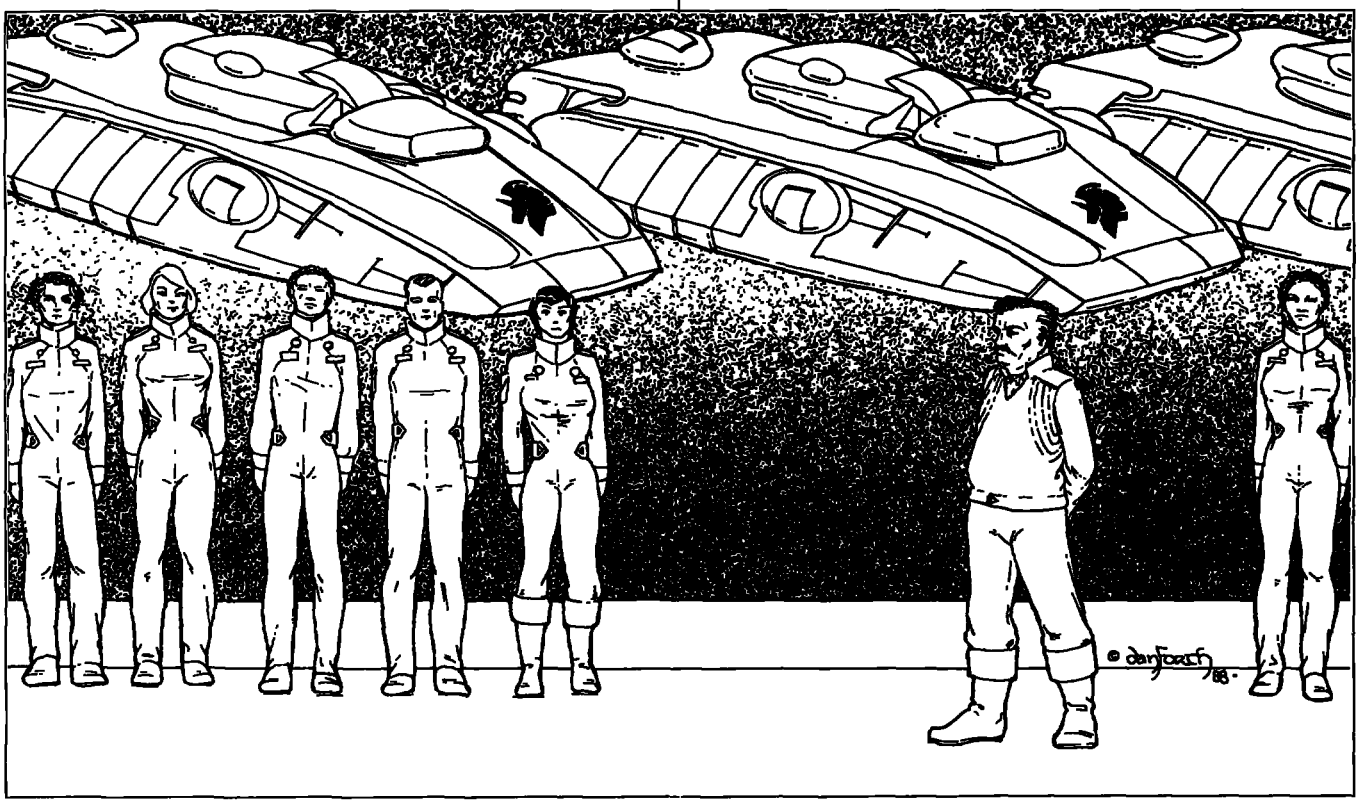
Norris, recently appointed Archduke of the Domain of Deneb, maintains his loyalty to the Imperium.

Vargr: Vargr, from beyond the Imperial border, think of the Imperium as a land where the streets are paved with gold. Now that the Imperium appears to be weakening, it is natural that the Vargr think in terms of plunder and loot. If the border can be strengthened, or if the Vargr can be persuaded to respect the border, half of the problem is solved. Of course, the Imperium found that the best solution was a massive fleet constantly patrolling at a cost in the billions (and that still did not stop all the raiders).

Aslan: Aslan settlers encroaching from rimward see the Domain of Deneb as ideally suited to their need for new lands. Traditional methods of stopping the Aslan are simply ineffective; the Imperium committed massive amounts for military and naval operations for centuries before the Aslan could be persuaded to accept the Peace of Ftalahr in 380. Norris needs to find a more acceptable solution in a shorter period of time.

THE FUTURE

Although Norris remains loyal to the Imperium, the fate of the Domain of Deneb becomes less and less tied to the fate of the Imperium. Assuming he can solve the Aslan and Vargr problems, any remaining problems are minor. Ultimately, he will need to consider whether the new state that he will lead will be the Empire of Deneb or the Federation of Deneb.



Aslan

The Fteirle are the youngest of the star-faring major races. After thousands of years confined to their homeworld of Kusyu (A876986-E), located in the Dark Nebula sector, the race discovered the jump drive and had the entire universe opened to them. The territorial instincts of the race drove them to colonize world after world in rapid succession.

Some years after they reached space, they encountered human traders also exploring new territories and, in the process, discovered that the universe was already filled with star-faring races Initial contacts were peaceful, but conflict eventually developed as both humans and Fteirle competed for worlds and resources. The human traders called the new race they found the Aslan (for reasons which remain unclear).

The Aslan are a race of intelligent carnivorous pouncers at the top of the ecological pyramid on their homeworld. They evolved intelligence as a result of climatic shifts on their world: Forests disappeared, forcing Aslan into the emerging grasslands. The changes of environment were a profound influence on the physical and psychological makeup of this race Three especially significant characteristics of the Aslan need to be noted.

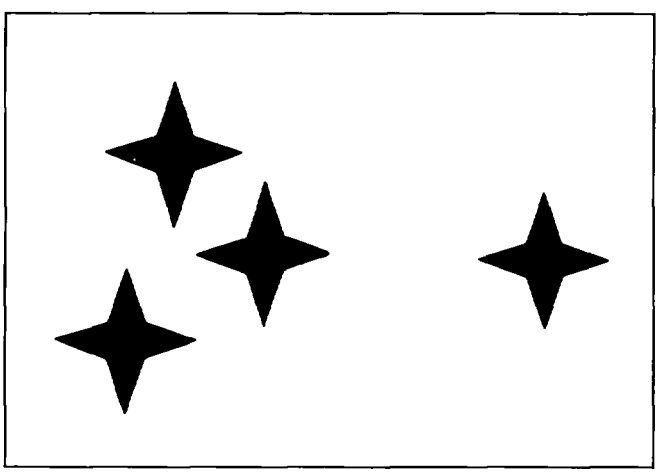
RACIAL CHARACTERISTICS

Aslan are upright bipeds averaging two meters in height and 100 kilograms in weight They are divided into two sexes male and female—the male's increased size and mane are major differences Females outnumber males three to one.

Aslan males are concerned with military operations, the acquisition of territory, and political affairs; Aslan females are more concerned with technology, industry, trade and commerce, and the accumulation of wealth and knowledge.

Territory: At the root of most Aslan action is a single motivation· the need for territory Aslan society and Aslan psychology are based on, and Aslan ambition centers on, the basic, instinctual Aslan need for territory. This need, however, expresses itself in different ways in different individuals

Aslan males have the greatest, most direct territorial drive. The ownership and control of territory for the male is directly associated with concepts of self-worth, with mating instincts, and with position within the family and clan. Females, however, contribute directly to the importance of territory. Male ownership of territory is attractive to females Aslan naturally occur in a ratio of about three females to one male; there is a surplus of females in society. Males with more territory attract more females as wives and as servants.



But the Aslan family unit is less a patriarchy than a partnership, because females also value territory Where Aslan males seek territory almost for its own sake, Aslan females seek territory for what it can be used for. Males are the landowners, often engaging in ritual and real combat to defend their land. Females are the entrepreneurs, finding uses for the land and finding markets for the land's products.

The drive for territory creates a drive for expansion as the population increases and expands into the available territory. Since the firstborn of the family inherits the land, the second sons (*ihatei*) must find other means to acquire territory. Success in warfare, acquisition of successful wives, and a rise in clan power are all ways that can produce territory for an individual. But the star-faring Aslan society has also acknowledged that, for social stability, there must be ways for ihatei to acquire territory The answer is for those without territory to migrate to regions where territory is available.

Migration is an age-old response for the Aslan. Before space travel became available, ihatei periodically left the clan to colonize new territory. Once space travel was established, the same procedures were used to produce colonizing expeditions to new worlds. The ihatei have always been at the forefront of the thrust outward into new territories for the Aslan.

Every Aslan clan periodically organizes an ihatei fleet. Ihatei who feel the natural urge to acquire territory volunteer for the expedition. Position in the expedition is allocated based on the individual's skills and financial contributions by the individual and his family. First sons, secure in their territory by inheritance, have a responsibility to help finance the second sons'

migrations. Fathers and mothers also feel similar responsibilities.

Creation of an ihatei fleet benefits both the economy and society. Spending to equip the fleet helps the economy, and migration of second sons helps relieve population pressure. For those who stay behind, these expeditions produces relief and hope.

The largest single expense that faces an ihatei fleet is the cost of the ships it will need. This expense is met by the clan, which periodically declares older, obsolescent or obsolete starships surplus and subsequently allocates them to the ihatei for use.

THE ASLAN HIERATE

The Aslan interstellar civilization is the Aslan Hierate. There is no central Aslan government; the Aslan have no nations in the human sense. Aslan loyalties are channelled along family lines

Ultimately, every Aslan is a member of a clan. Aslan see their own loyalties in terms of their clan, and its leader, the "ko." Most worlds are inhabited by many different clans, often with their populations intermingled. Differences between clan members within a clan are handled by the family structures; differences between clan members of different clans are handled by negotiations and agreements between the clans themselves.

The 29 strongest clans place their heads (or a representative) on a council called the *Tlauku* (which means 29 in the Aslan language). The Tlauku meets continuously on the Aslan homeworld to arbitrate disputes, settle matters of common interest, and otherwise deal with the problems that must confront an interstellar society.

But clans are independent. An agreement with one clan binds no other clan. A peace treaty with one clan does not assure peace with all other clans.

On the Borders of the Marches: The border between the Imperium and the Aslan Hierate is actually a band of independent worlds and client-states, roughly 10 parsecs wide, that separates Aslan and Imperials from direct contact. Imperial traders venture beyond the Imperial border and into Aslan territory in search of novel products that will sell well in the empire; Aslan traders venture into Imperial territory looking for high-tech goods, as well as markets among the many Aslan who live within the Imperium.

For centuries, the Aslan had looked with envious eyes on the territory of the Imperium. The now ancient Peace of Ftahalr (signed in 380) committed the Aslan clans to respect the Imperial territory and borders For centuries, there was room for expansion within the Hierate's territory; for more centuries, there was expansion room across the Great Rift. In recent years, the ihatei have settled farther and farther from the center of the Hierate New generations have had to travel greater and greater distances in order to remain able to find worlds to conquer and exploit.

Because of the distances which are involved, many ihatei have been content to travel to closer, previously settled worlds; the poorer quality of the territory they find in these worlds is made up for by the presence of other settlers and established markets.

Aslan Aorlakht

Landless Aslan Aorlakht *(New Lords) have invaded in search of developed worlds to conquer.*

LAKHT AORLAKHT

Centuries of ihatei settlement throughout the Aslan Hierate have clogged Aslan worlds with a large number of settlers and colonists. Better worlds have experienced wave after wave of settlers, while the less advantaged clans have been forced to settle vacuum worlds in order to find the territory which they need

In the Trojan Reach sector, few worlds suitable for territorial expansion remained within the defined borders of the Aslan Hierate. A few splinter republics in the sector allowed some settlement, but they too were fast filling up. True frontiers were rapidly being exhausted. And new ihatei fleets arrived in the sector every year. Some moved on to sectors farther away. And some ihatei fleets stayed on, their cargoes of Aslan settlers still in cold sleep, sending out scouts to look for new worlds

Over the past 20 years, a single Aslan leader has risen to power while administering the otherwise obscure post of Aikoho Earleatrais (Fleet Dispatcher). The accumulation of ihatei fleets in the sector produced confusion and competition; the Tlaukhu appointed an independent Aikoho Earleatrais and charged him with directing all ihatei fleets, in strict order of arrival, to the best available worlds The Aikoho Earleatrais enjoyed the support of all existing Aslan settlements in the sector as he helped relieve the pressure of arriving ihatei fleets, and he, in time, assisted every clan in the sector with his direction and information.

In early 1117, the first news of the upheaval in the Imperium filtered across the Great Rift Conflicting reports about Lucan, Dulinor, and their struggle for the throne of the Imperium were carried by the few ships that were able to traverse the vast, empty expanses of the Rift. By mid-1117, it was clear to the Aikoho Earleatrais that the Imperium was being torn apart At that time, an ihatei fleet which had originated in Ealiyasiyw sector entered Trojan Reach in search of new worlds; it was redirected to Imperial territory and was successful in establishing a settlement within the Imperial border. Several ihatei fleets being organized within the sector realized that the Imperium held tremendous potential, and they also ventured across the border into Imperial space, finding suitable systems for their new settlements as well. Ihatei fleets venturing into Trojan Reach sector during the course of the year heard of the potential for new territory within the Imperium and crossed the border themselves in search of new lands. The confusion of the Rebellion and the commitment of Imperial naval forces elsewhere made resistance only minimal.

The Aikoho Earleatrais at this time saw the tremendous potential of settling in Imperial territory. In his own interpretation of his charge from the Tlaukhu, he mobilized the many ihatei fleets in the sector and commissioned them as Aorlakht (New Lords); he named himself the Lakht Aorlakht (Lord of New Lords) and led them across the Imperial border in search of new worlds. By mid-1118, the Aorlakht fleets had ventured five parsecs into Imperial territory and established settlements on some 20 Imperial worlds.

NORRIS' RESPONSE

When the Aslan ihatei fleets began entering Imperial territory and landing colonization parties on Imperial worlds, Imperial fleets responded in force. They forced off some fleets, which fled to other systems, but Imperial force was simply not sufficient to stop the onslaught of Aorlakht. The Imperial Navy, even as it struggled to contain the invading Aslan, notified its higher headquarters of the problem Eventually, the matter fell in Archduke Norris' lap

Norris was caught on the horns of a dilemma. His borders were hard-pressed by Vargr raiders; the threat of Zhodani action was ever-present; even the Sword Worlds required fleet commitments in order to guarantee the Imperial border Simple military action was not necessarily an available response

Norris turned the problem over to his chief-of-staff, Imperial Fleet Admiral Tranathiaf, dispatching him to the Aslan front with instructions to eliminate any threat to the Domain

Tranathiaf began a three-point program of·

A Containment of the Aslan invasion to a band within five parsecs of the border.

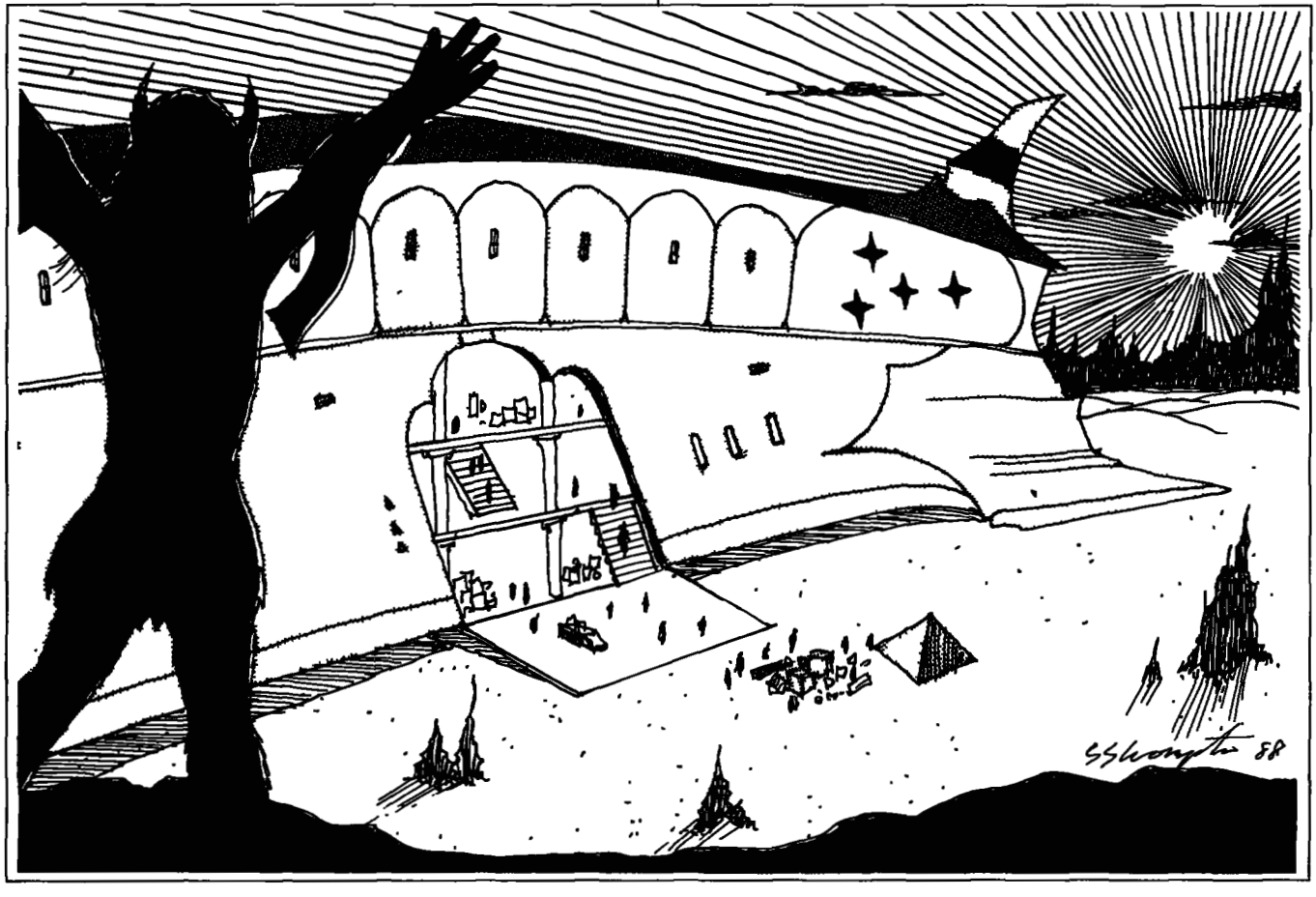
B. Direct negotiation with the Aorlakht to minimize their impact on Imperial worlds.

C. A buildup of forces with which to expel the Aslan.

By 1119, the plan was only just beginning

THE TECHNIQUE OF ASLAN INVASION

Aslan ihatei fleets constantly search for territory and for



markets. Territory is extremely important to Aslan males, but they bring more practical females who insist on investigating all aspects of the new territory. At their insistence, the ihatei consider the size of territory and practicality of exploitation. Sharing land with previous settlers is considered reasonable if it produces sufficient markets for Aslan business.

Having located a suitable world, the Aslan ihatei fleet moves into orbit while it surveys its surface for likely colony locations. Scouts recon the region more closely Once the final decision is made, the battle fleet remains in orbit and provides security while the trade fleet carries the colonists and their equipment to the surface. Preliminary quarters are constructed, land cleared, crops planted, resources located, and mines constructed. As the infrastructure is constructed, more colonists are awakened from cold sleep and sent to the surface.

In order to transport the greatest number of ihatei, some of them are carried in cold sleep. Only after the colony is well established can the bulk be revived and transferred to the world's surface.

Invading Uninhabited Worlds: The easiest Aslan invasion takes place on uninhabited worlds. Colonization can proceed at a leisurely pace. No pressing time table exists, and the project is usually easily defended.

Invading Settled Aslan Worlds: Some ihatei fleets select worlds already settled by other Aslan. Although they must be content with territory which not already claimed, there are benefits: People already exist who can be markets for the new settlers' enterprises.

Because trade is as important to female Aslan as is territory to males, many fleets to migrate to settled worlds.

Invading Settled Alien Worlds: The stereotype of alien invasion assumes violence and warfare; the truth of Aslan invasions is quite different. Aslan are not interested in short-term loot and plunder; they do want long-term territory and markets. They need to ensure they will be able to stay in their colony and thrive once it is established.

Wherever possible, Aslan will buy the land they settle. A small population on a world will often sell its rights to unclaimed, unexploited land for very little. Land can be bought with money or with royalties (for a fixed time) against the profit which comes from exploitation, or even with the promise to pay taxes. Aslan owe their own individual loyalty to their clan, but Aslan clans accept the authority of alien governments (for example, in taxation) over clan members, when that authority is evenhanded and just.

Where necessary, Aslan will take the land they need. Some worlds have whole continents which lie vacant; ejecting Aslan squatters is nearly impossible. Eventually, the two-way trade between the Aslan and the locals brings acceptance of the new citizens.

Where required, Aslan will fight for the land they need Their ability as warriors is undeniable and provides a strong incentive for local citizens not to resist the settlers.

AORLAKHT

The Aslan have discovered new territory at their feet. The urge to exploit it is irresistable.

Name: Aorlakht is an Aslan term for New Lords or New Landholders. The Aslan settlers moving into Imperial territory call themselves Aorlakht. Imperials are content to call them Aslan.

Leader: The most notable leader calls himself Lakht Aorlakht—Lord of the New Lords.

Territory: The invaders come from throughout the Aslan Hierate but typically enter Imperial territory through the border in Trojan Reach sector. Aslan settlement is throughout Trojan Reach and the rimward portions of the Spinward Marches.

IDEOLOGY

New lands!

The racial imperative is the need for territory. The firstborn son inherits land, others must seek their own. Expansion is virtually the only way Aslan can find new territory.

Vargr

Long ago, shrouded deep in the mists of prehistorical time, the Ancients plucked samples from hundreds of worlds From Terra, they selected humans and carried them to world after world as slaves, specimens, or companions. They also selected canines from Terra and carried them to one world.

On Lair (A8859B9-F), the Ancient's genetic experiments produced the Vargr: upright, bipedal intelligent carnivores with visible origins as dogs Over hundreds of thousands of years, Vargr matured and evolved to settle and exploit their world. When, in −3810, they discovered the jump drive, they burst out into the neighboring systems. Over the course of the next 2000 years, Vargr expanded into hundreds of systems, settling virgin worlds and sacking settled ones.

The key to understanding the Vargr is a single aspect of their psychology: They are driven in many aspects by a pack mentality. Vargr are a gregarious people, taking joy in the company of one another and seeking the security and comfort of fellowship with others of their own kind. Yet at the same time, Vargr within a group are engaged in a nearly constant struggle for prestige and dominance; to an outside observer, Vargr often appear quarrelsome and even treacherous. Vargr move from one group or association to another with great regularity.

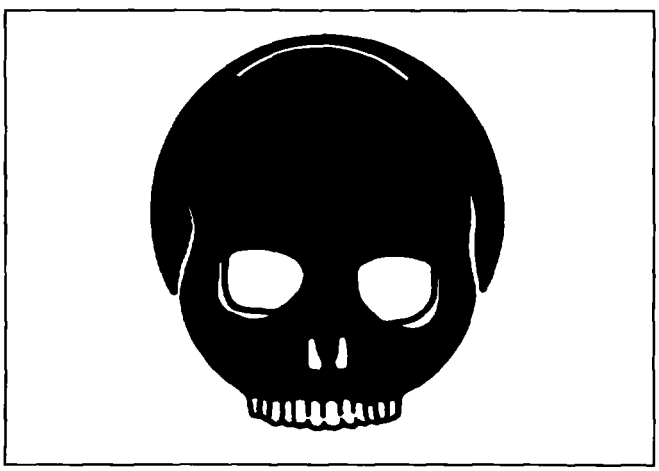
All of Vargr society is subject to twin forces—a centrifugal force bringing small groups together and makes them more cohesive, and a centripedal force pushing the group apart. All of Vargr society is constantly pushed and pulled by these twin forces.

THE IMPERIAL/VARGR BORDER

Vargr worlds are situated all along the Imperial coreward border. Stretching 200 parsecs across six sectors, the border requires constant monitoring in order to keep Imperial territory secure. Imperial fleets constantly patrol the border systems to deter Vargr corsairs. Punitive raids reinforce the concept that invasions of Imperial territory are unacceptable. Constant vigilance maintains the safety of trade and also of Imperial citizens.

Yet Vargr corsairs continue to cross the border in search of plunder Successful Vargr raiders also gain an intangible benefit: They find a reputation which enhances their standing with other Vargr.

Long ago, Imperial researchers concluded that the unification of the Vargr under one leader would be a strict impossibility. There could never be total agreement among Vargr as to a single leader; whenever leaders reach high levels of power, rivals bring them down, and their followers drift away to follow others



Within the last several decades, however, a new face has appeared among the Vargr, and acceptance of his leadership has grown to unprecedented proportions.

Beginnings: Knouksarrgh Ong (roughly translated as The Electronics Corporation) of Lair built an extensive market for its products throughout Vargr space by importing innovative novelty electronics from high-tech worlds, those products which did well were then copied by the corporation and produced at less cost locally. When the concepts were copied, they were often modified to better conform to the needs of Vargr specifically. Sound systems were more attuned to the Vargr ear; colors for image recorders were more pleasingly presented for the Vargr eye. Over time, Knouksarrgh has expanded its marketing to include the establishment of standards for electronics formats (such as computers, holograph recordings, and broadcast and beamcast transmissions), and even the production of entertainment and educational materials. Knouksarrgh's entertainment subsidiary, Knouks, is widely known to merchants in Vargr space as a quality producer; however, customers themselves rarely pay any attention to the producer, buying instead on the basis of the entertainer.

In 1090, Knouksarrgh introduced *utuvogh* (window-to-the-universe), which was initially perceived by the Imperium as a fancy programmable holoprojector/viewer. The device, through a quick, on-screen survey, determines an array of personality factors about the viewer and tailors the presentation directly to the viewer For one viewer, the utovogh might tint the background red; for another, the device might insert low

frequency harmonics. When properly set to a viewer's configuration, the utovogh produces a much higher level of entertainment and satisfaction than do ordinary holoviewers, even if the individual cannot verbalize why. The utovogh can incorporate more than one set of personality factors into its presentation and it is still relatively effective while handling four, five, or even six sets of factors. But its greatest effectiveness and satisfaction is achieved when it is used by one viewer at a time.

Utovogh programming was initially divided between entertainment and educational recordings. Entertainment programs were stories, often with alternative endings tailored to a variety of personality types. The utovogh became a widespread phenomenon throughout Vargr space. Humans, however, found the device hollow in its presentation; the nuances of Vargr verbal and body language made the utovogh's presentations opaque to most humans, and the tailored personality factors that appealed to Vargr were totally lost on humans.

In about 1102, Knouksarrgh responded to market research which showed that more and more utovoghs were used for musical entertainment. The tailored personality factors made it possible for a single musical presentation to appeal to a wide variety of musical tastes.

Positive market response to the utovogh prompted Knouksarrgh to research alternative uses for the device. One research project analyzed in detail the personality factors that were input and looked at what customers wanted. Researchers synthesized a musical personality which could easily trigger the greatest number of responses in customers. Actually, they synthesized several—one to appeal to mature individuals, one to appeal to juveniles, one to appeal to young adults—in fact, one to appeal to every major group within Vargr society. Recordings from each hit the market about 1110

That these new musical stars were synthetic personalities was not a widely known fact. For marketing purposes, a mystique was built around each one, with details and background that created the illusion of reality for the viewer.

The most popular of these synthetic personalities was Oekhsos; he conveyed a very strong charisma which inspired loyalty and allegiance among his viewers. Few realized that he was synthetic; most of his fans were inspired by the way his music touched their emotions and their intellects, and that effectively blinded them to seeing his synthetic nature.

Oekhsos, being synthetic, is manipulated by his manager and a team of electronic scientists. They determine what subject matter his material will deal with. Recently, they found an explosive subject that markets better than any previous one: anti-Imperial tirades. Oekhsos' first tirade reached the top of the market charts immediately and stayed there for months. His second tirade sold even better. Other synthetic personalities joined in and produced their own tirades

Oekhsos' tirades sparked some attacks on the Imperium. Utovogh provided the primary entertainment on starships, and it was natural to expect that some crews would respond to an anti-Imperial tirade by raiding Imperial territory. Imperial responses were swift and strong, and the Vargr raids were nothing more than a nuisance until the Rebellion.

The Rebellion within the Imperium crippled its ability to resist the Vargr. Fleets withdrawn from the frontier made it possible for Vargr to raid with relative impunity. Oekhsos' (and others') tirades against the Imperium continued to spark raids against Imperial territory.

Vargr

Vargr raiding bands, both private and governmental, have invaded coreward sectors of the Imperial border.

Oekhsos the Leader: If there is anyone who could be considered a single leader for the Vargr, it has to be Oekhsos The fact that he is tailored to create favorable responses in individuals makes him a sympathetic, charismatic leader that each individual genuinely feels is worthy of his allegiance and loyalty. In addition, as a recorded presentation, Oekhsos is a remote figure who does not actively interfere in the individual's daily life; each individual Vargr is able to accept and respect Oekhsos as a leader without that leadership interfering with ordinary relationships

Oekhsos' leadership extends across governmental lines. Governments recognize that he provides no direct competition to their own authority, and so he is no threat to them. Oekhsos is, in reality, the only kind of leader that the Vargr will accept on a broad scale—a rallying point to which they can respond. And, by a curious twist of fate, the chaos in the Imperium has given a focus against which Vargr attention can be pointed.

IDEOLOGY

Plunder.

The Vargr have no real ideology with which to support their actions. Many explanations and justifications can be presented for their actions, but all are fluff to cover the basic pack instincts of the Vargr Given a leader and a target, the Vargr will seek it out.

Daibei

Daibei sector is one of many settled long ago by the Vilani as they created their First Imperium. Under the Vilani, it was an undistinguished region far from the Imperial capital It has been off the major travel routes and treated as an unimportant backwater.

During the Long Night, Daibei suffered as much as any other sector from the loss of trade and collapse of technology In addition, Daibei sector was located squarely on the frontier with the newly developing culture of the Aslan Expanding Aslan clans moved into the sector and settled on many of its worlds. When human and other native races in the sector resisted, a series of low level raids known as the Aslan Border Wars (−1118 to 380) became the norm. Over more than a thousand years, the sector was subject to incessant Aslan raids and settlement, and in return the sector launched incessant raids into Aslan territory.

Finally, in 380, the Third Imperium stabilized the frontier by imposing the Peace of Ftahalr on all of the major Aslan clans. Its provisions established a buffer zone 30 parsecs wide between Imperial and Aslan space and made neighboring Reaver's Deep sector a cosmopolitan interstellar community Under the provisions of the treaty, the Third Imperium also guaranteed the safety and security of Daibei sector, pledging Imperial forces to ensure the matter.

For 700 years, the peace with the Aslan has continued. Threats to the sector have been greater from the Solomani Confederation than from the Aslan. The Peace of Ftahalr has moldered in the archives of Daibei, forgotten by the Imperial bureaucracy, remembered only slightly better by the government of Daibei sector until recently

SOLOMANI ADVANCES

Solomani attacks on the Imperium were timed to coincide with arrival of the news of Strephon's death. Solomani fleets crossed the Imperial border with Daibei in early 1117 and probed deep into the sector. Although the Imperial fleets were surprised, they fought a delaying action until reinforcements could be mobilized from the reserve fleets and from the sector's depot. In a surprise turn, the Imperial 285th and 111th Fleets ambushed three Solomani fleets as they entered the Conj system driving toward Depot/Daibei. When the Solomani fleet admiral realized there was a gaping hole in his line, he withdrew, allowing Daibei to regroup and reinforce.

At this early point in the Rebellion, local coordination was still a prime factor in the defense of the Solomani border sectors. Imperial forces in Diaspora sector dispatched several fleets to assist in the defense of the border, including three to Daibei sector. They were temporarily incorporated into the Daibei Fleet

Once the initial attacks had taken place, both sides settled into an protracted war of attrition, launching raids against each other's fleets while trying to prevent any deep incursions into their own territory. Because Solomani priorities were higher closer to Terra, the Daibei front was allowed to become stagnant, and it remained static through much of 1117

The Solomani attacks on Daibei solidified public opinion in favor of the Lucan and the Imperium; although Dulinor launched several public relations campaigns in the sector, it was commonly felt that Dulinor was the ultimate cause of the present crisis, and that loyalty to the Imperium was the preferable choice.

Imperial Demands: In 1118, Emperor Lucan was hard pressed to provide sufficient ships to counter Dulinor The Navy scoured its fleets in search of ships, and early in the year directed that Daibei provide 12 fleets to a task force being organized in Zarushagar sector for an assault on Dulinor in Ilelish When the order arrived at the sector capital of Warinir, Duke Craig, the ranking sector Duke, was incredulous. He felt totally betrayed by the Emperor who would now strip a loyal sector of its defenses.

The immediate response was to appeal the order, but after the appeal was dispatched, he called a conference of the ranking nobles of the sector. Together they decided that it would be impossible to provide the ships that Lucan required, and that in order to properly defend their own territories, they would refuse if the appeal was not granted One advisor pointed out that the Peace of Ftahalr guaranteed the security of Daibei from all invaders, not only the Aslan. The fact that the Imperium

proposed to strip Daibei of its defenses was taken as cause for independence

The appeal was denied.

Independent Action: Daibei, in order to gain time, chose to do nothing overt in response to the denial of the appeal. Provisions were made to reform the sector government as a confederation of subsectors, but no direct action was taken at that time.

In late 1118, Duke Craig was finally forced to act in the face of repeated demands from Lucan. The independent Federation of Daibei was then announced on 289-1118. Declarations of neutrality were dispatched to all neighboring governments, which included the Ilelish, Solomani, Imperial, and Aslan governments

DAIBEI

Daibei has elected to pursue a course of neutrality in the hope that it can survive the Rebellion with relatively little devastation

Name: The Federation of Daibei is commonly referred to as Daibei.

Leader: The most prominent leader in Daibei sector is Duke Craig of Warinir, the ranking sector duke. When the sector was a backwater, the duties of the sector duke were minimal, and the duke was content to have the bureaucracy handle the details of government Thrust into a situation which called for action, Craig responded with a talent many had not thought he had

Territory: Daibei includes parts of Daibei and Reaver's Deep sectors.

Constituents: The inhabitants of Daibei are the natural constituents of the Federation. Beyond the borders of Daibei, many Imperial citizens located in the war-torn Diaspora sector look to Daibei and see an island of stability and peace. Some citizens of the territory captured by the Solomani from Daibei early in the Rebellion look to Daibei to help them in a war of liberation.

IDEOLOGY

"We will survive "

The contention of the Rebellion is concerned with a variety of political and social philosophies. But while these political and social philosophies swirl around and through the systems of the Imperium, they are also remote and theoretical to some regions of the empire.

Daibei sector, when it was faced with a choice of which faction to support in the Rebellion, found that none of the factions could promise Daibei what it needed most—security Daibei was then forced to go its own way in order to assure its own survival.

DAIBEI'S SYMBOL

Worlds in Daibei sector have traditionally chosen tri-colors as their planetary insignia One might select a banner of three equally sized panels colored red-white-blue, green-yellow-blue, brown-red-orange, or any other combination of colors As a representation of solidarity among the many worlds of the Daibei sector, the sector has long used the blank tri-color as its symbol.

Daibei

Daibei sector, ordered by Lucan to commit its fleet against Ilelish, has declared its independence.

RELATIONSHIPS

The Federation of Daibei absorbed the Imperial bureaucracy within its borders almost without change. Reporting channels were shifted to a ruling council of nobles headed by Duke Craig. The entire bureaucratic staff was then required to execute an oath of allegiance to the new government. If staff members refused to execute the oath of allegiance to the new government, they were given the option of leaving The transition to the new government was completed in a matter of only a few months.

Enemies: Daibei is surrounded by enemies—the Solomani rimward and Lucan's Imperium coreward. The Solomani are actively attempting to incorporate Daibei into the Solomani Confederation. Lucan, on the other hand, desperately needs Daibei's fleets, and he would gladly abandon its territory if its fleets could be transferred to the main battle against Dulinor. Active diplomatic efforts are being made by both the Solomani rimward and Lucan's Imperium coreward to coordinate an offensive against Daibei.

Friends: Daibei has found that the enemy of its enemies becomes its friend. Dulinor is resigned to the fact that Daibei will not actively support him with fleets, but he also knows that even a neutral Daibei keeps fleets out of Lucan's hands and protects his flank from the Solomani. Active diplomatic efforts between Dulinor and Daibei are being made to conclude some kind of mutual assistance treaty.

Zhodani

The first contact between the Imperial citizens and the Zhodani took place in the first century of Imperial expansion. The outward thrust of Imperial colonialism carried scouts and settlers into the Spinward Marches sector and beyond, to the edges of the adjacent Foreven sector and into territory long ago settled by the Zhodani. This encroachment was not well-received and was a source of continuing friction between the Imperium and the Zhodani Consulate

The friction started a fire in 0000 when the Zhodani, in alliance with the Vargr and the Sword Worlders, attacked the Imperium in a bid to expel the Imperials Five more wars in the next 500 years continued to maintain the uneasy border between the two largest human empires in the galaxy.

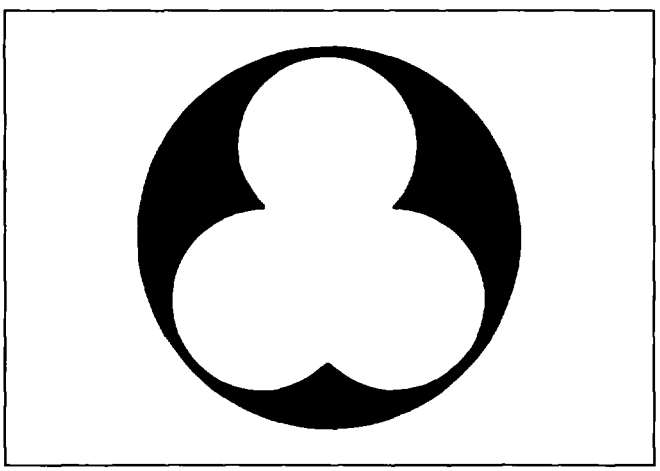
THE ZHODANI PURPOSE

In five centuries of conflict with the Imperium, the Zhodani gained a reputation for belligerence, strategic sense, and perfidy. They launched every war with a surprise attack. In every case, they waited until they had the advantage, then used it.

Less obvious is the result of each of the Frontier Wars. No single war was able to gain for the Zhodani more than a subsector of new territory Imperial histories are self-deluding when they applaud the Imperial ability to mobilize after an attack and to respond in force after a period of build-up. Researchers and commentators dismiss the Zhodani as incompetent at long-term warfare, they failed to note several key factors.

The Zhodani are not expansionist nor are they Imperialistic They long ago reached the practical size limit for their empire, and they are satisfied with their territory. Moreover, the Zhodani are racial isolationists. They know of the potential problems involved in absorbing non-Zhodani into their culture, and they avoid it whenever possible. They also see little gain in governing conquered worlds.

An analysis of this information gives a clue to the true nature of the Zhodani Frontier Wars. The wars were fought to keep the Imperium out of Zhodani territory Each one was a forceful reminder to the Imperium that settlement beyond the accepted border was absolutely not to be tolerated. The reminder was sent not only to the government of the Imperium, but also to the citizens of the empire. For centuries, the reminder served its purpose.



The Zhodani Threat: As the Rebellion begins in the Imperium, it is natural for the Spinward Marches to fear a Zhodani invasion. Indeed, that fear was the purpose of the centuries' Zhodani aggression When the chaos of the Rebellion struck the Imperium, the last thought that Imperials had was to bother the Zhodani.

The Zhodani Reality: The multi-generation campaign to protect the Zhodani Consulate from the largest human empire in existence has been a success In the early years of the Imperium there was a real possibility that Imperials would expand out into Zhodani territory Now, the Imperium is falling apart; no longer is it a threat to the Zhodani.

The most remote of options today would be for Zhodani to invade Imperial territory. Nothing is more acceptable for the Zhodani than to have many small human governments on its borders; each is large enough to be stable, yet small enough to pose no threat.

THE ZHODANI CONSULATE

More than 90 percent of all racial Zhodani live within the borders of the Zhodani Consulate

Name: The Zhodani homeworld is Zhdant. They call their government Driantia Zhdantia, which is commonly translated as Zhodani Consulate. It means Government of the Zhodani.

Leader: The Zhodani are ruled by the Qlomdlabr—the Supreme Ruling Council. The Qlomdlabr is composed of two regularly elected representatives from each of the eight Zhodani provinces. An advisory council of senior members (all former members of the Qlomdlabr) assists in making decisions.

The senior members of the advisory council of the Qlomdlabr often travel throughout the Zhodani Consulate, and they are respected leaders whose instructions and advice is received and acted upon with appreciation. The most apparent of Zhodani leaders in the region of the Spinward Marches is

Vlezpridliashav As a senior council member, he is aware of the long-term planning of the Qlomdlabr, his presence on the frontier helps advice local authorities of the course they should take.

As the senior official present, it is his advice and instruction maintains a peaceful frontier with the remains of the Imperium.

ZHODANI IDEOLOGY

The preservation and defense of the Zhodani

The Zhodani Consulate is an insular government, its territory contains the vast majority of all racial Zhodani, while non-Zhodani make up only a small fraction of its citizens. The Consulate has little need or desire to expand beyond its present boundaries, and it recognizes that its neighbors may want to expand into Zhodani territory.

The Zhodani Consulate has long been committed to the defense of its territory with careful, long-range plans that work to constantly inhibit or discourage any offensive action against it, even if that requires disruptive preemptive strikes.

ZHODANI MISSIONS

Virtually unknown to the Imperium, the Zhodani have been engaged for centuries in a consuming passion: the Zhodani Core Expeditions. The Zhodani Consulate has never kept these missions secret, but communications between the Imperium and the Consulate were never good, the information never gained widespread dissemination within the Imperium.

So, virtually unknown to the billions of the Imperium, the Zhodani have sent wave after wave of exploratory missions across thousands of parsecs in a careful exploration of the galaxy between Zhdant and the mysterious core. The Eighth Core Expedition is currently in preparation

With the Zhodani economy and popular imagination absorbed in this epic undertaking, the onset of the Rebellion within the Imperium is viewed with relief. For as long as the Rebellion continues, the greatly feared threat of Imperial expansion (especially into Zhodani territory) can be discounted. And if the best possible outcome (from the Zhodani standpoint) happens, the greatly fragmented Imperium will pose no threat to the Zhodani ever again.

Consequently, official policy for the Zhodani is to stand back and keep hands off of the Rebellion. It is far better for the Imperials to destroy their own empire than for them to think that an outside enemy did it to them. In addition, an occasional helping hand extended from the Zhodani to a few needy border worlds is considered to be an investment in the future, perhaps such gestures as these would be enough to maintain future friendly relationships and also to help to secure the Zhodani borders.

Unofficial policy, however, is entirely different. While the Consulate maintains neutrality as its policy, higher ranking officials know that the best results are worth pursuing; covert operations which are both untraceable to the Zhodani and which hasten the fall of the Imperium are worth mounting. At times, such operations might even seem contradictory. Zhodani aid and assistance might be given in order to help Norris fend off Vargr invaders under the assumption that a stable Domain of Deneb will help secure the Zhodani border; another mission might also be mounted to help Aslan colonists in their invasion of the Spinward Marches under the assumption that unrest in the Domain will result in diversion of the region's attention from Zhodane.

Zhodane

The Zhodani Consulate has seemed content to let events gradually dismember its only real rival.

THE FUTURE

The Zhodani plan for the long term. Their culture has already achieved what most human societies strive for general satisfaction and comfort for the majority of the population while retaining a sense of purpose and meaning for everyone. Some might consider such a society stagnant, but the Zhodani emphasis on exploration is enough to keep the Consulate vibrant and progressive.

The Rebellion within the Imperium marks a major turning point in the history of the Zhodani Consulate. For much of the past 1000 or so years, Zhodani government policy has necessarily been directed at protecting the Consulate from expansionist conflict with the Imperium Just as long-range Zhodani plans to curb and finally end that conflict appear to be bearing fruit, the Imperium is plunged into its all-consuming Rebellion.

If the Rebellion ends with a powerful, aggressive Emperor taking the throne, the Zhodani security and peace will be ultimately threatened On the other hand, if the Imperium is destroyed by the Rebellion, the lawless chaos that will donimate former Imperial territory may well pose an even greater threat to the Zhodani

For the immediate future, the Zhodani course remains unclear.

Solomani

The Solomani are the original humans. All other human races, both inside the Imperium and beyond its borders, spring from human samples plucked from Terra more than 300,000 years ago Naturally enough, the Solomani, as the original human race, has developed a strong philosophy that it is destined to lead—and rule—the human empire of the stars

The first Solomani empire already had two strikes against it: the Rule of Man taking over the territory and the bureaucracy of the aging and decaying First Imperium. It managed to continue for several hundred years, but the struggle was a losing battle. The Long Night ended its rule of the stars.

The Third Imperium was in many ways a Solomani empire. Solomani settlers were distributed throughout its territory; many families still had their Solomani names and many kept alive their Solomani past. A sizable fraction of the population of the Third Imperium could claim Solomani blood.

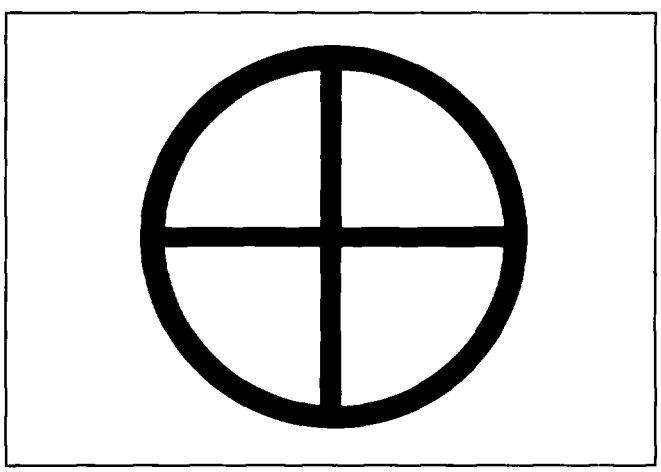
But for the growing Solomani political cause based on Terra, participation in the Third Imperium was not enough, it was necessary (as well as proper and inevitable) that Solomani be the leaders and rulers of the empire. Over the years, Solomani were allowed great freedom within the Imperium; they created an autonomous region within the Imperium and expanded its powers. Ultimately, the Solomani went too far, effectively declaring their independence from the Third Imperium. The Imperium was forced to go to war to regain its territories, and in 990 began the Solomani Rim War.

Over the course of the 12-year war, Solomani fortunes changed. The Solomani lost the war; Terra was occupied by Imperial forces and, over the next century, reintegrated into the Imperium. Where as before the Solomani aspired to rule the galaxy, they were instead forced to scheme to regain their homeworld. In the period from the end of the Solomani Rim War (1002) to the present (1119) the Imperium and the Solomani Confederation have lived under an uneasy peace Neither has the strength or the resolve to attack and destroy the other; both are content to patrol their borders and consolidate their holdings.

SOLOMANI SOCIETY

Solomani society is ruled by a triumvirate of agencies: the Solomani Party, the Solomani Military, and Solomani Security.

The Solomani Party: The Solomani Party is the binding organization under which all political and government activity within the Solomani Confederation is conducted. Every Solomani human is automatically a member of the party, but many individuals do not participate in it due to apathy or disagreement with its principles Those who do participate find it a hierarchy of committees and ruling councils organized by order of magnitude· 10 members form a cell; 10 cells form a committee; 10 committees form a supervisory committee. The chain of committees ultimately ends at the High Council, which provides representation for the several trillion Solomani humans throughout the universe.



The Solomani Party is an umbrella organization Within the party are a great many philosophies and approaches to vital problems. These factions of the party may be moderate, conservative, violent, radical, or have any number of other characteristics, provided only that they do not challenge the basic concept of the Solomani cause—that Solomani, as the original humans from Terra, are best suited to govern all humanity.

The Solomani Military: The Solomani Confederation maintains a strong military in order to defend itself, and to attack its enemies in furtherance of the Solomani cause. It also uses its armed forces for peace enforcement operations within the Confederation; peace enforcement is one of the major functions of the Solomani Army.

The military is divided into two forces: the army and the navy. The army is assigned all activity within the atmosphere of worlds; the navy is assigned all activity outside the atmosphere. As a result, the army is dependent on the navy for transportation between worlds. The navy, however, maintains its own Confederation Marines for military operations in space and on vacuum worlds.

Both the army and the navy maintain reserve units which

provide individuals with training for the defense of the Solomani Confederation. These Home Guard assignments allow individuals not on permanent military duty to be given military assignments in emergencies or special situations

Solomani Security: The third arm of Solomani government is SolSec, Solomani Security. This organization is charged with ensuring that the Solomani cause is never ignored or violated. It accomplishes its mission by recruiting agents from the general population. Some become overt agents; others become sleepers waiting to be activated; still others become monitors who observe and report on the actions of others.

The Solomani System: The triumvirate of the Solomani system is structured to ensure that it never strays from its basic purpose. Each of the three arms provides a check on the other two, whenever one gets too powerful, the other two will cooperate to bring it back in line. All three arms work constantly to direct the government as a whole toward the eventual success of the Solomani cause.

THE SOLOMANI CONFEDERATION

Faction: The Solomani Confederation is not a true participant in the Rebellion; it is an interested, interfering onlooker. The correct name for the government is the Solomani Confederation; often, the term Solomani is sufficient.

Leader: The Coordinator of SolSec

The leadership of the Solomani Party is vested in the High Council which consists of 10 individuals, no one of which is more powerful than the others. The leadership of the Solomani military is vested in a General of the Army and an Admiral of the Navy, the two have staffs that coordinate joint operations involving both forces. The leadership of SolSec is vested in one man—the Coordinator—for the overall security of the Confederation The Coordinator of SolSec is easily the most powerful person in the Solomani Confederation.

Within the last 10 years, the Coordinator has become a member of the Solomani High Council This consolidation of the power of a High Council member and the SolSec Coordinator in the hands of one person has made him the most powerful individual in the Solomani Confederation.

Territory: The Solomani Confederation covers six sectors: Magyar, Solomani Rim, Alpha Crucis, Canopus, Aldebaran, and Neworld sectors. The Confederation claims the Solomani Sphere which encompasses everything within a radius of 50 parsecs of Sol Also, the Confederation aspires to rule all human space.

Initial actions in the Rebellion have transferred control of much of Old Expanses sector and some of Solomani Rim sector to Solomani control.

Constituents: The Solomani claim the allegiance of every human of pure Solomani blood. Most humans within the Solomani sphere qualify under this criteria. Pure-blooded Solomani are also scattered throughout the territory of the Imperium, and many of these individuals support the general principles of the Solomani cause

IDEOLOGY

Humanity is destined to rule the universe.

For centuries, the Solomani have been a laughingstock. Their grand philosophy stated explicitly that humans of Terran descent were destined, for a variety of reasons, to govern an ever-expanding Imperium that would ultimately extend to encompass all of settled space. When the Imperium rejected this philosophy and reclaimed much of the Solomani Autonomous Region from the Solomani, they delivered a severe setback to Solomani ambitions. They also captured Terra

Where as before the Solomani claimed a mandate to rule the universe, they were now reduced to plans to recapture just their homeworld

The Rebellion changed everything. The first Solomani attacks recaptured Terra. Further Solomani advances forced large parts of the Imperium to submit to the Solomani and to join the Solomani Confederation In the course of three years, the Solomani Confederation transformed from an ineffective joke to the largest human interstellar government in existence.

Solomani

With the collapse of the Imperium, the Solomani have become the largest human empire in existence.

THE SOLOMANI SYMBOL

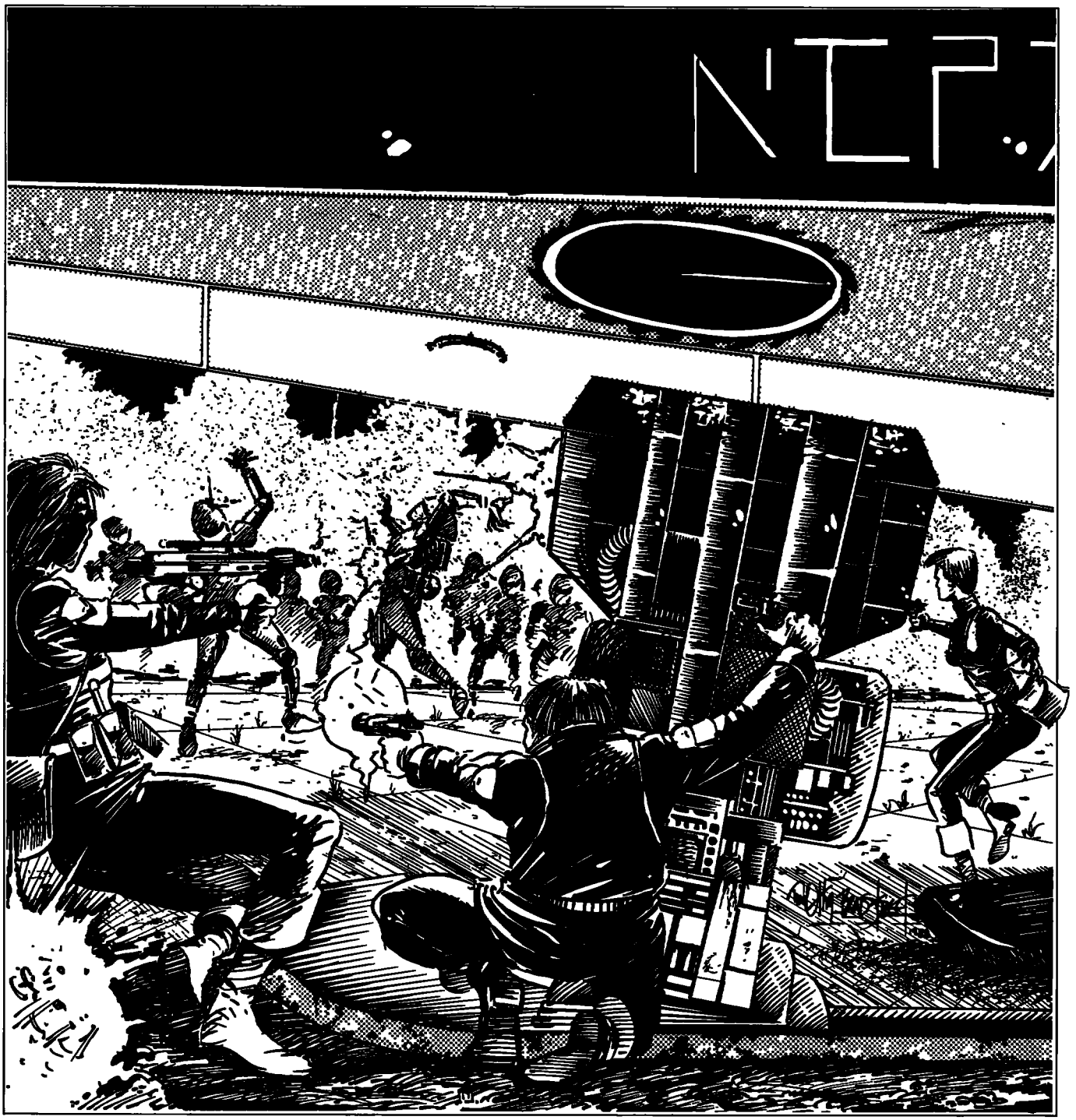
When the Solomani Confederation was established, it was decided to adopt, as the government's symbol, the classic astrological symbol for Earth. The circle with a cross signifies Terra as homeworld of mankind and center of human space.

COMPLICATIONS

With the Solomani conquests of the Old Expanses and portions of the Solomani Rim, the Solomani Confederation found itself in control of vast stretches of space conditioned, under Imperial rule, to governing themselves. Under Solomani rule, a greater degree of control by the Solomani government was expected by the Solomani, and just as naturally objected to by the local worlds. As a result, a major portion of Solomani Confederation assets were committed to ruling territories.

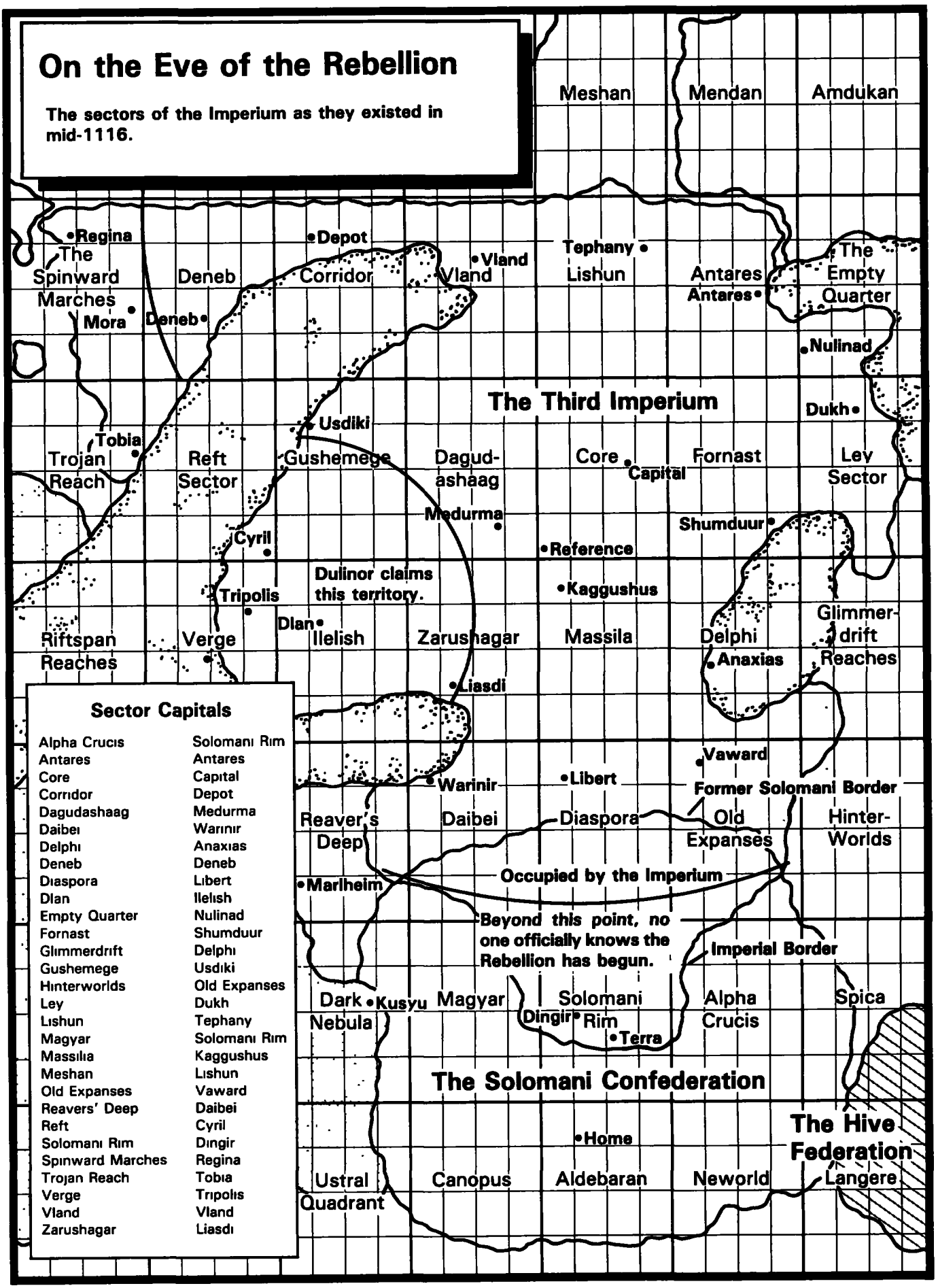
Historical Notes on the Rebellion

In order to better understand the process of the Rebellion, the following maps of the Rebellion's progress are provided. Maps for the years 1116, 1117, 1118, and 1119 show the rise of the factions and the boundaries they claim to control. Notations on the maps show specific activities of importance in understanding the individual conflicts.



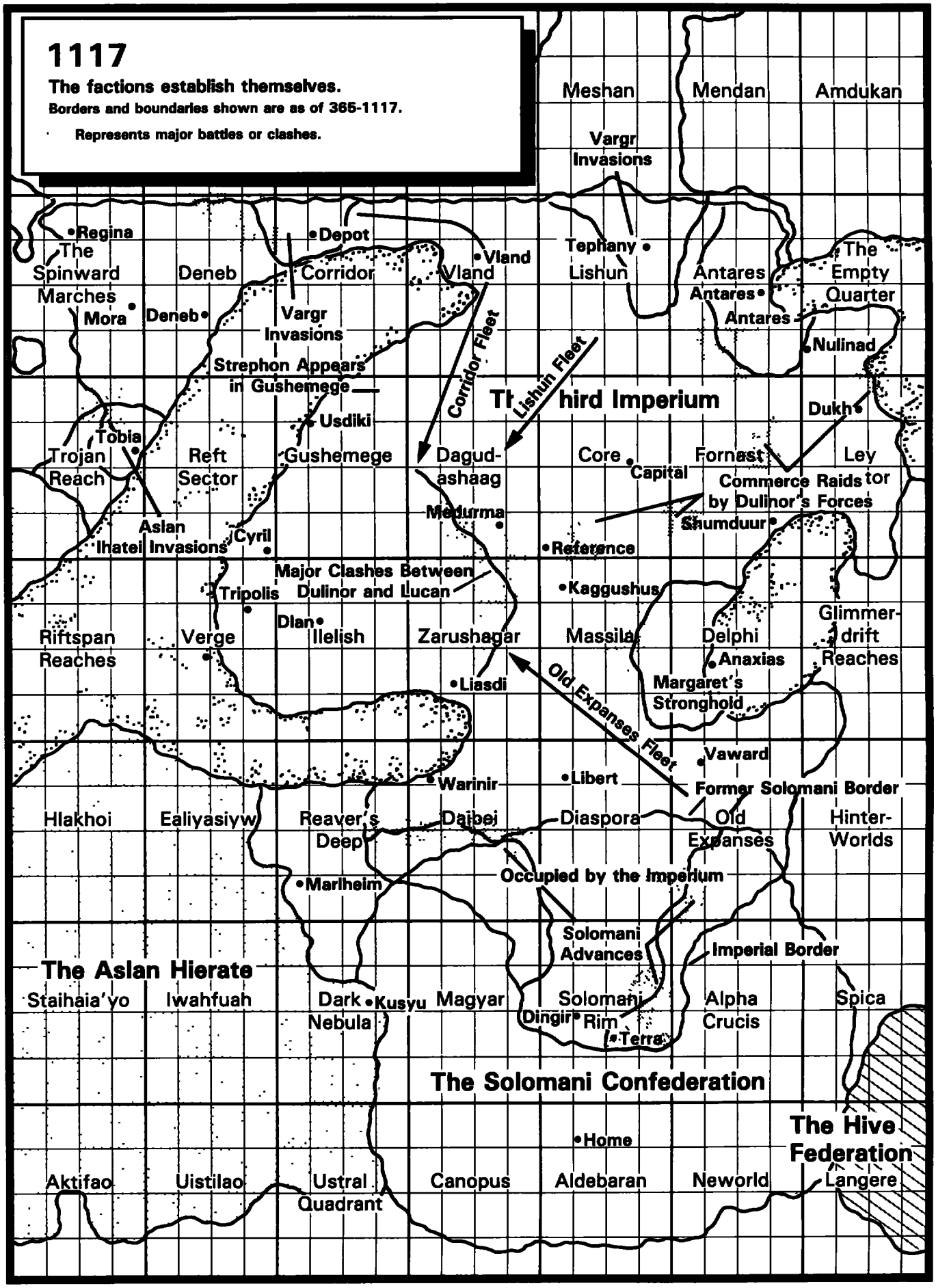
On the Eve of the Rebellion

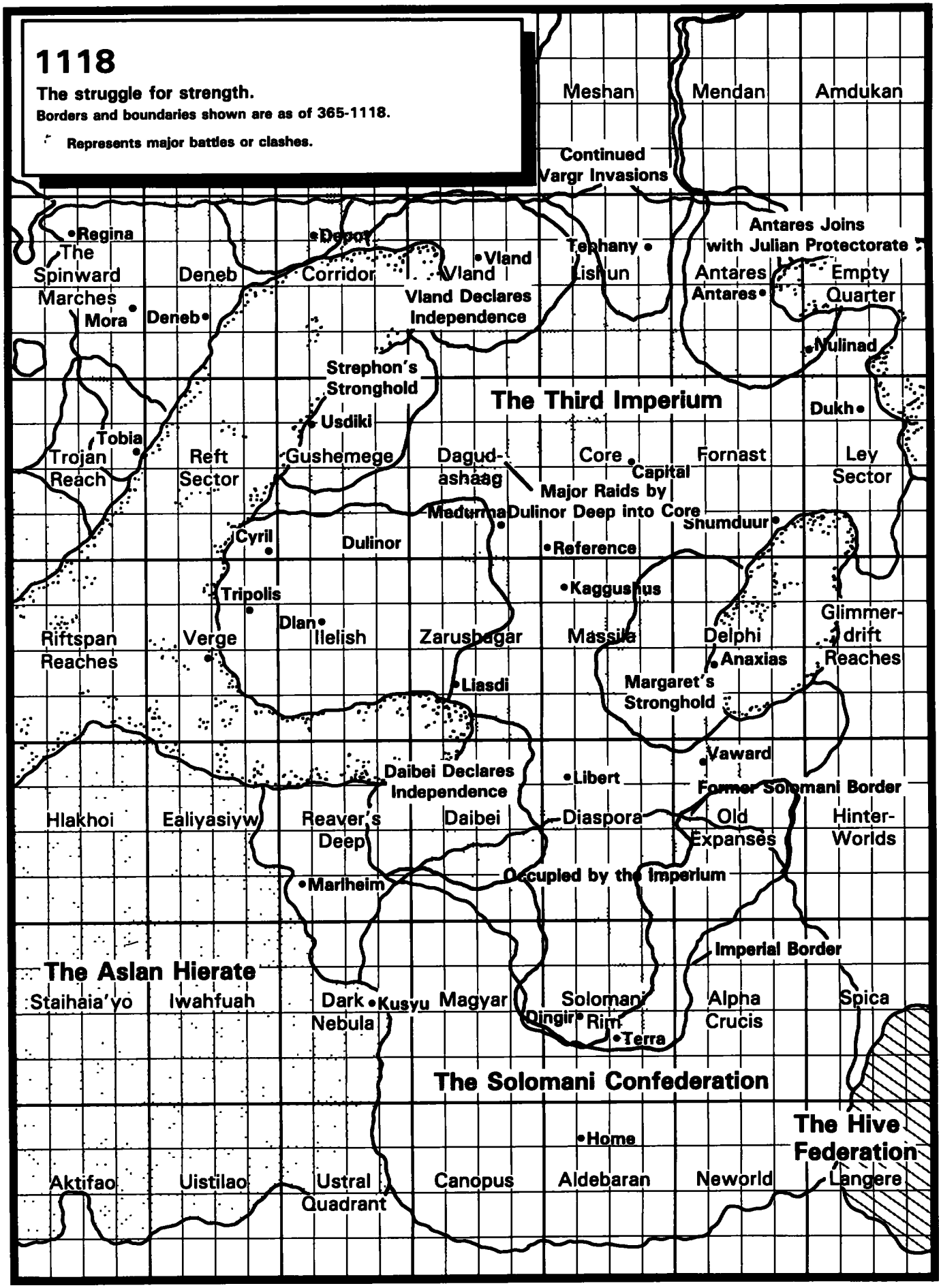
The sectors of the Imperium as they existed in mid-1116.

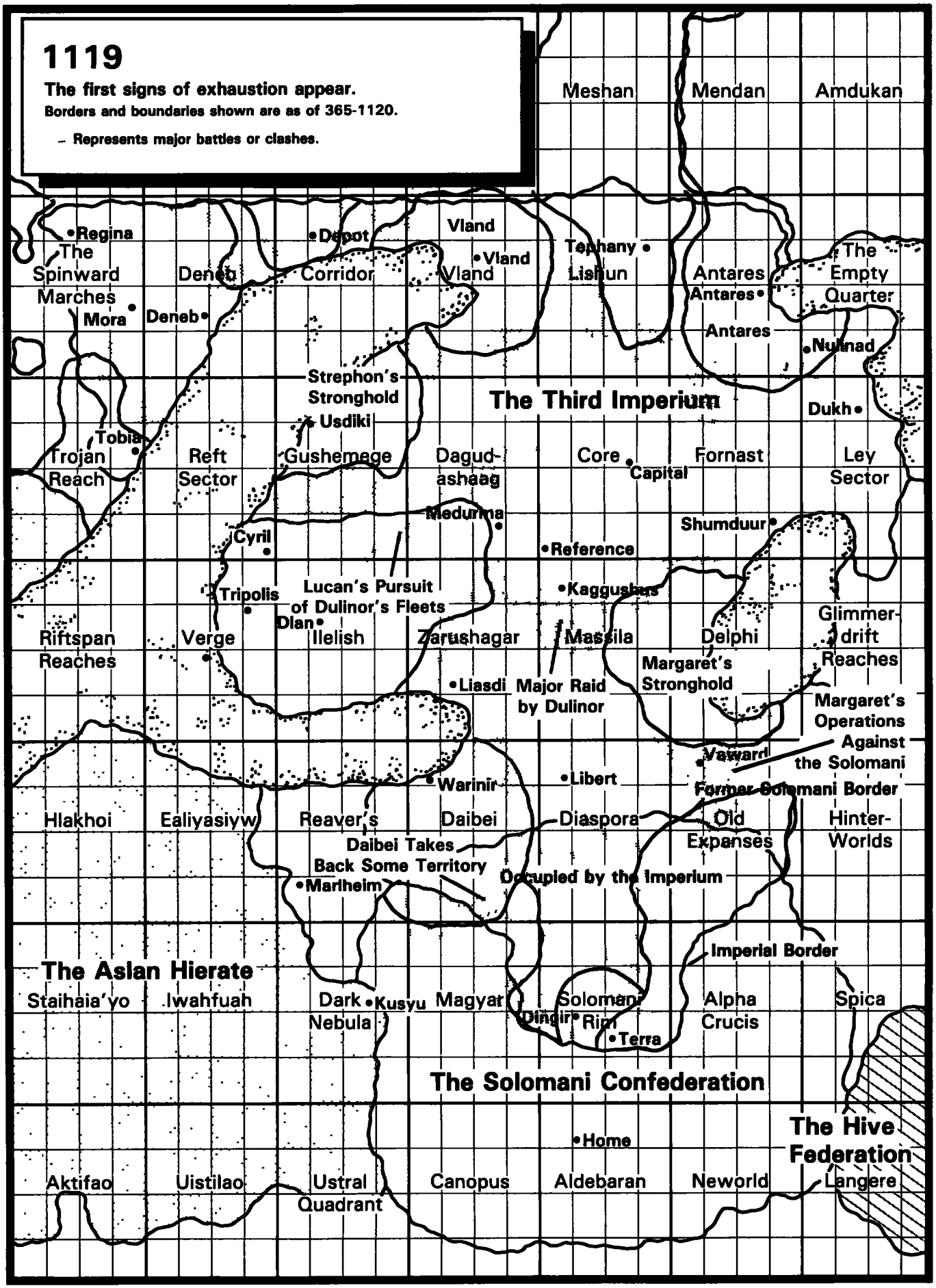


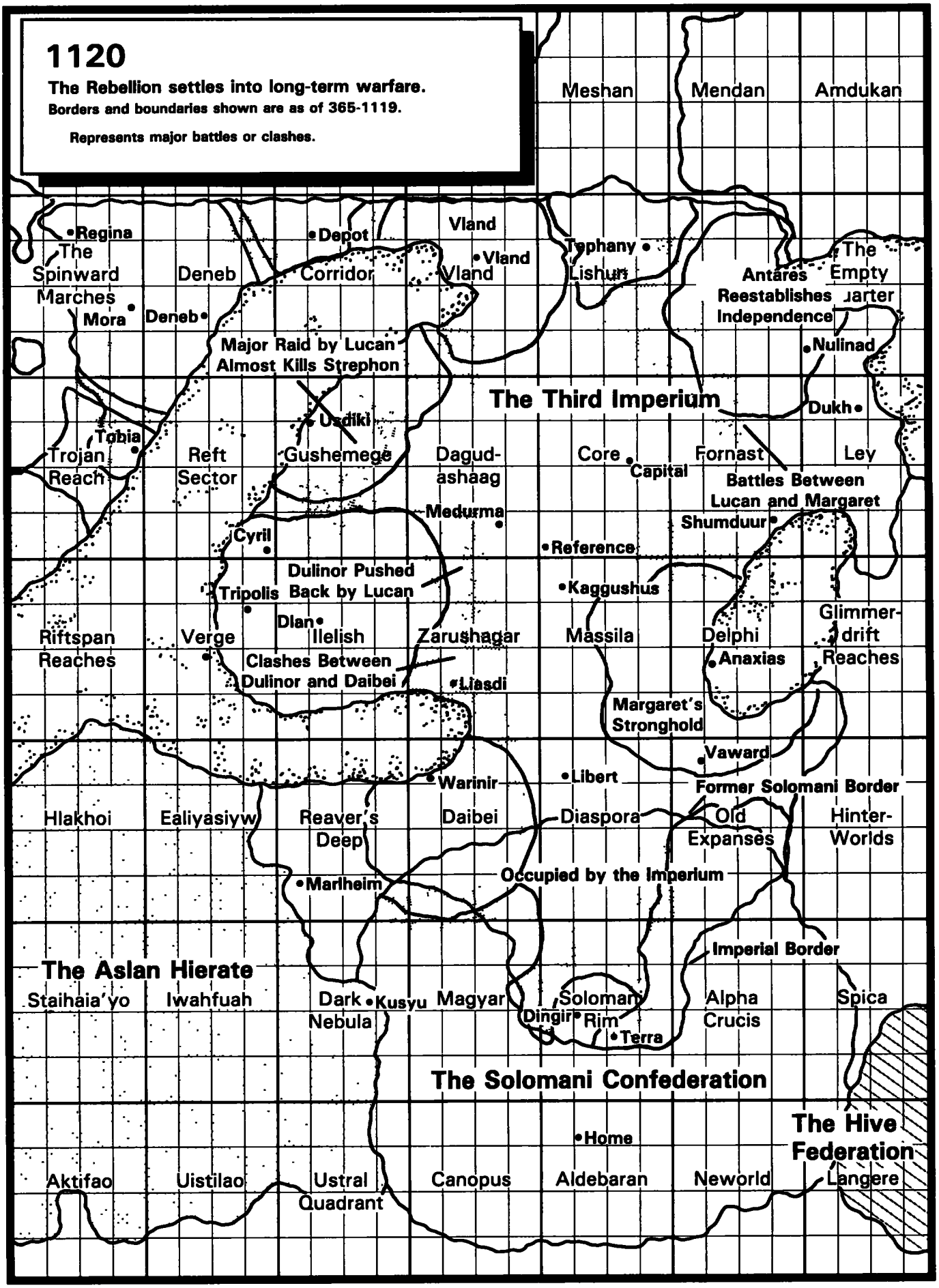
Sector Capitals

Alpha Crucis	Solomani Rim
Antares	Antares
Core	Capital
Corridor	Depot
Dagudashaag	Medurma
Daibei	Warinir
Delphi	Anaxias
Deneb	Deneb
Diaspora	Libert
Dlan	Ilelish
Empty Quarter	Nulinad
Fornast	Shumduur
Glimmerdrift	Delphi
Gushemege	Usdiki
Hinterworlds	Old Expanses
Ley	Dukh
Lishun	Tephany
Magyar	Solomani Rim
Massilia	Kaggushus
Meshan	Lishun
Old Expanses	Vaward
Reavers' Deep	Daibei
Reft	Cyril
Solomani Rim	Dingir
Spinward Marches	Regina
Trojan Reach	Tobia
Verge	Tripolis
Vland	Vland
Zarushagar	Liasdi


1117
The factions establish themselves.
Borders and boundaries shown are as of 365-1117.
Represents major battles or clashes.
Meshan
Mendan
Amdukan
Vargr Invasions
Regina
The Spinward Marches
Mora
Deneb
Deneb
Depot
Corridor
Vland
Vland
Tephany
Lishun
Antares
Antares
Antares
The Empty Quarter
Nulinad
Vargr Invasions
Strephon Appears in Gushemege
Corridor Fleet
Lishun Fleet
The Third Imperium
Dukh
Usdiki
Tobia
Trojan Reach
Reft Sector
Gushemege
Dagudashaag
Core
Capital
Fornast
Ley Sector
Commerce Raids by Dulinor's Forces
Medurma
Shumduur
Aslan Ihatei Invasions
Cyril
Reference
Major Clashes Between Dulinor and Lucan
Tripolis
Kaggushus
Dlan
Riftspan Reaches
Verge
Ilelish
Zarushagar
Massila
Delphi
Anaxias
Glimmerdrift Reaches
Liasdi
Margaret's Stronghold
Old Expanses Fleet
Vaward
Warinir
Libert
Former Solomani Border
Hlakhoi
Ealiyasiyw
Reaver's Deep
Daibei
Diaspora
Old Expanses
Hinter-Worlds
Marlheim
Occupied by the Imperium
Solomani Advances
Imperial Border
The Aslan Hierate
Staihaia'yo
Iwahfuah
Dark Nebula
Kusyu
Magyar
Solomani Rim
Dingir
Terra
Alpha Crucis
Spica
The Solomani Confederation
Home
The Hive Federation
Aktifao
Uistilao
Ustral Quadrant
Canopus
Aldebaran
Neworld
Langere


1118
The struggle for strength.
Borders and boundaries shown are as of 365-1118.
Represents major battles or clashes.
Meshan
Mendan
Amdukan
Continued Vargr Invasions
Regina
The Spinward Marches
Mora
Deneb
Deneb
Depot
Corridor
Vland
Vland
Vland Declares Independence
Tephany
Lishun
Antares Joins with Julian Protectorate
Antares
Antares
Empty Quarter
Nulinad
Strephon's Stronghold
The Third Imperium
Usdiki
Dukh
Tobia
Trojan Reach
Reft Sector
Gushemege
Dagudashaag
Core
Capital
Fornast
Ley Sector
Major Raids by Dulinor Deep into Core
Maduma
Shumduur
Cyril
Dulinor
Reference
Tripolis
Kaggushus
Dlan
Ilelish
Zarusbagar
Massila
Delphi
Anaxias
Glimmer-drift Reaches
Riftspan Reaches
Verge
Liasdi
Margaret's Stronghold
Vaward
Daibei Declares Independence
Libert
Former Solomani Border
Hlakhoi
Ealiyasiyw
Reaver's Deep
Daibei
Diaspora
Old Expanses
Hinter-Worlds
Mariheim
Occupied by the Imperium
Imperial Border
The Aslan Hierate
Staihaia'yo
Iwahfuah
Dark Nebula
Kusyu
Magyar
Solomani
Dingir
Rim
Terra
Alpha Crucis
Spica
The Solomani Confederation
Home
The Hive Federation
Aktifao
Uistilao
Ustral Quadrant
Canopus
Aldebaran
Neworld
Langere


1119
The first signs of exhaustion appear.
Borders and boundaries shown are as of 365-1120.
– Represents major battles or clashes.
Meshan
Mendan
Amdukan
Regina
The Spinward Marches
Mora
Deneb
Deneb
Depot
Corridor
Vland
Vland
Vland
Tephany
Lishun
Antares
Antares
Antares
The Empty Quarter
Nuhnad
Strephon's Stronghold
The Third Imperium
Dukh
Usdiki
Tobia
Trojan Reach
Reft Sector
Gushemege
Dagudashaag
Core
Capital
Fornast
Ley Sector
Medurma
Shumduur
Cyril
Reference
Tripolis
Lucan's Pursuit of Dulinor's Fleets
Kaggushers
Dlan
Riftspan Reaches
Verge
Ilelish
Zarushagar
Massila
Delphi
Glimmerdrift Reaches
Margaret's Stronghold
Liasdi
Major Raid by Dulinor
Margaret's Operations Against the Solomani
Vaward
Former Solomani Border
Warinir
Libert
Hlakhoi
Ealiyasiyw
Reaver's
Daibei
Diaspora
Old Expanses
Hinter-Worlds
Daibei Takes Back Some Territory
Occupied by the Imperium
Marlheim
Imperial Border
The Aslan Hierate
Staihaia'yo
Iwahfuah
Dark Nebula
Kusyu
Magyar
Solomani
Dingir
Rim
Terra
Alpha Crucis
Spica
The Solomani Confederation
The Hive Federation
Home
Aktifao
Uistilao
Ustral Quadrant
Canopus
Aldebaran
Neworld
Langere


1120
The Rebellion settles into long-term warfare.
Borders and boundaries shown are as of 365-1119.
Represents major battles or clashes.
Meshan
Mendan
Amdukan
Regina
The Spinward Marches
Mora
Deneb
Deneb
Depot
Corridor
Vland
Vland
Vland
Tephany
Lishun
Antares Reestablishes Independence
The Empty Quarter
Nulinad
Major Raid by Lucan Almost Kills Strephon
The Third Imperium
Dukh
Usdiki
Tobia
Trojan Reach
Reft Sector
Gushemege
Dagudashaag
Core
Capital
Fornast
Ley
Battles Between Lucan and Margaret
Medurma
Shumduur
Cyril
Reference
Dulinor Pushed Back by Lucan
Tripolis
Kaggushus
Dlan
Ilelish
Riftspan Reaches
Verge
Zarushagar
Massila
Delphi
Anaxias
Glimmerdrift Reaches
Clashes Between Dulinor and Daibei
Liasdi
Margaret's Stronghold
Vaward
Warinir
Libert
Former Solomani Border
Hlakhoi
Ealiyasiyw
Reaver's Deep
Daibei
Diaspora
Old Expanses
Hinter-Worlds
Marlheim
Occupied by the Imperium
Imperial Border
The Aslan Hierate
Staihaia'yo
Iwahfuah
Dark Nebula
Kusyu
Magyar
Dingir
Solomani Rim
Terra
Alpha Crucis
Spica
The Solomani Confederation
The Hive Federation
Home
Aktifao
Uistilao
Ustral Quadrant
Canopus
Aldebaran
Neworld
Langere

An Equipment Catalog for the Rebellion

Unlike most wars, the Rebellion is fought by several sides which all began as part of the same Imperium. As a result, they all began with essentially the same equipment and the same fighting starships. Except for the fact that two groups are shooting at each other, it would be difficult to tell that they were not from the same side.

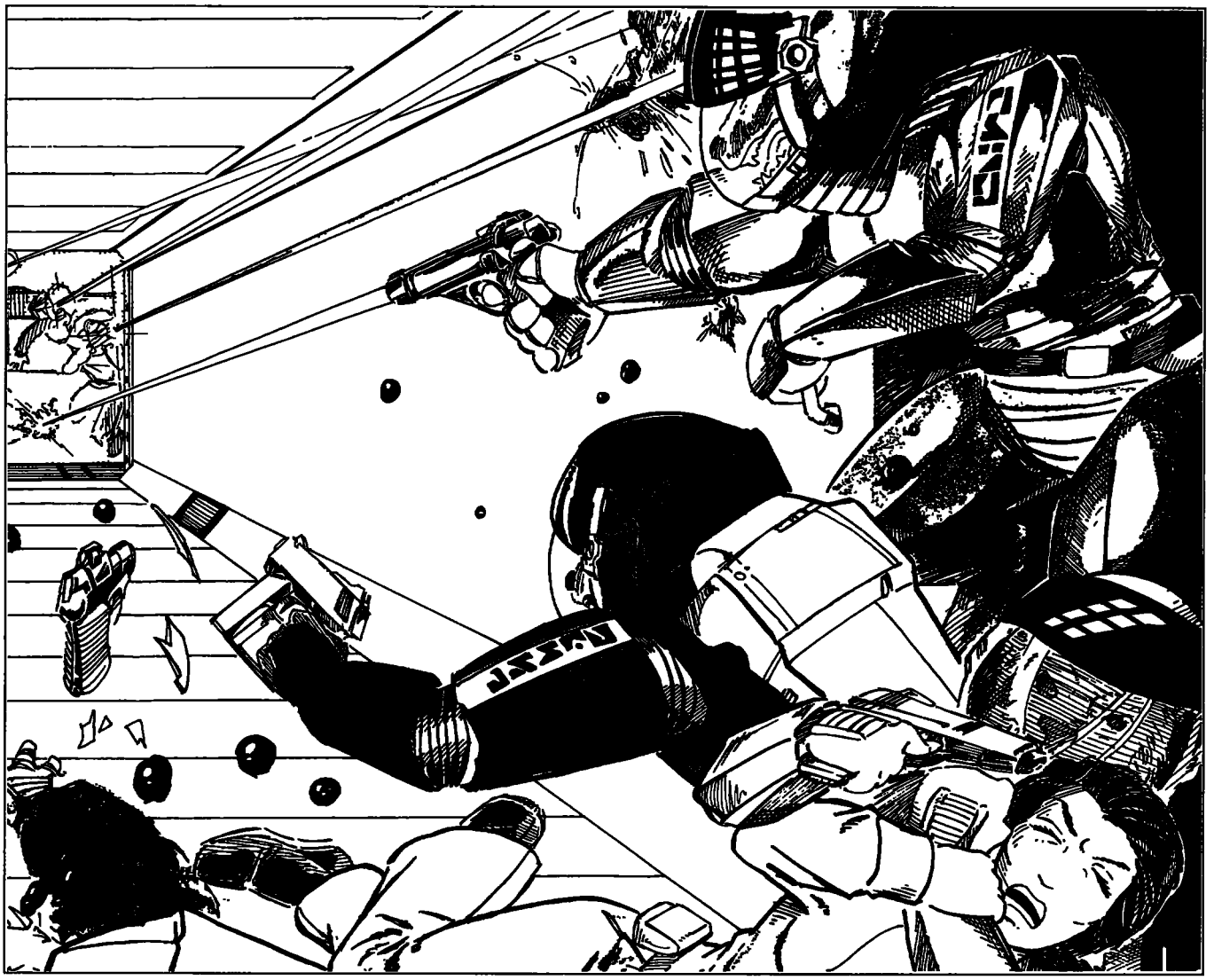
Insignia: For the purposes of easy identification, all factions routinely affix their own identification to their equipment and starships. The benefits from efficient control of friendly forces more than makes up for any vulnerability provided by the readily visible identification.

The Catalog: This catalog provides basic information on a variety of equipment that was in the Imperial inventory at the beginning of the Rebellion, and that has since found its way into the hands of various factions of the Rebellion.

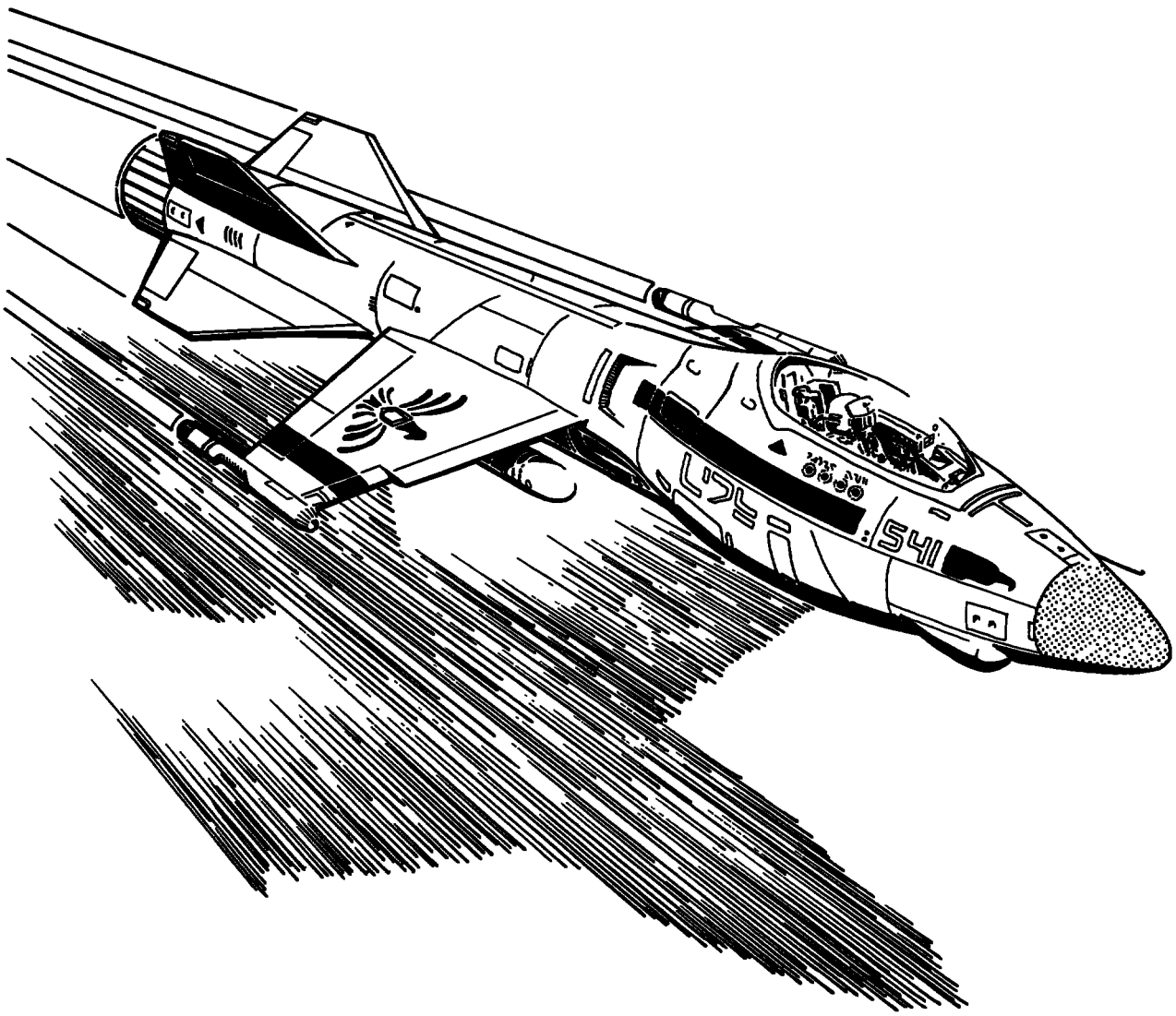
Starships: Starship information is provided to allow them to be involved in battles with other starships and spacecraft from the **MegaTraveller** system. In addition, background notes, information on which factions have or use the ships, and other details are included.

Specific ships used by non-Imperial factions are also included.

Vehicles: Fighting and armored vehicles from Imperial inventory are provided to allow encounters with military units in a variety of environments. Background notes, typical numbers of vehicles encountered, and other details are also included.



IMPERIAL *RAMPART*-CLASS FIGHTER

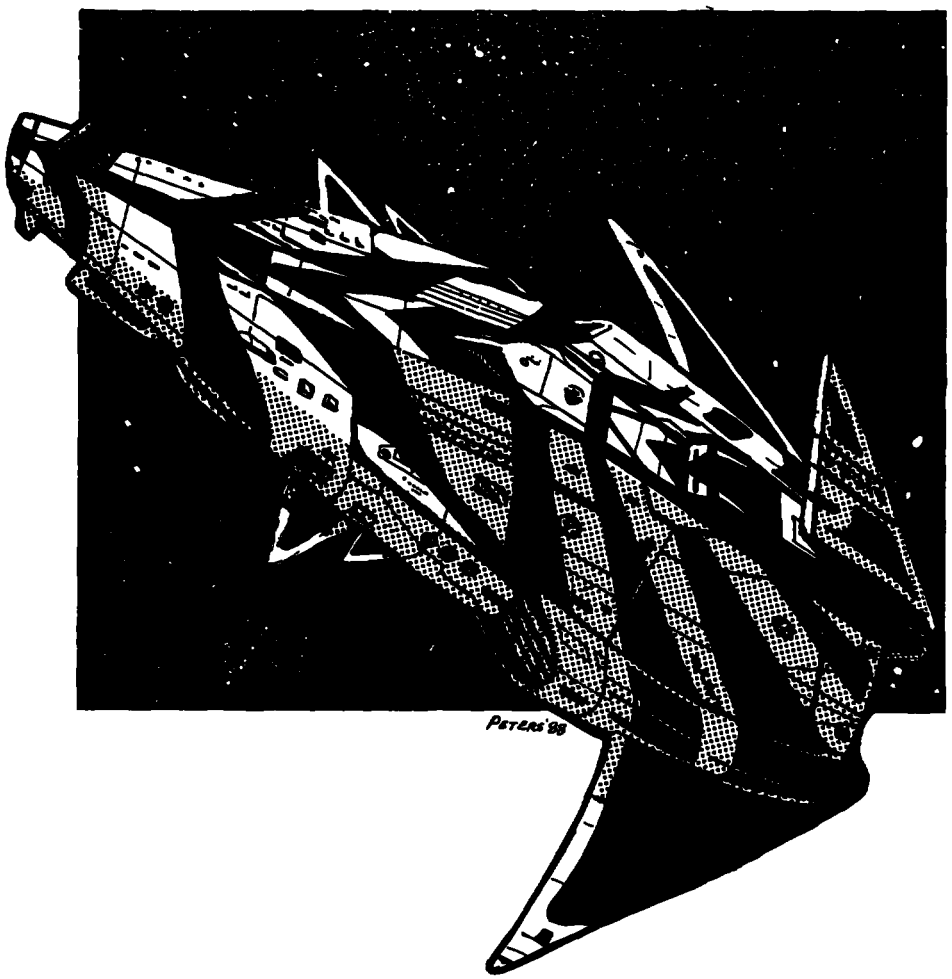


IMPERIAL *RAMPART*-CLASS FIGHTER

CraftID: Fighter, TL 15, MCr14.23
Hull: 9/22 5, Disp = 10, Config = 3AF,
Armor = 40G,
Unloaded = 4 6tons, Loaded = 18.7tons
Power: 1/2, Fusion = 186Mw, Duration = 5/15
Loco: 1/2, StdGravThrust = 1173tons,
NOE = 120kph, Cruise = 2835kph, Top = 3780kph
Agility = 6
Commo: Radio = System × 1
Sensors: PassiveEMS = Interplanet × 1,
ActiveEMS = Planet × 1,
ActObjScan = Diff, ActObjPin = Diff,
PasEngScan = Rout
Off: BeamLaser = x02
Batt 1
Bear 1
Def: DefDM = + 10

Control: Computer = 2 × 3, Panel = HoloLink × 47,
Special = HeadsUp × 1,
Environ = BasEnv, BasLS, ExtLS, GravPlates,
InertialComp
Accomm: Crew = 1
(Operator = 1),
Seats = roomy × 1
Other: Cargo = 6 75kliters, Fuel = 33 6kliters,
ObjSize = small, EMLevel = faint
Comments The fighter is an armed, grav-powered space vehicle often carried on larger military vessels as a subordinate craft

VARGR *AEK NAZ*-CLASS BATTLE CRUISER



VARGR *AEK NAZ*-CLASS BATTLE CRUISER

CraftID: Battle Cruiser, Type BC, TL 11, MCr17,189
Hull: 27,000/67,500, Disp=30,000 tons, Config=1SL,
Armor=50E,
Unloaded=675,297 tons, Loaded=690,040 tons
Power: 4050/8100, Fusion=243,000Mw, Duration=25/75
Loco: 540/1080, Maneuver=1,
1350/2700, Jump=4,
NOE=190kph, Cruise=750kph, Top=1000kph,
Agility=0
Commo: Radio=System×1
LaserComm=FarOrbit×1
MaserComm=Planet×1
Sensors: ActiveEMS=FarOrbit×2,
PassiveEMS=SubStellar×2
Densitometer=HighPen/1m×1,
NeutrinoDetect=1Gw×1
ActivObjScan=Rout, ActivObjPin=Rout
PasObjScan=Formid, PasObjPin=Formid,
PasEngScan=Rout, PasEngPin=Formid
Off: Missiles=x03, ParticleAccelerator=D00

Batt	25	1
Bear	22	1

PlasmaGun=x40, BeamLaser=xx4,

Batt	2	25
Bear	2	22

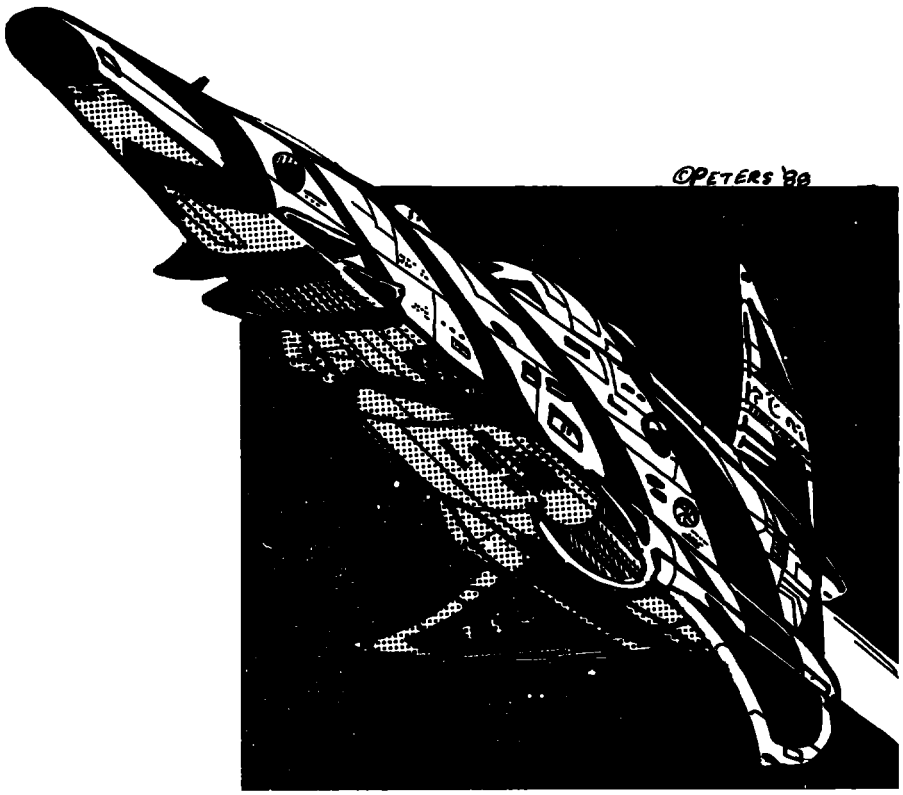
Def: DefDM=+4
SandCaster=xx6, Repulsor=x4x

Batt	25	5
Bear	22	5

Control: Computer=5×3, Panel=DynamicLink×900,
Special=HeadsUpDisplay×1350
Environ=BasEnv, BasLS, ExtLS, GravPlates
Accomm: Crew=31×30
(Bridge=18, Engineer=134, Maintenance=13,
Gunnery=585, Flight=2, ShipTroops=30,
Command=130, Medical=10)
Staterooms=487
SubCraft=cutter×2, pinnace2, air/raft×2
Other: Cargo=10800kliters, Fuel=210,600kliters
PurificationPlant, FuelScoops
ObjSize=Large, EmLevel=Strong
Comments: No Inertial Compensators

This Vargr tech level 11 battle cruiser design shows the problems inherent in creating a heavy-firepower starship at the lower levels of technology

The end result is a series of tradeoffs In order to fit the required equipment into a 30,000-ton hull, power plant fuel capacity was cut to only 25 days In order to support jump-4, the maneuver drive was cut to 1G with no excess power to provide agility



VARGR *FOGHOKS*-CLASS HEAVY CRUISER

CraftID: Heavy Cruiser, Type CA, TL 11, MCr693
Hull: 9000/22,500, Disp = 10,000 tons, Config = 1SL,
Armor = 45E,
Unloaded = 190,498 tons, Loaded = 195,951 tons
Power: 882/1764, Fusion = 52,920Mw, Duration = 18/54
Loco: 540/1080, Maneuver = 1,
810/1620, Jump = 2,
NOE = 190kph, Cruise = 750kph, Top = 1000kph,
Agility = 0
Commo: Radio = System × 1
LaserComm = FarOrbit × 1
MaserComm = Planet × 1
Sensors: ActiveEMS = FarOrbit × 2,
PassiveEMS = SubStellar × 2
Densitometer = LowPen/surface × 1, HighPen/1m
NeutrinoDetect = 1Gw × 1
ActivObjScan = Rout, ActivObjPin = Rout
PasObjScan = Formid, PasObjPin = Imposs,
PasEngScan = Rout, PasEngPin = Formid
Off: Missiles = x70, BeamLaser = xx3

Batt	8	10
Bear	8	10

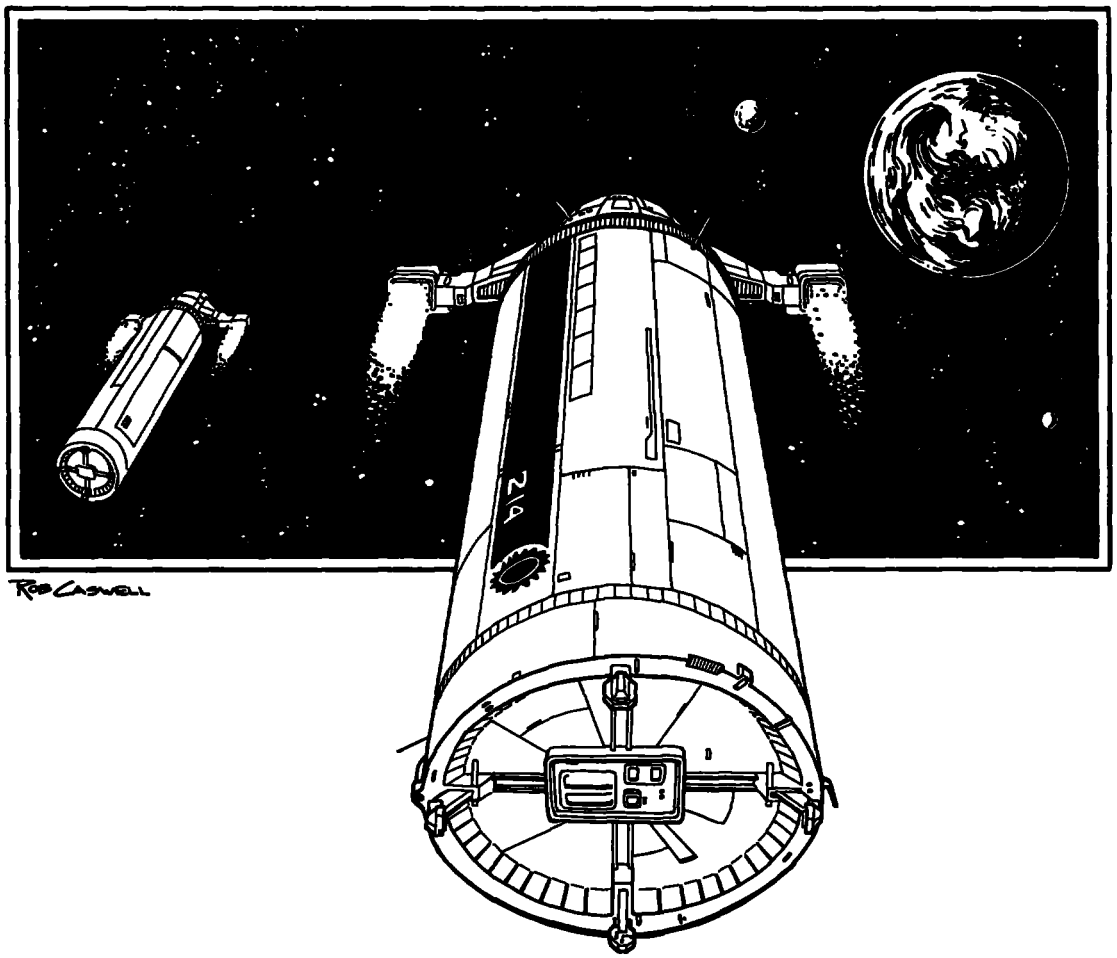
Def: DefDM = +4
SandCaster = xx4

Batt	10
Bear	10

Control: Computer = 5 × 3, Panel = DynamicLink × 425,
Special = HeadsUpDisplay × 638
Environ = BasEnv, BasLS, ExtLS, GravPlates
Accomm: Crew = 13 × 10
(Bridge = 12, Engineer = 45, Maintenance = 6,
Gunnery = 41, Flight = 2, ShipTroops = 10,
Command = 19, Medical = 6)
Staterooms = 71
SubCraft = shuttle × , air/raft × 2
Other: Cargo = 270kliters, Fuel = 77,896kliters
PurificationPlant, FuelScoops
ObjSize = Average, EmLevel = Moderate
Comments: No Inertial Compensators.

This Vargr tech level 11 cruiser design demonstrates the even greater problems (when compared to the larger Vargr Battle Cruiser) of lower levels of technology. This ship sacrifices endurance and armor in order to achieve the jump levels and weaponry it needs

COMMON IMPERIAL TRANSPORT



COMMON IMPERIAL TRANSPORT

CraftID: Transport, Type MP, TL 15, MCr3,465
Hull: 18000/45000, Disp=20,000, Config=3USL,
Armor=40G,
Unloaded=95,099 tons, Loaded=100,322 tons
Power: 235/471, Fusion=63,569Mw, Duration=27/81
Loco: 360/720, Maneuver=1,
720/1440, Jump=3,
NOE=190kph, Cruise=750kph, Top=1000kph,
Agility=0
Commo: Radio=Planet×1, System×1
LaserComm=FarOrbit×2,
MaserComm=Planet×3
Sensors: ActiveEMS=FarOrbit×1
PassiveEMS=InterPlanet×1,
ActObjScan=Rout, ActObjPin=Rout
PasObjScan=Rout
PasEngScan=Rout,
Off: Missiles=x05, BeamLaser=x07

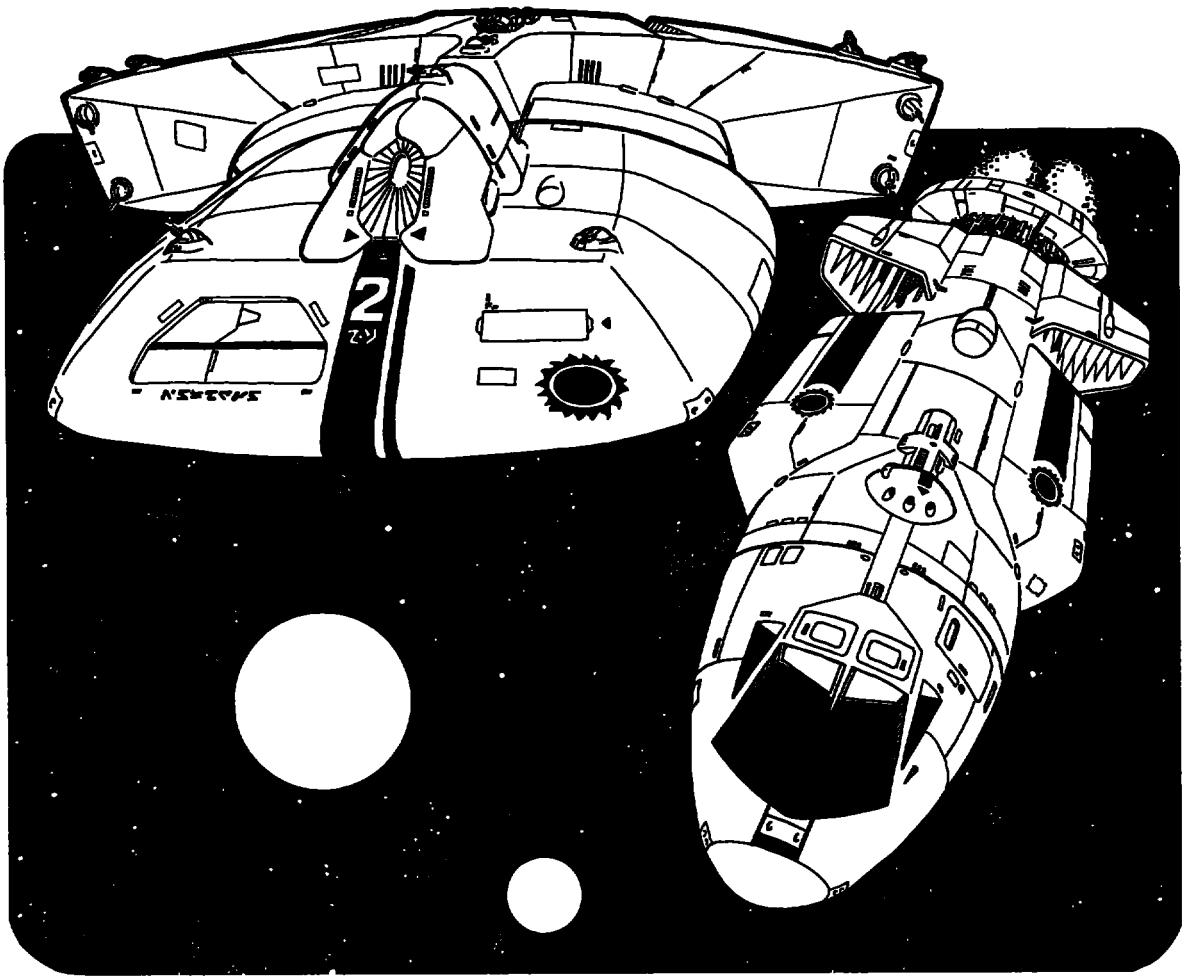
Batt	15	12
Bear	15	12

Def: DefDM=+9, OptimumNucDamper=1,
SandCaster=xx5,

Batt	30
Bear	29

Control: Computer=9 ×3, Panel=HoloLink×20,
Special=LgHoloDisplay×4
Environ=BasEnv, BasLS, ExtLS, GravPlates,
InertialComp
Accomm: Crew=5×20
(Bridge=7, Engineer=11, Gunnery=49, Flight=2,
Command=14, Steward=2, Medical=4)
Staterooms=75, HighPassage=20,
SubCraft=shuttle, air/raft
Other: Cargo=145,800kliters, Fuel=74,596kliters
PurificationPlant, FuelScoops
ObjSize=Large, EmLevel=Moderate

IMPERIAL *SEH*-CLASS LIGHT CRUISER



IMPERIAL *SEH*-CLASS LIGHT CRUISER

CraftID: Light Cruiser, Type CL, TL 15, MCr15,732
Hull: 27,000/67,500, Disp = 30,000, Config = 1SL,
Armor = 50G,
Unloaded = 334,127 tons, Loaded = 350,800 tons
Power: 2800/3733, Fusion = 504,000Mw, Duration = 26/78
Loco: 3240/4320, Maneuver = 3,
1620/2160, Jump = 3,
NOE = 190kph, Cruise = 750kph, Top = 1000kph,
Agility = 1
Commo: Radio = System × 3
LaserComm = System × 3
Sensors: ActiveEMS = FarOrbit × 2
PassiveEMS = InterStellar × 2
Densitometer = HighPen/1km × 1,
NeutrinoDetect = 10kw × 1
ActivObjScan = Rout, ActivObjPin = Rout,
PasObjScan = Rout, PasObjPin = Rout,
PasEngScan = Simp, PasEngPin = Rout
Off: Missiles = x06, FusionGun = x03

Batt	20	5
Bear	18	5

BeamLaser = xx6, MesonGun = J0x

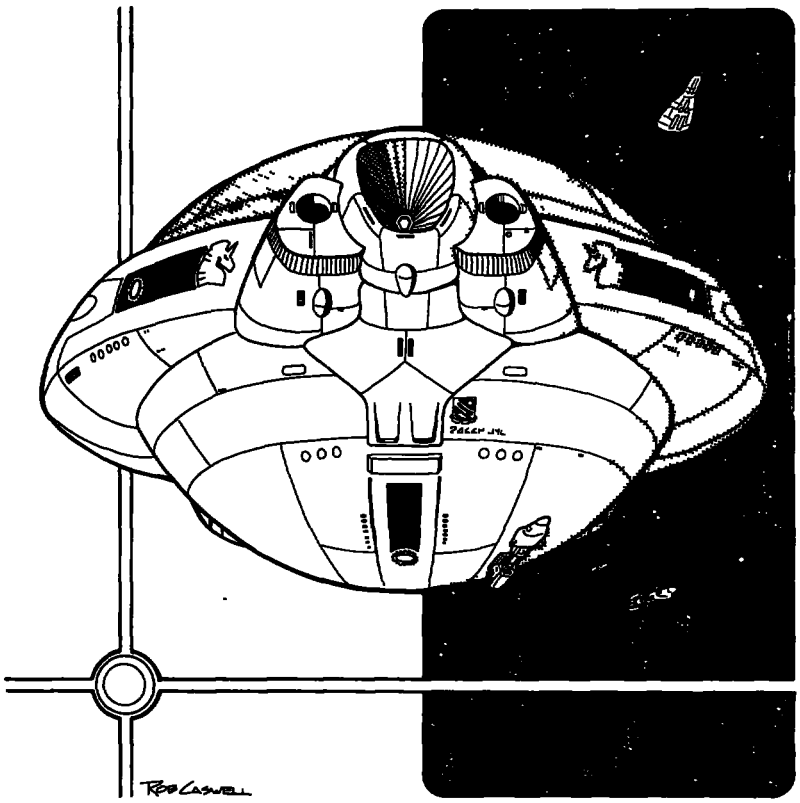
Batt	15	1
Bear	14	1

Def: DefDM = +9, OptimumNucDamper = 1,
SandCaster = xx4, Repulsor = x9x

Batt	10	1
Bear	8	1

Control: Computer = 9fib × 3, Panel = HoloLink × 75,
Special = LgHoloDisplay × 13
Environ = BasEnv, BasLS, ExtLS, GravPlates,
InertialComp
Accomm: Crew = 20 × 30
(Bridge = 12, Engineer = 35, Gunnery = 434,
Flight = 20, ShipTroops = 30, Command = 85,
Stewards = 2, FrozenW = 19, Medical = 1)
Staterooms = 319,
LowBerths = 19, EmergencyLowBerths = 159,
SubCraft = cutter × 5, air/raft
Other: Cargo = 3375kliters, Fuel = 238,248kliters
PurificationPlant, FuelScoops
ObjSize = Large, EmLevel = Strong
Comments: Electronic Circuit Protection
The *SEH*-class light cruiser is named for recipients of the Imperial Starburst for Extreme Heroism

IMPERIAL *VOROSHILEF*-CLASS BATTLESHIP



IMPERIAL *VOROSHILEF*—CLASS BATTLESHIP

CraftID: Battleship, Type BB, TL 13, MCr82,577
Hull: 180,000/450,000, Disp=200,000, Config=4SL,
Armor=40G,
Unloaded=3,281,000 tons, Loaded=3,393,000 tons
Power: 14,670/29,340, Fusion=2,640,600Mw,
Duration=22/66
Loco: 9000/18000, Maneuver=2,
7200/14400, Jump=3,
NOE=190kph, Cruise=750kph, Top=1000kph,
Agility=1
Commo: Radio=Planet×1, FarOrbit×1, System×1
LaserComm=Planet×1, FarOrbit×1, System×1,
MaserComm=Planet×1, FarOrbit×1, System×1
Sensors: ActiveEMS=FarOrbit×2
PassiveEMS=InterStellar×2
Densitometer=LowPen/50m×1, HighPen/100m×1
NeutrinoDetect=100kw×2
ActiveObjScan=Rout, ActiveObjPin=Rout,
PasObjScan=Diff, PasObjPin=Diff,
PasEngScan=Rout, PasEngPin=Diff
Off: Missiles=x80, FusionGun=x60

Batt	148	30
Bear	148	30

BeamLaser=xx6, MesonGun=03x

Batt	12	9
Bear	12	9

Disintegrator=Axx

Batt	1
Bear	1

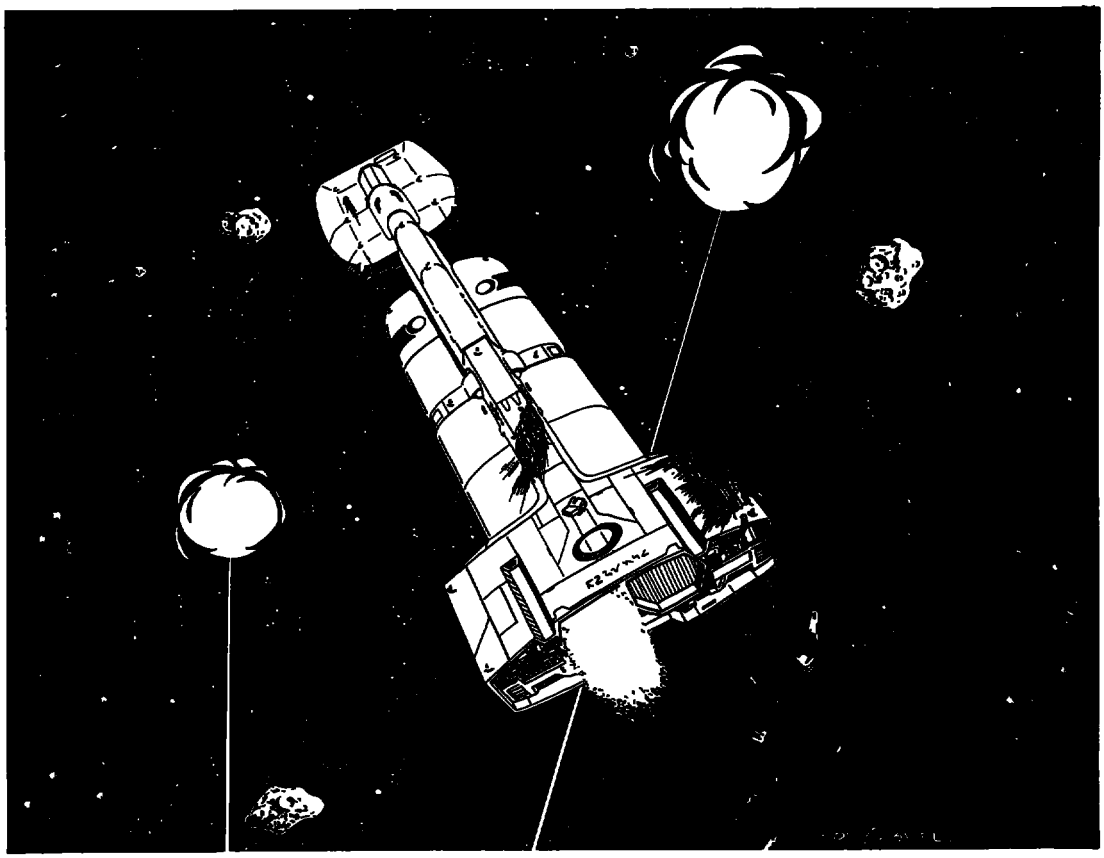
Def: DefDM=+9, NucDamper=3, MesonScreen=3
SandCaster=xx5,

Batt	20
Bear	20

Control: Computer=9 ×3, Panel=HoloLink×600,
Special=LgHoloDisplay×160
Environ=BasEnv, BasLS, ExtLS, GravPlates,
InertialComp
Accomm: Crew=8×200
(Bridge=37, Engineer=376, Maintenance=101,
Gunnery=679, Flight=42, ShipTroops=200,
Command=232, Stewards=6, FrozenW=337,
Medical=10)
Staterooms=1231, LowBerths=410,
EmergencyLowBerths=615,
SubCraft=shuttle×5, fighters×20, air/raft×4
Other: Cargo=4050kliters, Fuel=13467kliters
PurificationPlant, FuelScoops
RapidLaunch,
ObjSize=Large, EmLevel=Strong
Comments: MCr price is the present cost to build to this configuration

This present version includes removal of a previous ParticleAccelerator spinal mount and replacement by a Disintegrator-A, and replacement of the TL13 fusion power plant with a TL15 version

IMPERIAL *PLANET*-CLASS HEAVY CRUISER



IMPERIAL *PLANET*-CLASS HEAVY CRUISER

CraftID: Heavy Cruiser, Type CA, TL 15, MCr27,228
Hull: 67,500/168,750, Disp = 75,000 tons, Config = 2SL,
Armor = 50G,
Unloaded = 944,347 tons, Loaded = 989,443 tons
Power: 3753/7506, Fusion = 1,013,310Mw, Duration = 28/84
Loco: 5063/6750, Maneuver = 2,
6075/8100, Jump = 5,
NOE = 190kph, Cruise = 750kph, Top = 1000kph,
Agility = 2
Commo: Radio = System × 3
LaserComm = System × 3
MaserComm = System × 3
Sensors: ActiveEMS = FarOrbit × 3,
PassiveEMS = InterStellar × 3,
Densitometer = LowPen/250m × 1, HighPen/1km × 2
NeutrinoDetect = 10kw × 3
ActiveObjScan = Rout, ActiveObjPin = Rout
PasObjScan = Rout, PasObjPin = Rout,
PasEngScan = Rout, PasEngPin = Rout
Off: Missiles = x93, FusionGun = x04

Batt	20	10	5
Bear	15	8	4

BeamLaser = xx7, ParticleAccelerator = 090

Batt	3	2
Bear	3	2

MesonGun = J0x

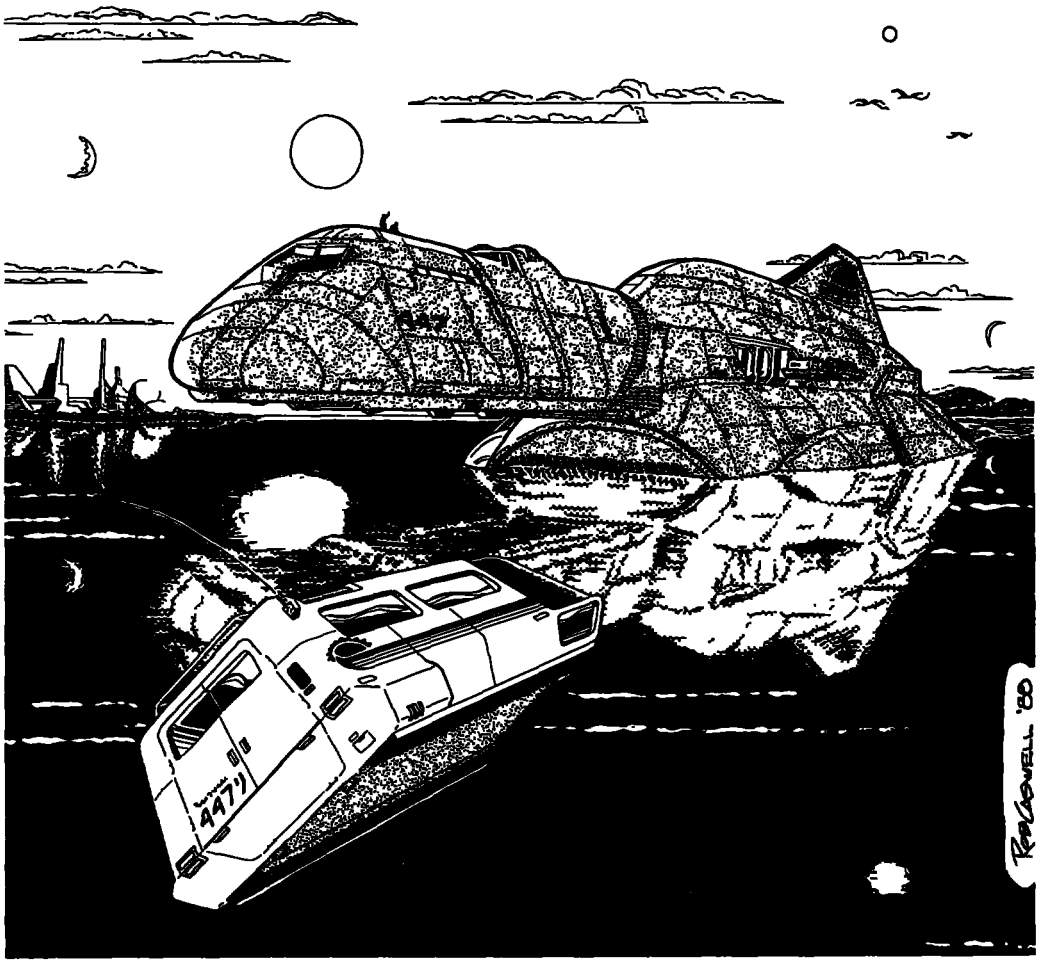
Batt	1
Bear	1

Def: DefDM = +9, OptimumNucDamper = 1,
MesonScreen = 9
SandCaster = xx7, Repulsor = x9x

Batt	15	10
Bear	2	8

Control: Computer = 9 × 3, Panel = HoloLink × 100,
Special = LgHoloDisplay × 28
Environ = BasEnv, BasLS, ExtLS, GravPlates
Accomm: Crew = 11 × 75
(Bridge = 15, Engineer = 86, Gunnery = 542,
Flight = 30, ShipTroops = 75, Command = 120,
FrozenW = 65, Medical = 4)
Staterooms = 468, LowBerths = 65,
EmergencyLowBerths = 233,
SubCraft = shuttle × 3, cutter × 4,, air/raft × 4
Other: Cargo = 2700kliters, Fuel = 644,222kliters
PurificationPlant, FuelScoops
ObjSize = Large, EmLevel = Moderate
Comments: Electronic Circuit Protection
No Inertial Compensators

IMPERIALLINES FRONTIER TRANSPORT TI

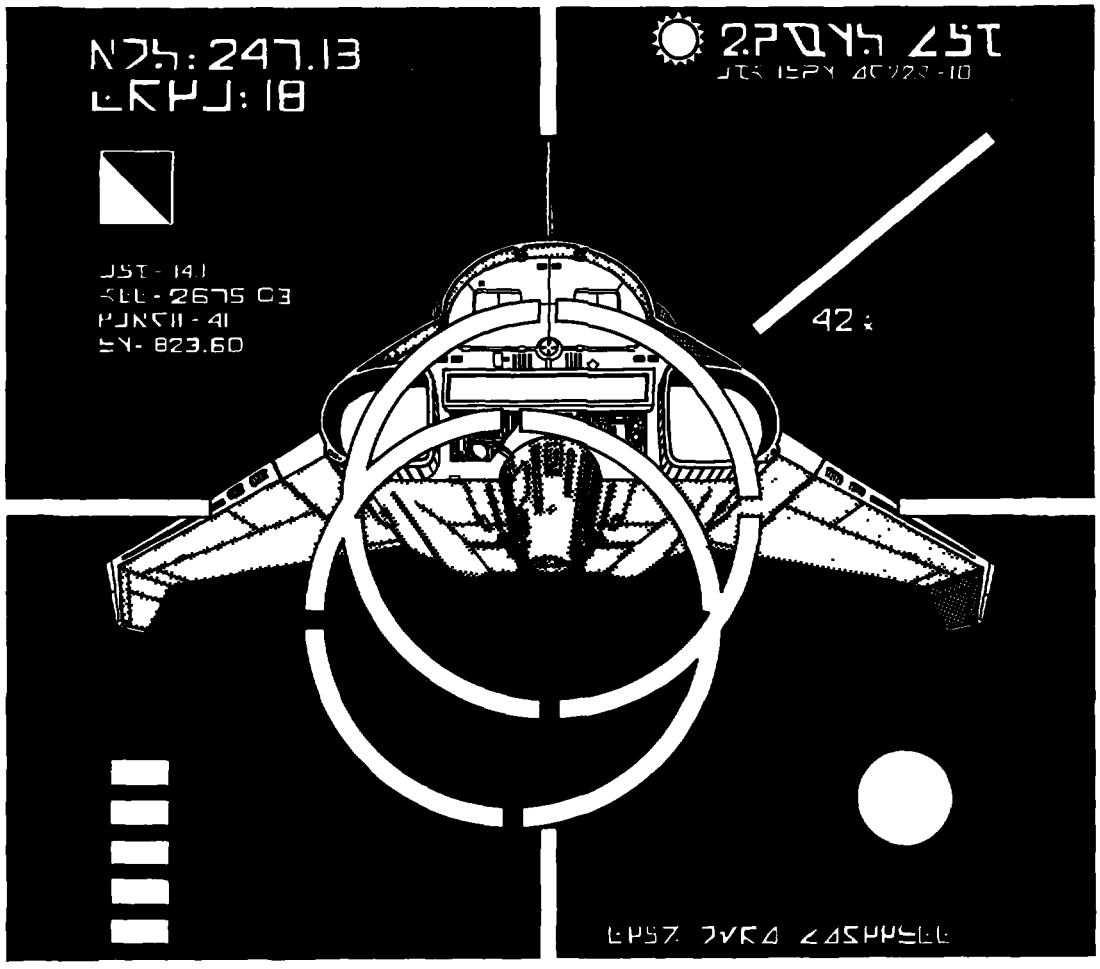


IMPERIALLINES FRONTIER TRANSPORT TYPE TI

CraftID: Frontier Transport, Type TI, TL 15, MCr587 9
Hull: 1800/4500, Disp = 2,000 tons, Config = 4SL,
Armor = 40G,
Unloaded = 14,143 tons, Loaded = 14,709 tons
Power: 61/83, Fusion = 11,600Mw, Duration = 30/90
Loco: 135/180, Maneuver = 2,
81/108, Jump = 2,
NOE = 190kph, Cruise = 750kph, Top = 1000kph,
Agility = 0
Commo: Radio = Planet × 1, System × 2
LaserComm = Planet × 1, System × 2
MaserComm = Planet × 1, System × 2
Sensors: PassiveEMS = InterPlanet × 1, InterStellar × 2
Densitometer = LowPen/1km × 2,
NeutrinoDetect = 10kw × 2
PasObjScan = Rout, PasObjPin = Rout,
PasEngScan = Simp, PasEngPin = Rout
Off: Missiles = x03, FusionGun = x03
Batt 3 1
Bear 3 1
BeamLaser = xx4,
Batt 3
Bear 3
Def: DefDM = +9, OptimumNucDamper = 1,
SandCaster = xx4,
Batt 2
Bear 2
Control: Computer = 9 × 3, Panel = HoloLink × 10,
Special = LgHoloDisplay × 1
Environ = BasEnv, BasLS, ExtLS, GravPlates
Accomm: Crew = 10 × 2
(Bridge = 1, Engineer = 2, Gunnery = 10, Flight = 2,
ShipTroops = 2, Command = 2, Medical = 1)
Staterooms = 12, EmergencyLowBerths = 5,
SubCraft = shuttle, air/raft
Other: Cargo = 11610kliters, Fuel = 8067kliters
PurificationPlant, FuelScoops
ObjSize = Large, EmLevel = Moderate
Comments: Electronic Circuit Protection
No Active Sensors.
No Inertial Compensators.

The Imperiallines TI Frontier Transport is a common sight throughout the Imperium, operating on trade and commerce missions to worlds off the main trade routes.

IMPERIALLINES FRONTIER TRANSPORT TJ

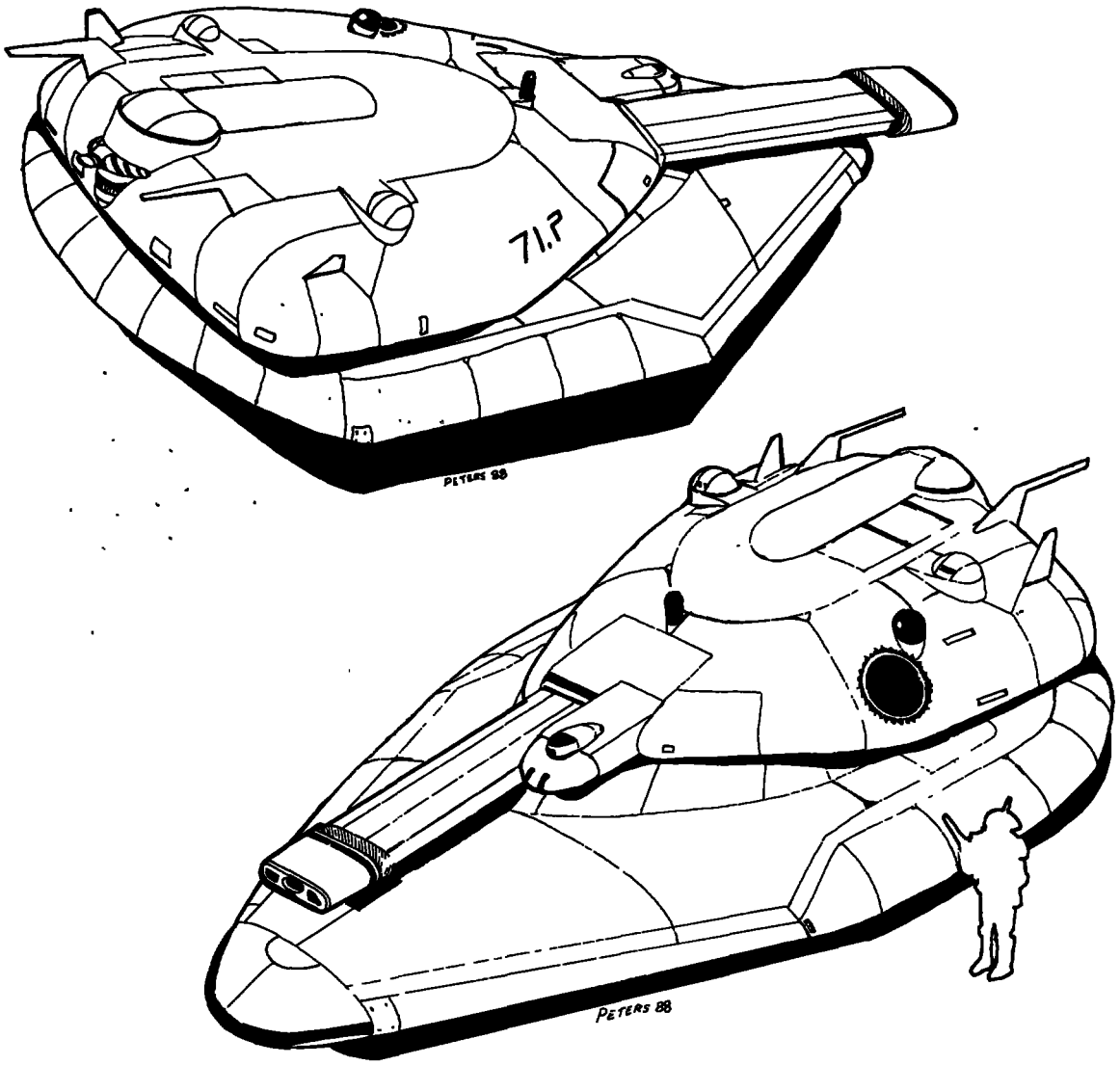


IMPERIALLINES FRONTIER TRANSPORT TYPE TJ

CraftID: Frontier Transport, Type TJ, TL 15, MCr975 7
Hull: 1800/4500, Disp = 2,000 tons, Config = 4SL,
Armor = 40G,
Unloaded = 18,463 tons, Loaded = 19,407 tons
Power: 62/82, Fusion = 5420Mw, Duration = 30/90
Loco: 135/180, Maneuver = 2,
189/252, Jump = 2,
NOE = 190kph, Cruise = 750kph, Top = 1000kph,
Agility = 0
Commo: Radio = Planet × 1, System × 2
LaserComm = Planet × 1, System × 2
MaserComm = Planet × 1, System × 2
Sensors: PassiveEMS = InterPlanet × 1, InterStellar × 2
Densitometer = LowPen/1km × 2,
NeutrinoDetect = 10kw × 2
PasObjScan = Rout, PasObjPin = Rout,
PasEngScan = Simp, PasEngPin = Rout
Off: Missiles = x03, FusionGun = x03
Batt 3 1
Bear 3 1
BeamLaser = xx4,
Batt 3
Bear 3
Def: DefDM = +9, OptimumNucDamper = 1,
SandCaster = xx4,
Batt 2
Bear 2
Control: Computer = 9 × 3, Panel = HoloLink × 10,
Special = LgHoloDisplay × 1
Environ = BasEnv, BasLS, ExtLS, GravPlates
Accomm: Crew = 10 × 2
(Bridge = 2, Engineer = 2, Gunnery = 10, Flight = 2,
ShipTroops = 2, Command = 2, Medical = 1)
Staterooms = 12, EmergencyLowBerths = 5,
SubCraft = shuttle, air/raft
Other: Cargo = 4050kliters, Fuel = 13,467kliters
PurificationPlant, FuelScoops
ObjSize = Large, EmLevel = Moderate
Comments: Electronic Circuit Protection
No Active Sensors.
No Inertial Compensators

The Imperiallines TJ Frontier Transport is externally identical to the Imperiallines TI Frontier Transport, internally, its only difference is the installation of jump-6 drives and a reduced cargo capacity While Type TI ships routinely cover Imperiallines territory conducting trade and commerce, the Type TJ ships use their immense jump capacity to serve as clandestine Imperial couriers.

IMPERIAL *TREPIDA* GRAV TANK



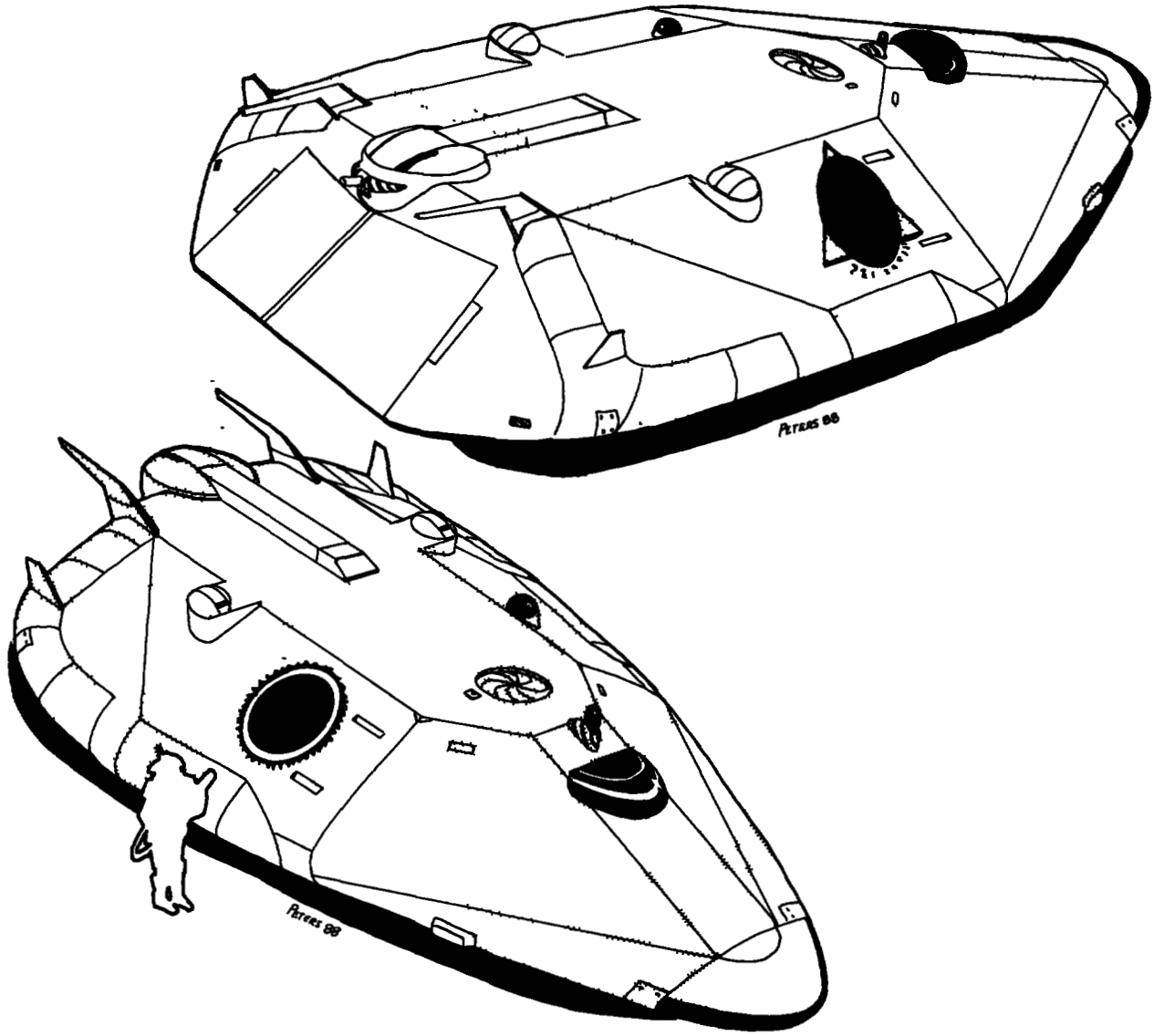
IMPERIAL *TREPIDA* GRAV TANK

CraftID: Imperial *Trepida* Grav Tank, TL 14, MCr20 06
Hull: 12/29, Disp = 10 (+30% turret), Config = 4SL, Armor = 40G, Unloaded = 110 8 tons, Loaded = 125 9 tons
Power: 2/4, Fusion = 126Mw, Duration = 43/130
Loco: 1/2, Standard Grav Thrust = 400 tons, NOE = 180kph, Cruise = 750kph, Top = 1000kph, Vacuum = 1950kph
Commo: Radio = Continental × 1, MaserComm = Distant × 2
Sensors: EMMask, PassiveEMS = VDistant × 1, Continental × 1, ActiveEMS = Distant × 2, ActivObjScan = Formidable, ActivObjPin = Formidable, PasEngScan = Formidable
Off: Hardpoints = 1

	Ammo	Rnd	Pen/ Attn	Dmg	Auto Tgt	Dngr Spc	Sig	Recoil
Fusion RFX-14 (point def targetting)	0	0	67/5	30	2	45	Hi	—

Def: Prismatic Aerosol × 2, Sandcaster × 2
Control: Computer = 3 × 2 Panel = Dynamic × 1, Special = HeadsUp × 1, Environ = BasEnv, BasLS, ExtLS, GravPlates, InertialComp
Accomm: Crew = 2 (Operator/Gunner = 1, Commander = 1), Seats = roomy × 2, Bunks = 2
Other: Cargo = 10kliters, Fuel = 73kliters, ObjSize = Small, EmLevel = Faint
Comments: The *Trepida* became the standard issue Imperial grav tank (at least at the high end of the technology level scale) in 1109, and is widely distributed within the Imperium

IMPERIAL *ASTRIN* GRAV APC



IMPERIAL *ASTRIN* GRAV ARMORED PERSONNEL CARRIER

CraftID: Imperial *Astrin* Grav Armored Personnel Carrier, TL 14, MCr18

Hull: 12/29, Disp = 10, Config = 4SL, Armor = 40G, Unloaded = 100 tons, Loaded = 130 tons

Power: 2/4, Fusion = 120Mw, Duration = 40/120

Loco: 1/2, Standard Grav Thrust = 400 tons, NOE = 180kph, Cruise = 750kph, Top = 1000kph, Vacuum = 1950kph

Commo: Radio = Continental × 1, MaserComm = Distant × 2

Sensors: EMMask, PassiveEMS = VDistant × 1, Continental × 1, ActiveEMS = Distant × 2, ActivObjScan = Formidable, ActivObjPin = Formidable, PasEngScan = Formidable

Off: Hardpoints = 1

Def: Prismatic Aerosol × 2, Sandcaster × 2

Control: Computer = 3 × 2 Panel = Dynamic × 1, Special = HeadsUp × 1, Environ = BasEnv, BasLS, ExtLS, GravPlates, InertialComp

Accomm: Crew = 2 (Operator/Gunner = 1, Commander = 1), Seats = roomy × 2, adequate = 10

Other: Cargo = 10kliters, Fuel = 73kliters, ObjSize = Small, EmLevel = Faint

Comments: The *Astrin* was developed as a companion to the *Trepida* to carry troops into battle Its deployment has followed the *Trepida* by about three years

The *Astrin* carries up to ten combat-equipped soldiers

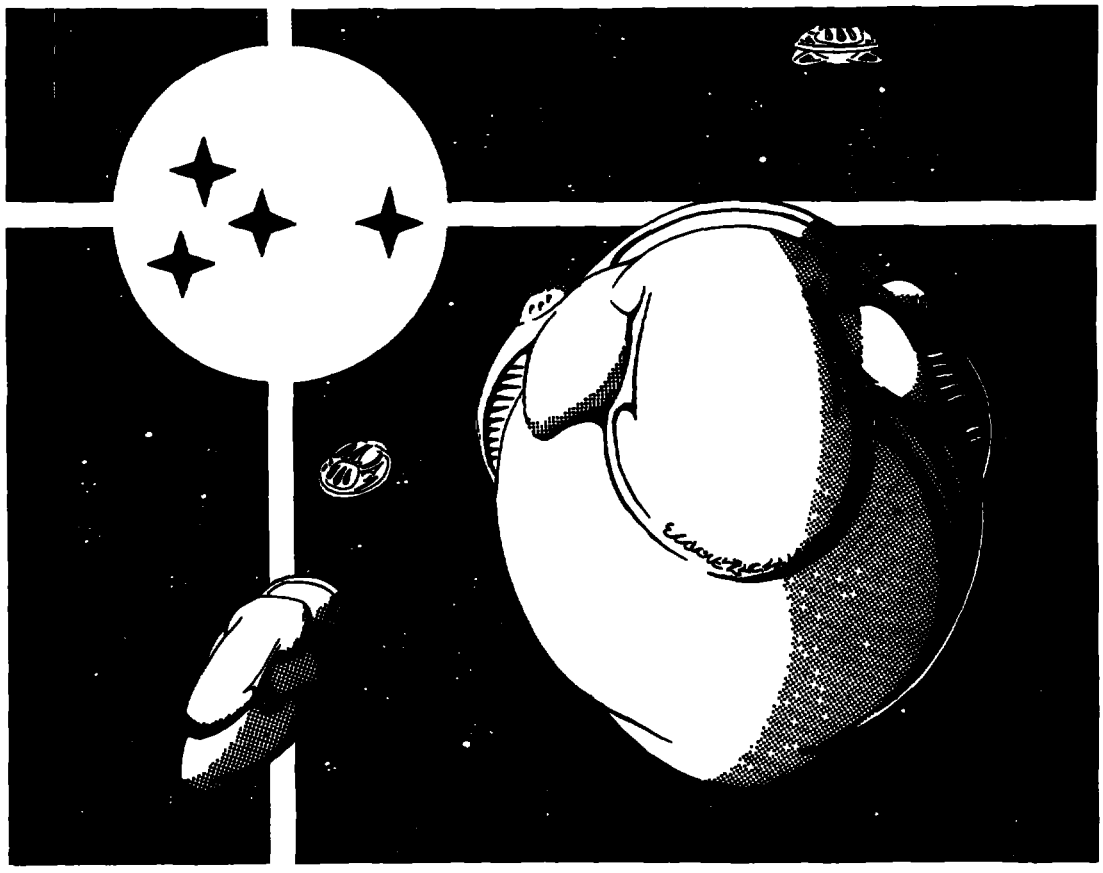
ASLAN *IHATEI*-CLASS TRANSPORT

ASLAN IHATEI CLASS TRANSPORT TYPE NP

CraftID: Colonial Transport, Type NP, TL 13, MCr12,474
Hull: 45,000/112,500, Disp = 50,000 tons, Config = 3SL,
Armor = 40F,
Unloaded = 515,554 tons, Loaded = 529,656 tons
Power: 1202/2403, Fusion = 108,135Mw, Duration = 30/90
Loco: 900/1800, Maneuver = 1,
1800/3600, Jump = 3,
NOE = 190kph, Cruise = 750kph, Top = 1000kph,
Agility = 0
Commo: Radio = Planet × 1,
LaserComm = Planet × 1,
Sensors: ActiveEMS = FarOrbit1
PassiveEMS = InterPlanet × 1,
Densitometer = HighPen/100m × 1,
NeutrinoDetect = 100kw × 1
ActivObjScan = Rout, ActivObjPin = Rout
PasObjScan = Diff, PasObjPin = Diff,
PasEngScan = Rout, PasEngPin = Diff
Off: None
Def: DefDM = +6, NucDamper = 2,
Control: Computer = 7 × 3, Panel = HoloLink × 200,
Special = LgHoloDisplay × 75
Environ = BasEnv, BasLS, ExtLS, GravPlates
Accomm: Crew = 3 × 50
(Bridge = 14, Engineer = 52, Maintenance = 19,
Gunnery = 8, Flight = 2, ShipTroops = 50,
Command = 24, Stewards = 5, Medical = 10)
Staterooms = 92, LowBerths = 10,000,
SubCraft = shuttle × 5, cutter × 8, air/raft × 10
Other: Cargo = 202,500kliters, Fuel = 199,881kliters
PurificationPlant, FuelScoops
ObjSize = Large, EmLevel = Strong
Comments: No Inertial Compensators

The Aslan *Ihatei*-class transport is one of several standard designs encountered in Aslan colonial fleets, like all of them, it provides economical movement of a large number of colonists (in low berths) and their supporting heavy equipment and start-up supplies (about 1 5 tons per colonist)

ASLAN *WEAKHTO*-CLASS CRUISER



ASLAN *WEAKHTO*-CLASS CRUISER

CraftID: *Heavy Cruiser, Type CA, TL 13, MCr10,476*
Hull: 9000/22,500, Disp = 10,000 tons, Config = 2SL,
Armor = 50F,
Unloaded = 725,807 tons, Loaded = 730,941 tons
Power: *990/1980, Fusion = 89,100Mw, Duration = 26/78*
Loco: 720/1440, Maneuver = 3,
360/720, Jump = 3,
NOE = 190kph, Cruise = 750kph, Top = 1000kph,
Agility = 0
Commo: Radio = Planet × 1, System × 1
LaserComm = Planet × 1
MaserComm = Planet × 1, System × 1
Sensors: PassiveEMS = SubStellar × 1,
ActiveEMS = FarOrbit × 1,
Densitometer = HighPen/100m × 1,
NeutrinoDetect = 100kw × 1
ActivObjScan = Rout, ActivObjPin = Rout,
PasObjScan = Diff, PasObjPin = Diff,
PasEngScan = Rout, PasEngPin = Diff
Off: Missiles = x93, FusionGun = x02

Batt	1 10	5
Bear	1 10	5

BeamLaser = xx6, PlasmaGun = x04

Batt	9	5
Bear	9	5

ParticleAccelerator = 030

Batt	1
Bear	1

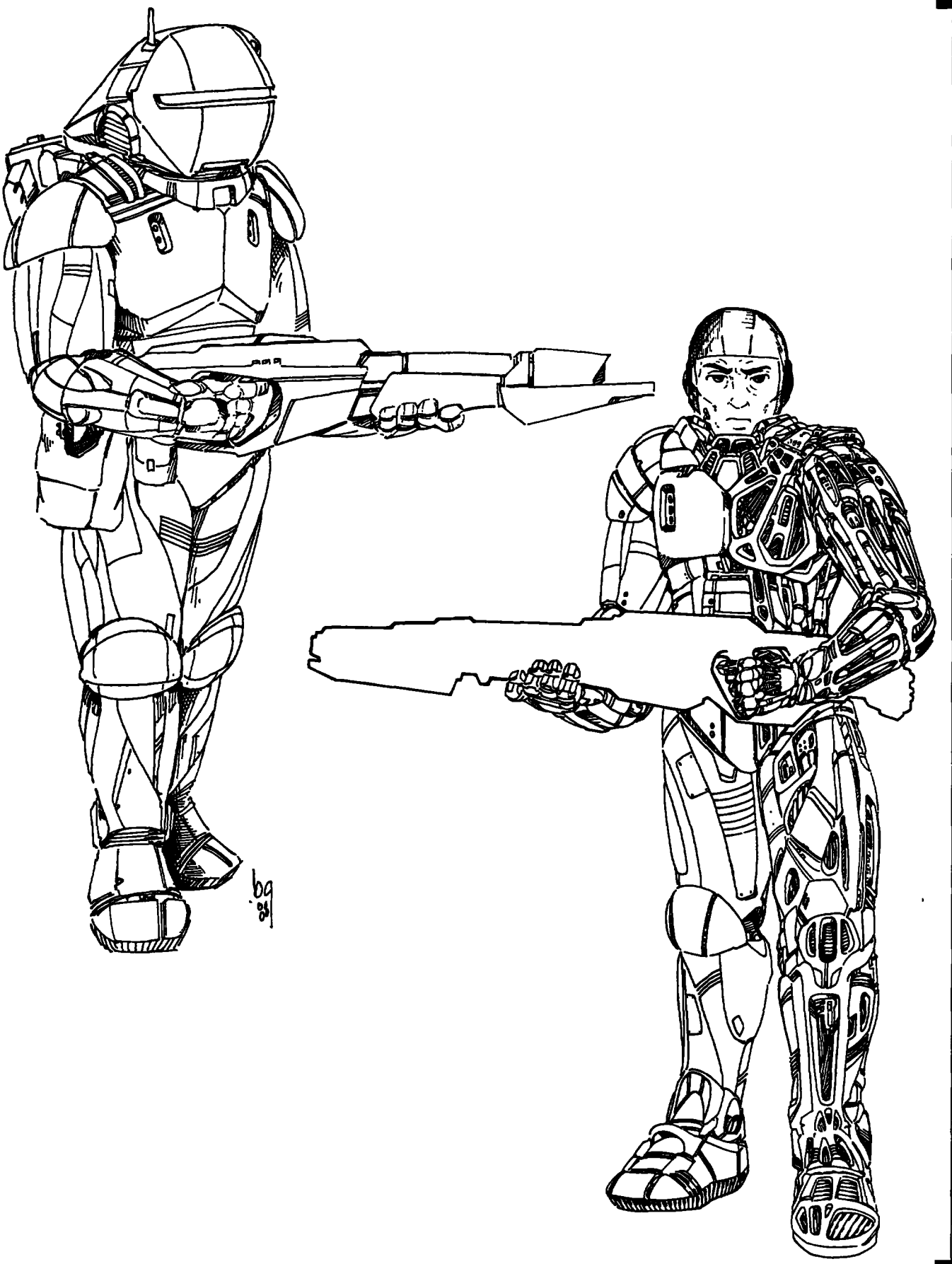
Def: DefDM = +7, NucDamper = 3,
SandCaster = xx4,

Batt	10
Bear	10

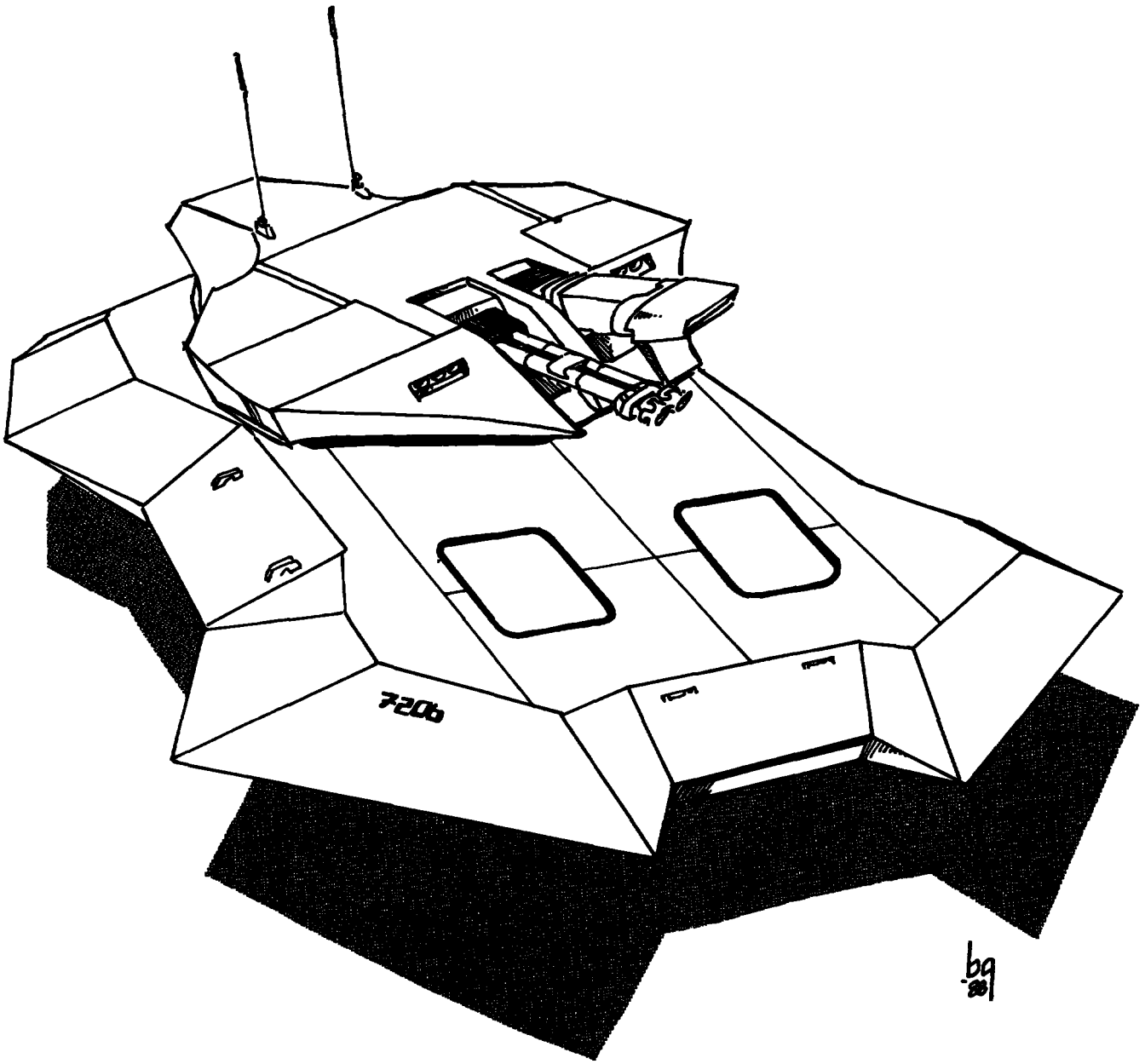
Control: Computer = 7 × 3, Panel = HoloLink × 80,
Special = LgHoloDisplay × 18
Environ = BasEnv, BasLS, ExtLS, GravPlates
Accomm: Crew = 17 × 10
(Bridge = 13, Engineer = 24, Maintenance = 39,
Gunnery = 54, Flight = 2, ShipTroops = 10,
Command = 23, Stewards = 5, Medical = 3)
Staterooms = 87, Bunks = 100, SubCraft = shuttle × 2,
cutter × 2, air/raft
Other: Cargo = 1350kliters, Fuel = 73332kliters
PurificationPlant, FuelScoops
ObjSize = Large, EmLevel = Moderate
Comments: The Aslan *Weakhto*-class Cruiser is typical of those deployed by the Aslan ihatei fleets on colonization missions Considered obsolescent by contemporary Aslan standards, the ship has enough life left in it to provide effective protection for the colony ships it escorts, and to provide scout and recon services as the fleet seeks out new colony worlds

Weakhto-class ships are named for famous clan battles, *weakhto* means battle

IMPERIAL COMBAT ARMOR



ZHODANI *Z-80* GRAV TANK



ZHODANI *Z-80* GRAV TANK

CraftID: Zhodani *Z-80* Grav Tank, TL 14,
Hull: 12/29, Disp = 10 (+30% turret), Config = 4SL, Armor = 40G,
Power: 2/4, Fusion = 130Mw, Duration = 38/114
Loco: 1/2, Standard Grav Thrust = 400 tons, NOE = 180kph, Cruise = 750kph, Top = 1000kph, Vacuum = 1950kph.
Commo: unknown
Sensors: EMMask, others unknown
Off: Hardpoints = 1
Def: Prismatic Aerosol × 2
Control: Computer = 3 × 2
Panel = Dynamic × 1, Special = HeadsUp × 1
Environ = BasEnv, BasLS, ExtLS, GravPlates, InertialComp
Accomm: Crew = 2
(Operator/Gunner = 1, Commander = 1)
Seats = roomy × 2
Other: Cargo = ?? kliters, Fuel = ?? kliters
ObjSize = Small, EmLevel = Faint
Comments: Imperial intelligence agencies have given the designation *Z-80* to the current Zhodani primary issue grav tank. Detailed information about the vehicle has not yet become available

Nail Mission

The Domain of Deneb has been cut off from the main body of the Imperium ever since Emperor Lucan withdrew Corridor Fleet and allowed the Vargr raiders to move into that sector. All along Imperial coreward border, Vargr corsairs have become bolder and bolder as they find the Imperium unable to resist their plundering expeditions. Meanwhile, the rimward border of the Domain is being steadily nibbled at by Aslan ihatei fleets intent on settling any hospitable world they can find, even ones already settled by Imperials.

Defending at the core of the Spinward Marches is Norris, Archduke of Deneb, using every asset at his command to halt the collapse of his small part of the Imperium, hoping the Rebellion can be ended before the star-spanning might of the empire is completely destroyed.

PROJECT 12

In order to adequately reinforce the defenses of the Domain, every possible starship is being impressed into service. Squadron after squadron of mothballed battleships is being reactivated, refurbished, and pressed into the line to hold back the raiding Vargr.

Long ago, a squadron of *Voroshilef*-class battleships was retired from active service, transferred to the reserve fleet, and ultimately parked in orbit around Mora/Spinward Marches (2924 C367300-8) until they could be scrapped. The ships were always second-class battleships, never intended for use on the main battlefronts, but in the Marches, when used against the Vargr, they promised to be reasonably efficient.

When the naval inspectors looked the hulls over in anticipation of reactivating them, they bumped up against an undocumented installation in five of the six ships. After a quick check and several cross checks, they confirmed that the battleships Particle Accelerator-R spinal mounts had been replaced (according to the records, at Depot/Gushemege) with a highly experimental Disintegrator-A spinal mount, which conveniently fit into the space left by removing the Particle Accelerator-R.

The reserve fleet commodore immediately saw the potential of several battleships armed with highly effective disintegrators and sent an aide with the news to the Naval High Command at Regina Only after the aide was on his way was the commodore informed that the Disintegrators didn't work; they were missing a vital component which was obviously not in inventory in anywhere in the Domain

After several weeks of frantic messages exchanged with Regina, Naval High Command realized that the most straightforward course of action was to send a ship to Depot/Gushemege to get the parts required.

Through a sector filled with Vargr corsairs.

Then through the independent Vilani empire.

To a Depot which could be in the hands of any one of four factions of the Rebellion.

For a part that might not even be there.

And return.

THE MISSION

Sending a fleet on a journey of more than 150 parsecs is a genuine waste of vital naval power. A squadron, on the other hand, might not survive the mission. A single naval cruiser would never survive. The mission absolutely must be undertaken by a ship that can blend into the environment, run fast enough to escape most pursuers, and carry several hundred tons of vital parts back to the Spinward Marches.

Fortunately, there exists such a ship. Several Imperiallines TJ 2000-ton Frontier Transports are stranded in the Marches by the Rebellion. They continue to operate as couriers for the Archduke, mainly because they have little else they can do at

the moment. These ships, capable of jump-6, can easily make the journey to Depot/Gushemege in the fastest possible time.

The TJ has several advantages as well. If any Imperiallines offices remain open, they can serve as a source of assistance and support if needed. Imperiallines offices are present (or were before the Rebellion began) at two out of three type C starports in the Imperium.

Recruiting: Commander Itsan Unuggi, naval aide for the Archduke of Deneb, has been charged with organizing an expedition to Depot/Gushemege using an Imperiallines TJ. Several crews of the TJs have been stranded in the Spinward Marches, and some of their personnel are anxious to return to their homeworlds in the Imperium before all interstellar travel grinds to a halt. From the available crews, a composite crew has been assembled. About half come from subsectors in the interior of the Imperium, and they want to be taken home. The rest are prepared to make the full journey. To round out the crew, Commander Unuggi is now recruiting a multi-skilled band of adventurers who can provide the best possible support to the TJ crew.

The adventurers are the perfect answer. They are recruited.

Preparing for the Mission: The adventurers must prepare themselves for the mission by procuring equipment and supplies that they might feel important. Anything can happen on this mission: It may include world surface actions, encounters with enemy ships, rescue missions, vacuum operations, or any other activity.

The Navy will supply basic small arms weaponry and ammunition. The ship itself is well-stocked with food, some repair parts, and medical supplies. Beyond that, any requirements must be filled by personal purchase.

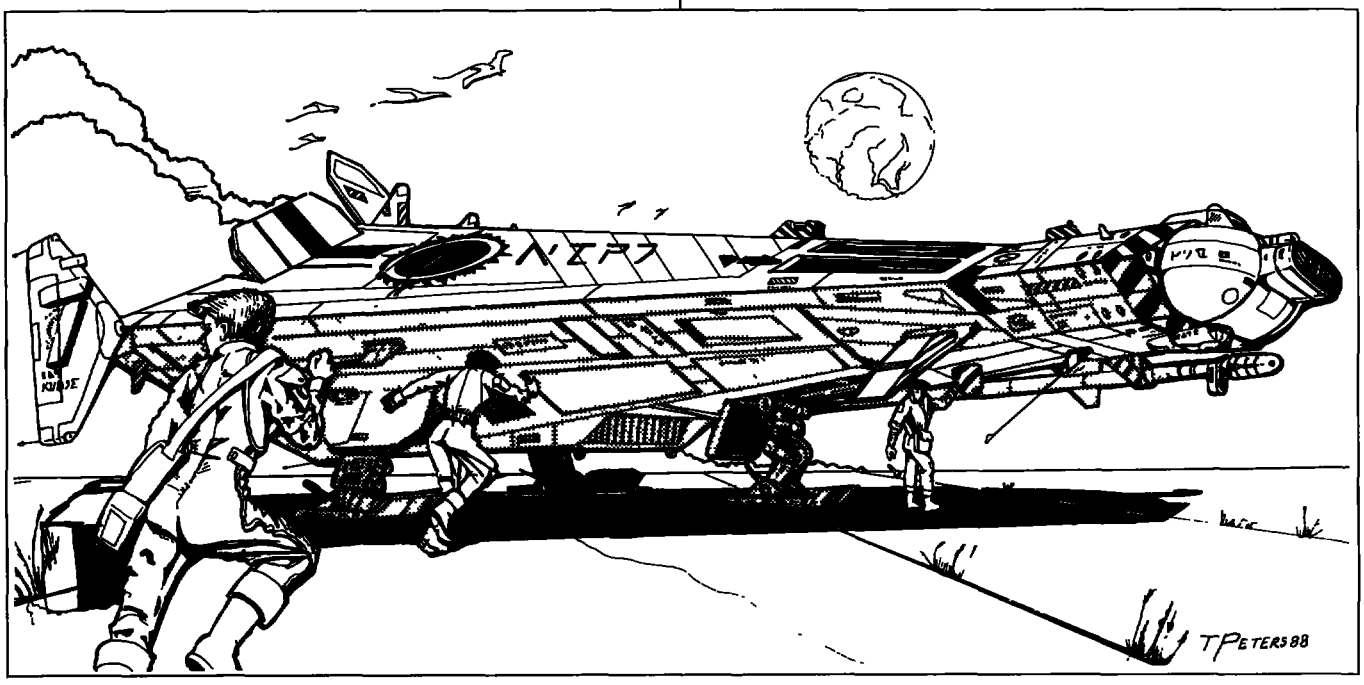
The Imperiallines TJ included up to 10 tons of cargo space for each crewmember.

Procedures: The TJ is capable of jump-6. It can refuel at any gas giant, at a starport, or with water from a lake or ocean. Costs for life support on the ship are already taken care of. Theoretically, the ship can make jump after jump after jump without having any appreciable delay on the way to Depot/Gushemege.

The referee must create maps of the sectors through which the TJ will travel. Once these maps are generated, the TJ can proceed under the navigation of one of the player characters (with the advice and assistance of the other player characters, and the non-player characters as administered by the referee).

Mission Orders: As the ship prepares to depart, the specific mission orders are made available to the crew. They read as follows:

> You are now ordered to proceed to Depot/Gushemege in Gushemege sector by the fastest possible route. There, you are to locate and procure the attached list of vital starship weaponry components You will then return to Mora/Spinward Marches to deliver the parts for installation in waiting starships
>
> Several crewmembers have expressed a desire to be returned to their homeworlds of record. If such action is possible and will not appreciably delay the journey, you are ordered to do so.
>
> Imperiallines Transport offices are commonly encountered at type C starports. You should consider Imperiallines offices a possible resource in the event of problems while enroute. You are ordered to provide Imperiallines Transport offices any possible assistance if it will not appreciably delay your journey.
>
> The attached list of vital starship weaponry components includes parts numbers, descriptions, photographs and drawings to help recognize the equipment. The material weighs 200 tons and has a volume of 400 kiloliters.



REFEREE'S INSTRUCTIONS

This mission is intended to provide a wide variety of experiences for the player characters as they journey through a wide variety of Rebellion-filled Imperial subsectors. To the casual observer, the mission looks like it will be a simple matter: Go there, get the stuff, and come back. To make it more interesting, the following procedure should be used.

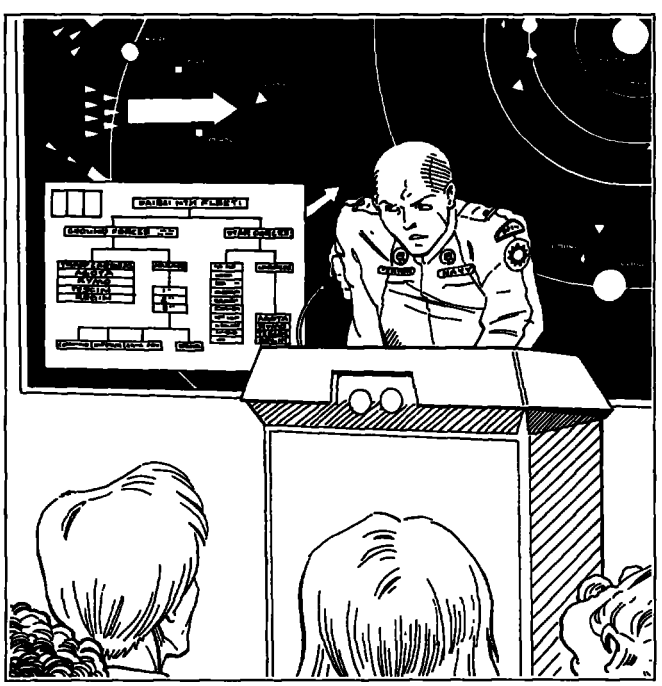
First Steps: After the basic situation has been established, the adventure should concentrate on the details of how the ship travels through unknown or unfriendly territory Emphasize the details of arrival in system, checking for possible enemy ships, refueling, a reconnaissance of the main world in the system (even if at a distance), and possibly a reconaissance of other worlds in the system. Only then should the ship proceed to the next world on its itinerary

Every system should have an encounter. The precise nature of the encounter is left to the referee, and it definitely should not be random. Instead, use each encounter to show some aspect of the Rebellion to the players Some suggestions include:

A Vargr Corsair: Meeting this enemy allows a pitched space battle. The corsair might be lying in ambush near the gas giant, not to be spotted until too late, or it might lie dormant like a derelict to lure the TJ closer.

An Abandoned World: A world with a type C starport, its city (or cities) in ruins after continued raiding by Vargr. The few survivors on the world need desperately to be taken to a more hospitable place, and the local Imperiallines office pleads for the TJ's help

Use each encounter to build interest in the adventure. But remember that encounters and game action also helps players better understand not only their own characters but also the character around them. As they become comfortable with the characters of the adventure, they can learn to depend on them. And from that dependence and interaction comes a truly rewarding role playing experience.



Mid-Game: After the players are comfortable with the procedures and have come to expect an encounter in each system, the adventure can proceed more swiftly. Some systems can now be passed through without encounters, and progress toward the goal of Depot/Gushemege can be more rapid.

First Climax: The obvious goal of the adventure is to arrive at Depot/Gushemege and procure the vital starship weaponry components. There are three alternatives for the events at Depot/Gushemege; which one is used must depend on the referee's evaluation of appropriateness and player enjoyment

1. The Depot is abandoned. In the early years of the Rebellion, the naval staff maintained the depot as a supply and repair base, but as the war swirled around it, it became apparent that keeping the place in operation was no longer a reasonable option During 1118, virtually all of the movable, useful supplies and equipment were removed to other naval bases. Left behind were empty starship hulls and parts for which there was no foreseeable use.

The adventurers will have to carefully search the entire depot trying to find the specific components they need. The parts are there; the abandoned computer system (if it can be brought back to life) has the required stock bin locations; the search can be long and tedious or systematic and short, depending on how the adventurers go about it.

Meanwhile, the situation lends itself to various dramatic scenes: huge warehouses stretching for kilometers. Vast landing grounds with a cannibalized starship hull lying collapsed every three or four kilometers. Immense buildings formerly dedicated to naval education, or starship repair, or living quarters, now all abandoned...their windows broken out and their roofs caving in.

2. The Depot remains in operation Naval security constantly patrols the system and makes it nearly impossible for an unseen penetration. Instead, negotiation and bargaining are necessary to convince the local naval authorities that they should part with the starship weaponry components.

3. The Depot has been destroyed. Destruction can never be complete, but it does make finding specific pieces of equipment a difficult proposition. The search must be systematic, and it is possible that the components were destroyed, in which case the search is hopeless. But perseverance and determination should be rewarded. Eventually, the search should turn up the required equipment.

Once the equipment is found, bargained for, or located, it can be loaded onto the TJ and the journey home begun. Part of the process should include locating some special information about the components: an ordnance repairman who has experience with the parts and who also wants to return to his homeworld in the Spinward Marches; a comprehensive installation manual of very recent date, undoubtedly not available to the Navy in the Marches, an automated installation guide which projects holographic images and uses image recognition to check installation accuracy This extra bit of help makes the journey to get the parts all the more rewarding.

The Return Journey: The return journey is the time for the excess crewmembers to be dropped off at their homeworlds. Several different homeworlds in Gushemege sector should be selected for this and then each one visited in turn. Each visit

is the pretext for a specific adventure

On one world, the Rebellion has cut off the flow of provisions and supplies; the world's low population will starve unless it is quickly moved to a nearby, more hospitable world The several required mercy flights are a reasonable enough return for the able service of the crewman being returned home.

On another world, the crewmember's home village has been destroyed. A momentary delay is necessary to help in the location of his family and possibly the mounting of a short relief effort

On still another world, the population is suffering from a virulent plague. To just leave the crewmember there would no doubt condemn him to certain death—and to not help his family would condemn them to death as well A short stopover to help in diagnosing the plague, assisting in synthesizing a treatment for it, and then producing enough treatment and vaccine to help the population is a humanitarian act that few could possibly refuse.

On yet another world, local trade is being raided by a local pirate who exacts tribute to let ships pass His extortion scheme seems primitive, but the lawless environment of the Rebellion lets this sort of thing happen. The reasonable response is to find some way of stopping the pirate· perhaps a clandestine mission to put a limpet mine on his hull

The Final Climax: The end of the mission is naturally greeted with great anticipation. With careful preparation on the part of the referee, it can be made memorable and entertaining.

When the TJ returns to Moran/Spinward Marches, the crew finds that the battleships are no longer there They have been moved to the coreward borders (Aramis/Spinward Marches) closer to the Vargr invaders in order to reinforce the fleets, even though their main weaponry is not functional.

The TJ must move quickly to Aramis, deliver the components, and then stand by while the equipment is installed in the battleships. While the installation process takes place, the base is hit again and again by Vargr raiders, to the point that it looks like the base will have to be abandoned.

A series of vital (and perhaps lucky) hits cripple the drives of at least two of the battleships, meaning that retreat will allow two potentially well-armed battleships to fall into Vargr hands.

Then, and only then, should the climactic battle between the Vargr raiders and the now-operational battleships be allowed to take place. While three of the battleships move out to use their disintegrators, the two crippled ships remain behind in orbit, maneuvered by the TJ so that they can aim their own disintegrators at any raiders who get past the front lines.

And on that note, the adventure ends.

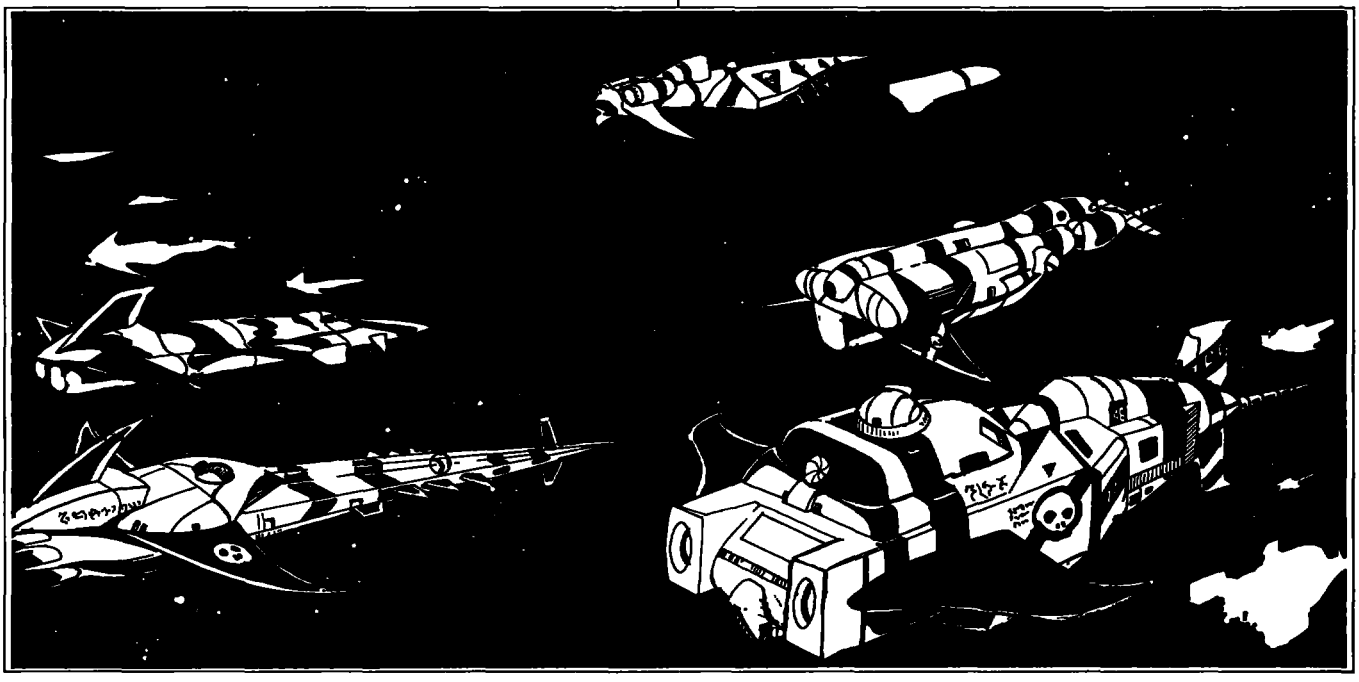
FINAL REFEREE CONSIDERATIONS

There is a lot of room for adventure in this situation. It is intended to allow the players to see the broad span of situations possible within the Imperium and its ongoing Rebellion. In doing so, it is important for an individual to remember two things, as follows·

First, there is something for everyone in the Imperium. Players in **MegaTraveller** can become involved in naval, military, scientific, exploratory, diplomatic, or merchant activity, all with equal ease Often all of that activity can be included in the same adventure. Careful planning can make any of it happen.

Second, there are good, sound reasons for nonviolent action in **MegaTraveller**, but there are also good sound reasons for violent responses. Just be careful to realize that each has its place. If every activity is violence or robbery, it soon becomes dull. Instead, a careful mix makes each type of action interesting and exciting.

Third, this adventure can be a lot of fun! Players can enjoy anything that happens to them along the way and at the end, if they do things right, can experience a tremendous feeling of accomplishment. Properly paced, players will look forward to each session. Never let anything get in the way of the players enjoying their adventure, and make sure you enjoy it, too.



Mapping Sectors

Travel through the vast reaches of the Imperium can be an exciting, intriguing, dangerous activity Although broad schematic maps of Imperial territory are provided in the **MegaTraveller** rules and in this sourcebook, the details of the individual star systems are not generally available. This chapter provides the basic information necessary to generate star systems as adventurers travel through the Imperium.

The blank sector map shows the 1280 hex locations in which star systems can be placed. The hexagons on the map are numbered with unique, four-digit identifiers. The first two digits show the hex column (01 is the first, or leftmost, column; 32 is the last, or rightmost, column); the second two digits show the staggered hex row. This hex number identifies the location of a hex in a sector.

The blank sector map is also ruled into 16 subsectors for ease in further identifying locations. Since these subsectors are shown on the large-scale maps of the Imperium, they can be used to more precisely locate regions and areas on the map.

MAPPING STAR SYSTEMS

When mapping star systems, a photocopy of the blank sector grid should be made. The simplest procedure uses a photocopy as a rough draft with all markings transferred neatly to a final copy once the computations are completed.

Basic Mainworld Generation: Using Basic Mainworld Generation (pages 24 and 25 in the *Referee's Manual*), consult Step 1, System Presence, for each hex in the sector. Make a small mark to identify when a system is present in a hex.

For each system found then produce Starport Type (Step 3), Scout and Naval Base Presence (Step 11), and Gas Giant Presence (Step 15). Record the information in the format shown for mapping subsectors on page 20 of the *Referee's Manual*.

If more detail is desired, throw for World Size (Step 4), Atmosphere (Step 5), and Hydrographics (Step 6). Using that information, properly show the World Type as a Desert or Vacuum World, an Asteroid Belt, or a Standard World. Also throw for population (Step 7) and give the world a name if it is a High Population world.

ADDING KNOWN INFORMATION

Using appropriate maps from this sourcebook, add additional information to your sector map about allegiances, depots, and capitals. Sketch out the faction allegiance of groups of worlds by noting broad areas dominated by each faction. Note the existence of depots from the depot map and add them to the sector map Note sector capitals and other named worlds and add them to the sector map as well.

USING THE SECTOR MAP

Producing a sector map for a region within the Imperium allows a **MegaTraveller** referee to administer adventures which can range throughout the length and breadth of the Rebellion-wracked Imperium. When worlds need to be identified and specified in detail, they can be Casual travellers, however, need only know the basic information necessary to handle refueling and identifying the probable faction allegiance within the system

Encounters: A variety of encounters can be dictated by the master sector maps

Faction Fleets: In a region close to a faction's base of power, it is probable that a casual traveller will encounter fleets loyal to the faction. Since one job a fleet performs is to patrol its territory, these fleets will challenge and inspect ships passing through their territory. Armed vessels will probably be attacked in such situations. It is possible that travellers will encounter elements of a faction's fleet near its controlled territory, although the possibility drops off with distance.

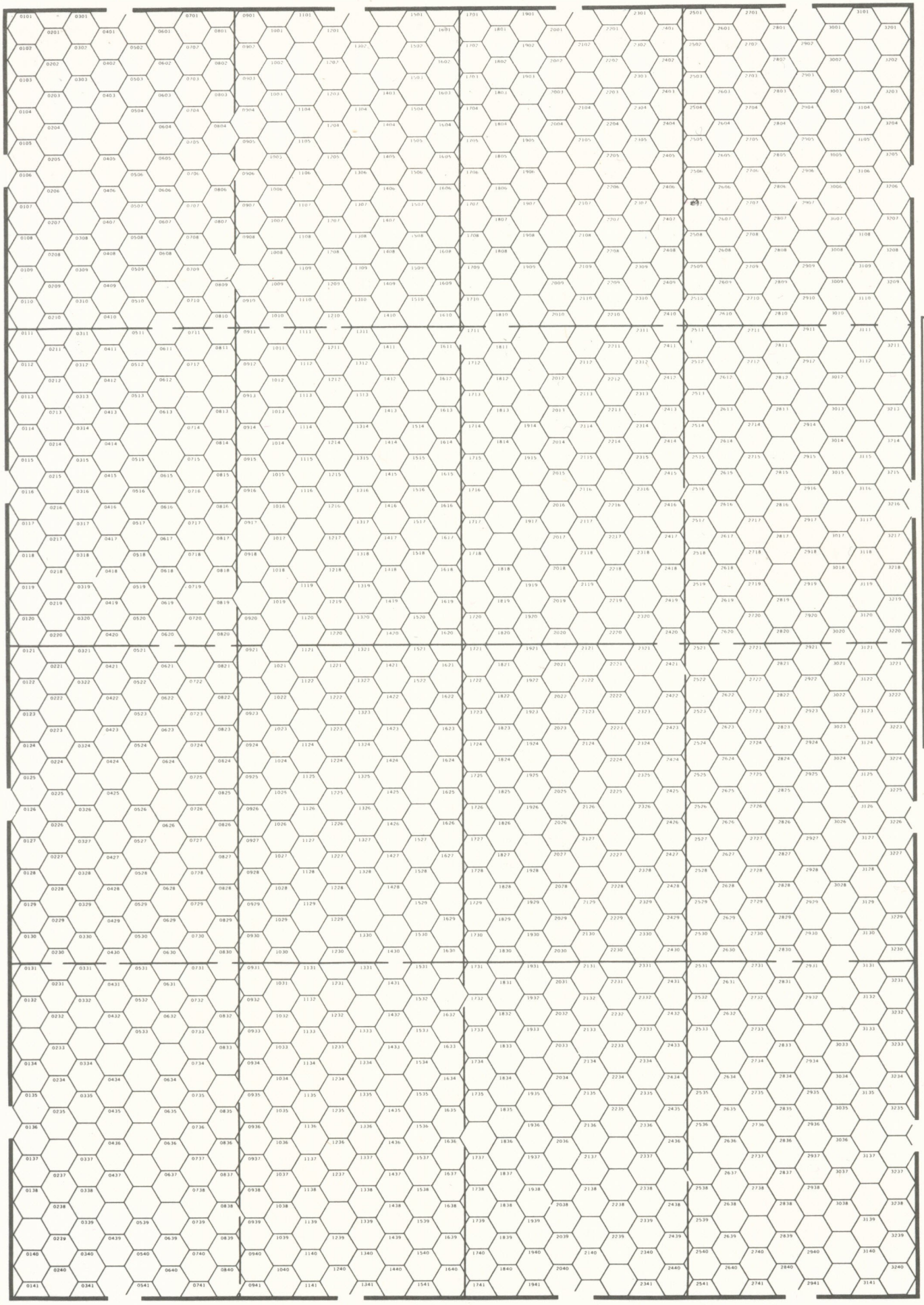
Sieges: High Population worlds which have not declared loyalty to a faction and which are close to its base of power are probably under siege. The besieging fleets use their power to prevent ships from approaching or leaving the besieged world.

Destinations: Analyzing a sector map can provide a variety of important destinations that adventurers can be assigned. The thrill of the journey is what is important, and the preparation during the trip helps make the adventure all the more worthwhile.

High Population worlds are the key to the Rebellion Although they represent less than 10 percent of the Imperium's worlds, they hold 90 percent of its population. A mission to a High Population world can be the key to an operation by a faction.

Other important destinations include depots, naval bases, and devastated worlds.

Inaccuracies: The information produced when the sector map is generated should be thought of as official information which is available in computer files The frequently seen shifting of allegiances during the Rebellion makes it all but impossible to know exactly what will actually be encountered within a system.



A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

SUBSECTORS WITHIN A SECTOR

MAP LEGEND

Starport Type
Bases
Gas Giant
Tertius
World Type
World Name
X-Boat Route

Travel Zone Code (Red)
No Gas Giant
Quintus
border

WORLD CHARACTERISTICS

- ● No Water Present
- ● Water Present
- ⁂ Asteroid Belt

BASES

- ★ Imperial Naval Base
- ▲ Imperial Scout Base
- ★ Zhodani Base
- ● Independent Base
- r Research Station
- ▲ Scout Way Station
- R Imperial Reserve
- P Imperial Prison
- X Exile Camp

TRAVEL ZONES

- Amber Zone
- Red Zone

POPULATION

Secundus	under one billion
PRIMUS	over one billion

World names in red are subsector capitals.

REBELLION

SOURCEBOOK

The Imperium is being torn apart by the star-spanning Rebellion; rival leaders are fighting for the right to sit on the Iridium Throne of the Third Imperium and to rule the greatest interstellar empire that the galaxy has ever seen.

Now, the *Rebellion Sourcebook* provides the details of the Rebellion that allow **MegaTraveller** referees and players to incorporate the sweep and the chaos of the Rebellion into their own role-playing adventures. Maps show the Imperium and its battlegrounds. Diagrams show the organization of the Imperial military, naturally the source of the armed forces for every faction of the Rebellion. Drawings show typical Imperial military hardware—the Imperial standard design grav tanks, grav APCs, and typical ships of the Imperial fleets.

The rival factions of the Rebellion have their own distinct leadership, aims, and backgrounds; the *Rebellion Sourcebook* provides this material.

Lucan—the Emperor's nephew and a legitimate heir but also rumored to have murdered his own brother in order to win the throne.

Dulinor—he sparked the Rebellion by killing the Emperor, and now he claims to be Emperor by right of assassination.

Margaret—the compromise candidate proposed by moderate elements in Imperial society.

Strephon—is he the real Emperor or an impostor?

Brzk—the Archduke of Antares, convinced that the Imperium will never accept him, a non-human, as Emperor.

Norris—claiming allegiance to the Imperium but refusing to support any specific faction.

Vargr—raiders intent on looting the undefended border provinces of the Imperium.

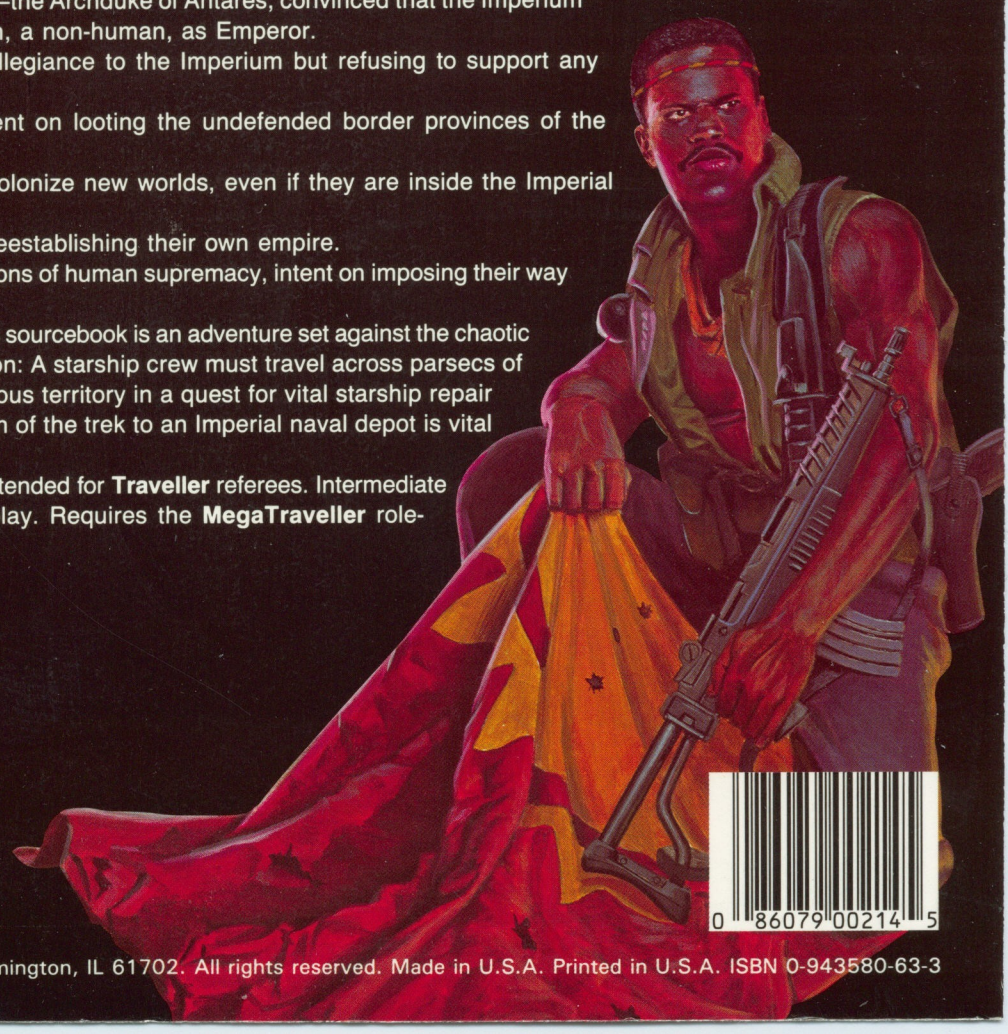
Aslan—driven to colonize new worlds, even if they are inside the Imperial borders.

Vland—intent on reestablishing their own empire.

Solomani—champions of human supremacy, intent on imposing their way on all of humanity.

Also included in this sourcebook is an adventure set against the chaotic sweep of the Rebellion: A starship crew must travel across parsecs of disputed and dangerous territory in a quest for vital starship repair parts. And completion of the trek to an Imperial naval depot is vital to the survival of the Spinward Marches.

MegaTraveller *Rebellion Sourcebook*. Intended for **Traveller** referees. Intermediate complexity. Suitable for some solitaire play. Requires the **MegaTraveller** role-playing game system.



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MEGATRAVELLER

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COACC

CLOSE ORBIT AND AIRSPACE CONTROL COMMAND

Terry McInnes

Science-Fiction Adventure in the Shattered Imperium

AIRCRAFT AND FLYERS FOR MEGATRAVELLER

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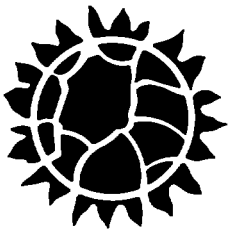
Terry McInnes

MEGATRAVELLER™

COACC

CLOSE ORBIT AND AIRSPACE CONTROL COMMAND

Science-Fiction Role-Playing
in the Shattered Imperium



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MegaTraveller
COACC

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Somewhere on the ridge ahead the rebels have dug in. You've had tough tickets before, but this assignment is one of nastiest ever.

The keening whine of incoming mortars scatters the troops as rounds hit all around. Your people fire back without much luck. Cries for "Medic!" tell you of casualties.

The powers that be have planned for this eventuality. A dark shape circles in the sky. Your commo man flips the channel selector to the FA's frequency.

"Misty, Beta 6 Actual requesting air strike, coordinates Alpha Delta Gamma Delta two one three four zero eight. Rebel infantry in the tree line 300 meters northwest of the streambed, over "

"Beta 6, Misty," the FAC circling above replies, "I have two birds inbound with high-drag and napalm. I see the target's muzzle flashes."

Misty, a light attack aircraft on FAC duty, swoops straight at the tree line. Smoke rockets streak forward, exploding in white streamers on top of the muzzle flashes.

Misty pulls out of his dive with the arrival of two medium attack jets. They begin beating up the tree line with their autocannons. Six black shapes separate from each aircraft; the jets jerk upward. In seconds, the tree line dissolves in ground-shaking blasts. Fragments of bomb casings whiz overhead at this close range. The two jets circle back and start another run, this time shallower and even lower. More shapes separate and tumble to the ground. Liquid fire splashes across the turf.

In the sudden quiet, you note there is no more incoming fire.

"Misty from Beta 6, check fire. That's got 'em. We're moving up."

A couple of minutes later, your company reaches what's left of the tree line: craters, burning pools of fire, charred stumps, cooked meat. You feel glad the rebels don't have air support.

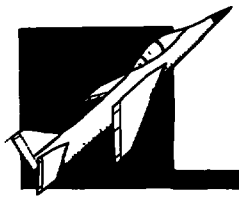
MEGATRAVELLER

COACC

CLOSE ORBIT AND AIRSPACE CONTROL COMMAND

Control of the air is the technological equivalent of the first law of warfare: Control the high ground High ground gives more advantages than can be numbered easily· It provides better vision, and is harder to hit, easier to defend, and easier to attack from Castles are built on hilltops, not in canyons.

The Close Orbit and Airspace Control Command is the force that modern military organizations in the Imperium use to control the high ground. COACC is the air force and the space force that conducts reconnaissance, bombing, and ground-attack missions against enemy military forces on the ground, and strives to keep those enemy forces from doing the same in return.



The Origins of COACC

Armed forces exist to allow nations to wage war All nations need them, if only to defend themselves against the aggression of a few nations with expansionist tendencies. For humans and most intelligent races, the first armed force was the army, which existed as a band of armed individuals who moved from place to place on foot The army's territorial responsibility is dry land. For some sea-dwellers the first armed force was the navy, which existed as a band of armed individuals who swam from place to place. The navy's territorial responsibility is the sea And for some winged flying creatures, the first armed force was the air force, which existed as a band of armed individuals who flew from place to place The air force's territorial responsibility is the atmosphere As technological level increases further and a culture reaches space, it is natural that a space force be established and given responsibility for military operations in space.

Notice that, because Anglic is a human language, it has distinct words for land military force (army) and sea military force (navy), but must use a coined word for air military force (air force) The language of a desert world's people probably includes no word for navy, the language of a water world's people probably has no word for army; and the language of a flying people probably includes a specific word for air force.

The march of technology eventually provides any civilization with the ability to establish and operate the armed forces which it does not initially have. Sea-dwellers and flyers soon find a need for, and establish, an army to patrol and control dry land Cultures that use the sea for transportation need a navy to protect and control the seas And all cultures which reach a technological level that allows them to venture into the air soon find a need to establish an air force

EARLY AIR FORCES

Air forces originated historically for most cultures as a part of planetary armies or wet navies. The first military and naval use of aircraft has nearly always been for scouting and such unarmed chores as artillery spotting. The very earliest military aircraft, including fixed balloons, have been attached to various branches of the army, including the artillery, the cavalry (because of its scouting duties), and even in the case of a major nation on Terra, the signal corps!

The first armament that aircraft carried was restricted to small arms such as rifles and pistols, brought along when opposing pilots thought it might be a good idea to do something more offensive than wave at a passing enemy aircraft. In at least one early battle, historians report that pilots fought air-to-air combat with thrown bricks!

The first military aircraft are lighter-than-air vehicles: that class of aircraft which includes tethered balloons, dirigibles, and blimps. The latter two are used as long-range scouts and crude bombers on many primitive worlds. They are particularly valued as naval scouts and form the first component of the air arm of many a wet navy's fleet.

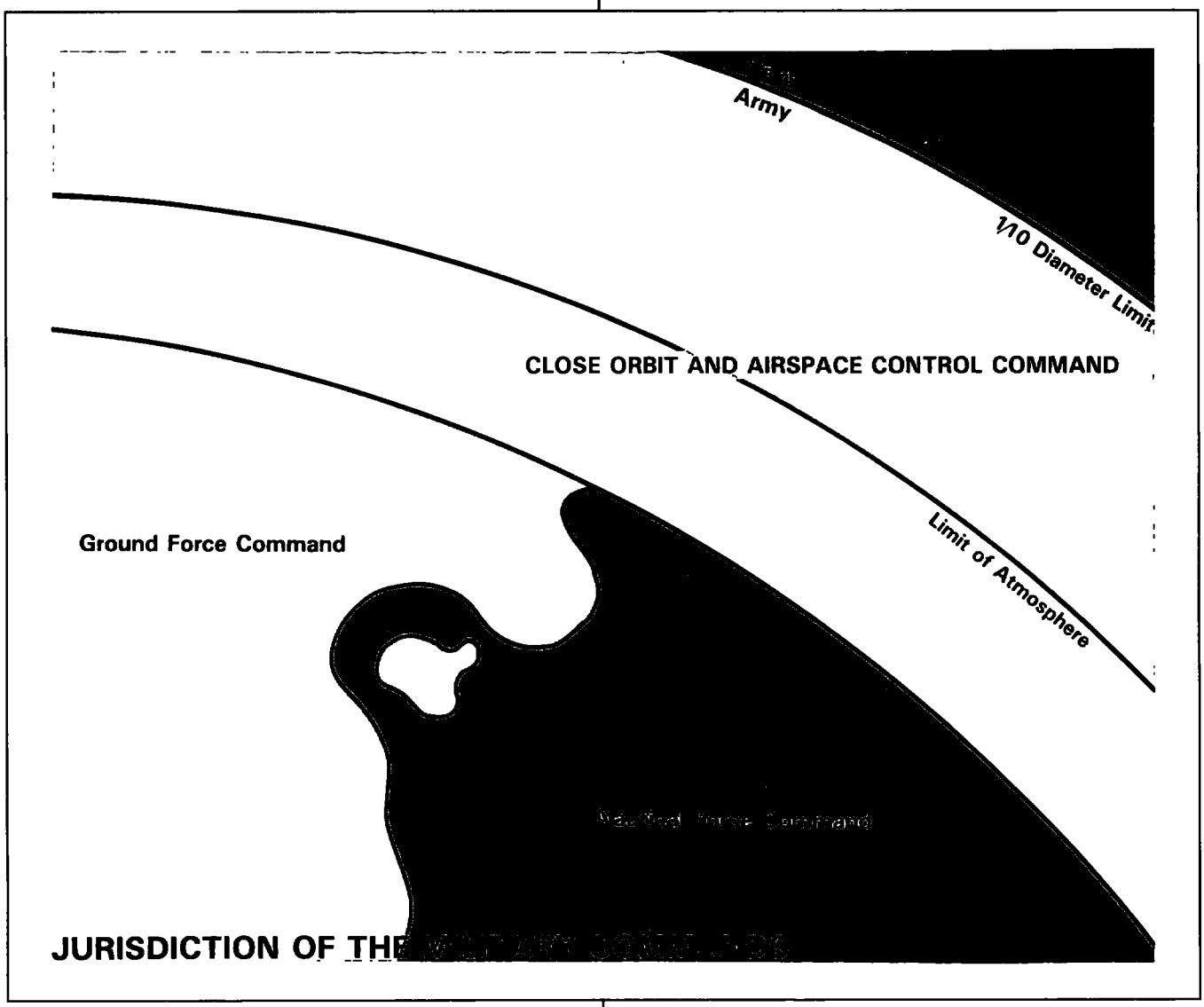
Gliders are also found as precursors to air power on primitive worlds, particularly those with dense atmospheres They have been used as one-way attack aircraft, and larger versions have provided troop and cargo transport Some gigantic examples have been constructed to carry armored fighting vehicles into combat.

As power plants became more efficient, aircraft designers built heavier-than-air vehicles that could carry heavier and increasingly sophisticated armament Primitive machineguns soon replaced rifles and pistols at TL5, and the first fighters were born. Bundles of explosives were placed in steel or other metal cases, and the first bombers designed to deliver these deadly packages were developed

With the rise of these more efficient, purpose-built aircraft came the independent air forces—some organized almost immediately after fighters and bombers were first built, others only after technology had advanced several levels. Organizationally, the rise of independent air forces has been resisted by the existing armed forces. An independent air force reduces the budget expenditure for the already existing army or navy, and an independent air force soon develops its own priorities, which may not be in line with the priorities of the army or navy. In one historic case, a major nation's independent air force was not organized until it had developed TL6 jet aircraft!

Air forces remain independent and assume new duties as technology advances Air forces tend to take a major role in the development of the first rockets and, as spaceflight develops, become major developers and users of hypersonic orbital fighters and spacecraft

The Lastenti: Troolian is a water world blessed with a very dense atmosphere, gentle climate, and an intelligent race of flyers (the Lastenti) living high in the clouds, forever gliding on broad, feathered wings. The first armed force of the Lastenti was the *aashiat* (roughly translated as "air force") which consisted of armed bands of Lastenti organized to protect the soaring flocks from rival flocks At initial technological levels, the *aashiat* made use of fishbone spears and darts Doctrinally, forces developed the tactics of the high ground and made use of altitude advantage to drop bone darts on adversaries Individuals were trained for single combat against enemy forces, and these individuals refined the dogfight to a fine art Various cultures of the Lastenti emphasized various doctrines. Some concentrated on lighter-than-air technology to hold military supplies near their flocks; the technology proved useful to them



commercially as well Some Lastenti concentrated on the sea surface, eventually building ships from which they conducted large-scale fishing operations Naturally enough, the operation of ships led to the establishment of a wet navy, naval tactics, and (quite early) antiair doctrine

The Staln: Drist is a desert world characterized by many stark, young mountain ranges and extensive volcanic action Its native intelligent race (the Staln) evolved from flyers adapted to Drist's steep mountain chasms The first armed force of the Staln was the *tristaln* (roughly translated as "flying armed men") Originally, military tactics involved a lot of swooping—from cave mouths down on enemies and from the sky down on cave mouths Later, the evolution of tactics produced the organized military unit armed with spears, bows and arrows, and feathered deadfall darts Flying creatures, domesticated as riding beasts, were adapted to a kind of flying cavalry used for scouting and shock actions Ultimately, a surface army was organized to defend overland shipments of goods too heavy to carry by air Large overland shipments eventually led to riverine and ocean navies to defend water shipments of goods too heavy to efficiently ship overland

EARLY SPACE FORCES

Eventually, many worlds develop their technology to the point that they can reach space. The responsibility for space exploration and operations initially belongs to the already existing air force The natural tendency is for any space force to claim as its responsibility all operations in space Until the development of jump drive, no one contradicts this claim.

But once jump drive is attained and all the stars become accessible, a further distinction of armed forces becomes necessary. The navy becomes an interstellar force, and responsibility for local space operations near the homeworld is assigned to the close orbit and airspace control command. As technology and experience progress, the distinction between interstellar, interplanetary, and local space forces becomes greater and greater. Ultimately, close orbit responsibilities become part of the local air force mission

The Terran Space Force: When Terran nations first reached space, the responsibility for operations in space was given to the various national air forces As a greater presence was placed in orbit and then on the moon, many nations established

independent space forces to handle the responsibilities.

The creation of the Terran Confederation in response to clashes with the First Imperium resulted in a consolidation of the space forces into a Terran Space Navy. During the course of the various interstellar wars, the Terran Space Navy found that, to pursue its mission, it was becoming more and more an interstellar navy. In order to meet all its mission requirements, the Terran Space Navy formally established interplanetary components stationed in star systems that it permanently controlled. Under these interplanetary components, the navy assigned system defense forces, roving reaction forces, and orbital fighters

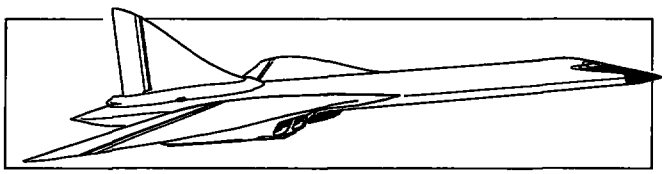
THE RISE OF THE COMBINED MISSION FORCE

On the homeworld, the armed forces concerned strictly with planetary defense tend to consolidate to fulfill this mission as the planetary armed forces. This organization may be called the army, the planetary defense force, the world armed defenses, or some other name In all cases, however, it incorporates into itself the ground force, the nautical force, and the air force

Responsibilities for various missions are carefully defined for the various forces The ground force is given responsibility for land combat The nautical force is given responsibility for naval surface and subsurface combat The air force is given responsibility for atmospheric and close orbit combat within one-tenth of a planetary diameter

The air forces which evolve into close orbit and airspace control command forces are given the broad role of close orbit defense, as well as intra-atmosphere air defense and tactical air support for ground and wet naval forces. Technology gives them the tools for these jobs, including system defense boats, orbital fighters, orbital battle stations, and high-performance gravitic and dynamic aircraft. Many close orbit and airspace control command forces are also responsible for crewing anti-aircraft and antispacecraft gun, missile, and energy weapon batteries On many worlds with Average Stellar (TL11)+ technology, COACC personnel crew deep meson gun planetary defense installations far beneath the planetary surface

Terran COACC: By the end of the interstellar wars, the Terran Space Navy was almost exclusively concerned with interstellar operations Its interplanetary components were clearly stepchildren—not on the fast promotion career track and not the flashy services that attracted high-quality personnel. Responsibility for the defense of Terra was vested with the Terran System Defense Command. Once the Rule of Man was established, Terra effectively lost its space navy and its ability to project power on an interstellar basis Although the Rule of Man was clearly not a threat to Terra, it was also clearly not a dependable ally and friend. The Terran System Defense Command assumed responsibility for atmospheric and orbital operations, as well as for roving in-system reaction forces and system defense boat operations Deep space operations and close orbit operations were clearly two different responsibilities, with different goals and different equipment needs After several decades of weakness, the Terran government reestablished its own space navy (after giving assurances to the Rule of Man that it had no aggressive intentions) That space navy acquired the deep space in-system responsibilities of the Terran System Defense Command; the newly formed Close Orbit and Airspace Control Command was established under the overall control of the Terran Army



Although current Imperial usage clearly derives from the Terran example, the division of responsibility that places close orbit and airspace control under a single command answering to the overall command of the army was a logical evolution that has been repeatedly arrived at by many cultures

INTERFORCE COOPERATION

Under any strict interpretation, the air force controls aircraft, the ground force controls land forces, and the nautical force controls watercraft. As a practical matter, however, such an interpretation proves unworkable Inflatable rafts used by the ground force would technically be commanded by the nautical force, aircraft based on ships and used for submarine detection would be commanded by the air force, commando landing teams carried by ships at sea would be commanded by the ground force; underground missile launch stations would be commanded by the ground force; shore installations for repair and resupply of ships would be commanded by the ground force

Instead, an understanding of the mission of each force allows each to tolerate some encroachment by other forces on its supposed territory, provided that the encroachment is not blatant and that it serves a legitimate purpose

As a result, the following accommodations have been reached

Ground Force: The ground force is permitted watercraft which enable it to cross water barriers between land areas It may command craft which travel through the air within approximately 10,000 meters of a planet's surface, provided they operate in direct support of ground forces

Nautical Force: The nautical force is permitted shore installations which provide harbor or docking for watercraft. It may use small units of troops for shore installation security and for commando landing operations It may operate aircraft which are based on ships and which directly support and protect those ships

Air Force: The air force is permitted land installations which provide basing, support, and maintenance for aircraft and missiles. It may command small units of troops for air base security, but commando landing operations (paratroopers) are ground force personnel It is permitted aircraft which can land on water (seaplanes and amphibious craft) and small watercraft which can service them

Orbital Force: The orbital force is permitted land installations which provide basing, support, and maintenance for orbital craft launch and recovery. It may command small units of troops for base security; it is permitted aircraft and watercraft for support of orbital operations

Disagreements are adjudicated by the upper level military command having control of the several forces.

READING AIRCRAFT SPECIFICATIONS

Reading an aircraft specification is an easy task Use the following format to help understand the process.

CRAFT NAME (TECH LEVEL) AIRCRAFT TYPE

CraftID: Aircraft Type or Description, TLN (N = tech level at which the aircraft was constructed), MCrX (X = cost of aircraft).

Hull: AA/BBB (AA = inoperative damage points, BBB = destroyed damage points), Displacement = CC (CC = displacement tons), Weight Loaded = DD tons, Airframe = airframe type, Armor = armor level and locations.

Power: E Mw (E = power available for systems on the aircraft, Endurance = FF hours (FF = hours of flight before refueling is required)

Loco: G/H (for each engine· G = inoperative damage points, H = destroyed damage points), Engine Type, Thrust = J tons, Cruise = KK kph (KK = cruising speed in kph = 75% of Top Speed), Top = LL kph (LL = Top speed in kph)

Commo: List available commo equipment

Sensors: List available sensor equipment

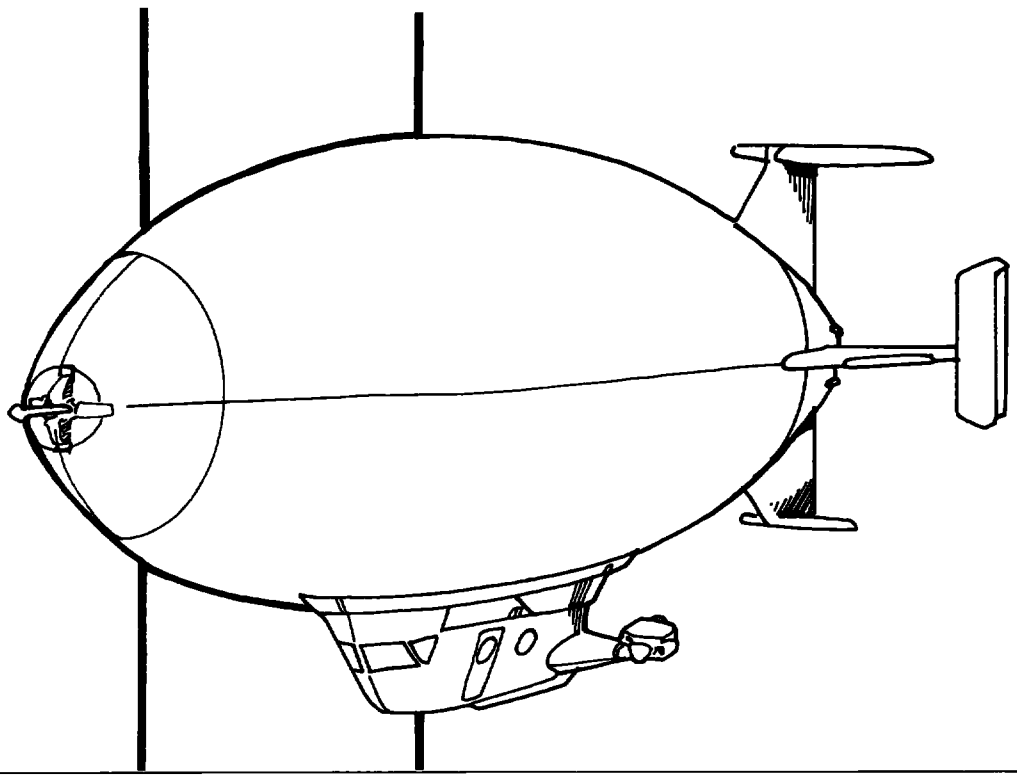
Off: List available offensive weapons

Control: Indicate controls installed

Accom: Crew = M (M = number of crewmembers; list all positions). Indicate all crew stations

Other: List fuel tankage, cargo space, and other details

Indicate any special comments



Military Control of Atmosphere

The Imperium organizes its armed forces into the navy (responsible for control of interstellar and interplanetary space) and the army (responsible for control of worlds). The army is further organized into three commands: the ground command (assigned the mission of world surface combat), the nautical command (assigned the mission of maritime or ocean combat), and the air command (assigned the mission of atmospheric combat) The formal name for the air command is COACC· the Close Orbit and Airspace Control Command.

All three army commands are concerned with two aspects of their mission: the conquest of individual worlds and the control of those worlds after they have been conquered.

Immediate Command: Virtually all armed forces within the Imperium are organized along the same lines Thus, the armed forces within a star system will include ground command, nautical command (if any oceans are present), and air command In some cases, those commands will answer directly to the Imperial military hierarchy, in other cases, the commands will answer to local Imperial nobility (for example, the duke of a sector who is in charge of military operations in support of the Imperium)

Most armed forces, however, are associated with worlds. That is, each world organizes and supports its own armed forces As such, a world army has its own ground command, nautical command, and air command Many present and former member worlds of the Imperium maintained their own planetary armies as well. Balkanized worlds commonly have one army per nation to either further national ambitions or to deter other nations from becoming too ambitious

THE COACC MISSION

The Close Orbit and Airspace Control Command has the basic mission of atmospheric combat This mission is further defined as

- The achievement of air combat superiority over rival air commands.
- The attack of enemy forces and resources by air.
- The provision of air combat support to friendly ground commands and nautical commands
- The operation of air transportation support to friendly ground commands and nautical commands.

Air combat superiority is control of the atmosphere to the exclusion of enemy air forces Achievement of air combat superiority is the first priority of COACC in time of war. Before air combat superiority is achieved, all ground- and naval-based operations are at risk to enemy air attack; after air combat superiority is achieved, friendly air combat support can be provided with relative safety Most COACC forces believe that air combat superiority should be pursued to the exclusion of all else, including providing ground support; they believe that the importance of controlling the skies is so great that it must be achieved first. Consequently, the early stages of a world surface conflict are marked by a great deal of air combat as each side strives to eliminate the other as a force to be reckoned with Only later in the conflict (after one side has established relative air combat superiority) does ground attack become a higher priority mission

Attack of enemy forces and resources by air refers to the use of aircraft to carry battle to the enemy. Strategic bombing is one form that this mission may take; another is the use of strategic ballistic or cruise missiles

Air combat support refers to all support operations provided by the air forces to the ground command and the nautical command Ground attacks in support of troops, bombing, reconnaissance, and driving off enemy attack aircraft are all aspects of air combat support

Air transport support refers to the use of aircraft to move material and supplies about a world's surface Aircraft can carry personnel, equipment, and supplies to the battlefield with a response time and a pinpoint accuracy that other transport methods have difficulty matching. Air transport support can also include reconnaissance activities

Achieving the COACC Mission: Every world's COACC exists to achieve its mission No one can tell precisely when the need arises for COACC, and it must be in place in order to attempt to achieve its mission As a result, every world with a population above 6 (any world which does *not* have a trade classification of Nonindustrial) can be expected to have an air command.

Achieving air combat superiority and providing air combat support are battle-oriented missions; they are necessary only in the case of imminent hostilities or open warfare Every COACC, however, can be expected to provide air transportation support on an ongoing basis in both peace and war COACC air transportation support includes moving emergency supplies by air for disaster relief, transporting governmental and military personnel on official business (often to locations not serviced by commercial transport organizations), and supporting training exercises

THE COACC ADVISORY GROUP

The vast majority of COACC forces are organized by and in the service of individual worlds. Because viable, efficient COACC forces are an important part of individual world defenses and because those forces require a great deal of training, maintenance, and properly designed equipment, it is in the best interest of the Imperium to oversee them For this

purpose, the Imperium maintains the Imperial COACC Advisory Group

The COACC Advisory Group provides two primary services:

- **Aircraft Design Support:** Through a subsidy system that funnels initial design funding to industrial corporations throughout the Imperium, the COACC Advisory Group assists individual air commands in the design and production of aircraft which meet the requirements of the specific organization This subsidy support goes directly to the aircraft design and manufacturing industry on Industrial worlds and helps in the establishment of a viable local aircraft industry The Imperium considers this expenditure of funding a good investment in stability for local industry and labor

Lower population worlds, or those without the industrial base which would let them produce their own aircraft, are able to procure their aircraft from nearby Industrial worlds Where an aircraft industry might not be able to invest in specific designs for alien environments or alternative technological levels, the aircraft design subsidy that the COACC Advisory Group provides allows for such aircraft to be designed and produced.

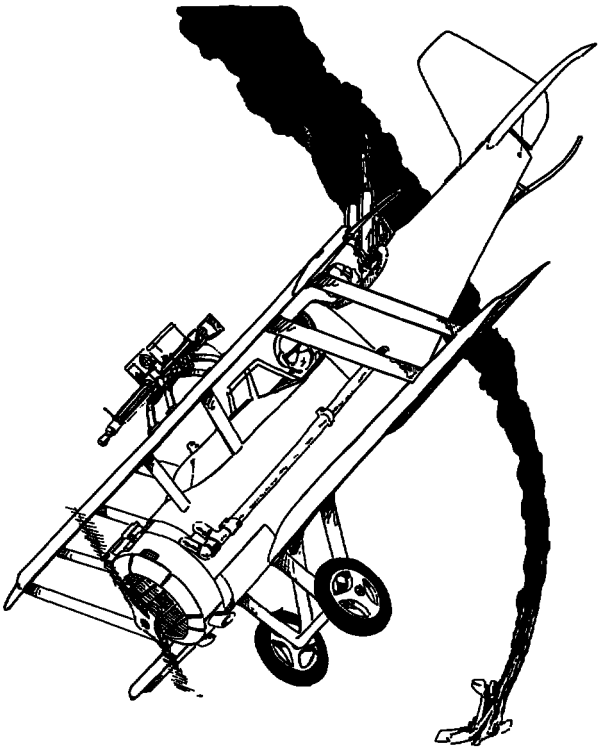
Much of the Imperium's aircraft industry is associated with the megacorporations which span the entire empire As a result, there is a healthy competition for contracts between megacorporate divisions, and the knowledge gained in supplying aircraft to some worlds of the Imperium can be used to help produce aircraft for other Imperial regions and for export beyond the Imperial borders

- **Training and Doctrinal Support:** The COACC Advisory Group assigns its own officers and noncommissioned officers to local air commands in order to help them understand the uses of their aircraft COACC provides training in the doctrinal uses and technological aspects of the aircraft (including maintenance, improved use of technology, and fitting known missions and operations into the restrictions of specific technological levels) COACC advisors help in the formulation of proper organization of air commands so that missions can be accomplished efficiently, in the creation of strategies that make the best use of the available aircraft forces, and in the creation of tactics that allow individual aircraft crews to encounter and best their opponents

Outside Support: In addition, the COACC Advisory Group provides contacts with existing mercenary air units available for hire by worlds in need of their services Mercenary COACC forces provide a valuable service to the worlds of the Imperium· They allow world governments or nations to hire air command units that precisely fit their needs without going to the expense of establishing and training them Hiring mercenary COACC forces is expensive but costs less than raising such a unit locally from scratch.

MERCENARY AIR UNITS

Battalion-sized and larger mercenary units often include at least a limited airspace control component (and sometimes a close orbit control component) Separate mercenary air and close orbit control units are for hire, although these are extremely expensive and can only be afforded by the wealthiest of clients Finally, many individual veteran flyers of both official and mercenary units are available for hire with or without their aircraft or spacecraft

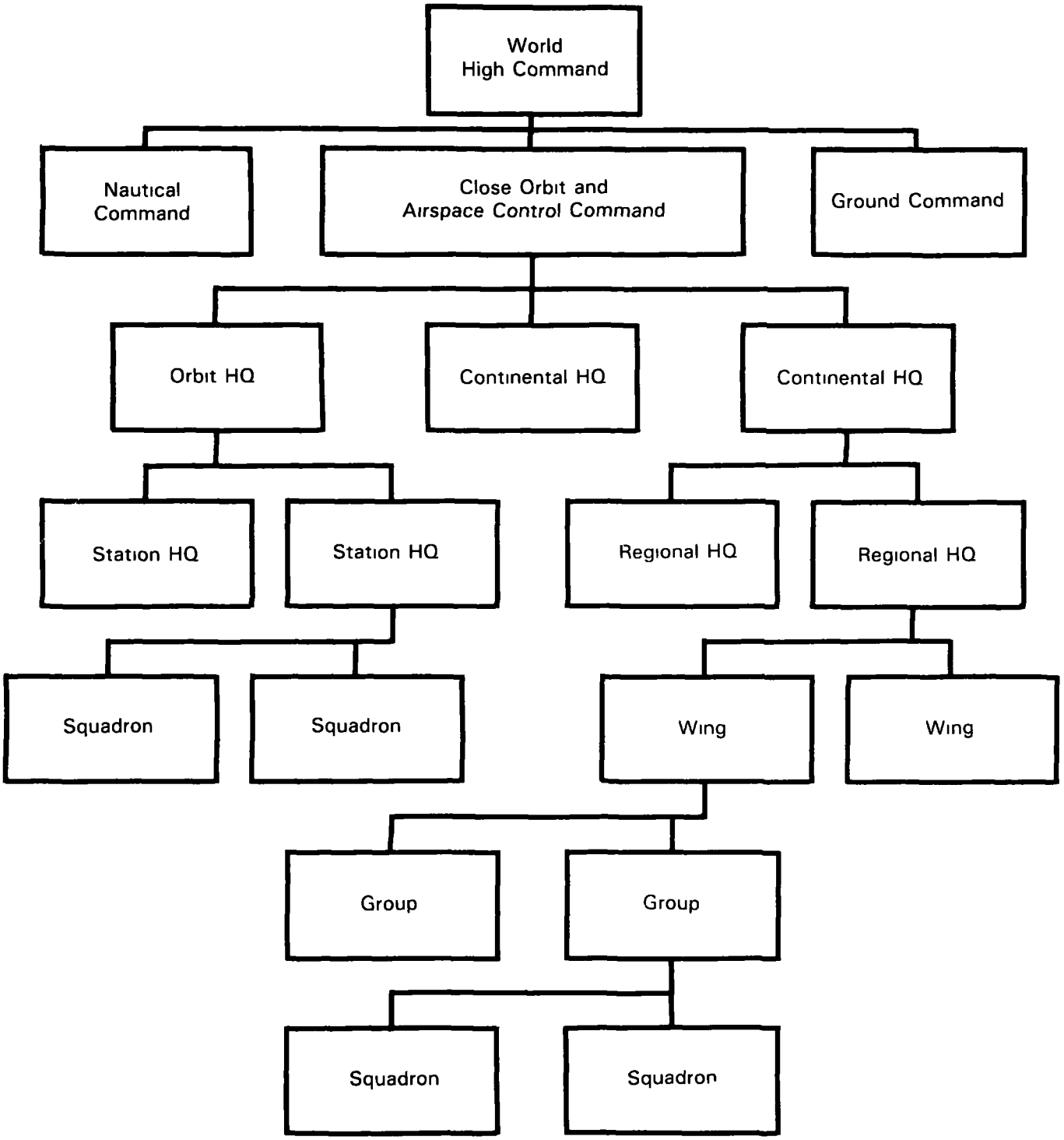


YPRES (TL5) PRIMITIVE FIGHTER

CraftID: Fighter, TL4, Cr41,600
Hull: 8/20, Disp. = 2, Weight Loaded = 2tons, Airframe = Simple, Armor = 0
Power: 4/10 Internal Combustion, 25 Mw, Endurance = 8 hours
Loco: Basic Propeller, Thrust = 2tons, Cruise = 202, Top = 270, Agility = 2
Off: MMG × 2 fixed, forward-firing, MMG × 1 flexible mount rearward firing/100 rounds per gun
Control: Simple
Accom: Crew = 2, (Pilot, Gunner), Simple Cockpit × 2
Other: Fuel = 500liters

Essentially an armed reconnaissance aircraft used in the fighter role by societies just beginning to develop aircraft Unarmed versions are used as couriers, mail carriers, and private sport aircraft.

COACC ORGANIZATION



TECH LEVEL

Imperial forces, including COACC forces, were typically equipped at the best possible level: the prevailing Imperial tech level of 15 However, with the assassination of Strephon and the onset of the Rebellion, successor units may be found at TL14 or even lower as their equipment deteriorates and replacements become hard to find. Main force Imperial and ex-Imperial COACC units have been equipped with ground-based, gravitic airspace and orbital fighters and with system defense boats. Beneath the planetary surfaces of many worlds they also crew deep meson gun sites to defend against invading star fleets.

Individual worlds' close orbit and airspace control command forces have a wide variety of equipment, depending on world tech level and resources, including available off-world hardware This equipment can range from propeller-driven TL5 aircraft, to helicopters and supersonic jet aircraft, to hypersonic orbital fighters and system defense boats approaching Imperial technology levels.

Mercenary forces also vary widely in technology. At a minimum, however, mercenary air units will be equipped with helicopters, turboprop or jet attack aircraft, and/or jet fighters. As with mercenary ground units, the higher the tech level of a mercenary air unit, the more expensive it is to hire That's why numerous mercenary air squadrons equipped to TL9 have found lucrative employment on moderate-technology worlds, especially those that are Balkanized

A BRIEF GLOSSARY

Here is a brief list of terms which are often used in confusing ways

Air Command: One of three organizations within the army of a world The army is organized into three commands the ground command (assigned the mission of land combat), the nautical command (assigned the mission of maritime or ocean combat), and the air command (assigned the mission of atmospheric combat)

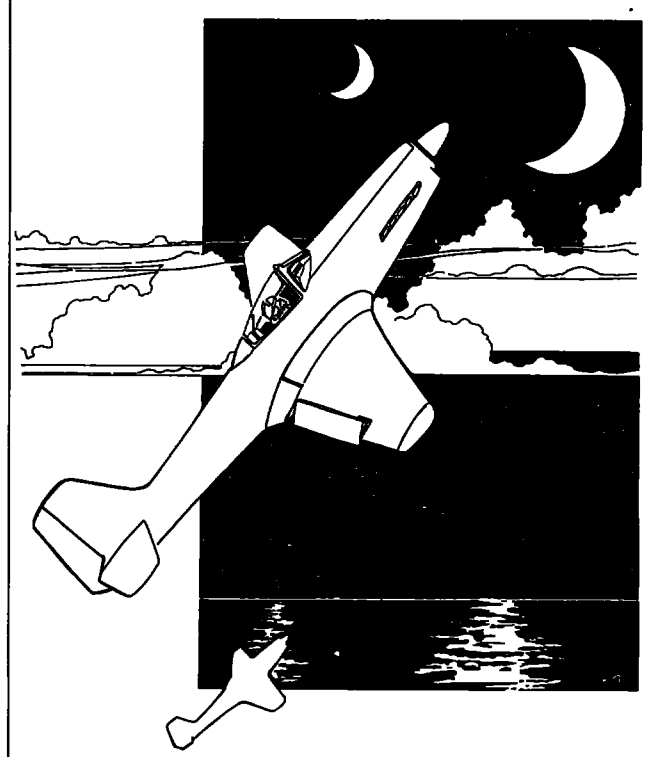
Air Force: A military force concerned with the combat use of aircraft

Army: The military forces concerned with worlds. The Imperium organizes its armed forces into the navy (responsible for control of interstellar and interplanetary space) and the army (responsible for control of worlds)

COACC: The Close Orbit and Airspace Control Command. The formal name for the air command is the Close Orbit and Airspace Control Command

USING THIS MODULE WITH MEGATRAVELLER

This module is a comprehensive look at the personnel, aircraft, weapons, and tactics of the close orbit and airspace control command forces found in the **MegaTraveller** universe, as well as aircraft attached to regular and mercenary ground force units It's designed to let players and referees generate advanced flyer characters for use as player characters and NPCs in their **MegaTraveller** campaigns The rules and tasks in this module simulate air-to-air, air-to-ground, ground-to-air, and space-to-ground combat, and can be integrated into a **MegaTraveller** campaign.



TUSCON (TL6) FIGHTER

CraftID: Fighter, TL6, Cr135,700
Hull: 16/40, Disp =5, Weight Loaded = 4tons, Airframe = Subsonic, Armor = Cockpit 8
Power: 4/10 Improved Internal Combustion, 40 Mw, Endurance = 3 hours, 45 min on internal fuel; 8 hours, 10 min with internal fuel and drop tank
Loco: High Performance Propeller, Thrust = 6 5tons, Cruise = 600, Top = 800, Agility = 6
Commo: Radio, Regional × 1
Off: HMG × 6 fixed, forward-firing/600 rounds per gun. 6 launch rails for 120mm rockets
Control: Simple
Accom: Crew = 1 (Pilot), Oxygen mask and tank
Other: Fuel = 1040liters; additional 1400liter drop tank may be carried beneath fuselage.

Ultimate development of the purpose-built, propeller-driven fighter. Used as interceptors against enemy bombers, as bomber escorts, and as air superiority aircraft Also used in a limited secondary role as ground attack aircraft with rockets and machineguns as strafing weapons

Air Units

Many see aircraft as the basis for COACC, but once those aircraft are produced and procured, they must be organized into military units which provide direction and control Subordinate units respond to the chain of command which transmits orders from the highest levels to the actual operational air units Organization allows each unit to know its mission and what superiors it must respond to

Although both nautical and ground forces on a world have similar organizations, this section will address only those forces particular to COACC

HIGH COMMANDS

High commands represent the supreme command structures for the military forces For a world, the supreme military organization is the world high command. Within the world military organization, separate commands exist for nautical, COACC, and ground forces

World High Command: The world high command is the supreme military organization on a world Its leader is the highest military authority on the world, responsible only to political authority (in some cases, the leader of the world high command is also the supreme political authority).

The world high command is responsible for overall direction of all military effort. It plans strategy, determines priorities, and coordinates efforts by subordinate military units Typically, the world high command is named for the world: Regina High Command, for example.

On Balkanized worlds, no unified world high command exists, instead, each nation has its own national high command

Force Commands: Each of the three forces under the high command has its own force command—nautical command, ground command, and close orbit and airspace control command Each force command is responsible for strategic planning and direction of its force in order to achieve its missions

The three force commands are considered equal in importance, although each has its own provincial view of the value of its mission and ability

The force commands are responsible for procurement of their equipment

STRATEGIC COMMAND UNITS

Strategic command units are primarily concerned with the direction of broad activities within COACC They may be established on a mission or a geographic basis The following are typical COACC strategic command units.

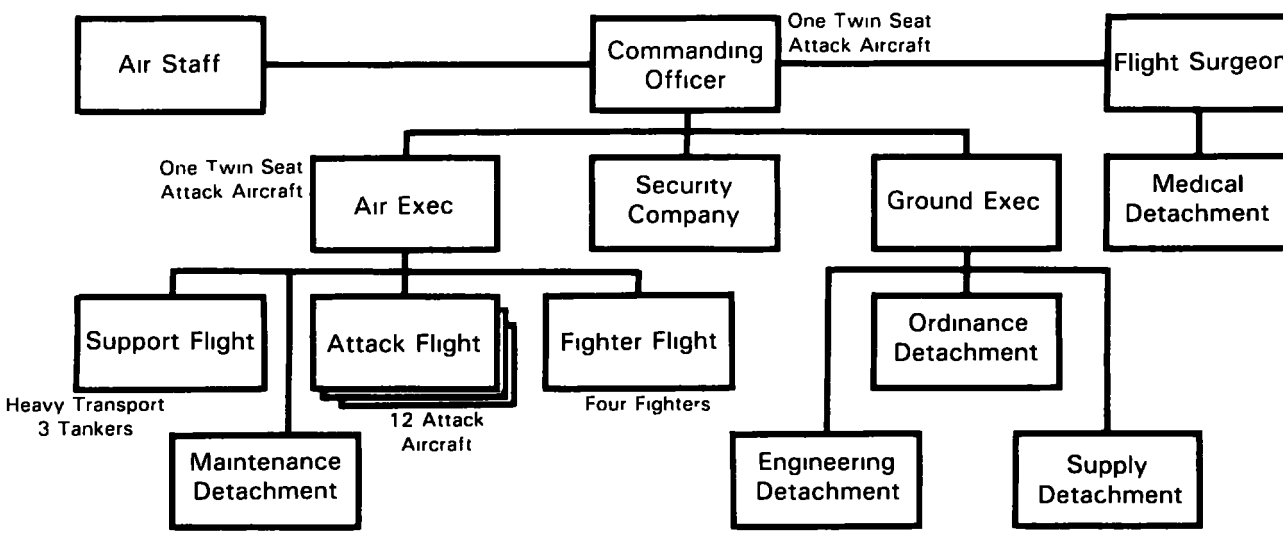
Continental Air Headquarters: Because a continent is a large fraction of a world's surface, it serves as a convenient geographic area over which an air headquarters can be established Its shores serve as natural boundaries

Continental air headquarters are an intermediate headquarters between the strategic headquarters and the serving units Where continents are not a convenient geographic definition, alternatives have been found On a world with no seas, its COACC might establish two hemispheric air headquarters.

On worlds with only one continent, the continental air headquarters may be omitted

Orbit Headquarters: Established to be independent of the continental air headquarters, orbit headquarters is responsible for directing and operating the orbital forces within COACC

Regional Air Headquarters: Established under the operating command of the continental air headquarters, the regional air headquarters distribute command authority and



responsibility further down the chain of command and allow greater supervision of operating units.

OPERATING UNITS

Operating units are the specific military units which accomplish the missions of COACC

Wings: A wing is the largest operating unit in COACC. Generally, one wing is associated with one regional air headquarters. The wing plans specific operations and assigns its subordinate units to parts of those operations.

A wing consists of two or more groups

Groups: A group is an intermediate operating unit in COACC. Typically, a group is stationed at a single air base, although that base may have outlying satellite fields in order to disperse its forces.

A group consists of two or more squadrons

Squadrons: The squadron is the basic operating unit within COACC. In most cases, a squadron is homogeneous: It is equipped with only one type of aircraft, and it has a specific mission determined by the type of aircraft which are assigned it.

Nonaircraft Squadrons: Operating units smaller than groups (i.e , squadrons) may be nonaircraft units. They are assigned missions which do not need or provide aircraft. Such mission units include base hospitals, air defense units, security units, and maintenance and repair units.

UNIT DESIGNATIONS

COACC unit designations reflect the geography or the mission of the unit

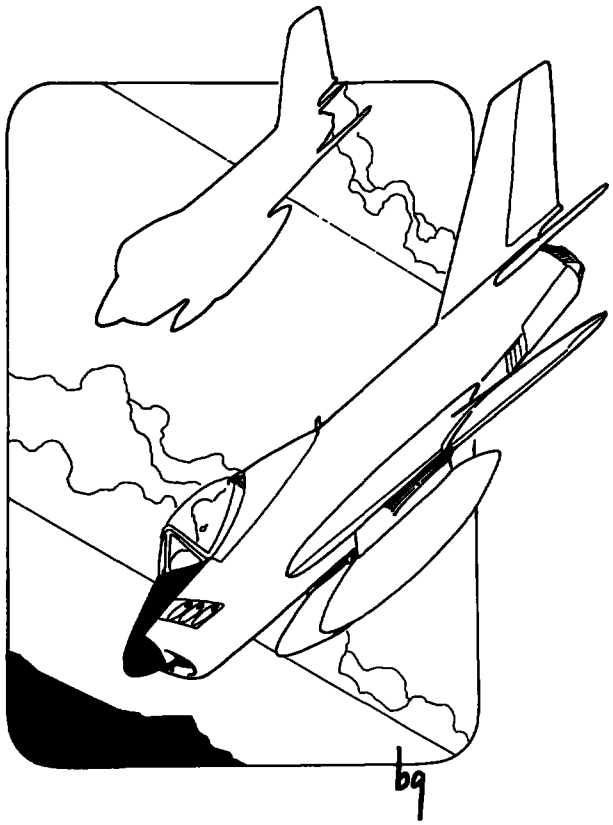
Strategic Command Units: Strategic command units are named for the world, continent, hemisphere, or region they are assigned to (for example, the North American Continental Air Headquarters or the Jewell Orbital Headquarters).

Operating Units: Operating units are numbered and may carry mission or aircraft names Numbers are assigned within each COACC and usually contain four digits. The Imperial COACC Advisory Group insists that the first digit be the technological level of the world—the remaining three digits are arbitrarily assigned. Because units are generally not transferred off a world, the numbers are reused on each world. In addition, operating units may carry mission or aircraft names if the entire unit is consistent with the aircraft or mission

Nonaircraft operating units also carry their mission as part of their designations; the name helps identify what the unit does. They are also numbered in a manner similar to aircraft operating units.

For example, a typical unit would be the 9084th Escort Squadron. Other units could be the 8877th Fighter Group or the 7821st Continental Bomber Group. The 8704th Wing consists of both fighter squadrons and bomber squadrons, since the wing has more than one aircraft type and mission, it does not use a mission or aircraft name. A typical nonaircraft unit would be the 9467th Hospital Squadron.

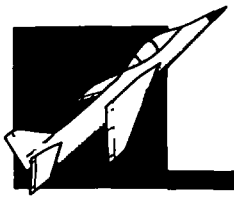
Mercenary Unit Designations: In order to allow easy identification of mercenary air units, the Imperial COACC Advisory Group insists that the second digit of air unit numbers be "9" if the unit is a mercenary unit. Such mercenary units often carry a name reflecting their combat leaders. For example, the 8901st Strike Squadron is also called Stephen's Strikers.



***CHEYENNE* (TL6) JET FIGHTER**

CraftID: Jet Fighter, TL6, Cr439,000
Hull: 28/70, Disp = 11, Weight Loaded = 7tons, Airframe = Transonic, Armor = Cockpit 8
Power: 4/10, Gas Turbine, 60 Mw, Endurance = 1 hour, 6 min on internal fuel; 1 hour, 50 min with internal fuel and drop tank
Loco: High-Performance Turbojet, Thrust = 6 5tons, Cruise = 825, Top = 1100, Agility = 6
Commo: Radio, Regional × 1
Off: HMG × 6 fixed, forward-firing/600 rounds per gun. 2 × plumbed inboard wing hardpoints
Control: Boosted, 1 Maneuver Point
Accom: Crew = 1 (Pilot), Oxygen mask and tank. Complex armored cockpit with ejection seat
Other: Fuel = 2400liters; 2 additional 750liter drop tanks may be carried beneath wings.

Among the first jet-propelled fighters Used as interceptors against enemy bombers and air superiority aircraft Also used in a limited secondary role as ground attack aircraft with up to 750 kilogram bombs attached to hardpoints and machineguns used as strafing weapons



Aircraft

Aircraft are the basis for COACC Specific types of aircraft are designed, constructed, and procured for specific missions

Aircraft Type: An aircraft's type is almost always associated with its mission, the type describes what the aircraft attempts to do Typical aircraft types include fighter, bomber, or transport

Aircraft Size or Capacity: Aircraft can be identified by their size or capacity. This type of identification ranges from light to very heavy. The Aircraft Size or Capacity Table shows the general meanings of the terms used

AIRCRAFT SIZE OR CAPACITY

Descriptor	*Size (Passengers)*	*Capacity (Tons)*
Light	5	1
Medium	25	5
Heavy	50	10
Very Heavy	100	20
Super Heavy	300	60

Aircraft Range: Aircraft range indicates the total distance that an aircraft may fly before refueling or required maintenance Range descriptors vary from regional to orbital. The Aircraft Range Table shows the general meanings of the terms used

AIRCRAFT RANGE

Descriptor	*Range (km)*	*Operational Radius (km)*
Regional	50 to 500	16 to 160
Continental	500 to 5000	160 to 1600
Planetary	5000 to 50,000	1600 to 16,000
Orbital	Can reach orbit	Can reach orbit

Operational radius indicates the distance an aircraft can travel, perform a mission, and still return to its originating air base Operational radius is one-third of range

AIR SUPERIORITY AIRCRAFT

Air superiority aircraft are given the basic mission of achieving air superiority over enemy air forces They are designed to find, track, and engage the enemy aircraft in combat

Fighters: Fighters are aircraft designed to destroy other aircraft High speed and agility are their main requirements so that they can both serve as lethal weapons platforms and survive in combat

Fighters evolved from TL5 reconnaissance aircraft (originally used as unarmed scouts) when pilots began carrying pistols, rifles, and later machineguns to shoot at enemy recon aircraft As tech levels advance, engines become more powerful, higher speeds are reached, aircraft become more agile, and more weapons and fuel can be carried

At TL6 and TL7, many aircraft designers and users realize that fighters can be armed with external bombs, rockets, and missiles, and employed as ground attack aircraft However, this impairs their ability to carry out their primary mission, and fighters are increasingly designed as air-to-air combat aircraft, while the air-to-ground role increasingly becomes the mission of specialized attack aircraft

By TL8, fighters carry multibarrel autocannons and fire-and-forget homing missiles. At TL9 they are armed with the first air-to-air combat lasers and achieve close orbital as well as atmospheric combat capability At TL13, fighters become fully grav powered, although much of their lift and agility continues to be derived from airfoils.

Ultimately, at TL15, fighters are truly space as well as atmospheric crafts Larger versions can remain on station in far orbit and system space for as long as 30 days The TL15 *Ramparts*-class Imperial fighter is widely used as a ground-based planetary defense fighter as well as a shipboard craft

In a sense, the system defense boat is also a fighter, capable of operating in many environments for extended periods of time, with the fighter-like role of destroying hostile spacecraft.

Interceptors: Interceptors are specialized fighter aircraft which are designed with sufficient speed that they can overtake and attack enemy aircraft. An interceptor is characterized by a short range (because it is assigned to attack all enemy aircraft which enter its specifically defined territory) and heavy armament (in order to deliver a killing blow to the target).

The interceptor is typically a manned aircraft. Alternative approaches to accomplishing the interceptor mission include anti-aircraft missiles and the use of remotely piloted aircraft

Escorts: Escorts are specialized fighter aircraft which are designed to defend other aircraft (typically bombers) from the interception mission An escort is characterized by long range (because it must accompany other aircraft as they pursue their mission) and heavy armament (in order to deliver a killing blow).

The escort is typically a manned aircraft. Missiles do not perform well in the escort mission, but remotely piloted aircraft (often remotely piloted from the escorted aircraft) have sometimes proven successful

Detection and Tracking Aircraft (DATA): The detection and tracking aircraft is assigned the mission of locating enemy aircraft so that they can be intercepted and destroyed. DATA serve as the eyes and ears of the air force.

STRIKE AIRCRAFT

Strike aircraft are dedicated to the strategic goals of the air force. They carry the destructive force of their weapons to the enemy and its resources One strategy often favored by the air force is to "bomb them back to the stone age " Another is to systematically destroy those military targets which allow the enemy to carry on the war. A third is to attack civilian targets in order to demoralize the enemy population. But all of the strategies call for the air force to deliver weapons of destruction to the territory of the enemy

Strike aircraft specialize in attacking ground targets in close support of friendly ground troops, interdicting enemy transport and supplies immediately behind enemy lines, and destroying enemy command and communications centers

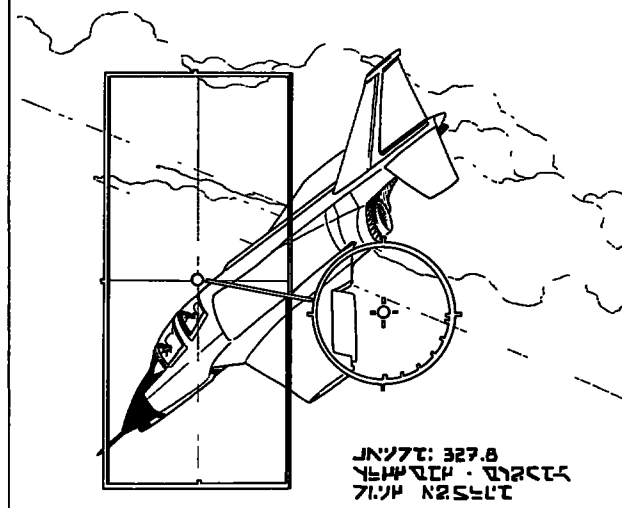
Strike aircraft are designed to carry external air-to-ground weapons such as armor-piercing autocannons, bombs, free-flying rockets, and tactical missiles, and deliver them accurately on target Stability and the ability to absorb ground fire from enemy forces and still fight are major considerations in strike aircraft design Strike aircraft are less agile than fighters, but they carry a heavy external weapons load and are armored around the engines and cockpit Many strike aircraft—once they have dropped their weapons—are agile enough to engage enemy fighters and give a good fight. Some carry two or more air-to-air missiles for use in self-defense.

Early technology strike aircraft were derived from dive bomber designs originally used against wet naval targets. Others were derived from fighters (usually those fighters with one or two bombs hung beneath the fuselage or wings in place of drop tanks and a handful of rockets attached to launch rails).

Two schools of thought often emerge about strike aircraft.

One school believes they should be specialized aircraft. Early fighters burdened with bombs needed fighter escorts flying combat air patrol in hostile skies so that the fighter/bombers could reach their targets. The specialized strike aircraft school points to this and says if fighter/bombers need escorts anyway, why not make them fully specialized strike aircraft?

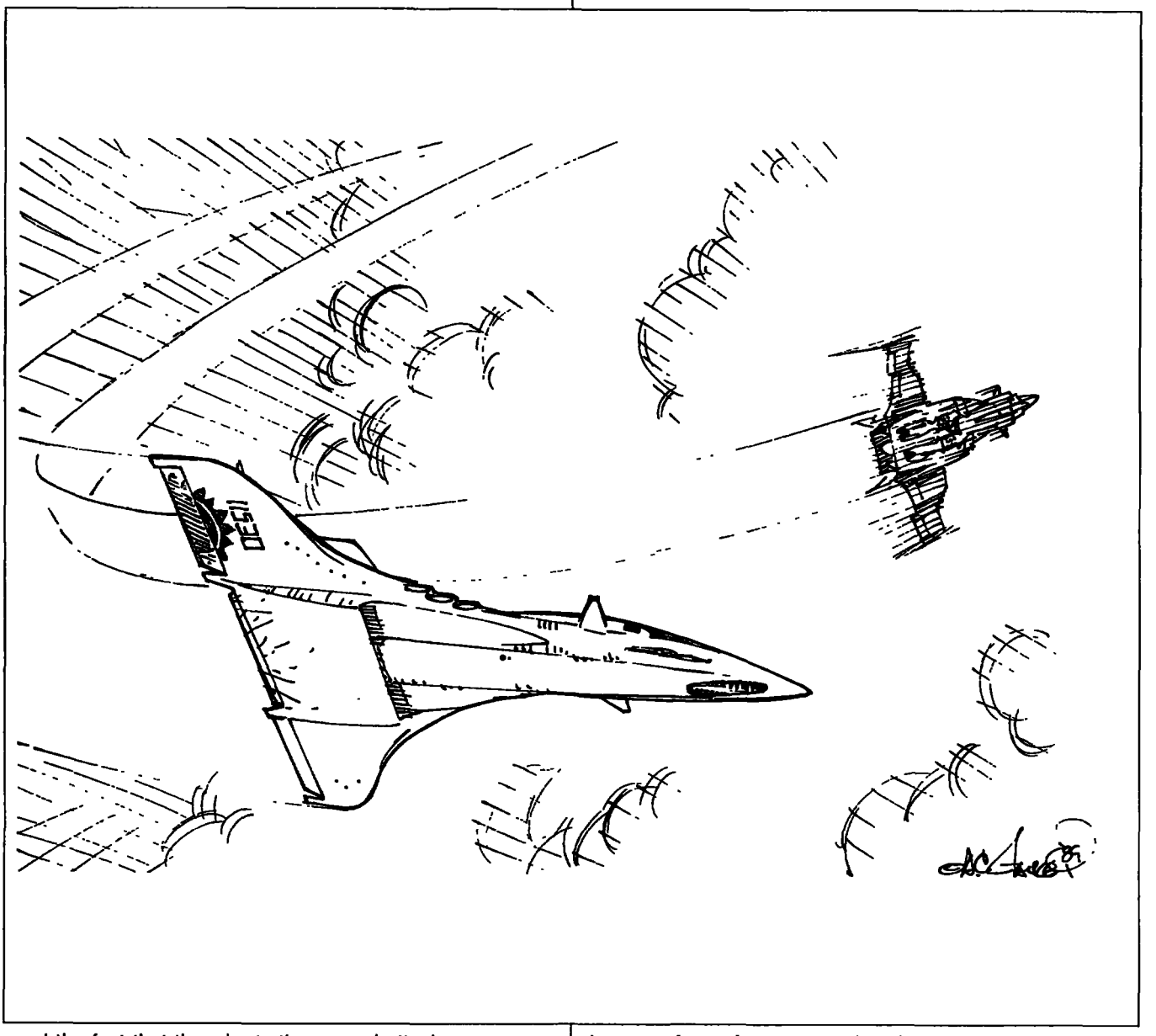
The other school points to the economy of combining two types of aircraft in one If you are flying in a low-threat environment, they point out, you don't need a fighter Besides, if a threat materializes, they say, the fighter/bomber can jettison external stores and instantly become a true fighter—never



LARAMIE (TL7) JET FIGHTER

CraftID: Jet Fighter, TL7, MCr1 9
Hull: 108/270, Disp. = 50, Weight Loaded = 27tons, Airframe = Supersonic, Armor = Cockpit 8, Engines = 8
Power: 4/10, Gas Turbine, 60 Mw. × 2, Endurance = 2 hours on internal fuel, 3 hours, 36 min with internal fuel and maximum drop tanks
Loco: Basic Turbojets w/Afterburner × 2, Thrust = 30tons (50 w/afterburner), Cruise = 900, Top = 1200 (1980 w/afterburners), Agility = 5
Commo: Radio, Regional × 2
Sensors: VDistant Radar × 1, Passive Infrared Sensor × 1, Radar Direction Finder × 1
Off: 6 barrel, 2cm autocannon × 1 forward-firing/600 rounds per gun. 100kg missile bays × 4, missile launch rails × 4, Plumbed Fuselage Hardpoint × 1, Plumbed Inboard Wing Hardpoints × 2, Outboard Wing Hardpoints × 2
Control: Powered, 2 Maneuver Point
Accom: Crew = 2 (Pilot, Weapon Systems Operator), Oxygen mask and tank, Complex armored cockpit with ejection seat × 2
Other: Fuel = 6326liters internal. Up to 5000liters additional may be carried in drop tanks mounted on the three plumbed hardpoints. Fitted with air-to-air refueling probe.

Among the first supersonic jet-propelled fighters. Originally developed as defensive interceptors. Later extensively used as air superiority and ground-attack fighters (truly a multimission aircraft).



mind the fact that this aborts the ground attack mission

The first school tends to dominate military air thought on worlds, particularly Balkanized worlds, where strike aircraft face significant air and ground opposition. The second school seems to have held sway on worlds where COACC forces face little or no fighter opposition and mainly put down internal guerrilla opposition.

Multirole combat aircraft combining fighter and attack roles generally emerge around TL6 and reach their zenith of development around TL7 However, dedicated attack designs, out of favor since late TL5, return in late TL6 and flourish in TL7. Because of the need for increasing speed and agility in fighters, and the need for increasing ruggedness, stability, and weapons-carrying ability in strike aircraft, specialization generally wins over the combination design philosophy by TL8.

Two basic types of destructive devices can be brought into play against the enemy: bombs and beams. Bombs are carried by bombers or (as warheads) by missiles. Beams are fired by some form of projector either directly at the enemy or by reflection off an intermediate object

Bombers: Bombers carry bombs to the enemy Most bombers are rated by their size (or carrying capacity) and their range

Bombers are aircraft designed to make deep strike missions into enemy territory. These missions disrupt and destroy industrial production, communications, and transportation. They are also meant to reduce civilian morale and support for the war effort. Occasionally, bombers are used to break up enemy troop concentrations near the front lines, with their missions overlapping those of strike aircraft

Bombers and strike aircraft both undertake bombardment missions. However, the missions of the former are primarily strategic, the latter tactical—although both occasionally undertake either. Bombers are larger than strike aircraft and have far greater range. They also carry a much larger weapons load. Most of the time these weapons are nuclear

The specific type of bomber in service is the result of doctrinal decisions made by the air force's high command

Batteries: Batteries carry beam weapons A beam weapon fires in a straight line (line of sight) and so cannot easily be fired over the horizon The battery may be an aircraft (the weapon mounted on an aircraft), an orbital spacecraft, or a ground installation (if it is a ground installation, it fires at orbital reflectors which then direct the beam at the target).

Missiles: Missiles are the ultimate disposable remotely piloted craft They carry a warhead (or several warheads) to a designated target Missiles may be cruise, ballistic, or orbital

Cruise Missiles: Cruise missiles are terrain-following missiles which travel to their target using nap-of-the-earth maneuvering. They are characterized by precise targeting, a long travel time (several hours), and the ability to evade enemy aircraft.

Ballistic Missiles: Ballistic missiles follow a high trajectory up to suborbital or orbital altitudes, and then dive back through the atmosphere toward their target They are characterized by slightly imprecise targeting and a fast travel time.

Orbital Missiles· Orbital missiles are placed in low orbit to await a firing command. When launched, they proceed directly down to their target. Orbital missiles are characterized by a very short travel time, slightly imprecise targeting, and a vulnerability before launch.

COMBAT SUPPORT AIRCRAFT

Combat support aircraft are designed to provide assistance to military battles in roles other than the air superiority and strike missions Thus, combat support aircraft are not fighters or bombers; their functions include many other missions, such as surveillance, jamming and deception, target designation, aerial refueling, and air assault transport.

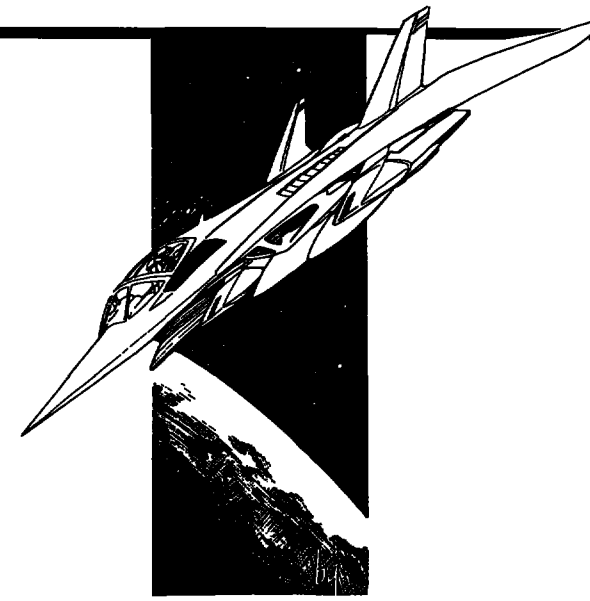
Surveillance: Surveillance aircraft carry observers, cameras, or sensors that enable the operators (or analysts on the ground later) to evaluate intelligence information. Surveillance aircraft include observation helicopters, high-altitude photoreconnaissance planes, high-endurance airships, and low-altitude battlefield observation planes

Jamming and Deception: Jamming and deception aircraft carry electronic equipment intended to jam enemy sensors or to deceive those sensors as to the nature of the aircraft they are fighting.

Target Designation: Target designation aircraft function as forward observers on the battlefield They indicate targets to be attacked by using voice, dropped smoke, rocket-carried radio beepers, radar, or laser. Target designators are generally low-performance aircraft that evaluate a situation and then provide direction to the high-performance strike aircraft when they appear on the scene

Aerial Tankers: Aerial tankers make it possible for aircraft to replenish their fuel in the air. Thus, short-range aircraft can cross large distances (over water or deserts) without landing. Use of aerial refueling also eliminates the need for aircraft to land for refueling; larger numbers of aircraft can remain on station.

Air Assault Transport: Air assault transport aircraft are designed to deliver troops into combat They differ from ordinary transports because they must be able to land in unprepared areas or allow troops to exit the aircraft in flight Air



***RENO* (TL9) HYPERSONIC FIGHTER/INTERCEPTOR**

CraftID: Hypersonic Ramjet Fighter, TL9, MCr17 7
Hull: 200/500, Disp =125, Weight Loaded = 50tons, Airframe = Hypersonic
Power: 4/10, Gas Turbine, 60 Mw with attached 20 Mw MHD generators × 5, Endurance = 3 hour, 7 min on turbofans; 20 min on ramjets on internal fuel 5000liters in drop tanks adds 1 hour, 20 minutes on turbofans, cannot be used with ramjets because of drag
Loco: High-Performance Turbofans × 2, Thrust = 42tons, Cruise = 630, Top = 840, High-Performance Ramjets × 3, Thrust 117tons. Cruise = 1800, Top = 2400, Agility = 6
Commo: Radio, Regional × 1, Continental Radio × 1
Sensors: Regional Radar × 1, Regional Radar Jammer × 1, Radar Direction Finder × 1, Advanced Image Enhancement × 1, Laser Sensor × 1
Off: 1 Mw Beam Laser in fixed, forward-firing mount 250kg missile bays × 2, Plumbed Fuselage Hardpoint × 1, Plumbed Inboard Wing Hardpoints × 2
Control: Computer Enhanced Fly by Wire, 6 Maneuver Points Computer = 3
Accom: Crew = (Pilot), Basic Life Support, sealed cockpit with vacc suit backup. Complex cockpit with rocket escape pod × 1
Other: Fuel = 12,000liters internal. Up to 5000liters additional may be carried in drop tanks mounted on the three plumbed hardpoints. Fitted with air-to-air refueling probe

Hypersonic dash-capable interceptor. Patrols while flying on turbofans, then jettisons drop tanks and uses ramjets to quickly intercept and destroy hostile space and aircraft. MHD generators attached to all engines are used to charge laser capacitor banks

assault transports may be orbital reentry vehicles, rough terrain-capable cargo aircraft, or helicopter transports.

AIR TRANSPORT AIRCRAFT

Air transport aircraft provide noncombat transportation services for the air force and the forces it supports. Air transport includes short- and long-distance transportation for personnel, equipment, and supplies. Special missions for air transport include heavy lift operations (moving and positioning heavy equipment that cannot be positioned quickly by water or land) and rough terrain transport (moving personnel, equipment, and supplies in areas where air transport is the only efficient method)

Cheap, reliable, rapid, long-range transportation is the major function of aircraft on most worlds Unless they are in a first-hand air combat situation, this is the main reason characters will encounter and use aircraft in their adventures

Personal and transport aircraft range from small, single-engine, personal aircraft that characters can rent or charter for basic transportation on moderate technology worlds (or as an inexpensive substitute for an air/raft on higher technology worlds) to gigantic suborbital liners that fly between cities thousands of kilometers apart in an hour or two

This aircraft category also includes frontier transports capable of landing on rough dirt strips, amphibious craft that land on water or land, and vertical takeoff and landing (VTOL) transports which are similar to the frontier transports but which can take off and land vertically in a relatively small clear area.

Transports may be civilian or military Civilian aircraft may be operated by a lone individual, a charter service, or an airline

Military transports are flown by COACC transport squadrons to haul supplies among COACC and ground force units, to airlift troops into battlefield airstrips or landing zones, and to airdrop paratroops and supplies into battle.

Transports are rated by their capacity and their range.

UNUSUAL AIRCRAFT

When doctrine or strategy dictates the use of unusual types of aircraft, they are usually indicated in the aircraft type description Unusual aircraft are helicopters or airships.

For example, the term "continental super heavy transport" is assumed to indicate a fixed-wing aircraft unless otherwise stated. If it were not a fixed-wing aircraft, then the description should state "continental super heavy transport helicopter" or "continental super heavy transport airship "

PERSONAL AIRCRAFT

Personal aircraft exist beginning in late TL4 societies These are usually disarmed fighters of the type described under the Fighter section of this chapter.

Personal aircraft become both simpler to operate and sturdier at TL6 and TL7 Multiengine versions evolve, as do personal turbojets. Most personal aircraft are superseded by air/rafts and other grav vehicles—particularly the G-speeder—at around TL12.

A few personal airplanes remain at all tech levels as personal propeller- and jet-driven sport aircraft flown by hobbyists. However, flying individual aircraft on high-population worlds is severely restricted by safety regulations and lack of airfields Transport safety authorities on high technology, high-population worlds prefer that their citizens use highly reliable grav taxis or grav busses under ground control for their transportation needs.

Transports began as TL5 multiengine aircraft holding 12 to 15 passengers willing to endure cold, deafening flights because they were faster than railroad trains. Fabric fuselages gave way to metal by TL6, and the number of engines increased from two to four yielding much improved speed and range Accommodations became quite comfortable, and air travel became fashionable. By TL7, jet-powered transports had rendered passenger railroads obsolete. Meanwhile, large, turboprop, rough field-capable cargo aircraft have proven to be ideal frontier freighters

At TL8, commercial air transportation split along two paths—massive jumbo jet liners hauling up to 400 passengers each at subsonic speeds as volume movers of the masses, and supersonic liners carrying the elite at two to three times the speed of sound in somewhat cramped, though luxurious, surroundings. Frontier freighters became jet propelled at this tech level, later becoming VTOL aircraft.

The first VTOL commercial airliners appear at TL9, giving passengers fast, short- to medium-distance air transportation from city center to city center. Supersonic and hypersonic transports become larger and more powerful, and by TL10 they are the long-distance transportation of choice for nearly every air traveller

Suborbital transports are the last advance in technology before grav airliners begin take over at TL13. Suborbitals take off vertically on advanced hydrogen-fueled turbofans which rotate to a horizontal position for level flight The transport flies into the beginning of a ballistic arc on its turbofans, then lights off one or more fusion rockets to thrust it out of the atmosphere and into space on a ballistic path to its destination. After reentry, the transport assumes a long, shallow glide approach to its destination The turbofans are relighted to assist in landing. Flights from one side of a Size 8 world to the other last no more than two hours.

Thruster technology makes airfoil-supported transports obsolete at TL13 Grav airliners driven by high-G thruster plates supersede any reaction-powered transports, including the ballistic suborbitals.

HELICOPTERS

Small, primitive helicopters appear in late TL5 and prove to be the first workable VTOL aircraft. Helicopters evolve into useful search and rescue, and medical evacuation aircraft in TL6 as their ability to hover and to fly low and slow, as well as their VTOL capability, proves to be increasingly useful. However, engine power limits keep them in a specialized rescue and medevac role.

Helicopters become widely used transports and combat aircraft with the advent of practical gas turbine engines at TL7. The quantum leap in power-to-weight ratios greatly increases helicopters' lifting ability, yielding a much higher capacity to carry cargo, troops, and weapons. Helicopter gunships carrying machineguns, autocannons, autogrenade launchers, and air-to-ground rockets become potent close-in air support craft Troop carriers, carrying from a squad to a platoon of infantry,

bring the first battlefield air mobility to ground forces.

Increasingly sophisticated tac missiles turn TL8 combat helicopters into agile nap-of-the-earth tank killers that complement fixed-wing close support aircraft on the battlefield—the helicopters pop up to pick off command tanks and antiaircraft AFVs, then fixed-wing attack aircraft finish off the rest

Combat helicopters begin to have air-to-air combat capability at TL8, while other larger helicopters attached to wet navies become sophisticated hunter/killers of submersibles. Meanwhile, helicopter transports become larger and able to carry heavy loads for longer distances. Air-to-air refueling increases range and endurance.

At TL9, helicopters begin evolving into hybrid, high-speed VTOL aircraft that fly with fixed wings in normal flight The first air/rafts appear on worlds that develop gravitic technology. They begin superseding helicopters, although their expense precludes general use. However, air/rafts' silent operation makes them ideal recon vehicles, and they can be used to insert or extract spies and commando teams in hostile territory.

At TL10 and beyond, helicopters remain in service as a low-speed, low-cost alternative to grav-powered vehicles for civilian users However, the easy to fly air/rafts gain in popularity over difficult to handle rotary-wing aircraft that require trained pilots.

Grav AFVs and G-carriers take over the helicopter's combat attack and transport roles, eliminating them from general military service

AIRSHIPS

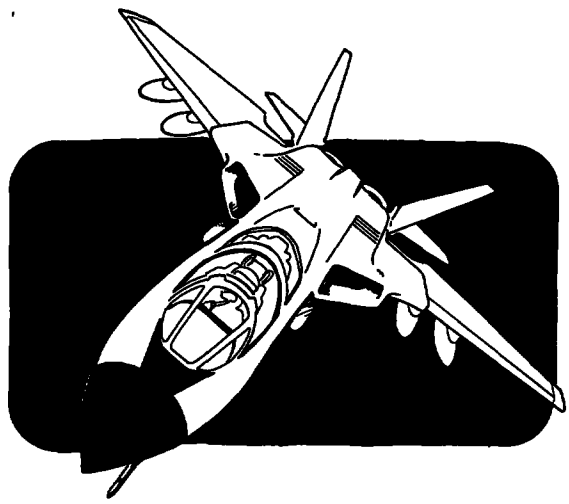
Lighter-than-air flight is the only type (other than crude gliders) to appear at TL3 not long after scientists notice that warm air rises. Lighter-than-air vessels are curiosities and playthings of the wealthy. Their paper envelopes often ignite; smoky wood and straw fires burning in the gondolas make early hot air balloons dangerous and uncomfortable conveyances

The isolation of hydrogen and the discovery of its properties, along with the development of silk and latex envelopes to contain the gas, lead to the first practical free balloons around mid-TL3 These are used as reconnaissance and artillery-spotting platforms, as well as free-flying sport vehicles.

At TL4, balloons become powered airships with the advent of the internal combustion engine Increasingly sophisticated construction techniques enable the design and building of increasingly larger and longer-ranged airships

By TL5, economical diesel engines and rigid-frame construction techniques combine to build transoceanic air vessels that carry passengers through the skies in luxurious comfort across oceans in hours instead of days. Airships are at their peak. If helium is available on their worlds, they linger for a few years as passenger liners and later as military radar and reconnaissance platforms. Otherwise, their Achilles heel, the explosive properties of hydrogen, begins to force people on their worlds to look for safer methods of air travel

At TL7, they are virtually gone—although free-flying balloons remain as novelties for balloon sports enthusiasts Lightweight propane tanks and burners bring balloons full circle to hot air ballooning by the end of TL7. And, where helium is present, helistats are developed—combining the balloon's lift with the helicopter's controllability to delicately lift heavy loads from remote wilderness sites and carry cargoes to civilization.



***ABILENE* (TL8) JET FIGHTER**

CraftID: Jet Fighter, TL8, MCr6.1
Hull: 100/250, Disp. = 50, Weight Loaded = 25tons, Airframe = Supersonic, Armor = Cockpit 8
Power: 4/10, Gas Turbine, .60 Mw × 2, Endurance = 1 hour, 50 min on internal fuel, 3 hours, 7 min with internal fuel and drop tanks
Loco: High Performance Turbofans w/Afterburner × 2, Thrust = 42tons (62 w/afterburner), Cruise = 1320, Top = 1760 (2400 w/Afterburner), Agility = 6
Commo: Radio, Regional × 2
Sensors: Regional Radar × 1, Regional Radar Jammer × 1, Radar Direction Finder × 1, Image Enhancement × 1, Video Recorder × 1
Off: 6-barrel, 2cm autocannon × 1 forward-firing/600 rounds per gun. 250kg missile bays × 4, missile launch rails × 4, Plumbed Fuselage Hardpoint × 1, Plumbed Inboard Wing Hardpoints × 2
Control: Fly by Wire, 4 Maneuver Points; Computer = 2bis
Accom: Crew = 2 (Pilot, Weapon Systems Operator), Basic Life Support, sealed cockpits with oxygen mask and tank backup Vacc suits may also be worn as optional life support backup Complex armored cockpit with advanced ejection seat × 2.
Other: Fuel = 7000liters internal. Up to 5000liters additional may be carried in drop tanks mounted on the three plumbed hardpoints Fitted with air-to-air refueling probe

Interceptor and air superiority fighter design found in the COACC forces of many moderate-technology worlds in the Imperium. Serves as an effective interceptor against most spacecraft in atmosphere except advanced grav fighters.

Overview

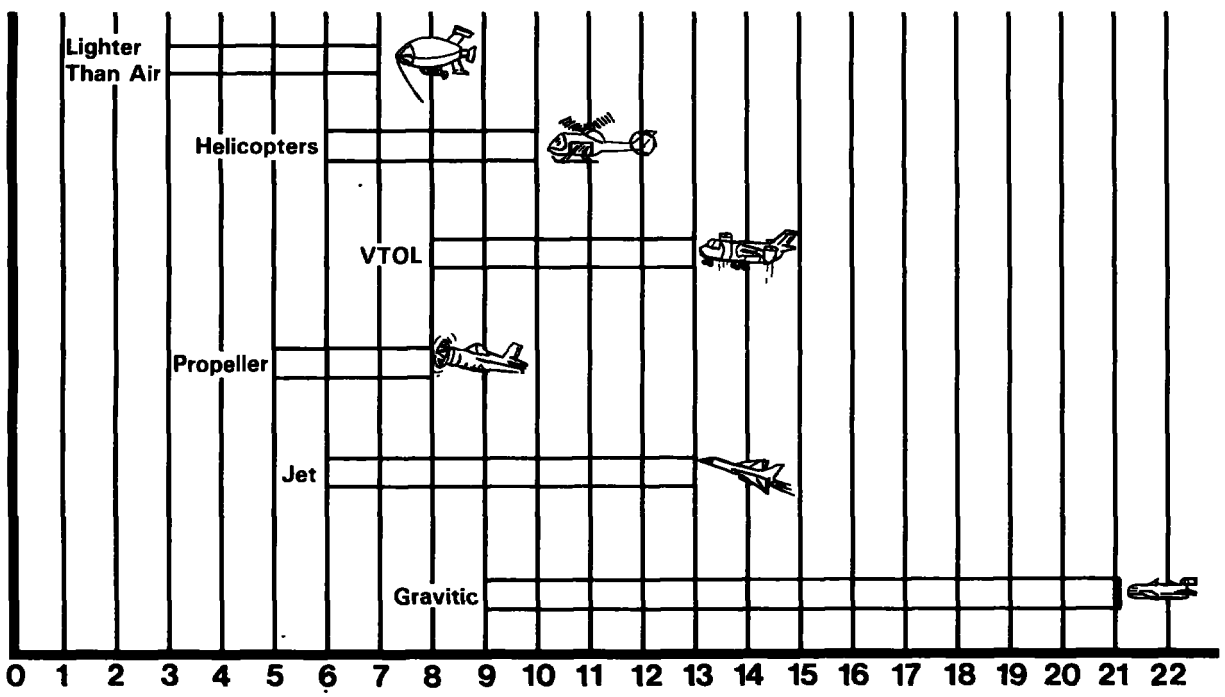
"Anything with wings is ours."

That's the motto of the Close Orbit and Airspace Control Command force. COACC pilots fly anything with wings and are responsible for killing anything with wings—even hostile spacecraft that venture too close to a force's homeworld.

Winged aircraft? In the Imperium? Where gravitics is common technology?

Gravitics may be common technology on many worlds, but it is expensive, and until TL13, gravitic transportation is relatively slow Except for very expensive speeders, the effective speed limit for gravitic vehicles is 120 kilometers per hour Winged private propeller-driven aircraft travel at 200 kilometers per hour on moderate technology worlds while commercial jet transports travel at speeds approaching 1000 kilometers per hour hauling hundreds of passengers at relatively modest seat-per-kilometer costs Only with TL14 technology and above, when high-efficiency grav thruster plates become available for atmospheric craft, do gravitic airbusses replace commercial passenger aircraft. Military jet interceptors fly twice as fast as commercial transports, while hypersonic aerospacecraft—propelled by a combination of ramjets and rockets, often exceed 3000 kilometers per hour Both types of combat aircraft—thanks to their high thrust engines, efficient streamlining, and atmospheric maneuverability—fly rings around most spacecraft which enter atmosphere. A hypersonic interceptor would give even a TL15 Imperial naval fighter a hard fight in the air

Three basic types of aircraft, each with its advantages and disadvantages, exist Below is a chart showing the technology levels at which they are used.



AVIATION TECH LEVELS

AIRCRAFT TYPES

The three types of aircraft include

Fixed-Wing Aircraft: These receive at least some, if not all, of their lift from fixed wings moving through the air. Most require a runway to reach a minimum takeoff speed Some are seaplanes capable of takeoffs and landings on oceans, rivers, and lakes. Others are amphibious, capable of using both runways and water for takeoffs and landings Still others can take off and land vertically.

The major advantages of fixed-wing aircraft at most technology levels are that they are much faster than gravitic vehicles, and they are cheaper to build and operate. They do not depend on raw power to overcome gravity; therefore, their power plants can be smaller and cheaper than those of corresponding grav vehicles Instead of directly overcoming gravity, fixed-wing aircraft power plants provide thrust to move the aircraft through the atmosphere Fixed-wing aircraft's major disadvantages are their fragility and their need for runways

Rotary-Wing Aircraft: These aircraft use rotating airfoils to create lift Their advantages are their vertical takeoff, landing, and hovering capabilities, their extreme maneuverability, and a slight speed advantage over many grav vehicles. Rotary-wing aircraft also cost about one-third as much as grav vehicles.

Rotary-wing aircraft disadvantages include fragility, noise, and the relatively high maintenance requirement of their complex power plant, transmission, and control systems.

Rotary-wing aircraft are generally replaced by grav vehicles for military applications by TL10. Commercial rotary-wing aircraft remain available up to TL12 because of their cost advantage

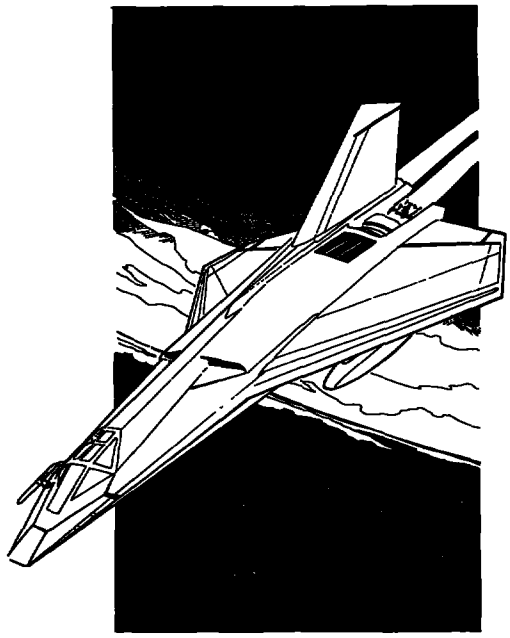
Lighter-Than-Air Aircraft: These aircraft obtain lift from bags of lighter-than-air lifting gases. They range from simple tethered balloons to massive multiengine dirigibles.

Their advantages are that a small amount of energy is needed for their propulsion and that no energy is needed for lift and long airborne endurance. In fact, aerostats that remain aloft indefinitely in a relatively fixed position have been constructed as habitats on several worlds.

Lighter-than-air aircraft disadvantages include low speed, poor maneuverability, and vast bulk which makes for easy detection

NAMING CONVENTIONS

Thousands of aircraft models have been developed on the Imperium's moderate technology worlds, and it has become necessary for the Imperial government to develop a standard naming convention that uniquely identifies each aircraft model The Intelligence Division of the Imperial Ministry of Industry (Air) has adopted the names of Earth's cities as names of aircraft classes so each class can be easily identified no matter where in the Imperium it flies. When possible, names have been selected that suggest special attributes of each aircraft class For example, "Seattle" has been assigned to a class of all-weather attack aircraft because that city's inclement weather suggests the aircraft's all-weather capabilities. "Nairobi" has been assigned to a class of VTOL frontier transport because of the frontier wilderness still surrounding this African city



DAYTONA (TL9) ORBITAL FIGHTER/INTERCEPTOR

CraftID: Orbital Fighter, TL10, MCr10.7
Hull: 100/250, Disp. = 125, Weight Loaded = 25tons, Airframe = Hypersonic
Power: 4/10, Gas Turbine, 60 Mw × 2, Endurance = 2 hours, 36 min on turbofan on drop tanks; 20 min on rocket on internal fuel
Loco: High Performance Turbofan × 1, Thrust = 21tons, Cruise = 810, Top = 1080, High Performance Rocket × 1, Thrust 39tons Cruise = 1320, Top = 1760, Agility = 6
Commo: Radio, Regional × 1, Continental Radio × 1
Sensors: Regional Radar × 1, Radar Direction Finder × 1, Advanced Image Enhancement × 1, Laser Sensor × 1
Off: 250kg missile bays × 2, fuselage hardpoint, inboard wing hardpoints for drop tanks only
Control: Computer Enhanced Fly by Wire, 6 Maneuver Points, Computer = 3
Accom: Crew = (Pilot), Basic Life Support, sealed cockpit with vacc suit backup, Complex cockpit with rocket escape pod × 1
Other: Fuel = 9000liters internal for rocket only, 5000liters in drop tanks for turbofan. Refueling probe fitted for refilling drop tanks.

Uses turbofans for atmospheric patrol and to climb to high altitude. Rocket motor ignited to reach orbital velocity and to maneuver to intercept enemy spacecraft Fighter reenters atmosphere and glides to dead stick landing after final deorbit burn.

TECH LEVEL 3

Early hot air balloons appear. Built of silk and with their lift derived from straw-fueled fires, they are rich peoples' toys of limited practical value.

TECH LEVEL 4

The lifting ability of hydrogen is discovered, leading to the first balloons capable of remaining aloft for hours. Tethered hydrogen balloons are used as artillery observation platforms. Later at this level, self-propelled dirigibles are introduced, as are early gliders. The first powered airplanes appear late TL4.

TECH LEVEL 5

The first practical aircraft appear early in this tech level, including the first biplane fighters. Dirigibles evolve into major passenger-carrying, ocean-spanning transports. Seaplanes appear.

TECH LEVEL 6

Propeller-driven aircraft reach their zenith with metal fuselage monoplane fighters and long-range bombers as the major combat aircraft. Amphibious aircraft appear in specialized roles such as search-and-rescue aircraft. Transoceanic propeller-driven transport aircraft replace dirigibles as intercontinental airliners Primitive jet-propelled aircraft are introduced late in this period Helicopters make their first useful appearance late in TL6, primarily as search-and-rescue and medical evacuation (medevac) aircraft

TECH LEVEL 7

Jet aircraft become supersonic—first combat aircraft then transports. Jet passenger liners are the long-distance transportation systems of choice, rendering passenger railroads and ocean liners obsolete on most worlds. Large, turboprop, short takeoff and landing (STOL) freighters capable of operating from crude, dirt airstrips prove to be ideal frontier transports Helicopters evolve into large, rotary-wing transports and sophisticated, maneuverable weapons platforms. Specialized jet attack aircraft appear with smart weapons and computerized delivery systems Personal ultralight aircraft make their debut.

TECH LEVEL 8

Vertical takeoff and landing (VTOL) combat aircraft appear and begin to eliminate the need for expensive, vulnerable airbases Transport aircraft develop into massive jumbo jetliners carrying up to 500 passengers and into hypersonic liners carrying the social elite at up to 5000 kilometers per hour. Triphibian vehicles appear capable of operating in the air, on land, on water, and underwater Laser-guided and "fire and forget" tactical missiles make helicopters lethal antiarmor weapons.

TECH LEVEL 9

The first orbital fighters appear as increasingly powerful ramjet/rocket propulsion systems become available. VTOL commuter transports make city center-to-city center air transportation common Larger, more powerful hypersonic airliners become the globe-spanning transportation system of choice VTOL frontier transports appear, designed to land and take off on small open patches of ground in rugged terrain Primitive grav vehicles appear and, because of their silent operation, begin replacing helicopters in some covert military operations

TECH LEVEL 10

Grav vehicles replace helicopters in low-altitude combat and transportation roles Suborbital transports appear, using VTOL technology to lift off and then using fusion rockets at high altitude to propel them into a ballistic arc. The suborbitals can span a world in one to two hours.

TECH LEVEL 11

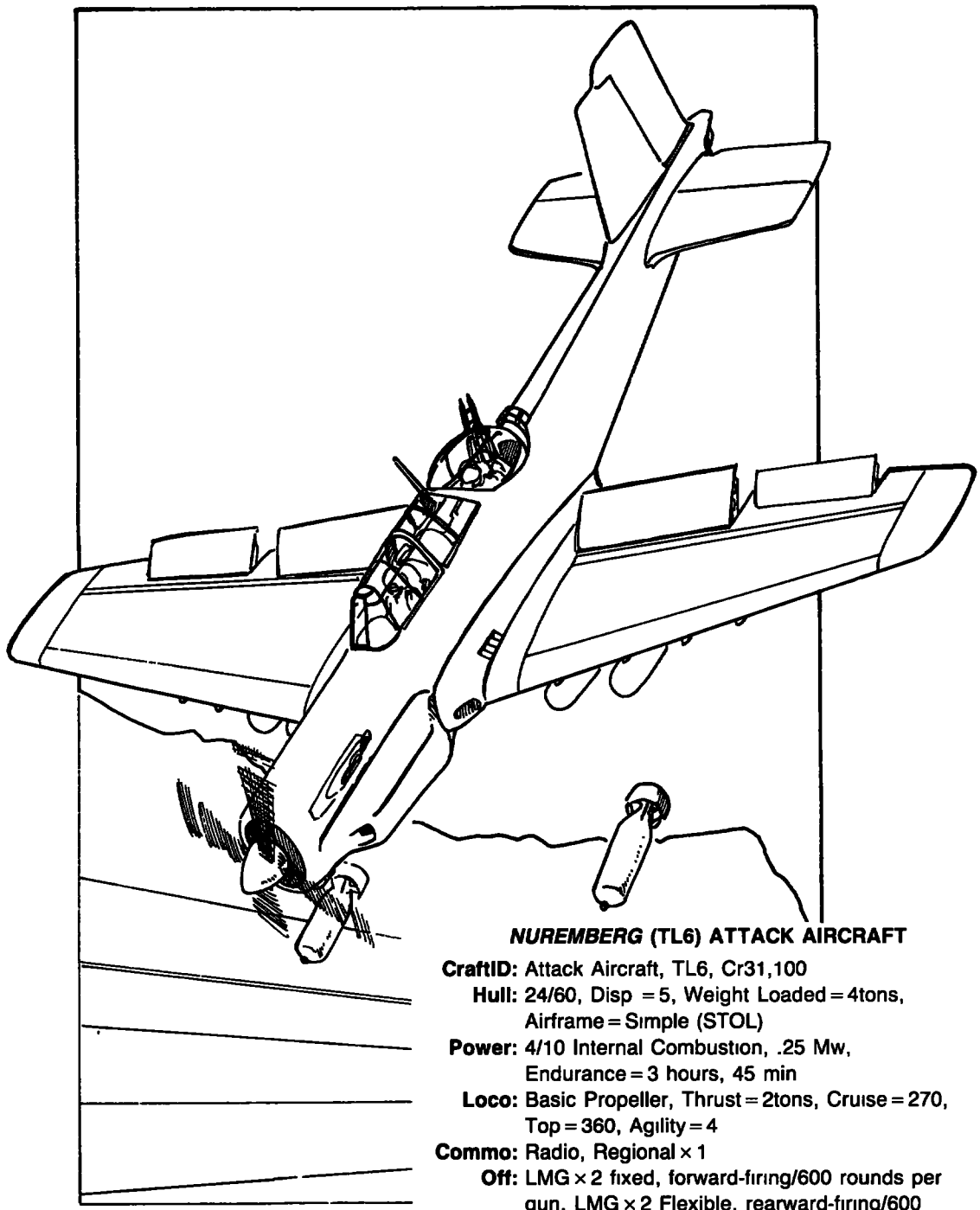
Grav vehicles dominate the air and other transportation functions except for specialized high-speed operations.

TECH LEVEL 12

Grav technology blends with aircraft design to create gravitically propelled, airfoil-supported, medium- to high-speed aircraft. Grav tanks effectively replace fighters at low and medium altitudes while maneuver drive-equipped space fighters replace reaction drive orbital fighters

TECH LEVEL 13

High-capacity grav thruster plates make high-speed grav transport and combat aircraft a practical reality. Airfoils, however, continue to be used for control purposes on some designs. Aircraft and grav vehicles are effectively merged at this tech level.



***NUREMBERG* (TL6) ATTACK AIRCRAFT**

CraftID: Attack Aircraft, TL6, Cr31,100
Hull: 24/60, Disp = 5, Weight Loaded = 4tons, Airframe = Simple (STOL)
Power: 4/10 Internal Combustion, .25 Mw, Endurance = 3 hours, 45 min
Loco: Basic Propeller, Thrust = 2tons, Cruise = 270, Top = 360, Agility = 4
Commo: Radio, Regional × 1
Off: LMG × 2 fixed, forward-firing/600 rounds per gun. LMG × 2 Flexible, rearward-firing/600 rounds per gun, Fuselage Hardpoint × 1, Inboard Wing Hardpoints × 2, Maximum external stores = 2000kg
Control: Simple
Accom: Crew = 1 (Pilot)
Other: Fuel = 560liters

An example of one of the first purpose-built attack aircraft. They are easy to produce and are known to operate en masse in support of early armored fighting vehicle ground attacks Similar designs have successfully operated against wet naval shipping from land bases and the decks of specially designed wet naval vessels.

Aircraft Design

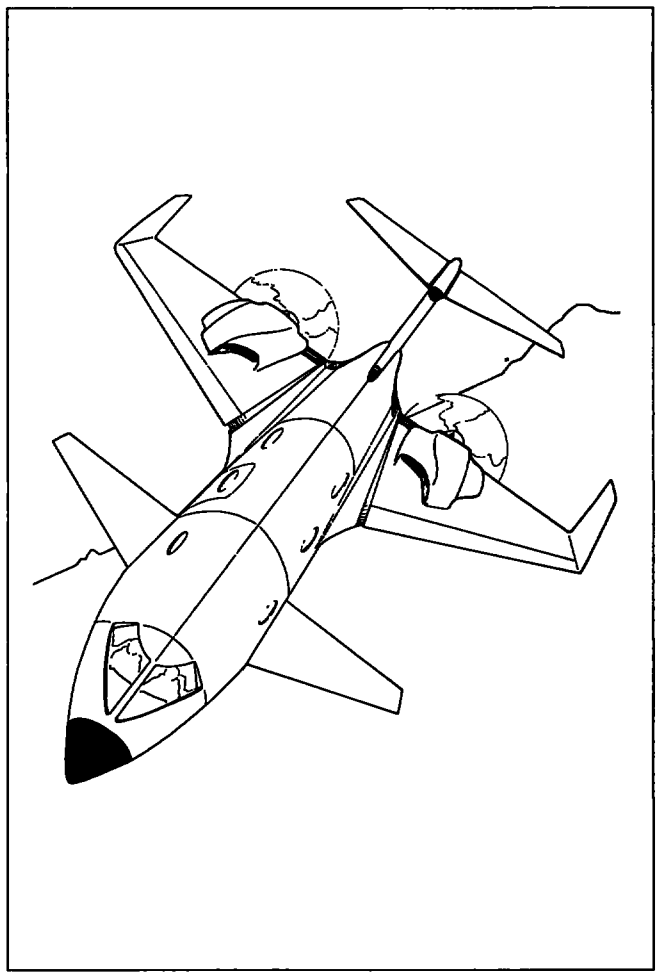
Three basic types of nongrav-powered aircraft can be designed for use in the **MegaTraveller** universe:

- Fixed-wing aircraft
- Rotary-wing aircraft
- Lighter-than-air aircraft.

The design sequence in this module addresses the details of their design. Grav-powered vehicles and spacecraft (including those which might be used by COACC) can be designed using the design sequences in the **MegaTraveller Referee's Manual**; they will not be discussed here However, examples of spacecraft used by COACC forces are described in the aircraft and spacecraft description section later in this module.

FIXED-WING AIRCRAFT

Fixed-wing aircraft rely on their airframe (with its associated wings) to produce lift Weight is the limiting factor in designing fixed-wing aircraft. The designer selects a maximum weight and then assigns the various components necessary for the aircraft mission and performance The maximum weight for fixed-wing aircraft is 400 metric tons



ROTARY-WING AIRCRAFT

Helicopters are rotary-wing aircraft that rely on lift generated by their rapidly rotating airfoils—rotor blades—in order to fly. Their design is limited by the amount of available lift which in turn is derived from the amount of available engine power. The designer selects the type and number of engines desired (or available) and determines their output and the takeoff weight they can support. The designer then assigns the various components necessary for the aircraft mission and performance.

LIGHTER-THAN-AIR AIRCRAFT

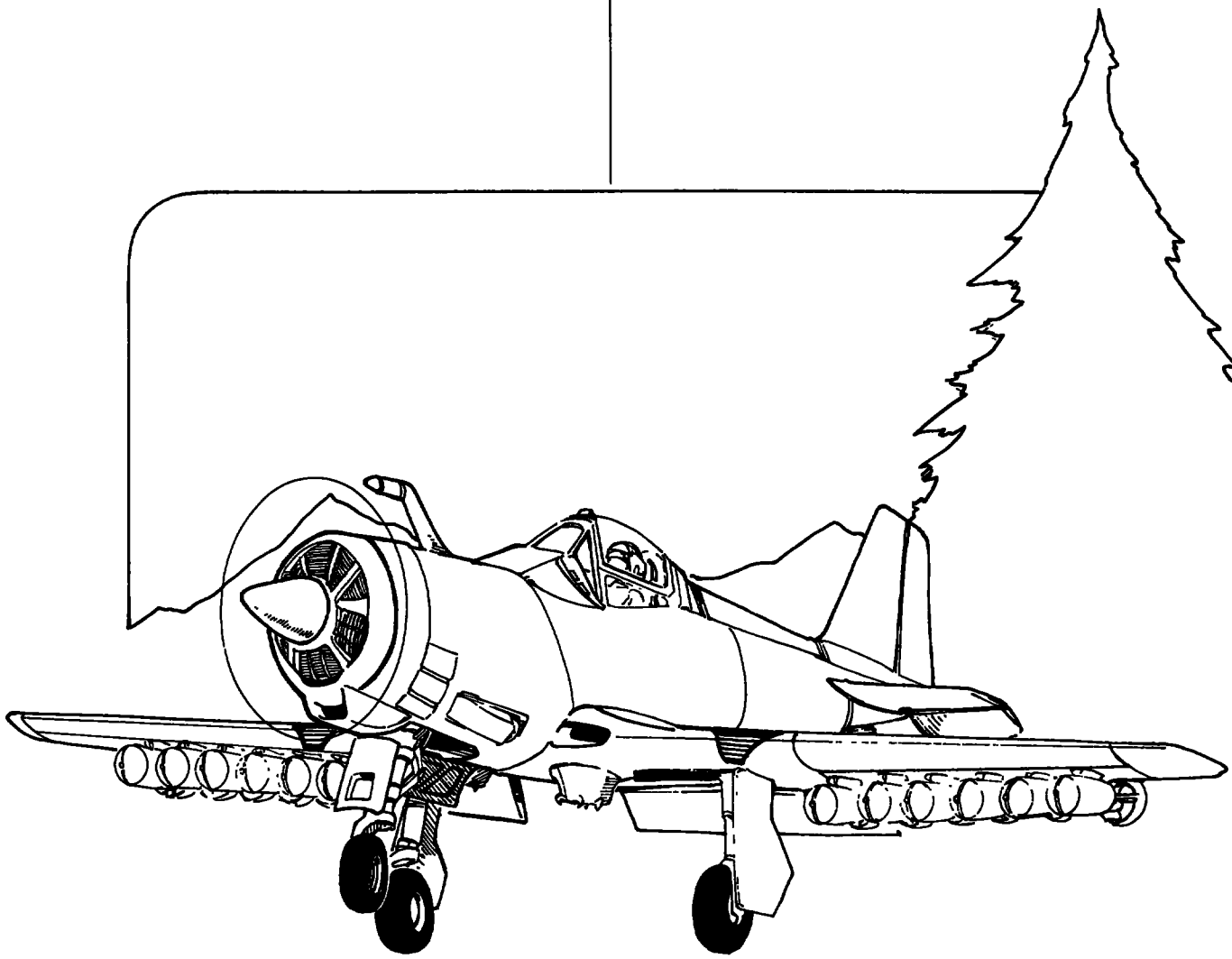
Lighter-than-air aircraft rely on lifting gases to hold them in the air The limiting factors in airship design are the lifting gas compartment capacity and the lift associated with it. The designer determines the size of the lifting gasbag and computes the available lift for the airship. He then assigns the various components necessary for the airship mission and performance.

THE MISSION SPECIFICATION

Aircraft designs are made in order to produce aircraft which can accomplish specific missions. Before an aircraft is designed, a mission specification should be generated which indicates the nature of the mission, the requirements that the mission may have in terms of payload and aircraft performance, and any special information that must be taken into account. Only after a mission specification has been written should the design be attempted

A mission specification is written in response to a specific need by a world COACC That need takes into account the technological capabilities of the world, the known capabilities of existing aircraft, and the capabilities of aircraft possessed by enemy COACCs or by potential invaders.

A Typical Mission Specification: Lastina, a TL7 world, has a need for a new generation of escort fighter. As a result, Lastina COACC has established a mission specification for a TL7 escort fighter capable of continental range with a light payload. No intelligence is available concerning potential enemy aircraft to be encountered, so designers are simply encouraged to maximize performance.



***CHICAGO* (TL6) HEAVY ATTACK AIRCRAFT**

CraftID: Attack Aircraft, TL6, Cr165,700
Hull: 28/70, Disp. = 10, Weight Loaded = 7tons, Airframe = Subsonic, Armor = Cockpit 8
Power: 4/10 Improved Internal Combustion, 40 Mw, Endurance = 7 hours
Loco: High Performance Propeller, Thrust = 6 4tons, Cruise = 486, Top = 648, Agility = 2
Commo: Radio, Regional × 1
Off: 20mm autocannon × 4 fixed, forward-firing/200 rounds per gun Plumbed Inboard Wing Hardpoints × 2, Outboard Wing Hardpoints × 12, Maximum External Stores = 4tons
Control: Simple
Control: Simple
Accom: Crew = 1 (Pilot), Oxygen mask and tank, cockpit armor and ejection seat.
Other: Fuel = 2100liters

Ultimate development of the purpose-built, propeller-driven attack aircraft This and similar aircraft have turned the tide of battle on many moderate-technology worlds with timely close air support of ground troops This aircraft's boxy design and massive bomb load have earned it the nickname "Flying Dump Truck." Because it is effective and relatively inexpensive, and is rugged and can operate from frontier airstrips, it is a favorite of mercenary air wings operating on low- to moderate-technology worlds. However, it is vulnerable to TL7 + antiaircraft weapons and fighters, which limits its use on more advanced worlds.

Designing Fixed-Wing Aircraft

Fixed-wing aircraft depend on their airframes and their associated wings to produce the lift that enables them to fly Fixed-wing aircraft may be propelled by bladed propellers or by jet engines

Weight is the limiting factor in designing a fixed-wing aircraft The weight selected by the designer is the aircraft's maximum weight without external stores This includes the weight of the empty aircraft, a full internal fuel load, the crew, crew accommodations, passengers and their accommodations, cargo, internal weapons, and avionics (communications, sensors, and electronic navigational instruments) Weight is expressed in metric tons in one standard gravity (1G) The maximum weight for fixed-wing aircraft is 400 metric tons. The total weight of all components including fuel and cargo must not exceed the aircraft's maximum weight Externally mounted weapons will increase the weight and add drag, affecting top speed. Up to 35 percent of the aircraft's maximum internal weight may be carried as external stores, depending on available hardpoints The aircraft's maximum internal weight plus its maximum external stores equals its maximum takeoff weight.

AIRFRAME

Once the designer decides upon the aircraft's weight, he must select the airframe from the Airframes Table. Each type of airframe has its own price per ton of aircraft, minimum and maximum speed limit, and efficiency factor (used in determining the aircraft's cruising and maximum speed).

Airframes may be modified for VTOL aircraft, STOL aircraft, or seaplanes

VTOL airframes add 10 percent to weight and 50 percent to the cost of the airframe

STOL airframes add five percent to weight and 30 percent to the cost of the airframe

Seaplane airframes add five percent to weight and 25 percent to the cost of the airframe

VTOL and STOL airframes are mutually exclusive, seaplane capability can be added to either VTOL or STOL airframes

ENGINE

Select the engine or engines to power the aircraft. Available engines are listed on the Engines Table. The first two are internal combustion engines The remainder, except for rockets, are gas turbine or gas turbine-related engines. Rockets need both fuel and oxidizer, a requirement factored into their fuel consumption figure.

The Engines Table also indicates each engine's approximate rated thrust, weight, and fuel consumption measured in liters per hour, cost in credits, and the highest speed of airframe with which the engine type can be used Afterburners (at no cost) may be added to turbojet and turbofan engines. Add 10 to the thrust when afterburners are used, but double fuel consumption

Other factors notwithstanding, the more engine thrust you have for a given aircraft weight, the faster the aircraft will fly. You may install more than one engine per aircraft If you do so, multiply the thrust, weight, fuel consumption, and cost figures by the number of engines you are installing This will give you total figures for the aircraft in each category.

Engine compartments or nacelles (pods holding engines under the wings or along the fuselage) may be armored Engine armor weighs one ton per engine and gives an armor factor 8 penetration resistance.

VTOL: Engine thrust must exceed the total weight of a VTOL aircraft if it is to hover, or to take off and land vertically. Otherwise, the aircraft is limited to STOL operations VTOL aircraft may take off in STOL mode if they are over the VTOL weight limit, then land vertically after external stores are dropped or sufficient fuel is burned to bring them below the VTOL weight limit. This is called STOVL operation.

Engine Limitations: Some types of engines have limitations.

Ramjet-powered aircraft must reach a speed of 800 kilometers per hour before the ramjet will start The ramjet may be launched from another aircraft at that speed, or the ramjet may also use one or more turbojets, turbofans, or rockets to boost it to that speed.

Rocket-powered craft are usually designed for vacuum or trace atmosphere operations where air-breathing engines cannot operate Some hypersonic orbital fighter designs include a turbojet for takeoff and initial climb, a ramjet for reaching suborbital velocities, and a rocket for final boost and orbital maneuvering

CONTROLS

Select controls for the aircraft from the Controls Table. Control types are limited by the airframe of the aircraft. Some types yield maneuver points which are added to the aircraft's agility rating for air-to-air combat and evading ground fire.

CREW AND PASSENGERS

Crew and passenger accommodations can range from a single seat for a fighter pilot to 500 seats for passengers and four crew stations aboard a jumbo jetliner Note that, for convenience, regular passengers are seated in multiples of four, first-class passengers in multiples of two Jumbo jetliners carrying passengers in 12-across rows would need three passenger sections per row A small executive jet would only need one passenger section

Pilots of aircraft without advanced electronics may be in

simple cockpits, and their crews may be at crew stations. Pilots must be in complex cockpits aboard aircraft equipped with radar, electronic countermeasures (ECM), infrared sensors, low-light vision devices, or enhanced controls

A radar operator, or second pilot who can act as a radar operator, must be aboard an aircraft equipped with terrain-following radar, or target acquisition and fire control radar and high-performance, operator-guided missiles This individual may also operate a laser target-designator system

Two pilots are needed for aircraft over 25 tons. A flight engineer is needed for aircraft over 50 tons The pilot acts as a gunner for any forward-firing, fixed weapons, bombs, rockets, and missiles Turret-mounted and flexible-mounted guns require a gunner. One gunner may control any number of remote control turrets but may fire only one turret during a combat round A gunner in a simple turret may only fire the guns in that turret A gunner firing guns attached to a flexible mount may fire only those guns during a combat round, but may move to a second flexible and fire its guns in the following combat round

A bombardier and a navigator must be carried aboard a bomber aircraft weighing more than 50 tons

Armor and various escape devices listed in the Crew/Passenger Accommodations Table may be added to any cockpit or crew station. Transonic combat aircraft require ejection seats for each crewmember, advanced ejection seats are required aboard supersonic combat aircraft; and rocket-powered escape capsules are required aboard any hypersonic aircraft

Cockpit armor has a rating of 8 against penetration.

LIFE SUPPORT

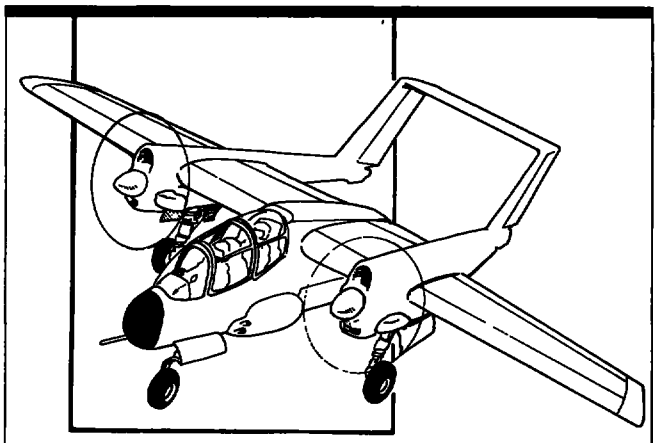
Aircraft flying above 3000 meters in a standard atmosphere (5000 meters in dense, 1500 meters in thin) require life support systems These range from oxygen tanks and masks to sealed cockpits and full pressure suits aboard combat aircraft, to sealed cabins and basic life support systems for civilian airliners

Select a life support system from the Life Support Table.

WEAPONS MOUNTS

The number of weapons mounts should be determined and the type selected from the Weapon Mounts Table. Fixed mounts have no weight or drag Hardpoints only have drag when ordnance or a bomb rack is mounted Drag disappears when weapons are dropped or launched Turrets always incur a drag penalty.

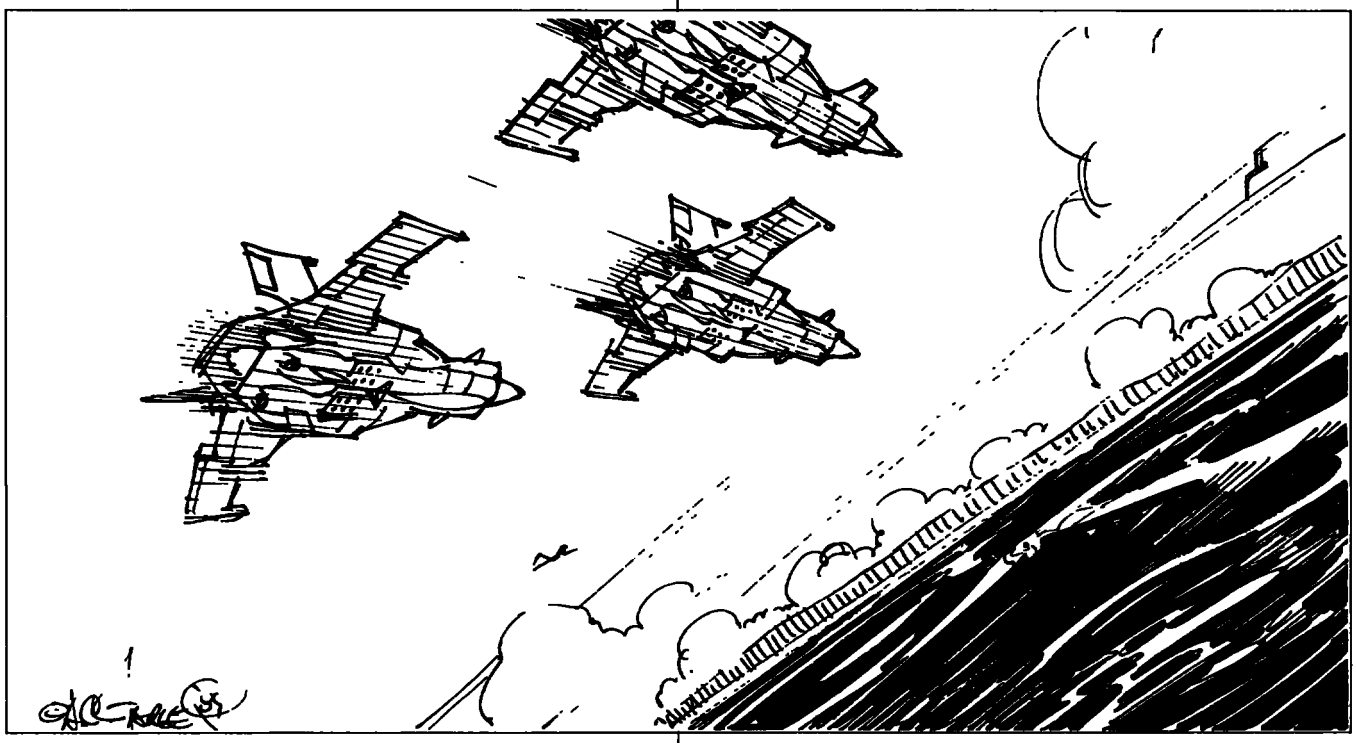
Hardpoints are generally located beneath the fuselage and wings Normally an aircraft only has room for one fuselage hardpoint—usually the strongest of all the hardpoints Fuselage hardpoints can carry up to 2000 kilograms of ordnance Hardpoints can carry less of a load as you move outboard Inboard wing hardpoints carry up to 1500 kilograms each, while outboard hardpoints carry up to 500 kilograms each Up to two inboard and two outboard hardpoints may be fitted to each wing. Bomb racks, each carrying up to six bombs, three rocket pods, or three launch rails with their missiles may be attached to each hardpoint, as well as single weapons Fuel drop tanks may be attached to the centerline hardpoint or the inboard wing hardpoints if they have fuel intake plumbing Launch rails for



***PLEIKU* (TL7) LIGHT ATTACK AIRCRAFT**

CraftID: Attack Aircraft, TL7, Cr123,500
Hull: 22/54, Disp = 075, Weight Loaded = 5 4tons, Airframe = Subsonic (STOL)
Power: 4/10 Gas Turbine × 2, .60 Mw, Endurance = 2 hours, 25 min on internal fuel, 4 hours with internal fuel and 1500liter drop tank
Loco: Light Turboprop × 2, Thrust = 8tons, Cruise = 600, Top = 800, Min = 80, Agility = 2
Commo: Radio, Regional × 1
Off: LMGs × 4 fixed, forward-firing in weapons sponsons with 500 rounds per gun. Plumbed fuselage hardpoint × 1, equivalent of outboard wing hardpoints × 4 on sponsons If fuselage hardpoint is used, only two sponson hardpoints may be used Maximum external stores = 1600kg
Control: Simple
Accom: Crew = 2 (Pilot, Observer), Ejection seats
Other: Cargo = 1 ton. Five passengers or two medevac patients on litters, or one ton of cargo may be carried in rear cargo compartment. Rear clamshell doors detach, and four paratroopers or cargo may be air-dropped. Fuel = 2332liters, additional 1500liter drop tank may be carried beneath fuselage

All-purpose light attack, reconnaissance, liason, cargo, and airdrop aircraft designed to operate in a low-threat combat environment from rugged forward airstrips Its high-wing, twin tail boom design gives high ground clearance for takeoff and landing Low pressure tires and STOL capability enable this aircraft to operate from dirt airstrips Simple, light-weight turboprop engines and controls make maintenance inexpensive and easy This is a favorite design used by many mercenary battalions in their organic aviation platoons for scouting and on-call close air support. The rear seat observer often acts as a forward air controller, guiding in heavier attack aircraft onto targets spotted and first engaged by the LAA.



missiles weighing no more than 100 kilograms may be installed on wingtips

WEAPONS

A wide variety of weapons may be installed aboard aircraft. Machineguns and autocannons may be installed either in fixed, forward-firing mounts, or in flexible or turret mounts. Lasers and energy weapons may also be installed in fixed, forward-firing mounts

Bombs may be installed in internal bomb bays. One ton of bombs may be carried for each ton allocated for internal bomb bays They may also be attached to hardpoints either singly or in multiple racks. Rocket pods, gun pods, electronic countermeasures pods, photo and radar reconnaisance pods, infrared sensor pods, flare dispenser pods, napalm tanks, and fuel tanks may also be carried by the hardpoints Missiles and larger free-flying rockets may be carried on missile launch rails that are mounted separately or are attached to hardpoints Ammunition for internally mounted guns is included in the overall aircraft weight Ammunition for gun pods is included in the pods and counts as part of the external load. Ordnance and its uses will be discussed in detail in "Aircraft Ordnance" later in this rules module

ELECTRONICS

Electronic systems may be installed on the aircraft These include radios, radar, electronic countermeasures, navigation aids, forward-looking infrared (FLIR) and low-light-level television (LLTV) sensors. Combat aircraft of Pre-stellar technology (TL7)+ may also carry ECM systems, reconnaissance cameras, and radar reconnaissance systems in pods. Internal electronic systems count toward the total aircraft weight. External, pod-mounted systems incur a drag penalty and count toward the aircraft's loaded weight Complete lists of available communications, detection, and ECM systems are found in the **MegaTraveller Referee's Manual**. Pod-mounted systems are discussed in "Aircraft Ordnance" later in this rules module

CARGO

Aircraft may have weight allocated to cargo Each ton of cargo capacity allocated enables the aircraft to carry one ton of cargo.

MANEUVER ENHANCEMENT

You may allocate any percentage of the aircraft's weight to maneuver enhancement There is no cost. The higher the percentage, the more agile your aircraft will be

FUEL

Fuel capacity is measured in liters Aircraft burn either hydrocarbon-based petroleum distillates or alcohol-based fuels. Petroleum distillates are preferred because of their higher thermal energy, however, they may not always be available. When alcohol-based fuels are used, deduct 20 percent from the aircraft's thrust rating. Both petroleum distillates and alcohol-based fuels cost Cr.25 per liter.

Each ton of aircraft allocated to fuel storage will allow it to carry 1000 liters of fuel. This is the internal fuel capacity. Drop tanks with capacities from 500 to 2000 liters are available to increase range and/or endurance.

An air-to-air refueling probe may be included in an aircraft design. This lets the aircraft refuel in flight from a tanker aircraft or another aircraft carrying a refueling pod as an external store. Refueling probes cost Cr1000 and weigh one-tenth of a ton. Refueling pods include a wind-powered transfer pump attached to an extendable hose and drogue, and a tank holding up to 1000 liters of fuel for transfer Refueling pods cost Cr5000 and weigh one ton

FIXED-WING AIRCRAFT RATINGS

Once you have designed your aircraft, you need to determine and record its ratings. These include weight, thrust, speed, agility, damage points, fuel use, endurance, range, price, and volume

Weight: An aircraft's full internal weight is the weight determined at the beginning of the design sequence Be sure the total weights of all components including fuel, cargo, ammunition, and bombs in bays do not exceed the specified weight. Any extra space may be used as fuel tankage or cargo capacity. This is the aircraft's "clean" weight.

An aircraft also has a maximum gross takeoff weight This includes the full internal weight plus the weight of maximum external stores attached to the hardpoints. As a rule, the aircraft's maximum gross takeoff weight—also called its "loaded" weight—should not be more than 135 percent of its "clean" weight. An aircraft with a fuselage hardpoint, two inboard hardpoints, and two outboard hardpoints fully loaded with weapons would weigh its full internal weight plus six tons.

Thrust: An aircraft's thrust is equal to the thrust of its engine type listed on the Engines Table times the number of engines on the aircraft. Thrust is listed in tons.

G Rating: An aircraft's G rating helps determine its top speed and agility Calculate the G rating by dividing the aircraft's total thrust by its weight and multiplying the result by the airframe efficiency factor for the airframe type listed on the Airframes Table. Calculate the G rating using both the aircraft's clean and loaded weights (for two different ratings).

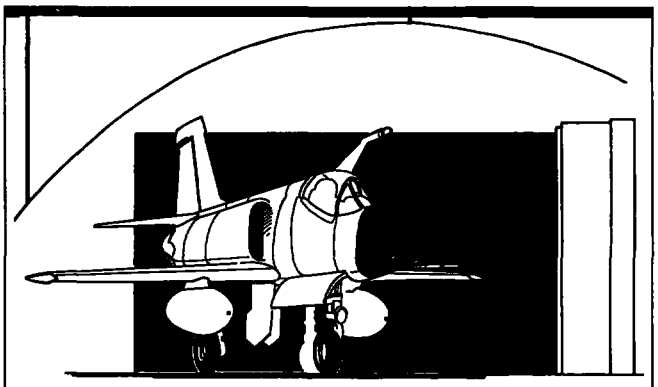
Speed: Find the aircraft's maximum speed by locating its G rating on the Maximum Speed Table and its corresponding speed in kilometers per hour Do this using both G ratings to obtain maximum speeds for both clean and loaded weights. Maximum speed cannot be greater than the maximum design speed listed for airframe type.

Maximum speed is reduced by drag Note the total number of drag points from the Weapon Mounts Table for the aircraft with and without external stores. Reduce the maximum speed by one percent for each drag point. As an example, an attack aircraft carrying four loaded, multiple-bomb racks under its wings and a drop tank under its fuselage would have 17 drag points This would reduce its maximum speed while carrying these external stores by 17 percent Once the bombs and tanks are dropped, the aircraft's maximum speed increases to its full internal weight speed or maximum airframe design speed, whichever is lower

Cruising Speed: An aircraft's cruising speed is 75 percent of its maximum speed

Minimum Speed: An aircraft's minimum speed depends on its airframe type Note its minimum speed on the Airframes Table The first number is for a standard airframe, the second for a STOL aircraft using that airframe. VTOL aircraft have no minimum speed. Minimum speed is reduced by one percent for every one percent of aircraft weight used for maneuver enhancement

NOE Speed: Only VTOL aircraft and helicopters fly the contours of the ground at nap-of-the-earth (NOE) speeds. They may fly no more than 40 kilometers per hour without radar, and 120 kilometers per hour with radar.



***SAN DIEGO* (TL7) MEDIUM ATTACK AIRCRAFT**

CraftID: Attack Aircraft, TL7, Cr545,000
Hull: 40/100 Disp. = 16, Weight Loaded = 10tons, Airframe = Transonic
Power: 4/10 Gas Turbine × 1, .60 Mw, Endurance = 3 hours, 20 min on internal fuel, 4 hours, 30 min with internal fuel and 2000 liter drop tank, 5 hours, 20 min with internal fuel and two 1500 liter drop tanks
Loco: Basic Turbojet × 1, Thrust = 15tons, Cruise = 825, Top = 1100, Min = 176, Agility = 3
Commo: Radio, Regional × 1
Off: 20mm autocannon × 2 fixed, forward-firing w/200 rounds per gun, Plumbed Fuselage Hardpoint, Plumbed Inboard Wing Hardpoints × 2, Outboard Wing Hardpoints × 2, Maximum External Stores = 3.5tons, Nuclear capable.
Control: Boosted, 1 Maneuver Point
Accom: Crew = 1 (Pilot), Oxygen tanks and mask, Cockpit armor and ejection seat
Other: Fuel = 5150liters. Additional 2000liter drop tank may be carried beneath fuselage, or two additional 1500liter tanks may be carried on the inboard wing hardpoints Refueling probe fitted for fuel transfer from aerial tanker or buddy fuel pack mounted on another aircraft

One of the most popular aircraft designs used by mercenary air squadrons, this medium attack aircraft packs a massive punch but is relatively inexpensive to buy, maintain, and operate. It is sufficiently agile for close air support and has sufficient range for deep strike interdiction missions. Its small size makes it a hard target for both ground-based antiaircraft gunners and opposing pilots Its size, speed, and agility make it survivable in a moderate-technology, high-threat environment Flying clean without external stores, this aircraft can be a formidable air-to-air opponent Some examples of the medium attack aircraft have been fitted with air-to-air missiles and used as interceptors. Its relatively small size makes it easily transportable in the holds of starships, another plus for mercenaries on the move

WEIGHT

Aircraft weight is determined by the mission specification or arbitrarily by the designer. Design weight may be revised as a clearer picture of the final aircraft materializes Weight is specified in tons; maximum weight is 400 tons.

AIRFRAMES

Tech Code	*TL*	*Type*	*Weight*	*Price*	*Min Speed*	*Max Speed*	*Efficiency*
Industrial	4	Simple	01	10	150/ 75	300	.85
Pre-Stellar	6	Fast Subsonic	05	20	160/ 80	800	90
Pre-Stellar	6	Transonic	10	30	176/ 88	1100	.95
Pre-Stellar	6	Supersonic	.20	40	280/140	2800	1 00
Pre-Stellar	6	Hypersonic	.30	100	350/175	5000	1.00

Units: *Weight·* Tons per ton of aircraft *Price·* Thousands of credits per ton of aircraft. *Min Speed:* Minimum speed in kilometers per hour for normal aircraft/for STOL. *Max Speed·* Maximum design (do not exceed) speed for airframe type. *Efficiency:* Airframe efficiency used in determining maximum and cruising speeds.

VTOL airframes add 10% to weight and 50% to cost of the airframe. STOL airframes add 5% to weight and 30% to cost of the airframe Seaplane airframes add 5% to weight and 25% to cost of the airframe. VTOL and STOL airframes are mutually exclusive, seaplane capability can be added to either VTOL or STOL airframes.

ENGINES

Tech Code	*TL*	*Type*	*Thrust*	*Weight*	*Fuel*	*Cost*	*Airframe*
Industrial	4	Basic Propeller	2	1	150	5000	Fast Subsonic
Industrial	5	Light Propeller	1	0.5	75	3500	Simple
Pre-Stellar	6	High Performance Propeller	6 4	1	300	20,000	Fast Subsonic
Pre-Stellar	6	High Performance Turboprop	15	1	1200	100,000	Fast Subsonic
Pre-Stellar	6	High Performance Turbojet	18	1	2160	150,000	Supersonic
Pre-Stellar	6	Basic Ramjet	30	1	9600	250,000	Hypersonic
Pre-Stellar	6	High Performance Ramjet	39	1	12,000	300,000	Hypersonic
Pre-Stellar	6	Basic Rocket	30	1	19,200	250,000	Hypersonic
Pre-Stellar	6	High Performance Rocket	39	1	24,000	300,000	Hypersonic
Pre-Stellar	6	Engine Compartment Armor	—	1	—	10,000	—
Pre-Stellar	7	Basic Turboprop	12	1	960	75,000	Fast Subsonic
Pre-Stellar	7	Light Turboprop	4	0 5	400	50,000	Fast Subsonic
Pre-Stellar	7	Basic Turbojet	15	1	1560	125,000	Supersonic
Pre-Stellar	7	Light Turbojet	6	0.5	700	100,000	Supersonic
Pre-Stellar	7	Basic Turbofan	18	1	1680	175,000	Supersonic
Pre-Stellar	7	High Performance Turbofan	21	1	1920	200,000	Supersonic
Pre-Stellar	8	High Bypass Turbofan	50	4	3840	250,000	Supersonic
Early Stellar	10	Fusion Rocket	195	4	5	350,000	Hypersonic

Units: *Thrust* Tons *Weight·* Tons. *Fuel·* Consumption in liters/hour *Cost·* Credits. *Airframe:* Highest speed airframe with which this engine can be used.

Afterburners: Afterburner may be used with turbojet and turbofan engines. Add 10 tons thrust and double fuel consumption when in use **Rockets:** Rocket fuel consumption includes both fuel and oxidizer. **Ramjets:** Ramjets must reach a speed of 800 kph before the ramjet will start

Multiple Engines: The table shows information for one engine. If additional thrust or performance is required, additional engines must be installed.

Tech Level Effects: Thrust and cost for each engine increases by 2% per tech level above the basic stated tech level in the table Weight and fuel consumption decrease by 2% per tech level above the basic stated tech level in the table.

CONTROLS TABLE

Tech Code	*TL*	*Type*	*Airframe*	*MP*	*Power*	*Weight*	*Price*
Industrial	5	Simple	Fast Subsonic	0	0 0	05	20
Pre-Stellar	6	Boosted	Transonic	1	1	.10	50
Pre-Stellar	6	Powered	Hypersonic	2	1	.15	100
Pre-Stellar	6	Fly-by-Wire	Hypersonic	4	.2	20	200
Pre-Stellar	6	Computer-Enhanced Fly-by-Wire	Hypersonic	6	.3	.15	1000

Units: *Airframe·* Highest speed airframe this type of control may be used with *MP:* Maneuver points. *Weight:* Weight multiplier (weight multiplier × aircraft weight = weight of controls). *Price.* Price in thousands of credits per ton of controls *Power.* Mw power required per ton of controls

CREW/PASSENGER ACCOMMODATIONS

Tech Code	*TL*	*Type*	*Capacity*	*Volume*	*Weight*	*Price*
Industrial	5	Simple Cockpit	1	2	10	5000
Industrial	5	Crew Station	1	2	10	5000
Industrial	5	Passenger Section	4	4	.30	5000
Pre-Stellar	6	Complex Cockpit	1	2	25	50,000
Industrial	5	Cockpit Armor	(1)	1	+ 10	5000
Pre-Stellar	6	Ejection Seat (Transonic)	(1)	1	+ 10	5000
Pre-Stellar	6	Advanced Ejection Seat (Supersonic)	(1)	1	+.25	10,000
Pre-Stellar	6	Rocket Escape Pod (Hypersonic)	(1)	1	+.50	15,000

Units: *Capacity:* Number of persons each station will hold (items with capacity in parentheses may be added to a cockpit or station at the designer's option) *Weight.* Tons *Cost:* Credits *Volume:* Kiloliters

LIFE SUPPORT TABLE

TL	*Description*	*Volume*	*Weight*	*Price*	*Units*
5	Oxygen Tanks and Masks	0.010	0.010	Cr100	Per person
5	Basic Environment (lights and heat)	0 005	0 005	Cr10	Per kiloliter of occupied space
5	Basic Life Support (sealed, atmosphere)	0.050	0 050	Cr300	Per kiloliter of occupied space

Units: *Volume·* Kiloliters (one kiloliter = one cubic meter) *Weight.* Kilograms *Price* Credits

WEAPON MOUNTS TABLE

Tech Code	*TL*	*Type*	*Drag*	*Weight*	*Capacity*	*Price*
Industrial	5	Fixed Mount	0	0.00	1 slugthrower/energy weapon	0
Industrial	5	Launch Rail	(1)	.01	1 100kg missile/rocket	100
Industrial	5	Flexible Mount	1	005	1 heavy machinegun	100
Industrial	5	Fuselage Hardpoint	(1)	02	2000 kg	2000
Industrial	5	Plumbed FHP	(1)	03	2000 kg or 2000-liter tank	2500
Industrial	5	Inboard Wing Hardpoint	(1)	02	1500 kg	2000
Industrial	5	Plumbed IWHP	(1)	03	1500 kg or 1500-liter tank	2500
Industrial	5	Outboard Wing Hardpoint	(1)	.02	500 kg	2000
Industrial	5	Triple Bomb/Missile Rack	(2)	05	3 bombs/rocket pods/missiles	4000
Industrial	5	Multiple Bomb/Missile Rack	(4)	10	6 bombs	8000
Industrial	5	Internal Bomb Bay	0	1 00	1 ton of bombs per ton of bomb bay	15,000
Industrial	5	Turret	4	40	2 heavy machineguns	5000
Industrial	5	Remote Turret	2	50	4 heavy machineguns	50,000
Pre-Stellar	6	Turret Autocannon	2	50	2 autocannons/1 multibarrel	50,000
Pre-Stellar	6	Remote Turret	1	50	1 multibarrel autocannon	20,000

Units: *Drag:* Drag points (values in parentheses only affect loaded aircraft) *Weight:* Tons *Cost* Credits

Inboard hardpoints are located between the wing root and half the distance to the wingtip. Outboard hardpoints are located between the wingtip and half the distance to the wingtip Aircraft may have no more than two inboard and two outboard hardpoints under each wing. Aircraft may have up to eight launch rails on each wing and one on each wingtip

WEAPONS

A wide variety of weapons may be installed aboard aircraft Ordnance and its uses are discussed in detail in the Ordnance Tables

ELECTRONICS

Electronic systems may be installed on the aircraft. Complete lists of available communications, detection, and ECM systems are found in the **MegaTraveller Referee's Manual**

Pod-mounted systems are discussed in the "Aircraft Ordnance" section of this rules module.

CARGO

Allocate tonnage for cargo One ton holds one ton of cargo

FUEL

Allocate one ton per 1000 liters of fuel

MAXIMUM SPEED TABLE

G Rating	*Max Speed*	*G Rating*	*Max Speed*	*G Rating*	*Max Speed*
10	120	70	840	2 4	2400
15	180	80	960	2 6	2600
20	240	90	1080	2 8	2800
25	300	1 0	1200	3 0	3000
30	360	1 2	1320	3 5	3150
35	420	1.4	1540	4 0	3200
40	480	1 6	1760	4 5	3600
45	540	1 8	1980	5 0	3750
.50	600	2 0	2000		
60	720	2.2	2200		

Units: *Max Speed:* Maximum speed of aircraft in kph Max airframe design speed may not be exceeded even if max G rating speed is higher Cruising speed is 75 max speed

Agility: Agility is used to help determine which aircraft has the advantage in air-to-air combat Use the following formula to calculate an aircraft's agility rating:

$$(MS/100 + G \times 100)/100 - ME + MP.$$

MS is the aircraft's maximum speed

G is the G rating.

ME is the percentage of weight devoted to maneuver enhancement

MP is the number of maneuver points from the aircraft controls Maneuver points for each type of controls are listed in the Controls Table

Volume: You need to calculate the aircraft's volume to determine its damage point rating Simply multiply its weight by 60 to determine its volume in cubic meters. This volume is also the space needed to ship an aircraft in combat-ready condition inside another vehicle such as a starship. If its wings have been folded or removed for ease of transport, multiply its weight by 20 to determine shipping volume

Damage Points: Calculate the damage point ratings for the aircraft's airframe and its engines The damage point ratings for each component consist of two numbers separated by a slash The first number shows the number of damage points needed to make the component inoperable, the second, to destroy the component.

See "Air-to-Air Combat" for a discussion of damage effects.

Calculate the airframe's first damage point figure by dividing the aircraft's volume by 15 Then calculate the second damage point figure by dividing the volume by six A 50-ton aircraft with a volume of 3000 cubic meters would have an airframe damage rating of 200/500

Each engine has its own damage rating of 4/10

Fuel Use: The fuel use of each engine type is listed in liters per hour on the Engines Table. Multiply the figure for the installed engine type by the number of engines installed on the aircraft to determine total hourly fuel use

Endurance: Endurance is the number of hours an aircraft can remain aloft at cruising speed Divide the total number of liters of fuel on board (including fuel in drop tanks) by the fuel use rate to determine endurance.

Range: Range is the distance an aircraft can fly at cruising speed. Calculate range by multiplying endurance by cruising speed Do this for both clean cruising speed and loaded cruising speed

Price: Total the price of the aircraft's components to determine its total price

FIXED-WING AIRCRAFT DESIGN CHECKLIST

1. Determine maximum aircraft weight in metric tons.
   - **A.** Determine maximum weight of external stores (35 percent of maximum weight)
   - **B.** Determine maximum weight of internal stores (35 percent of maximum weight)
   - **C.** Add the weights from steps 1A and 1B to determine maximum takeoff weight.
2. Select airframe type from Airframes Table
   - **A.** Determine weight of airframe
   - **B.** Determine price of airframe.
   - **C.** Adjust A and B as indicated if designing an STOL, VTOL, or seaplane.
   - **D.** Determine minimum and maximum speed limits imposed by airframe
3. Select type of engine from the Engines Table, and determine the number of engines for the design. If a jet engine is used, add afterburner if desired
   - **A.** Note thrust.
   - **B.** Note weight
   - **C.** Note fuel consumption.
   - **D.** Note cost.
   - **E.** Determine maximum airframe type that is compatible with selected engine.
   - **F.** Note any engine type limitations
4. Select controls. Note airframe limitations, weight, and price
5. Select passenger (if any) and crew accommodations Note crew requirements Add armor and any escape devices, noting their weight and cost.
6. Select life support systems as needed.
7. Select weapons mounts, including internal mounts, bays, and hardpoints for external stores Note price, weight limitations, and drag penalties
8. Select permanently mounted internal weapons such as machineguns, autocannons, or lasers Determine their ammunition loads Note weights. Determine tonnage for internal bomb bays.
9. Select electronics—including communicators, sensors, and computers—from tables in the **MegaTraveller Referee's Manual**
10. Allocate cargo tonnage.
11. Allocate a percentage of aircraft weight for maneuver enhancement.
12. Allocate tonnage for fuel One ton holds 1000 liters
13. Total the weight of all components, including cargo, fuel, and maneuver enhancement tonnage This total should not exceed the weight selected in step 1.
14. Rate your aircraft

A NEW FIGHTER FOR PRETORIA

The capital of Pretoria subsector in Deneb sector is an important world on the Imperial border with the Vargr states. Pretoria (Pretoria/Deneb 0406 B656967-9) is a Hi Pop world

Pretoria developed a need for a new fighter later in the last century On 024-1098, Pretoria's Close Orbit and Airspace Control Command issued a mission specification for what it called *Fighter 1100*

That specification was the basis for the design and construction of the present mainstay of its aerial forces.

Fighter 1100: This air superiority fighter is to be a TL9 fixed-wing fighter with Near Planetary range (at least 4000 kilometers), supersonic speed (at least 1200 kilometers per hour), and a medium (five ton) payload

The Design Process

Fighter 1100 was designed in the following manner.

Weight: The armed aircraft will carry up to 5 tons of external ordnance and no internal ordnance or stores Because external stores may be no more than 35 percent of maximum

weight, the aircraft must be at least 15 tons The weight of the aircraft is planned at 15 tons.

Airframe: The aircraft is planned as supersonic, so a supersonic airframe is selected. The airframe weighs in at 3.0 tons (0 20 tons per ton of aircraft) and costs Cr600,000 (Cr40,000 times 15 tons)

It will have a minimum speed of 280 kilometers per hour and a maximum speed of 2800 kilometers per hour (if its engines can produce it) The airframe efficiency is 1 00

Engines: The aircraft is given a TL9 high performance turbofan engine with an afterburner Because the engine is TL9 (two levels higher than its introductory TL7), the engine is 4 percent costlier and has 4 percent more thrust; it is 4 percent lighter and has 4 percent less fuel consumption The engine produces 21.84 tons of thrust and costs Cr208,000. The engine weighs 0.96 tons, and fuel consumption is 1843 liters per hour.

The afterburner adds no weight or cost When in use, it increases thrust to 31 84 tons and fuel consumption to 3686 liters per hour.

The engine compartment is armored at a cost of Cr20,000

Controls: The aircraft designers select relatively inexpensive powered controls for the *Fighter 1100*. The installation requires 2.25 tons (0.15 times 15 tons) of powered controls and costs Cr225,000 The controls provide two maneuver points and require 0.225 megawatts of power

Accommodations: The aircraft is fitted with a complex cockpit (at 0.30 tons and a cost of Cr50,000) Cockpit armor is added (0.10 tons and Cr5000) An advanced ejection seat is also added (0 25 tons and Cr10,000) The volume of the accommodations installation is four kiloliters

Life Support: The aircraft is provided with basic life support for the three kiloliters of accommodations provided. It weighs 0.2 tons and costs Cr1200.

Weapons Mounts: The designers allocate the maximum available number of launch rails to the wings of the aircraft 18 (eight under each wing and one on each wingtip). The installation costs Cr1800 and weighs 0.18 tons. When loaded, the 18 launch rails will impose 18 drag points on the aircraft

Electronics and Avionics: The designers select the following electronic equipment for the aircraft All Weather VDistant Radar-9 (0.008 tons, 0 008 megawatts, 0 016 kiloliters, Cr12,000), Continental Radio Communicator-9 (.0015 tons, 0 0015 megawatts, 0 0016 kiloliters, Cr5000).

The engine can provide power in megawatts up to two percent of its thrust in tons. This aircraft's thrust is 21 84 tons; its power for accessories and electronics is 4368 megawatts (more than enough to power the electronics and avionics on the aircraft)

Cargo: No cargo capacity is allocated

Maneuver Enhancement: No maneuver enhancement is provided.

Fuel: Fuel tankage for the aircraft must allow it to achieve its mission specification range of at least 5000 kilometers at a speed of 1200 kilometers per hour. Because fuel consumption is 1843 liters/hour, the aircraft must carry 7700 liters (7 7 tons) of fuel.

Rating

The *Fighter 1100* must now be rated and described

Rated Weight: The aircraft's clean weight (excluding external stores) totals 14.9495 tons Its maximum takeoff weight (including 18 100-kilogram missiles on the external launch rails) is 16.7495 tons; this is acceptable since 16.7495 is not more than 135 percent of 14 9495

Thrust: The aircraft thrust is 21.84 tons standard (and 31 84 tons if the afterburner is in use).

G Rating: The G rating for the clean aircraft is 1 46 G, for the loaded aircraft, it is 1 30 G. If the afterburner is in use, the clean G rating is 2 12 G; the loaded G rating is 1 90 G

Speed: The aircraft maximum speed is determined from the Maximum Speed Table as 1540 kilometers per hour clean (2000 kilometers per hour clean when afterburning) The loaded maximum speed (taking into account the 18-percent reduction in speed due to drag) is 1082 kilometers per hour (1623 kilometers per hour when afterburning) None of these speeds exceeds the maximum speed the airframe is capable of

Cruising Speed: Aircraft cruising speed is 1155 kilometers per hour clean (75 percent of clean maximum speed) and 811 kilometers per hour loaded (75 percent of loaded maximum speed).

Minimum Speed: The aircraft minimum speed is determined by the Airframe Table as 280 kilometers per hour

Agility: The aircraft's agility is computed as (1082/100 + 1 3 × 100)/100 − 0 + 2 = 3 4.

Volume: The aircraft volume is computed as 60 times aircraft weight (14.9495), or 897 kiloliters Displacement of the aircraft is computed as kiloliters divided by 13.5 (which produces the result in displacement tons)· 66 5 tons

Damage Points: The aircraft airframe damage point rating is 60/150 (897/15)/(897/6) The aircraft engine damage point rating is 4/10

Fuel Use: Fuel use of the aircraft is 1843 liters/hour

Endurance: The aircraft carries 7700 liters of fuel, it can remain aloft for four hours and 10 minutes

Range: The aircraft can fly up to 4824 kilometers clean and 3387 kilometers loaded

Price: The total cost for the aircraft is MCr1.12

PRETORIA (TL9) FIGHTER

CraftID: Fighter 1100, TL9, MCr1 12
Hull: 60/150, Displacement = 66, Weight Loaded = 16.7495tons, Airframe = Supersonic, Armor = Cockpit 8
Power: 0 4368 Mw (drawn from engines), Endurance = 4 hours 10 minutes
Loco: 4/10, High Performance Turbofan with Afterburner, Thrust = 21.84tons (31 84tons with afterburner), Cruise = 1155 kph (clean) and 811 kph (loaded), Top = 1540 kph (2000 with afterburner), Agility = 3
Sensors: All Weather VDistant Radar-9
Commo: Continental Radio Communicator-9
Off: Launch Rails × 18
Control: Powered, 2 Maneuver Points
Accom: Crew = 1 (Pilot), complex armored cockpit, advanced ejection seat, basic life support
Other: 7700liters internal fuel

Meets Pretoria *Fighter 1100* mission specification

Helicopter Design

Helicopters are rotary-wing aircraft that rely on lift generated by rapidly rotating airfoils—rotor blades—in order to fly. Their design is limited by the amount of available lift which in turn is derived from the amount of available engine power

ENGINES

The designer should select the type of engine from the Helicopter Engines Table and the number of engines he wants to use for his design The two basic types are reciprocating and gas turbine—with their variations Each engine listing includes power output, weight, fuel consumption, and cost.

Once the engine type and number are determined, total the power output in kilowatts Then multiply the kilowatt rating by four This yields the helicopter's maximum takeoff weight in kilograms Divide the kilogram figure by 1000 to calculate maximum takeoff weight in tons. Increase the lift rating of a helicopter using tandem main rotors by 20 percent (see Transmissions and Rotors below).

As an example, a helicopter fitted with one standard gas turbine engine has a power rating of 1000 kilowatts It has a maximum takeoff weight of 4000 kilograms or four tons The weight of the airframe, transmission, engine, passengers, cargo, and weapons can never exceed the maximum takeoff weight This includes any external load, such as weapons on external hardpoints or cargo carried as an external sling load

TRANSMISSIONS AND ROTORS

Helicopters need gearboxes, transmission assemblies, and rotors to convert engine power to lift. Gearboxes reduce engine speed to rotor speed with reduction ratios of up to 90 1 Transmission assemblies link the engine(s) to the rotors, and rotors provide lift

Rotors come in several configurations, which in turn affect the number of gearboxes and transmission assemblies needed in a helicopter design. All of these configurations prevent torque from rotating the helicopter in the opposite direction of the rotor's rotation. The most common rotor configurations include the following.

Main and Tail Rotor (MTR): This assembly is a large, single, main rotor and a much smaller, antitorque, tail rotor which is mounted vertically near the end of the tail boom Gearbox and transmission weight equals 50 percent of the engine's weight

Tandem Main Rotors (TAN): Two large main rotors that spin in opposite directions are mounted near each end of the airframe. Gearbox and transmission weight equals 75 percent of the engine's weight Increase the lift rating of a helicopter using tandem main rotors by 20 percent.

Coaxial Main Rotors (COAX): Two large main rotors spinning in opposite directions are mounted on the same vertical axis Gearbox and transmission weight equals 50 percent of the engine's weight.

Light gearbox and transmission assemblies weighing 20 percent of the engine's weight are available for helicopters weighing two tons or less

Reduce gearbox and transmission weight by 10 percent per tech level for each tech level above 6 TL6 gearbox and transmission weight is 100 percent; TL7 gearbox and transmission weight is 90 percent; TL8 gearbox and transmission weight is 80 percent. The lightest gearbox and transmission assemblies are 50 percent of the table value

Gearboxes and transmissions, including rotors, cost Cr10,000 per ton

AIRFRAME

Helicopters require only a simple airframe. More advanced airframes may be selected if desired Each type of airframe has its own price per ton of aircraft, maximum speed limit, and efficiency factor (used in determining the aircraft's cruising and maximum speed)

The airframe may be designed to make water landings by adding the seaplane weight tonnage and then calculating the cost using the seaplane cost modifier. Seaplane airframes add five percent to the weight and 25 percent to the cost of the airframe.

CONTROLS

Helicopters larger than 10 tons require boosted controls. Others may use simple controls

CREW AND PASSENGERS

Helicopters larger than 10 tons require a pilot and copilot Helicopters (of any size) that are armed require a copilot/gunner. Pilots and copilot/gunners are accommodated in simple cockpits Troop carrier assault helicopters and search-and-rescue helicopters often have additional observer/gunners manning flexible mounted weapons and carrying out miscellaneous duties in the main cabin.

Passenger seats may be added in groups of four as with fixed-wing aircraft, with each group weighing 3 tons Fully armed and equipped troops may be carried with 1 ton allocated for each soldier.

CARGO

Helicopters may carry one ton of cargo internally for every ton of available cargo space Additional cargo may be carried as an external sling load provided its weight added to the helicopter's weight does not exceed available lift

Helicopters may be designed with no internal cargo space

and function as flying cranes that carry their entire cargo externally

Other helicopters may be designed with large internal cargo holds and rear ramps so they can carry vehicles or a large number of troops.

WEAPONS MOUNTS

Helicopters may be fitted with any weapon mount from the Weapon Mounts Table as long as the mounts and their load do not exceed available lift. These mounts may include plumbed hardpoints permitting the use of external fuel tanks for extended range or endurance Specialized gunship helicopters often mount hardpoints and weapons on stub wings extending from the fuselage

WEAPONS

Nearly any weapon carried by a fixed-wing aircraft may be carried by a helicopter Machineguns and autocannons may be fitted in fixed, forward-firing mounts, flexible mounts, or, in Pre-Stellar tech levels, in remote turrets Rocket pods or missiles may be attached to external hardpoints under stub wings or on the fuselage exterior These missiles include anti-armor tac missiles, as well as air-to-air missiles for use against hostile helicopters and in self-defense against hostile fixed-wing aircraft Free-fall bombs are generally not carried by helicopters, however, because these aircraft may have trouble avoiding blast damage due to their relatively slow speeds and low operating altitudes. Helicopters assigned to or supporting wet navies also may carry antisubmarine/antiship torpedoes in addition to acoustic submarine detection gear

ELECTRONICS

Radios, radar, electronic countermeasures, and navigation aids may be installed aboard helicopters Complete lists of available communications, detection, and ECM systems are found in the **MegaTraveller Referee's Manual**

FUEL

Fuel capacity is measured in liters Hydrocarbon or alcohol-based aircraft fuels cost Cr.25 per liter. Each ton of aircraft allocated to fuel storage will carry 1000 liters of fuel This is the internal fuel capacity. Drop tanks with capacities from 500 to 2000 liters are available to increase range and/or endurance

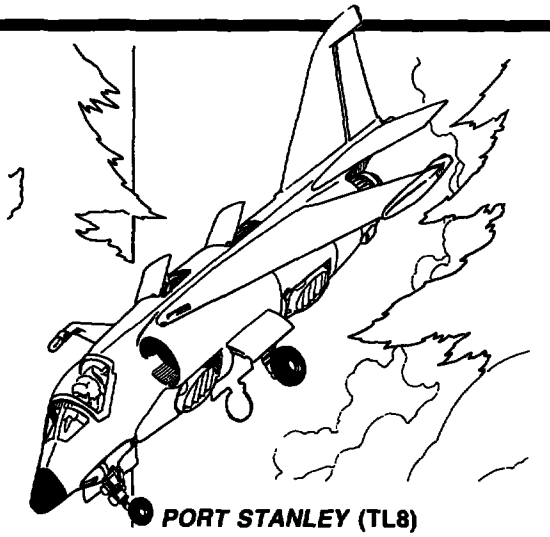
An air-to-air refueling probe may be included in a helicopter design This lets the helicopter refuel in flight from a tanker aircraft or another aircraft carrying a refueling pod as an external store.

HELICOPTER RATINGS

Once you have designed your helicopter, you need to determine and record its ratings. These include lift, weight, speed, damage points, fuel use, endurance, range, price, and volume.

Lift: Calculate lift by multiplying your total engine power output by four and dividing the result by 1000. This gives you the amount of lift in tons If you are designing a helicopter with tandem main rotors add 20 percent to the total lift figure

Weight: Add up the weight of each component in your helicopter, including engine(s), transmission, gearbox and rotor assembly, airframe, passenger and crew accommodations,



***PORT STANLEY* (TL8)**
VTOL MEDIUM ATTACK AIRCRAFT

CraftID: VTOL Attack Aircraft, TL8, Cr1,170,000
Hull: 40/100 Disp = 16, Weight Loaded = 10tons, Airframe = Transonic VTOL
Power: 4/10 Gas Turbine × 1, .60 Mw, Endurance = 2 hours, 20 min on internal fuel, 5 hours, 15 min with internal fuel, 2000liter drop tank, and two 1500liter drop tanks
Loco: Basic Turbofan × 1, Thrust = 18tons, Cruise = 784, Top = 1045, Min = 0, NOE = 120, Agility = 6
Commo: Radio, Regional × 1 Sensor = TL8 Avionics
Off: 30mm autocannon × 2 fixed, forward-firing w/100 rounds per gun, Plumbed Fuselage Hardpoint, Plumbed Inboard Wing Hardpoints × 2, Outboard Wing Hardpoints × 4, Maximum External Stores = 4tons; Nuclear capable
Control: Boosted, 1 Maneuver Point. Computer = 1, HUD
Accom: Crew = 1 (Pilot), Oxygen tanks and mask, Cockpit armor and ejection seat
Other: Fuel = 4020liters Additional 2000liter drop tank may be carried beneath fuselage, and two additional 1500liter tanks may be carried on the inboard wing hardpoints.

A very popular attack aircraft design because of its VTOL capability, weapons load, endurance, and agility. This design has proven to be an outstanding fighter as well as an attack aircraft Its in-flight vectored thrust capability yields high agility and the ability to survive in air-to-air combat. Only its relatively high price precludes it from becoming widely used by mercenary air units However, because this design is an ideal close air support aircraft capable of operating without airstrips from an open patch of ground, some of the wealthier mercenary ground regiments and brigades may have a small number of these organic to their aviation companies. This design is also prized for its rugged construction and reliability.

AIRFRAMES

Tech Code	*TL*	*Type*	*Weight*	*Price*	*Max Speed*	*Efficiency*
Industrial	4	Simple	.01	10	300	.85
Pre-Stellar	6	Fast Subsonic	05	20	800	90

Units: *Weight.* Tons per ton of aircraft *Price·* Thousands of credits per ton of aircraft *Max Speed:* Maximum design (do not exceed) speed for airframe type *Efficiency* Airframe efficiency used in determining maximum and cruising speeds.

Seaplane airframes add 5% to weight and 25% to cost of the airframe.

HELICOPTER ENGINES

Tech Code	*TL*	*Type*	*Output*	*Weight*	*Fuel*	*Cost*	*Airframe*
Industrial	5	Light Reciprocating	300	0 5	175	3000	Simple
Pre-Stellar	6	Reciprocating	1250	1 0	375	20,000	Simple
Pre-Stellar	7	Light Gas Turbine	400	0.25	500	50,000	Simple
Pre-Stellar	7	Gas Turbine	1000	0.5	800	75,000	Simple
Pre-Stellar	8	High Performance Gas Turbine	3300	2.0	1600	200,000	Simple

Units: *Output:* Kilowatts *Thrust:* Tons. *Weight·* Tons *Fuel:* Consumption in liters/hour. *Cost.* Credits. *Airframe:* Highest speed airframe with which this engine can be used.

Engine Output: Multiply the total engine output rating (in kilowatts) by four to calculate the lift generated by each engine Increase the lift rating of a helicopter using tandem main rotors by 20%.

This figure is the maximum takeoff weight

TRANSMISSIONS AND ROTORS

Abbrev	*Type Gearbox*	*Weight*	*Notes*
MTR	Main and Tail Rotor	50%	
TAN	Tandem Main Rotors	75%	120% lift
COAX	Coaxial Main Rotors	50%	

Light transmission and rotor assemblies (20% of engine weight) are available for helicopters weighing two tons or less

Gearboxes and transmissions, including rotors, cost Cr10,000 per ton.

Reduce gearbox and transmission weight by 10% per tech level for each tech level above 6 TL6 gearbox and transmission weight is 100%; TL7 gearbox and transmission weight is 90%; TL8 gearbox and transmission weight is 80% The lightest gearbox and transmission assemblies are 50% of the table value

CONTROLS TABLE

Tech Code	*TL*	*Type*	*Power*	*MP*	*Weight*	*Price*
Industrial	5	Simple	0.0	0	.05	20
Pre-Stellar	6	Boosted	1	1	.10	50
Pre-Stellar	6	Powered	1	2	.15	100
Pre-Stellar	6	Fly by Wire	2	4	20	200
Pre-Stellar	6	Computer-Enhanced Fly-by-Wire	.3	6	15	1000

Units: *Maneuver points. Weight:* Weight multiplier (weight multiplier × aircraft weight = weight of controls) *Price:* Price in thousands of credits per ton of controls

CREW/PASSENGER ACCOMMODATIONS

Tech Code	*TL*	*Type*	*Capacity*	*Volume*	*Weight*	*Price*
Industrial	5	Simple Cockpit	1	2	.10	5000
Industrial	5	Crew Station	1	2	.10	5000
Industrial	5	Passenger Section	4	8	30	5000
Industrial	5	Troop Section	1	2	.10	500
Pre-Stellar	6	Complex Cockpit	1	4	25	50,000
Industrial	5	Cockpit Armor	(1)	2	+ 10	5000
Pre-Stellar	6	Advanced Ejection Seat	(1)	1	+.25	10,000
Pre-Stellar	6	Rocket Escape Pod	(1)	1	+ 50	15,000

Units: *Capacity·* Number of persons each station will hold (items with capacity in parentheses may be added to a cockpit or station at the designer's option) *Weight:* Tons *Cost·* Credits.

Advanced ejection seat and rocket escape pod must also be armored in order to permit installation. A standard ejection seat cannot be installed in a rotary wing aircraft.

A helicopter requires a pilot. If larger than 10 tons, it requires a pilot and copilot

LIFE SUPPORT TABLE

TL	Description	Volume	Weight	Price	Units
5	Basic Environment (lights and heat)	0.005	0 005	Cr10	Per kiloliter of occupied space

Units: *Volume* Kiloliters (one kiloliter = one cubic meter) *Weight·* Kilograms. *Price:* Credits

WEAPON MOUNTS TABLE

Tech Code	TL	Type	Drag	Weight	Capacity	Price
Industrial	5	Fixed Mount	0	0.00	1 slug thrower/energy weapon	0
Industrial	5	Launch Rail	(1)	.01	1 100kg missile/rocket	100
Industrial	5	Flexible Mount	1	.005	1 heavy machinegun	100
Industrial	5	Fuselage Hardpoint	(1)	02	2000 kg	2000
Industrial	5	Plumbed FHP	(1)	03	2000 kg or 2000-liter tank	2500
Industrial	5	Inboard Wing Hardpoint	(1)	02	1500 kg	2000
Industrial	5	Plumbed IWHP	(1)	.03	1500 kg or 1500-liter tank	2500
Industrial	5	Triple Bomb/Missile Rack	(2)	.05	3 bombs/rocket pods/missiles	4000
Industrial	5	Multiple Bomb/Missile Rack	(4)	10	6 bombs	8000
Industrial	5	Internal Bomb Bay	0	1 00	1 ton of bombs per ton of bomb bay	15,000
Industrial	5	Turret	4	.40	2 heavy machineguns	5000
Industrial	5	Remote Turret	2	50	4 heavy machineguns	50,000
Pre-Stellar	6	Turret Autocannon	2	50	2 autocannons/1 multibarrel	50,000
Pre-Stellar	6	Remote Turret	1	.50	1 multibarrel autocannon	20,000

Units: *Drag* Drag points (values in parentheses only affect loaded aircraft) *Weight* Tons *Cost:* Credits Helicopter weapons mounts that assume wings also assume the mount produces rudimentary wings to serve the purpose

Inboard hardpoints are located between the wing root and half the distance to the wingtip. Outboard hardpoints are located between the wingtip and half the distance to the wingtip Helicopters may have no more than two inboard and two outboard hardpoints under each wing.

WEAPONS

A wide variety of weapons may be installed aboard aircraft. Ordnance and its uses are discussed in detail in the "Aircraft Ordnance" chapter

ELECTRONICS

Electronic systems may be installed on the aircraft Complete lists of available communications, detection, and ECM systems are found in the **MegaTraveller Referee's Manual**. Pod-mounted systems are discussed in the ordnance section of this rules module

CARGO

Excess lift after all other components are assigned may be utilized to carry cargo

Internal: Internal space must be allocated as part of the structure

External: Excess lift not allowed for in the structure may be carried by external sling.

FUEL

Allocate one ton per 1000 liters of fuel

MAXIMUM SPEED TABLE

G Rating	Max Speed	G Rating	Max Speed	G Rating	Max Speed
01	60	06	85	.15	180
02	65	07	90	.20	240
03	70	08	100	25	300
.04	75	09	110		
05	80	0 1	120		

Units: *G:* G rating of helicopter *Maximum Speed* Maximum speed of helicopter in kilometers per hour

Aircraft may not exceed maximum airframe design speed (see Airframes Table) even if the maximum G rating speed is higher

Cruising speed is 75% of maximum speed.

Note on G Rating: The difference in G rating between two aircraft in combat is used as a positive or negative DM in gaining advantage

weapons mounts, internal weapons, fuel, cargo, and electronics Subtract weight from lift. The resulting figure is the additional weight available for external weapons and sling load cargo (loaded weight)

Thrust: A helicopter's thrust is equal to 25 times its total lift rating Thrust is listed in tons

G Rating: A helicopter's G rating determines its top speed. Calculate the G rating by dividing the helicopter's total thrust by its weight and multiplying the result by the airframe efficiency factor for the airframe type listed on the Airframes Table

Speed: Find the helicopter's maximum speed by locating its G rating on the Maximum Speed Table and its corresponding speed in kilometers per hour Do this using both G ratings to obtain maximum speeds for both clean and loaded weights Maximum speed cannot be greater than 300 kilometers per hour because of rotor unloading

Maximum speed is reduced by drag Note the total number of drag points from the Weapon Mounts Table for the helicopter with and without external stores. Reduce the maximum speed by one percent for each drag point Each ton of sling load cargo creates 10 drag points

Cruising Speed: A helicopter's cruising speed is 75 percent of its maximum speed

Minimum Speed: A helicopter has no minimum speed

NOE Speed: Only VTOL aircraft and helicopters fly the contours of the ground at NOE speeds of no more than 40 kilometers per hour without radar and 120 kilometers per hour with radar

Volume: You need to calculate the helicopter's volume to determine its damage point rating Simply multiply its weight by 60 to determine its volume in cubic meters This volume is also the space needed to ship a helicopter in combat-ready condition inside another vehicle such as a starship. If its rotors have been folded or removed for ease of transport, multiply its weight by 20 to determine shipping volume

Damage Points: Calculate the damage point ratings for the helicopter's airframe and its engines. The damage point ratings for each component consist of two numbers separated by a slash The first number shows the number of damage points needed to make the component inoperable, the second to destroy the component See "Air-to-Air Combat" later in this module for a detailed discussion of damage effects.

Calculate the airframe's first damage point figure by dividing the helicopter's volume by 15. Then calculate the second damage point figure by dividing the volume by six A 20-ton helicopter with a volume of 1200 cubic meters would have an airframe damage rating of 80/200

Each engine has its own damage rating of 4/10.

Fuel Consumption: The fuel use of each engine type is listed in liters per hour on the Helicopter Engines Table. Multiply the figure for the installed engine type by the number of engines installed on the helicopter to determine total hourly fuel use.

Endurance: Endurance is the number of hours a helicopter can remain aloft. Divide the total number of liters of fuel on board (including fuel in drop tanks) by the fuel use rate to determine endurance

Range: Range is the distance a helicopter can fly at cruising speed. Calculate range by multiplying endurance by cruising speed. Do this for both clean cruising speed and loaded cruising speed

Price: Total the price of the helicopter's components to determine its total price

HELICOPTER DESIGN CHECKLIST

1. Select the type and number of engines from the Helicopter Engines Table.

2. Total the engine power output in kilowatts

3. Multiply the kilowatt rating by four The result is the helicopter's maximum takeoff weight in kilograms. Divide by 1000 to calculate the maximum takeoff weight in tons

4. Determine rotor configuration, and gearbox and transmission weight Adjust for tech level Determine gearbox and transmission price

5. Determine airframe weight and cost

6. Select type of controls

7. Determine crew and passenger accommodations Include life support

8. Allocate cargo capacity, both internal and with external sling

9. Select weapon mounts if the helicopter is to be armed or is to carry external fuel tanks

10. Select weapons Remember that the combined weight of weapons and helicopter must not exceed maximum takeoff weight

11. Select electronics

12. Allocate tonnage to fuel

13. Total all weights and prices. Total weight must not exceed maximum takeoff weight determined in step 3

HELICOPTERS FOR THE DUKE

The Duke of Regina has a subordinate fief on Yori (Regina/Spinward Marches 1910 C360757-A), and he maintains a small troop unit there which can reinforce local police and provide services to protect his property and the population Recently, the unit has developed a need for a search and rescue vehicle to conduct patrols over the broad deserts which surround the major population centers The mission specification describes a rotary-wing aircraft which is tentatively called *Rotary-X*

Rotary-X: This rotary-wing craft is to be a TL10 medium regional helicopter suitable for civilian missions and reinforcement of military forces. It should be able to carry a payload of 5 tons

The Design Process

Rotary-X was designed in the following manner

Weight: The helicopter must be able to carry a payload of 5 tons Payload is generally not more than 35 percent of total weight. The weight of the helicopter is planned as 14 tons (which counts internal payload).

Airframe: The helicopter requires only a simple airframe The designers do not see the need for any more sophisticated airframe The airframe weighs in at 0 14 tons (0 01 tons per ton of aircraft) and costs Cr140,000 (Cr10,000 times 14 tons) It will have a maximum speed of 300 kilometers per hour (if its engines can produce it). The airframe efficiency is 0 85 No modifications for seaplane ability are made

Engines: The helicopter requires a lift of 14 tons (14,000 kilograms), this number, divided by four, is the required output

of the helicopter engines in kilowatts. 3500 kilowatts. If the helicopter uses tandem main rotors, lift is increased by 20 percent, thus lift of 14,000 kilograms requires engines which produce only 11,666 kilograms of lift, or 2917 kilowatts. Three gas turbines are allocated for the engines. The trio of engines produces 3000 kilowatts of power. Total engine weight is 1.5 tons; cost is Cr225,000, fuel consumption is 2400 liters per hour. Thrust is 12,000 kilograms (12 tons) which will increase to 14,400 kilograms when used with tandem main rotors

Transmissions and Rotors: The designers have selected tandem main rotors for this helicopter. The system weighs 75 percent of the engine weight: 1 125 tons The transmission is produced at TL10, allowing a reduction in weight to 60 percent of this amount: Transmission and rotor weight is 0 675 tons The transmission and rotor assembly costs Cr6750.

Controls: Because the helicopter weighs more than 10 tons, it requires boosted controls The control installation requires 1 4 tons (0 10 times 14 tons) of boosted controls and costs Cr70,000 The controls provide one maneuver point and require 0.14 megawatts of power.

Accommodations: The helicopter requires a pilot and a copilot/gunner. Mission requirements call for an additional two crew and the ability to carry up to 12 people in addition to the crew. The helicopter is fitted with two simple cockpits (0 20 tons, Cr10,000), two crew stations (0 20 tons, Cr10,000), and one passenger sections (0.40 tons, Cr5,000).

The volume of the accommodations installation is 32 kiloliters

Life Support: No life support is furnished

Weapons Mounts: The designers allocate to the aircraft a basic array of protective weaponry one remote turret (0 5 tons, Cr50,000, two drag points) and four launch rails (0 04 tons, Cr400, four drag points when loaded).

Electronics and Avionics: The designers select the following electronic equipment for the aircraft. All Weather VDistant Radar-9 (0.008 tons, 0.008 megawatts, 0.016 kiloliters, Cr12,000), Continental Radio Communicator-A (.0013 tons, 0 0013 megawatts, 0.0026 kiloliters, Cr5000).

The engine can provide power in megawatts up to two percent of its thrust output in tons before transmission is affected. This aircraft's thrust is 12 tons; its power for accessories and electronics is .24 megawatts (more than enough to power the electronics, avionics, and controls on the helicopter)

Cargo: Cargo capacity is allocated at 5 tons.

Maneuver Enhancement: No maneuver enhancement is provided

Fuel: Fuel tankage for the aircraft must allow it to achieve its mission specification range of at least 500 kilometers at a speed of 200 kilometers per hour. Because fuel consumption is 1200 liters per hour, the aircraft must carry 3000 liters (3.0 tons) of fuel.

Rating

The *Rotary-X* must now be rated and described.

Rated Weight: The helicopter's clean weight (excluding external stores) totals 13.5143 tons. Its maximum takeoff weight (including four 100-kilogram missiles on the external launch rails) is 13.9143 tons

Lift: The three 1000-kilowatt engines produce 12,000 kilograms of raw thrust; the tandem main rotors increase this by 20 percent to 14.4 tons of lift.

Thrust: The helicopter thrust is equal to 0.25 times lift: 3.6 tons.

G Rating: The G rating for the helicopter is 0.22 clean; the loaded G rating is nearly identical.

Speed: The helicopter maximum speed is determined from the Maximum Speed Table as 240 kilometers per hour. This speed does not exceed the maximum speed the airframe is capable of.

Cruising Speed: The helicopter cruising speed is 180 kilometers per hour (75 percent of clean maximum speed).

Minimum Speed: The helicopter has no minimum speed.

NOE Speed: The helicopter is equipped with radar and can fly at 120 kilometers per hour in NOE mode.

Volume: The helicopter volume is computed as 60 times helicopter weight (13.9143), or 835 kiloliters. Displacement of the helicopter is computed as kiloliters divided by 13.5 (which produces the result in displacement tons) 62 tons.

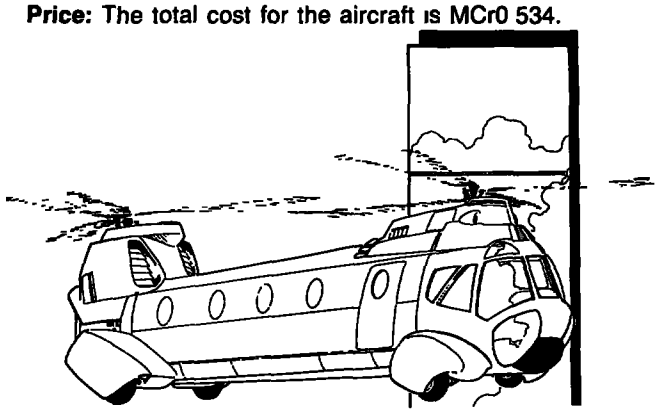
Damage Points: The helicopter airframe damage point rating is 56/139 (835/15)/(835/6). Each of the three helicopter engine damage point ratings is 4/10.

Fuel Use: Fuel use of the aircraft is 2400 liters per hour.

Endurance: The aircraft carries 3000 liters of fuel, it can remain aloft for three hours.

Range: The aircraft can fly up to 540 kilometers before refueling.

Price: The total cost for the aircraft is MCr0 534.



***LOMBARD* (TL10) HELICOPTER**

CraftID: Patrol Helicopter, TL10, MCr0.534
Hull: 56/139, Displacement = 62, Weight Loaded = 13.9143 tons, Airframe = Simple, Armor = none
Power: 0 24 Mw (drawn from engines), Endurance = 3 hours
Loco: 4/10, 4/10, 4/10 Gas Turbines, Thrust = 3 6 tons, Cruise = 180 kph, Top = 240 kph
Commo: Continental Radio Communicator-A
Sensors: All Weather VDistant Radar-9
Off: Launch Rails × 4
Control: Boosted, 1 Maneuver Point
Accom: Crew = 4 (Pilot, Copilot/Gunner, Crew1, Crew2), Simple cockpit × 2, Crew station × 2
Other: 3000 liters internal fuel, 5 tons cargo, passenger section (4 passengers)
Meets *Rotary-X* mission specification

Airship Design

Adventurers may encounter, ride aboard, and pilot lighter-than-air aircraft on low- to medium-tech worlds. These may range from unpowered balloons to giant airships used as scheduled passenger liners or military reconnaissance and bombardment aircraft In fact, adventurers may want to purchase their own lighter-than-air aircraft for use as exploration vehicles on low- to medium-tech worlds.

LIFT

Lift generated by lighter-than-air gases—most commonly hydrogen, helium, or heated air—and the volume needed to hold the lifting gases are the two constraints of airship design

In Atmosphere Type 6 or 7 (Standard Atmosphere), 1000 cubic meters of hydrogen in a lift envelope provides 1 21 tons of lift, 1000 cubic meters of helium in a lift envelope provides 1 13 tons of lift, 1000 cubic meters of air (heated to twice ambient temperature) provides one ton of lift

Lift is increased 20 percent in Atmosphere Type 8 or 9; lift is insufficient to produce a working airship in Atmosphere 5 or less

Costs: Cr100 per cubic meter of hydrogen, Cr300 per cubic meter of helium (if available—roll 3+ on 1D for helium to be available on a given world)

THE ENVELOPE

Determine the volume of the balloon or the airship's main fuselage, known as the envelope. Then calculate its lifting capacity using the above information. Airship envelopes may be nonrigid and made of coated fabric, or rigid and made of metal

Envelope Characteristics: A rigid envelope is constructed of metal with a fabric covering, it costs Cr50,000 per 1000 cubic meters of volume and weighs 0.8 tons per 1000 cubic meters. A nonrigid envelope is constructed of coated fabric without the metal reinforcement, it costs Cr10,000 per 1000 cubic meters of volume and weighs 0.5 tons per 1000 cubic meters.

Useful lift is calculated by subtracting the weight of the envelope from the lift of the volume of the envelope For example, 1000 cubic meters of nonrigid airship envelope using helium produces 1.13 tons of lift; the envelope itself weighs 0.5 tons The 1000-cubic-meter envelope produces 0 63 (1.13 − 0.5) tons of useful lift

BALLOONS

Lighter-than-air aircraft may be either unpowered balloons that drift with the wind, or powered airships.

For a balloon, allocate one-tenth of a ton per passenger in a suspended gondola If the balloon is lifted with hot air, allocate 05 ton for its burner system and .05 ton for four fuel gas cylinders capable of keeping a hot air balloon aloft for four hours

Costs: Gondola, Cr1000, hot air burner system Cr1000, fuel gas cylinders Cr20 per cylinder. Each cylinder contains enough hydrocarbon-based fuel gas to keep a hot air balloon aloft for one hour

Unpowered balloons need no controls They require one pilot.

ENGINES

Powered airships require either propeller or turboprop engines for propulsion They need at least one ton of thrust for each 10,000 cubic meters of volume Airships powered by two engines or less may have them attached to the main control car. Airships powered by more than two engines require individual engine cars for each engine in addition to the first two. These weigh .25 tons each Airships may be powered by any propeller or turboprop engines on the Airship Engines Table The table includes a high-efficiency diesel engine usable only by airships

AIRFRAME

In addition to the envelope, airships require one or more cars suspended beneath the envelope to hold crew and passengers Rigid airships may have crew and passenger accommodations inside the main envelope as well Airship cars require simple airframes They weigh 01 ton per ton of airship weight and cost Cr10,000 per ton of aircraft (excluding envelope)

CONTROLS

Powered airships require the equivalent of simple controls Allocate one ton of controls for every 10,000 cubic meters of airship volume Airship controls are priced as simple aircraft controls.

CREW AND PASSENGERS

Crewmembers and passengers in unpowered balloons fly in an open gondola suspended beneath the balloon Airship crew and passengers fly in one or more cars suspended beneath the fuselage Some larger airships may have passenger and crew accommodations within their fuselages

Airships require at least two pilots, a navigator, a flight engineer, and two engineering technicians stationed in the control gondola at crew stations, and one engineering technician in each engine car. Airships designed to remain aloft more than

12 hours require enough relief crewmembers to stand three eight-hour watches every 24 hours

Military airships may also carry a bombardier and one or more gunners, depending on their weapon loads

One steward is required for every 10 passengers Passengers may be accommodated in standard passenger seating if flights last less than eight hours Otherwise, passengers require single or double staterooms. A galley, dining area, and other common areas must be included aboard long-distance airships with one-tenth of a ton allocated per passenger

LIFE SUPPORT

Because airships generally fly beneath 3000 meters, no life support systems are normally required However, if a balloon or airship is to fly higher than 3000 meters (5000 meters in a dense atmosphere, 1500 meters in thin), it should be equipped with oxygen tanks and masks for each crewmember or passenger, or with sealed crew and passenger compartments and basic life support.

WEAPONS MOUNTS

The number of weapons mounts should be determined and the type selected from the Weapon Mounts Table Airship weapons are usually simple gravity bombs or antisubmersible depth charges mounted on hardpoints on the control car or beneath the airship fuselage. Each hardpoint will hold up to 500 kilograms of weapons Airships may have internal bomb bays (one ton of bomb bay holds one ton of bombs)

Airships may be armed with machineguns

ELECTRONICS

Electronic systems may be installed on an airship. These include radios, radar, and navigation aids Some airships are designed as radar pickets capable of remaining on patrol more than 200 hours

CARGO

Airships may have weight allocated to cargo Each ton of cargo capacity enables the aircraft to carry one ton of cargo.

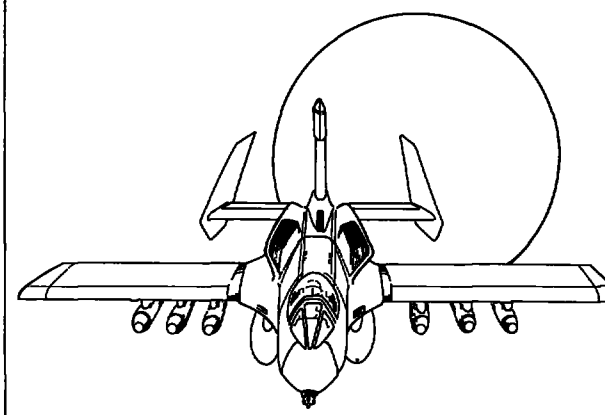
FUEL

Fuel capacity is measured in liters Hydrocarbon or alcohol-based aircraft fuels cost Cr.25 per liter. Each ton of airship allocated to fuel storage will carry 1000 liters of fuel.

AEROSTATS

Aerostats are massive lighter-than-air aircraft available at Early Stellar technology levels which are used as permanent aerial habitats Aerostats may be several kilometers in diameter and are supported by solar-heated hot air cells Solar power cells are used to accumulate electricity for maintaining hot air cell temperatures in darkness, to power electric station-keeping motors, and to supply power for on-board uses. Surplus power may be sent to ground receiving stations via microwave

These habitats float in the stratosphere where they can absorb a maximum amount of solar energy and remain free from any dangerous storms. Aerostats may accommodate several thousand dwellers They are used as meteorological research bases, industrial platforms, and residences floating above



BITBURG (TL8) HEAVY ATTACK AIRCRAFT

CraftID: Attack Aircraft, TL8, Cr949,000
Hull: 60/100 Disp. = 30, Weight Loaded = 15tons, Airframe = Transonic
Power: 4/10 Gas Turbine × 2, 120 Mw, Endurance = 2 hours, 15 min on internal fuel, 3 hours, 10 min with internal fuel and two 1500 liter drop tanks
Loco: Basic Turbofan × 2, Thrust = 36tons, Cruise = 748, Top = 1045, Min = 176, Agility = 6
Commo: Radio, Regional × 1
Off: 30mm 6-barrel autocannon fixed, forward-firing w/1000 rounds, Fuselage Hardpoint, Plumbed Inboard Wing Hardpoints × 2, Inboard Wing Hardpoints × 2, Outboard Wing Hardpoints × 6, Maximum External Stores = 6tons; Nuclear capable
Control: Boosted, 1 Maneuver Point
Accom: Crew = 1 (Pilot), Oxygen tanks and mask, Armored cockpit and ejection seat
Other: Fuel = 7380liters. Two 1500liter drop tanks may be carried on the inboard wing hardpoints. Refueling probe fitted for fuel transfer from aerial tanker or buddy fuel pack mounted on another aircraft

One of the most effective ground attack aircraft in the antiarmor fighting vehicle role. This aircraft's 30mm hypervelocity autocannon can punch through all but the heaviest vehicular armor with its depleted uranium KEAP ammunition. Tac missiles launched by this aircraft take care of the rest. Because of cost, this aircraft is rarely operated by mercenary units However, it is a mainstay of many COACC close air support squadrons.

WEIGHT AND LIFT ENVELOPE

Lift: Lift generated by lighter-than-air gases—most commonly hydrogen, helium, or heated air—and the volume needed to hold the lifting gases are the two constraints of airship design.

In Atmosphere Type 6 or 7 (Standard Atmosphere), 1000 cubic meters of hydrogen in a lift envelope provides 1 21 tons of lift; 1000 cubic meters of helium in a lift envelope provides 1 13 tons of lift, 1000 cubic meters of air (heated to twice ambient temperature) provides one ton of lift

Lift is increased 20 percent in Atmosphere Type 8 or 9; lift is insufficient to produce a working airship in Atmosphere 5 or less

Costs: Cr100 per cubic meter of hydrogen, Cr300 per cubic meter of helium (if available—roll 3+ on 1D for helium to be available on a given world)

The Envelope: Determine the volume of the balloon or the airship's main fuselage, known as the envelope Then calculate its lifting capacity using the above information Airship envelopes may be nonrigid and made of coated fabric, or rigid and made of metal

Envelope Characteristics: A rigid envelope is constructed of metal with a fabric covering, it costs Cr50,000 per 1000 cubic meters of volume and weighs 0.8 tons per 1000 cubic meters A nonrigid envelope is constructed of coated fabric without the metal reinforcement; it costs Cr10,000 per 1000 cubic meters of volume and weighs 0 5 tons per 1000 cubic meters

Useful lift is calculated by subtracting the weight of the envelope from the lift of the volume of the envelope For example, 1000 cubic meters of nonrigid airship envelope using helium produces 1 13 tons of lift, the envelope itself weighs 0 5 tons The 1000-cubic-meter envelope produces 0.63 (1 13 – 0 5) tons of useful lift

Balloons: For a balloon, allocate .10 of a ton per passenger in its suspended gondola If the balloon is lifted with hot air, allocate .05 of a ton for its burner system and .05 of a ton for four fuel gas cylinders capable of keeping a hot air balloon aloft for four hours For a balloon the costs are· gondola, Cr1000; hot air burner system, Cr1000; fuel gas cylinders, Cr20 per cylinder Each cylinder contains enough hydrocarbon-based fuel gas to keep a hot air balloon aloft for one hour

AIRFRAMES

Tech Code	*TL*	*Type*	*Weight*	*Price*
Industrial	4	Simple	01	10

Units: *Weight:* Tons per ton of aircraft. *Price:* Thousands of credits per ton of aircraft.

Seaplane airframes add 5% to weight and 25% to the cost of the airframe For airships, a seaplane airframe allows the craft to land on water.

AIRSHIP ENGINES

Tech Code	*TL*	*Type*	*Thrust*	*Weight*	*Fuel*	*Cost*	*Airframe*
Industrial	5	Basic Propeller (Diesel)	2	1	15	15,000	Simple
Industrial	5	Basic Propeller	2	1	150	5000	Fast Subsonic
Industrial	5	Light Propeller	1	0 5	75	3500	Simple
Pre-Stellar	6	High Performance Propeller	6 4	1	300	20,000	Fast Subsonic
Pre-Stellar	6	High Performance Turboprop	15	1	1200	100,000	Fast Subsonic
Pre-Stellar	7	Basic Turboprop	12	1	960	75,000	Fast Subsonic
Pre-Stellar	7	Light Turboprop	4	0 5	400	50,000	Fast Subsonic
Pre-Stellar	7	Basic Turbofan	18	1	1680	175,000	Supersonic
Pre-Stellar	7	High Performance Turbofan	21	1	1920	200,000	Supersonic
Pre-Stellar	8	High Bypass Turbofan	50	4	3840	250,000	Supersonic

Units: *Thrust:* Tons *Weight.* Tons *Fuel* Consumption in liters/hour *Cost.* Credits. *Airframe·* Highest speed airframe with which this engine can be used.

Engine Cars: One or two engines may be attached to the main airframe More than two engines require individual engine cars for each engine in addition to the first two Engine cars weigh 25 tons each

CONTROLS TABLE

Tech Code	*TL*	*Type*	*Airframe*	*MP*	*Weight*	*Price*
Industrial	5	Simple	Simple	0	.05	20

Units: *Airframe:* Highest speed airframe this type of control may be used with *MP:* Maneuver points *Weight·* Weight multiplier (weight multiplier × aircraft weight = weight of controls) *Price* Price in thousands of credits per ton of controls

CREW/PASSENGER ACCOMMODATIONS

Tech Code	*TL*	*Type*	*Capacity*	*Volume*	*Weight*	*Price*
Industrial	5	Crew Station	1	2	10	5000
Industrial	5	Passenger Section	4	2	30	5000
Industrial	5	1st-Class Passenger Section	2	2	30	5000
Industrial	5	Passenger Stateroom	2	2	1 00	50,000
Industrial	5	Passenger Amenities (per passenger)	—	2	10	1000

Units: *Capacity:* Number of persons each station will hold. *Weight:* Tons. *Cost:* Credits.
Passenger amenities provides a galley, dining area, and other common areas

LIFE SUPPORT TABLE

TL	*Description*	*Volume*	*Weight*	*Price*	*Units*
5	Oxygen Tanks and Masks	0 010	0.010	Cr100	Per person
5	Basic Environment (lights and heat)	0 005	0.005	Cr10	Per kiloliter of occupied space
5	Basic Life Support (sealed, atmosphere)	0 050	0.050	Cr300	Per kiloliter of airframe

Units: *Volume·* Kiloliters (one kiloliter = one cubic meter). *Weight* Kilograms *Price* Credits *Units:* Application of price

WEAPON MOUNTS TABLE

Tech Code	*TL*	*Type*	*Drag*	*Weight*	*Capacity*	*Price*
Industrial	5	Fixed Mount	0	0.00	1 slug thrower/energy weapon	0
Industrial	5	Launch Rail	(1)	01	1 100 kg missile/rocket	100
Industrial	5	Flexible Mount	1	005	1 heavy machinegun	100
Industrial	5	Fuselage Hardpoint	(1)	02	500 kg	2000

WEAPONS

A wide variety of weapons may be installed aboard airships Ordnance and its uses are discussed in detail in the "Aircraft Ordnance" chapter

ELECTRONICS

Electronic systems may be installed on the airships Complete lists of available communications, detection, and ECM systems are found in the **MegaTraveller Referee's Manual**. Pod-mounted systems are discussed in "Aircraft Ordnance "

CARGO

Allocate one ton per ton of cargo

FUEL

Fuel capacity is measured in liters. Hydrocarbon or alcohol-based aircraft fuels cost Cr.25 per liter. Each ton of airship allocated to fuel storage will carry 1000 liters of fuel

MAXIMUM SPEED TABLE

G Rating	*Max Speed*	*G Rating*	*Max Speed*	*G Rating*	*Max Speed*
01	60	06	85	15	180
02	65	07	90	20	240
03	70	.08	100	25	300
04	75	09	110		
05	80	0 1	120		

Units: *G* G rating of aircraft *Maximum Speed* Maximum speed of aircraft in kilometers per hour

Aircraft may not exceed maximum airframe design speed (see Airframes Table) even if the maximum G rating speed is higher

Cruising speed is 75% of maximum speed

Note on G Rating: The difference in G rating between two aircraft in combat is used as a positive or negative DM in gaining advantage

planets with inhospitable surfaces. Many aerostats are large enough to launch and recover subsidiary aircraft from landing decks around their equators

Aerostats are quite rare and have been superseded at higher technology levels by cities built on massive grav platforms.

AIRSHIP RATINGS

Once you have designed your airship, you need to determine and record its ratings. These include volume, lift, weight, speed, damage points, fuel use, endurance, range, and price.

Volume: Determine the volume of the balloon or the airship's main fuselage, known as the envelope If you are designing an airship, determine if it is rigid or nonrigid.

Lift: Calculate lift by multiplying your volume by 1.21 if you are using hydrogen as a lifting gas or by 1.13 if you are using helium. Multiply the volume by one if you are designing a hot air balloon. This yields the total lift in kilograms. Divide this by 1000 to determine total lift in metric tons.

Calculate the weight of the envelope and any gas cells in metric tons by dividing the volume by 1000 and multiplying by 0 88 Subtract the weight of the envelope from the total lift to obtain usable lift remaining for gondolas, engines, passenger and crew accommodations, and weapons.

Weight: Add up the weight of each component in your airship, including engine(s), controls, airframe, passenger and crew accommodations, weapon mounts, fuel, cargo, and electronics This figure cannot exceed usable lift if the lighter-than-air aircraft is to fly

Thrust: Multiply the thrust rating for the engine type used by the number of engines on the airship for the total thrust rating

G Rating: A airship's G rating determines its top speed Calculate the G rating by dividing the airship's total thrust by its weight and multiply by 85, the efficiency rating for a simple fuselage.

Speed: Find the airship's maximum speed by locating its G rating on the Maximum Speed Table and its corresponding speed in kilometers per hour Maximum speed cannot be greater than 150 kilometers per hour because the envelope would sustain damage at higher speeds

Maximum speed is reduced by drag Note the total number of drag points from the Weapon Mounts Table for the airship with and without external stores Reduce the maximum speed by one percent for each drag point

Cruising Speed: A airship's cruising speed is 75 percent of its maximum speed

Minimum Speed: A airship has no minimum speed

Damage Points: Calculate the damage point ratings for the airship's airframe and engines The damage point ratings for each component consist of two numbers separated by a slash The first number shows the number of damage points needed to make the component inoperable, the second to destroy the component See the "Air-to-Air Combat" section later in this module for a detailed discussion of damage effects

Calculate the airframe's first damage point figure by dividing the airframe's volume by 15. Then calculate the second damage point figure by dividing the volume by six. A 20-ton airship with a volume of 1200 cubic meters would have an airframe damage rating of 80/200.

Each engine has its own damage rating of 4/10.

Fuel Use: The fuel use of each engine type is listed in liters per hour on the Airship Engines Table. Multiply the figure for the installed engine type by the number of engines installed on the airship to determine total hourly fuel use.

Endurance: Endurance is the number of hours an airship can remain aloft. Divide the total number of liters of fuel on board by the fuel use rate to determine endurance.

Range: Range is the distance a airship can fly at cruising speed Calculate range by multiplying endurance by cruising speed.

Price: Add the price of the airship's components to determine its total price.

AIRSHIP DESIGN CHECKLIST

1. Determine the volume of the airship's envelope or balloon's gasbag.
2. Calculate total lifting capacity of that volume of hydrogen or helium gas
3. Calculate the cost of the envelope or gasbag.
4. Divide the volume by 1000 to determine the weight of the envelope or gasbag in metric tons
5. Subtract the weight of the envelope from the lifting capacity to determine usable lift
6. If designing an unpowered balloon, go to step 10. If designing a powered airship, select propeller or turboprop engines, noting the minimum thrust requirements.
7. Add engine cars as needed
8. Add airship cars as needed
9. Allocate tonnage for controls
10. Determine crew and passenger accommodations.
11. Select life support systems if needed
12. Install weapon mounts if military airship.
13. Install electronics if tech level is 6+.
14. Allocate tonnage to cargo
15. Allocate tonnage to fuel
16. Total weight of components It should not exceed available lifting capacity after the weight of the envelope has been subtracted from the total lifting capacity of the lifting gases

LING STANDARD PRODUCTS WANTS AN AIRSHIP

LSP has developed several mining colonies with similar characteristics· TL6 or less, standard atmosphere, and standard gravity. Although many aspects of mining are high tech, it is more cost-effective to use low-tech equipment for secondary activities like equipment movement and resupply to remote areas. Consequently, the megacorporation has developed a mission specification for a common airship type· *Airship LSP*

***Airship LSP*:** This lighter-than-air aircraft is to be a TL6 (or less) medium continental airship suitable for cargo and passenger service.

The Design Process

Airship LSP was designed in the following manner.

Weight: The airship must be able to carry a 5-ton payload Additional airship weight is estimated at 15 tons. The airship must be able to lift 20 tons in addition to its envelope weight.

Lift Required: *LSP* has specified helium as the lifting agent· 1000 cubic meters of helium lift envelope produces 0.63 tons of

useful lift; 20 tons of useful lift requires an envelope of 31,000 cubic meters (Cr310,000, 15 5 tons)

Airframe: The airship requires only a simple airframe. The airframe weighs in at 0 355 tons (0 01 tons per ton of airship) and costs Cr200,000 (Cr10,000 times 20 tons) No modifications for seaplane ability are made

Engines: The airship has 31,000 cubic meters of volume and requires engines delivering at least 3 1 tons of thrust If more than two engines are used, they require their own engine cars; the designers avoid constructing engine cars by specifying two basic propeller (diesel) engines with a total of 4 tons of thrust (Cr30,000, 2 tons, 30 liters/hour fuel consumption)

Controls: The airship uses simple controls (1 775 tons, Cr35,500).

Accommodations: The airship requires two pilots, a navigator, a flight engineer, and two engineering technicians; all are at crew stations. Six crew stations are installed (Cr30,000, 0.6 tons) The volume of the accommodations installation is 12 kiloliters

Life Support: No life support is furnished

Weapons Mounts: No weaponry is allocated.

Electronics and Avionics: The designers select the following electronics. Regional Radio Communicator-6 (0.015 tons, 0 015 megawatts, 0 03 kiloliters, Cr1000)

The engine can provide power in megawatts up to two percent of its thrust output in tons This aircraft's thrust is 4 tons; its power for accessories and electronics is 04 megawatts (more than enough to power the electronics, avionics, and controls on the airship)

Cargo: Cargo capacity is originally allocated at 5 tons; subsequent totals indicate that the total cargo capacity is 12 tons.

Maneuver Enhancement: No maneuver enhancement is provided

Fuel: Fuel tankage for the aircraft must allow it to achieve its mission specification range of at least 5000 kilometers at cruising speed of 60 kilometers per hour Because fuel consumption is 30 liters/hour, the airship must carry 2500 liters (2 5 tons) of fuel

Rating

The *Airship LSP* must now be rated and described

Rated Weight: The airship's weight is planned as 35 tons, all components are totaled as 35.245 tons.

Lift: The lift envelope produces 35 tons of lift

Thrust: The two engines produce 4 tons of thrust.

G Rating: The G rating for the airship is 0.06.

Speed: The airship maximum speed is found on the Maximum Speed Table—85 kilometers per hour This speed does not exceed the maximum speed the airframe is capable of

Cruising Speed: The airship cruising speed is 64 kilometers per hour (75 percent of clean maximum speed).

Minimum Speed: The airship has no minimum speed

Volume: The airship volume is computed as the volume of the envelope 31,000 kiloliters Displacement of the airship is computed as kiloliters divided by 13 5 (which produces the result in displacement tons): 2296 tons.

Damage Points: The airship airframe damage point rating is 80/200 (1200/15)/(1200/6) Each of the two engine damage point ratings is 4/10

Fuel Use: Fuel use of the airship is 30 liters per hour

Endurance: The aircraft carries 2500 liters of fuel, it can remain aloft 83 hours

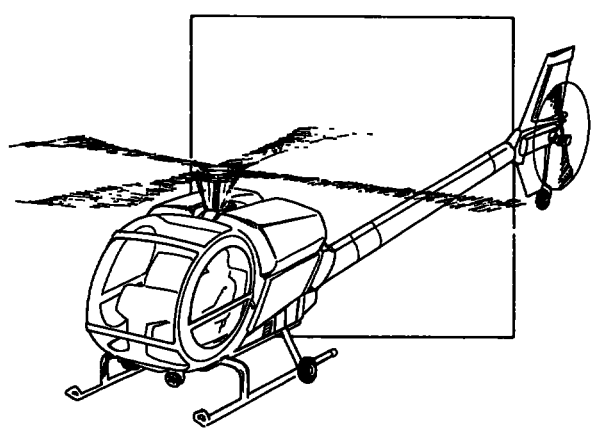
Range: The aircraft can fly up to 5300 kilometers before refueling.

Price: The total cost for the aircraft is MCr0 606.

GREENWICH (TL10) AIRSHIP

CraftID: Dirigible, TL6, MCr0 606
Hull: 80/200, Displacement = 2296, Weight Loaded = 34 745 tons, Airframe = Simple, Armor = none
Power: 0.04 Mw (drawn from engines), Endurance = 83 hours
Loco: 4/10, 4/10, Basic Propeller (Diesel), Thrust = 4 tons, Cruise = 64 kph, Top = 85 kph
Commo: Regional Radio Communicator-6
Sensors: None
Off: None
Control: Simple
Accom: Crew = 6 (Pilot × 2, Navigator, Flight Engineer, Engineering Technician × 2), Crew Station × 6
Other: 2500 liters internal fuel, 12 tons cargo

Meets *Airship LSP* mission specification.



SPRINGFIELD (TL5) LIGHT HELICOPTER

CraftID: Helicopter, TL5, Cr15,000
Hull: 4/10, Disp = 1, Weight Loaded = 1 2tons, Airframe = Simple, Armor = 0
Power: 4/10 Internal Combustion, 30 Mw, Endurance = 1 hour, 20 min
Loco: Main and Tail Rotor, Lift = 1 2tons, Thrust = 3tons, Cruise = 225, Top = 300
Commo: VDistant Radio × 1
Control: Simple
Accom: Crew = 1, (Pilot, Observer), Simple Cockpit × 2, Passenger may ride in second seat
Other: Fuel = 250liters

A light, unarmed aircraft used as a utility vehicle for reconnaissance, VIP transportation, liaison, medevac, and training Casualty may be carried on a skid stretcher when second seat is empty

Air-to-Air Combat

Air battles have become increasingly frequent in the skies of the worlds in the disintegrating Imperium Factions invade the worlds controlled by other factions and bring their COACC forces with them. Worlds are Balkanized with people loyal to different factions inhabiting different countries and continents World COACC forces break down into national air forces, and air battles flare as one country attacks another Mercenary air wings join any side with enough credits so that they can cash in on the increasingly lucrative war trade Flyer characters are swept into this maelstrom, and some must fly and die in the wars above the worlds of the shattered Imperium

AIR-TO-AIR COMBAT

MegaTraveller air-to-air combat is task based (as is all **MegaTraveller** combat). Two aerial combat systems are presented here—hasty combat, suitable for the referee and player group who do not have the time to plot and track the movements of a combat scenario, and standard combat for those who wish to use a fast-moving, yet realistic, air battle system

Combat Rounds: Both aerial combat systems use the standard **MegaTraveller** combat round Each combat round lasts six seconds Ten combat rounds equal one minute

HASTY COMBAT

Hasty combat is a series of tasks that quickly resolve an air battle Each hasty combat task requires one combat round. Maps and markers are not required because distances are treated abstractly. Just two dice, paper, and a pencil are needed. These hasty combat rules work best when there are only a small number of aircraft in combat If more than four aircraft are doing battle on each side, the standard combat system is recommended

Spotting: Combat aircraft close in on each other at widely varying altitudes and angles Whichever side spots the other first usually shoots first and enjoys a major combat advantage Whenever the referee presents a possible aerial combat situation, characters and the referee should begin rolling the spotting task If each character is flying an individual aircraft, each character should perform the spotting task each combat round If one character spots the enemy, he may alert the others over his aircraft radio If the referee is controlling the opposition, he should roll one spotting task for that side

To spot enemy aircraft

Difficult, Tactics, Sensor Ops, Endurance, 1 Combat Round, (unskilled OK)

Referee: DM + 1 if the spotter's aircraft is a two-seat, two-flyer fighter DM + 1 if the spotter's aircraft has radar. DM + 2 if the spotter's aircraft is flying under ground-controlled intercept (GCI) radar control DM – 1 if the sky is cloudy DM – 3 if the sky is rainy.

Advantage: Fighter pilots constantly maneuver for advantage in battle as they try to get in position for a shot against the enemy The aircraft that first spots an opponent has both the advantage and surprise for itself and its fellow aircraft. They may take the first shot However, once the shooting begins and surprise is lost, each side must roll for the advantage in each combat round If both sides spot each other simultaneously, each must roll the advantage task every combat round to represent continuously maneuvering for advantage in battle The side that has the advantage may fire on its enemy in that combat round.

To gain air combat advantage

Difficult, Aircraft, Tactics, Strength, 1 Combat Round (absolute)

Gun Combat

Three types of weapons may be used in COACC aerial gun combat· single-barrel machineguns or autocannons, multibarrel machineguns or autocannons, or lasers The task to hit with each of these weapons is the same, however, the damage effects are different

To hit an enemy aircraft in gun combat

Difficult, Gunnery, Aircraft, Dexterity (confrontational)

Referee DM + 1 if firing aircraft has radar DM + 1 if firing aircraft has heads-up display (HUD) DM + aircraft computer level DM + difference in aircraft agility rating (may be negative number) DM + 1 if attacking aircraft firing lasers.

Hits: Roll to succeed on the "To Hit" task for as many gun barrels or beam lasers firing. If one or more pulse lasers fired, determine the number of rolls to hit by multiplying the number of pulse lasers fired by the number of lenses in each laser. If beam lasers are fired, roll once to hit per laser, but double the number of hit points when calculating damage to the defending aircraft

If two single-barrel autocannons are fired in the attack, roll the "To Hit" task twice. If a single six-barrel autocannon is fired, roll to hit six times to represent its high rate of fire.

Damage Effects: The ability of an aircraft to sustain damage is represented by two sets of numbers. Each set has two numbers separated by a slash. The aircraft's airframe is represented by the larger of the two sets. Each engine mounted on an aircraft has its own damage point set The larger the

aircraft, the higher its airframe damage rating, and the harder it is to shoot down Each engine will have an identical damage rating

DAMAGE LOCATION TABLE

Die Roll	*Location*
1	Airframe
2	Electronics
3	Crew
4	Engine
5	Engine
6	Airframe

Roll for the location of each hit on 1D

Airframe Hit: Subtract the number of damage points inflicted by the hit from the first airframe damage rating number. When the first number is reduced to zero, subtract the damage points inflicted by the hit from the second airframe damage rating number. When the first number is reduced to zero, the aircraft is no longer flyable, and the crew must either bail out or attempt a crash landing If the second airframe number is reduced to zero, the aircraft sustains a catastrophic failure, and all aboard are killed.

To attempt a crash landing
Formidable, Aircraft, Dexterity (fateful, hazardous).

Referee· If a mishap is rolled, roll separate wound levels for each crewmember If **Destroyed** is rolled, the crewmember is killed. If **Destroyed** is rolled on the first roll, all crewmembers are killed.

To eject from a damaged aircraft
Difficult, Endurance (fateful, hazardous)

Engine Hit: Subtract the number of damage points from the engine damage rating (see above). If the aircraft has more than one engine, randomly roll the dice to determine which engine is hit If the first number is reduced to zero, the engine ceases operating. If the second number is reduced to zero, the engine catches fire and will explode on a 1D roll of 5+ (check each combat round)

Electronics Hit An electronics hit destroys one electronic device· radio, radar, computer, etc Randomly select the destroyed device.

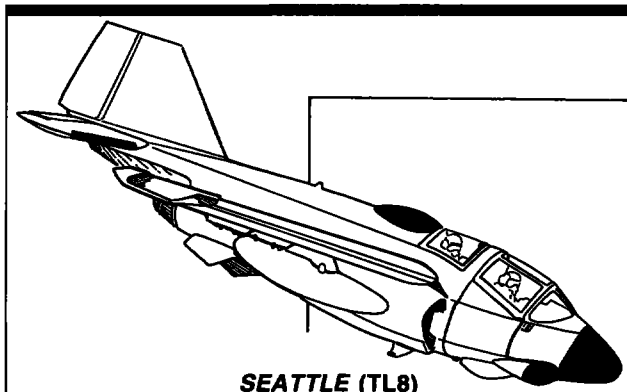
Crew Hit: Randomly determine which crewmember is hit, and make a mishap roll to determine wound level.

Air-to-Air Missile Combat

Three types of air-to-air missiles are available: infrared homing missiles (IRH), semiactive homing missiles (SAH), and active homing missiles (AH)

Infrared Homing Missiles (IRH): Infrared homing missiles lock on to and home in on either the hot exhaust and engine metal, or, in more advanced versions, the relative warmth of the entire aircraft. They are generally highly maneuverable "dogfighting" missiles

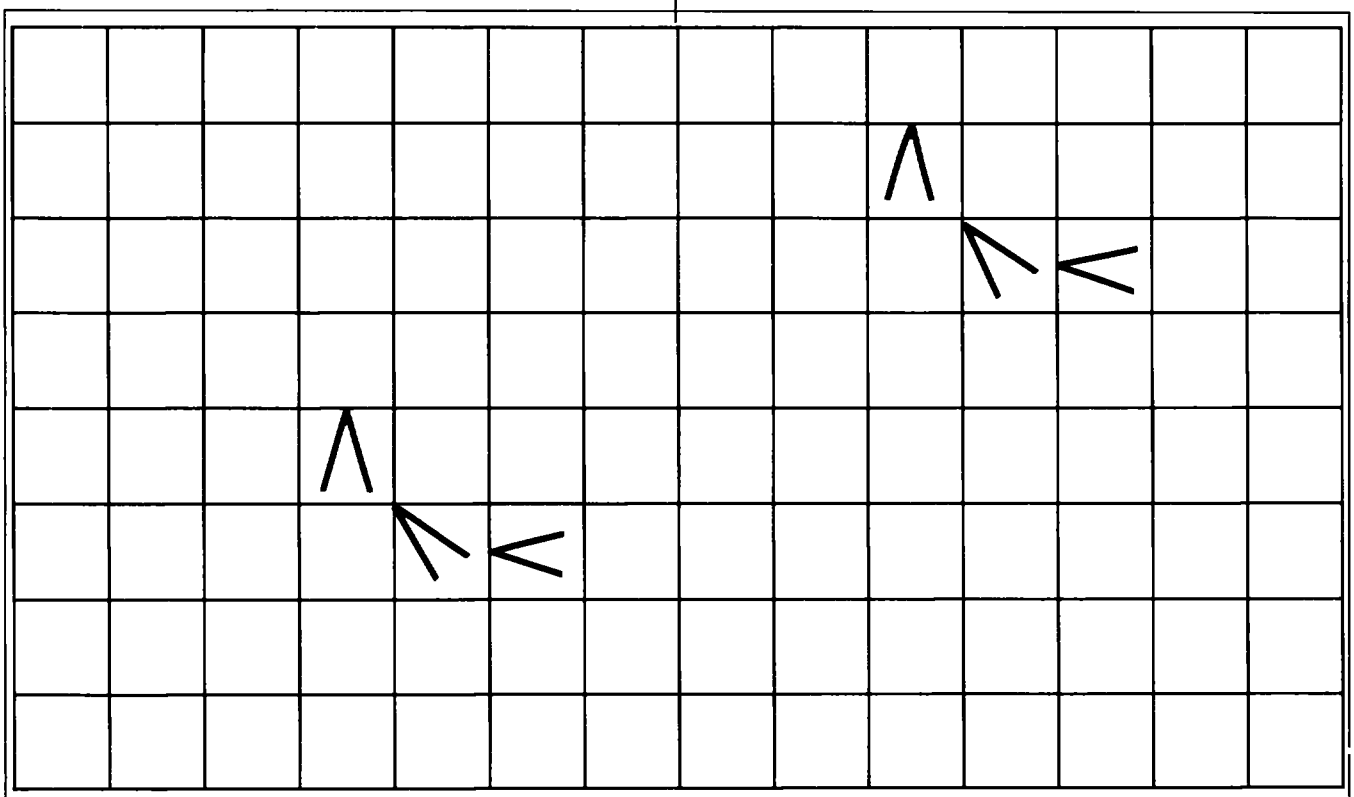
In hasty combat, two tasks must be successfully performed to hit an enemy aircraft with an IRHM They include in sequence:



***SEATTLE* (TL8)**
ALL-WEATHER HEAVY ATTACK AIRCRAFT

CraftID: Attack Aircraft, TL8, Cr4,976,000
Hull: 80/200 Disp. = 60, Weight Loaded = 15tons, Airframe = Transonic
Power: 4/10 Gas Turbine × 2, 120 Mw, Endurance = 6 hours, 20 min on internal fuel, 10 hours, 10 min with internal fuel and 4 1500liter drop tanks
Loco: Basic Turbojet × 2, Thrust = 30tons, Cruise = 748, Top = 1045, Min = 176, Agility = 6
Commo: Radio, Regional × 1
Sensors: Radar = VDistant, Ladar = VDistant, Passive IR, Light Amplification, Image Enhancer, Radar Direction Finder
Off: Fuselage Hardpoint, Plumbed Inboard Wing Hardpoints × 4, Maximum External Stores = 8tons, Nuclear capable
Control: Boosted, 1 Maneuver Point, Computer 2, HUD
Accom: Crew = 2 (Pilot, Bombadier), Oxygen tanks and mask, Armored cockpit and ejection seat
Other: Fuel = 9900liters. Four 1500liter drop tanks may be carried on the inboard wing hardpoints. Refueling probe fitted for fuel transfer from aerial tanker or buddy fuel pack mounted on another aircraft.

The ultimate attack aircraft design combining a heavy weapons load, long range, and full sensor suite for all-weather, day and night attack capability. This aircraft can use its radar for precision guidance of smart bombs and missiles in close air support missions as well as deep strike attacks Its computer, radar, and image enhancement systems give it accurate weapons delivery capability in foul weather and at night Its range and bomb load make it as much a bomber as an attack aircraft. Its cost, however, precludes it from purchase by all but the wealthiest national or planetary governments Two variants are available—one an electronic warfare variant with a complete suite of radio and radar jamming equipment and anti-radiation missiles, the other a tanker variant with all sensors removed, and a refueling package and extra fuel tanks installed.



Arrowheads drawn on the grid represent the change in the aircraft's position as the aircraft makes a 90° right turn in three squares using five Manuever Points.

To lock an infrared homing missile on an enemy aircraft
Routine, Tactics, Dexterity (confrontational)

To successfully launch an IRHM:
Simple
Referee If launch is successful, the missile will impact in 1D – 3 combat rounds unless the defending aircraft breaks lock. The IRHM inflicts 16 damage points on impact

The defending aircraft may attempt to break lock once per combat round with this task

To break an IRHM lock
Difficult, Aircraft, Tactics, Strength.
Referee: Add DM + 2 if the defending aircraft is equipped with infrared countermeasures (IRCM)

Semiactive Radar Homing Missiles (SARH): Semiactive radar homing missiles home in on radar energy reflected from the target aircraft For an SARH missile to attack successfully, its launching aircraft must illuminate the target with its radar until impact The launching aircraft must be radar-equipped to use this type of missile

In hasty combat, three tasks must be successfully performed to hit an enemy aircraft with a SARH They include in sequence·

To lock launching aircraft's radar onto target aircraft.
Difficult, Tactics, Aircraft, Sensor Ops.
Referee Add DM + 2 if the launching aircraft has a radar intercept officer

To launch SARH missile
Simple
Referee: If launch is successful, roll 1D for number of combat rounds to impact. Roll for damage on impact unless the defending aircraft successfully breaks radar lock The SARH inflicts 28 damage points.

To radar illuminate target aircraft
Difficult, Tactics, Aircraft, Sensor Ops
Referee Add DM + 2 if the launching aircraft has a radar intercept officer This task must be rolled for each combat round the missile is in flight

The defending aircraft may attempt to break radar lock once per combat round with this task·

To break radar lock
Difficult, Aircraft, Tactics, Strength
Referee· DM + 2 if defending aircraft is equipped with chaff dispenser, DM + 4 if equipped with radar jammer (internal or ECM pod)

Active Radar Homing Missiles (ARHM): ARHMs are similar to SARHs except that have their own on-board radar sets. The launching aircraft need only radar illuminate the target craft

until the missile is within three combat rounds of impacting the target. Then the missile's internal radar takes over the guidance function, and impact is automatic unless radar lock is broken as described above.

More advanced ARHMs (TL9+) automatically lock on to their targets at launch, freeing the launching aircraft for additional combat or breakoff. They are "fire and forget" missiles

Resolve ARHM combat the same as SARH combat except for the less restrictive radar illumination requirements.

Break Off

Combat ends when aircraft:

- Shoot down all opposing aircraft.
- Successfully disengage (break off) from combat.

An aircraft may attempt to break off during a combat round by declining to fire its weapons and successfully attempting the "Breakoff" task.

To break off from combat:
Difficult, Tactics, Aircraft, Strength.
Referee: DM+4 if aircraft attempting to break off has the advantage.

STANDARD COMBAT

Standard air-to-air combat is a fast-paced, realistic simulation of air-to-air combat with movement plotted on a grid and altitude tracked through changes in flight levels. Movement may be plotted on square-ruled graph paper or on hex paper. Cardboard markers may be used to represent individual aircraft, or colored pencils may be used to plot individual aircraft positions during each combat round with a different color representing each aircraft Aircraft facing should be indicated with an arrowhead drawn on the cardboard marker, or drawn directly on the square or hex as the aircraft position marker Aircraft altitude logs should be maintained and updated each turn to track each aircraft's current flight level.

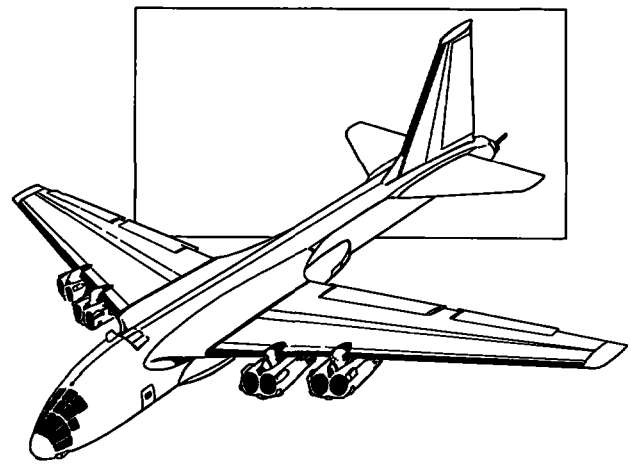
Scale: Standard air-to-air combat is played on a grid with each square (or hex) representing 500 meters. Aircraft may move and fire in each combat round. Each combat round represents six seconds of time. Aircraft fly at varying flight levels. Each flight level represents 500 meters. Flight beneath 100 meters is considered NOE flying.

Angle-Off: Angle-off arcs are used to measure deflection in gun attacks. They are measured from the rear to forward axis of the target plane as the zero angle. An aircraft approaching from dead astern of a target aircraft is on the target's angle-off zero line. An aircraft approaching a target aircraft from dead ahead is approaching on the 180-degree angle-off line. Other angle-off arcs are measured to the right or the left of the zero line.

Movement: Aircraft are granted maneuver points to be used in each combat round. To calculate available maneuver points, divide the aircraft's current speed by 250 and round off to the nearest whole number.

Maneuver Points: Each maneuver point (MP) may be used in a combat round to:

- Move horizontally one square (or hex).
- Climb one flight level
- Dive one flight level

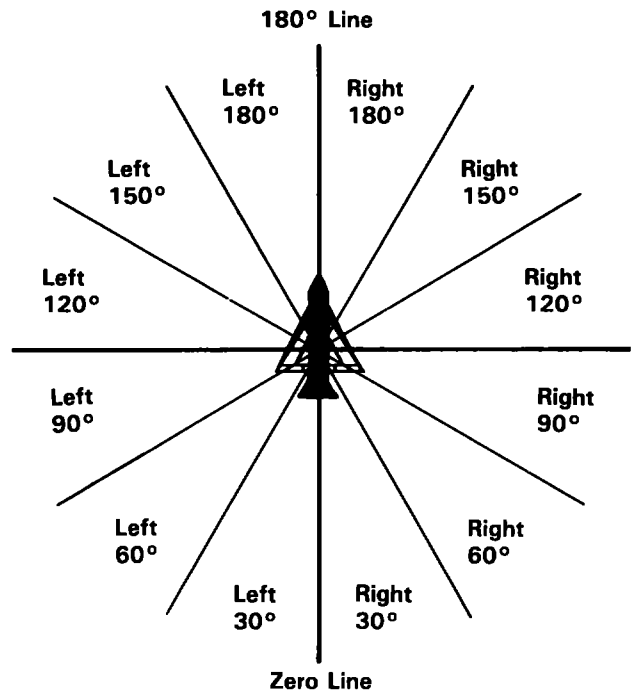


***LOS ANGELES* (TL8) BOMBER**

CraftID: Bomber, TL8, Cr4,976,000
Hull: 1000/2500 Disp =800, Weight Loaded=250tons, Airframe=Transonic
Power: 4/10 Gas Turbine×8, 4.8 Mw, Endurance=11 hours, 55 min on internal fuel
Loco: Basic Turbofan×8, Thrust=144tons, Cruise=600, Top=800, Min=176, Agility=1
Commo: Radio=Planetary×2, Regional×2, Radio Jammer=Regional×1
Sensors: Radar=Regional, Radar Jammer=Regional Passive IR, Image Enhancer, Radar Direction Finder
Off: 28ton Bomb Bay, Inboard Wing Hardpoints×4, Nuclear capable. 6-barrel, 20mm autocannon in rearward-firing remote turret.
Control: Boosted, 1 Maneuver Point, Computer 2, Avionics
Accom: Crew=6 (Pilot, Copilot, Bombadier, Navigator, Electronic Countermeasures Operator, Gunner), Basic Life Support, Oxygen tanks and mask, Complex cockpits with ejection seats
Other: Fuel=160,000liters. Refueling probe fitted for fuel transfer from aerial tanker

A massive, lumbering strategic bomber that can be destroyed in normal, high-altitude flight by any sophisticated air defense system. However, if used as a missile platform launching missiles to destroy antiaircraft defenses and airfields in its path, this aircraft can strike deep and deliver nuclear bombs on enemy cities and other strategic targets. It can carry a massive load of both conventional and nuclear bombs and missiles.

ANGLE-OFF ARCS



- Turn 45 degrees
- Accelerate one square per combat round (until the aircraft reaches its maximum speed).

Maneuver points may be used in any combination for horizontal flight, turning, climbing, or diving to the maximum amount available to each aircraft in each turn. Each maneuver point represents 250 kilometers per hour horizontal flight speed or the energy needed to complete the maneuvers stated above Maneuver points may not be carried over from turn to turn

Exceptions to the maneuver point rules include.

- By gliding, aircraft may reduce power to idle and descend 1/2 flight level per combat round as well as decelerate one square per combat round.
- VTOL aircraft with vectored in-flight thrust capability (VIF) may use one maneuver point to turn 90 degrees per combat round without rolling to avoid pilot/crew blackout
- Helicopters may turn 180 degrees per combat round

Blacking Out Crewmembers aboard an aircraft turning more than 45 degrees while travelling more than two squares per turn risk blacking out. Each needs to roll the following task:

To avoid blacking out:

Routine, Strength + Endurance (fateful)

Referee Roll on the Mishap Table if the task fails. If a mishap is **Superficial**, consciousness is regained in 1D seconds, and control is lost momentarily. If a mishap is **Minor**, consciousness is regained in 1D – 3 combat rounds The aircraft will crash if it is below 1000 meters and the pilot blacks out. If a mishap is **Major**, consciousness is regained in 1D minutes The aircraft will crash if it is below 10,000 meters and the pilot blacks out. If a mishap is **Destroyed**, the character requires medical attention to recover consciousness. The aircraft will crash if the pilot blacks out

Spotting: Combat aircraft close in on each other at widely varying altitudes and angles Whichever side spots the other first usually shoots first and enjoys a major combat advantage Whenever opposing aircraft close to within 20 squares (10 kilometers), characters and the referee should begin rolling the spotting task If each character is flying an individual aircraft, each character should perform the spotting task each combat round If one character spots the enemy, he may alert the others over his aircraft radio. If the referee is controlling the opposition, he should roll one spotting task for that side each round

To spot enemy aircraft:

Difficult, Tactics, Sensor Ops, Endurance, 1 Combat Round, (unskilled OK)

Referee: DM + 1 if the spotter's aircraft is a two-seat, two-crew fighter. DM + 1 if the spotter's aircraft has radar DM + 2 if the spotter's aircraft is flying under ground-controlled intercept (GCI) radar control DM – 1 if the sky is cloudy DM – 3 if the sky is rainy. DM – 3 if opposing aircraft is in spotting aircraft's 30 degree angle-off arc.

Helicopters: Helicopters may engage in air-to-air gun combat with other aircraft using the tasks given below Helicopters may launch infrared homing missiles at other helicopters and fixed-wing aircraft using the tasks given in the Air-to-Air Missile Combat section Helicopters may not use radar-guided missiles.

Gun Combat

Guns are an important part of aerial combat.

Surprise: Fighter pilots constantly maneuver for advantage in gun combat as they try to get in position for a shot against

the enemy The aircraft that first spots an opponent (see Spotting) has surprise for itself and its fellow aircraft They may maneuver for the best first-shot position—as close as possible to the target's angle-off zero line—while their opponents continue to fly their previous courses. However, once the shooting begins and surprise is lost, each side must maneuver for its shooting position in each combat round. If both sides spot each other simultaneously, each must maneuver for advantageous shooting positions.

Combat Range: All aircraft autocannons have an effective range of three squares. Both heavy and light machineguns have an effective range of one square. Lasers firing in clear air have unlimited range.

Rate of Fire: Rate of fire is:

- One 10-round burst per machinegun
- One 10-round burst per single-barrel autocannon.
- One 50-round burst per tribarrel autocannon.
- One 100-round burst per six-barrel machinegun or autocannon.

Gun Combat Weapons: Three types of weapons may be used in aerial gun combat: single-barrel machineguns or autocannon, multibarrel machineguns or autocannons, or lasers. The task to hit with each of these weapons is the same; however, the damage effects are different.

To hit an enemy aircraft in gun combat:

Difficult, Gunnery, Aircraft, Dexterity (confrontational)

Referee: DM + 1 if firing aircraft has radar. DM + 1 if firing aircraft has heads-up display (HUD). DM + aircraft computer level DM + difference in aircraft agility rating (may be negative number). DM + 1 if attacking aircraft is firing lasers.

Hits: Roll the "To Hit" task for the number of gun barrels or beam lasers firing. If one or more pulse lasers fires, determine the number of rolls to hit by multiplying the number of pulse lasers fired by the number of lenses in each laser If beam lasers fire, roll once to hit per laser, but double the number of hit points when calculating damage to the defending aircraft.

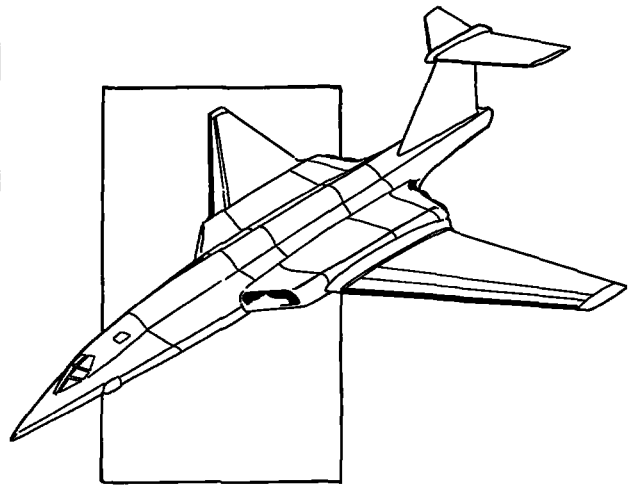
If two single-barrel autocannons fire in the attack, roll the "To Hit" task twice. If a single six-barrel autocannon fires, roll to hit six times to represent its high rate of fire.

Damage Effects: The ability of an aircraft to sustain damage is represented by two sets of numbers Each set has two numbers separated by a slash. The aircraft's airframe is represented by the larger of the two sets. Each engine on an aircraft has its own damage point set. The larger the aircraft, the higher its airframe damage rating, and the harder it is to shoot down. Each engine will have an identical damage rating.

DAMAGE LOCATION TABLE

Die Roll	*Location*
1	Airframe
2	Electronics
3	Crew
4	Engine
5	Engine
6	Airframe

Roll for the location of each hit on 1D.



***MEXICO CITY* (TL9) BOMBER**

CraftID: Bomber, TL9, Cr10,582,500
Hull: 1000/2500 Disp. = 800, Weight Loaded = 210tons, Airframe = Supersonic
Power: 4/10 Gas Turbine × 4, 2.6 Mw, Endurance = 5 hours, 20 min on internal fuel, 7 hours with dismountable bomb bay tanks
Loco: High Bypass Turbofans × 4, Thrust = 200tons, Cruise = 900, Top = 1200, Min = 280, Agility = 2
Commo: Radio = Planetary × 2, Regional × 2, Radio Jammer = Regional × 1
Sensors: Radar = Regional, Radar Jammer = Regional, Passive IR, Image Enhancer, Radar Direction Finder
Off: 34ton Bomb Bay, Fuselage Hardpoints × 8; Nuclear capable
Control: Powered, 2 Maneuver Points, Computer 2, Avionics
Accom: Crew = 4 (Pilot, Copilot, Offensive Systems Operator, Defensive Systems Operator), Basic Life Support, Oxygen tanks and mask, Complex cockpits with ejection seats
Other: Fuel = 83,500liters. An additional 20,000liter, dismountable fuel tank may be installed in the bomb bay reducing the internal weapons load by 20tons Refueling probe fitted for fuel transfer from aerial tanker.

Supersonic strategic bomber with advanced electronic countermeasures and standoff missiles capable of penetrating all but the most advanced air defenses. Its relatively low endurance requires that it operate in conjunction with aerial tankers on most missions.

Airframe Hit Subtract the number of damage points inflicted by the hit from the first airframe damage rating number After the first number is reduced to zero, subtract damage from the second damage rating number. When the first number is reduced to zero, the aircraft is no longer flyable, and the crew must either bail out or attempt a crash landing If the second airframe number is reduced to zero, the aircraft sustains a catastrophic failure, and all aboard are killed

To attempt a crash landing
Formidable, Aircraft, Dexterity (fateful, hazardous).
Referee If a mishap is rolled, roll separate wound level for each crewmember If **Destroyed** is rolled, crewmember is killed If **Destroyed** is rolled on first roll, all crewmembers are killed

To eject from a damaged aircraft
Difficult, Endurance (fateful, hazardous).

Engine Hit Subtract the number of damage points from an engine damage rating (see above) If the aircraft has more than one engine, you need to randomly roll dice to determine which engine is hit If the first number is reduced to zero, the engine ceases operating If the second number is reduced to zero, the engine catches fire and will explode on a 1D roll of 5+ (roll each combat round)
Electronics Hit. An electronics hit destroys one electronic device· radio, radar, computer, etc Randomly select the destroyed device
Crew Hit: Randomly determine which crewmember is hit and make a mishap roll to determine wound level

Air-to-Air Missile Combat

Three types of air-to-air missiles are available
- Infrared homing missiles (IRH).
- Semiactive radar homing missiles (SARH).
- Active radar homing missiles (ARHM)

They are used as follows
Infrared Homing Missiles (IRH): Infrared homing missiles lock onto and home in on either the hot exhaust and engine metal or the relative warmth of the entire aircraft. They are highly maneuverable "dogfighting" missiles.

Early-model IRHMs (TL7−) must be launched within the target aircraft's 60-degree or less angle-off arc to engage the target. Later all-aspect models may be launched at any target angle-off IRHM seeker heads must lock on the target aircraft before it is launched

To lock an infrared homing missile on an enemy aircraft:
Routine, Tactics, Dexterity (confrontational).

The IRHM has a 20-square maximum range and no minimum launching range. It has five maneuver points plus the maneuver points of the launching aircraft at launch. The missile's maneuver points are used as those of an aircraft. The IRHM remains in flight four turns

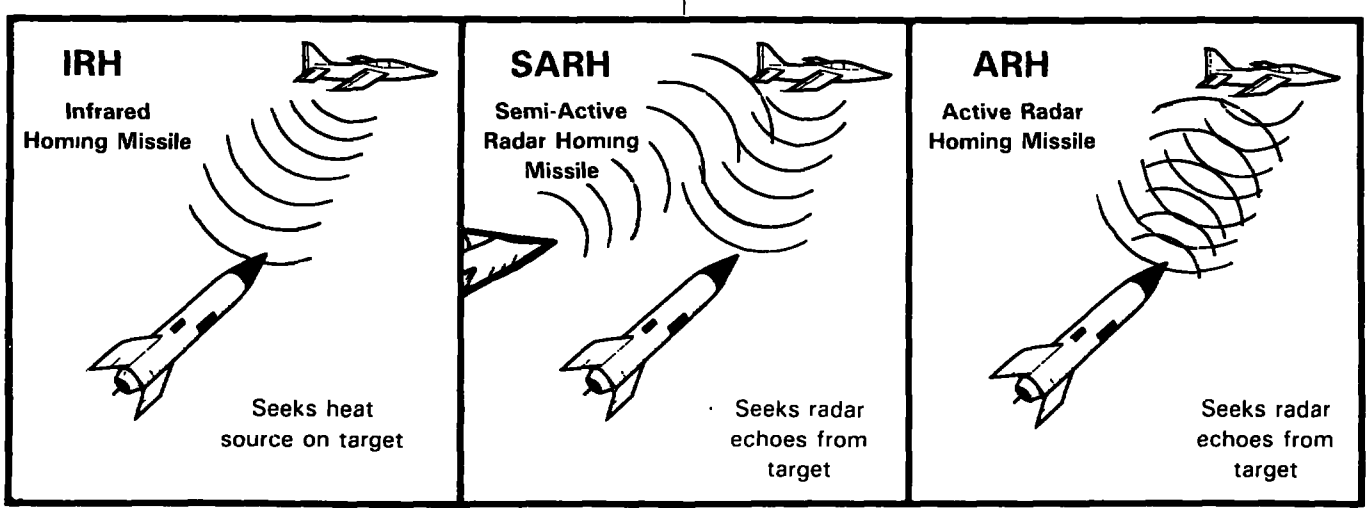
To successfully launch an IRHM:
Simple
Referee. If launch is successful, the missile will impact unless the defending aircraft breaks lock The IRHM inflicts 16 damage points on impact.

The defending aircraft may attempt to break lock once per combat round with this task:

To break an IRHM lock·
Difficult, Aircraft, Tactics, Strength.
Referee: Add DM+2 if defending aircraft is equipped with infrared countermeasures (IRCM)

Semiactive Radar Homing Missiles (SARH): Semiactive radar homing missiles home in on radar energy reflected from the target aircraft. For a SARH missile to attack successfully, its launching aircraft must illuminate the target with its radar until impact. The launching aircraft must be radar-equipped to use this type of missile The target must be within the 150-degree+ angle-off arc of the launching aircraft and within missile range before the missile may be fired

To lock launching aircraft's radar on target aircraft
Difficult, Tactics, Aircraft, Sensor Ops
Referee: Add DM+2 if the launching aircraft has a radar intercept officer.



The SARH missile has 10 maneuver points plus the maneuver points of its launching aircraft at launch. The missile's maneuver points are used as those of an aircraft Its maximum launch range is 60 squares (30 kilometers), and it has a minimum launch range of six squares (three kilometers) It remains in flight for six turns.

To launch SARH missile:
Simple
Referee If the launch is successful, roll for damage on impact unless the defending aircraft successfully breaks radar lock The SARH inflicts 28 damage points

The launching aircraft must illuminate the target until the missile hits.

To radar illuminate target aircraft
Difficult, Tactics, Aircraft, Sensor Ops.
Referee The task is Routine when the range of the launcher to the target is less than 20 squares Add DM + 2 if the launching aircraft has a radar intercept officer, DM – 2 if target aircraft is below 500 meters. *This task must be rolled for each combat round the missile is in flight or until the target breaks radar lock*

The defending aircraft may attempt to break radar lock once per combat round with the following task

To break radar lock.
Difficult, Aircraft, Tactics, Strength
Referee: Add DM + 2 if defending aircraft is equipped with chaff dispenser, DM + 4 if equipped with internal radar jammer or radar jammer pod

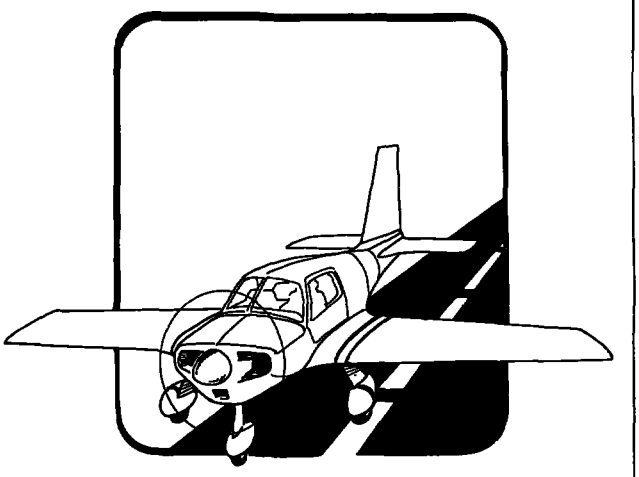
Radar lock is also broken if the target aircraft escapes the launcher's 150-degree + angle-off radar arc
Active Radar Homing Missiles (ARH): ARHMs are similar to SARHs except that have their own on-board radar sets. The launching aircraft need only radar illuminate the target aircraft until the missile is within 20 squares (10 kilometers) of its target. Then the missile's internal radar takes over the guidance function, and impact is automatic unless radar lock is broken as described above
More advanced ARHs (TL9 +) automatically lock on to their targets at launch, freeing the launching aircraft for additional combat or breakoff They are "fire and forget" missiles
Resolve ARH combat the same as SARH combat except for the less restrictive radar illumination requirements

Breakoff

Combat ends when aircraft.
- Shoot down all opposing aircraft
- Successfully disengage (break off) from combat.

An aircraft may attempt to break off during a combat round by declining to fire its weapons and successfully attempting the breakoff task

To break off from combat
Difficult, Tactics, Aircraft, Strength.



***VAN NUYS* (TL6) PERSONAL AIRCRAFT**

CraftID: Personal Aircraft, TL6, Cr33,500
Hull: 6/15, Disp = 1, Weight Loaded = 1 5tons, Airframe = Simple
Power: 4/10 Internal Combustion, 25 Mw, Endurance = 4 hours, 15 min
Loco: Light Propeller, Thrust = 1ton, Minimum Speed = 75, Cruise = 190, Top = 255, Agility = 2
Commo: VDistant Radio × 1
Control: Simple
Accom: Crew = 1 (Pilot), Passengers = 3, Simple Cockpit × 2, Passenger Seats × 2
Other: Fuel = 318liters, Cargo = 10ton

A small, economical personal transport aircraft These are available for rent at airfields on many worlds, or may be purchased as a cheaper, somewhat faster alternative to the air/raft. They are equipped with dual controls so that a qualified passenger may function as copilot, or the aircraft may fly as a trainer with a flight instructor and student. Its relatively low speed and rugged construction let this aircraft take off and land from unprepared dirt airstrips. Variants are available with floats for water landings and takeoffs or with skis for landings on snow or ice

Air-to-Ground Combat

Close air support of ground forces, aerial interdiction strikes, aerial bombardment, and their high technology analogs can play an important part in **MegaTraveller** combat scenarios as wars rage among the factions of the Rebellion Mercenary units often have their own organic rotary-wing or light, fixed-wing combat aviation units available to supply "on call" air support. Air-to-ground combat is a prime task and specialty of many mercenary air wings. Planetary defense, Imperial, and rebellious COACC forces are constantly used to support their ground forces as the Imperium becomes increasingly fragmented.

COACC air-to-ground combat rules try to simulate the effects of tactical air warfare with an easily playable, fast-moving combat system.

These air-to-ground combat rules simulate air strikes by player characters on ground units controlled by the referee or in some cases by other player characters. COACC air-to-ground combat rules may also be used by player characters in control of ground forces who call in close air support on nearby enemy positions, and can be used to resolve the effects of air strikes on troop units controlled by player characters

HASTY COMBAT

Like its air-to-air counterpart, air-to-ground hasty combat is a somewhat abstract version of the standard combat rules designed to enable the referee to resolve a combat situation with a minimum of delay Maps are not required, ground units need not be placed, aircraft need not be maneuvered, nor are their positions plotted Simply resolve air-to-ground combat by rolling the tasks indicated in the standard combat rules section, resolving weapons penetration and damage with **MegaTraveller** combat rules.

STANDARD AIR-TO-GROUND COMBAT

Air-to-ground combat uses the same time, distance, and altitude scale as the air-to-air combat rules Aircraft movement is plotted on graph paper or hex paper as in air-to-air combat. Cardboard markers may be used to represent individual aircraft, or colored pencils may be used to plot individual aircraft positions during each combat round, with a different color representing each aircraft Aircraft facing should be indicated with an arrowhead drawn on the cardboard marker, or drawn directly on the square or hex as the aircraft position marker. Aircraft altitude logs should be maintained and updated each turn to track each aircraft's current flight level

Movement: Aircraft are granted maneuver points to be used in each combat round To calculate available maneuver points, divide the aircraft's current speed by 250 and round off to the nearest whole number

Units of Measurement: Each square or hex equals 500 meters, each flight level equals 500 meters in altitude; each aircraft maneuver point equals 250 kilometers per hour, or one square/hex per combat round or its energy equivalent, each combat round lasts six seconds.

Ground Scale: The 500-meter square/hex scale applies to target units on the ground Many air-to-ground weapons are area weapons, including rocket salvoes, bombs, and napalm Usually if a pilot knows he has hit the area of the target, his mission is successful Often, this is all he will know.

Other weapons, including strafing with guns or lasers, laser-guided bombs, and various types of missiles are precision weapons, and the pilot will want to know if he has hit the precise target at which he was aiming

To reflect these differences in weapons, COACC air-to-ground combat includes two different types of "To Hit" tasks· "To hit a designated target area," and "To hit an individual target within the target area." Area weapons use the former task, precision weapons the latter

However, many referees and players, particularly those who have player characters on the ground, will want to know if particular individuals, vehicles, or structures are hit by area weapons To determine this, a second "To hit an individual target" task with the DMs is included with each appropriate weapon

For additional realism, the referee may want to break the 500-meter target square/hex into 50- or five-meter squares to more accurately place the characters, and plot the hits and effects of an air strike.

Placing Units: Either the referee or player controlling ground units shall mark the location of all ground units and terrain features on either graph paper or a hex grid map before play begins. Units are not identified nor are their types revealed until they are attacked or they open fire on the attacking aircraft Ground units and installations must be spotted before they can be attacked

Loadouts: The proper mix of weapons must be selected for the mission Rockets, cluster bombs, and napalm are most effective against troops. Bombs—either free-fall or guided—are most effective against bunkers and structures. Missiles are effective against vehicles, single structures, and weapons installations

Check each aircraft's specifications and make sure the total weight of the external weapons does not exceed the maximum external stores listing for that aircraft type.

Also, make sure the weapons or other external stores loaded on the aircraft's individual hardpoints do not exceed the weight limits listed below.

HARDPOINTS

Hardpoint	*Maximum Weight (kg)*
Fuselage Hardpoint	2000
Plumbed FHP	2000 (or 2000-liter tank)
Inboard Wing Hardpoint	1500
Plumbed IWHP	1500 (or 1500-liter tank)
Outboard Wing Hardpoint	500
Wingtip Launch Rail	100

Forward Observers: Forward observers are individuals specially trained in spotting targets and directing air strikes onto these targets

Airborne FOs fly over the target area in light aircraft or sometimes as observers in two-seat attack aircraft. They are in radio contact with strike aircraft, and as the strike approaches, they mark targets with smoke rockets in daylight or flares at night FO aircraft of TL7 and above also carry laser target designators used to illuminate targets for laser-guided bombs and missiles

Ground FOs are COACC officers attached to the forward elements of friendly forces in need of close air support They mark friendly forces' positions with colored smoke grenades and recognition panels and use aircraft frequency radios to guide strike aircraft to their targets They also use laser carbines or other target designators to illuminate targets for laser-guided bombs and missiles

FOs are usually experienced attack aircraft pilots assigned to this mission because of their knowledge of aircraft and air-to-ground ordnance Forward Observer skill level is a positive DM to spot and to hit a ground target

Spotting: Each type of unit or installation has its own spotting range. An aircraft must be within this spotting range before it can attempt to spot a ground unit or installation and begin its attack

SPOTTING RANGES

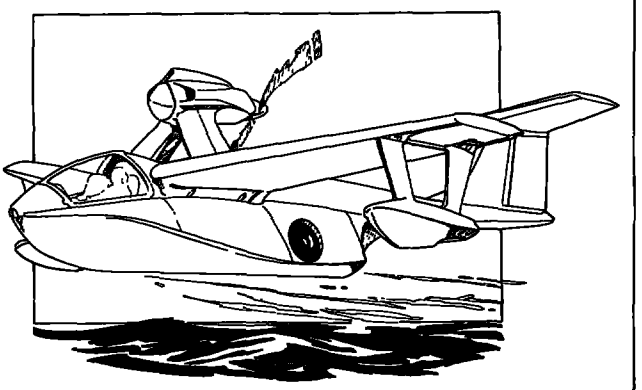
Object	*Spotting Range*
Infantry units	3 kilometers/ 6 squares
Armor/vehicle units	6 kilometers/12 squares
Artillery	9 kilometers/18 squares
Buildings/structures	9 kilometers/18 squares
Multistory buildings	12 kilometers/24 squares

To spot a ground unit or installation from an aircraft in line of sight within spotting range:

Routine, Forward Observer, Recon (unskilled OK).

Referee: This task becomes Difficult if the target is camouflaged. DM + 1 if observer aboard spotting aircraft DM + Forward Observer skill of ground or airborne forward air controller if FO has target in his line of sight. DM + 4 if forward observer has marked target with smoke DM + 6 if target is marked with a laser designator and spotting aircraft is equipped with either internal or pod-mounted laser sensor or ladar

Spotting becomes Formidable if attempted at night unless target is illuminated with flares or the spotting aircraft is equipped with passive infrared, light amplification, or image enhancement sensors. If these devices are used, spotting at



***AVALON* (TL6) AMPHIBIOUS PERSONAL AIRCRAFT**

CraftID: Amphibious Personal Aircraft, TL6, Cr39,250
Hull: 6/15, Disp. = 1, Weight Loaded = 1.5tons, Airframe = Simple
Power: 4/10 Internal Combustion, .25 Mw, Endurance = 3 hours, 20 min
Loco: Light Propeller, Thrust = 1ton, Minimum Speed = 75, Cruise = 190, Top = 255, Agility = 2
Commo: VDistant Radio × 1
Control: Simple
Accom: Crew = 1 (Pilot), Passengers = 3, Simple Cockpit × 2, Passenger Seats × 2
Other: Fuel = 258liters, Cargo = 10ton

This is a personal transport aircraft built with a boat-shaped hull and retractable wheeled landing gear. It can take off and land at regular land-based airfields as well as on bodies of water, making it an ideal air vehicle for back-country exploration.

night is Difficult. The same DMs noted above apply except for the smoke target marking DM.

Ground Fire: Attacking aircraft are subject to random ground fire—of rifle caliber—when attacking at less than two flight levels (1000 meters) above ground Each time a character's aircraft descends below 1000 meters to begin an attack, roll the following task

To avoid ground fire:
Simple (hazardous).
Referee. Roll on the Mishap Table to determine level of damage Apply damage as indicated with a 1D roll on the Damage Location Table in the "Air-to-Air Combat" chapter A **Destroyed** result rolled on the Mishap Table results in the aircraft crashing, however, the pilot (and other crewmembers) have a chance to eject/bail out.

Attacking: Aircraft must spend three maneuver points aiming at ground targets they are attacking unless they have computers and HUDs Computer/HUD-equipped aircraft need only expend one MP on aiming. This expenditure means either flying level at the target for three squares, diving three flight levels, or any combination of these, until the aircraft is within its weapons' firing/launch/release range. (See Strafing Range Table or Dive Bombing Release Points Table later in this chapter, or individual air-to-ground weapon tables for range.)

Slow-flying aircraft may expend the needed maneuver points to aim their aircraft during two or more combat rounds. *Exception* Combat helicopters within one square of their targets may fire immediately

Aircraft, except for helicopters or fixed-wing craft flying NOE, or fixed-wing craft making laydown attacks, must descend at least one flight level per combat round while attacking a ground target

Strafing

Strafing is an aircraft attack on ground targets with machinegun fire, autocannon fire, or laser fire. The aircraft must be within range of the target as indicated on the Strafing Range Table below before it can begin a strafing attack.

STRAFING RANGE

Range	*Weapon*
3-square maximum	Aircraft cannon
1-square maximum	Heavy machineguns
1-square maximum	Light machineguns
Unlimited	Lasers in clear air

To hit a target with TL7 (or less) aircraft fire:
Difficult, Gunnery
Referee: DM+level of computer DM+1 if using HUD DM+1 if attacking aircraft is a helicopter

To hit a target with TL8 (or more) aircraft fire.
Routine, Gunnery
Referee DM+level of computer DM+1 if using HUD DM+1 if attacking aircraft is a helicopter

Hits: Roll the "Strafing" task times the number of guns or gun barrels firing As an example, if two one-barrel autocannons fire, roll twice to hit per target, if one six-barrel autocannon fires, roll six times for hits per target If firing a pulse laser, roll times the number of lenses per laser If strafing with beam lasers, roll once to hit per laser but double the number of hits when calculating damage

Penetration and Damage: Calculate penetration and damage for each hit as indicated on the Guns Table in the "Aircraft Ordnance" chapter and apply as indicated in the **MegaTraveller Players' Manual.**

Autofire Targets: Up to the listed number of additional targets adjacent to the primary target may be attacked in a strafing attack as listed on Guns Table.

Gun Pods: Internal guns and gun pods may be used in a strafing attack either separately or together The following gun pods are available

GUN PODS

Type	*Weight (kg)*	*Rounds*	*Shots*
7mm gatling gun	150	1400	14
20mm single autocannon	400	200	20
20mm 3-barrel autocannon	300	300	6
20mm 6-barrel autocannon	750	1200	12
30mm 6-barrel autocannon	850	400	4

Laser Pods: Laser pods are available beginning at TL9 and may be used to strafe ground targets either separately or together with internal lasers.

Laser Pod: A 0 5-megawatt beam laser driven by a 8-megawatt integral gas turbine/MHD generator with 350 liters of fuel sufficient for one hour of continuous operation Penetration = 5, Damage = 4. Weight = 1500 kilos, fuselage hardpoint only.

Rockets

Free-flying rockets may be fired singly or in pairs at a single precise target, or by full pod ripples for an area-wide shotgun effect They either come singly or in pods Pods may be fired one rocket at a time or in a ripple. The most common sizes include 80mm and 120mm rockets The former come in pods of seven or 19, the latter in pods of three or singly for launching from underwing rails

ROCKETS

Size	*Pen*	*Damage*	*Danger (m)*	*Range*
80mm HE	14	12	20	1000 m/2 squares
Flechette	3	3	100	
120mm HE	18	16	25	1500 m/3 squares
Flechette	4	4	150	

ROCKET PODS

Size	*Rounds*	*Weight (kg)*
80mm	7	60
80mm	19	200
120mm	3	200
120mm	1 (launch rail)	60

Danger Space: Multiply the danger space per rocket times

the number of rockets fired to determine the total blast radius per attack.

To hit designated target area with air-to-ground rocket attack: Routine, Gunnery.
Referee. DM + aircraft computer level DM + 1 if aircraft has HUD DM + forward observer's FO skill DM + 1 if attacking aircraft is a helicopter.

To hit individual target within designated target area. Routine, Gunnery.
Referee· The difficulty level applies if the target is in the open The task is Difficult if the target is under cover DM + aircraft computer level. DM + 1 if aircraft has HUD. DM + 2 if attacking aircraft is a helicopter.

Penetration and Damage: Calculate penetration and damage for each hit as indicated on the Rockets Table and apply as indicated in the **MegaTraveller Player's Manual**

High-Explosive Bombs

High-explosive bombs come in a number of sizes as indicated in the High-Explosive Bomb Table below. They are simple, effective, and cheap.

HIGH-EXPLOSIVE BOMBS

Size	*Penetration*	*Damage*	*Danger*
200 kg	30	34	45 meters
350 kg	32	38	50 meters
450 kg	34	40	55 meters
1000 kg	48	60	100 meters

High-explosive bombs are either finned, low-drag bombs or are retarded, high-drag bombs fitted with air brakes or parachutes The latter are less accurate but may be dropped from lower altitudes because the aircraft has enough time to escape bomb blast damage

Ballute bombs are available at TL8 At the pilot's discretion, these may be dropped as high- or low-drag bombs, slowed by a self-inflating, air-filled "ballute" (balloon/parachute) on the tail assembly The pilot may select the drag mode prior to drop.

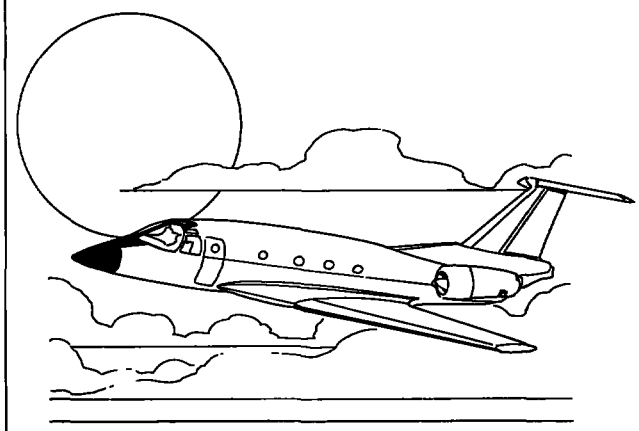
Release Points: Bomb release points vary with altitude, the range to the target square, and whether the aircraft is dive bombing or in level flight. Only high-drag bombs may be dropped below 500 meters

DIVE BOMBING RELEASE POINTS

Range	*Altitude (meters)*	*DM*
0	500-1500	−2
1	1500-3000	0
2	3000-4500	+1

Units: *Range:* Squares from target square

To hit designated target area with bombing attack Routine, Gunnery
Referee DM + aircraft computer level. DM + 1 if aircraft has HUD. DM + forward observer's FO skill DM + release point DMs. DM − if bombing with high-drag bombs. DM − 2 if bombing with napalm

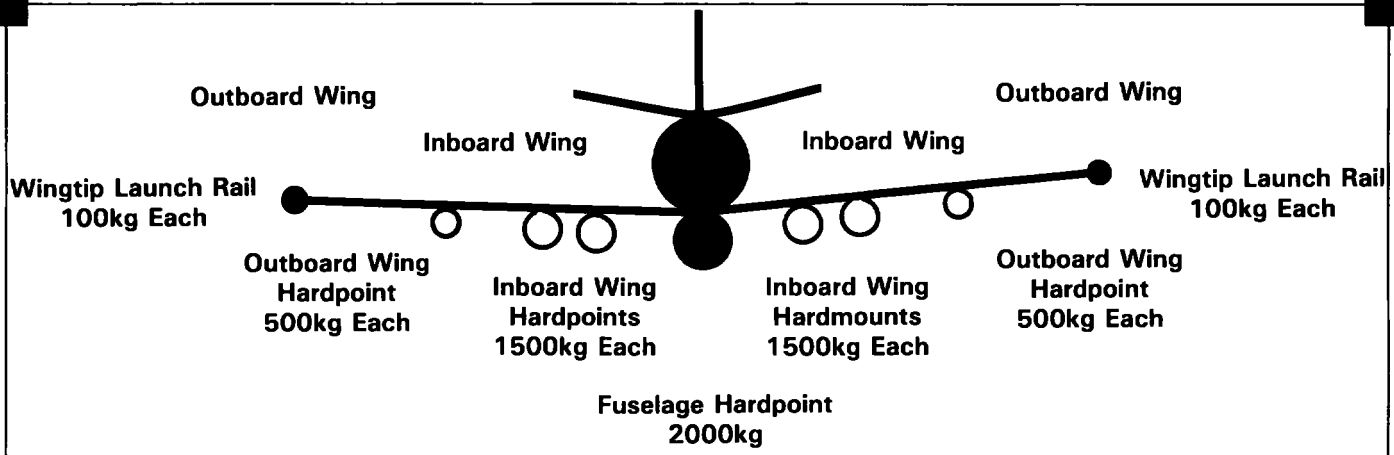


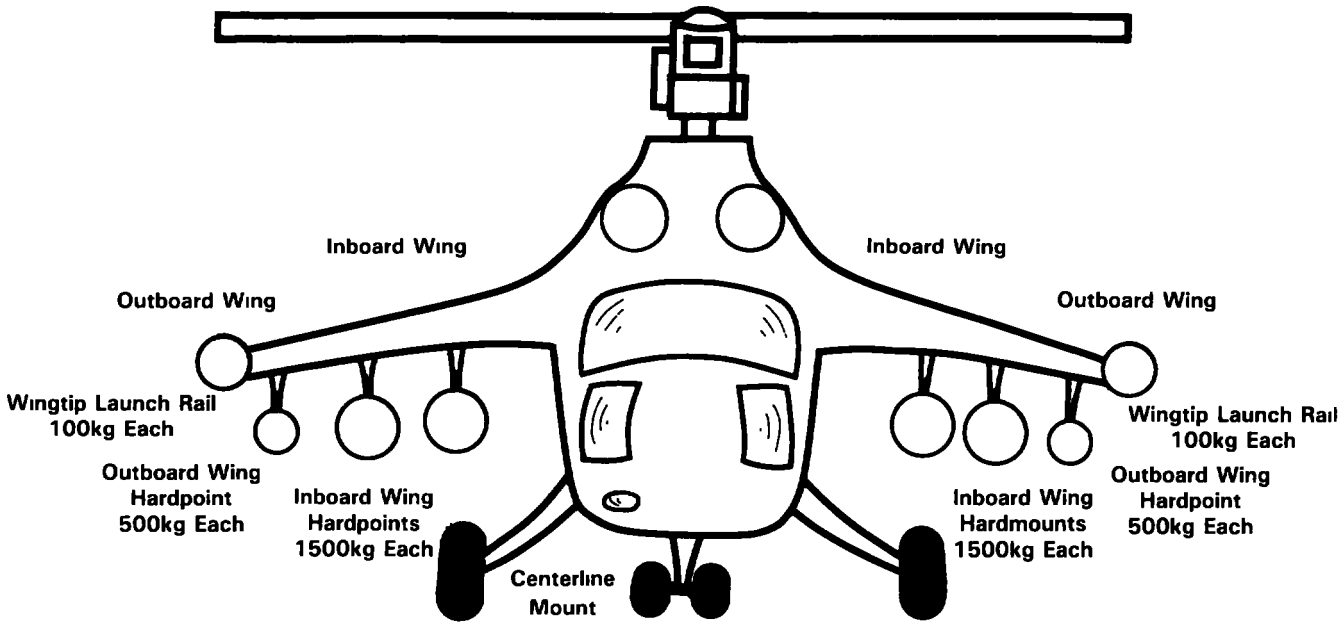
***BEVERLY HILLS* (TL7) PERSONAL JET AIRCRAFT**

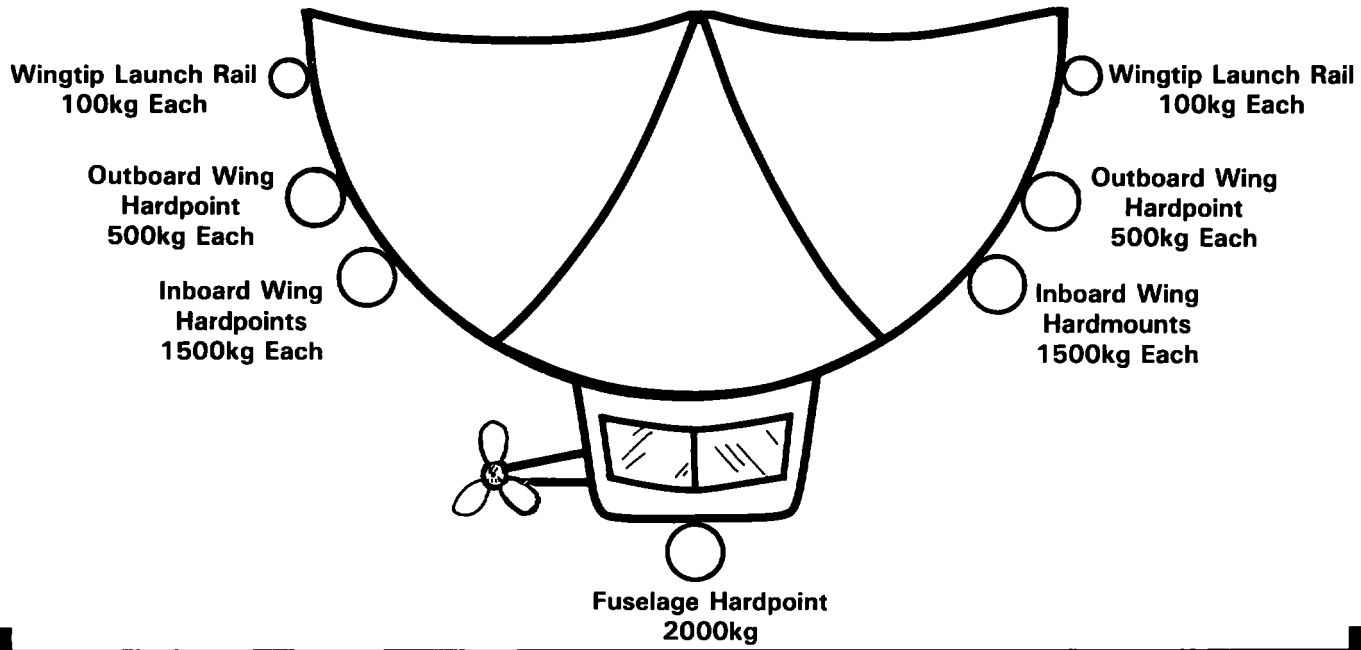
CraftID: Personal Jet Aircraft, TL7, Cr455,500
Hull: 40/100, Disp. = 16, Weight Loaded = 10tons, Airframe = Transonic
Power: 4/10 Gas Turbine × 2, 60 Mw, Endurance = 4 hours
Loco: Light Turbojet × 2, Thrust = 12tons, Minimum Speed = 176, Cruise = 825, Top = 1100, Agility = 1
Commo: Regional Radio × 1
Control: Boosted
Accom: Crew = 2 (Pilot, Copilot), Passengers = 4, Complex Cockpit × 2, Passenger Section
Other: Fuel = 5700liters, Cargo = .5ton

A small jet transport available for rapid, private transportation on many worlds These may be chartered with crew or purchased by qualified jet pilots Larger versions carrying up to 10 passengers with twice the endurance are also available for double the price. Both aircraft are substantially cheaper and faster than their grav-powered equivalents.

AIRCRAFT LOADOUTS







To hit individual target within designated target area in open terrain

Routine, Gunnery

Referee: DM + aircraft's computer level DM + 1 if aircraft has HUD DM + 4 if bombing with laser-guided bomb.

To hit individual target within designated target area under cover:

Difficult, Gunnery.

Referee: DM + aircraft's computer level. DM + 1 if aircraft has HUD DM + 4 if bombing with laser-guided bomb

Laser-Guided Bombs: If a forward observer, another aircraft, or the attacking aircraft has a laser aimed at the specific target and the attacking aircraft has dropped a laser-guided bomb, skip the task for hitting a designated target area and roll the task to hit an individual target.

Low-Level Bombing Hazard: If bombing with low-drag bombs below 1500 meters roll for the following task:

To avoid bomb blast damage to aircraft:

Routine (fateful).

Referee: Aircraft sustaining **Major** damage cannot return to base and pilot/crew must bail out **Destroyed** aircraft crash immediately, and crew cannot escape.

Number Dropped: Bombs may be dropped singly, in pairs, in "sticks" (all bombs dropped in sequence with timed intervals), or in salvoes (every bomb on the aircraft dropped at once)

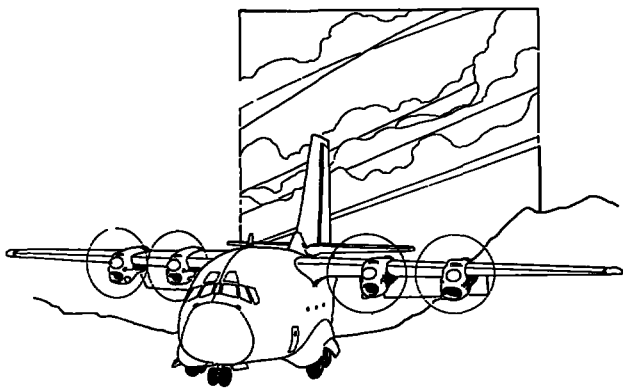
Danger Space: Multiply the danger space per bomb times the number of bombs dropped to determine the total blast radius per attack If bombs are dropped in sticks, the attacking player has the option of plotting impact points in a straight line along the attacking aircraft's direction of travel Bombs land approximately 50 meters apart

Penetration and Damage: Calculate penetration and damage for each hit as indicated on the High-Explosive Bombs Table and apply as indicated in the **MegaTraveller Player's Manual.**

Napalm: Napalm is a petroleum-based fuel which has been mixed with powdered aluminum thickeners, white phosphorus, and charcoal It is used to fill 350-kilogram firebombs with blunt ends and no fins. These firebombs are designed to tumble after they are released to cause maximum dispersion of the flaming fuel, and therefore napalm firebombs have only moderate accuracy.

Dive Bombing Attacks: Napalm bombs may be used in dive bombing attacks as described above with the indicated DMs. A napalm attack against dug-in troops is a Routine, not Difficult, task. Each napalm bomb used in a dive bombing attack has a 50-square-meter danger space

Laydown Attacks: Napalm bombs may be used in laydown attacks by aircraft flying level in the NOE altitude band. A designated target area for a laydown attack consists of a "footprint" of 100 meters times the number of bombs dropped long × 20 meters wide parallel to the aircraft's line of flight. If this designated area is successfully attacked, individual targets within the footprint are automatically attacked



***ANCHORAGE* (TL8) FRONTIER TRANSPORT**

CraftID: STOL Frontier Transport, TL8, Cr2,575,500
Hull: 420/1050, Disp = 200, Weight Loaded = 70tons, Airframe = Fast Subsonic
Power: 4/10 Gas Turbine × 4, .60 Mw., Endurance = 10 hours, 40 min, 11 hours, 40 min with demountable tanks
Loco: Basic Turboprops × 4, Thrust = 48tons, Minimum Speed = 80, Cruise = 570, Top = 760, Agility = 1
Commo: Regional Radio × 1
Control: Boosted
Accom: Crew = 4 (Pilot, Copilot, Flight Engineer, Loadmaster), Complex Cockpit × 2, Crew Station × 1
Other: Fuel = 40,800liters internal, 4000 additional in 2000liter × 2 demountable external tanks, Cargo = 20tons

Cargo transport designed to operate from rugged wilderness airstrips hauling either civilian or military cargo May haul up to 150 passengers in cramped seats or 130 troops to be either airdropped or combat landed into battle

NAPALM BOMBS

Size	Pen	Damage	Danger
350 kg	10	40	100m × 20m danger space parallel to aircraft in laydown attacks, 50 m² in dive bomb attacks

Incendiary Bombs

Incendiary bombs are filled with a fire- and smoke-producing chemical, usually white phosphorus, that creates a cloud of white smoke, causes severe burn wounds, and ignites any flammable structures it hits.

Incendiary bombs are aimed and dropped with the same DMs to hit a designated area and a specific target as low-drag HE bombs. They are more accurate but have a smaller danger space than napalm. In many cases, they are used primarily to generate smoke screens or mark targets rather than being used as incendiary weapons.

Incendiary bombs generate a cloud of smoke 30 meters in diameter on impact The cloud drifts with the wind and dissipates after 15 combat rounds

INCENDIARY BOMBS

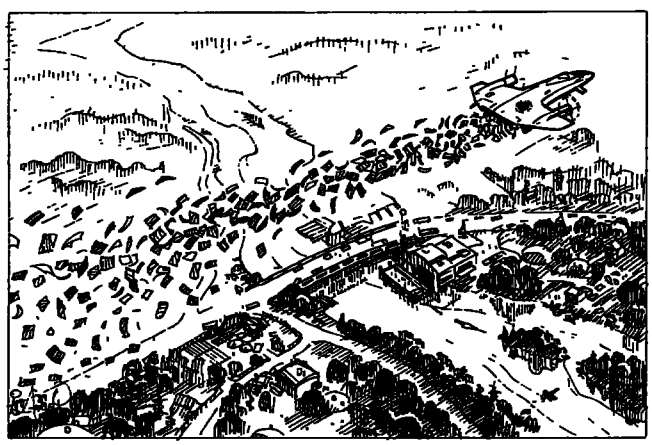
Size	Penetration	Damage	Danger
250 kg	10	30	30

Incendiary Rockets

Incendiary rockets (80mm) are also available. They have the same penetration and damage as incendiary bombs have but a danger space of 10 meters They are mostly used by airborne forward observers for marking targets Colored smoke rockets with half the penetration and damage of incendiary rockets are also used to mark targets

Cluster Bombs

Two versions of cluster bombs are available—high explosive antipersonnel (HE) and high explosive armor piercing (HEAP) Both types consist of bomb-shaped low-drag canisters containing hundreds of bomblets that are scattered over a wide area as the canister opens after it is dropped HE cluster bombs release spherical bomblets made of plastic explosive that release a cloud of flechettes as they explode. HEAP cluster bombs release small finned bomblets, each containing a shaped charge which detonates on impact



CLUSTER BOMBS

Type	Size	Penetration	Damage	Danger
HE	250 kg	9	6	120
HEAP	250 kg	28	8	120

To hit designated target area with a cluster bomb attack Routine, Gunnery, Forward Observer

Referee: DM + aircraft computer level DM + 1 if aircraft equipped with HUD Also apply release point DMs

To hit individual target within designated target area: Simple, Gunnery

Referee: The task is Routine if the target is under cover DM + aircraft computer level DM + 1 if aircraft equipped with HUD.

Missiles

The four basic types of missiles are.

- Laser-guided.
- Command-guided
- Homing
- Antiradiation.

Laser-Guided Missiles: These are similar to laser-guided bombs in that they home in on a target illuminated with a laser target designator The laser target designator may be aboard the launching aircraft, or a forward observer's aircraft, or may be aimed by an FO on the ground. Laser-guided missiles may be equipped with an HE warhead for use against structures such as buildings and bridges, or a HEAP warhead for use against armored targets

Command-Guided Missiles: These weapons are guided to the target by commands sent by radio link or wire—in the case of some helicopters—from the launching aircraft At TL6 and TL7, these missiles are manually guided by the pilot of the launching aircraft who manipulates a joystick in his cockpit to steer the missile to its target. At TL8 and above, optical tracking equipment tracks the missile after launch and guides the missile to the target as the pilot keeps the target centered on the screen of his missile-aiming system At this technology level, the aircraft's missile-aiming mechanism is a flexible television-based device that enables it to turn away from the target immediately after missile launch and yet keep the missile aimed on target

Homing Missiles: The four types of homing missiles are optical, infrared, active microwave, and neutrino homing

Optical Homing Missiles: When firing optical homing missiles, the pilot designates the target on the television screen of his aircraft's optical targeting system. This lets the missile "see" and lock onto the target and retain its image in memory before launch. The missile remains locked onto the target image after launch until impact

Infrared Homing Missiles: Infrared homing missiles lock onto the target's heat signature, such as exhaust or engine heat from a vehicle, and home in on target

Active Microwave Homing Missiles Active microwave homing missiles scan terrain with integral radar sets looking for metallic targets When microwaves are reflected back off a metallic target, such as an armored fighting vehicle, the missile homes in on the reflection.

Neutrino Homing Missiles: Neutrino homing missiles lock onto a target's radiation source, such as a fusion power plant, and home in on the target

Optical homing missiles may be used against vehicles and easily visible fixed targets, such as buildings, missile sites, gun emplacements, and bridges. Infrared homing missiles may only be used against targets with a significant heat source, such as vehicles and occupied buildings. Neutrino homing missiles are useful against fusion-powered vehicles and stationary power generators.

All are fire and forget weapons

Antiradiation Missiles: Antiradiation missiles (ARMs) home in on radar and radio emissions, and are used to suppress early warning and fire control radars, as well as radio transmitters.

Target Acquisition: Laser-guided missiles, infrared homing missiles, and ARMs must acquire their targets before launch Pilots firing command-guided or optical homing missiles must spot their targets before launch Pilots firing optical homing missiles must also spot and designate their targets before launch

To lock on laser-guided missile target, infrared homing target, or ARM target within 60 degrees of each side of the line of flight:
Simple, Gunnery, aircraft computer level.

To designate an optically guided missile target·
Routine, Gunnery, Instant.

Missile Launch: The launching aircraft must be diving toward the target, and descending at least one flight level per turn, and have the target within 30 degrees of either side of its line of flight for at least one combat round before launching a missile. The missile must be launched within its minimum and maximum launch ranges Add the missile's speed to the aircraft speed to determine total missile speed at launch.

To successfully launch an air-to-ground missile.
Simple, Instant (fateful).
Referee: A "fumble" result indicates the launching system was improperly armed, and the missile is "hung up" on its launcher.

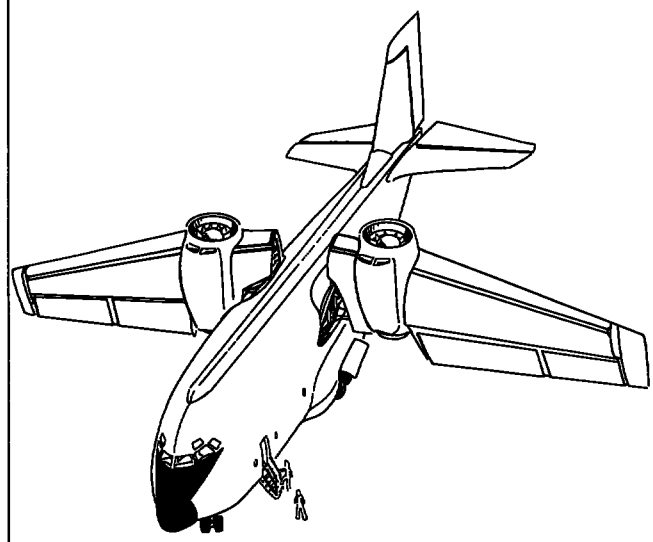
Missile Attack: Pilots who have launched a command-guided missile must roll the following task once each turn the missile is in flight

To successfully guide a command-guided missile toward its target.
Routine, Gunnery, Aircraft, Dexterity, Instant.
Referee: DM – 2 if missile TL6 or TL7

All pilots making missile attacks roll the following task in the turn the missile impacts

To hit a missile attack target.
Routine, Gunnery, Instant (fateful)
Referee DM – 2 if weather is hazy; DM – 4 if weather is rain; DM + 4 if laser-guided or ARM missile; DM – 4 if ARM target ceases transmitting and ARM is TL7 – .

Missile Attack Damage: See Air-to-Ground Missile Table for penetration and damage ratings



***NAIROBI* (TL9) VTOL FRONTIER TRANSPORT**

CraftID: VTOL Frontier Transport, TL8, Cr3,095,000
Hull: 420/1050, Disp. = 200, Weight Loaded = 70tons, Airframe = Fast Subsonic
Power: 4/10 Gas Turbine × 4, .60 Mw, Endurance = 3 hours
Loco: High Bypass Turbofans × 2, Thrust = 100tons, Cruise = 570, Top = 760, Agility = 1
Commo: Regional Radio × 1
Sensors: VDistant Radar × 1, Image Enhancement × 1
Control: Boosted
Accom: Crew = 2 (Pilot, Copilot), Complex Cockpit × 2
Other: Fuel = 24,000liters internal, Cargo = 20tons or up to 150 passengers or 130 troops

Cargo transport designed to operate from small open patches of terrain without any need for conventional airfields. The transport's wings, each with a high bypass turbofan at the wingtip, swivel into the vertical position for takeoff and landing, then swivel into the normal horizontal position for flight This aircraft's range is somewhat limited, however, because of the relatively high fuel consumption of the turbofans. Its radar and image enhancement sensors give it an all-weather/nighttime operations capability

HARDPOINTS

Hardpoint	*Maximum Weight (kg)*
Fuselage Hardpoint	2000
Plumbed FHP	2000 (or 2000-liter tank)
Inboard Wing Hardpoint	1500
Plumbed IWHP	1500 (or 1500-liter tank)
Outboard Wing Hardpoint	500
Wingtip Launch Rail	100

SPOTTING RANGES

Object	*Spotting Range*
Infantry units	3 kilometers/ 6 squares
Armor/vehicle units	6 kilometers/12 squares
Artillery	9 kilometers/18 squares
Buildings/structures	9 kilometers/18 squares
Multistory buildings	12 kilometers/24 squares

NAPALM BOMBS

Size	*Pen*	*Damage*	*Danger*
350 kg	10	40	100m × 20m danger space parallel to aircraft in laydown attacks, 50 m² in dive bomb attacks

INCENDIARY BOMBS

Size	*Penetration*	*Damage*	*Danger*
250 kg	10	30	30

CLUSTER BOMBS

Type	*Size*	*Penetration*	*Damage*	*Danger*
HE	250 kg	9	6	120
HEAP	250 kg	28	8	120

HIGH-EXPLOSIVE BOMBS

Size	*Penetration*	*Damage*	*Danger*
200 kg	30	34	45 meters
350 kg	32	38	50 meters
450 kg	34	40	55 meters
1000 kg	48	60	100 meters

DIVE BOMBING RELEASE POINTS

Range	*Altitude (meters)*	*DM*
0	500-1500	−2
1	1500-3000	0
2	3000-4500	+1

Units: *Range*· Squares from target square

STRAFING RANGE

Range	*Weapon*
3-square maximum	Aircraft cannon
1-square maximum	Heavy machineguns
1-square maximum	Light machineguns
Unlimited	Lasers in clear air

GUN PODS

Type	*Weight (kg)*	*Rounds*	*Shots*
7mm gatling gun	150	1400	14
20mm single autocannon	400	200	20
20mm 3-barrel autocannon	300	300	6
20mm 6-barrel autocannon	750	1200	12
30mm 6-barrel autocannon	850	400	4

LASER POD

A 0.5-megawatt beam laser driven by a 8-megawatt integral gas turbine/MHD generator with 350 liters of fuel sufficient for one hour of continuous operation Penetration = 5, Damage = 4 Weight = 1500 kilos, fuselage hardpoint only.

ROCKETS

Size	*Pen*	*Damage*	*Danger (m)*	*Range*
80mm HE	14	12	20	1000 m/2 squares
Flechette	3	3	100	
120mm HE	18	16	25	1500 m/3 squares
Flechette	4	4	150	

ROCKET PODS

Size	*Rounds*	*Weight (kg)*
80mm	7	60
80mm	19	200
120mm	3	200
120mm	1 (launch rail)	60

AIR-TO-GROUND MISSILE TABLE

Type	*Weight*	*Range Min/Max*	*Speed*	*Penetration/Damage*
Light ARM	200	6/24	12	26/28
Heavy ARM	500	6/45	14	30/34
Laser Guided	350	3/20	6	HE 30/34, HEAP 51/24
Command	1000	3/18	8	HE 34/40, HEAP 55/30
Auto Cmd	1000	3/45	5	HE 34/40, HEAP 55/30
TV Homing	200	2/24	6	44/20
IR Homing	200	2/24	6	44/20
Microwave Homing	50	2/12	6	40/18
(pod of 12)	(1000)			

AIR-TO-GROUND MISSILE TABLE

Type	Weight	Range Min/Max	Speed	Penetration/Damage
Light ARM	200	6/24	12	26/28
Heavy ARM	500	6/45	14	30/34
Laser Guided	350	3/20	6	HE 30/34, HEAP 51/24
Command	1000	3/18	8	HE 34/40, HEAP 55/30
Auto Cmd	1000	3/45	5	HE 34/40, HEAP 55/30
TV Homing	200	2/24	6	44/20
IR Homing	200	2/24	6	44/20
Microwave Homing	50	2/12	6	40/18
(pod of 12)	(1000)			

Orbit to Ground Weapons: Fire support from orbit is a major mission of a COACC force's orbital components, including system defense boats, monitors, and orbiting artillery platforms. Orbital fire support may be conducted by space vessels, small craft, and orbiting platforms using lasers, energy weapons, missiles, particle accelerators, and meson guns.

Fire support from orbit is classified as long-range indirect fire. In spite of the distance, it is considered artillery rather than air support. Consequently, a forward observer trained in directing orbital fire—*not* just a forward observer—must be within line of site of the intended target for an orbital fire mission to be successful

To hit a targeted location with indirect fire.

Difficult, Forward Observer, 1 combat round (absolute, fateful).

Referee: Indirect fire from orbit requires a trained forward observer who can see the target and adjust fire Orbital fire called in by the observer begins arriving in the combat round after the fire mission is requested

Indirect fire from orbit automatically scatters if the task fails. Indirect fire from orbit falls on friendly positions if a 2 (fumble) is rolled. Roll for a Mishap in case of failure. A **Superficial** mishap scatters the fire 500 meters (one square) in a random direction; a **Minor** mishap scatters fire 1000 meters (two squares); a **Major** mishap scatters fire 1500 meters (three squares); and **Destroyed** mishap scatters fire 2000 meters (four squares).

Reroll the task to correct fire on a target Add a cumulative DM of +1 for each combat round fire correction is called to the orbiting artillery platform

Orbiting starships and other vessels may provide laser, energy weapon, and particle accelerator fire support only while directly overhead. They are overhead one-third of the time of their orbital period. Their orbital period is equal to the UPP Planetary Size Code; e.g , a vessel orbits a size 8 planet in eight hours and would be overhead for only 2 6 hours every eight-hour orbit. Roll 5+ on 1D to determine if a given vessel is overhead and available for orbital fire support. *Note:* Particle accelerators may not fire through atmosphere. They are only effective against targets on a vacuum world's surface.

Missiles fired from orbit may be laser guided by the forward observer or other target designator, command guided via radio link from their launching vehicle, or preprogrammed to hit a specific target with a terrain-matching targeting system.

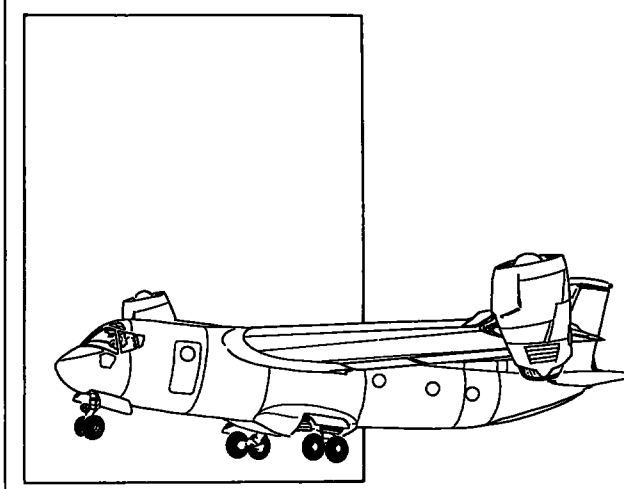
To hit a target with missiles launched from orbit.

Routine, Gunnery, Forward Observer, Instant (fateful)

Referee: DM−2 if weather is hazy; DM−4 if weather is rain; DM+4 if laser-guided or ARM missile; DM−4 if ARM target ceases transmitting and ARM is TL7−.

Turret-launched missiles have a warhead equal to a 16cm howitzer round; bay-launched missiles have a warhead equal to a 24cm howitzer round

Orbital Fire Damage: Complete statistics for starship weapons used in orbit-to-ground fire—including damage, penetration, and commentary—can be found on page 80 of the **MegaTraveller Players' Manual**.



***PASADENA* (TL9) VTOL INTERURBAN AIRLINER**

CraftID: VTOL Airliner, TL8, Cr3,416,000
Hull: 420/1050, Disp.=200, Weight Loaded=70tons, Airframe=Transonic
Power: 4/10 Gas Turbine×2, .60 Mw, Endurance=3 hours
Loco: High Bypass Turbofans×2, Thrust=100tons, Cruise=785, Top=1045, Agility=1
Commo: Regional Radio×1
Control: Boosted
Accom: Crew=8 (Pilot, Copilot, Flight Attendants×6), Complex Cockpit×2. Basic Life Support
Other: Fuel=28,000liters internal, Passengers=120, Cargo=3.5tons

Short- to medium-haul VTOL airliner designed to fly from city center to city center avoiding the need for runways and congested airports. This design is highly popular on high-population worlds for quick travel between cities and remains viable economically until thruster-powered airbuses and airliners replace airfoil-based airliners.

Aircraft Ordnance

A wide variety of air-to-air and air-to-ground aircraft ordnance is available to flyers of all tech levels, ranging from light machineguns and crude hand-thrown bombs at TL5, to energy weapons and space-to-space self-guided thermonuclear missiles at TL15 Following is a sample of some of the aircraft weapons and related devices available to flyers on the worlds of the once-mighty Imperium

AIR-TO-AIR WEAPONS

Air-to-air weapons are designed to be used by aircraft to destroy other aircraft They include the following

Machineguns: These are rapid-firing slug throwers designed to fire solid projectiles at target aircraft. Multiple hits are needed to damage and disable aircraft engines, control cables, and control surfaces Slugs also wound and kill crew and passengers Machineguns are useful for strafing unarmored ground targets. Light, medium, and heavy machineguns are available for aircraft beginning at TL5 They are generally superseded by aircraft autocannons at TL7

Autocannons: These heavy-caliber, rapid-firing slug throwers fire explosive and incendiary shells. They cause damage by penetration, explosion, and fire. First introduced at mid-TL5, early aircraft autocannons are plagued with low muzzle velocities (thanks to their short barrels), short ranges, and an inability to penetrate enemy armor By TL6, they have greater penetration and increased lethality. Multibarrel autocannons bring high rates of fire at TL7 and are the leading close-in dogfighting weapon at ranges under 1500 meters.

Lasers: The first airborne lasers appear at TL7 crudely mounted aboard larger transport aircraft converted to weapons platforms Lasers increase in power and decrease in size so that by TL9 they are mounted as integral weapons or carried in pods by fighters and attack aircraft They supersede slug throwers by TL10 By TL13, x-ray lasers yielding 250 megawatts are widely used air-to-air, air-to-ground, and space-to-space weapons by fighter aircraft and spacecraft

Missiles: Infrared homing missiles appear at TL6. They home in on the hot exhaust and engine metal of their targets. They may only be fired from astern of the target aircraft At TL7, all-aspect infrared homing missiles become available These home in on the relative warmth of the entire target aircraft and may be fired at the target from any angle.

SARH missiles become available at TL7 These home in on reflected radar energy from the target aircraft as it is illuminated by the launching fighter. The launching aircraft must be radar equipped and illuminate the target the entire time the missile is in flight SARH missiles are susceptible to jamming

ARHMs first become available at TL8. These have their own miniature on-board radar sets and need the launching aircraft to illuminate the target only part of the way to the target Once within range of their on-board radar sets, the internal missile radar takes over final guidance to the target At TL9, true fire and forget missiles appear that lock onto their target aircraft immediately at launch.

AIR-TO-GROUND WEAPONS

Air-to-ground weapons include

Machineguns: As indicated in the previous section, these slug throwers are also used against soft ground targets, principally troops and unarmored vehicles caught in the open As more powerful and sophisticated helicopters are developed at TL7, both fixed, forward-firing and flexible, pintle- and turret-mounted machineguns were successfully fitted to these craft as air-to-ground weapons

Autocannons: In addition to the dual-purpose autocannons discussed above, specialized air-to-ground autocannons firing hypervelocity armor-piercing shells are developed as a major antiarmor weapon Their high rate of fire plus the kinetic effect of their depleted uranium slugs allow these autocannons to kill tracked battlefield tanks. Internal as well as pod-mounted versions are available.

Turret-mounted single- and multibarrel autocannons also prove to be effective helicopter-mounted air-to-ground weapons Autocannons and guided missiles combine to turn helicopters into lethal tank destroyers at TL8

Bombs: Explosive-filled bombs are cheap and simple to make They are also the first purpose-built, air-to-ground weapons, appearing as simple, hand-thrown bombs at TL5 As aircraft become more powerful, they carry larger loads of heavier bombs, as well as increasingly sophisticated bomb sights. By TL6, various forms of incendiary, smoke, and chemical bombs are developed, as well as the first crude nuclear bombs Fusion bombs weighing as much as 5000 kilograms are developed at TL7 but shrink rapidly becoming effective "tactical" weapons weighing as little as 350 kilograms by TL8 The latter thermonuclear weapons are sophisticated "dial-a-yield" devices that enable the pilot to select a yield of from 100 kilotons to one megaton while in flight

Both optical and laser bomb guidance packages are developed by late TL7. The first enables the bomb to "see" the target with a television camera and transmit it to the pilot of the attacking aircraft, who steers the bomb onto the target with a small joystick controller in the cockpit The second homes in on reflected laser light directed at the target by the pilot or a forward observer Both packages attach guidance electronics and movable fins to standard "iron" bombs, con-

verting them to precision-guided "smart weapons " Although guidance packages can be attached to any size bomb, they are most commonly attached to 1000-kilogram and larger bombs, and used against hard targets such as bridges

Cluster Bombs: The first cluster bombs appear at TL6 filled with magnesium incendiary bomblets As explosives technology is developed, antipersonnel cluster bombs are built at TL7 containing spherical, high-explosive bomblets studded with flechettes. As they are dropped, the cluster bomb containers open releasing the bomblets in a wide pattern. The bomblets explode on impact, releasing a cloud of the dart-like flechettes over a wide area. Antiarmor cluster bombs are available at TL8 that release small, finned bomblets with shaped charge HEAP warheads capable of penetrating light to medium armor

Napalm: Napalm firebombs become available at TL6 as antipersonnel/incendiary weapons These are relatively inaccurate area weapons filled with a petroleum-based fuel mixed with powdered aluminum thickeners, white phosphorus, and charcoal. They are effective against personnel in the open and soft vehicle targets.

Rockets: Unguided rockets first appear as air-to-ground weapons at TL6, generally fired in pairs at specific targets, giving the launching aircraft a "standoff" capability Standardized pods are developed at TL7, enabling rocket salvoes to be fired into a target area with an effect analogous to a giant shotgun blast Rocket pods are highly effective helicopter (as well as fixed-wing aircraft) weapons. Rocket warheads include high-explosive, smoke, and flechette types.

Missiles: The first air-to-ground missiles appear in late TL6 as command-guided weapons tracked visually by the pilot and steered with a joystick control Other versions include a television camera in the missile's nose and a television receiver in the launch aircraft's cockpit These let the pilot see the target from the missile and guide it to impact with his joystick controller Missiles are more accurate than bombs and give a greater standoff attack capability than guided bombs or free-flying rockets

More sophisticated homing missiles that close in on reflected laser light or infrared radiation emitted by the target are available at TL7. Also at TL7, optically guided missiles appear. These need only to lock onto the target with an integral television camera. Once the target's image is in memory, the missile will home all the way to impact without further guidance, making it a true fire and forget weapon. This capability frees the pilot to take evasive action and leave the target area

Specialized antiradiation missiles are also developed. These home in on radar emissions, and are used to destroy early warning and fire control radars by specialized air defense suppression aircraft that lead in a major air strike. Early TL7 versions are foiled by simply turning off the target's radar. Later TL8 versions remember the radar's location and continue homing even if the transmitter is turned off

Automated command-guided missiles which only need the pilot to keep the target centered in the screen of his electro-optical missile aiming system become available at TL8

Active microwave homing missiles appear at TL8. These have miniature radar sets that guide them to metallic targets on the ground, such as armored fighting vehicles, by the microwaves reflected from the target. They may be launched from behind a hill separating the launching aircraft from the target or from other remote locations as fire and forget weapons. Once launched, they automatically scan for and home in on metallic targets. Active microwave homing missiles are available in pods of 12, each weighing 1000 kilograms.

Neutrino homing missiles appear at TL10 and prove extremely useful against fusion-powered grav vehicles

OTHER EXTERNAL STORES

A variety of external stores may be carried These include:

Fuel Tanks: These 500-, 1000-, and 2000-liter external fuel tanks are widely available to extend aircraft range They must be mounted on plumbed hardpoints (equipped with fuel intake piping) and are often dropped when empty

Refueling Pods: These contain 1000 liters of fuel, a hose reel, and a drogue. When one of these is mounted and a control unit is installed in the cockpit, any aircraft is converted into a tanker that can refuel other refueling probe-equipped aircraft in flight. Refueling pods weigh 1500 kilograms

Electronic Countermeasures Pods: ECM pods come in several varieties Some weighing in the 250-kilogram range provide antiradar jamming for an entire flight of aircraft, protecting against early warning and missile fire control radars out to 50 kilometers (very distant) Others weighing about 20 kilograms eject passive radar jamming "chaff" and infrared decoy flares. These protect individual aircraft against radar-guided and infrared homing missiles The pods are light enough to be mounted on the wingtips or conformally on the fuselage where the wings and fuselage join

ECM aircraft are often purpose-built to provide up to 500 kilometers (regional) radar jamming coverage.

Target Designator Pod: Two versions of this pod are available and needed to control some varieties of smart bombs and guided missiles. Laser target designator pods enable an attacking pilot to illuminate a target from his aircraft for his own or another aircraft's ordnance Optical target designator/data-link pods are needed for automated command-guided missiles if the aircraft does not carry an integral target designation and tracking system The optical pod may operate in visible light or infrared Either type weighs about 200 kilograms and requires one hardpoint.

Reconnaissance Pods: These weigh about 200 kilograms and require one hardpoint. They include their own power supply, as well as still, motion picture, and (beginning at TL8) video cameras and recorders Depending on the cameras included, recon pods can be configured for high-altitude, vertical photography, or low-altitude, forward- and side-looking, still and motion photography. Cameras sensitive to infrared light are also carried At TL8 and above, recon pods transmit images back to the aircraft's base in near real time. At TL10 and above, holographic images are captured and transmitted.

Flare Dispensers: Flare dispenser pods containing four flares each are available at TL7. Flares fired from these pods can illuminate 500 square meters for three minutes when dropped from 1000 meters above ground level. Night attack aircraft generally work in pairs—one dropping flares over suspected target locations, the other spotting targets and attacking (See the "Spotting" task in the air-to-ground combat rules regarding the use of flares when spotting at night)

AIR-TO-AIR MISSILES

TL	Type	Weight	Range Min/Max	Speed	Damage	Cost
6	IRHM	100	—/20	5	16	Cr1100
7	SARH	200	6/60	10	28	Cr3000
8	ARHM	200	6/60	10	28	Cr3500

AIR-TO-GROUND MISSILES

TL	Type	Weight	Range Min/Max	Speed	Penetration/Damage	Cost
7	Light ARM	200	6/24	12	26/28	Cr2200
7	Heavy ARM	500	6/45	14	30/34	Cr4500
8	Laser Guided	350	3/20	6	HE 30/34, HEAP 51/24	Cr2500
6	Command	1000	3/18	8	HE 34/40, HEAP 55/30	Cr7780
7	Auto Cmd	1000	3/45	5	HE 34/40, HEAP 55/30	Cr9000
7	TV Homing	200	2/24	6	44/20	Cr2000
7	IR Homing	200	2/24	6	44/20	Cr1300
8	Microwave Homing	50	2/12	6	40/18	Cr500
	(pod of 12)	(1000)				Cr6000 per pod
10	Neutrino Homing	200	2/24	8	44/20	Cr10,000

Units: *Range.* Squares. One square = 500 meters *Speed:* Squares per turn One square = 500 meters

GROUND-TO-AIR GUNS

TL	Weapon	Ammo Notes	Rds	Pen/Atten	Max Dmg	Range	Ceiling	Cost
6	Heavy Machinegun	Belt	100	6/3	3	500m/ 1sq	1000	3000/ 250
6	20mm Autocannon	HE Belt	50	1	6	1500m/ 3sq	1500	4400/ 100/ 2
7	20mm 3-barrel	HE Hopper	2500	2	6	1500m/ 3sq	1500	6400/5000/ 2
7	20mm 6-barrel	HE Hopper	2500	2	6	1500m/ 3sq	1500	7600/5000/ 2
5	40mm Autocannon	HE Clip	10	5	8	5000m/10sq	2000	17,500/ 80/ 8
6	60mm Autocannon	HE Clip	5	9	10	5000m/10sq	2000	40,000/ 125/25
6	80mm AAA Cannon	HE Single	1	14	12	10,000m/20sq	10,000	52,000/ 55
6	100mm AAA Cannon	HE Single	1	16	14	10,000m/20sq	10,000	84,000/ 120
6	120mm AAA Cannon	HE Single	1	18	16	10,000m/20sq	10,000	120,000/ 160

GROUND-TO-AIR MISSILES

TL	Type	Weight	Range Min/Max	Speed	Ceiling	Damage	Cost
7	Portable SAM	16 kg	—/ 8	10	1500	13	Cr400
7	Light SAM	100 kg	—/ 20	5	2500	16	Cr1100
6	Medium SAM	625 kg	2/ 70	20	10,000	30	Cr142,000
6	Heavy SAM	5000 kg	5/200	20	20,000	32	Cr750,000
9	150mm Ships	250 kg*	Far Orbit	6G6	Far Orbit	**	Cr6000/1000

Notes: *Includes 200kg booster stage **Calculate hits and damage with **MegaTraveller** ship-to-ship missile combat tables in the **MegaTraveller Referee's Manual.**

GUNS

TL	Weapon	Ammo Notes	Rds*	Pen/Atten	Dmg	Max Range	Autofire Targets**	Cost
5	Medium Machinegun	Belt	100	3/3	3	VLong	3	1500/ 120
6	Light Machinegun	Belt	100	3/3	3	VLong	2	1200/ 120
6	Heavy Machinegun	Belt	100	6/3	3	VLong	2	3000/ 250
6	20mm Autocannon	HE Belt	50	1	6	VLong	2	4400/ 100/2
6		KEAP		8	4			
7	20mm 3-barrel	HE Hopper	2500	2	6	VLong	7	6400/ 5000/2
		KEAP		8	4			
7	20mm 6-barrel	HE Hopper	2500	2	6	VLong	15	7600/ 5000/2
		KEAP		8	4			
8	30mm Autocannon	HE Belt	50	3	7	Distant	2	8800/ 250/5
		KEAP		13	5			8800/ 250/5
8	30mm 6-barrel	KEAP Hopper	2500	13	5	Distant	15	19,000/12,500/5

Notes: *Figure equals rounds in standard belts and standard hoppers Multiple linked belts are usually loaded per aircraft gun. Aircraft hoppers hold a limited ammunition supply. See individual aircraft listings for actual ammunition supply **Maximum air-to-ground strafing targets only. See combat rules governing number of hits per shot in air-to-air combat *Cost Figure* Cost per gun/cost per belt or hopper/cost per round (autocannon only)

GUN PODS

Type	Weight	Rounds	Shots	Cost
20mm single autocannon	400 kg	200	20	Cr5000
20mm 3-barrel autocannon	300 kg	300	6	Cr7200
20mm 6-barrel autocannon	750 kg	1200	12	Cr10,400
30mm 6-barrel autocannon	850 kg	400	4	Cr21,600

ROCKETS

TL	Type	Size	Penetration	Damage	Danger	Range
7	HE	80mm	14	12	20 m	1000 m/2 squares
7	Flechette	80mm	3	3	100 m	1000 m/2 squares
6	HE	120mm	18	16	25 m	1500 m/3 squares
7	Flechette	120mm	4	4	150 m	1500 m/3 squares

ROCKET PODS

TL	Size	Rounds	Weight	Cost
7	80mm	7	60 kg	Cr350
7	80mm	19	200 kg	Cr950
7	120mm	3	200 kg	Cr350
6	120mm	1 (launch rail)	60 kg	Cr100

BOMBS

TL	Type	Size	Penetration	Damage	Danger	Cost
5	High Explosive	50 kg	24	24	35 m	Cr135
6	High Explosive	250 kg	30	34	45 m	Cr285
6	High Explosive	350 kg	32	38	50 m	Cr720
6	High Explosive	500 kg	34	40	55 m	Cr1200
6	High Explosive	1000 kg	48	60	100 m	Cr2000
6	Incendiary	250 kg	10	30	30 m	Cr500
7	Cluster HE/Frag	250 kg	9	6	120 m	Cr2500
8	Cluster HEAP	250 kg	28	8	120 m	Cr3500
6	Napalm	350 kg	10	40	50 m*	Cr750

Notes: *Indicated danger space is for dive bomb attack only. Danger space per napalm bomb in laydown attack is 100 × 20 meters parallel to aircraft track. *Cost:* Add Cr100 per bomb for high-drag airbrakes, Cr200 per bomb for pilot-controlled ballute low-drag/high-drag airbrake system (TL8+ only); Cr500 per bomb for laser guidance package; Cr1000 per bomb for television command guidance package

Ground-to-Air Combat

Air defense—ground-to-air combat—is both a major function of many COACC forces and a major obstacle to the successful completion of many COACC air combat missions. Depending on tech level, characters may expect to run into (or be part of) air defenses consisting of aircraft and guns, missiles, and/or energy weapons If serving in a COACC force on a sufficiently advanced world, a flyer may find himself serving far underground in a deep meson gun pit

These rules may also be used by mercenary characters defending themselves against air attack This section includes descriptions of some of the antiaircraft and antispacecraft weapons available in Imperial space

GROUND FIRE

Ground fire is the simplest, least effective form of antiaircraft defense. It consists of defending troops firing their personal weapons and light machineguns skyward in a usually vain attempt to down an attacking aircraft. Mostly, ground fire is good only for morale Rarely, however, a rifle bullet will sever a fuel line or control cable and bring about the end of a multimillion credit aircraft. On the whole, defending troops would be better off keeping under cover.

Note: Ground fire is a form of rapid fire. Units conducting ground fire empty their weapons in one combat round

To hit attacking aircraft with ground fire
Formidable, Combat Rifleman or Submachinegun, Dexterity.

Referee. The attacking aircraft must be below 1000 meters (two flight levels) and pass over the defenders' square before this task may be attempted If successful, inflict the weapon's number of damage points per hit Apply damage as indicated with a 1D roll on the Damage Location Table in "Air-to-Air Combat "

LIGHT ANTIAIRCRAFT ARTILLERY (AAA)

Light AAA includes automatic slug throwers fitted with antiaircraft sights, and mounted on tripods or pintles that allow high-angle, 360-degree fire. Heavy machineguns mounted on high-angle tripods, vehicle pintles, or multiple mounts of two or four are included in this category So are 20mm and 30mm single- and multibarrel autocannons on towed or self-propelled vehicle mounts VRF gauss guns fall into this category as well Roll the following task to hit once for each barrel firing at an attacking aircraft

To hit an attacking aircraft with light antiaircraft artillery:
Formidable, Heavy Weapons, Dexterity.

Referee: The attacking aircraft must be at or below three flight levels (1500 meters) and within a range of three squares before autocannons may open fire, and at or below two flight levels (1000 meters) and within a range of one square before heavy machineguns may fire. Some light AAA guns may have integral fire control radar and computing gunsights If so, the task to hit becomes Difficult.

If the task is successful, inflict the firing weapon's number of damage points (see Ground-to-Air Guns Table) for each hit against the aircraft. Apply damage as indicated with a 1D roll on the Damage Location Table in "Air-to-Air Combat "

MEDIUM AAA

Medium AAA weapons include autocannons from 40mm to 60mm. These may be located in stationary gun pits and tied into radar-directed mass fire batteries or mounted on self-propelled vehicle chassis. One- and two-barrel weapons are common

To hit an attacking aircraft with medium antiaircraft artillery:
Formidable, Gunnery, Dexterity

Referee: The attacking aircraft must be at or below four flight levels (2000 meters) and within 10 squares range before autocannons may open fire If a gun is equipped with fire control radar or is part of a radar-controlled battery, the "To Hit" task becomes Difficult.

If the task is successful, inflict the firing weapon's number of damage points (see Ground-to-Air Guns Table) for each hit against the aircraft Apply damage as indicated with a 1D roll on the Damage Location Table in "Air-to-Air Combat."

HEAVY AAA

Heavy AAA guns are generally replaced with missiles by TL8. However, at more primitive tech levels they can be deadly Heavy AAA guns range in caliber from 80mm to 120mm They are generally fired in barrages using proximity-fused shells at altitudes up to 10,000 meters (20 flight levels)

To hit an attacking aircraft with heavy antiaircraft artillery·
Formidable, Gunnery, Sensor Ops.

*Referee:*The Gunnery and Sensor Ops skills of different gun crew members may be combined for the task roll Heavy AAA gun batteries must be radar directed to fire against high-altitude targets. They may fire against targets flying at 10000 meters or below, and within 10 squares (five kilometers) of their location.

If the task is successful, inflict the firing weapon's number of damage points (see Ground-to-Air Guns Table) for each hit against the aircraft Apply damage as indicated with a 1D roll on the Damage Location Table in "Air-to-Air Combat."

MISSILES

Ground forces can make use of several types of missiles for defense.

Man-Portable SAMs

Introduced at TL7, these shoulder-fired weapons gave the infantry the first dedicated antiaircraft weapon that provided a measure of battlefield air defense. They weigh approximately 16 kilograms, including launch tube The target must be visually acquired and identified, and the infrared guidance system locked on before the missile is fired These missiles are deployed with two-man teams, the gunner carrying the launch tube loaded with one missile and the assistant carrying two reloads. Two teams are deployed per company.

TL7 man-portable SAMs must be fired at the rear of their targets. TL8+ man-portable SAMs incorporate all-angle IR seekers. Both models may be decoyed by infrared flares dropped by the target aircraft

To hit an attacking aircraft with a man-portable SAM:
Routine, Heavy Weapons, Dexterity

Referee: DM−2 for each infrared countermeasures flare dropped by the target aircraft Man-portable SAMs may be fired against targets flying at 1500 meters or below and within eight squares (four kilometers) of the launch point.

If the task is successful, inflict the missile's damage points (see Ground-to-Air Missiles Table) for each hit against the aircraft. Apply damage as indicated with a 1D roll on the Damage Location Table in "Air-to-Air Combat."

Light Vehicle-Mounted SAMs

Air-to-air IRHM are converted to light SAMs by mounting them on four-rail launchers aboard light, tracked, armored fighting vehicles. They usually operate in conjunction with multibarrel autocannons also mounted aboard tracked AFVs to provide a close-in antiaircraft defense for front-line headquarters units and air bases. Targets must be visually detected and locked on before firing. Light SAMs may engage targets out to 20 squares (10 kilometers) and up to 2500 meters (flight level 5).

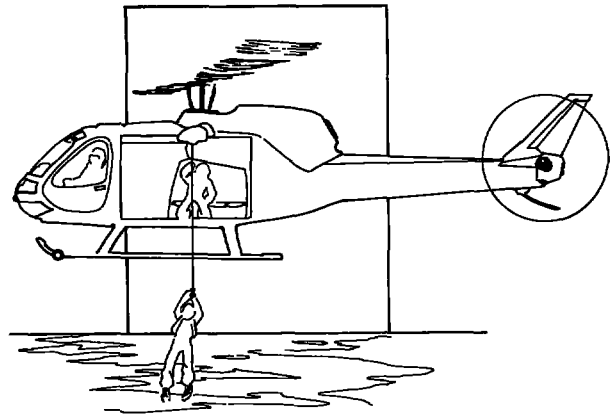
To hit an attacking aircraft with a vehicle-mounted SAM:
Routine, Heavy Weapons, Dexterity.

Referee: DM−2 for each infrared countermeasures flare dropped by the target aircraft. Light SAMs may be fired against targets flying at 2500 meters or below, and within 20 squares (10 kilometers) of the launch point

If the task is successful, inflict the missile's damage points (see Ground-to-Air Missiles Table) for each hit against the aircraft. Apply damage as indicated with a 1D roll on the Damage Location Table in "Air-to-Air Combat "

Medium SAMs

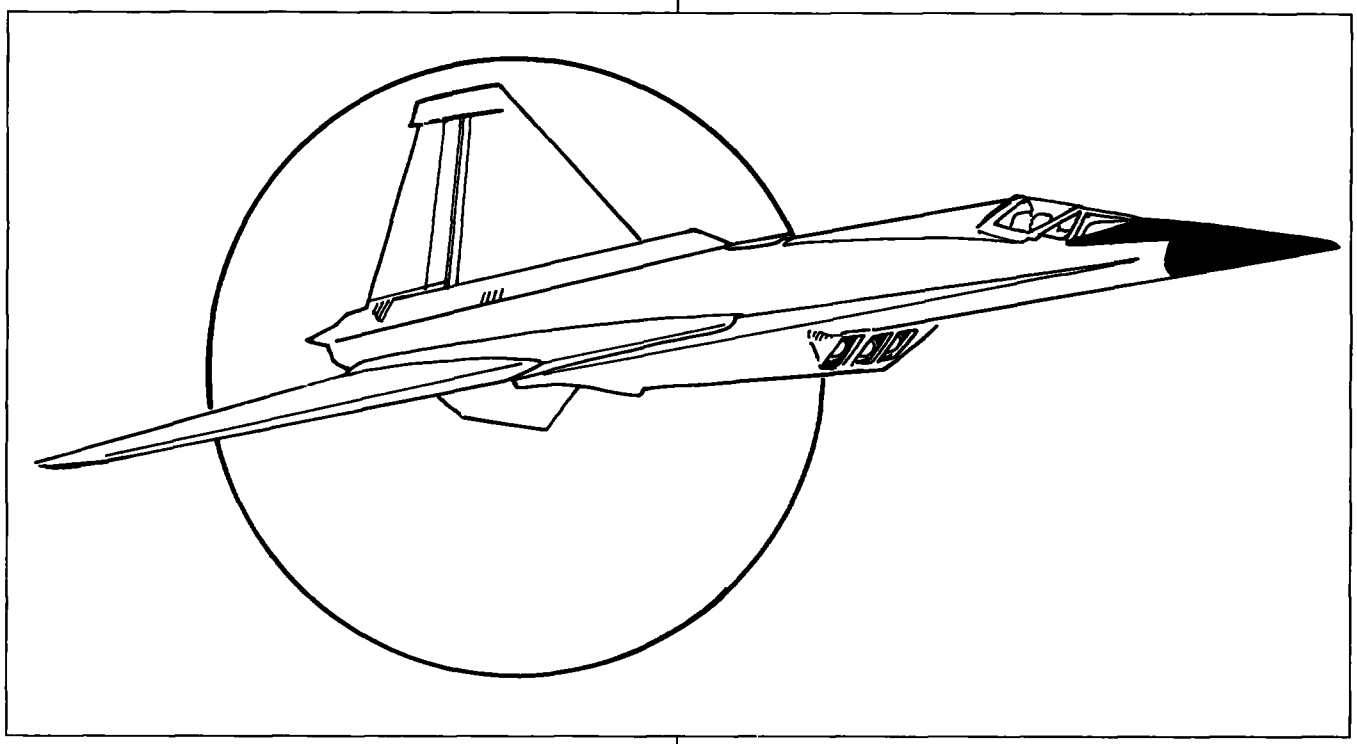
Medium SAMs are semistatic weapons employed to defend headquarters units, bases, and critical industrial sites from air attack. Medium SAM batteries employ three to four multirail launchers (each holding three missiles) and a radar control van. Targets are first acquired by separate early warning radar



***HARTFORD* (TL6) UTILITY HELICOPTER**

CraftID: Helicopter, TL6, Cr58,500
Hull: 16/40, Disp.=5, Weight Loaded=4tons, Airframe=Simple, Armor=0
Power: 4/10 Internal Combustion, 1 25 Mw, Endurance=2 hour, 10 min
Loco: Main and Tail Rotor, Lift=5tons, Thrust=1.25tons, Cruise=225, Top=300
Commo: Regional Radio×1
Control: Simple
Accom: Crew=3, (Pilot, Copilot, Observer), Simple Cockpit×2, Observer rides in passenger/cargo compartment, 9 passengers+observer
Other: Cargo=1ton internal in place of passengers+ observer, 1ton internal+1ton external sling load, or 2ton external sling load; Fuel=850liters

A utility helicopter used as a search-and-rescue vehicle and to carry urgent cargo as well as troops for the first experimental airmobile units. This helicopter is equipped with a cable, sling, and hoist capable of lifting 120 kilograms. It's used to lift personnel into the passenger/cargo compartment while the helicopter hovers, enabling this aircraft to perform its search and rescue mission



systems and passed down to the battery fire control radars The missiles are launched once fire control radars lock onto the target and remain locked on for one turn. The missiles are guided by the fire control radars to their target. The lock-on must be maintained until impact

To lock onto target aircraft with SAM fire control radar:
Routine, Sensor Ops.
Referee. DM – 2 for each chaff ECM cartridge fired by target aircraft in lock-on turn DM – 4 if target aircraft or aircraft within 50 kilometers is using active jamming pod or if dedicated ECM aircraft is operating within 500 kilometers

To launch a missile
Simple, Gunnery
Referee **Superficial** or **Minor** mishaps result in the missile not leaving the launcher **Major** and **Destroyed** mishaps result in the missile exploding on the launcher
A missile may be launched after the target is tracked for one turn, and is within 35 kilometers (70 squares) of the launch point and at less than 10000 meters (flight level 20) altitude

To maintain a lock on a target aircraft during missile flight:
Routine, Gunnery or Sensor Ops
Referee· DM – target aircraft pilot's Aircraft and Tactics skills DM – 2 for each aircraft chaff cartridge fired each turn DM – 4 if aircraft active jammer pod is in operation within 50 kilometers or dedicated ECM aircraft is operating within 500 kilometers. This task must be rolled each turn the missile is in flight until the target breaks lock or is destroyed If the lock is successfully maintained until impact, inflict the missile's damage points (see Ground-to-Air Missiles Table) for each hit against the aircraft Apply damage as indicated with a 1D roll on the Damage Location Table in "Air-to-Air Combat "

Heavy SAMs

The heavy SAM is a static weapon designed to protect rear areas and population centers Heavy SAM batteries include one fire control van and eight launchers Each launcher holds four missiles ready to fire TL8 heavy SAM batteries use phased array radars which perform the early warning function as well as provide guidance for launched missiles
Referee: The tasks for obtaining a lock-on, launching the missile, and maintaining lock-on are identical to the same tasks performed for the medium SAM with these exceptions·

- The missile may be launched after the target has been tracked for one turn and is within 100 kilometers of the launch site and within 20,000 meters (flight level 40) in altitude
- The chaff DM is – 1, rather than – 2, when attempting to avoid lock-on or attempting to break lock.

Standard Ship Missiles

Turret-mounted, standard, 150mm ship's missiles may be installed in ground emplacements as antispacecraft defense weapons. These installations are quite common at Class A and B starports and naval bases, along with laser turret installations
These missiles may be targeted against ships in orbit out to far orbit range They may not be targeted against aircraft. They include a booster stage to lift the missile clear of the atmosphere, a solid fuel 6G6 sustainer motor, a conventional 30-kilogram focused explosive warhead, a mass detector homing guidance package, and an initial radio command guidance package attached to the missile booster stage Each emplacement includes a triple launcher with three reloads in the ready locker Missile launchers are linked to a central active EMS/radar sensor and computer facility which performs initial detection and launch guidance. The missile's on-board mass detection guidance package takes over once the missile clears

atmosphere and its booster drops away Hits and damage are resolved as in standard **MegaTraveller** space combat rules

ENERGY WEAPONS

Several different types of energy weapons are utilized in ground-to-air combat

Antiaircraft Lasers

Lasers may be installed on high-angle, rapid-slewing mounts as antiaircraft weapons at TL9+ These may be towed units designed for semifixed emplacement or mounted on self-propelled chassis A point defense fire control package may be attached to enable lasers to engage incoming artillery shells and missiles, as well as aircraft Lasers may be connected to a central early warning radar and targeting radar They may also be fired over open sights. Self-propelled units generally include integral early warning and targeting radars on board their vehicles.

To hit an aircraft with an antiaircraft laser artillery
Routine, Gunnery
Referee DM – 2 if fired through clouds, DM – 4 if fired in rain or snow, DM – 2 if radar directed and chaff is fired in firing turn by target aircraft, DM – 4 if radar directed and active ECM is operating within range.

Antispacecraft Lasers

These are ground-mounted, 250-megawatt ship's lasers in triple turrets used as space defense weapons primarily at starports and naval bases They may be targeted against ships in atmosphere and in close orbit out to Planetary range (50,000 kilometers) They may also be used against aircraft These ground laser installations are grouped in batteries controlled by a central active EMS/radar sensor and fire control station, and are rated as batteries according to the Beam Laser Turrets Table and Pulse Laser Turrets Table on page 73 of the **MegaTraveller Referee's Manual**

Referee: Combat against spacecraft with ground-mounted laser batteries is resolved according to **MegaTraveller** space combat rules with the addition of the following DMs on the "To Hit" task DM – 2 if fired through clouds, DM – 4 if fired in rain or snow.

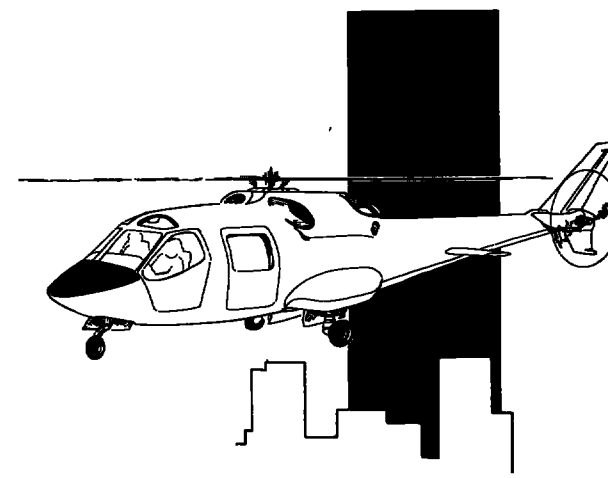
Roll the following task if firing against aircraft

To hit an aircraft with antispacecraft lasers:
Difficult, Gunnery.
Referee: A hit totally destroys the target aircraft

Meson Guns

Ship-size meson guns buried in deep underground pits are major planetary defensive weapons They may be fired out to Planetary range (50,000 kilometers), and since the planet is effectively transparent to them, they may fire at any angle toward any target desired from their pit. Deep meson guns are effectively impossible to silence The only way to knock out these weapons is to locate and destroy their target acquisition and fire control sensors This is a major mission for jump troop commando raids.

Meson gun combat between planetary deep gun pits and nearby starships is conducted exactly as space-to-space combat with one exception—only sensor hits have any effect on the deep meson gun site. However, large portions of countryside and urban areas are reduced to rubble by meson gun fire. These effects may be optionally applied by the referee



***PALM SPRINGS* (TL7) PERSONAL JET HELICOPTER**

CraftID: Helicopter, TL7, Cr78,000 standard version, Cr83,000 executive version
Hull: 6/30, Disp = 1, Weight Loaded = 1 6tons, Airframe = Simple, Armor = 0
Power: 1/2.5 Light Gas Turbine, 4 Mw, Endurance = 1 hour, 45 min standard version, 1 hour, 10 min executive version
Loco: Main and Tail Rotor, Lift = 1 6tons, Thrust = 4tons, Cruise = 225, Top = 300
Commo: Regional Radio × 1 (Executive version has Regional Radio × 2)
Control: Simple
Accom: Crew = 2, (Pilot, Copilot), Simple Cockpit × 2, Executive version is equipped with 4-seat passenger section An additional passenger is often carried in place of copilot
Cargo: Up to 3ton of cargo may be carried in the standard version with a reduced fuel load.
Other: Fuel = Up to 875liters standard version, 575liters executive version

Gas turbine personal helicopter flown by individuals, by corporations for executive transportation, and for hire as air taxis or charters Military versions exist as liaison and reconnaissance aircraft. Lightly armed versions are known but are uncommon

Bases

All aircraft, ranging from a mercenary battalion's helicopters to massive transports and bombers, need bases to keep them flying. Bases provide maintenance, supplies of fuel and ammunition, and housing and support for aircraft crews and maintenance personnel

The size and facilities needed for a base depend on the type of aircraft it will support Light attack aircraft can operate from a dirt airstrip with maintenance performed under canvas VTOL attack ships need only a flat patch of ground. On the other hand, a bomber wing needs an extensive base with long, paved runways and gigantic maintenance hangers

RUNWAYS

Runways (or landing pads) are the heart of any base Their length and surfacing depend on the weight and the required length of the landing/takeoff run of the aircraft expected to use them.

STOL Light Aircraft: STOL aircraft are designed to operate from short dirt airstrips STOL-equipped, light aircraft weighing less than two tons require only a 150-meter dirt or grass airstrip to take off and less than 60 meters of strip to land.

Personal Aircraft: Non-STOL, light, propeller-driven, personal aircraft require approximately 300 meters of dirt, grass, or paved airstrip for takeoff and approximately half that for landing Personal jet aircraft should fly from paved airstrips to avoid foreign object ingestion into the engines (unless debris screens are fitted) and require 1500 meters for takeoff and 1000 meters for landing.

Fighters: TL5 and some TL6 propeller-driven fighters can operate from grass airstrips More advanced TL6 propeller-driven fighters require paved runways or runways covered with metal planking to avoid problems with mud and dust. Runway length should be no less than 1000 meters—longer if heavy fuel and weapons loads are anticipated.

Early TL6 jet fighters have low takeoff acceleration and require long runways They need paved runways at least 2500 meters long Required runway length is reduced for late TL6 and TL7 aircraft to 1500 meters thanks to increasingly efficient engines and high lift devices on the wings, such as triple-slotted flaps and leading edge flaps However, TL9 and TL10 hypersonic and later orbital fighters need either runways at least 3500 meters long or 1000-meter runways with catapult or rocket-assisted takeoff because of their large size and fuel load.

Attack Aircraft: Light attack aircraft such as the *Pleiku*-class described on page 29 in this book have excellent short field performance They require less than 250 meters of dirt airstrip for both takeoffs and landings Heavier craft, such as the *Chicago*-class attack aircraft require 1000 to 1500 meters The *San Diego*-, *Bitburg*-, and *Seattle*-class TL6 to TL8 jet aircraft should have paved or planked strips of at least 1500 meters. The *San Diego*-class is equipped for catapult launching and arresting gear recovery on short airstrips and from the decks of specialized wet navy ships

VTOL attack aircraft require only a clear patch of hard-packed ground to operate from This could be a forest clearing, a short length of road, a nautical ship's deck, or any other level landing space VTOL capability allows building an easily concealed air base within a forest or even hidden among city buildings.

Bombers: Bombers are generally heavily loaded with fuel and weapons, and require long, paved runways. These should be at least 3000 meters long and sturdily built of reinforced concrete to resist the impact of up to 250 tons of aircraft as it touches down. Bomber bases are expensive and vulnerable.

Transports: Runway requirements vary widely for transports The *Anchorage*-class frontier transport can operate from a 1000-meter, dirt airstrip. On the other hand, the *Tokyo*-class heavy airliner needs 3000 meters to get safely off the ground with its maximum fuel and passenger load. Interurban airliners such as the *Fresno*-class commuter airliner require only 2000 meters to operate safely At slightly higher tech levels, the *Pasadena*-class VTOL commuter airliner can take off from landing pads in the heart of the city and fly downtown to downtown—noise regulations permitting The *Nairobi*-class VTOL frontier transport can land anywhere with enough open space to clear its wingtips.

Units of a regular COACC force will have their own home bases built for them by their government. On a military campaign, they may need to quickly construct forward airbases with runways hastily graded and covered with pierced-steel planking or aluminum box planking. Mercenary air units need to have proper basing supplied by their employers and should know what is available before signing on for a ticket VTOL-equipped squadrons command top prices because of their simple basing requirements.

CONTROL TOWERS

All bases require a form of control tower to direct arriving and departing traffic as well as aircraft movements on the ground. These may be manned towers or remote towers containing remote video cameras and surveillance radar atop a pylon. Mercenary air units are equipped with self-contained control centers that include extendable camera towers. These are housed in a standard three-meter × three-meter × six-meter cargo container-sized module that is air- and space-transportable, weighs three tons, and costs Cr150,000

C³I CENTERS

Bases have command, control, communications, and intelligence centers that track friendly and enemy aircraft, and communicate with and control their own units' aircraft while in flight Mission requests are called into this center and relayed to aircraft aloft Air defense aircraft are coordinated from here as well. Mercenary air units travel with a three-ton portable C³I module costing Cr100,000 Their ground executive officers coordinate and relay missions to the unit commander and his subordinates aloft using this module.

HANGARS AND MAINTENANCE FACILITIES

Aircraft need proper maintenance facilities This can range from a tarp-covered field maintenance pad to a gigantic hangar for a bomber or heavy transport. Generally, one hangar for every three squadrons should be available for heavy maintenance, such as engine changes and complete fuselage inspections, along with a maintenance workshop module mounted aboard a ground vehicle such as a truck or ACV for each squadron. These modules contain tools and spare parts for minor maintenance work on engines, airframes, electronics, and weapons systems. A workshop module weighs two tons, costs Cr50,000, and is configured as a standard three-meter × three-meter × six-meter cargo module

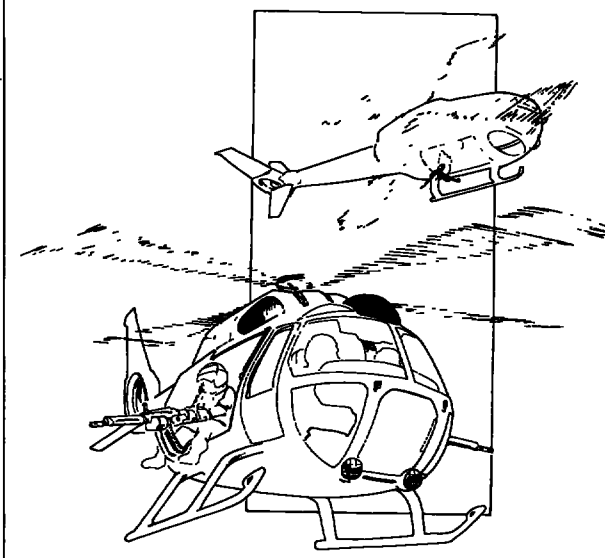
QUARTERS

Air and ground crews need living quarters and food service facilities Combat air crews should have eight hours of sleep every 24 hours for maximum efficiency and at least two hot meals a day. Otherwise, their effectiveness suffers from fatigue and hunger. To reflect this, impose a DM – 2 on flight or air combat tasks if air crew members have missed a sleep period and an additional DM – 1 if they have not had a hot meal within the past 24 hours. Note that these DMs can lead to a fumble.

Mercenary air units include transportable quarters and food service modules among their equipment Each quarters' module houses two officers or four enlisted personnel They include beds (or two double-deck bunks), storage chests, writing desks, showers, and sanitary facilities They may be sealed, linked together, and equipped with filter systems to operate in tainted atmospheres They are fully air conditioned and insulated for use in any climate. Food service facilities include a field kitchen module and one or more dining modules that can be linked together to form a mess hall Each dining module can feed 40 people at one sitting. A quarters module weighs one ton and costs Cr5000. A field kitchen module weighs two tons and costs Cr10,000 A simple dining module weighs one ton and costs Cr1000.

FLIGHT SURGEON'S MODULES

The squadron's flight surgeon is responsible for two modules—the office/surgery module and the infirmary module These are set up and connected together when the base is established The first module includes the flight surgeon's office, examination room, and a small emergency operating room equipped with an x-ray machine, plasma, drugs, and surgical tools. The infirmary module contains four cots, sanitary facilities, and additional medical equipment. The office/surgery

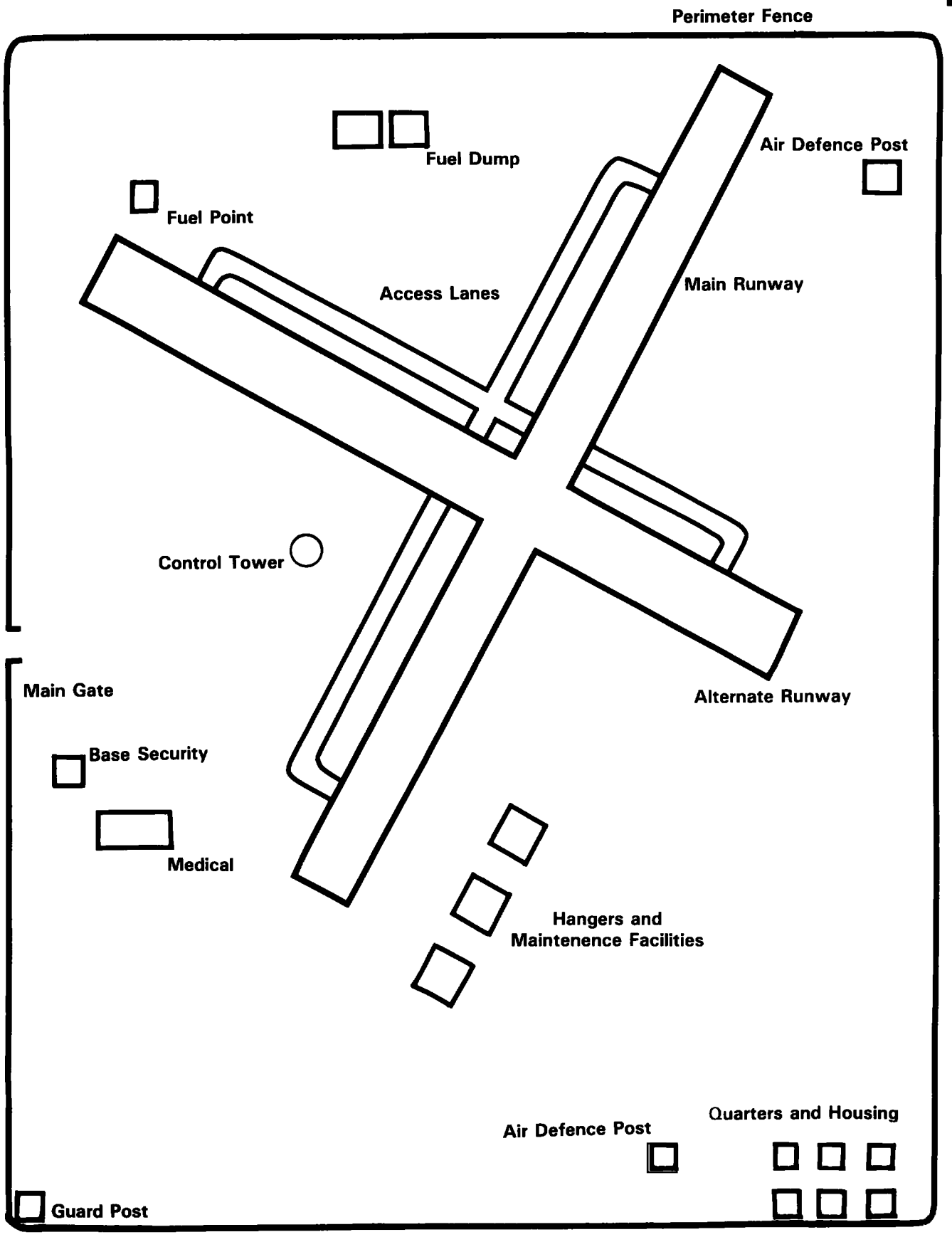


***AN KHE* (TL7) UTILITY JET HELICOPTER**

CraftID: Helicopter, TL7, Cr97,600
Hull: 16/40, Disp = 5, Weight Loaded = 4tons, Airframe = Simple, Armor = 0
Power: 2/5 Gas Turbine, 1 Mw, Endurance = 1 hour, 50 min
Loco: Main and Tail Rotor, Lift = 4tons, Thrust = 1ton, Cruise = 225, Top = 300
Off: LMG × 2 flexible mount firing sideways from cargo compartment doors/500 rounds per gun
Commo: Regional Radio × 1
Control: Simple
Accom: Crew = 4, (Pilot, Copilot, Gunners × 2), Simple Cockpit × 2, Gunners ride in passenger/cargo compartment. 10 passengers + 2 gunners, 4 medevac casualties on stretchers + medic + 2 gunners in medevac role
Cargo: 1 2ton internal in place of passengers + gunners, or 1 2ton external sling load
Other: Fuel = 1450liters

Widely used as a troop carrier and medevac helicopter in moderate-tech mercenary battalions' organic aviation platoons Gunship versions are available with up to 500-kilograms of external weapons attached to hardpoints on each side of the fuselage above the landing gear Unarmed civilian versions are available for purchase or charter

BASES


Perimeter Fence
Fuel Dump
Air Defence Post
Fuel Point
Access Lanes
Main Runway
Control Tower
Main Gate
Alternate Runway
Base Security
Medical
Hangers and
Maintenence Facilities
Quarters and Housing
Air Defence Post
Guard Post

module costs Cr20,000, and the infirmary module, Cr10,000. These facilities are adequate for treating light wounds or injuries, and providing initial treatment for more serious casualties

FUEL AND ORDNANCE

All bases must have fuel and ordnance storage dumps dispersed away from the flight line and quarters areas Fuel may be contained in tanks or collapsible bladders, and be trucked or piped to the flight line to fuel aircraft If the aircraft are equipped to burn hydrogen as fuel and there is a sufficient local water supply, fuel may be manufactured at the base with a fusion-powered water electrolyzer See the fuel section of "Aircraft Design" for fuel pricing

Ordnance may be purchased in bulk with the buyers receiving a 20-percent discount when buying one or more lots of 20 bomb, rocket pod, or missile rounds, 40 percent when buying lots of 100 rounds, and 60 percent when buying lots of 1000 rounds Ordnance buyers also receive a 60-percent discount when buying lots of 10,000 machinegun or autocannon rounds.

Where possible, mercenary units purchase ordnance and ammunition locally to keep shipping charges to a minimum However, most units carry a basic ordnance load sufficient for one week's operation, as well as a more extensive supply of higher technology items such as cluster bombs and missiles that local sources may not be able to supply

BASE SECURITY

Bases need to be kept secure from ground and air attack Base security troops, equipped and trained to fight as light infantry, are a major component of ground defenses. They occupy defensive positions around the base perimeter and control access at the base's gates Security troops also patrol the base's interior to guard against sabotage and infiltrators They may be army troops assigned to defend the base or COACC troops who are members of an integral base defense unit

Smaller mercenary air units usually rely on local forces to provide base defense units Moreover, mercenary flyers carry personal weapons wherever they go and are trained to fight with them if necessary

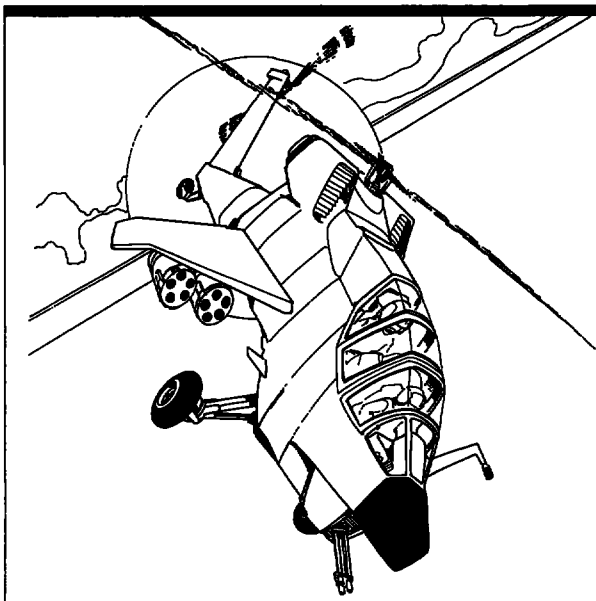
Larger units, such as a mercenary wing, may include a base defense battalion in their tables of organization A base defense battalion would include an antiaircraft missile battery, a point defense gun battery armed with multibarrel autocannons, and a surveillance and early warning radar detachment. In addition, the battalion would include two or more companies of security troops

THE MOBILE MODULAR MERCENARY BASE

With their services in increasing demand, mercenary air units are constantly on the move on worlds and among worlds Mercenary squadrons are able to embark all their aircraft, personnel, and mobile base modules on one 10,000-ton interstellar bulk carrier, and land them on their destination world aboard standard 95-ton cargo shuttles

The more wealthy squadrons include a 400-ton heavy transport among their aircraft This aircraft is transported between the stars in eight 50-ton sections and is reassembled after landing on the destination world. It is used to haul ground personnel and base modules and equipment from the starport to the squadron's next base of operations.

The heavy transport is equipped to land on unprepared airstrips Upon landing at the proposed base site at the end of its first flight, it unloads earth-moving equipment and runway planking or fast-setting paving material. While the runway, taxiways, and flight-line aprons are being graded and paved, the C^3I and control tower modules are unloaded and set up The base is operational in eight hours, in time for the first combat aircraft to arrive. Meanwhile, the transport has flown back to the starport, loaded quarters, field kitchen, and dining modules, and returned to the new base These are set up and connected together A third and final flight brings in the maintenance modules, medical clinic module, fuel bladders, ordnance, and remaining personnel. At the same time, locally chartered transports are hauling in additional fuel and ordnance The base is fully established in less than 24 hours



***DALLAS* (TL7) JET HELICOPTER GUNSHIP**

CraftID: Helicopter, TL7, Cr116,700
Hull: 8/20, Disp =2, Weight Loaded=3tons, Airframe=Simple, Armor=0
Power: 2/5 Gas Turbine, 1 Mw, Endurance=1 hour, 20 min
Loco: Main and Tail Rotor, Lift=4tons, Thrust=1ton, Cruise=225, Top=300
Off: Tribarrel, 2cm autocannon in remote nose turret/750 rounds, 4×500kg hardpoints on stub wings, max external weapons load=1ton
Commo: Regional Radio×1
Control: Simple
Accom: Crew=2, (Pilot, Copilot/Gunner), Simple Cockpit×2
Other: Fuel=1050liters

Early helicopter gunship designed to give close air support in low- to moderate-threat environment Effective armor killer when armed with tac missiles

Maintenance

Combat aircraft require four types of maintenance:

- Engine maintenance.
- Airframe and control maintenance
- Electronic maintenance.
- Weapons system maintenance (including weapons loading, fusing, and arming).

Each type of maintenance requires technicians with specific skills. They include

Engine Maintenance: Mechanical-2 or better

Airframe and Control Maintenance: Mechanical-1 or better

Electronic Maintenance: Electronic-2 or better.

Weapons System Maintenance: Mechanical-1 or better

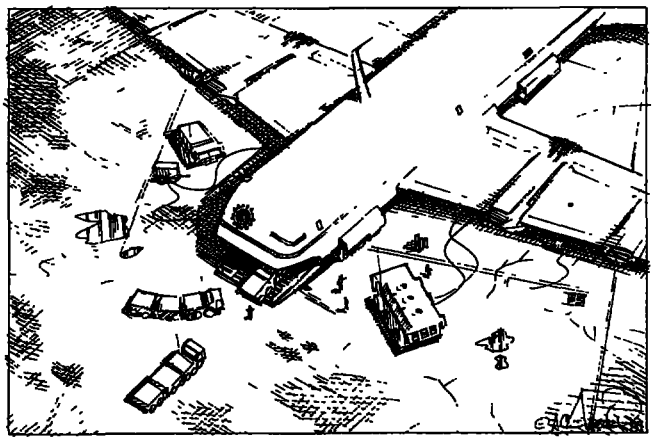
Collectively, these individuals make up the squadron aircraft's ground crew.

ROUTINE MAINTENANCE

Routine maintenance is performed daily when flight operations are ongoing This type of maintenance is dealt with somewhat abstractly to determine whether sufficient resources are available to properly maintain a unit's aircraft during flight operations Each technician provides 50 maintenance points in his specialty—engine, airframe, electronics, or weapons.

Each type of aircraft requires a certain number of maintenance points to keep flying, depending on the type and number of engines, its weight, its on-board electronic systems, and the number of its external ordnance hardpoints. Maintenance point requirements are listed on the daily maintenance point tables

As an example, the *San Diego*-class attack aircraft requires six maintenance points for its one basic turbojet engine, 10 maintenance points for its 10-ton airframe, control surfaces, and systems, one maintenance point for its radio; 10 maintenance points for its two autocannons (five points each), and five maintenance points for loading and arming weapons and/or fuel tanks on its hardpoints, assuming one weapon or tank is loaded on each hardpoint If triple or multiple ejection racks were fitted onto some or all of the hardpoints, the number of required maintenance points would increase as noted on the Ordnance Table in the daily maintenance point tables



One *San Diego*-class aircraft would need 35 maintenance points Because of the overlap in some skill requirements, a technician with Mechanical-2 would be able to service both the engine and airframe maintenance requirements (16 points) for three aircraft One electronics technician would be able to service the electronics maintenance needs of an entire squadron of this aircraft class. One ordnance technician can service the autocannon and weapons hardpoints (45 points) of three aircraft of this class

PERIODIC MAINTENANCE

Aircraft require periodic maintenance as well as daily maintenance. The two different types of periodic maintenance are 1000-hour maintenance and 10,000-hour maintenance

The 1000-hour maintenance includes the exchange of engines for rebuilt ones, visual and x-ray inspection of key airframe points, testing and replacement as needed of electronic components, and inspection and testing of control systems. The 1000-hour maintenance may be performed in the field as long as rudimentary shelter from the environment and a complete maintenance workshop module are available This maintenance requires 20 engine maintenance points per engine, five airframe and control maintenance points per ton of aircraft, and 10 electronic maintenance points per component.

The 10,000-hour maintenance is a complete rebuilding of the aircraft, including engine replacement, complete teardown and inspection of the airframe, complete teardown and replacement of control systems, and replacement and upgrading (if available) of all electronic components. The 10,000-hour maintenance must be performed in a fully equipped and dedicated maintenance hanger. This maintenance requires 20

maintenance points per engine, 20 airframe and control maintenance points per ton of aircraft, and 20 electronic maintenance points per component.

Helicopter Periodic Maintenance

Because of their complexity—primarily in the gearbox and transmission assemblies—helicopters require significantly more maintenance than fixed-wing aircraft. Periodic maintenance should be performed at 500 and 5000 hours for helicopters

REBUILDS

Engines and electronic components may be rebuilt after they are removed from an aircraft during periodic maintenance. Each rebuild requires 1 × 1D days and takes 10 times the number of maintenance points listed for daily maintenance Used engines and electronics may also be sent to commercial rebuilding facilities and refurbished at 2D × the original purchase cost

FUEL AND ORDNANCE

Fueling aircraft is one major function for a ground crew High-speed pumps and single-point refueling enable one person to refuel an aircraft using an airfield hydrant system or a fuel truck At TL6 and above, external tanks may be filled through the aircraft's single refueling point via the internal plumbing system At TL9 and above, fueling may be carried out by robots.

The ground crew is also responsible for loading, fusing, and arming ordnance aboard aircraft. They use either manual or remote-controlled weapons-handling vehicles to carry weapons from the ordnance dumps to the flight line and attach them to individual aircraft. Once loaded, fuses are inserted in bombs and rocket warheads, and firing and control cables are attached to rocket pods and missiles Safety pins and flags are removed from fuses and firing circuits at a special arming pad near the end of the active runway immediately before an aircraft is launched. Ground crew members also reload ammunition trays or hoppers, and service machineguns, autocannons, and lasers aboard aircraft Robots are available at TL9 to load weapons under human supervision. Fusing and arming are always performed by human ground crew members.

Individuals operating fuel trucks or ordnance haulers must have Vehicle-1 Individuals who fuse and arm weapons systems must have at least Demolition-1

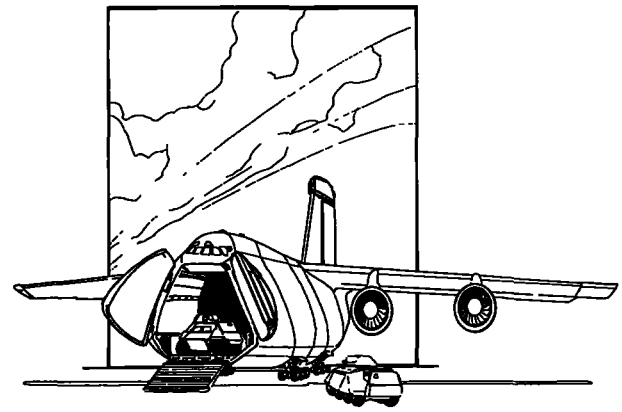
Two ground crew members or robots are required to load weapons or fuel tanks on hardpoints or in the bomb bay of one aircraft.

REPAIRING COMBAT DAMAGE

Damage can be repaired

Engine Damage: An engine that has sustained enough damage points to reduce its first damage rating to zero cannot be repaired in the field and must be replaced. An engine that has sustained light damage (with its first damage rating not reduced to zero) may be repaired in the field.

Airframe Damage: An airframe that has sustained light damage that has not reduced its first rating number to zero may be repaired in the field Each damage point requires one maintenance point to be repaired in one day. If insufficient



***MEXICO CITY* (TL8) HEAVY CARGO JET**

CraftID: Heavy Cargo Jet Transport, TL8, Cr16,200,000
Hull: 1600/4000, Disp = 1500, Weight Loaded = 400tons, Airframe = Transonic
Power: 4/10 Gas Turbine × 4, 60 Mw, Endurance = 8 hours, 36 min
Loco: High Bypass Turbofans × 4, Thrust = 200tons, Minimum Speed = 176, Cruise = 630, Top = 840, Agility = 1
Commo: Regional Radio × 1
Control: Boosted
Accom: Crew = 4 (Pilot, Copilot, Flight Engineer, Loadmaster), Complex Cockpit × 2, Crew Station × 1, 4 Passenger sections included aft of flight deck for relief of flight crew and 12 troops or vehicle drivers
Other: Fuel = 132,500liters, Cargo = 150tons

Heavy cargo transport designed to haul oversized cargo such as armored fighting vehicles and construction machinery, as well as standard cargo modules Main cargo deck has drive-through design with nose and tail hatches and ramps to facilitate rapid loading and unloading Five hundred troops may be carried in lieu of cargo These and similar heavy lift aircraft are often employed as logistics transports by mercenary air units to haul mobile base components and construction machinery from assignment to assignment

DAILY MAINTENANCE POINTS

ENGINES

Tech Code	*Tech Level*	*Type*	*Maintenance Points*
Industrial	4	Basic Propeller	6
Industrial	5	Light Propeller	3
Pre-Stellar	6	High Performance Propeller	10
Pre-Stellar	6	High Performance Turboprop	8
Pre-Stellar	6	High Performance Turbojet	8
Pre-Stellar	6	Basic Ramjet	6
Pre-Stellar	6	High Performance Ramjet	8
Pre-Stellar	6	Basic Rocket	12
Pre-Stellar	6	High Performance Rocket	16
Pre-Stellar	7	Basic Turboprop	6
Pre-Stellar	7	Light Turboprop	4
Pre-Stellar	7	Basic Turbojet	6
Pre-Stellar	7	Light Turbojet	4
Pre-Stellar	7	Basic Turbofan	6
Pre-Stellar	7	High Performance Turbofan	8
Pre-Stellar	8	High Bypass Turbofan	8
Early Stellar	10	Fusion Rocket	20

Note: These are the maintenance points required for *each engine* aboard an aircraft

HELICOPTER ENGINES AND TRANSMISSIONS

Tech Code	*Tech Level*	*Type*	*Maintenance Points*
Industrial	5	Light Reciprocating	8
Pre-Stellar	6	Reciprocating	12
Pre-Stellar	7	Light Gas Turbine	6
Pre-Stellar	7	Gas Turbine	8
Pre-Stellar	8	High Performance Gas Turbine	16

Note: These are the maintenance points required for *each engine* aboard an aircraft

AIRFRAME AND CONTROLS

Fixed-wing aircraft and helicopters require one maintenance point per ton of aircraft to properly maintain their airframes, control surfaces, and hydraulic, mechanical, and electrical control systems.

ELECTRONICS

Type	*Maintenance Points*
Radar	5
Radio	1
ECM	5
Radar Direction Finder	5
Ladar	5
IR Sensor	5
Light Amplification	5
Image Enhancer	10
HUD	10
Computer	50
Autopilot	30
Laser	10

ORDNANCE

Type	*Maintenance Points*
Machinegun	5
Autocannon	5
Plumbed Hardpoint	2
Hardpoint	1

resources are available to repair a damaged aircraft and to simultaneously maintain flyable aircraft, the damaged aircraft should be considered a source of spare parts

Electronic Damage: Electronic components that have sustained combat damage are destroyed and must be replaced See the sensors and electronics tables in the **MegaTraveller Referee's Manual** for replacement cost information.

To meet an engine's routine maintenance requirement
Routine, Mechanical, Dexterity, 30 min (fateful, hazardous).
Referee· A number of mishaps will result when characters fail to meet engine maintenance requirements They include the following

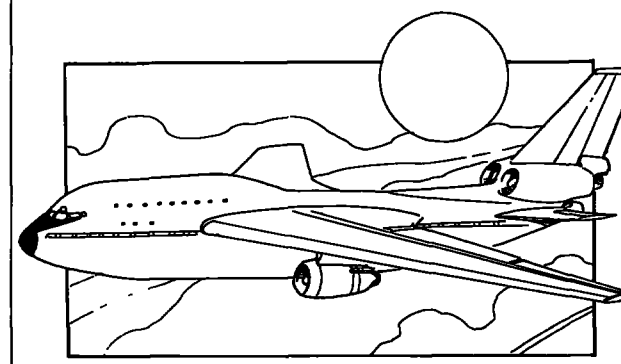
Superficial mishap results in failure of engine to start on ground **Minor** mishap results in engine failing to reach takeoff power **Major** mishap results in an in-flight engine failure Roll 4+ on 1D to restart the engine in flight **Destroyed** mishap results in a jet engine's hot compressor stage throwing a turbine blade that ruptures fuel and hydraulic lines and causes a catastrophic explosion, or in a propeller engine, losing lubricant in the engine, seizing up, and catching fire in flight—which may ignite fuel tanks

To service, fuse, and arm an aerial weapon
Routine, Demolition, Dexterity, 10 sec (hazardous, fateful)
Referee: A **Major** mishap results in failure to properly service, fuse, and arm the weapon. Bombs do not detonate when dropped, rockets and missiles do not launch, guns jam when fired. A **Destroyed** mishap results in the bomb or missile warhead immediately detonating when fuses are armed, destroying the arming character and the weapon-carrying aircraft Cartridge casings rupture when a gun is fired, destroying the breech To minimize such catastrophes, aircraft weapons are not armed until immediately before takeoff on an arming pad next to the end of the runway away from other aircraft

To fuel an aircraft
Simple, Dexterity, 2 min (hazardous, unskilled OK)
Referee. If a fumble failure occurs, static electricity ignites a fire leading to an explosion in 3D seconds The aircraft and possibly any neighboring aircraft are destroyed by the explosion The character/NPC refueling the aircraft is killed unless he is at least 20 meters from the fire when the explosion occurs

To repair a battle-damaged engine·
Difficult, Mechanical, Dexterity, 1 hour (hazardous).
Referee A number of mishaps will result when characters fail in an attempt to repair a battle-damaged engine They include the following.

Superficial mishap results in failure of engine to start on ground **Minor** mishap results in engine failing to reach takeoff power. **Major** mishap results in an in-flight engine failure. Roll 4+ on 1D to restart the engine in flight. **Destroyed** mishap results in a jet engine's hot compressor stage throwing a turbine blade that ruptures fuel and hydraulic lines and causes a catastrophic explosion, or in a propeller engine, in the engine losing lubricant, seizing up, and catching fire in flight—which may ignite fuel tanks



***TOKYO* (TL8) HEAVY PASSENGER TRANSPORT**

CraftID: Heavy Passenger Transport, TL8, Cr16,700,000
Hull: 1600/4000, Disp = 1500, Weight Loaded = 400tons, Airframe = Transonic
Power: 4/10 Gas Turbine × 4, 60 Mw, Endurance = 15 hours, 15 min
Loco: High Bypass Turbofans × 4, Thrust = 200tons, Minimum Speed = 176, Cruise = 630, Top = 840, Agility = 1
Commo: Regional Radio × 1
Control: Boosted
Accom: Crew = 15 (Pilot, Copilot, Flight Engineer, 12 Flight Attendants), Complex Cockpit × 2, Crew Station × 1, 400 passengers
Other: Fuel = 234,000liters, Cargo = 20tons

Long-range, heavy passenger transport designed for mass air transportation on medium-technology worlds. Its relatively low seat-per-mile cost helps bring transcontinental and intercontinental air transportation within reach of the common citizen on many TL8 to TL10 worlds

Defending a World

Attacking a world is like peeling an onion—attacking forces have to cut through many defensive layers before reaching the surface And each time they penetrate a layer, pieces of the attacking force are stripped away Ultimately, there may not be enough force remaining to take the defending world Two major components compose a world defense force—COACC and the navy It's their job to strip away the invading force so that none remains to invade a world Quite often, they succeed. The navy, whether a first-line fleet or local system squadron, sees action first.

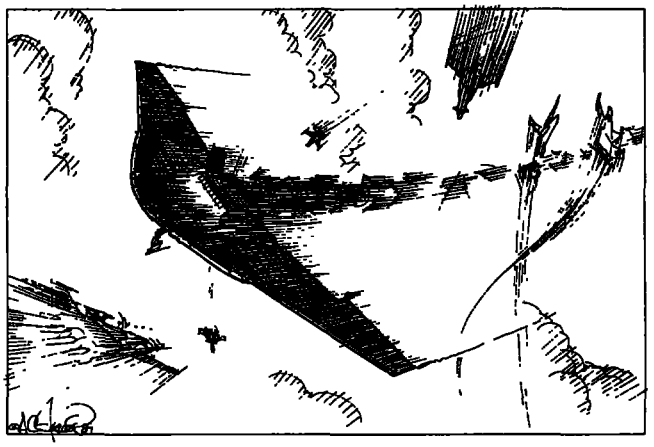
NAVY

Naval forces take the initial brunt of an assault Invaders may encounter naval units ranging from first-line Imperial (or other faction) naval fleets to local system squadrons, depending on the importance, location, political situation, and technology level of the invaded system.

The mainstays of the local system squadrons are monitors and system defense boats (SDBs) Monitors are multikiloton naval vessels armed similar to a battleship but without jump drives They are designed for system defense only. SDBs are heavily armored nonjump vessels displacing 200 to 1000 tons They are heavily armed with missiles and other turret weapons. SDBs and monitors may hide in the outer system or in a planetoid belt for months awaiting an invasion. In addition, SDBs hide in a gas giant's atmosphere waiting to ambush refueling enemy starships or in a world's oceans waiting to defend the world

The invading force must survive battles with battleships, cruisers, and system squadron monitors, while at the same time holding off assaults from system squadron SDBs These battles usually begin as soon as sensors detect the invading fleet stepping out from jumpspace and heading toward the nearest gas giant to refuel. Naval ships, local monitors, and SDBs attack the invaders at their most vulnerable—while refueling from the gas giant. Battleships, cruisers, and monitors attack from above, while SDBs fire on refueling craft as they skim through the gas giant's atmosphere.

If these battles are successful, the defenders gain control of the gas giant, and the attackers must jump out-system with their remaining fuel. If the defenders fail, the battles continue inward as the invading fleet heads toward the target world. Surviving naval defenders conduct a running fight, continuously attacking and harassing the invaders, paying special attention to troop-carrying assault transports and cruisers assigned to surface bombardment missions



COACC

COACC forces come into the picture as the battles move closer to the target world. COACC SDB squadrons join their naval counterparts in raiding the invading fleet as the invaders approach the Close Orbit zone one-tenth of a diameter out from the defenders' world. Once the invaders are within the close orbit zone, the COACC orbital component throws its full weight against the enemy fleet All COACC SDB squadrons are committed to the fight, as are orbital patrol fighter squadrons and space fighter squadrons launched from the world below

Within 50,000 kilometers, planetary deep meson guns open fire, tearing into the invaders' capital ships Robot orbital battle stations in low orbit about 200 kilometers above the world form the last space line of defense These devices cannot maneuver, but their fire control systems and missiles tipped with thermonuclear warheads can engage and seriously damage, if not destroy, portions of the incoming fleet

Invading vessels, including troop-laden assault shuttles, are forced to slow as they enter atmosphere They become easy prey for concealed supersonic VTOL fighters rising to intercept, and to COACC-manned, ground-based laser and missile batteries

If invading troops successfully reach the ground, they face local ground forces with air support from COACC forces waiting to smash them on the landing zones Meanwhile, COACC and naval SDBs ambush incoming transport and supply ships far away in the outer system. Unless there is overwhelming force in orbit, the invaders may find themselves cut off on the surface of a hostile world

A well organized defense using the combined assets of navy and COACC forces makes an assault on a planet a very difficult and expensive operation

COACC's ORBITAL CONTINGENT

Although many people only think of COACC in terms of its air force, it also has a powerful and effective planetary defense

contingent as well The Close Orbit and Airspace Control force has a major orbital defense responsibility as well as its air superiority and ground force air support mission. It is responsible for the defense of Close Orbit space, the space out to one-tenth the diameter of its homeworld Beyond that, the planetary navy (also known as the system naval squadrons), the subsector naval fleets, and the Imperial (or faction) Navy has primary defense responsibility However, a world's COACC force often has an orbital base in geosynchronous orbit to monitor traffic, provide early warning sensor surveillance, and serve as a base for fighters and SDBs. As conflict widens in the Imperium, the planetary navy's monitors and SDBs are bearing an increasing system defense burden

COACC forces from TL9 to TL11 worlds meet their orbital defense commitment with missile-firing orbital fighters and robot orbital battle stations. COACC forces from higher-tech worlds employ high-endurance orbital patrol fighters, orbital battle stations, and their own system defense boats to defend and patrol close orbit space.

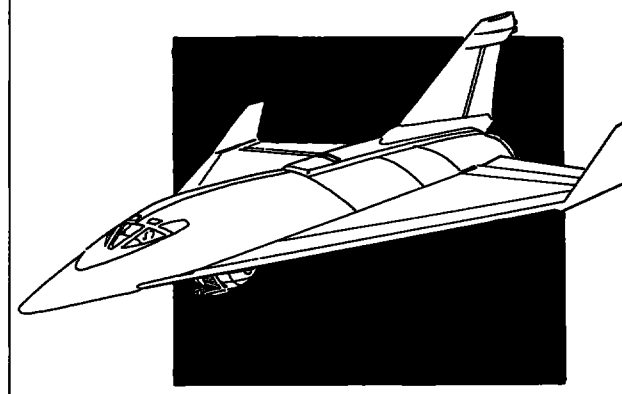
Responsibilities overlap in a combat situation. Naval SDBs pursue enemy craft anywhere near or on the system's main world. COACC SDBs and fighters assist naval units anywhere in the system their capabilities permit.

COACC has three types of craft to meet its orbital responsibilities.

Fighters: Depending on tech level, these range from rocket-powered, missile-firing, low-endurance orbital fighters to Imperial Navy-pattern *Ramparts*-class fighters and *Magnum*-class heavy fighters The latter are high-endurance, two-person craft fitted for long patrols and capable of remaining on station for up to 30 days Fighters may be surface based or based at orbital COACC bases in geosynchronous orbit. These fighters may also provide air support to local ground forces if an invading force reaches the surface.

Orbital Battle Stations: These are cheap, unmanned, mass-produced guardian satellites placed in low orbit around their homeworld They are equipped with a fire control computer and an active sensor array, and are armed with a 100-ton missile bay Orbital battle stations will automatically engage any hostile spacecraft with nuclear-tipped missiles out to Far Orbit range (500,000 kilometers) For safety considerations, these satellites are not deployed until hostilities appear to be imminent

System Defense Boats: These heavily armed and armored gunboats are assigned to patrol Close Orbit space, conduct customs inspections, and perform rescue missions during peacetime COACC SDBs assist naval forces during wartime and are responsible for defending Close Orbit space and the planet's surface. SDBs may be based in orbit, or at dispersed ground bases, or hidden beneath the planet's oceans or icecaps (if any) until ordered to strike at the enemy Several models are available, ranging from 200 to 1000 tons displacement. They are primarily armed with nuclear-tipped missiles, with beam lasers as their secondary weapon In addition to their antiship duties, SDBs attack enemy ground forces that have landed on their homeworld. If the invasion succeeds, the COACC SDBs disperse to hidden bases in the outer system to refuel, rearm, and fight again, harassing the enemy until friendly reinforcements arrive.



***MAGNUM*-CLASS TL15 HEAVY FIGHTER**

CraftID: Heavy Fighter, TL15, MCr105.33
Hull: 45/113, Disp = 50, Config = 3AF, Armor = 40G
Power: 2/4, Fusion = 560Mw, Duration = 30/90
Loco: 2/5, Maneuver 6, NOE = 120, Cruise = 2835 kph, Top = 3780kph, Agility = 6
Commo: Radio = System
Sensors: Passive EMS = Interplanetary, Active EMS = Planetary, ActObjScan = Diff, ActObjPin = Diff, PasEngScan = Rout
Off: Missile = x03
Batt 1
Bear 1
Def: DefDM = 10
Control: Computer 7 × 3, Holodynamic link × 98, Special = U, Environ = basic environment, basic life support, extended life support, grav plates, inertial comp
Accom: Crew = 2 (Pilot, Gunner), Seats = roomy × 2, Stateroom = 1
Other: Fuel = 750kliters, ObjSize = Small, EMLevel = faint

The heavy fighter is designed for long duration patrol It may be carried and launched by a naval vessel or orbiting station, or launched from a planetary surface base. It includes accommodations designed to house its two-person crew in relative comfort for up to 30 days.

The Eddum Campaign

Eddum (Eddum/Dagudashaag 0531) is a relatively peaceful world situated deep in the Imperial sector of Dagudashaag

EDDUM 0531 D797978-6 Hi In Im

Eddum is a stagnant world It long ago reached the relative security of TL6 and has since remained there for more than 1000 years. Its technology produces a world of plenty for its population, and easily used and understood exports for surrounding worlds Its exports pay for a modest degree of imports of essential high-tech products that enhance local medicine and safety

Even the local starport is a reflection of the local population's desire to be left to its own devices. The Type D starport is enough to allow some interaction with the rest of the empire, but it does little to encourage trade or travel on a large scale

The Rebellion: In the immediate polarization of the Imperium after the assassination of Emperor Strephon, the major factions tried immediately to seize and control the high-population worlds of the Imperium. Close to the centers of power, one faction or another was the clear winner Near Ilelish, Dulinor's forces gained the upper hand, near Capital, Lucan's forces held fast, in outlying sectors, other factions took control But at the borders between the factions, the worlds were up for grabs Eddum was one such world.

THE SIEGE OF EDDUM

Immediately after Dulinor's return to Ilelish in 1116, his messengers carried the word of his rise to power to every world possible. Their announcements reached Eddum in late 1116. At the same time, news travelling from Capital told Lucan's side of the story Naturally, the citizenry of Eddum was torn between two choices

In the last days of 1116, both Dulinor and Lucan had stationed battle fleets in the Eddum system The admirals in charge, however, found that the relative equality of the forces produced a stalemate with little chance for resolution. Further, until one side or the other achieved supremacy in space, they would not be able to begin a campaign to convince the local population of Eddum that it should give its loyalty to one of the factions of the Rebellion.

However, on Eddum, the population found itself divided in its loyalties The old and well established western continent of Elantia sided with Lucan and the existing structure of the Imperium The more recently settled eastern continent of Nostria sided with Dulinor and his philosophies. Yet, within the continents, not all nations agreed; often rivalries between nations colored public opinion enough to tip the local scales against one side or the other Scattered smaller island nations spanned the range from absolute loyalty to utter neutrality.

Yet overall, the world of Eddum found itself undecided and unable to commit, as a world, in favor or Lucan or Dulinor It remained up to the external forces to force a decision

The Governor General of Eddum: In order to allow the Balkanized world of Eddum to interact with the rest of the Imperium on a consistent, united basis, its nations long ago appealed to the emperor to help find a solution. His solution was to appoint a governor general who could receive directives from the Imperial bureaucracy and then disseminate them to the world's nations Over time, the position of governor general became a hereditary office which was the object of great respect and deference by the planetary population In return, the governor general himself took on the role of elder statesman and leader on the world. Although without any specific powers to control or direct the nations of Eddum, his counsel is respected by nearly everyone

The Governor General's Compromise: Because the besieging forces in space could be much better used elsewhere, both Lucan's Fleet and Dulinor's Fleet found it easy to accept a compromise offered by Eddum's governor general

The governor general proposed that Eddum be allowed to determine for itself, through large-scale general elections, which side it would take in the Rebellion. The besieging fleets would be reduced to the bare minimum required to blockade the planet A cease-fire between the two fleets would be imposed The nations of Eddum would be allowed to determine for themselves which faction they would support in the Rebellion

At the same time, the governor general proclaimed certain ground rules which would govern the battle for the hearts and minds of the people of Eddum.

1. A world-wide election would take place on Holiday 001-1120. This date nearly three years in the future would allow complete discussion of the relative merits of the choices facing Eddum.

2. Aggression was to be prohibited No border changes would be allowed or accepted during the period, nor would invasions or the use of military force to impose government on other nations.

3. Armed force, violence, and military action were to be accepted only as reasoned responses to violence

The governor general assumed a gentle, reasoned campaign through the media—radio, television, and the press. But instead, as one faction or another gained the upper hand in each nation, it suppressed its opposition's coverage and presentation of its case After six months of intense campaigning, the nations of Eddum were effectively polarized

The major nations then began to carry their cases for the factions they supported into other nations using radio and television broadcasts. Opponents reacted by jamming those transmissions.

By the end of 1117, the governor general's concept of a reasoned, gentle campaign had been pushed to its limits.

THE (ALMOST) BLOODLESS CAMPAIGN ON EDDUM

Prohibited from deploying military forces into the enemy's territory, yet allowed by the same proclamation to carry their arguments into those territories, the major nations of Eddum turned to their air forces to convince their neighbors of the rightness of their causes.

Each nation assigned to its air forces the responsibility of carrying radio broadcasts, television broadcasts, and print leaflets into the territory of the enemy in order to convince populations which way they should vote in the upcoming general election

In turn, each nation found itself forced to defend its skies by driving off or destroying the invading aircraft, justifying such actions on the basis of article three of the governor general's proclamation.

Finally, nations defended their unarmed broadcast aircraft (also claiming justification from article three) with armed escort fighters

Air War Over Eddum: The natural result was an intense air war in the skies of Eddum. Air forces campaigned to carry convincing arguments about the Rebellion to the populations of other nations Dogfights in the skies became routine as fighters were deployed to eliminate intruding aircraft.

But the war did not extend to the ground Bombing was clearly prohibited by the governor general's proclamation. Airfields and air bases were safe havens Only in the skies was full-scale air combat allowed

CAMPAIGN RULES

The following rules govern the conduct of the air campaign for the hearts and minds of the people of Eddum.

Eddum: The planet Eddum is a high-population, industrialized world whose territory is Balkanized into about a dozen nations (the actual number varies from time to time) Its surface is divided into two major continents and several smaller islands; virtually the entire planet was explored and settled millennia ago As a result, the world has a mature culture with established economic and social conventions

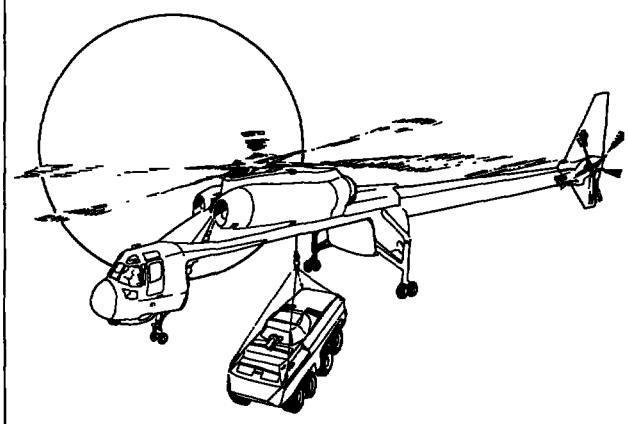
Yet the world has clung to distinct nations even though it is a member of the Imperium The local populations have their own individual characteristics which they do not care to lose

Map of Eddum: The map of Eddum shows the world surface of the planet using the standard geodesic hex grid. Each hex on the grid is 300 kilometers in width. Only those aspects of Eddum important to the campaign are shown. They include mountains, cities, populated areas, oceans, and national boundaries.

Intensely populated hexes (InPop) each have 10 million people living in them. These hexes represent the intensely industrial urban areas of the world. Such hexes are marked with the large city symbol

High population hexes (HiPop) each have one million people living in them These hexes represent the ordinary, well settled territories of the world. Such hexes are marked with the small city symbol.

Low population hexes (LoPop) each have 100,000 people living in them. These hexes represent the outlying rural areas of the world. Such hexes are marked as mountains or desert.

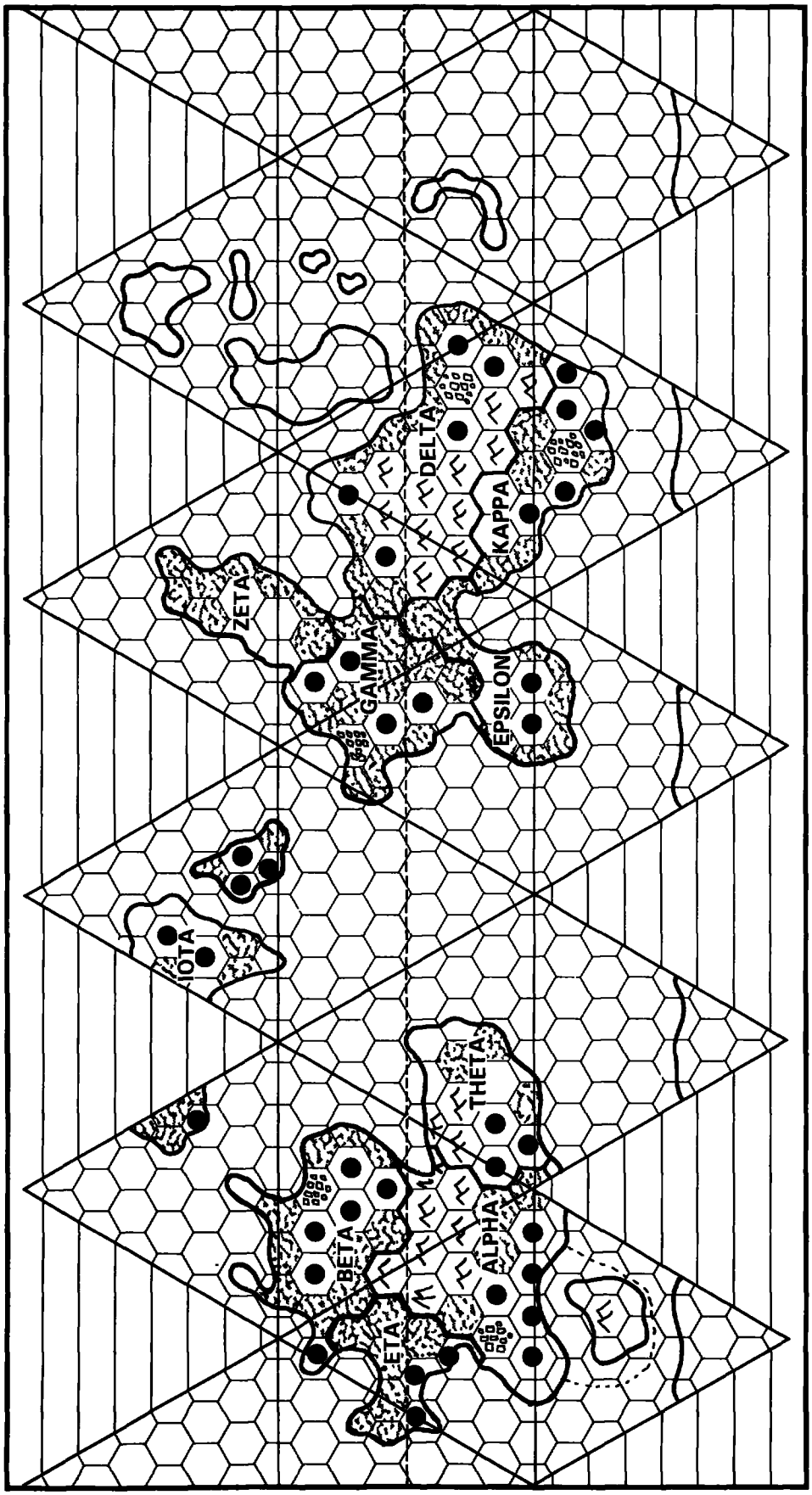


***BOISE* (TL8) JET SKYCRANE HELICOPTER**

CraftID: Helicopter, TL=8, Cr338,500
Hull: 40/100, Disp.=5, Weight Loaded=26tons, Airframe only=9.9tons, Airframe=Simple, Armor=0
Power: 4/1 Gas Turbine, 3 3 Mw×2, Endurance=1 hour, 50 min
Loco: Main and Tail Rotor, Lift=26.4tons, Thrust=9.9ton, Cruise=225, Top=300
Commo: Regional Radio×1
Control: Boosted
Accom: Crew=3, (Pilot, Copilot, Cargo Lift Pilot, simple cockpits×2, crew station×1)
Cargo: 16.5ton sling load
Other: Fuel=6000liters internal

The skycrane is heavy lift helicopter with no internal passenger or cargo capacity. It has only engines, rotors, controls, and a small crew pod forward. Cargo is hung by slings or cables from a central attachment point beneath the single main rotor while the skycrane hovers, and is carried externally while the skycrane is in flight. As civilian aircraft, these helicopters haul outsized cargo such as sling loads of timber from remote logging sites, hoist machinery to otherwise inaccessible locations, and carry cargo containers from starships direct to on-planet destinations, such as construction or industrial sites. Military skycranes retrieve downed aircraft—including other helicopters—and haul supplies and ammunition to forward bases. Customized pods containing command posts, medical and surgical facilities, communications equipment, and repair shops may also be attached to the skycrane and flown to forward locations

CAMPAIGN MAP



World Name
EDDUM

UWP
D-797978-6

Hex Scale in km
320km

In Population
High Population
Low Population
No Population
Ocean
Desert
Mountain

The Nations of Eddum: Eddum is territorially divided into 10 nations of varying shape and population. The five largest nations, however, are all roughly equal in population and technological capability.

The nations of Eddum are named for the letters of the Greek alphabet: Alpha, Beta, Gamma, Delta, Epsilon, Zeta, Eta, Theta, Iota, and Kappa. They are shown on the map, which indicates their territories and the locations of their major cities.

Special Local Equipment: In addition to the aircraft equipment provided by the aircraft design sequence, the following equipment is specifically available for use on Eddum in the air campaign

Radio Broadcast Module (RBM): A radio broadcast module produces radio broadcasts from prerecorded tapes presenting the message of a faction of the Rebellion The broadcast can be received anywhere within a single 300-kilometer hex on the world map. *Weight* One ton.

Radio Broadcast Jamming Module (RBJM): A radio broadcast jamming module jams or suppresses the output of an RBM if operated within the same map hex as the RBM *Weight:* One ton.

Video Broadcast Module (VBM): A video broadcast module produces video broadcasts from prerecorded tapes presenting the message of a faction of the Rebellion. The broadcast can be received anywhere within a single 300-kilometer hex on the world map *Weight:* One ton

Video Broadcast Jamming Module (VBJM): A video broadcast jamming module jams or suppresses the output of a VBM if operated within the same map hex as the VBM. *Weight·* One ton.

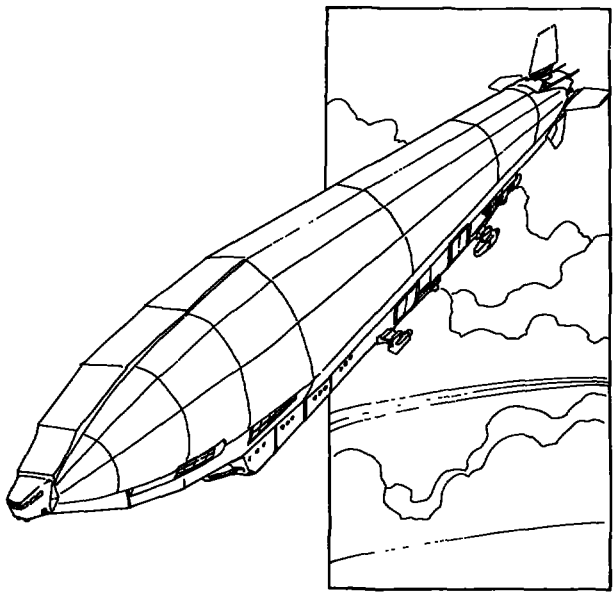
Leaflet Load· A leaflet load is a printed message pointing out a specific message for a faction of the Rebellion *Weight:* 10 tons.

Any number of the modules shown are available. Only one may be carried in an aircraft.

PLAYING THE CAMPAIGN

"The Eddum Campaign" pits five players against each other in an effort to influence the ultimate vote for Eddum's allegiance in the Rebellion. That vote is scheduled to take place on 001-1120. The present date is 095-1117 In the coming 1000 days, each nation must commit its resources to turning the vote to its own benefit

Each player is given control over a single nation on Eddum and provided with a copy of the map of Eddum, and with Eddum's world census figures which indicate its resources.



***AKRON* (TL5) NONRIGID AIRSHIP**

CraftID: Nonrigid Airship TL5, Cr31,100
Hull: 333/8333, Disp. = 4000, Volume = 50,000 cubic meters, Envelope Weight = 50tons, Usable Lift = 6.5tons, Airframe = Simple
Power: 3 × 4/10 Internal Combustion, .25 Mw, Endurance = 5 hours
Loco: Basic Propeller, Thrust = 6tons, Cruise = 90, Top = 120, Agility = 0
Commo: Radio, Regional × 1
Control: Simple
Accom: Crew = 5 (Pilot, Copilot, Navigator, Engineer, Flight Engineering Technician), 4 passengers or 300kg of cargo
Other: Fuel = 2300liters

Sport and tourist airship found on a number of worlds Commercially available for use as minimum-intrusion exploratory craft on primitive worlds. May be collapsed and folded into a 335-kiloliter package displacing 25 tons and weighing 54 tons for carriage aboard a starship. Other larger versions feature increased range and endurance.

THE NATIONS OF EDDUM

Characteristics	*Total*	*Alpha*	*Beta*	*Gamma*	*Delta*	*Epsilon*	*Eta*	*Theta*	*Zeta*	*Iota*	*Kappa*
Population	993	168	128	127	175	49	37	40	39	72	158
Land Hexes	174	24	20	19	31	13	10	13	12	18	14
LoPop Shore	22	6	2	3	2	0	0	3	1	5	0
LoPop Desert	78	4	10	10	12	9	7	3	8	7	8
LoPop Mountain	33	8	6	4	11	0	0	4	0	0	0
HiPop Hexes	36	5	1	1	5	4	3	3	3	6	5
InPop Hexes	5	1	1	1	1	0	0	0	0	0	1

Units: *Population:* In millions

The Goal: Each player has as the goal for his nation victory in the general election to be held on 001-1120 That election will provide each and every person on the planet with a ballot and the opportunity to mark the name of one faction of the Rebellion All ballots must be cast, even if unmarked Individuals who are undecided may cast an unmarked ballot

When the ballots are tallied, the winning faction is determined by majority vote In the event that a majority of ballots is not cast for one faction, the Lucan and Dulinor factions will assume that the governor general's method has not worked· Eddum will become a battlefield in which both Dulinor and Lucan's forces will fight for control of the world and its population

Individual players win if the total vote at the general election selects the side that they have been supporting. More than one player may win in such a case. However, because the long-term campaign to determine Eddum's allegiance is an expensive undertaking, the true winner is the player whose nation has spent the least amount of money and is still supporting the winning side

Initial Preparation: Each player secretly selects the faction which his nation will support He may choose from Dulinor, Lucan, Strephon, Margaret, or Vland Other candidates are not strong enough to be viable Not all candidates need be supported Once a faction has been selected, the player and nation may not change their choice

Nations without players have no specific faction which they support A 10-percent segment of the population supports each of Dulinor, Lucan, Strephon, Margaret, and Vland, the remaining 50 percent of the population is undecided

Each player may select as initial aircraft equipment any aircraft shown as a sidebar in this COACC module Any reasonable number of aircraft can be acquired and used in whatever ways are permitted or useful for the nation involved, provided that the governor general's proclamation is not violated Interpretations generally accepted are that bombing or ground attacks are not allowed, but air-to-air combat is

Once the initial air forces for each side are established, each player must publish a list showing 80 percent of his equipment This information is made available to all other players. Players may, after learning this information, add up to 20 percent to their total forces in additional aircraft (also taken from sidebars in this module)

Budget: Players and nations have unlimited budgets and may spend any reasonable amount of money The only restraint on military spending is the provision that the true winner is determined by the supporter of the winning faction who also spent the least amount of money

Players may provide military aid to other players The recipient of aid is charged with spending 75 percent of the cost of the aircraft transferred, regardless of their condition or age; the donor receives a 50-percent credit for the aircraft disposed of Military aid can only be transferred between nations which support the same faction

Design and Procurement of Aircraft: All aircraft required after the campaign begins must be designed and produced on Eddum. Such aircraft may have no components of a tech level higher than 6. The design process takes two months. Production of the aircraft then depends on available factories

Factories: Each nation on Eddum has five factories, each capable of producing one aircraft design at a time Preparation for production takes two months after the design has been finalized, after which the factory begins manufacturing the aircraft at the rate of one per day

Airfields and Bases: Each InPop and HiPop hex can be used as an airfield or air base. LoPop hexes cannot be used as air bases. Aircraft can normally only be based in HiPop or InPop hexes within their native country Aircraft can be based in foreign countries if the two countries share allegiance to the same faction. If the foreign country is operated by a player, the player must give permission (which may be withdrawn at any time)

PERSUASION

The populations of the nations of Eddum begin the campaign with 40 percent supporting the faction of the nation's choice, 10 percent supporting each of the other four factions, and 20 percent undecided This preference has been established for each land hex on the world map (sea hexes have no population and are ignored)

Shaping Opinion: Virtually the only way to shape opinion on Eddum is through the use of aerial missions which carry the message of a faction to the public Canny public relations organizations have developed entertaining programming for both radio and video, and presenting that programming to the public can shift public opinion by a few percentage points if properly administered.

Such programs must be carefully crafted, and as such they indicate both the target audience and the goal. For example, a Dulinor-to-Lucan radio program is crafted to appeal to supporters of Dulinor and to convince them that Lucan is the better faction to support Such a program, when presented to an audience, will shift one percentage point of the audience from their original stand to the new stand

Video programs shift two percentage points from their original stand to the new stand

Leaflets: Leaflet delivery missions carry printed materials instead of radio or video programs The effect of a leaflet delivery mission is the same as a radio program, but it cannot be jammed

Inoculation: An inoculation program is also carefully crafted to reinforce presently held beliefs When presented to an audience, it will prevent any shifts in that audience's beliefs for one week For example, a Dulinor inoculation program will make the Dulinor-supporting population resistant to changing its opinion for a week

Native Propaganda: The natural presentation of the case for a nation's preferred faction produces a gradual shift in preferences among the population Native propaganda produces a shift of one percentage point per week from the undecided population to the nation's preferred faction.

An Operation in Action: A HiPop hex in Alpha is initially loyal to Dulinor (40 percent) with support for Lucan (10 percent), Strephon (10 percent), Margaret (10 percent), Vland (10 percent), and a portion of the population undecided (20 percent). Neighboring Beta (supporting Lucan) sends an RBM into the hex broadcasting a Dulinor-to-Lucan program. On the first two days, the mission is successful; on the third day, it is driven off

The local authorities in Alpha mount a Dulinor inoculation program (which prevents any change in pro-Dulinor population opinions for the next seven days) on the fourth day of the week. On the fifth day of the week, Beta sends an RBM module into the hex broadcasting a Margaret-to-Lucan program It is successful for the next three days.

Native propaganda in the hex produces shifts of one percent from the undecided group to the Dulinor faction.

At the end of the week, the preferences of the population in the HiPop hex are Dulinor (39 percent), Lucan (15 percent), Strephon (10 percent), Margaret (7 percent), Vland (10 percent), and undecided (19 percent).

MISSIONS

RBM delivers a radio broadcast program to a target hex. VBM delivers a video broadcast program to a target hex. RBJM jams all radio broadcast programs in a target hex VBJM jams all video broadcast programs in a target hex. LDM delivers a load of leaflets to a target hex.

PROGRAMS

An audience-to-target radio program subtracts one percent of support from an audience and adds one percent of support to a target An audience-to-target video program subtracts two percent of support from an audience and adds two percent of support to a target

An audience inoculation program prevents the shift of support from an audience for seven days Leaflets subtract one percent of support from an audience and add one percent of support to a target (they cannot be jammed).

RANKINGS

Although rankings can be determined every day, it is easier to note and publish them every week (every seven days)

BATTLES

The entire purpose of the campaign is to determine the political preferences of the population of Eddum The method of shaping this opinion is through the use of COACC.

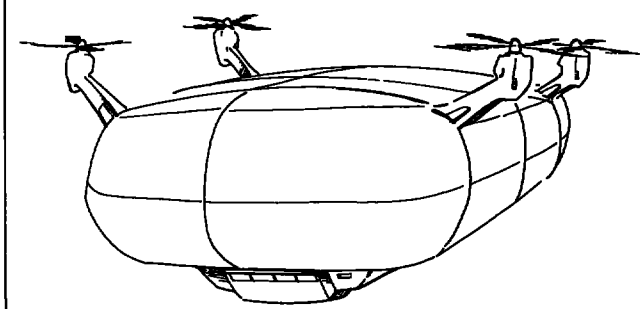
Air Battles: An aircraft in position to deliver a broadcast achieves its mission if it remains in the hex for one hour. If it is driven off or destroyed by enemy aircraft before the hour has elapsed, then it is unsuccessful in shifting public opinion Air battles by interceptors and escorts are commonplace as each side tries to achieve its mission.

Strategic Placement: The limits of aircraft range and the positioning of various aircraft's home bases can clearly channel what can be done and the manner in which the enemy can attempt to counter those actions.

Attrition: Success in destroying enemy aircraft severely limits what actions and missions the enemy may take As aircraft are destroyed, the limits on new aircraft production may make it difficult to replace them all.

Costs: Although all participating nations have effectively unlimited budgets, the ultimate victor is judged on cost-effectiveness as well as on success. Participants must carefully weigh the costs of aircraft needed.

Diplomacy: Nations may negotiate with each other in an attempt to further the aims that each has. By pooling resources, it may be possible for all sides to make significant progress toward their goals. However, ultimately, such diplomacy may fail.



***CALCUTTA* (TL8) HELISTAT**

CraftID: Helistat TL8, MCr16.15
Hull: 13333/33333, Disp. = 4000, Volume = 200,000 cubic meters, Envelope Weight = 200tons, Usable Lift = 66tons with hydrogen, 50tons with helium, Airframe = Simple
Power: 4/1 Gas Turbine, 3 3 Mw × 8, Endurance = 1 hour, 50 min
Loco: 4 Sets Main and Tail Rotor, Lift = 26.4tons each, Thrust = 9.9ton each, Cruise = 110, Top = 150
Commo: Regional Radio × 1
Control: Boosted
Accom: Crew = 3, (Pilot, Copilot, Cargo Lift Pilot; simple cockpits × 2, crew station × 1), aboard control helicopter linked electronically to robot control sets aboard three slave helicopters
Cargo: 132ton sling load (hydrogen); 116ton sling load (helium)
Other: Fuel = 6000liters internal each helicopter

The helistat is a heavy lift air vehicle combining the lifting capacity of an airship with the maneuverability and increased speed of the helicopter It is designed to carry sling loads of heavy equipment and construction material into wilderness areas.

Flyer Characters

Skilled individuals capable of operating craft in atmosphere are constantly in demand with the armed forces and with commercial endeavors on planets throughout civilized space When travel is an essential part of modern star-spanning civilization and when the aircraft (as a part of modern activities) is more cost-effective than brute thrust-powered travel, an industry will arise to exploit it commercially and armed forces to make use of it militarily

Flyers are those individuals who spend their lives and careers involved in air or atmospheric travel activities. Most worlds with atmospheres and sufficient technological levels maintain an air force as part of their armed forces, and they make use of flyers to operate the aircraft which serve in the air force These worlds also have commercial aircraft companies which use flyers to operate commercial aircraft

Flyer Ranks: Ranks for flyer characters serving in COACC are shown in the COACC Table of Ranks. Ranks O1 to O10 are called *officers* or *commissioned officers* Ranks E1 to E9 are *enlisted personnel*. Within the enlisted ranks, ranks E3 to E9 are *noncommissioned officers* Ranks for commercial flyer characters are shown in the Flyer Table of Ranks

Flyers: The general term for individuals serving in COACC, regardless of rank or position, is *flyer*

ADVANCED CHARACTER GENERATION

The advanced character generation systems in the **MegaTraveller Players' Manual** produce enhanced characters for the careers of mercenary (including the army and the marines), navy, scout, and merchants This chapter uses the same techniques to produce enhanced characters for the flyer career

The process begins with the advanced character generation procedure (pages 44 to 47 of the **MegaTraveller Players' Manual**) and the homeworld generation procedure (page 13 of the **MegaTraveller Players' Manual**).

Homeworld: Any character from any homeworld may become a flyer The individual is assumed to have served out his career on his homeworld

A beginning flyer character must be aware of several things: the atmosphere code of the world he is on (always no less than Thin), the world's population code (always no less than Mod Pop), and the world's government type These factors influence the type of COACC forces that are available to the character, and the type of aircraft and spacecraft the character may use in service

If the character's homeworld does not meet the requirements of Thin+ atmosphere, Mod+ population, and Industrial+ technology code, the character must generate an adopted homeworld (using the procedures on page 13 of the **MegaTraveller Players' Manual**) and is assumed to have served out his career on that new world If necessary, the character must continue to generate successive adopted homeworlds until an acceptable one for flyer service is found.

INITIAL ACTIVITIES

The individual may undertake any of the precareer options available in the **Megatraveller** basic game set College, the Military Academy, the Merchant Academy, medical school, flight school, the Air Academy, AOTC, and COACC Flight School are available The Air Academy, AOTC, and COACC Flight School are covered in detail in this section

Air Academy: Any character with a Social Standing of 8+ may apply for admission to the Air Academy The character must throw 10+ on 2D for admission with a DM of +2 for Dexterity of 9+. If the character fails the admission throw, he remains 18, and may enlist in COACC or another armed service.

A character must throw 9+ to succeed Add a DM of +2 if the character's Intelligence is 8+ If the character fails the success throw, he ages one year and is immediately drafted into the COACC for a short three-year term

The Education throw of 1D−3 with a DM of +1 if the character's Intelligence is 9+ indicates the increased level of Education gained during four years at the Air Academy.

A successful 9+ throw (DM+1 if Intelligence is 9+) for honors recognizes the character's scholastic and aviation accomplishments A character earning Air Academy honors will be admitted to flight school upon application and may apply to medical school.

Air Academy graduates automatically receive Survival-1 Graduates throw 4+ on 1D for each of these skills Navigation, Leader, Admin, Technical Graduates may also throw 6 on 1D for Propeller Aircraft-1 They are commissioned in the homeworld (or adopted homeworld) COACC immediately after graduation. Air Academy graduates will have aged four years and will begin their first term of service or additional education at age 22.

AOTC (Air Officer's Training Corps): Individuals attending college may elect to take AOTC and, if they successfully complete it, they receive a commission as an officer in COACC. AOTC is identical to OTC.

COACC Flight School: COACC Flight School is open to COACC commissioned officers only. Any Air Academy honors graduate or college honors graduate who has successfully completed AOTC may attend COACC Flight School by applying. Other Air Academy or AOTC graduates may apply for admission, succeeding on a roll of 9+ with a DM+1 if the candidate has a Dexterity of 9+ COACC officers who fail the

admission roll report for immediate duty as officers in a nonflight branch and begin serving their first four-year term.

COACC Flight School students succeed on a roll of 8+ with a DM+1 if the student has Dexterity 9+. COACC Flight School students who wash out report to duty as nonflying COACC officers and begin serving a short three-year term in a nonflight branch. Successful flight school students automatically receive Propeller Aircraft-1 *and*, if the individual's homeworld has Pre-Stellar technology or higher, the successful flight school students also automatically receive their choice of Jet Aircraft-1 or Helicopter-1. COACC Flight School graduates also automatically receive Survival-1 (Air Academy graduates would thus have Survival-2 when graduating from COACC Flight School). If an individual's homeworld's tech level is Early Stellar+, the student may receive Grav Vehicle-1 instead of Helicopter-1 COACC Flight School students also receive Navigation-1, Tactics-1, and Gunnery-1 on a roll of 4+ on 1D for each skill.

COACC Flight School graduates report to active duty as officers (rank O1) and begin serving a short three-year term at age 23

College, the Military Academy, medical school, and flight school are each covered in the **MegaTraveller Players' Manual**. The following modifications apply.

College: The college procedures are used without change, except that AOTC is an acceptable substitute for OTC or NOTC.

Military Academy: The Military Academy procedures are used without change, except a graduate may decide to take a commission in his homeworld COACC.

Medical School: The medical school procedures are used without change except that a graduate may automatically be commissioned as a captain (rank O3) in the homeworld COACC. The character is automatically assigned to the medical branch.

Flight School: A graduate of flight school can elect to transfer his commission in his homeworld COACC (instead of serving in the Imperial Navy, sector navy, or subsector navy) The character is automatically assigned to the orbit branch.

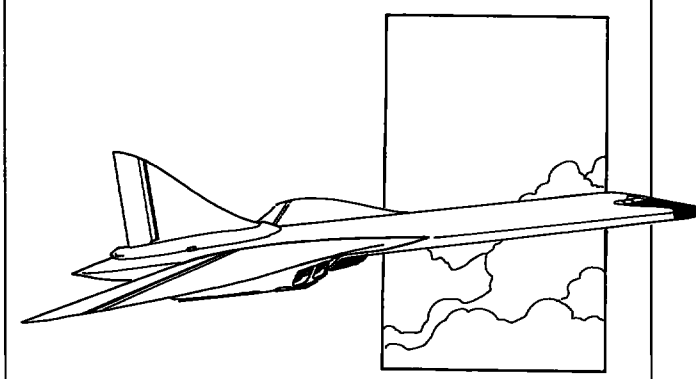
ENLISTMENT

The two different levels of COACC forces are the Imperial COACC Advisory Group and the world COACC (which encompasses the subordinate COACC of a nation on a Balkanized world).

All individuals initially join a world COACC. That world is described and defined by the homeworld (or adopted homeworld) characteristics of the individual. If the world is Balkanized, the individual has enlisted in one nation's COACC on that world.

Armed forces from worlds with Mod Pop or greater have their own COACC forces for patrol duties, counterinsurgency operations, support of world goals, and defense against planetary invasions. Depending on the world's tech level, these COACC forces may be equipped with aircraft and spacecraft ranging from jet fighters and attack aircraft to system defense boats.

Balkanized worlds' nations have COACC or air forces with the mission of defending their home countries or attacking their neighbors, and are seldom concerned with a unified system or world defense against outsiders. Depending on technology level, these worlds will have combat aircraft ranging from propeller-driven biplanes to suborbital rocket-ramjets. If technology permits, some nations may have orbital fighters and orbiting laser artillery platforms. Surface-to-surface cruise and ballistic missiles are found under the control of COACC forces



***MELBOURNE* (TL10)**
HYPERSONIC SUBORBITAL LINER

CraftID: Suborbital Liner, TL10, MCr15.2
Hull: 420/1050, Disp.=300, Weight Loaded=100tons, Airframe=Hypersonic
Power: 4/10 Gas Turbine×2, 60 Mw, Endurance=1.5 hours; 4/10 Fusion×2, 2 Mw, Endurance=1891 hours, 40 min
Loco: High Bypass Turbofans×2, Thrust=100tons, Cruise=1200, Top=900, Fusion Rocket×2, Thrust=390tons, Cruise=2400, Top=3200, Agility=6
Commo: Regional Radio×2, Continental Radio×1
Sensors: Radar Regional×1
Control: Boosted
Accom: Crew=8 (Pilot, Copilot, Flight Attendants×6), Complex Cockpit×2, Basic Life Support
Other: Fuel=11,350liters hydrogen internal, Passengers=12 First Class, 160 Coach, Cargo=3tons

The *Melbourne* is a hypersonic transport that takes off and lands vertically using deflected exhaust from high bypass hydrogen-burning turbofans for lift Turbofans are also used to transfer to level flight and climb to 20 kilometers, where fusion rockets are ignited that propel the transport into a suborbital arc toward its destination. The transport reenters the atmosphere gliding toward its destination. The turbofans are restarted when speed drops below Mach 1 The transport gradually changes over to vertical flight and lands on a city center landing pad.

on Balkanized worlds outside Imperial control where international rivalry and tension are particularly high

Ruie in the Spinward Marches is an outstanding example of this situation

All characters enter COACC service through enlistment, the draft, or officer training. If all enlistment attempts fail, the character may not undertake COACC service unless he is subsequently drafted. Successful enlistment commits the character to a four-year term of service beginning at age 18

Enlistment: Throw 8+ to enlist in the homeworld COACC, allow DM+1 if Intelligence is 8+, DM+2 if Education is 9+, and DM+1 if homeworld is Balkanized

Draft: If an individual is unsuccessful in enlisting he may submit to the draft A throw of 5+ (1D) results in the individual being drafted into his homeworld COACC.

Commissions: Air Academy graduates are commissioned with the rank of pilot officer O1 in the homeworld COACC upon graduation. AOTC graduates are commissioned as pilot officer O1 in their homeworld COACC.

BRANCH SELECTION

Each COACC is divided into five *branches* orbit, atmosphere, technical, security, and medical.

Orbit: The orbit branch is concerned with operations beyond the atmosphere, including orbital combat by orbital fighters and system defense boats This branch exists in COACC forces with homeworlds having Early Stellar+ technology (TL9+) An officer in an orbit branch commands orbital units

Atmosphere: The atmosphere branch is concerned with operations in the atmosphere, including air-to-air combat and air-to-ground strikes An officer in an atmosphere branch commands atmospheric units

Technical: Ground support operations, including maintenance and the operation of air bases are the concern of a technical branch An officer in a technical branch commands bases and missile units

Security: The security branch is concerned with base security and ground-based air defense. An officer in a security branch commands air police, security, and air defense units

Medical: Health support activities are the concern of a medical branch An officer in a medical branch commands medical and hospital units

Branch is assigned by COACC when the individual joins If the character is a flight school graduate, he is automatically assigned to the atmosphere branch (if the homeworld is tech code Early Stellar+, he may choose orbit branch instead) If the character is a medical school graduate, he is automatically assigned to the medical branch. If the character attended and failed medical school, he is automatically assigned to the medical branch A medical school attendee who is also a flight school graduate may choose between atmosphere or orbit branch and medical branch

Cross-Training: An individual who has received cross-training in another branch may transfer to that branch when reenlisting.

Terms of Service: Characters serve four-year terms. When the term is completed, reenlistment is for additional four-year terms Some characters serve short initial terms (three years)

Training: The first year of service is dedicated to training Enlisted personnel make two rolls on the Branch Skills Table for their first year. Officers make two rolls on their choice of the Branch Skills Table, the Staff Officer column of the Service Stills Table (or Flight Officers column if they are in the flight branch).

CAREER RESOLUTION

A character's career begins once the character has graduated from all precareer schools and has officially joined the service

Assignments: A character carries out four one-year assignments each term As noted elsewhere, the first year of the first term is devoted to initial or officer training

Each one-year assignment is resolved separately Officers determine whether they hold a command in the current assignment, all characters determine their specific assignments, all resolve their assignments in terms of survival, decorations, promotions, and skills.

Command Determination (Officers Only): Any officer may consult the Command Duty Table For each branch, a successful throw places the officer in a command position Failure places him in a staff position If the officer does not consult the Command Duty Table, he will automatically serve his next assignment in a staff position

Specific Assignments: Two COACC assignment tables are used to determine the character's specific assignment: the Flight (Atmosphere/Orbit) Assignments Table and the Ground Assignments Table. The first is for personnel on flight status in the atmosphere or orbit branches, the second for all others

Specific assignments for personnel on flight status include combat, patrol, transport, training, and special duty Specific assignments for ground personnel include base defense, training, base operations and special assignment Roll 2D for specific assignments on both tables.

Special Assignments: Characters who receive a special assignment are sent to service schools or are assigned to unusual duty

Flight Status: Flight school graduates are automatically on flight status until they are grounded. Enlisted personnel gain flight status through cross-training or attending air crew specialist school and then joining the flight branch at the beginning of the following four-year term Enlisted personnel also remain on flight status until grounded.

Wings: Flight school graduates are awarded and wear pilot wings Officers on flight status who have reached flight lieutenant (rank O3) and who have served at least three terms are awarded senior pilot wings. Officers on flight status who have reached squadron leader (rank O4) and who have served at least five terms and at least five command assignments are awarded command pilot wings The wings earned by a character are always mentioned in his resume

Grounding: Personnel on flight status must roll to avoid grounding when beginning their second or subsequent four-year term A roll of 6+ on 1D grounds the character Add a DM of +1 on the grounding roll for every term served beyond two terms Add a DM of +1 if the character has been wounded Subtract a DM of −1 if the character's Dexterity is 8+ Grounded personnel must immediately begin rolling for their specific assignments on the Ground Assignments Table

Assignment Resolution

For each specific one-year assignment, the character must resolve his survival, decoration, promotion, and whether he receives skills

Survival: The character must pass a survival throw to see if he survives the current year If he fails the throw, character generation is finished, and he is mustered out Optionally, the character is dead If the exact survival number is rolled, the character was wounded on duty If the character's assignment was combat or base defense, he was wounded in action and receives a Purple Heart.

The character may choose to take a negative DM on his survival roll and apply it as an equal positive DM on the decorations roll

Decoration: Characters may be decorated for heroism If a character rolls the indicated number or higher, he is awarded the Meritorious Conduct Under Fire (MCUF) award If he rolls at least three higher than the number stated, he receives the Medal for Conspicuous Gallantry (MCG) instead If he rolls at least six higher, he receives the Starburst for Extreme Heroism (SEH)

If the character took a negative DM on his survival roll, an equal positive DM may be taken in an attempt to win a decoration

This procedure may be reversed to gain a greater chance to survive by applying a positive DM to the survival throw However, if the resulting negative DM applied to the decoration throw causes the decoration throw to fail by six or more (such as rolling a 4 when 10+ is required for a decoration), consult the Court Martial Table in the **MegaTraveller Players' Manual** (page 47)

Promotion: A character may receive a promotion by throwing the indicated number or higher on 2D Where a number is listed in parentheses officers may not roll for promotion.

Normally, an officer may not be promoted more than once per term Enlisted characters may be promoted as often as once per assignment However, they may not be promoted beyond flight sergeant major (rank E9) except through attending Officer Candidate School (OCS)

Skills: A character may receive skills because of his assignment If the character rolls the indicated number or higher, he may roll for one skill on any skill column available to him.

REENLISTMENT AND MUSTERING OUT

The character must reenlist or muster out at the end of a four-year term To reenlist in the COACC force, the character must throw 6+ on 2D. If the throw fails, he must muster out and roll for the benefits on the flyer column of the Mustering Out Table in the **MegaTraveller Players' Manual** (page 20).

Changing Branches: Characters may reenlist in a different branch at the end of a four-year term if they have received cross-training in that branch during a prior term

Transfer to the Imperial COACC Advisory Group: A character may be invited to transfer to the Imperial COACC Advisory Group once he has achieved skill level 4+ in any aircraft type The individual is then assigned to staff college, cross-trained in atmosphere and orbit, and all further assignments are in atmosphere or orbit branches

SPECIAL RULES

The following special rule applies to flyers

Combat Ribbons: A character's resume should include details of combat experience. Each time a character receives a combat or base defense assignment, he receives a combat service ribbon. Each time an officer holds a command assignment in combat or base defense, he receives a combat command cluster on his combat service ribbon.

SKILLS FOR FLYERS

A number of skills have been expanded for use by flyer characters in this rules module. They include the following

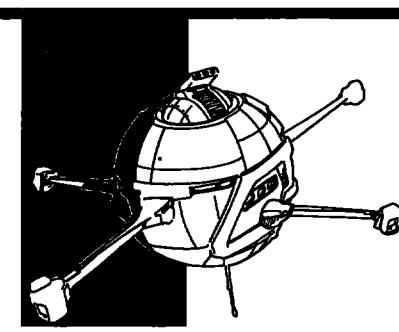
Forward Observer: Forward Observer includes skill in directing air strikes onto ground targets, as well as directing artillery fire and fire from ships in orbit

Gunnery: Gunnery includes skill in the use of air-to-air weapons, air-to-ground weapons, antiaircraft weapons, and ground-based antistarship weapons, as well as starship/small craft weapons

Navigation: Navigation is a skill in all forms of navigation, including aircraft navigation

Recon: Recon includes skill at aerial reconnaissance and photo interpretation

Tactics: Tactics now includes skill in air combat tactics and is used as a positive DM in some air combat situations



***GUARDIAN*-CLASS (TL12) ORBITAL BATTLE STATION**

CraftID: Orbital Battle Station, TL12, MCr21
Hull: 90/225, Disp = 120, Config. = 4, Armor = 40F
Power: 1/2, Fusion = 6 Mw, Duration 120/360
Commo: Radio = Planetary, datalink only
Sensors: Active EMS = Planetary
Off: Missile = x09
Batt 1
Bear 1
Computer: 1 x 1
Other: Fuel = 120kliters, ObjSize = Small, EMLevel = faint

The *Guardian*-class orbital battle station is armed with a 100-ton missile bay containing two battery rounds of UCP Factor-9 nuclear missiles Once activated in orbit, it automatically acquires and fires upon shipping that does not respond to the correct preprogrammed transponder code. It is easily and cheaply mass produced as a last line of defense in low orbit

ENHANCED FLYER CHARACTERS

INITIAL GENERATION

Generate the basic character using the advanced character generation procedure (**MegaTraveller Players' Manual** pages 44 to 47) and the homeworld generation procedure (**MegaTraveller Players' Manual** page 13).

HOMEWORLD INFORMATION

A flyer character must know his homeworld. If that homeworld has a Vacuum atmosphere, an adopted homeworld must be generated which has a non-Vacuum atmosphere.

PRECAREER OPTIONS

A flyer character has the following options available before the career begins. College, Naval Academy, Military Academy, Medical school, Flight school, Air Academy, AOTC, COACC Flight School

ENLISTMENT

Throw 8+ to enlist in the homeworld COACC; allow DM+1 if Intelligence is 8+, DM+2 if Education is 9+, and DM+1 if homeworld is Balkanized.

ENLISTMENT BRANCHES

Flyers each serve in a specific branch·

Orbit: The orbit branch is concerned with operations beyond the atmosphere An officer in an orbit branch commands orbital units

Atmosphere: The atmosphere branch is concerned with operations in the atmosphere An officer in an atmosphere branch commands atmospheric units

Technical: Ground support operations are the concern of the technical branch An officer in a technical branch commands bases and missile units.

Security: The security branch is concerned with base security and ground-based air defense An officer in a security branch commands air police, security, and air defense units

Medical: Health support activities are the concern of the medical branch. An officer in a medical branch commands medical and hospital units

BRANCH ASSIGNMENT

Die	*Enlisted*	*Officer*
1	Technical	Technical
2	Technical	Technical
3	Security	Security
4	Security	Atmosphere
5	Medical	Atmosphere
6	Atmosphere	Atmosphere
7	Orbit	Orbit

DM+1 if tech level Early Stellar+

Automatic Branch Selection

Automatic atmosphere branch if flight school graduate (choice of atmosphere or orbit branch if homeworld is tech level Early Stellar+) Automatic medical branch if character is medical school graduate or failed medical school

COMMAND DUTY

Officer's Branch	*Throw*
Atmosphere	7+
Orbit	8+
Technical	9+
Security	8+
Medical	10+

ASSIGNMENTS

Die	*Atmosphere/Orbit*	*Ground*
2	Combat	Base defense
3	Combat	Base defense
4	Patrol	Training
5	Transport	Base operations
6	Training	Base operations
7	Transport	Training
8	Training	Base operations
9	Combat	Training
10	Patrol	Base defense
11	Special assignment	Special assignment
12	Special assignment	Special assignment

ASSIGNMENT RESOLUTION

Atmosphere	*Training*	*Transport/Support*	*Strike*	*Superiority*
Survival	4+	3+	4+	6+
Decoration	none	12+	10+	6+
Promotion	6+	10+	8+	6+
Skill	6+	10+	8+	6+

DMs: For survival, DM+1 if any Flight skill 2+ For promo, DM+1 if Educ 7+.

Orbit	*Training*	*Transport/Support*	*Strike*	*Superiority*
Survival	4+	4+	6+	7+
Decoration	none	11+	9+	6+
Promotion	6+	10+	8+	6+
Skill	6+	8+	8+	6+

DMs: For survival, DM+1 if any Space skill is 2+

Technical	*Training*	*Support/Base*	*Missiles*
Survival	auto	auto	6+
Decoration	none	12+	10+
Promotion	8+	10+	8+
Skill	6+	7+	8+

DMs: For survival, DM+1 if Combat Rifleman-1 For skill DM+1 if Int 8+.

Security	*Training*	*Air Police/Security*	*Air Defense*
Survival	3+	4+	7+
Decoration	none	10+	8+
Promotion	6+	8+	6+
Skill	7+	8+	8+

DMs: For survival, DM+1 if Combat Rifleman-1; DM+2 if base defense school

Medical	*Training*	*Base*	*Hospital*
Survival	auto	auto	4+
Decoration	none	12+	10+
Promotion	7+	10+	8+
Skill	7+	10+	8+

DMs: For promotion, +2 if Medical 4+

ENHANCED FLYER CHARACTERS

SPECIAL ASSIGNMENTS

		Officers	
Die	*Enlisted*	*Flight*	*Ground*
1	Cross-training	Flight school	Cross-training
2	Specialist school	Intelligence school	Flight school
3	Recruiting	Air attache/aide	Intelligence school
4	Air crew school	Recruiting	Base defense school
5	Base defense school	Forward observer school	Command school
6	OCS	Advanced air combat school	Staff College
7	Space school	Space school	—
8	Space school	Space school	—

DMs: *Enlisted and Flight Officers* +2 if world TL9+

SERVICE SKILLS

Die	*Flyer Life*	*Flight Sgt*	*Flight Off*	*Grnd Off*	*Staff Off*	*Cmnd Off*
1	Brawling	**Vice**	**Aircraft**	**Gun Cbt**	Computer	Handgun
2	+1 Dex	**Gun Cbt**	**Gunnery**	Admin	Admin	Leader
3	+1 Endur	Mechanic	Tactics	Computer	Instruct	Leader
4	Carousing	Electronic	**Gunnery**	Electronic	Liaison	Liaison
5	+1 Educ	Mechanic	Navigation	Mechanic	Handgun	+1 Endur
6	Leader	Demo	Handgun	Comm	SMG	**Inborn**
7	Vacc Suit	Instruct	Grav Veh	—	—	Tactics
8	Handgun	Leader	Vacc Suit	—	—	**Gunnery**
9	+1 Soc	Admin	—	—	—	—
DM:	+3 if O4+	+3 if E6+	+2 if TL11+			+2 if on flight status

BRANCH SKILLS

Die	*Atmosphere*	*Orbit*	*Technical*	*Security*	*Medical*
1	**Aircraft**	Ship's Bt	**Gun Cbt**	Cbt Rifleman	Admin
2	**Aircraft**	Vacc Suit	Mechanic	Hvy Wpns	Electronic
3	Tactics	Navigation	Mechanic	Recon	Medical
4	**Gunnery**	Engineer	Demo	Cbt Rifleman	Computer
5	Navigation	Ship Tactics	Mechanic	**Gunnery**	Medical
6	**Gunnery**	**Gunnery**	Electronic	**Gunnery**	Admin
7	Vacc Suit	—	Gravitics	—	Meson Gun
8	Grav Veh	—	—	—	—
DM:	+2 if TL9+		+1 if TL9+		+1 if TL11+

COACC TABLE OF RANKS

Enlisted	*COACC*	**Officer**	*COACC*	*Traveller Rank*
E1	Aircrafthand	O1	Pilot Officer	1
E2	Leading Aircrafthand	O2	Flying Officer	1
E3	Senior Aircrafthand	O3	Flight Lieutenant	2
E4	Crew Chief	O4	Squadron Leader	3
E5	Flight Sergeant	O5	Group Captain	4
E6	Leading Flight Sergeant	O6	Wing Commander	5
E7	Senior Flight Sergeant	O7	Air Commodore	6
E8	Master Flight Sergeant	O8	Air Vice Marshal	6
E9	Flight Sergeant Major	O9	Air Marshal	6
		O10	Air Chief Marshal	6

SPECIALIST SCHOOL

Die Roll	*Specialist School Type*
1	Mechanical
2	Electronic
3	Ordnance
4	Maintenance
5	Computer
6	Gunnery
7	Gravitics
8	Space

DMs: +2 if TL9+

SPECIAL ASSIGNMENTS

Cross-Training: Select any branch and cross-train in it Roll for one skill on that branch table.

Recruiting: Receive Recruiting-1

Air Crew School: Roll 4+ (1D) for Gunnery, Navigation, Sensor Ops

Base Defense School: Receive automatic Combat Rifleman-1 Roll 4+ (1D) for Heavy Weapons, Tactics, Leader, ATV, Gunnery.

OCS: Advance to rank O1, rank E7 advance to rank O2 (roll twice on Service Skills Table and once on Branch Skills Table). Rank E8 and E9 receive O3 (no new skills) OCS prohibited over age 38 (Reroll on the Special Assignments Table) If OCS is again received, a waiver allows attendance

Space School: Roll 4+ (1D) for Ship's Boat, Ship's Tactics, Navigation, Vacc Suit, Gunnery, Engineering.

Flight School: The individual is admitted to flight school. See page 91.

Intelligence School: Roll 4+ (1D) for Interrogation, Interview, Sensor Ops Flight officers only roll 4+ for Recon.

Air Attache/Aide: Roll 1D: 1-4 assigns duty as an air attache, 5-6 assigns duty as aide to an air marshal Attache receives promotion of one grade and +1 Social Standing. An aide receives +1 Social Standing and may select command duty or special assignment other than attache/aide

Forward Observer School: Roll 4+ (1D) for Forward Observer, Propeller Aircraft, Recon, Sensor Ops

Advanced Air Combat School: Roll 4+ (1D) for Aircraft, Tactics, Gunnery

Command College: Roll 4+ for Tactics, Leader, and Admin. If Early Stellar+ (TL9+) technology, roll 4+ for Ship Tactics and Fleet Tactics.

Staff College: Roll 4+ for Tactics, Admin, Liaison, Computer. If Early Stellar+ (TL9+) technology, roll 4+ for Fleet Tactics

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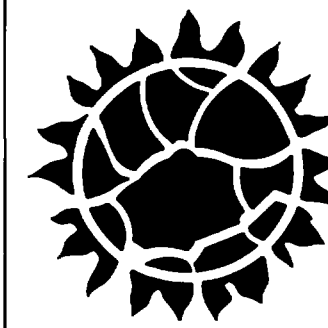

The time is the distant future Humanity has made the leap to the stars, interstellar travel is not only possible, but commonplace

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Now the emperor is dead at the hand of an assassin, leaving no immediate heirs and no clear successors The Emperor's nephew claims the throne, so does his cousin Even his assassin, citing an obsolete and obscure precedent, claims the throne No one knows whom to follow, someone is following each of the claimants Several border regions have lost their faith in the Imperium's ability to protect them and have declared their independence A few neighboring interstellar powers, learning of the Imperium's internal chaos, have begun to advance into unprotected frontier provinces

The Imperium has been shattered

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Traveller postulates that mankind has conquered the stars and that travel from one stellar system to another is commonplace However, the tremendous distances involved dictate that interstellar voyages can take weeks, months, sometimes years

In some respects, the situation is similar to Earth in the 18th century Communication is limited by the speed of travel, setting the stage for adventure in a grand fashion with all the trappings of classic science fiction star-spanning empires, huge starfleets, wily interstellar merchants (and equally wily interstellar pirates), complex diplomatic maneuvers, and larger-than-life heroes, heroines, and villains

Traveller is the name of the overall game **MegaTraveller** is the name of this rules set, and is used to differentiate it from the 10 years of development and earlier editions that preceded it

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COACC

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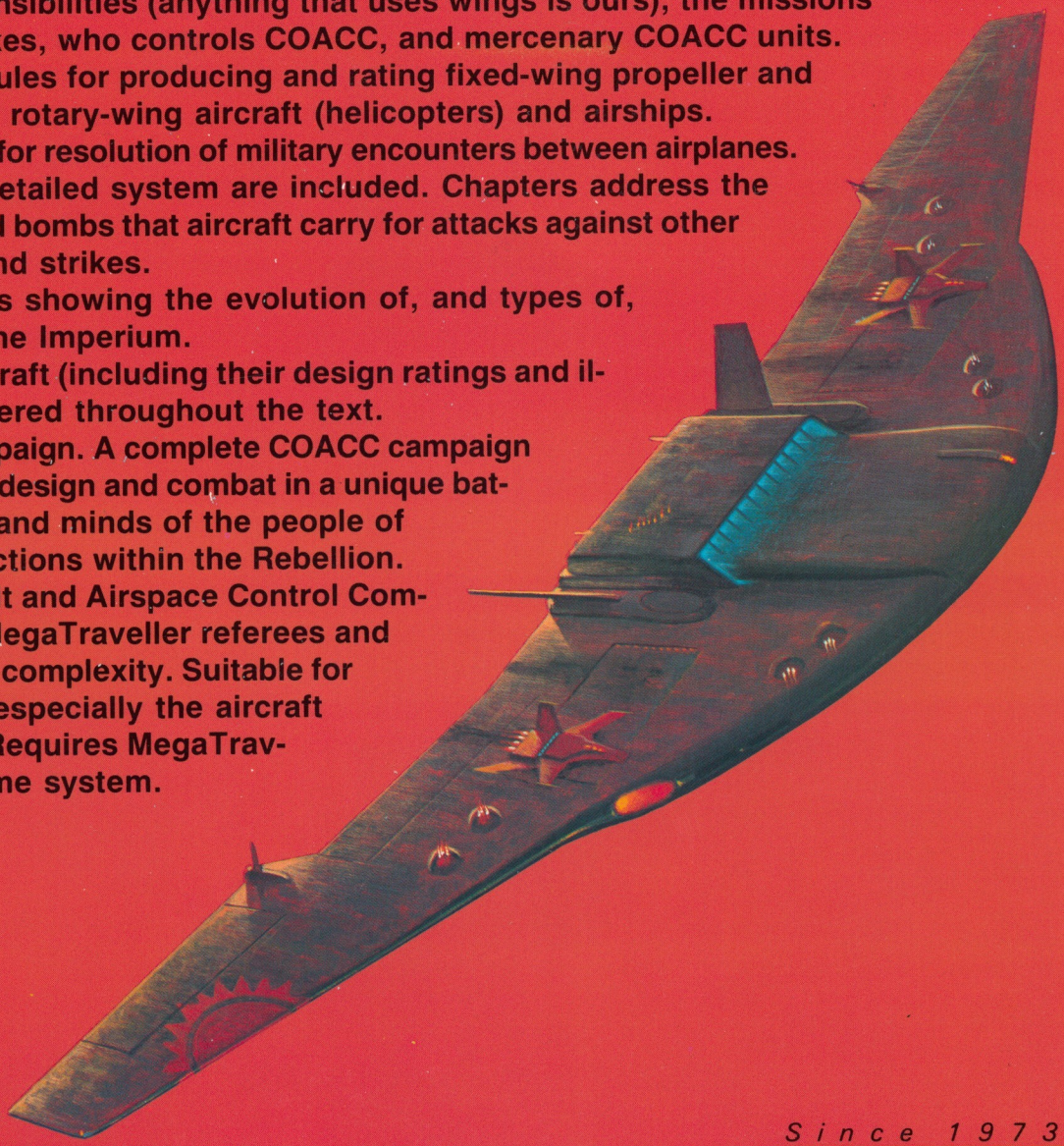
COACC: Close Orbit and Airspace Control Command. Intended for MegaTraveller referees and players. Intermediate complexity. Suitable for some solitaire play (especially the aircraft design sequences). Requires MegaTraveller role-playing game system.



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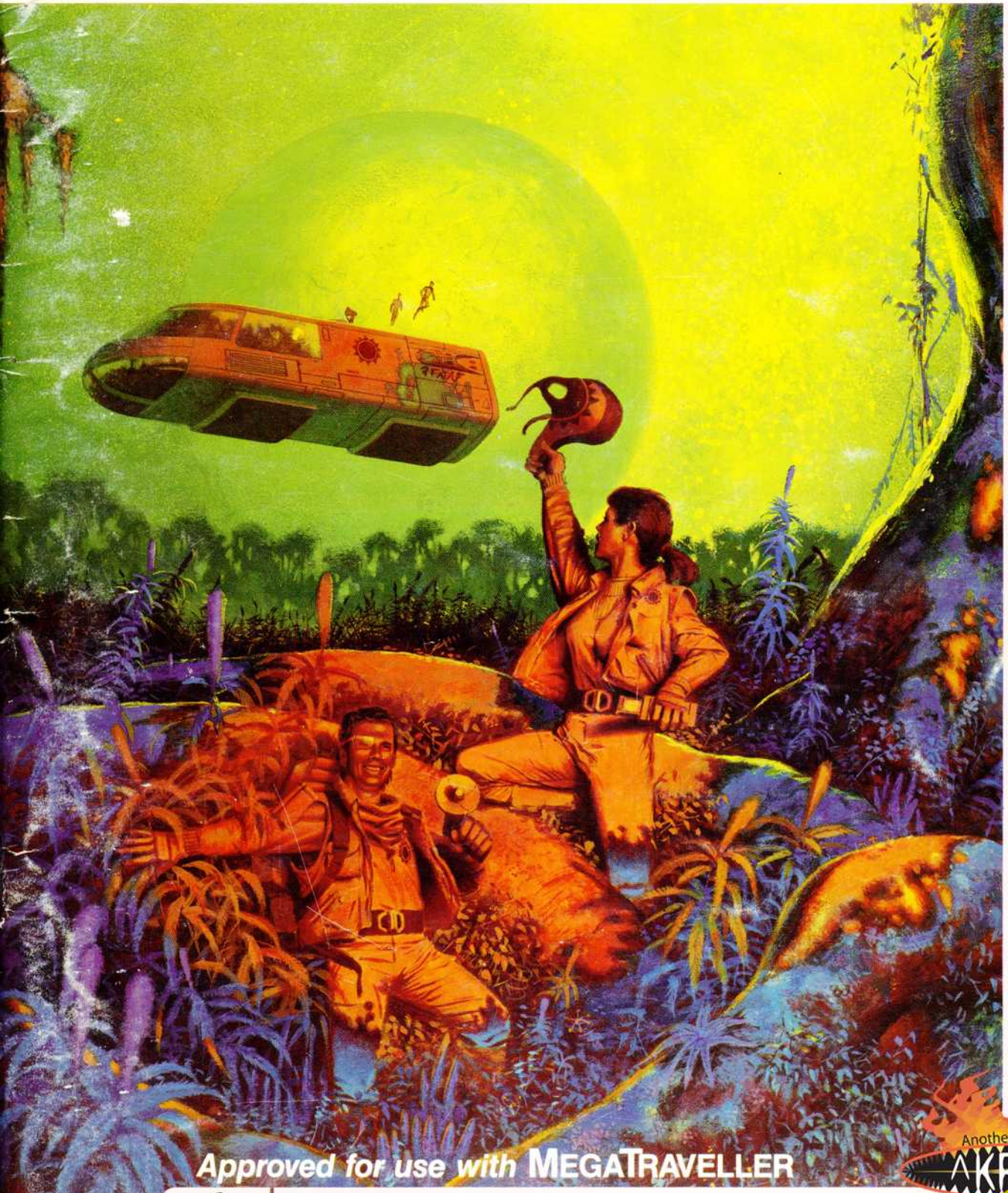

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Another Quality Scan by: AKRITTERA

WORLD DETAIL SHEET

1. Date of Preparation
2. World UWP

SIZE-RELATED

3. Diameter
4. Density
5. Mass
6. Gravity
7. Primary Mass (Star)
8. Orbit Nbr (Planet)
9. Orbital Period (Planet)
10. Rotation Period
11. Axial Tilt
12. Orbital Eccentricity
13. Seismic Stress
14. Asteroid Belt Zones
15. Primary Mass (Planet)
16. Orbit Nbr (Satellite)
17. Orbital Period (Satellite)

ATMOSPHERE-RELATED

18. Atmosphere Composition
19. Surface Pressure
20. Stellar Luminosity
21. Orbit Factor
22. Energy Absorption
23. Greenhouse Effect
24. Base Temperature
25. Orbital Ecc. Mod
26. Latitude Temp Effects
27. Axial Tilt Effects 0.00= 0.25= 0.50= 0.75= 1.00=
28. Daytime Plus
29. Nighttime Minus
30. Native Life? ☐Yes ☐No
31. Atmospheric Terraforming? ☐Yes ☐No original:
32. Greenhouse Effect Terraforming? ☐Yes ☐No new:
33. Albedo Terraforming ☐Yes ☐No new:
34. Atmosphere/Temperature/Terraforming Notes

HYDROSPHERE-RELATED

35. Hydrographic Percentage
36. Hydrosphere Composition
37. Nbr Tectonic Plates
38. Hydrosphere Terraforming? ☐Yes ☐No original:
39. Terrain Terraforming? ☐Yes ☐No
40. Nbr Major Continents/Oceans
41. Nbr Minor Continents/Oceans
42. Nbr Major Islands/Small Seas
43. Nbr Archipelagoes/Scattered Lakes
44. Notable Volcanoes
45. Weather Control? ☐Yes ☐No
46. Natural Resources
47. Processed Resources
48. Manufactured Goods
49. Information

POPULATION-RELATED

50. Total Population
51. Local Customs
52. Primary Cities (list name, population, starport/spaceport)
53. Secondary Cities (list name, population, spaceport)
54. Tertiary Cities (list name, population, spaceport)

55. Social Outlook—Progressiveness

Attitude	Action
☐Radical	☐Enterprising
☐Progressive	☐Advancing
☐Conservative	☐Indifferent
☐Reactionary	☐Stagnant

56. Social Outlook—Aggressiveness

Attitude	Action
☐Expansionistic	☐Militant
☐Competetive	☐Neutral
☐Unaggressive	☐Peaceable
☐Passive	☐Conciliatory

57. Social Outlook—Extensiveness

Attitude	Action
☐Monolithic	☐Xenophilic
☐Harmonious	☐Friendly
☐Discordant	☐Aloof
☐Fragmented	☐Xenophobic

GOVERNMENT-RELATED

58. Representative Authority ☐Executive ☐Legislative ☐Judicial ☐Ruler ☐Elite Council ☐Several Councils ☐Demos
59. World Government Description
60. Other Authority ☐Executive ☐Legislative ☐Judicial ☐Ruler ☐Elite Council ☐Several Councils ☐Demos
61. Other Authority ☐Executive ☐Legislative ☐Judicial ☐Ruler ☐Elite Council ☐Several Councils ☐Demos

LAW-RELATED

63. Uniformity of Law ☐Undivided ☐Territorial ☐Personal

64. Legal Profile (optional)

☐ – ☐☐☐☐☐

- Overall
- Weapons
- Trade
- Criminal Law
- Civil Law
- Personal Freedom

62. Religious Profile (optional)

☐☐☐☐☐☐ – ☐

- God View
- Spiritual Aim
- Devotion Required
- Organization
- Liturgical Formality
- Missionary Fervor
- Number of Adherents

TECHNOLOGY-RELATED

65. Technology Profile

Achievement Tech Levels

Common ☐☐ – Quality of Life ☐☐☐☐☐ – Transportation ☐☐☐☐ – Military ☐☐ – Novelty ☐

- High Common
- Low Common
- Energy
- Computers/Robotics
- Communications
- Medical
- Environment
- Novelty
- Heavy Military
- Personal Military
- Space Transport
- Air Transport
- Water Transport
- Land Transport

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WORLD SURVEY GUIDE
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World Builder's Handbook

Learn how to survey exotic alien worlds with the Imperial Scouts...
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Here in one volume is extensive information on how to create fully detailed worlds and background for creating your own exciting Scout survey missions.

World Builder's Handbook is the comprehensive guide to surveying and detailing worlds. *World Builder's Handbook* consists of these sections:

• **Survey and Exploration** is for **MegaTraveller** players. It details the survey, exploration, landing party, and contact procedures used by the Scouts. This section discusses other topics, too — like what has happened to the Scouts in the rebellion, determining sentience, and so on.

• **Survey Equipment** is also for players. Packed with new high-tech equipment, this section includes information on vacc suits, sensors, vehicles, and complete plans for the *Donosev* Class Scout Survey Vessel.

• **Detailing a World** is for the Traveller referee. It shows how to take the Traveller UWP stats for a world and expand them into an accurate, detailed description of the world's temperature, oceans, continents, seismic activity, resources, cities, starports, cultural outlook, local customs, government and legal structure, and technological achievements.

• **Mapping a World** tells how to create a carefully detailed world map, accurate to the world details produced from the "Designing a World" section.

• Using World Data discusses how to use the expanded world information to introduce a new level of exciting realism into a game session.

THE BASIC TRAVELLER PLANET

The Universal World Profile (UWP) is used by **Mega-Traveller** as the standard for recording coded information about a world. It consists of starport, size, atmosphere, hydrosphere, population, government, law level, tech level, bases, trade classes, travel zone, detailed data (population multiple, number of planetoid belts, number of gas giants, allegiance, and stellar data.

Any world can be described by the basic UWP. These brief stats serve as the starting point for *World Builder's Handbook.*

Additional useful materials include pens, pencils, notebook paper, hex grid or square grid graph paper, and colored markers. A calculator or home computer is helpful for some calculations in this book.

DIE ROLLING CONVENTIONS

World Builder's Handbook uses the common die rolling conventions for **MegaTraveller**.

Throw: That die roll required to achieve a stated effect. If only a number is stated, it must be rolled exactly. A number followed by a plus (such as 7+) indicates that number or greater must be rolled. Similarly, a number followed by a minus (such as 3-) indicates that number or less must be rolled.

Number of Dice: Generally a dice throw involves a roll of two six-sided dice. Throws requiring more (or fewer) dice are clearly stated. For example, a throw calling for one die would be stated as 1D.

Die Modifiers: Die roll modifiers (abbreviated DM) are always preceded by either a plus or a minus. Thus the notation DM+3 indicates that three is added to the dice roll before it is used. Some throws will be written to include a constant modifier; for instance, 2D-7 indicates that the throw required is a roll of 2D with a DM of -7 immediately applied.

Numbers from 0 to 9: Certain rules call for the generation of a digit from 0 to 9. The best way to generate these numbers is with a ten-sided die.

However, it is also possible to roll 2D-2 (using regular six-sided dice) and get a number from 0 to 10. Just reroll if you get 10. However, this method creates a highly skewed distribution, centered around 5. For those who find this unacceptable, the following more involved method of generating numbers from 0 to 9.

Roll 1D for an even or odd number. If the result is even, roll 1D-1 for a number from 0 to 5 — reroll is the result is 5. If the result of the first roll was odd, roll 1D+4 for a number from 5 to 10. Reroll if the result is 10. This method gives an even distribution, with all digits equally likely to occur.

HOW TO USE THIS BOOK Generally, the referee will use the section *Detailing a World* to generate the copious details about an individual world (or worlds) from the world UWP stats. During an adventuring session, the referee then has at her disposal a tremendous amount of useful detail about the world as the players adventure on it.

The referee can also use *Detailing a World* to detail a world as yet *unexplored.* The players can then use the section *Survey and Exploration* to discover the attributes the referee has already generated. The act of surveying and exploring an unknown world can be an exciting basis for an adventure.

A third option is for players to survey and explore a world that the referee has no data on, with each specific item of data generated from *Detailing a World* by the referee as the players request it. The world's UWP is actually "discovered" as the survey proceeds.

CREDITS

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Survey and Exploration

Two offices of the Imperial Scouts — the Survey Office and the Exploration Office — are responsible for surveying and exploring worlds. When the Scouts study a star system and its worlds, they follow certain procedures. In this section, we discuss these procedures in some detail.

The Survey Office: Depending on what is being studied, the Survey Office spends various amounts of time in various systems and on various worlds. Different means of classifying surveys are listed, based on time spent and type of survey.

A planetographer's checklist describes typical techniques a survey crew might use, from the time they decide to jump into a system, through the readings made at system's edge and in orbit around a world, to the world's surface. To illustrate, the operation of the *Donosev* Class sensor control center is described.

A variety of sensors are used in surveys: the EMS array detects objects and sources of electromagnetic energy, the densitometer detects and classifies objects by density, the neutrino sensor detects and classifies atomic-based energy sources, and the neural activity sensor detects and classifies most lifeforms by their "brainwave patterns".

Proper operation of these sensors is important to the success of a survey mission; examples within illustrate how to use these sensors effectively.

A variety of equipment has special uses on survey missions, included are a multitude of equipment. The largest piece of equipment used on a survey, of course, is the ship itself: complete plans and description for the *Donosev* Class Scout Survey Vessel are given as well.

From the survey data, the Scouts compile maps and navigational charts of the Imperium and surrounding areas.

The Exploration Office: Once the star system and its worlds have been surveyed from space, the exploration branch (or "dirtside Scouts") takes over. The dirtside Scouts gather and update data about the cultures, flora, and fauna that exist across the Imperium and surrounding areas.

Comprehensive landing party procedures are given, with notes about equipment used during different steps.

Identifying and contacting sentient life forms is discussed. Once contact has been made, it is imperative that an efficient and effective means of communication be developed as soon as possible. A brief history of language in the Imperium opens the doors to a new skill and detailed equipment for dealing with languages, both new and old.

A variety of equipment has special uses on exploration missions, providing highly technological means of transportation, communication, protection, and data gathering. Each of these devices is detailed and illustrated.

SURVEYING STAR SYSTEMS AND WORLDS

In order to maintain up-to-date information on the Imperium and the regions surrounding it, the Imperial Interstellar Scout Service conducts surveys on an ongoing basis. Although all systems are surveyed, not every system is surveyed to the same degree of detail. The Scouts divide their system surveys into five classes:

Class I: These surveys are the most brief, usually taking only 2D hours to complete. Probes and landing parties are almost never deployed. The Scouts reserve Class I surveys primarily for the survey of a new system.

Whenever an unsurveyed system is first encountered, the Scouts have a standing order: perform a class I survey (from interstellar range) on the new system as soon as possible. A class I survey may be conducted from as far away as one to two parsecs — close enough to allow the determination of basic stellar data and the possible presence of gas giants. The key goals are: chart the precise location of the new system, determine the system ecliptic, note stellar data, and establish the presence of large gas giants, if any. The average survey time is 1 hour per detectable body.

Class II: This kind of survey takes 2D days, and may use probes at the commander's initiative. Landing parties are rare. Class II surveys are usually used as the first insystem survey of a new system or as a special survey to determine only a limited amount of information (the survey ship is sent into the system for a specific purpose, and leaves as soon as the question has been answered).

In a class II initial system survey, all planetary bodies over 800km in diameter are noted, as well as any planetary satellites over 200km in diameter and the dimensions and density of asteroid belts and rings are measured. The survey takes an average of 4 to 8 days. The actual duration, of course, largely depends on the complexity of the star system.

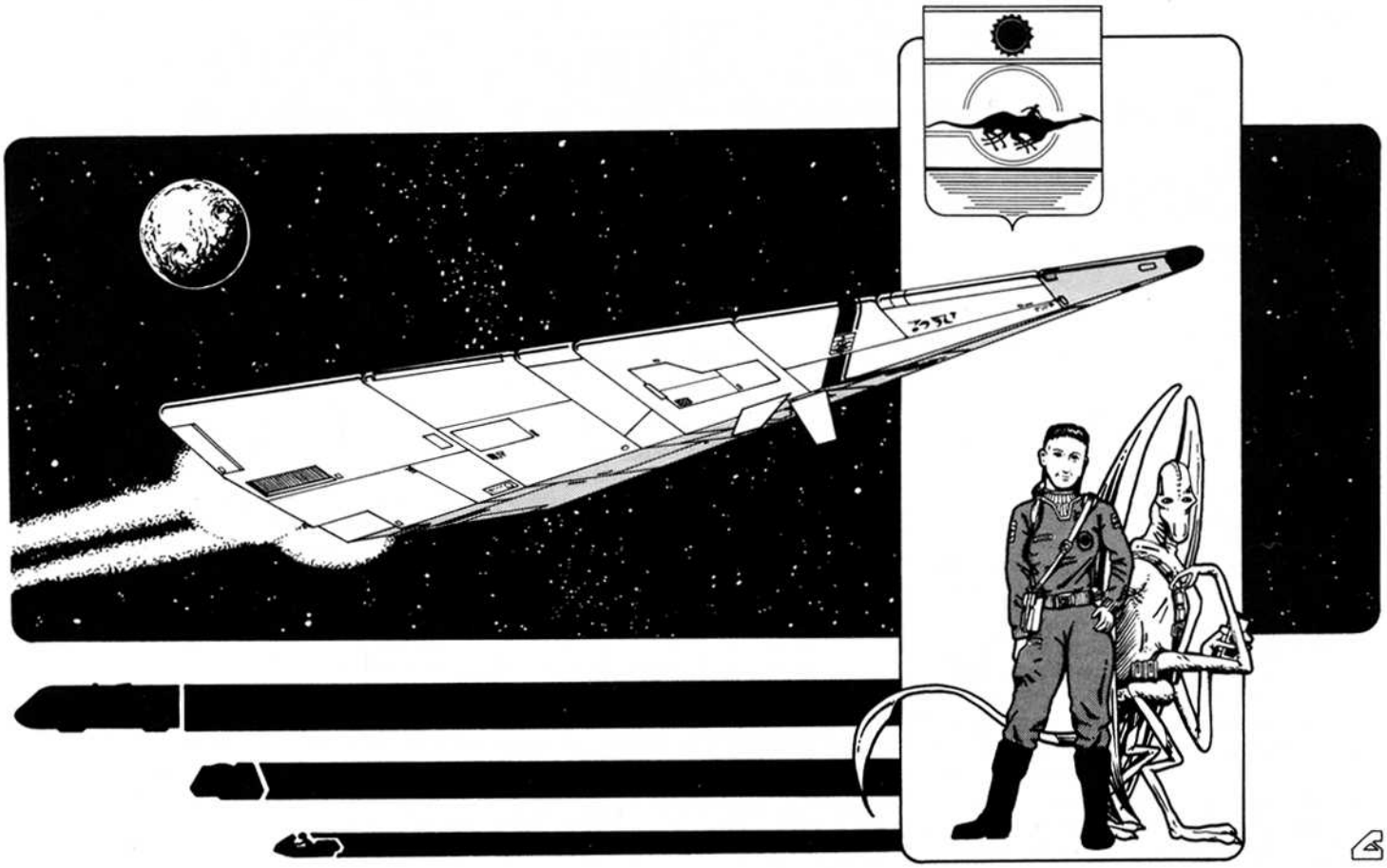
Class III: These surveys, which are the most common, take 2D weeks, including the deployment of probes into the habitable zone. Landing parties may be used at the commander's initiative.

Most system surveys are of this class. The Scouts perform physical profiles of all significant bodies, and do an ephemeris of the bodies' orbital motions. A orbital map of the main world is made. Using orbital examination, the Scouts determine a preliminary UWP. At the commander's discretion, the UWP may be augmented by some on-planet observation and exploration. The average time to complete such a survey is about 50 days.

Class IV: A class IV survey typically takes 2D months. Probes are sent into the system's habitable zone, and landing parties visit the habitable zone's worlds. Both major Imperium-wide surveys (published in 420 and 1065) were Class IV surveys.

The most common class IV survey undertaken by the Scouts is the intensive study of the main world. The world's surface is accurately mapped. Explorers examine the basic geology of the world and collect organisms so as to type the indigenous biology. Native sophonts are studied, but not usually contacted. The average such class IV survey lasts about 30 weeks.

Class V: These surveys take 2D years (or more). Probes



and landing parties are sent to all surveyed bodies. In most cases, an extensive Class V survey is performed only when requested by the surveyed system's government or by the Imperial military.

A common reason for a class V survey of a system is as a precursor to colonization. The Scouts undertake many detailed and time-consuming studies: they model planetary dynamics (including atmosphere, oceans, solar, vulcanism, and major migratory patterns), and they measure the stability of the climate. Basic resources necessary to sustain a colony are identified. A superficial examination of resources useful in economic exploitation is made, and native sophonts, if any, are contacted. The average class V survey takes 5 to 10 years to complete.

In a survey (as opposed to an exploration), contact with local sentients is avoided. The duration and extent of the survey must take this factor into account. Landing parties typically use the neural activity sensor to locate local life forms; non-sentients may be captured as specimens, while sentients are avoided.

In many non-contact surveys, landing parties are not used. Notice that surveys can also be classified by range: long range scan (1-2 parsecs distant), system perimeter scan (50,000-100,000 AUs from primary), outer system scan (beyond habital zone), inner system scan (between habital zone and primary), or habital zone scan.

Other possible survey classifications are: whether active or passive sensors are used, whether probes are used, and whether landing parties are used.

Specialized surveys may be made of the habitable zone of a system, the system's gas giants, planetoid belts, or the star itself. Some systems are resurveyed because newer sensors are available.

Thus, a survey may be a Class II system perimeter probe scan, or a Class IV habitable zone landing party resurvey, for example. Particularly disconcerting to a Scout is the so-called Class V "desk scan", which occurs if he is involuntarily transferred from the Field to the Bureaucracy.

THE PLANETOGRAPHER'S CHECKLIST

With the planetographer's checklist, referees can instantly generate "into the unknown" adventures for their players.

Have each player generate a Scout character. Use the *Donosev* Class Survey Scout described in this book, and generate as many NPC Scouts as needed to fill out the crew. Choose a location and let the players have at it. At each stage of the survey, they will learn more about the area they are in.

After they decide which way to go and lay in the course, their ship can jump to the system to be surveyed. When they reach it, there may be possible ship encounters as they study and approach desirable worlds.

The referee does not need to have an entire system gen-

PLANETOGRAPHER'S CHECKLIST

1 Setup

Determine the type and class of survey.

Remember that some survey sensors are active rather than passive; using active sensors could give away the ship's presence, which may not be wise if contact is to be avoided at all costs.

2 From 1 Parsec Out

- Use the densitometer to determine the number of stars.
- Use the densitometer to estimate the presence of gas giants in the system.
- Use EMS array spectrography to determine stellar types.

3 At System's Edge

- Use densitometer to measure the mass of each star.
- Use densitometer to locate all possible major bodies and planetoid belts.
- Use densitometer to measure the mass of each major body.
- Use EMS spectrography to determine stellar compositions with greater accuracy.
- Use neutrino sensor to determine the stellar energy profile of each star — this shows the internal structure and stability of each given star.
- Use EMS array to determine general location, type, and intensity of radio transmissions, both artificial and natural.
- Determine the UWP size digit for each major body in the system.

4 In Planetary Orbit

- Use EMS array to map the surface.
- Use densitometer to locate major plate boundaries and significant near-surface mineral deposits.
- Use EMS array to locate major climatic features such as icecaps, deserts, and major air and ocean currents.
- Use the EMS array to determine the presence or absence of a magnetosphere for the world and to locate radiation belts.
- Use EMS array spectrography to determine the general atmospheric composition.
- Use the EMS array to determine the world's albedo and a rough estimate of its greenhouse effect.
- If artificial radio transmission was detected earlier, use EMS array to pinpoint sources.
- The UWP atmosphere and hydrosphere digits can be estimated.

5 In Upper Atmosphere

- Continue survey as desired, using close range for higher accuracy.
- Use densitometers, environment sensors, and EMS array to finish accurate mapping.
- Use EMS array spectrography and chromatography to precisely determine atmospheric composition data.
- Use the EMS array to locate local magnetic anomalies.
- Use EMS array to get an initial reading on local sources of radioactivity.
- Use EMS array to ascertain terrain types.
- Use densitometers and EMS infrared sensors to search for minor faults and volcanism.
- The UWP atmosphere and hydrosphere digits can be precisely determined.

6 On World Surface

- Continue survey as desired, using surface and lower atmosphere sensor scans for greater accuracy.
- Use vacc suits and standard anti-contamination procedures for newly explored worlds.
- Collect samples as desired.
- Use neural activity sensor to avoid sentient life.

Complete dirtside exploration procedures, including standards for contacting native life, are detailed elsewhere in this book.

erated, but it helps if he does have detailed information on some world he has not yet used. In this way, wherever the characters go, the referee can use that system as their destination. Using this technique will not keep the referee's campaign consistent with the published Traveller universe, but if the referee uses a border area or an area with unpublished world profile information, conflicts will be minimized.

If the referee wants to maintain consistency, he must pre-generate some information, or be fast on his feet (or dice) when the characters arrive. He can have the players make task rolls to give himself more time. Meanwhile the referee can generate important information as the group discovers it. Various other adventure possibilities will present themselves as the referee generates system data.

THE HOLOGRAPHIC SURVEY STATION

The "holo pit" is the hub of shipboard survey activity on *Donosev* class vessels. The holo pit lies in the foreward section of the ship, in a round room with a diameter of 12 meters. The pit itself is hexagonal, about 4.5 meters on a side and 1.5 meters deep. In the holo pit are stations for a lead surveyor and four survey assistants.

The number of surveyors in the holo pit at any one time depends of course on the intensity and importance of the survey, but no matter how many are there, one is designated the lead surveyor, and he sits at the lead station. The lead surveyor is usually the crew member with the greatest level of survey skill, but when running different shifts of round-the-clock operations, this is not always true.

Meanwhile, on the bridge the pilot mans his station and the navigator takes the mission control station. The accuracy and completeness of the survey results depend not only on the survey skills of the crew members in the pit and the accuracy of the survey instruments they control, but also on the skills of the pilot and navigator, who must orient the ship properly for the sensors to operate most effectively.

In all cases, the ship's computer correlates and pre-analyzes the data — with this feedback, the crew can get the maximum amount of accurate survey data in the minimum amount of time.

Each computerized station in the holo pit has its own controls, which can be configured to operate any combination of sensors. In a typical survey, the four survey stations will be divided up as follows:

- One operator at the densitometer and neutrino sensor.
- One surveyor operates any probes being used.
- Two operators share the EMS sensor array.
- The lead surveyor coordinates this activity between surveyors and the bridge crew.

The computer presents the data via holographic projection so each surveyor sees just the information important to him. For example, while pinpointing an artificial radio transmission on a world's surface, a surveyor might see a projection of an area's geographic features with the radio source highlighted. Meanwhile, the computer includes graphs and digital readouts in the display to show the transmission's other characteristics, such as frequency and strength.

At the same time, the surveyor operating the densitometer would see, from his station, an entirely different projection, along with other information pertaining to his survey.

When a surveyor detects something unusual, important, or just interesting, he reports this to the lead surveyor in two

THE IMPERIAL INTERSTELLAR SCOUT SERVICE
In the Shattered Imperium

The charter of the Imperial Interstellar Scout Service (IISS) — that of maintaining interstellar communication and conducting ongoing exploration — has been markedly affected in the wake of Emperor Strephon's assasination. A key thread binding the Imperium's member worlds is rapid and reliable communication, provided by the Scout-supported express boat network. With the death of Strephon, the resulting unraveling of the Imperium, and the trend toward new governing factions — the binding power of the x-boat thread is all but gone.

Initially, most Scouts reacted to the "faction trend" by taking a neutral status. It was hoped a neutral stand would enable the Scouts to keep all communication routes open. Though this strategy worked for a time, several factions failed to recognize the express boat network's neutrality. Ships were either turned back, captured, or destroyed as they attempted to cross the nebulous borders of the growing rebellion factions.

Many hoped the Imperium's splintering would be a temporary phase, but by 1118 it became obvious matters were getting worse. Bowing to pressures within the domains of the various growing factions, the Imperium-spanning x-boat network fell into disarray over the course of 1118 and 1119. With the loss of a cohesive x-boat network, it became all too apparent the shattering of the Imperium was more than a passing event.

The role of the Scouts changed as their fleets swore allegiance to the local faction. The degree of change varied from faction to faction, depending on the faction's needs and ultimate goals.

In some areas, such as the Domain of Deneb under Norris or the region under Margaret's control, the role of the Scouts has changed in only minor ways. Considering the political climate, these two factions have added intelligence gathering to the Scout's duties. Margaret has actually expanded the Scout's exploration role, focusing their efforts on Hinterworlds and Glimmerdrift Reaches.

Those Scout units at the Imperial core (under the command of Lucan) have been directed to the Illelish fronts in Dagudashaag and Zarushagar sectors. Here, most of the Scouts' *Donosev* survey vessels have been pressed into service as spy ships, since the quality of the *Donosev's* sensors has few peers.

The Interstellar Scout Service under Dulinor's rule has been renamed to the Interstellar Development Service (or IDS). With a stratregic mission combining both trade and exploration, the IDS is responsible for assessing and meeting the trade needs of worlds both within and beyond the empire — the goal being, of course, to build a strong alliegance with such worlds by actively meeting the needs of their inhabitants. Along the way, the IDS is to do all it can to spread the good word of the ascension of Emperor Dulinor to the Imperial throne.•

ways. He calls out the data to the lead surveyor, while at the same time queuing the computer report onto a list at the lead surveyor's station. The oral report does not contain as much information as the computer report, but it alerts the lead surveyor sooner.

From the information accumulating, the lead surveyor decides which items deserve more attention. He calls these out to the appropriate surveyors, while queuing these back onto their computer lists. At the same time, he can pass on survey requests to the navigator on the bridge by using the computer reports queued at his station.

The navigator, at the mission control station, prioritizes the survey requests to the computer, and passes them onto the pilot via computer. The pilot maneuvers the ship, and once it is in position for proper sensor operation, the computer notifies the lead surveyor that the sensor is ready. The pilot must also keep a close eye on the ship's course, to make sure no maneuvering hazards go unnoticed while everyone else is preoccupied with the survey.

SURVEY LANDING PARTIES

Landing parties are more common on exploration missions than on survey missions, but some brief comments on survey landing parties are in order.

As mentioned, landing parties may be sent down to check findings of unusual interest or to pick up resource specimens. Survey parties avoid contact with indigenous life forms, but are always armed for self-defense. Survey parties usually spend 1D hours on the surface. In any event, the Scouts are always equipped to survive in the environment they enter, which often means equipment such as grav belts and their versatile duty vacc suits (although the vacuum mode is often not needed on a habitible world).

Extended surveys on a worlds' surface are sometimes conducted to gather more information on the world's ecology, geology, seismic activity, weather patterns, and resources. Landing parties will look for edible organisms, dangerous plants and animals, pathogenic microorganisms, agricultural and pharmaceutical potential of local life, accessibility of resources already located from orbit, stable and unstable terrain areas, volcanoes, faults, adaptations of local life to prevailing conditions, and dangerous weather. Such landing parties remain on the planet (one week at a time with resupply breaks) for 2D weeks unless otherwise ordered.

More details of landing party procedures are given in the exploration section.

EXPLORATION

The Exploration Office of the Imperial Interstellar Scout Service is responsible for exploration of areas previously discovered but not explored, or incompletely charted. It is divided into the *Exploration Branch* and the *Contact and Liaison Branch.*

The *Exploration Branch* undertakes actual exploration of space and planets, compiling data on local flora and fauna, on planetological features, and on hazards to navigation or dangers to individuals.

The *Contact and Liaison Branch* was originally charged with locating, making first contact (and maintaining friendly relations) with non-human intelligent races. As the Imperium expanded, the C&L Branch was given the additional duty of acquainting the various races of the Imperium with each other's cultures, and with smoothing over the inevitable conflicts that arise between cultures. Another function of the C&L Branch is the controlled dissemination of technological information to backward worlds within the Imperium, with a goal of bringing them up to Imperial standards slowly enough to minimize cultural shock effects.

Even though most sentient races in and around the Imperium were contacted long ago, on rare occasions a previously undiscovered intelligent life form is found, and the C&L branch must make first contact. The section "First Contact" discusses these situations in further detail.

Contrasting Survey and Exploration: Although all the parts of the Imperial Interstellar Scout Service cooperate with one another, not all Scouts are the same. The specialization of function is evident both in the formal training and in the skills learned while on a mission.

Both Survey and Exploration personnel learn how to conduct themselves while wearing vacc suits. Space skills, including engineering, gunnery, navigator, pilot, ship's boat, and ship tactics, can be learned by those in either office. Since Scouts in either office can find themselves in hostile environments, survival skills are important to both. Jack-of-all-trades skill is also common to both offices: well-rounded individuals are vital to the Scout Service's missions.

Survey skill, the mapping and charting of star systems, is exclusive to members of the Survey Office. This office puts more of an emphasis on pilot, engineering, and vacc suit skills, as its members spend more of their working hours travelling in space.

The Exploration Office, on the other hand, teaches its members several skills useful to their missions. Air/raft and general vehicle skills are important to those travelling about on the surface of a world. Recon skill allows the discreet observation of animals and alien cultures. And if worst comes to worst, exploring Scouts may get more than one chance to learn gun combat.

Both offices have special schools. Members of either office can be sent to Specialist School, where medical, mechanical, computer, administration, and gunnery skills are taught, as well as special strength training. Both offices also offer Field Training, where vehicle, air/raft, recon, survival, navigation, and survey skills can be learned.

The Exploration Office also offers Intelligence School and Contact School to its staff. Intelligence School teaches forgery, streetwise, brawling, bribery, gun combat, and survival skills. Contact School provides formal training in survey, liaison, streetwise, survival, pilot, and gun combat skills.

In general, the work of the Survey Office is done mostly from space, although some planetary mapping and sample gathering may be conducted from a planet's surface.

Exploration missions are carried out in the field, face to face with the local world, where the Scouts attempt to learn about the varied phenomena, life forms, and cultures spread about the Imperium's 11,000 worlds.

Coordination Between Offices: It is typical for members of both offices to be aboard a Scout survey vessel, such as one from the *Donosev* class.

The surveyors spend most of their time in the holo pit during a survey operation, travelling to the surface of the planet only for special purposes, when shipboard sensors can not provide the degree of detail desired.

Exploration Branch landing parties are the planetside experts. Many Scout survey ships carry a complement from both branches. An exploration party typically consists of three Scouts, an enclosed air/raft, and the necessary equipment. The air/raft serves as shelter for the Scouts and carries a week's worth of supplies, including handheld or raft-carried versions of the sensors, chemical analysis kits, seismographs, biological sample kits, and culture media. The raft carries a mechanic's kit and spare parts for itself.

Holorecorders are used for behavioral studies of animals and people. If the Scouts are to contact local sentients they approach unarmed. A second armed party, waiting out of sight but within radio range, supports the contact group.

Scout explorers collect specimen samples of life forms and watch for signs of undiscovered sentience. They are responsible for keeping the ethnographic reports on the Imperium's worlds up to date by observing and re-observing the local culture.

Explorers also have their share of work away from the field. Specimens must be catalogued and further analyzed. Full-scale computer analyses can cross-correlate cultural characteristics using extensive Scout databases.

The ship has entered the star system. It's time for the personnel of the Exploration Branch to head for the world's surface, to meet whatever awaits...

LANDING PARTY CONTACT PROCEDURES

The most common Scout survey and exploration starships are those of the *Donosev* class. Exploration Office landing parties are deployed in groups, three Scouts to an air/raft.

Several groups work in the same region, supporting each other and sharing information by radio or laser contact.

For a first landing, skills such as survival, sensor operation, survey, biology, chemistry, geology, and of course air/raft are needed.

The first contact landing party must wear uniform vacc suits and follow standard decontamination procedures on returning, pending the biological report on the planet. When cleared for unprotected exposure, Scouts must take prophylactic doses of antibiotics and antiviral agents.

Scouts can do a thorough biological survey even while avoiding the local populace. The chemical analysis "sniffer", linked to a hand computer, can determine food value of a plant from a 10 gram sample. Leaf, seed, fruit and root samples should all be tested. Soil and air bacteria should be cultured on a variety of media and tested for chemical activity.

Any potentially useful plant or animal must have natural enemies or controls. Since past experiences have taught the dangers of importing just one species, an interrelated group of species must be studied and approved for possible export to other planets.

Open contact should never be attempted with a pre-spaceflight culture. An exploration crew should be landed in a secluded area first, and attempt to observe without being seen. Neural activity sensor readings should be collected on each species noted. An extremely primitive race is difficult to distinguish from non-sentients, so extreme care is in order whenever the NAS reading is "intelligent" or "semi-intelligent". Oceans should not be overlooked as a possible home of intelligent life, but land is statistically more likely.

IISS Service Emblem

Exploration Office

Communications Office

Survey Office (Imperial Grand Survey)

THE FIELD OFFICES

The offices of the Scout Service are divided into the *Bureaucracy* and the *Field*. Three offices in the Scout service comprise the field: the Exploration Office, the Communications Office, and the Survey Office (still refered to as the *Imperial Grand Survey* in some areas).

Exploration Office: This office explores previously discovered areas, or areas that are incompletely charted. This office also makes the first contact (rare today) and maintains friendly relations with all intelligent races. In addition, the Exploration Office is to monitor the dissemination of technological information to backward worlds, with the goal being to minimize the shock effects on their culture.

Communications Office: This office oversees interstellar message and data transmission. The Communications office operates the Express Boat Service and the Imperial Courier Service.

Survey Office (Imperial Grand Survey): The Survey Office maintains the maps and charts of the Imperium and of areas outside the Imperium that are of importance to it. This office is responsible for resurveying and updating the basic navigational charts of the Imperium, and for mapping world surfaces when necessary. Areas outside the Imperium are also surveyed and mapped. Such outside area maps may be used for navigation, settlement, or planning, and are essential in times of war. External mapping generally takes place in regions already explored by the Exploration Office.•

See "Defining What Constitutes Sentience" for detailed procedures.

Not all planets have only a single sentient race. On rare occasions, two or more intelligent races may occupy non-competing niches; as for instance, one aquatic and one land-dwelling, or one tropical and one arctic or mountainous high-altitude. If two or more are found, all must be studied. If they are in competition, the Scout Service must not take sides.

If the intelligent race of a planet is human or humanoid, ship's stores will make up replicas of local costume from holophotos and the contact crew can pass themselves off as strangers to the territory at first. If the race is quite alien in form and apparently not scientifically sophisticated, no closer contact should be attempted. Holorecords and sound recordings will be stored and analyzed, but the race must be left alone until their technology develops further.

Sophisticated aliens present the most interesting problem in contact. An open landing in an unarmed ship's boat near a population center is standard procedure, but may be varied at the captain's discretion. Radio or light-signal contact is advised if a sufficient language base is worked out.

Under no circumstances is the first open contact to be made with weapons visible. (And some people wonder why Scouts have such poor survival statistics!) Attempt should be made to convey friendship, to indicate the existence of the Imperium, to show the advantages of technology and commerce, and to observe as much as possible of the new race's culture and science. At least one member of a contact party must have linguistics skill, one should have liaison skill, and all should be broadly knowledgeable about science.

Not all cultures which are scientifically ready for contact will accept it. Hostility from natives should be a sign to Scouts to withdraw to a safe distance and try another plan.

A full survey of a contacted culture includes:

- ratings in all areas of technology
- census figures (recent local census data may be acceptable but should be spot-checked)
- analysis of government(s)
- recorded and written language with lexicons and grammars developed in cooperation with native scholars
- records of fine and practical art works
- summary of laws that may affect future visitors
- sociologist's report on attitudes, customs, and religion.

On balkanized planets this should be repeated for each major nation.

Large gatherings of people are very fruitful subjects of observation when determining government. However, it can be difficult to distinguish political rallies from religious services and either of them from sales meetings, sports, and entertainments until the language can be understood. If any large meetings are seen being broken up by uniformed forces, the government cannot be listed as charismatic and is not likely to be democratic. If the actions of the crowd appear violent or criminal, however, this does not apply.

Very isolated areas, of course, may not be responsible to the planetary government or even aware of it at all, but these do not affect the determination of government type.

Law levels can be estimated by observing any citizens who carry arms, watching police actions, and recording any broadcast or proclaimed information about laws and their enforcement.

Techology is usually openly displayed and typically a culture's tech level can be estimated with no more than a week of observation.

PROCEDURES WHEN DIRECT CONTACT IS RISKY

Concealed surveys contain as much of the above as can be obtained with instruments and disguised landing parties. Such surveys are done when open contact is deemed unwise, and they present many challenges to a Scout's ingenuity.

City size can be estimated from high altitude sensor scans, using formulas to determine how much food can be transported into the city regularly. Daily food needs of human and all known non-human races are on file in Scout Service shipboard library computers. Rural population can be estimated directly from these scans.

Certain government types can be deduced, or eliminated, by remote observation as well. Obviously, if a definite war is in progress, the planet is balkanized or in revolt. A captive planetary government is not possible without spaceflight and interplanetary communications by the owners. No single bureaucracy (or oligarchy or dictator) can rule an entire planet without fast communications. If a non-balkanized planet lacks radio or telegraphy, it is probably feudal, having either nobles, priests, or technocrats in charge of limited areas.

It is often possible to locate the central authority by observing the movements of couriers and by finding the wealthiest area. Government seats are often large and ornate buildings compared to their surroundings, so a spy camera (perhaps a "private eye" robot) introduced into one of these buildings will frequently provide valuable insights into the workings of a government. If discovered, the spy camera may also provide a measure of governmental paranoia.

Even with the best efforts possible, a concealed survey will make some mistakes and miss some major keys to planetary behavior. However, since visits to a planet that has not been openly contacted are not frequent, the damage done by such errors should be limited.

IMPERIAL CULTURE

Imperial culture today is remarkably similar to that of the pre-jump humans of Terra. Many worlds still show their peculiarities, of course (especially those at lower tech levels) — but for all practical purposes, the general mindset of the Imperial population traces its roots back to old Earth, before the contact with the Vilani of the First Imperium in –2422.

THE FIRST IMPERIUM
(-10,000 through -2204)

As a species, humans were alien to the world of Vland, imported there by the Ancients for reasons unknown today. When the Final War was over, these humans found themselves alone in an unfriendly environment. Native plant and animal life was not edible to the Vilani, but special means were developed to process foodstuffs for human use. This aspect of Vilani culture, surprisingly enough, is not unique, and parallels can be found on a variety of worlds. Even on ancient Terra, poisonous manioc (after being processed) comprised 85 percent of the diet for one group of South American Indians.

In the case of the Vilani, the "shugilii" (as these food processors were known) kept their techniques secret, exerting influence over the primitive Vilani culture in this way. As the Vilani advanced technologically and domesticated more plants and animals, the shugilii developed more techniques, but guarded them carefully from outsiders.

Some sophontologists believe that a social structure for the Vilani was developed by the Ancients, and that the Vilani clung to this after their captors were gone. Groups of Vilani from widely separated geographic areas had similar (albeit primitive) governmental structures.

The nobility of Vland can trace itself back to these village chiefs. The early Vland society allowed nobles to marry more than once; this tended to preserve the property owned by a family. Not only could a noble man have more than one wife, but a noble woman could have more than one husband. The third child of any noble was noble; other children were commoners.

By the time the Vilani reached tech level 4, monogamy prevailed, but the custom of passing nobility on only to the third child continued until their conquest by the human culture of Terra. This tended to keep the number of nobles constant, but there were other ways to achieve this special status. New, lower level nobles could be created by the actions of higher nobles.

The languages of Vland diverged over time. Glottochronologists have attempted to reconstruct the original Vilani language, hoping thereby to get a glimpse into the culture of the Ancients, but these efforts have been largely unsuccessful. Vilani art eventually developed into a written form for these languages. By the time the Vilani had achieved the power of space flight (around -10,000), one language (Old High Vilani) was dominant on the world.

Vilani traced kinship through both parents. When a young couple married, residence was bilocal: the couple would decide whether to live with the bride's family or the groom's family.

Vilani culture was conservative, competitive, and surprisingly harmonious.

THE TERRAN IMPACT
(-2204 through -650)

With the conquest of the Vilani by the Terrans, the culture of Vland and the First Imperium was greatly altered. The conquering humans spoke a different language and had different social customs.

Many Vilani reacted to this influx of Terrans in ways that helped preserve them as a distinct race even while adopting Terran customs to conform to their conqueror's ways. For the first time in 30,000 years, the Vilani were not at the top of the social ladder, and they imitated culturally their social betters.

For one thing, the Vilani nobles adopted the Terran custom of passing nobility on to all children of a noble. With the diminishing political importance of Vilani nobles, this change meant the difference between survival and death of the Vilani noble classes.

Anglic, the official Terran language, was the language spoken by these new rulers, and the Vilani gradually adopted it.

When the Rule of Man ended, the isolation imposed by the technological regression of the Long Night allowed widely scattered worlds to again develop cultural uniqueness. Worlds with large Vilani populations tended to revert toward their original social institutions and customs; other minor human races did the same.

THE THIRD IMPERIUM
(-650 to 1117)

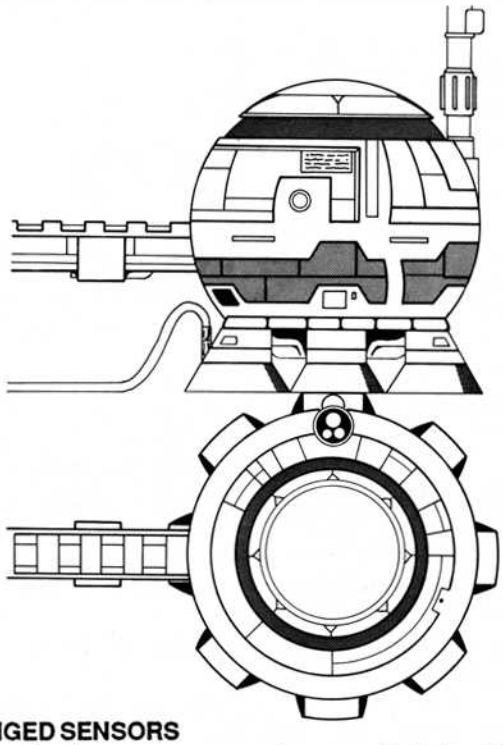
When Cleon finally forged the Sylean Federation into the Third Imperium, again establishing a central government over the human worlds, a mixed Vilani-Terran culture became dominant; a certain homogeneity is guaranteed by the intercommunication between worlds afforded by the mass media.

The basic culture of the Third Imperium, then, is the result more than 10,000 years of history. Political influences, brought about by the changes in power, have brought with them changes in the way people live together.

But most human populated worlds in the Imperium share certain basic cultural postulates, remarkably similar to those found among old Earth societies at tech level 8.

One clue to the source of modern Imperial culture is the fact that Galanglic became the official language of the Third Imperium. Galanglic, short for "Galactic Anglic", is a direct descendant of Anglic, the language used during the Rule of Man. And, of course, Anglic was a popular global language on old Earth before the Vilani contact.

In the Solomani Rim area today, political pressures have produced a radical, expansionistic, and somewhat militant social structure, quite different from either the old Vilani or old Terran cultures.



RANGED SENSORS

The Scouts use many ranged sensors (both in vehicles and handheld) to augment their senses. A ranged sensor (as opposed to a non-ranged one) senses something that is farther away than 5 meters. To do this long-distance sensing, ranged sensors do two things: they scan and they pinpoint.

The scan function allows a sensor to sweep wide areas in search of something. The pinpoint function, on the other hand, allows the sensor to zero in on a particular location or "target" for very precise and specific readings.

A sensor pinpoint requires a specific target. For this reason, a sensor scan is often done before a sensor pinpoint in order to locate potential targets for the follow-up pinpoint sensor readings.

Sensors also come in two varieties: active and passive.

Active sensors work by projecting a sensing beam at a given area or target. Active sensors thus locate *objects.*

Passive sensors work by remotely sensing and amplifying the area or target's natural emissions. Passive sensors thus locate *sources.*

While active sensors tend to provide more precise information, they are more risky. Since an active sensor is itself an emission source, the target of an active sensor scan or pinpoint will likely: 1) detect that they are being sensed, 2) locate the one doing the sensing by following the beam back to its source, and 3) jam the sensing beam, rendering the sensor useless — or worse yet, perform a hostile action against the one doing the active scan.

Passive sensors, by their nature, must be more sensitive to minor fluctuations in the natural emission they are sensing. Because of this, passive sensors often have substantial amplification circuits. Also, a clever sensor target may be able to mask some of its emissions, causing the passive sensor to return an erroneous reading.

The sensors in common use include the: EMS sensors, densitometer, neutrino sensor, and the neural activity sensor.

EMS SENSORS

Among the different sensors that have been developed over the years, some of the most useful to a planetographer are descendants of the lowly camera. As technology advances, the camera is integrated with other electromagnetic sensors and computer enhancement, until scientists develop the first crude integrated electromagnetic sensor array at tech level 9. This technology is called electromagnetic spectrum sensing or EMS.

A proper understanding of the electromagnetic spectrum reveals why an array of different EMS sensors is needed. Various types of electromagnetic energy behave differently, even though each is part of a continuous spectrum. From low to high frequency, the type of energy progresses from radio through microwave (also called the radio frequency or RF bands), heat, infrared, visible light, ultraviolet, and x rays, to gamma rays and beyond. Since each type of energy occupies only a small part of the spectrum, no one sensor is effective over the entire range of frequencies.

Various sensors, from handheld, to vehicle mounted, to starship mounted exist to handle EMS sensing. The PRIS field glasses is a common handheld EMS sensor. On vehicles and starships, the EMS array is popular at tech levels over 9 (both passive and active versions are available).

The Active EMS Array: The active array detects *objects.* The active array does this by sending out wide-beam electromagnetic emissions in an attempt to locate and classify objects from the reflected signal.

The active EMS array offers three options: radar, m-radar (microwave radar), and ladar.

Radar: A general-purpose sensor used for object scans and object pinpoint images. Radar is sensitive to disturbances in the reflected beam, and so is good at detecting some very "tenuous" objects such as debris, water vapor, dust clouds, sand clouds, and the like. Radar can be used for either area scans or pinpoint images.

M-Radar (Microwave Radar): Similar to radar, m-radar is also sometimes called "all-weather" radar because of its excellent penetration value. This property makes it much less sensitive to disturbances in the path of the reflected beam. M-radar can be used for either area scans or pinpoint images.

Ladar: A line-of-sight laser "radar", capable of very precise pinpoint images. Ladar cannot do area scans; it can only provide pinpoint images.

The Passive EMS Array: The passive array detects electromagnetic energy *sources.* When using the entire passive EMS array, a simultaneous scan is actually being conducted with three distinct sensor groups. A long dipole or wire antenna detects long waves. A parabolic dish or similar device detects short waves and microwaves. A set of optics detects the IR, visible light, and UV bands. A smaller sensory arm detects X rays and gamma rays.

An EMS image can be put directly into computer memory, allowing the image to be manipulated with ease: it can be instantly reduced, enlarged, or rotated with little loss of definition, and can be compared with another image to detect any change between the two. The resulting processed image is three dimensional.

Full spectrum, computer-enhanced orbital EMS scans can give the surface temperature of a world with such precision that the only way to get better results is to measure the temperature directly from the surface.

Electromagnetic band readings can be:

Long-Wave Radio: Power line networks, lower end of radio broadcast band.

Short-Wave Radio: Broadcast FM radio, television, radar.

Microwave Radio: M-radar, microwave transmissions.

Heat/IR: Any source of heat, from low tech maneuver drives (TL 9 or less), to fusion waste radiators on most space

vessels, to living beings.

Light: Any source of visible light, including low-tech (TL 12 or less) lasers and ladar.

UV: Ultraviolet light from stars, certain artificial lights, some special-purpose lasers and ladar.

X-ray: High tech lasers and ladar (TL 13 or more), jump grid and thruster emissions, as well as natural sources such as stars and gas giants.

Gamma: Nuclear explosions and stars.

THE DENSITOMETER

The remote densitometer, an outgrowth of gravitic technology, uses an object's natural gravity to directly measure the object's density (that is, its mass per unit volume).

The densitometer provides a 3D density map of the scanned object or region. Within certain limitations, an object's elemental makeup can be deduced from the densitometer's scan data.

A densitometer is a passive sensor that depends on an object's natural gravity for a reading. An object with an artificial gravity field will distort the the densitometer reading if that object is closer than planetary range.

Further, a densitometer can not be used at all if if the sensor itself resides in an area of artificial gravity, unless the sensor has been gravity shielded. Gravity shielding increases the weight, volume, cost, and power requirements of a densitometer. Handheld densitometers are never gravity shielded, while starship densitometers are always gravity shielded. Vehicle portable densitometers may or may not be gravity shielded, depending on whether or not they are to be used from operating grav vehicles.

When using a densitometer, a cubic region is scanned to determine the general density of objects in the scan region. Penetration is the depth to which density differentiation is possible on objects within the scan area. Resolution of the 3D density map also depends on the range setting.

The density levels differentiated by a densitometer include:

Vacuum: Indicates zero density.

Gaseous: Indicates an extremely low density, with very little liquid or solid present; densitometers are generally set to ignore gaseous density when used in an area with an atmosphere. However, a pinpoint scan for gaseous density can prove useful if trying to determine from a distance if an object in the vacuum of space contains any gas.

Liquid: Indicates a low density, often associated with liquids. Examples include petrochemicals and water.

Nonmetal Solid: Indicates a solid with low or moderate density. Examples include paper, wood, rubber, pumice, plastic, glass, sand, stone, and concrete.

Light Metal: Indicates a medium density solid with metallic properties. Examples include magnesium and aluminum.

Medium Metal: Indicates a dense solid with metallic properties. Examples include iron, copper, zinc, silver, tin.

Heavy Metal: Indicates a very dense solid with metallic properties. Examples include platinum, gold, mercury, lead, uranium, and any superdense material.

Artificial Grav Field: The scan area contains an artificial gravity field field — no other reading is possible. Artificial grav fields can be detected only at planetary distance or less; beyond this range, artificial grav fields do not interfere.

THE NEUTRINO SENSOR

The neutrino sensor, a development of research into subatomic particles, is the instrument used most often for detecting high energy sources.

Since neutrinos travel in straight lines from their source, it is easy to determine the direction to their source. The range to the source must be determined by dispersion of the particles rather than by attenuation because of distance. Because of this property of neutrinos, to pinpoint the exact range to the source requires that the sensor take multiple readings from more than one location to estimate the range using triangulation.

Neutrino sensors are passive sensors. They give scan readings similar to EMS sensors. However, because a neutrino sensor is usually used to sense high energy power plant emissions, it is difficult for to mask a power plant from neutrino detection. For this reason, neutrino sensors are among the most reliable sensors for detecting fusion and fission powered vessels.

A neutrino sensor provides its power reading by estimating the power plant's output in watts. In addition, a superdense hull deflects neutrinos ever-so-slightly, and a sensitive neutrino sensor can detect the hull shadow from a superdense hull. From this shadow, the sensor can construct a precise outline of the craft's hull — allowing remarkably reliable identification of a craft at great distances.

THE NEURAL ACTIVITY SENSOR

Developed from tech level 12 psionic helmet theory, the neural activity sensor (NAS) was first used medically. It remotely detects the electrical activity of a life form's central nervous system and classifies it according to amount and complexity. The data system compares the activity pattern to known types of life, especially intelligent life.

The neural activity sensor is a passive sensor. Because of range limitations, the NAS is used only in probes and by landing parties. An area scan is done first, to determine if any subjects are within range. The readings indicate number, range, and motion of beings exhibiting neural activity in the area. A pinpoint scan can classify the identified creatures according to intelligence.

Brain pattern readings include:

Simple: The neural activity of the creature or group of creatures is low-level.

Complex: The being or beings have highly developed brains, and should be scanned for possible intelligence.

Cluttered: A number of different life forms are grouped in one area, muddling the readings.

Neural class readings include:

Unknown: The pattern matches no known pattern.

Human/Vargr: The pattern matches Terran brain patterns.

Aslan: Matches Aslan brain patterns.

Droyne: Matches Droyne brain patterns.

K'Kree: Matches K'kree brain patterns.

Hiver: Matches Hiver brain patterns.

Other: Resembles one of the minor races the sensor is programmed to recognize.

Intelligence readings shown are:

Lower Form: Very simple brain, handles only sensations, reflexes, instincts. Examples: worms, insects, fish.

Not intelligent: Limited learning ability. Examples: cattle, birds, bees.

Semi-intelligent: Adequate brain capacity but lacks complexity of true sentience. Examples: dogs, apes, non genetically-manipulated dolphins.

Intelligent: Very complex brain functions characteristic of sentient life. Neural class identifies the type of intelligence if it is a known form.

FIRST CONTACT

On the whole, the habitable zone worlds of the Imperium were contacted long ago, are fairly well explored, and have at least an adequate spacefaring technology. Because of this, the Scouts of the Third Imperium rarely perform first contact activities today. But exceptions do exist. When these exceptions occur, the Exploration office must perform its most challenging task—the first contact.

For various reasons, a sentient culture may have been overlooked. Some of these reasons are:

The race is barely sentient. It is sometimes difficult to distinguish a true semi-intelligent lifeform from a quasi-intelligent lifeform. A good example is the Minlad of Kaiid (Lishun 0621), finally determined in 1104 to be true sentients, rather than just semi-intelligent animals. This is perhaps the most difficult and most controversial reason why a sentient race may be overlooked.

The race leaves little evidence of its existence. Even given the sophistication of modern tech 15 sensors, it is impossible to adequately scan and explore every square centimeter of a world's surface without allocating decades or even centuries to the task. Without an adequate reason to devote to such an effort, races that do little to change their environment are hard to find.

Such races are probably small in number, and possess a relatively low technology. Other times, the race may live in an unusual environment, such as underground or underwater, or even in a jungle or ice-field on a low population or low tech world. Or the race may not want to be found.

The race may be an unrecorded transplant, or in an unexpected location. From time to time, stories surface of a shipwrecked crew found on an out-of-the-way world—if they are able to survive, and they go undiscovered long enough, their descendants could develop into an entirely new local culture where none existed before.

Wal-ta-ka (Deneb 2713) is an example of such a culture. The miners on Wal-ta-ka were forced from their protective domes onto the bright side of the tidally-locked planet when a disaster occurred in 234. Visiting traders found the mining colony destroyed and presumed all were dead. The descendents of the surviving miners weren't found until 130 years later—by which time they had developed a full-fledged subculture with unique customs and a new language descended from Galanglic.

The race may live on a world with a hostile environment, not capable of supporting life as we know it. This situation is a double jeopardy—not only may the world be difficult and dangerous to explore, the explorers will not be expecting to find sentient life.

The race may be undiscovered for a combination of the above reasons. The race might be barely sentient and live in an unexpected or hostile environment. The race may be an unrecorded transplant that leaves little evidence of its existence. The race may be presumed to have died out long ago, when in fact a small number of them still exist. Many other possibilities exist.

CONTACTING A NEW RACE

The Scouts have defined procedures for making a first contact with a newly discovered sentient race. The procedures reflect the experience gained from the many first contacts made during the early centuries of the Third Imperium.

The procedures begin from the moment the Scouts enter a new star system, although such precontact procedures are seldom necessary any more. About the only time the Scouts use the precontact procedures is when dealing with developing cultures on interdicted worlds.

The following sections describe the Scouts first contact procedures in detail.

PRECONTACT PROCEDURES

The survey of a planet for intelligent life begins as the Scout ship enters a star system. The passive EMS array is set to pick up any signals being broadcast or beamed between planets.

Broadcast radio signals, if noted, are tech level 5 minimum, and should be recorded for linguistic analysis. Bearings should be taken to locate transmission source and probable destination: communications traffic between planets is tech level 7-8 minimum.

If computer analysis indicates coded transmissions, military or diplomatic use is probable and may indicate balkanization. An absence of transmissions does not rule out higher tech levels, since some races learn to contain their signals in tight beams, without leakage into space.

The habitable zone of the star is checked for life-bearing planets first. While densitometer crews make charts of all bodies in the system, the ship should take up a polar orbit around the planet being studied and conduct a ball-of-twine photographic survey, in visible and infrared light.

Visible light will locate any major cities on the night side as well as the day, while infrared will indicate cultivated areas (regular patches of "cool" color) and heat-producing industry. An absence of any construction suggests a primitive agrarian society, or perhaps a hunting and gathering culture.

The sensor scans should also have a number of comparison sequences run to locate any movement on the planetary surface. This is a critical item in finding sentient races, and in placing their tech level. For example: if a race is sentient and early tech level 0, they move very little and at slow speeds.

From late tech level 0 to tech level 3, there would be extensive association between sentients and their domesticated animals. Tech levels 1 through early 4 use sails in water travel if the planet has any hydrosphere to speak of. Above tech level 4, sentients usually use mechanical transportation instead of animals.

The infrared scans, when computer enhanced, show temperatures and weather patterns on the surface. This information frequently has a bearing on where the local sentients, if any, may be found. Spectrographic analysis (optical EMS) of the atmosphere gives the contact team information as to the conditions they will have to deal with on the surface of the planet.

Communications officers must remain alert for any attempted contact from a society showing some degree of industrialization. If broadcast language samples are available, Scouts skilled in linguistics and liaison must prepare a friendship message as soon as possible.

An advanced race should be contacted even if the messages are mutually unintelligible, simply to announce the ship's presence and indicate a willingness to talk. Refusal to answer a hail may be construed as a reason to send up missiles instead of messages! Pictorial communications, when mechanically possible, are usually best understood.

DEFINING WHAT CONSTITUTES "SENTIENCE"

What is an intelligent being? Variations in environment and physical form can lead to wide differences in a species's adaptations. Older definitions often need to be overhauled.

Before human colonization is permitted, a Scout exploration team has the responsibility of deciding whether a world has any native intelligent life. Any race that shows as "intelligent" or "semi-intelligent" on the neural activity sensor is closely observed for signs of sentient behavior.

Imperial xenologists find that three areas of development must interact to bring a species to the level labeled as "sentient". These are: language, social structure, and tools (environmental manipulation, in whatever manner is physically possible for that specific race). What follows are a series of steps for each level, from low animals to unquestioned sentients.

CONCEPTUAL THOUGHT

Conceptual thought, as evidenced by language, remains a major sign of intelligence. The key area is not the ability to label concrete objects but the ability to treat concepts as units in new concepts and thus to develop "conceptual ladders". Abstraction enables a race to envision the future and plan for it rather than to live in an eternal present, guided only by instinct.

Language begins, usually, with sounds or signals for emotions. A Terran cat's purr is an example, as is the harmonic hum of the Messieran nebon. Beyond this is the deliberate use of a sound to convey a message: the alarm snort of a deer or the slapping of a rouppa's tail would be in this category. A third step uses distinguishable sounds or signals to refer to different concrete objects. The Terran baboon gives a different warning cry for a tiger than for a hawk or eagle, and his group responds accordingly, climbing to high thin branches to avoid a tiger, but finding thick foliage to foil a hawk or eagle.

More difficult than naming a thing is referring to its attributes. Still, ro'bolla worms do this when describing the distance and direction to the best waterholes. This is a borderline behavior when determining intelligence.

Abstraction beyond attributes involves grouping things by some one common attribute and giving the group a single label. This is the key to conceptual ladders and the gateway to knowledge. There were aboriginal tribes on Terra as the Solomani entered their space age who still could not abstract, though they were definitely human.

Their language contained a name for every tree within their ken but no generic term "tree". They could not count beyond the number of their fingers. Their memories of the past were recited by rote, in detail, and they could not give a synopsis or state a length of time between events. These were primitive men, indeed!

Conceptual language enables a being to think of what is not immediately present, in time or space. Planning for the future, imagining new ways of doing things, and analyzing things logically all depend on this skill. Written language is a tremendous help for storing knowledge in something less volatile than a living brain. It facilitates cooperation and the bestowal of information to new generations.

Language comes in unexpected forms at times, such as the songs of Terran whales or the Hiver language of gestures. Even scents may be a form of deliberate communication. No translator machine exists which can cope with all

DEFINING "LIFEFORM"

In Imperial year 17, Cleon Zhunastu declared, "Any *sentient lifeform* within the Imperial borders, regardless of its origin, is a protected being, and thus a *citizen* of the Third Imperium." Under this definition, any sentient *lifeform* within the Imperium is automatically an Imperial citizen. If a lifeform can be shown to be sentient, it is a protected being under Imperial law. Robots, while perhaps sentient, are not a lifeform, and thus are not citizens.

Identifying a lifeform on a low tech world is usually a fairly routine matter, but in a high tech society, distinguishing between a lifeform and a non-lifeform may not be so obvious. Here are some of the more common difficulties the Imperium has had to face:

Cyborgs: Technically speaking, an individual with a high percentage of computerized electro-mechanical body parts is a "cybernetic organism" or "cyborg." Many Imperial human cultures consider "cyborg" to to be a vulgar and slanderous term. Using it in polite company to refer to anyone, especially someone among the nobility, may have serious consequences.

At higher tech levels, prosthetic and bionic body parts become ever more common.

Clones: A clone, or more specifically a full-body clone, is an "offspring" created from a single cell in the laboratory, rather than through the normal reproductive process. Such an offspring is a genetic duplicate of the single donor, and thus has only one parent. In all other respects, a full-body clone is identical to a normal offspring; the real oddity is the unnatural manner in which the offspring was conceived. The clone is its own person, with its own mind just like any child of another.

At tech level 16, the ability to develop adult clones, complete with the basic memory patterns of the original, becomes a reality. This is not yet the abilty to transfer one's consciousness into the clone, just the ability to make "memory copies". These techniques have just started to appear in the Imperium within the last 50 years.

To date, the Imperium considers such clones to be quite illegal, since this is "tampering with the mind of a sentient lifeform, similiar in concept to psionics" according to a ruling made by Emperor Paulo III in 1070.

Androids: An android is technically a "synthetic man, created from biological materials." Androids, a combination of cloning and genetic engineering, are rare. Literally, they are artificially created organic beings.

Androids can take any form, from monster to midget to normal size, limited only by the natural constraints of biology. However, they are almost always incapable of reproduction — this is imposed not by technology but by the laws of most high-tech worlds. Sometimes, they are even identified by special tattoos or markings.

In any event, an android is a sentient lifeform, and thus an Imperial Citizen.

In the Shattered Imperium: With the current state of affairs in the divided Imperium, some of the factions do not agree with the Imperium's stand that "Any *sentient lifeform* within the borders, regardless of its origin, is a protected being, and thus a *citizen* ". These are dark times for the rights of sentient lifeforms, and especially so-called "artificial" ones.•

the possibilities, so the Scout team must be alert to any means being used to exchange information. Psionics is the most difficult to discover.

SOCIAL STRUCTURE

Certain societal structures are necessary to a species' development into reasoning beings. One requirement, to which no exception has yet been found, is that adults must educate their young. If adults lay eggs and then leave them, or die before the eggs hatch, none of the adult's acquired knowledge and skills can be passed on to the young, and no cumulative learning can take place.

In many races, though not all, care for the young implies a pair bond that lasts at least through one breeding cycle. Others raise their young collectively. Even Hivers, while they ignore their larvae, do teach their adolescents.

Another great step forward occurs when members of the species group together rather than wander as solitary individuals. Cooperation then becomes possible, enabling the group to undertake tasks that a lone individual could not handle. Division of labor sometimes occurs in relatively low-level societies such as insect hives, but the different roles are instinctual rather than learned. The advantages of cooperation and the division of labor accrue when individuals, by concentrating their efforts, can improve their performance. More efficient work benefits both the worker and his group.

The dawn of sentience comes with the innovator. The being who invents a new way of dealing with problems is the cause of all technological progress. Instinctive behaviors are exactly alike in all members of the race, which gives the Scout a way of differentiating instinct from ingenuity. The absence of innovation is the reason why Terran bees, for all their highly ordered society, cannot be considered intelligent but are locked on the instinctual level.

Sometimes inaccurately labeled as altruism, the impulse to protect the group as a whole and not just oneself is another by-product of cooperation in higher animals and sentients. Compassion and care for the sick and injured are also signs of greater development in animals. These behaviors promote the kind of social order the individual can best live in. Advanced sentients never outgrow the impulse to preserve their species and especially their own children.

USING TOOLS

A first definition of man was "a tool-using animal". However, many non-sentients use implements to aid them. The revised definition was "a tool-making animal", requiring modification of an implement to make it usable. When Terran apes were seen to strip twigs to use as "fishing poles" in termite nests, anthropologists again revised their definition to say that sentients "make tools to make tools".

This is actually too restrictive, since a species without manipulative members may be highly intelligent despite its inability to use tools or fire. The dolphin of Terra is an example of this class, as is the lasat of Zurr. Special consideration must be given to psionic creatures, who may manipulate their environment by telekinesis with no material tools at all. A theory was advanced in 508 that psionics was linked to intelligence, but the theory was abandoned after the anolas of Pysadi were found to be psionic.

"Animals adapt to their environment; man adapts his environment to suit himself." Usually true, but what of the Terran beaver? He not only builds a lake to suit himself, but may dig a canal several hundred meters into the woods to float his chosen logs to the construction site. Sylean cultivator moths are farmers who create the soil in which to grow their fungi from bark. The means of adapting the environment must be judged.

Control of fire, in any atmosphere that permits it, was considered a definite mark of sentience until the maniku were found on Kimu in the Daibei sector. These primates observed that lightning-caused fires roasted the pods of a tree whose pods were poisonous when raw. The maniku began carrying torches from these fires to set off other patches of trees. Unfortunately this also sets off brush fires and trims the maniku population somewhat. The maniku are not sentient despite their use of fire.

The new Scout Contact Manual points out that the ability to make fire from scratch is a sign of intelligence, even more so than the making of stone knives or other tools. Carrying fire from place to place is not sufficient in itself.

Aesthetics are commonly an interest of more advanced species, but some lower animals decorate their homes (e.g., the agidda bird) while some advanced races disdain aesthetics entirely.

The domestication of other animals to one's own purpose can begin very low onthe intelligence scale, as in the leading of aphids by honeydew ants on Terra, but such cases are rare. In general, a species that uses and cares for another (not in the sense of symbiosis) is a good candidate for a closer inspection.

ONCE SENTIENCE IS DETERMINED

If a race is in fact sentient, what then? A developing sentient race is placed under the protection of the Scout service. This occasionally means declaring the planet a red zone but this is not absolutely necessary.

A race with less than tech level 5 development is generally not informed of the existence of the Imperium as such, but trade is often conducted discreetly. This is for the protection of the Imperials quite as much as the natives, since technology is likely to be mistaken for magic on backward worlds and may start a witch hunt.

Without the proper license, it is against Imperial law to sell, to races below tech 5, artifacts which are more than one tech level above the planet's. (This assumes that the low-tech world is part of the Imperium and not a red zone.)

In any case, characters caught selling energy weapons to a stone-working race are in trouble. Once a race has the scientific outlook necessary to believe that beings could come from other planets, they may become actual members of the Imperium. Any member race may buy any available technology, but the economics of intersystem trade usually prevent major abuses of this right. Most planets still develop their own sciences, though at an accelerated rate.

Killing any sentient without cause is murder. This is one of the few crimes that Imperial law defines, both on planets and between the stars.

Official decisions regarding the fate of a minor race whose sentience is in doubt must be settled by a panel including field experts in the Scout Service (one-half the members), Scout administrators (one-fourth of the members), and Imperial nobility (one-fourth the members).

LANGUAGES IN THE IMPERIAL REGION

With the linguistic diversity of the Imperium and the surrounding alien cultures, it is also important from a political and mercantile viewpoint that communication flow as smoothly as possible. To better understand the activities of the Scouts in dealing with the intricacies of languages, we will look at the history of language in explored space.

A HISTORICAL AND CULTURAL OVERVIEW

The earliest language known to have existed in the Imperium is the language (or languages) of the Ancients, the mysterious and now-extinct race that roamed this part of the galaxy 300,000 years ago. While nothing is known of their languages today, speculation as to their forms is rife. Few Ancient artifacts show any sign of written language, although now and again one is found with external markings on it. The entire extant corpus of the written Ancient language would take fewer than 100 pages of actual-size photographs. Unfortunately, this body of writing is as diverse as other features of Ancient sites, and shows little uniformity from one world to another.

Some of the best evidence for the language of the Ancients was the site excavated at Antiquity/Ian (Corridor 0806). Sounds emanated from one room at the site, but scientists are unsure whether the noise was an audial language or music. Other artifacts from the site included some visual display data, but an evident written language was never found. Unfortunately, this site was sealed up in an accident in 1101 and has not been reopened.

Since most devices we use today do include some written instructions or other insignia, some linguists have speculated that the Ancients did not have a written language, but instead relied on some form of audial or psionic communications. These scientists conclude that the few markings found are only religious symbols with mystical meaning.

One thing we do know about the Ancients is that they transported human stock from Terra throughout this area of space, although the reasons for this dispersal are still unknown. There are currently forty-six known and identified human subspecies within explored human space. Each developed a diversity of languages similar to that found on Terra, different numbers of inhabitants and societal structure notwithstanding.

As humans spread on their respective worlds, their languages tended to split, developing new forms. At the time the Terrans reached tech level 8, almost 3,000 different languages were in use there, along with 8,000 dialects, although only 101 had over 1 million speakers. The Terran languages can be grouped into 12 main language families and 50 smaller ones.

The Terrans at that time had five official languages in their United Nations: Chinese, French, English, Russian, and Spanish. Since the United Nations controlled the first Terran excursions using jump technology, these five languages increased in importance. The technological primacy of English eventually brought it to the forefront, and it was made the official language of the Terran Confederation during the war with Vland.

The Vilani, who started into space about 9,000 years before the Terrans, had already codified their languages into what is now known as Old High Vilani. This language, with periodic additions from new technology, and the gradual changes any language experiences over time, served the First Imperium until the time of the Rule of Man.

Galanglic is short for "Galactic Anglic", the official language of the Third Imperium. Galanglic is a direct descendant of Anglic, the language used during the Rule of Man (-2204 through -1776). The popularization of Galanglic is important to the Imperium, because a common language known by all is beneficial to commerce. On many worlds, Galanglic is in fact a second language, used only in dealing with offworlders and Imperial officials.

ALIEN LANGUAGES

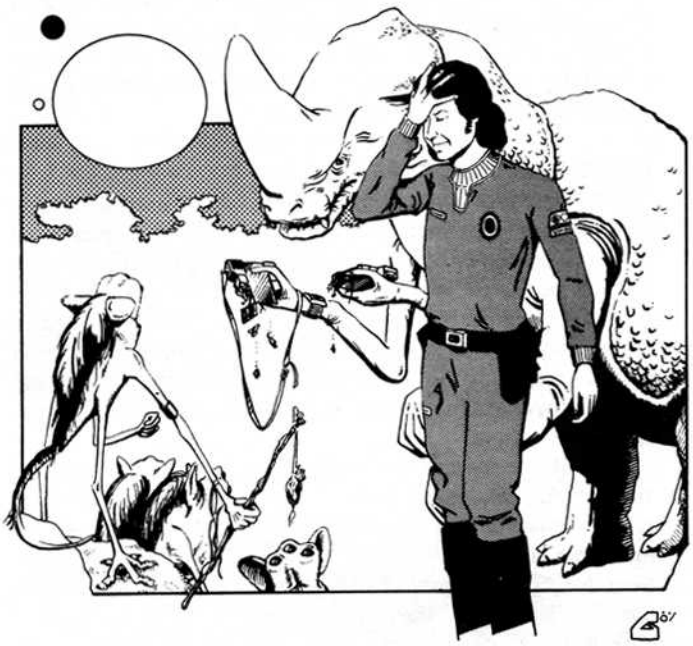
For similar reasons, most of the major races each use only one language today. All Aslan (with the exception of a few lost colonies) share a common language and culture. All K'kree share a common language and culture, highly conservative and tradition-bound.

The language of the Zhodani is a constant throughout the Consulate, adopted as a standard in the 300th Olympiad. A few dialects exist, but they tend to arise from the jargon of specific occupations rather than being differences in language. The Zhodani enforce their common language and culture by means of psionic techniques against dissenters and overrapid change.

The Hiver written language has become the standard within the Hive Federation. Local cultures may retain their own languages, but any which have interstellar interactions are also conversant with Hiver written language.

In the case of the Droyne, for centuries only the vast distances separating their worlds from each other concealed the fact that all had a common language. That is not to say that every Droyne spoke the same language; indeed, different Droyne communities spoke different languages, often very different languages. But all Droyne communities shared one common language—Oynprith, the language used in the coyn casting ceremony. Outsiders missed Oynprith simply because it was not used in public very often; it had a status as a ritual or ceremonial language, much like the status of Latin on Terra.

The Vargr are exceptional in that they are a major race which still shows a high degree of linguistic diversity, although a few languages do have high numbers of speakers. One of the Gvegh family of languages, for example, is spoken by about 60% of the Vargr encountered in the Spinward Marches and neighboring Gvurrdon sector. These languages include Gvegh, Gvegh-Aek, Knithnour, Uedhu, and Taeksu.



Example of a mishap during language translation.

SOCIETY AND CULTURE

With 11,000 worlds in the Imperium, a startling variety of cultures has sprung up. Since society consists of living individuals who change and grow, culture itself, which is transmitted by society as a whole, also changes and grows. Much of the culture extant 10,000 years ago is now gone forever. Some of the culture of only a few years ago has also passed into history.

Customs come into being on some world, and may be modified until unrecognizable over the years. Eventually, the custom may disappear entirely, only to spring up later on another world.

Historically, those who studied culture were known as "anthropologists", because they studied man, or *anthropos* in Greek. Today, these scientists are called "sophontologists", because they study all intelligent (*sophos*) life. This term is sometimes applied to those who study the biological mechanisms of humans and aliens; here we are concerned only with cultural sophontology.

To discuss the cultures of the Third Imperium and the surrounding areas, we need first to understand what culture is. Culture includes all the non-instinctual behavior patterns of a sophont that are learned from other members of society. A sophont abandoned as a baby on a desert island would grow up without a culture if it survived at all.

Culture defines how sophonts work, how they play, how they worship (or even whether they worship). Art, music, architecture, literature, and language are all outgrowths of culture. How laws are made, how individuals obey them, and how lawbreakers are dealt with all reflect the culture of the society.

What do they eat? Where do they live? With whom do they live? Who are their relatives? How are children reared? Who works and who plays? How are the sick, elderly, and deceased treated? All these questions are in the domain of the cultural sophontologist.

Not counting the Ancients, of whom we have too little knowledge to do more than speculate, sophontologists study cultures spanning from the present back about 50,000 years. Naturally, some of this study deals with cultures long dead: archaeology, a branch of sophontology, is able to unlock the keys to these cultures.

BASIC CULTURAL TYPES

Every culture changes over time, since the individuals belonging to that culture change over time. Typically, a developing race of sophonts passes through several stages once it achieves intelligence. While these stages correspond roughly to the development of technology, none of these cultures are "simple" just because their technology is simple. Some of the most puzzling knots sophontologists must unravel are found among the earlier stages of subsistence techniques.

It is also important to understand that, in the view of sophontologists, no culture is "better" or "worse" than another culture. The purpose of every culture is to help its members survive. If the culture fails in this task, it will disappear (or evolve into something different) as its members die. For those untrained in sophontology, it is particularly difficult not to believe that one's own culture is the "best". This belief is known as "ethnocentrism", and sophontologists must be careful not to let it contaminate their studies.

At the earliest stage, the members of the race practice a "hunting-gathering" culture. (In fact, more gathering than hunting is usually done, but the order of the terms was established eons ago.) Individuals in the society usually do not have fixed dwellings, but wander from place to place in search of the basic necessities of food and water. Although these cultures are usually at the lowest tech levels, this should not imply that they lack gadgetry. Some very sophisticated ways of dealing with one's environment can be found even at tech level 0.

Although hunter-gatherers seldom live exclusively in one place, temporary shelters may be built at different stops along the trail and family bonds may be particularly strong. Small groups typically band together for a period of time and roam over a particular area before breaking up and reforming other groups. Hunter-gatherers are individualistic, usually with little formal government.

A society next reaches the level of "horticulture". At this stage, more permanent structures are built for housing and the cultivation of the soil begins. Carnivorous and omnivorous sophonts start to raise animals on a small scale at this stage of cultural development. With the establishment of larger villages, governmental institutions start to appear, usually under the rule of a village chief or council.

Horticultural societies may be widespread, with literally thousands of villages, and yet have no formal government at a level higher than that of the individual village.

The dividing line between horticulture and the next level is one of degree. "Agriculture" requires better tools and more efficient techniques over a wider area, with correspondingly better results. Horticultural societies dig gardens; agricultural societies farm. With food more plentiful, life is more secure, and the members of the society have more leisure time. This gives rise to more art, music, and literature. It also gives time for scientific development, necessary before highly technological cultures can be established.

At the horticultural and agricultural stages of development, some societies adapt to their environments by practicing "pastoralism", domesticating animals and raising them as a principal food source, rather than growing plants for food.

TECHNOLOGY AND CULTURE

It is the claim of some sophontologists that technology determines culture: these scientists, given a description of the science and gadgetry used by the society, believe they can accurately predict all other aspects of the culture. Whether this is true or not, a certain degree of consistency has come into being in the Imperium, particularly on worlds at tech level 8 and above.

True, the basic culture of the Imperium has changed much through the more than 10,000 years of recorded history. Political influences, brought about by the changes in power, have brought with them changes in the way people live together.

But most worlds in the Imperium share certain basic cultural postulates, remarkably similar to those found among Terran technological societies at tech level 8.

Survey Equipment

The Scouts use a wide array of equipment in a survey or exploration mission. This section details many of the more important items of survey equipment:

Sensors: Sensors are devices used to augment and extend the natural senses. The Scouts use many sensory devices in the perfomance of their job. Several sensors are presented in this section. They include the densitometer, neural activity sensor, image convertor binoculars, PRIS field glasses, medical scanner, and sniffer.

Personal-Assist Hardware: Personal-assist hardware is any portable device that makes ones job get done easier or quicker. The personal-assist harware presented here includes the floater, gyrocompass, multichonometer, language translator, handheld communicator, commdots, remote earpiece, lasercom relay, and data/display headset.

Clothing and Protective Gear: Any clothing or protective gear worn by a Scout fits into this category. The clothing and protective gear from this section includes the general-purpose vacc suit, portable life-support backpack, tailored vacc suit, light-duty vacc suit, hostile environment vacc suit, and utility vest.

Vehicles: The Scouts use many forms of transportation to traverse a world's surface. The vehicles commonly used include the grav belt, g-tube, grav "bike", 4-man air/raft, and the Kankurur g-carrier.

Space Vessels: Surveying the universe requires state-of-the-art space vessels loaded with sensors. No vehicle better represents the combination of economy and quality than the 400-ton *Donosev* class survey vessel. Complete deck plans of this ubiquitious vessel are provided.

EQUIPMENT SHEETS

The next several pages present equipment on **Mega-Traveller** equipment sheets, using a format of one item of equipment per page. The sheets are organized for maximumplayability and usefulness to players.

Each sheet focuses on one specific item of equipment, and provides the stats for versions from several tech levels. An illustration shows one representative sample of the equipment so you can see what the equipment looks like.

Further, each sheet includes a text description, a task library, and a place for logging usage. In short, all a player needs to know to use the item of equipment is there on one sheet.

Players should get a copy of the sheets for the equipment they have in their possession. Then, at any time, the sheet a player has represents their current inventory. To keep the sheets from falling on the floor or from getting soiled, it is a good idea for each player to have a folder or large envelope to keep their equipment sheets in.

SENSORS

Some of the sensory devices in this section are "ranged sensors", while others are not. A ranged sensor can detect sources or objects beyond short range (5 meters) — an example of a ranged sensor is the image convertor binoculars. Other sensors are not ranged, however. Non-ranged sensors only sense things close at hand — for example, the sniffer is not a ranged sensor.

The reason for this distinction — ranged versus non-ranged — is because the tasks for a ranged sensor are handled a little differently than the tasks for a non-ranged sensor.

Non-Ranged Sensors: Essentially, to use a non-ranged sensor, a character just needs to point it at something and take a reading (and thus roll a task). That's about all there is to it.

The task library for a non-ranged sensor lists what kind of readings the sensor gives. Non-ranged sensors do not use the Sensor Reading Panel.

Ranged Sensors: Ranged sensors, however, work a bit differently.

To use a ranged sensor, the character must state a range and direction (use a hexagonal direction — roll 1D for a number from 1 to 6).

From the range, determine the task difficulty. Depending on how good the task roll was, the player may get one of several possible readings:

Exceptional Failure:	no coherent readings
Failure:	strong sources/large objects only
Success:	all but faint sources/small objects
Exceptional Success:	all sources/objects at given range

Each task lists the information that the specific sensor gives. For your convenience, a Sensor Reading Panel is provided for you to use to plot sensor readings.

Ranged Sensor Example: Using PRIS field glasses at night, a character picks up a heat/IR source in the sky at very distant range (he rolled a general area scan task while on night watch). He rolled success at his task, but the our secret referee's roll failed. So we tell the player the source is moderate in intensity, increasing, and several in number (this is a distortion because the secret roll failed — the source is, in fact, only one in number).

The player says his character will do an active object pinpoint to see what this source is. He rolls an ActObjPin task (see the PRIS equipment sheet) and succeeds (as does the secret roll this time). His pinpoint sensor results are: acceleration of none, speed of 300 kph, motion is toward, number is one (that's different this time!), and size is small — it must be a craft of some kind. The character does not have his PRIS hooked to a computer with library data (even a hand computer), so he gets no positive ID.

However, we give the player an index card on which we have sketched the following rough silhouette that appears in his PRIS viewfield:

He immediately recognizes it as a Kankurur G-Carrier.

RANGE KEY

M	medium	5m – 50m
L	long	50m – 250m
VL	very long	250m – 500m
D	distant	500m – 5km
VD	very distant	5km – 50km
RG	regional	50km – 500km
CN	continental	500km – 5,000km
PL	planetary	5,000km – 50,000km
FO	far orbit	50,000km – 0.5Mkm
XO	extreme orbit	0.5Mkm – 5Mkm
IP	interplanetary	5Mkm – 1AU
SY	system	1AU – 1,000AU
SS	substellar	1,000AU – 100,000AU
ST	stellar	100,000AU – 1 parsec
IS	interstellar	1 parsec – 2 parsec
SB	subsector+	2 parsecs+

PATTERN

- ☐ simple
- ☐ complex
- ☐ cluttered

INTELLIGENCE

- ☐ lower form
- ☐ not intell
- ☐ semi-intell
- ☐ intelligent

NEURAL CLASS

- ☐ unknown
- ☐ human/vargr
- ☐ aslan
- ☐ droyne
- ☐ k'kree
- ☐ hiver
- ☐ other

EM BAND

- ☐ longwave RF
- ☐ shortwave RF
- ☐ microwave RF
- ☐ IR/heat
- ☐ light
- ☐ UV
- ☐ x-rays
- ☐ gamma rays

MOTION

- ☐ → ▮ Closing
- ☐ ↗ ▮ Toward
- ☐ ↙ ▮ Away
- ☐ ← ▮ Leaving
- ☐ ↓ ▮ Parallel

ACCEL

- ☐ none
- ☐ speeding up
- ☐ slowing down

NUMBER

- ☐ • single
- ☐ •• several
- ☐ multitude

SPEED

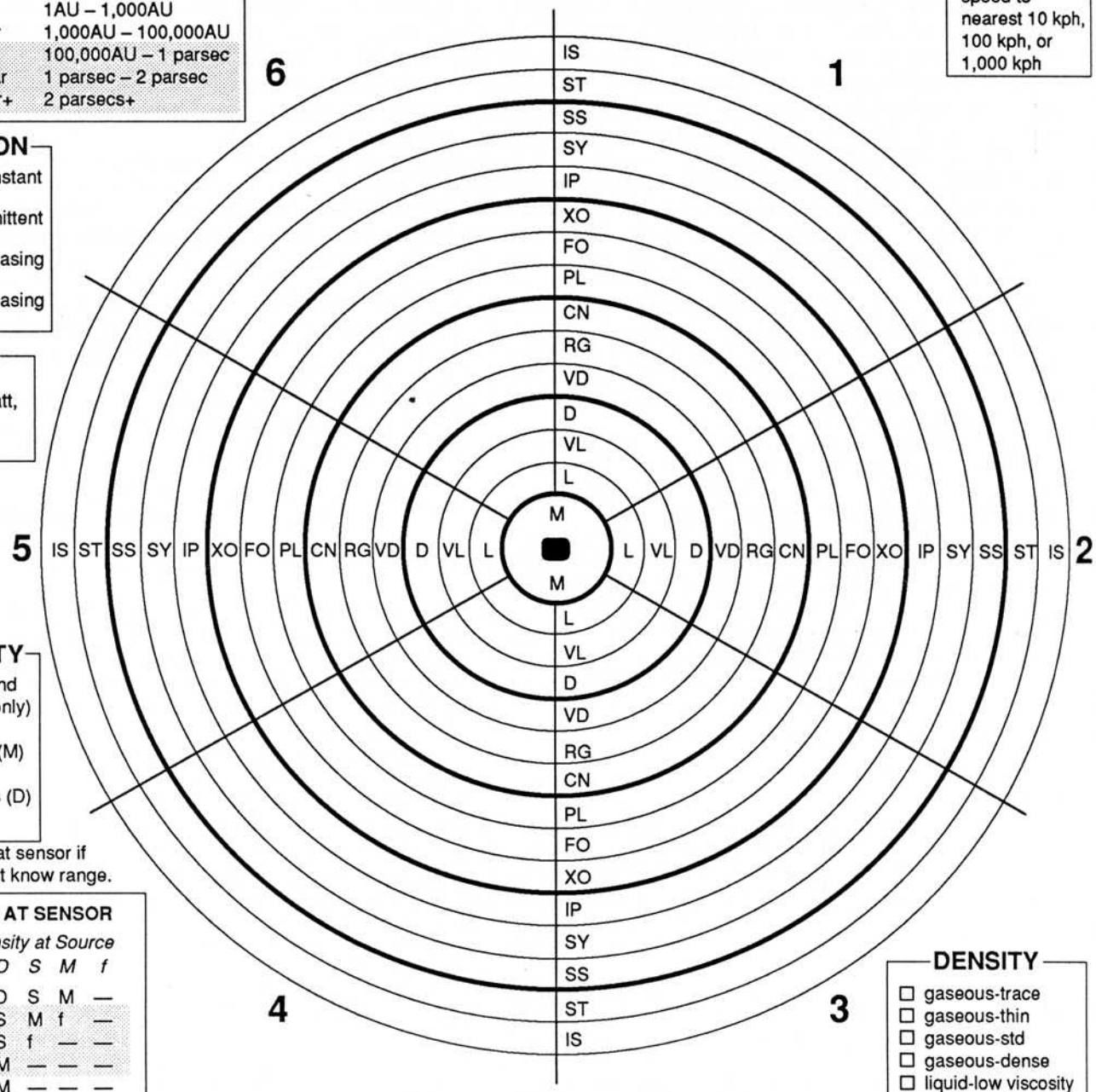
speed to nearest 10 kph, 100 kph, or 1,000 kph

DURATION

- ☐ constant
- ☐ intermittent
- ☐ increasing
- ☐ decreasing

POWER

power to the nearest kilowatt, megawatt, or gigawatt



INTENSITY

- ☐ below bkgnd (neutrino only)
- ☐ faint (f)
- ☐ moderate (M)
- ☐ strong (S)
- ☐ dangerous (D)
- ☐ fatal (F)

Give intensity at sensor if player does not know range.

INTENSITY AT SENSOR

	Intensity at Source				
	F	*D*	*S*	*M*	*f*
M	F	D	S	M	—
L	F	S	M	f	—
VL	F	S	f	—	—
D	F	M	—	—	—
VD	F	M	—	—	—
RG	D	f	—	—	—
CN	D	—	—	—	—
PL	D	—	—	—	—
FO	S	—	—	—	—
XO	S	—	—	—	—
IP	M	—	—	—	—
SY+	f	—	—	—	—

VOLUME

volume to nearest liter, kiloliter, or tons displacement

SIZE

- ☐ tiny (<10 tons)
- ☐ small (10-100 tons)
- ☐ avg (100-10,000 tons)
- ☐ large (10,000-1,000,000 tons)
- ☐ huge (>1,000,000 tons)

STATE

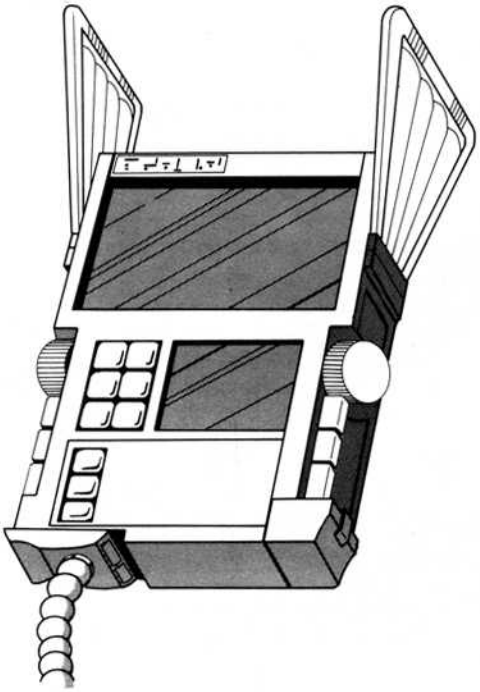
- ☐ vacuum
- ☐ gaseous
- ☐ liquid
- ☐ solid
- ☐ artificial grav fld

DENSITY

- ☐ gaseous-trace
- ☐ gaseous-thin
- ☐ gaseous-std
- ☐ gaseous-dense
- ☐ liquid-low viscosity
- ☐ liquid-med viscosity
- ☐ liquid-high viscosity
- ☐ solid-nonmetal
- ☐ solid-light metal
- ☐ solid-medium metal
- ☐ solid-heavy metal
- ☐ superdense

SENSOR READOUT PANEL

HANDHELD DENSITOMETER



Tech Level 15 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	14	Handheld Densitometer-14	15 liters	7kg	Cr15,000
O	15	Handheld Densitometer-15	3.0 liters	2kg	Cr25,000
O	16	Handheld Densitometer-16	2.6 liters	1.5kg	Cr40,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	14	15 days	humming	0.16kw	Penetration 1m
O	15	15 days	soft hum	0.06kw	Penetration 50m
O	16	30 days	none	0.02kw	Penetration 100m

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL14: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐ ■■■■■■■■■■

O TL15: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐ ■■■■■■■■■■

O TL16: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

NOTES:

DESCRIPTION

The handheld densitometer is an outgrowth of gravitic technology. Using an object's natural gravitational attraction, the remote densitometer can classify the object's density.

The resulting densitometer scan is a three-dimensional density map of the scanned object or region.

TASK LIBRARY

To do an PasObjScan with a handheld densitometer:
[varies], Sensor Ops, Edu, 6 sec (unskilled OK, uncertain)

Referee: Task difficulty depends on range:

M	L	VL	D	VD	RG	CN	PL	FO+
S	S	S	R	D	D	F	I	—

This task finds objects. Gives: direction, state, size.

Simultaneous readings from two locations separated by at least distant range also gives: accel, speed, motion.

Some truth gives false sources, misses some sources, or distorts data.

To do an PasObjPin with handheld densitometer:
[varies], Sensor Ops, Edu, 6 sec (uncertain)

Referee: Task difficulty depends on range:

	M	L	VL	D	VD	RG	CN	PL	FO+	
TL14	S	S	S	R	D	D	F	I	—	
	M	L	VL	D	VD	RG	CN	PL	FO	XO+
TL15+	—	S	S	S	R	R	D	F	I	—

This task pinpoints an object whose location is already known. Gives: volume, density, range, accel, speed, motion, number, size, ID (ID only if linked to library data).

On some truth, some readings distorted.

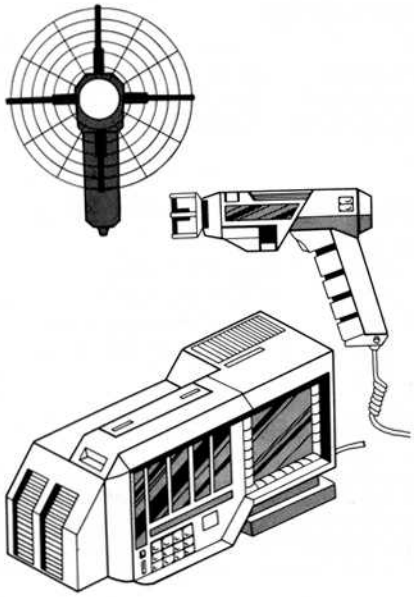
To repair a damaged densitometer:
[varies], Electronics, Gravitics, [varies]

Referee: Difficulty depends on the damage level of the sensor: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 30 sec
minor damage ..... 2 min
major damage ..... 1 hrs
destroyed ..... 2 hrs

For field repair, double the time increment, in addition to other standard increases.

NEURAL ACTIVITY SENSOR



Tech Level 14 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	13	Neural Activity Sensor-13	18 liters	8.5kg	Cr15,000
O	14	Neural Activity Sensor-14	15 liters	7.2kg	Cr25,000
O	15	Neural Activity Sensor-15	20.5 liters	10.3kg	Cr35,000
O	16	Neural Activity Sensor-16	12.5 liters	5.5kg	Cr35,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	13	24 hrs	none	0.75kw	Max range=M
O	14	7 days	none	0.35kw	Max range=L
O	15	30 days	none	0.20kw	Unattached handset, max rng=VL
O	16	30 days	none	0.20kw	Unattached handset, max rng=D

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL13:
O TL14:
O TL15:
O TL16:

NOTES:

DESCRIPTION

Developed from tech level 12 psionic helmet theory, the neural activity sensor (NAS) remotely detects the electrical activity of a life form's central nervous system and classifies it according to amount and complexity. The data system compares the activity pattern to known types of life, especially intelligent life.

The tech level 13 and 14 versions consist of a hand-carry display/power unit, while the tech 15 and 16 versions consist of a backpack and a separate handset. The TL15 and 16 handset is not attached to the backpack, and can be operated up to 100m distant, further extending the range (TL15=VL+100m, TL16=D+100m)

TASK LIBRARY

To do an passive lifeform scan with a neural activity sensor:
[varies], Sensor Ops, Edu, 6 sec (unskilled OK, uncertain)

Referee: Task difficulty depends on range:

M	L	VL	D
S	S	R	D

This task finds lifeforms. Gives: number, range, motion, speed, direction, and pattern. Some truth gives false lifeforms, misses some lifeforms, or distorts data.

To do a passive lifeform pinpoint with a neural activity sensor:
[varies], Sensor Ops, Edu, 2 sec (uncertain)

Referee: Task difficulty depends on range:

M	L	VL	D
S	S	R	D

This task pinpoints a lifeform whose location is already known. Gives: neural class, and intelligence.

On some truth, some readings distorted.

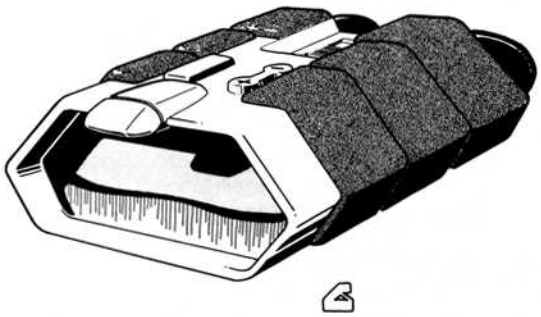
To repair a damaged neural activity sensor:
[varies], Electronics, Biology, [varies]

Referee: Difficulty depends on the damage level of the sensor: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 30 sec
minor damage ..... 2 min
major damage ..... 2 hrs
destroyed ..... 5 hrs

For field repair, double the time increment, in addition to other standard increases.

IMAGE CONVERTOR BINOCULARS



Tech Level 10 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	9	Image Conv Binoculars-9	1.5 liters	2.0kg	Cr15,000
O	10	Image Conv Binoculars-10	1.5 liters	1.8kg	Cr20,000
O	11	Image Conv Binoculars-11	1.0 liters	1.0kg	Cr12,000
O	12	Image Conv Binoculars-12	0.5 liters	0.5kg	Cr10,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	9	24 hrs	clicking	0.04kw	Military only, no rangefinder
O	10	7 days	soft clicking	0.1kw	Rangefinder 5km
O	11	2 wks	soft clicking	0.1kw	Rangefinder 7km
O	12	4 wks	silent	0.1kw	Rangefinder 10km

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL9:
O TL10:
O TL11:
O TL12:

NOTES:

DESCRIPTION

Image converter binoculars are sensitive to IR, visible light, and UV bands. Magnification can be up to 20x. Images set on high intesification cuts contrast drastically, making resulting images unclear. Automatic polarizers cut in if the image is bright enough to blind.

The image convertor can be connected to various display devices (communicator, visual display headset, map box) so that others can see the image. Also, the image can be transfered to certain devices (hand computer, map box) for further processing.

TASK LIBRARY

To do a PasEngScan with image convertor binoculars:
[varies], Sensor Ops, Edu, 1 sec (unskilled OK, uncertain)

Referee: Task difficulty depends on range:

M	L	VL	D	VD	RG	CN	PL+
S	R	R	D	F	I	I	—

This task finds sources. Gives: EM band, intensity, duration, number, and direction.
Simultaneous readings from two locations separated by at least distant range gives: range, accel, speed, motion. Requires a computer link between both sensors.
Some truth gives false sources, misses some sources, or distorts data.

To do an ActObjPin with image convertor binoculars (TL10+ only):
[varies], Sensor Ops, Edu, instant (unskilled OK, uncertain)

Referee: Task difficulty depends on range:

M	L	VL	D	VD
S	S	S	R	D

This task pinpoints an object whose location is already known. Can also be used to pinpoint an energy source if that source is an object in range. Gives: range, accel, speed, motion, number, size, ID (ID only if linked to library data).
On some truth, some readings distorted.

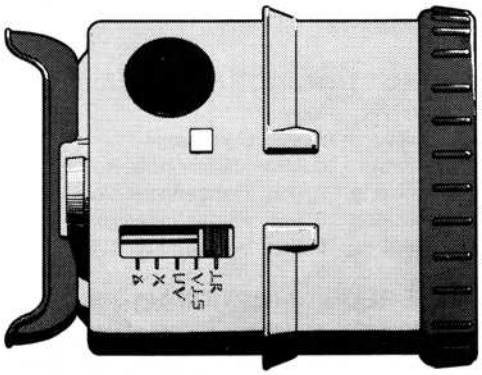
To repair damaged image converter binoculars:
[varies], Electronics, Edu, [varies]

Referee: Difficulty depends on the damage level of thebinoculars: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 30 sec
minor damage ..... 2 min
major damage ..... 1 hrs
destroyed ..... 2 hrs

For field repair, double the time increment, in addition to other standard increases.

"PRIS" FIELD GLASSES



Tech Level 12 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	12	PRIS Field Glasses-12	3.0 liters	2.0kg	Cr25,000
O	13	PRIS Field Glasses-13	2.5 liters	1.8kg	Cr20,000
O	14	PRIS Field Glasses-14	2.0 liters	1.5kg	Cr15,000
O	15	PRIS Field Glasses-15	1.0 liters	1.0kg	Cr13,500

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	12	1 day	buzz/click	0.12kw	Magnification 100x
O	13	3 days	soft buzz	0.10kw	Magnification 225x
O	14	4 days	soft hum	0.08kw	Magnification 275x
O	15	7 days	silent	0.04kw	Magnification 350x

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL12:
O TL13:
O TL14:
O TL15:

NOTES:

DESCRIPTION

The Portable Radiation Imaging system (PRIS)can be set to observe images in the spectral range from infrared to gamma rays. The front surface of the PRIS is transparent to all radiation; just behind it is a series of lenses tailored to various bands.

Magnification strength is adjustable — a built-in flywheel for gyroscopic stabilization insures a steady field of view at all magnifications.

TASK LIBRARY

To do a PasEngScan with PRIS field glasses:
[varies], Sensor Ops, Edu, 1 sec (unskilled OK, uncertain)

Referee: Task difficulty depends on range:

M	L	VL	D	VD	RG	CN	PL	FO+
S	S	S	R	D	D	F	I	—

This task finds sources. Gives: EM band, intensity, duration, number, and direction.
Simultaneous readings from two locations separated by at least distant range gives: range, accel, speed, motion. Requires a computer link between both sensors.
Some truth gives false sources, misses some sources, or distorts data.

To do an ActObjPin with PRIS field glasses:
[varies], Sensor Ops, Edu, instant (unskilled OK, uncertain)

Referee: Task difficulty depends on range:

M	L	VL	D	VD
S	S	S	R	D

This task pinpoints an object whose location is already known. Can also be used to pinpoint an energy source if that source is an object in range. Gives: range, accel, speed, motion, number, size, ID (ID only if linked to library data).
On some truth, some readings distorted.

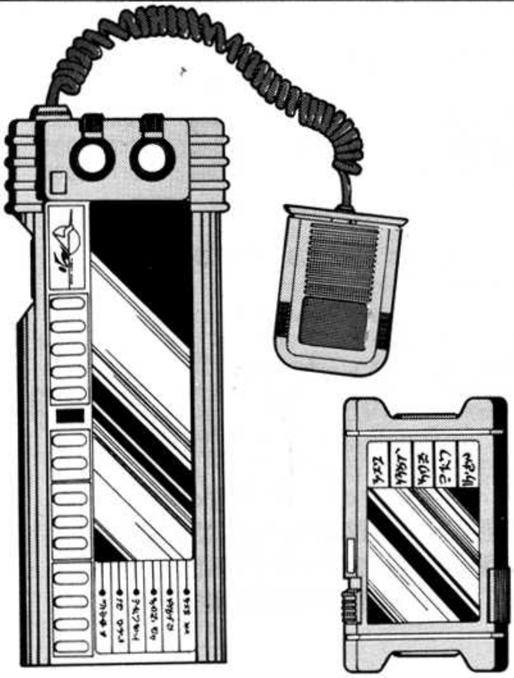
To repair damaged PRIS field glasses:
[varies], Electronics, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 2 min
minor damage ..... 5 min
major damage ..... 3 hrs
destroyed ..... 6 hrs

For field repair, double the time increment, in addition to other standard increases.

MED SCANNER



TL 10 and TL12 versions illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	10	Med Scanner-10	2 liters	1.0kg	Cr25,000
O	12	Med Scanner-12	0.2 liters	0.1kg	Cr10,500

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	10	7 days	beeping	9.0w	Handheld size
O	12	7 days	beeping	1.0w	Pocket size

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL10: □□□□□□□

O TL12: □□□□□□□

NOTES:

DESCRIPTION

A doctor or nurse need only to press a med scanner probe against the patient's chest and moments later, the scanner accurately determines body temperature, blood pressure, pulse rate, respiration rate, level of neural activity, fluid balance and other important data.

Once the reading is made, the device records the values in the scanner's memory. These records can be called up later for review. The scanner can be set so that if readings reach a certain level (either high or low), the scanner beeps to alert the attending physician. Adhesive pads allow attaching the scanner temporarily to the chest for this purpose.

A med scanner is optimized for a given race, so using it on members of another alien race does not work. One exception: the same device can be used for humans and Vargr.

Tech 12+ vacc suits have contacts allowing use of a med scanner without removing the suit.

TASK LIBRARY

To use a med scanner to perform diagnosis:
Routine, Medical, Edu (unskilled OK)

Referee: A med scanner allows *instant* diagnosis of injury. For diagnosis of sickness, the time increment is reduced by one-half.

To modify a med scanner for another race:
Difficult, minimum of Medical or Electronics, Edu, 1 hour (uncertain)

Referee: Use the lower level of medical and electronics skills to determine the skill DM. If the character does not have both skills, the task is Impossible. Once the device is converted, it can not be used for the original race without successfully performing this task again. If the result of this task is *Some Truth*, then all subsequent tasks using the modified scanner require exceptional success to be successful.

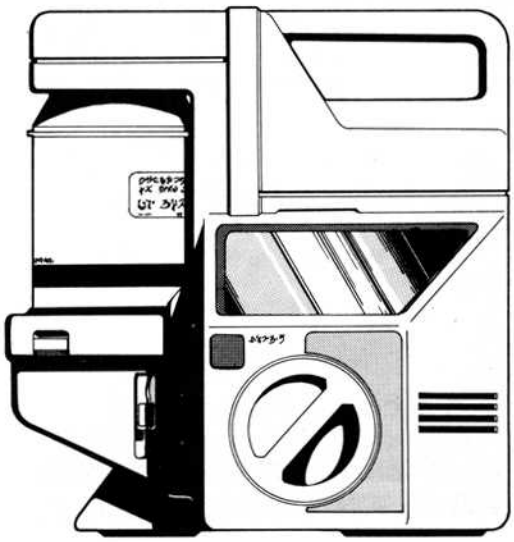
To repair a damaged med scanner:
[varies], Electronics or Computer, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage .... 1 min
minor damage .... 5 min
major damage .... 2 hrs
destroyed .... 5 hrs

For field repair, double the time increment, in addition to other standard increases.

BIO-SCANNER (SNIFFER)



Tech Level 15 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	13	Bio-Scanner (Sniffer)-13	20 liters	7.0kg	Cr500,000
O	15	Bio-Scanner (Sniffer)-15	8 liters	3.5kg	Cr350,000
O	16	Bio-Scanner (Sniffer)-16	3 liters	1.5kg	Cr150,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	13	24 hours	hiss/clunk	2.5kw	Analysis is slow, range under 1m
O	15	4 days	soft hiss	0.6kw	Analysis is faster, range 1m
O	16	10 days	soft hiss	0.2kw	Analysis is much faster, range 5m

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL13:
O TL15:
O TL16:

NOTES:

DESCRIPTION

An advancement of volatile chemical molecular analysis technology, the bio-scanner "sniffer" scans for evidence of biological/ metabolic activity in the area. It is a highly advanced combination sampler/analyzer. Not only is the bio-scanner useful for biological studies, but it also helps with regular chemical analysis.

The unit incorporates both analyzer and collector into one. It has 2 modes and corresponding equipment: one mode for mass sampling (scanning) and one mode for minute sampling (pinpoint reading).

The evidence of biological activity must be within short range (5m) of the scanner—anything beyond short range is undetectable.

TASK LIBRARY

To recognize or categorize a familiar organism:
Routine, Biology, Edu, (time incr varies: TL13:10 min; TL15:1 min; TL16:10 sec) (uncertain)

Referee: Success at this task allows one of the following: ecological classification, determination of potential hazards to other lifeforms, estimate of potential uses (form of food, commercial value). Total truth gives the exact identity of the familiar organism. Hunting serves as one level less in biology skill with familiar organisms.

To recognize or categorize an unfamiliar organism:
Difficult, Biology, Edu, (time incr varies: TL13:10 min; TL15:1 min; TL16:10 sec) (uncertain)

Referee: Success at this task allows one of the following: ecological classification, determination of potential hazards to other lifeforms, estimate of potential uses (form of food, commercial value).

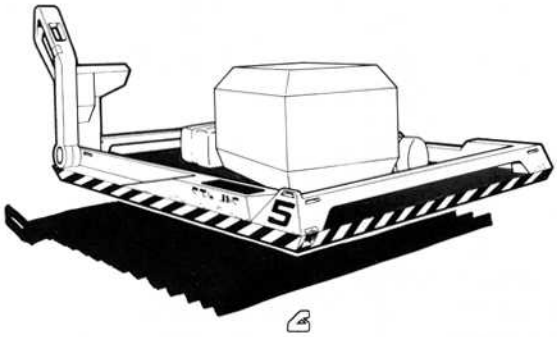
To repair a damaged sniffer:
[varies], Mechanical or Electronics, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 30 sec
minor damage ..... 2 min
major damage ..... 2 hrs
destroyed ..... 4 hrs

For field repair, double the time increment, in addition to other standard increases.

FLOATER



Tech Level 13 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	10	Floater-10	400 liters	110kg	Cr30,000
O	13	Floater-13	400 liters	100kg	Cr30,000
O	15	Floater-15	400 liters	95kg	Cr30,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Duration	Operating Noise	Fuel Usage	Comments
O	10	36 days	hum	200 liters	Thrust: 890kg
O	13	60 days	soft hum	200 liters	Thrust: 900kg
O	15	120 days	none	200 liters	Thrust: 905kg

USAGE RECORD (OPTIONAL)

Each square represents 3 days (72 hours) of usage

O TL10:

O TL13:

O TL15:

NOTES:

DESCRIPTION

With the advent of artificial grav technology in a big way at tech level 10, most societies construct all manner of platforms for transporting heavy cargos. One popular category of cargo platform is the floater — essentially a self-propelled cargo platten of sorts.

Most floaters are between 1 and 2 meters square, and can carry several hundred kilograms of bulky cargo. Each of the floaters shown here can propel itself at up to 5kph — the speed of a brisk walk. Each floater includes a fold-down control pedestal, a flashing warning strobe, cargo tie-downs, and an open end to allow for platform drainage.

TASK LIBRARY

To use a floater for 8 hours without incident:
Routine, Grav Veh, Dex (fateful)

Referee: For long-term usage of a floater, you can short-cut this task by just rolling 3 times per week.

To repair a damaged floater:
[varies], Gravitics, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 10 sec
minor damage ..... 1 min
major damage ..... 30 min
destroyed ..... 2 hrs

For field repair, double the time increment, in addition to other standard increases.

GYROCOMPASS

Tech Level 15 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	9	Gyrocompass-9	8 liters	3kg	Cr1,100
O	11	Gyrocompass-11	4 liters	1.5kg	Cr1,500
O	13	Gyrocompass-13	2.5 liters	1.0kg	Cr1,800
O	15	Gyrocompass-15	1.0 liters	0.5kg	Cr2,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	9	24 hrs	whirr	0.2kw	Self-precessing in 1 hr
O	11	48 hrs	soft whirr	0.1kw	Self-precessing in 30 min
O	13	7 days	soft hum	0.05kw	Self-precessing in 10 min
O	15	30 days	silent	0.02kw	Self-precessing in 2 min

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL9:
O TL11:
O TL13:
O TL15:

NOTES:

DESCRIPTION

A necessary improvement in navigational equipment for other worlds is the self-precessing gyrocompass.

The gyrocompass does not need a magnetic field to operate, and sets itself automatically. When a landing party stops on the surface of the world, the gyrocompass senses the world's rotational motion and sets itself.

The gyrocompass can be linked with a hand computer or map box, thereby providing accurate information as to one's current location on the surface of a world.

TASK LIBRARY

To use a gyrocompass to find direction (north, south, east west):
Routine, Sensor Op, Recon (unskilled OK)

Referee: For a tech level 9 gyrocompass, make this task uncertain.

To use a gyrocompass link to find location:
Routine, Sensor Op, Recon

Referee: For a tech level 9 gyrocompass, make this task uncertain.

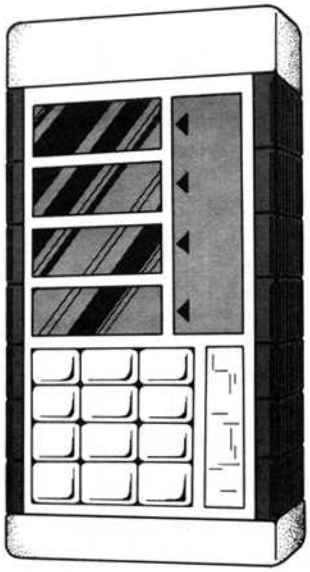
To repair a damaged gyrocompass:
[varies], Electronics, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 30 sec
minor damage ..... 2 min
major damage ..... 1 hrs
destroyed ..... 2 hrs

For field repair, double the time increment, in addition to other standard increases.

MULTICHRONOMETER



Tech Level 10 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	9	Multichonometer-9	0.2 liters	0.1kg	Cr500
O	10	Multichonometer-10	0.1 liters	—	Cr200

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	9	24 hrs	none	3w	
O	10	7 days	none	1w	Includes computer link

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL9:

O TL10:

NOTES:

DESCRIPTION

An important device, but one easily overlooked by those who have never left their home planets, is the multichronometer. This timepiece sets itself, in one planetary rotation, to local zero meridian time, local solar time, and local sidereal time. A setting allows for automatic time zone corrections according to world size. The multichronometer also keeps Imperial standard time.

The sidereal and zero meridian times are of interest mainly to the astronomer and navigator, giving them the spin plane of the world, its year length, and other information.

TASK LIBRARY

To use a multichronometer to determine local time:
Routine, Edu

Referee: Remember to allow time for auto setting (1 rotation period). Optionally, the chonometer can be set manually, if the rotation period is known.

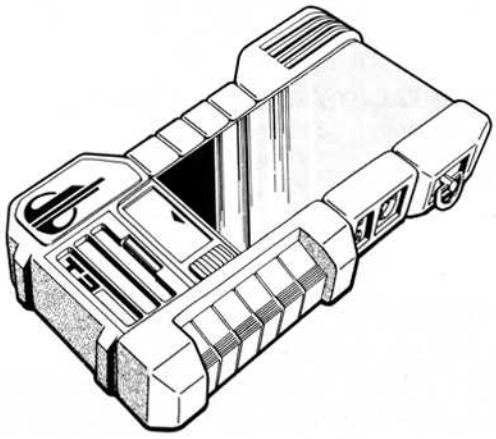
To repair a damaged multichronometer:
[varies], Electronics, Edu, [varies]

Referee: Difficulty depends on the damage level of thebinoculars: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage........ 30 sec
minor damage .... 2 min
major damage .... 1 hrs
destroyed .... 2 hrs

For field repair, double the time increment, in addition to other standard increases.

LANGUAGE TRANSLATOR



Tech Level 12 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	9	Language Translator-9	3 liters	2.0kg	Cr2,000
O	10	Language Translator-10	3 liters	1.5kg	Cr1,000
O	12	Language Translator-12	2 liters	1.0kg	Cr800
O	14	Language Translator-14	0.5 liters	0.5kg	Cr800

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	9	24 hrs	silent	0.025kw	Audio output limited/ no visual
O	10	2 days	silent	0.05kw	Improved audio/limited video
O	12	1 wk	silent	0.01kw	Quality audio/quality video
O	14	1 wk	silent	0.01kw	Pocket sized unit

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL9:
O TL10:
O TL12:
O TL14:

NOTES:

DESCRIPTION

The Language Translator serves efficiently as an inexpensive translation device. Normally, the translator transmits to a remote earpiece or commdot.

Individual memclips are needed for both the source and target language — to translate from Vargr to K'kree, for example, two memclips are needed. The translator can hold up to six memclips. Four peripheral outlets support accessories for unique communication modes such as light, smell, ultra-high or ultra-low frequency sound, touch, and pictorial display. Internal memory allows copying an entire memclip if necessary. Blank memclips cost Cr10.

This unit performs well when translating one spoken sentence after another in a variety of languages, however, subtle nuances of meaning may not be preserved. (For the utmost in precise language translation, one of the powerful translator robots on the market is ideal.)

TASK LIBRARY

To perform translation of a conversation:
Difficult, Linguistics, Int (fateful)

Referee: If translating offline video/text, this task is Routine. Treat mishaps as follows:
- superficial ..... Some nuances not conveyed.
- minor ..... Meaning is misleading although some correct meaning exists.
- major ..... Totally incorrect meaning conveyed. If to an NPC, roll NPC reaction.

To create a language memclip:
Difficult, Linguistics, Edu, 1 month (uncertain)

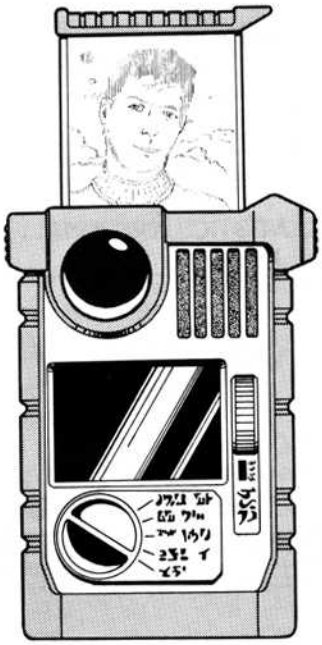
Referee: The reulting memclip has a skill level of one less than the creator's skill, to a maximum skill level of 3. As far as the uncertain results:
- No truth ..... Secretly lower memclip skill level by 2 (minimum level of 0).
- minor ..... Secretly lower memclip skill level by 1 (minimum level of 0).

To repair a damaged language translator:
[varies], Electronics or Computer, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:
- superficial damage ..... 1 min
- minor damage ..... 5 min
- major damage ..... 2 hrs
- destroyed ..... 4 hrs

For field repair, double the time increment, in addition to other standard increases.

HANDHELD COMMUNICATOR



Tech Level 14 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	9	Handheld Communicator-9	1.20 liters	1.2kg	Cr500
O	12	Handheld Communicator-12	1.00 liters	0.5kg	Cr500
O	14	Handheld Communicator-14	0.45 liters	0.2kg	Cr500

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	9	1 day	none	0.03kw	Range 500km
O	12	2 days	none	0.02kw	Range 500km
O	14	7 days	none	0.01kw	Range 500km

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL9:
O TL12:
O TL14:

NOTES:

DESCRIPTION

The handheld communicator transmits a voice and two-dimensional image over a range of 500km (regional). (If this range is insufficient to contact an orbiting ship, a laser communicator or landing vehicle radio can be used as a repeater.)

The communicator has a built-in microphone and video camera for input, and a small speaker and a display for output. The video camera can be switched off if desired. Commdots can be used to speak and listen if the device is attached to a belt.

The communicator can be programmed to a select group of different frequencies for current use; one of these pre-programmed frequencies can then be quickly selected. The communicator can transmit and receive simultaneously.

When used with commdots, the communicator can be used to tune the commdot frequencies to itself; it will also automatically multiplex with a commdot for any of its active frequencies.

TASK LIBRARY

To use a communicator:
Routine, Communication, Edu (unskilled OK)

Referee: For ideal conditions, make this task Simple. For poor condtions make this task Difficult.

To repair a damaged communicator:
[varies], Electronics, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 30 sec
minor damage ..... 2 min
major damage ..... 1 hrs
destroyed ..... 2 hrs

For field repair, double the time increment, in addition to other standard increases.

COMMDOTS

Tech Level 14 version illustrated

EQUIPMENT STATISTICS

	TL	*Type*	*Vol*	*Wt*	*Price*
O	10	Commdot/Multiplexer-10	0.1 liters	0.1kg	Cr1,000
O	12	Commdot/Multiplexer-12	0.1 liters	0.1kg	Cr500
O	14	Commdot/Multiplexer-14	0.1 liters	0.1kg	Cr200

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	*Charge Duration*	*Operating Noise*	*Power Usage*	*Comments*
O	10	6 days	none	0.5w	Multiplex 2 devices
O	12	8 days	none	0.5w	Multiplex 5 devices
O	14	30 days	none	0.5w	Multiplex any nbr of devices

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL10: ☐☐☐☐☐☐

O TL12: ☐☐☐☐☐☐☐☐

O TL14: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

NOTES:

DESCRIPTION

A commdot is most often found used as an adjunct to a communicator or computer. One commdot is affixed to the scalp just behind the ear; another commdot is stuck to the throat just above the voicebox. The microelectronics in the dots can transmit and receive for a distance of only about a meter, but this is far enough to put the dots in contact with a larger, more powerful device.

A communicators or hand computer can be used and the hands can be kept free for other tasks. Commdots are powered by ultraminiature superbatteries and can be tuned by using another device. Most communicators support this tuning cabability.

When it is desired to communicate over more than one frequency at a time, or to operate more than one device, a commdot multiplexer is used. The multiplexer is worn on the belt, and coordinates activity between the commdot and other devices. The operator can then receive or transmit only on the channels desired, turning signals on or off at will.

TASK LIBRARY

To use a commdot:
Routine, Communication, Edu (unskilled OK)

Referee: For ideal conditions, make this task Simple. For poor condtions make this task Difficult.

To multiplex a device with a commdot:
Routine, Communication, Edu

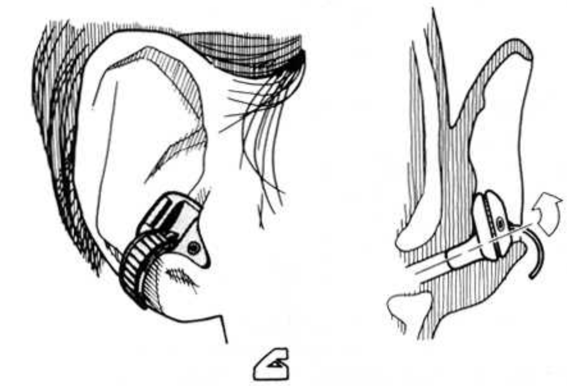
To repair a damaged commdot/multiplexer:
[varies], Electronics or Communications, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage .... 1 min
minor damage .... 5 min
major damage .... 1 hrs
destroyed .... 2 hrs

For field repair, double the time increment, in addition to other standard increases.

REMOTE EARPIECE



Tech Level 14 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	8	Remote Earpiece-8	0.2 liters	0.1kg	Cr75
O	12	Remote Earpiece-12	0.2 liters	0.1kg	Cr75
O	14	Remote Earpiece-14	0.2 liters	0.1kg	Cr150
O	16	Remote Earpiece-16	0.2 liters	0.1kg	Cr300

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	8	8 hours	none	0.01kw	Rng D (5km)
O	12	1 day	none	0.01kw	Rng VD (50 km), multiplex 2
O	14	4 days	none	0.01kw	Rng RG (500km), multiplex 4
O	16	12 days	none	0.01kw	Rng CN (5,000km), multiplex any

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL8: ☒

O TL12: ☐

O TL14: ☐☐☐☐

O TL16: ☐☐☐☐☐☐☐☐☐☐☐☐

NOTES:

DESCRIPTION

The remote earpiece can both send and receive voice communication. An earpiece communicator tends to be a short range device — an orbiting ship or other long-range destination can be contacted by linking to a laser communicator or a landing vehicle radio as a repeater.

The earpiece picks up the voice of the wearer via the vibrations in the wearer's skull. Dialog transmitted to the earpiece is just as distinct as dialog spoken to a handheld communicator.

High-tech versions include a multiplexer allowing the earpiece to be connected to other communicator or computer devices.

TASK LIBRARY

To use an earpiece communicator:
Routine, Communication, Edu (unskilled OK)

Referee: For ideal conditions, make this task Simple. For poor condtions make this task Difficult.

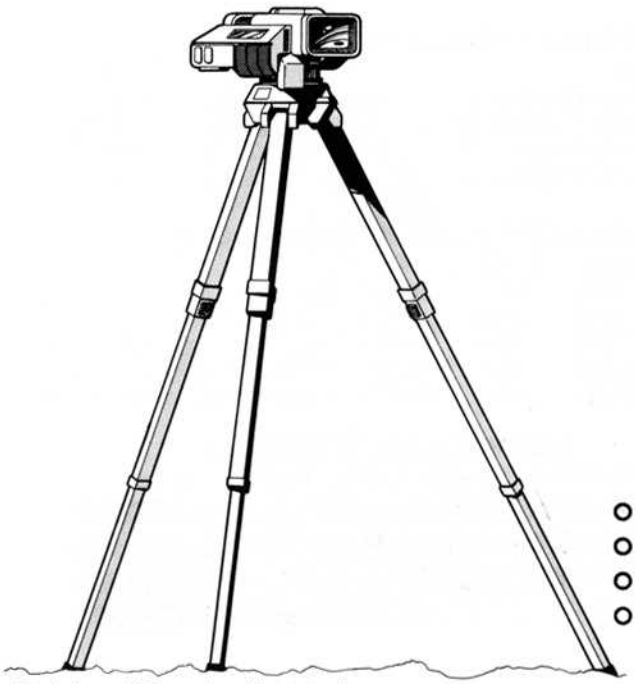
To repair a damaged earpiece communicator:
[varies], Electronics, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

- superficial damage .... 1 min
- minor damage .... 4 min
- major damage .... 1 hrs
- destroyed .... 2 hrs

For field repair, double the time increment, in addition to other standard increases.

LASERCOM RELAY



Tech Level 10 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	10	Lasercom Relay-10	5 liters	1.5kg	Cr2,500
O	11	Lasercom Relay-11	4 liters	1.2kg	Cr2,500
O	13	Lasercom Relay-13	3.5 liters	1.0kg	Cr2,000
O	15	Lasercom Relay-15	3.0 liters	0.8kg	Cr1,500

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	10	1 day	soft hum	0.17kw	Rng VD (50km)
O	11	1 day	none	0.18kw	Rng RG (500 km)
O	13	2 days	none	0.22w	Rng CN (5,000km), better pen
O	15	3 days	none	0.35w	Rng PL (50,000km), better pen

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL10:
O TL11:
O TL13:
O TL15:

NOTES:

DESCRIPTION

The laser communicator is a line-of-sight device, and as such is subject to atmospheric conditions. The extreme range of the lasercom relay is seldom needed on a world's surface, as the distance to the horizon limits the range first. Still, the relay's range does allow tight-beam contact with an orbiting ship as it goes overhead.

The laser communicator's main advantage is that it provides a tight beam, and therefore private, means of communication. Sets of laser communicators can also be lined up to form a "repeater" network. Spaced at a horizon to horizon distance, the units can instantly convey a message around a world by retransmitting it from station to station.

TASK LIBRARY

To use a lasercom relay to contact an orbiting vessel:
Difficult, Communication, Edu (unskilled OK)

Referee: For ideal conditions, make this task Routine; for poor conditions make this task Formidable.

To configure a lasercom relay network:
Routine, Communication, Edu

Referee: This task assumes the relays are already in place. For ideal conditions, make this task Simple. For poor condtions make this task Difficult.

To use a lasercom relay network to communicate without being discovered:
Routine, Communication, Edu

Referee: For ideal conditions, make this task Simple; for poor conditions make this task Difficult.

To repair a damaged lasercom relay unit:
[varies], Electronics or Communications, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 1 min
minor damage ..... 5 min
major damage ..... 1 hrs
destroyed ..... 2 hrs

For field repair, double the time increment, in addition to other standard increases.

DATA/DISPLAY HEADSET

Tech Level 13 version illustrated

EQUIPMENT STATISTICS

	TL	*Type*	*Vol*	*Wt*	*Price*
O	12	Data/Display Headset-12	0.2 liters	0.1kg	Cr2,500
O	13	Data/Display Headset-13	0.1 liters	0.1kg	Cr5,000
O	15	Data/Display Headset-15	0.1 liters	0.1kg	Cr5,000
O	16	Data/Display Headset-16	0.1 liters	—	Cr10,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	*Charge Duration*	*Operating Noise*	*Power Usage*	*Comments*
O	12	8 hours	none	0.02kw	2D display image
O	13	7 days	none	0.01kw	3D display
O	15	15 days	none	0.01kw	3D display
O	16	30 days	none	0.005kw	3D display

USAGE RECORD (OPTIONAL)

Each square represents 1 day (24 hours) of usage

O TL12: ☒

O TL13: ☐☐☐☐☐☐☐

O TL15: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

O TL16: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

NOTES:

DESCRIPTION

This headset represents a significant breakthrough in display technology — it can be interfaced with virtually any number of devices of the same or lower tech level, using a multiplexer. The multiplexer not only coordinates the devices for the user but also synchronously records the multiple data signals onto one standard data clip for later review.

It is common for any technician using equipment to wear one of these. Their use is also common among bridge and engineering personnel on starships as well as smaller craft. For example, a surveyor flying in a grav belt and using a neural activity sensor can control both the sensor and his grav belt fromhis headpiece. If he is also wearing a vacc suit, he can monitor and control his life-support status as well.

The headset allows the wearer to use eye motion to control the movement of device control settings. With practice, the use of the headset to control multiple devices can become as instinctive as flipping a light switch to turn on the lights. When desired, the headpiece can be swung out of the way above the head; when the display is turned off, it is transparent.

About three percent of the population find it difficult to focus properly on the headpiece and are unable to use the device. To determine this for a character, roll 2D when he is generated. A result of 2 disqualifies the character from wearing a headpiece.

TASK LIBRARY

To use a data/display headset:
Routine, Sensor Op, Edu

Referee: Roll only when using the headset for significant device control actions.

To multiplex a device to a data/display headset:
Routine, Sensor Op, Edu

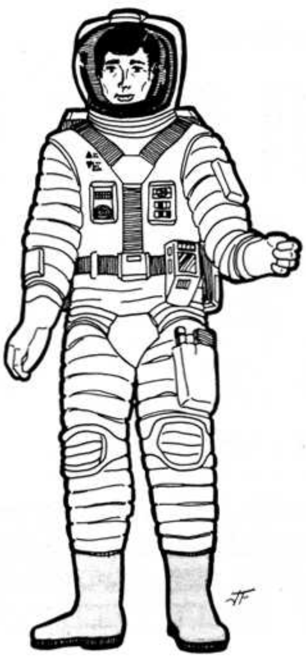
To repair a damaged headset:
[varies], Electronics, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage .... 1 min
minor damage .... 5 min
major damage .... 2 hrs
destroyed .... 5 hrs

For field repair, double the time increment, in addition to other standard increases.

GENERAL PURPOSE VACC SUIT



Tech Level 11 version illustrated

EQUIPMENT STATISTICS

	TL	*Type*	*Vol*	*Wt*	*Price*
O	9	Gen Purpose Vacc suit-9	3.6 kliters	8kg	Cr7,000
O	10	Gen Purpose Vacc suit-10	2.7 kliters	6kg	Cr7,000
O	11	Gen Purpose Vacc suit-11	1.8 kliters	4kg	Cr7,000
O	12	Gen Purpose Vacc suit-12	0.9 kliters	2kg	Cr7,000
O	13	Gen Purpose Vacc suit-13	0.7 kliters	1kg	Cr13,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	*Charge Duration*	*Comments*
O	9	see PLSS	Armor=5, encumbrance to Dex -3
O	10	see PLSS	Armor=5, encumbrance to Dex -3
O	11	see PLSS	Armor=5, encumbrance to Dex -2
O	12	see PLSS	Armor=6, encumbrance to Dex -1
O	13	see PLSS	Armor=6, encumbrance to Dex -1, self-sealing

PLSS USAGE RECORD (OPTIONAL)

Each square represents ____________ *of usage*

O TL9:

O TL10:

O TL11:

O TL12:

O TL13:

NOTES:

DESCRIPTION

At lower tech levels, general purpose vacc suits are unwieldy and uncomfortable, but they become lighter and more flexible with each technological advance. At the higher tech levels, the suits provide improved armor protection. At tech level 13, the suit becomes self-sealing.

General purpose vacc suits consist of suit, gloves, boot, and standard helmet; they protect against temperatures from +100°C to -110°C and pressures of up to 5 atm.

These suits all require a PLSS backpack for power and oxygen. The PLSS backpacks are listed on a separate sheet.

TASK LIBRARY

To put on or take off a GP vacc suit:
Routine, Vacc Suit, Dex, 12 sec (unskilled OK)
Referee: This task becomes Simple if the vacc suit is TL12+..

To use a GP vacc suit without incident:
Routine, Vacc Suit, Dex (unskilled OK, fateful)
Referee: Roll once for short excursions — two or three times for longeroutings.

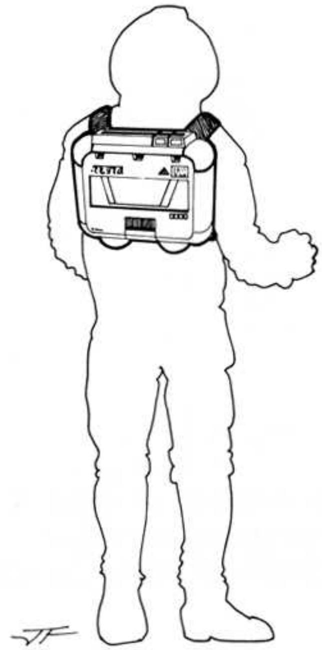
To apply a patch to a breached GP vacc suit:
Routine, Dex, 2 sec
Referee: Since a combat round is 6 sec, this task may take several rounds. After the first round, apply 1D damage to the character in the suit each round until the suit is patched.

To repair a damaged GP vacc suit:
[varies], Mechanical, Dex, [varies]
Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage .... 1 min
minor damage .... 5 min
major damage ....1 hr
destroyed ....2 hrs

For field repair, double the time increment, in addition to other standard increases.

PORTABLE LIFE SUPPORT SYSTEM (PLSS A)



Tech Level 12 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	9	PLSS A-9	11 liters	7.0kg	Cr3,000
O	12	PLSS A-12	7 liters	4.0kg	Cr3,000
O	14	PLSS A-14	1.5 liters	0.5kg	Cr3,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	9	4 hrs	none	0.35kw	Standard oxy refill
O	12	4 hrs	none	0.25kw	High press. oxy refill
O	14	12 hrs	none	0.5kw	Ultra hi-press. oxy refill (recycle)

USAGE RECORD (OPTIONAL)

Each square represents 3 hours of usage

O TL9: ☒☐

O TL12: ☒☐

O TL14: ☐☐☐☐

NOTES:

DESCRIPTION

A portable life support system (PLSS) is a necessity with a vacc suit — the PLSS is a self-contained unit that supplies the suit with its power and air supply. The PLSS backpack plugs into the back of any of the standard vacc suit designs, and it is operated from the suit's standard controls.

The PLSS A unit is the lightest and most compact of the various PLSS units. It also has the shortest duration.

TASK LIBRARY

To put on or take off a PLSS unit:
Routine, Vacc Suit, Dex, 12 sec (unskilled OK)
Referee: This task becomes Simple if the unit is TL14.

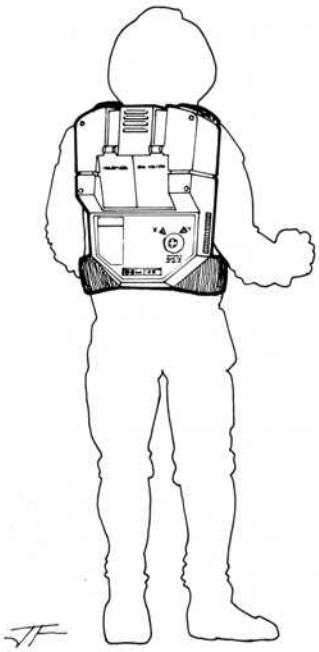
To recharge a used PLSS unit:
Routine, Vacc Suit, Edu, 20 min (unskilled OK)

To repair a damaged PLSS suit:
[varies], Electronics, Edu, [varies]
Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

- superficial damage .... 2 min
- minor damage .... 5 min
- major damage .... 2 hrs
- destroyed .... 5 hrs

For field repair, double the time increment, in addition to other standard increases.

PORTABLE LIFE SUPPORT SYSTEM (PLSS B)



Tech Level 12 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	9	PLSS B-9	20 liters	14.5kg	Cr5,000
O	12	PLSS B-12	16 liters	11.0kg	Cr5,000
O	14	PLSS B-14	3.5 liters	2.5kg	Cr5,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	9	24 hrs	none	0.75kw	Standard oxy refill (recycle)
O	12	24 hrs	none	0.65kw	High press. oxy refill (recycle)
O	14	24 hrs	none	0.95kw	Ultra hi-press. oxy refill (recycle)

USAGE RECORD (OPTIONAL)

Each square represents 3 hours of usage

O TL9: ☐☐☐☐☐☐☐☐ ■■■■■■■■■■■■■■■■■■■■■■■■

O TL12: ☐☐☐☐☐☐☐☐ ■■■■■■■■■■■■■■■■■■■■■■■■

O TL14: ☐☐☐☐☐☐☐☐ ■■■■■■■■■■■■■■■■■■■■■■■■

NOTES:

DESCRIPTION

A portable life support system (PLSS) is a necessity with a vacc suit — the PLSS is a self-contained unit that supplies the suit with its power and air supply. The PLSS backpack plugs into the back of any of the standard vacc suit designs, and it is operated from the suit's standard controls.

The PLSS B unit is moderate weight unit with a useful duration of 24 hours.

TASK LIBRARY

To put on or take off a PLSS unit:
Routine, Vacc Suit, Dex, 12 sec (unskilled OK)

Referee: This task becomes Simple if the unit is TL14.

To recharge a used PLSS unit:
Routine, Vacc Suit, Edu, 20 min (unskilled OK)

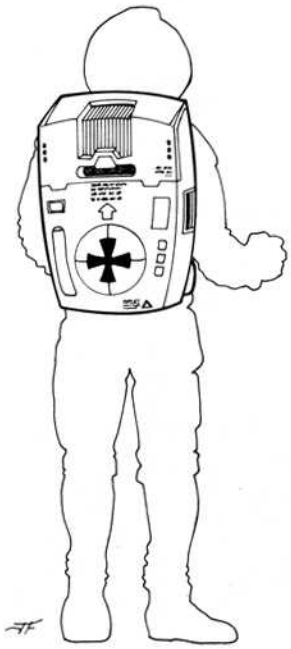
To repair a damaged PLSS suit:
[varies], Electronics, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 2 min
minor damage ..... 5 min
major damage ..... 2 hrs
destroyed ..... 5 hrs

For field repair, double the time increment, in addition to other standard increases.

PORTABLE LIFE SUPPORT SYSTEM (PLSS C)



Tech Level 12 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	9	PLSS C-9	55 liters	29.0kg	Cr8,000
O	12	PLSS C-12	30 liters	18.0kg	Cr8,000
O	14	PLSS C-14	7 liters	3.5kg	Cr8,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	9	48 hrs	none	1.3kw	Standard oxy refill (recycle)
O	12	48 hrs	none	1.2kw	High press. oxy refill (recycle)
O	14	48 hrs	none	1.6kw	Ultra hi-press. oxy refill (recycle)

USAGE RECORD (OPTIONAL)

Each square represents 3 hours of usage

O TL9:

O TL12:

O TL14:

NOTES:

DESCRIPTION

A portable life support system (PLSS) is a necessity with a vacc suit — the PLSS is a self-contained unit that supplies the suit with its power and air supply. The PLSS backpack plugs into the back of any of the standard vacc suit designs, and it is operated from the suit's standard controls.

The PLSS C unit is the heaviest and has the greatest duration of the various PLSS units. A PLSS C unit includes a thruster unit capable of 1gee acceleration for 60 seconds.

TASK LIBRARY

To put on or take off a PLSS unit:
Routine, Vacc Suit, Dex, 12 sec (unskilled OK)

Referee: This task becomes Simple if the unit is TL14.

To recharge a used PLSS unit:
Routine, Vacc Suit, Edu, 20 min (unskilled OK)

To repair a damaged PLSS suit:
[varies], Electronics, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 2 min
minor damage ..... 6 min
major damage .....3 hrs
destroyed .....6 hrs

For field repair, double the time increment, in addition to other standard increases.

TAILORED VACC SUIT

Tech Level 15 soft helmet version

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	14	Vacc suit, soft helmet-14	0.2 kliters	—	Cr12,000
O	14	Vacc suit, hard helmet-14	0.2 kliters	1.0kg	Cr13,200
O	15	Vacc suit, soft helmet-15	0.2 kliters	—	Cr9,000
O	15	Vacc suit, hard helmet-15	0.2 kliters	1.0kg	Cr10,200

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Comments
O	14	see PLSS	Armor=7, no encumbrance, duration x 0.5
O	14	see PLSS	Armor=7, no encumbrance
O	15	see PLSS	Armor=7, no encumbrance, duration x 0.5
O	15	see PLSS	Armor=7, no encumbrance

PLSS USAGE RECORD (OPTIONAL)

Each square represents _____ of usage

O TL14: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ (x 0.5)

O TL14: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

O TL15: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ (x 0.5)

O TL15: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

NOTES:

DESCRIPTION

When Scouts are in the field away from civilization, (for example, when on shipboard survey or planetside wilderness exploration), the field duty uniform is the tailored Tech Level 15 vacc suit.

These suits protect against temperatures from +100°C to -110°C and pressures of up to 5 atmospheres. The suit includes a soft helmet and gloves, and can easily be used with a PLSS unit. The most common field configuration is the soft helmet, gloves, and PLSS A.

When the environment doesn't call for a sealed vacc suit, the soft helmet and gloves can be folded up and stored in one of the pockets on the vacc suit. Even unsealed, the suit is comfortable: it provides uniform cooling or heating—making it particularly comfortable in hot or cold environments (+50°C to -10°C).

Fo minor rips and tears (minor damage), the suit is automatically self-sealing.

TASK LIBRARY

To put on or take off a tailored vacc suit:
Simple, Vacc Suit, Dex, 6 sec (unskilled OK)

To use a tailored vacc suit in vacuum mode without incident:
Routine, Vacc Suit, Dex (unskilled OK, fateful)

Referee: Roll once for short excursions — two or three times for longeroutings.

To apply a patch to a torn tailored vacc suit:
Routine, Dex, 2 sec

Referee: Since a combat round is 6 sec, this task may take several rounds. After the first round, apply 1D damage to the character in the suit each round until the suit is patched.

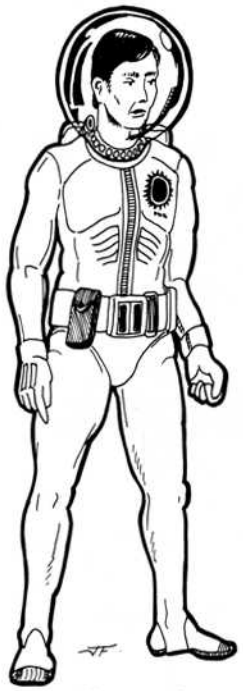
To repair a damaged tailored vacc suit:
[varies], Mechanical, Dex, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 15 sec
minor damage ..... 1 min
major damage .....1 hr
destroyed .....2 hrs

For field repair, double the time increment, in addition to other standard increases.

LIGHT DUTY VACC SUIT



Tech Level 12 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	10	Light Duty Vacc Suit-10	19.0 liters	1.5kg	Cr15,750
O	12	Light Duty Vacc Suit-12	16.5 liters	1.4kg	Cr14,500
O	14	Light Duty Vacc Suit-14	15.0 liters	1.1kg	Cr13,300

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Comments
O	10	15 min	Armor=(1), no encumbrance
O	12	20 min	Armor=(2), no encumbrance
O	14	30 min	Armor=2, no encumbrance

USAGE RECORD (OPTIONAL)

Each square represents 1 min of usage

O TL10:

O TL12:

O TL14:

NOTES:

DESCRIPTION

The light duty vacc suit is a lightweight and comfortable alternative to the general purpose vacc suit. The suit is designed to work for short periods of time under mildly hostile atmospheric conditions. It can be worn under clothes or armor.

The suit includes a special air cartridge that supplies air for 15 to30 minutes. A standard PLSS backpack can be used instead, if desired.

The suit protects against temperatures +50°C to -40°C and pressures up to 2.5 atm.

TASK LIBRARY

To put on or take off a light duty vacc suit:
Routine, Vacc Suit, Dex, 12 sec (unskilled OK)

Referee: This task becomes Simple if the vacc suit is TL12+..

To use a light duty vacc suit without incident:
Routine, Vacc Suit, Dex (unskilled OK, fateful)

Referee: Roll once for short excursions — two or three times for longeroutings.

To apply a patch to a torn light duty vacc suit:
Routine, Dex, 2 sec

Referee: Since a combat round is 6 sec, this task may take several rounds. After the first round, apply 1D damage to the character in the suit each round until the suit is patched.

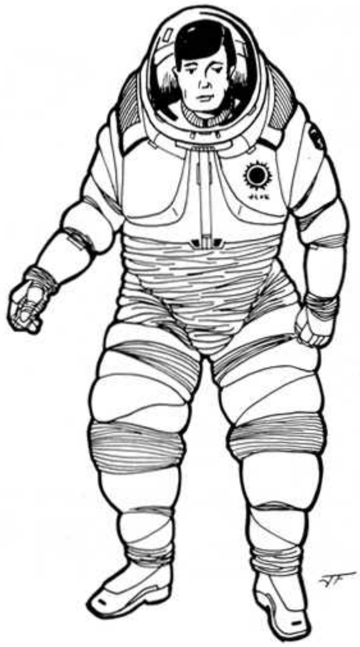
To repair a damaged light duty vacc suit:
[varies], Mechanical, Dex, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 15 sec
minor damage ..... 1 min
major damage .....1 hr
destroyed .....2 hrs

For field repair, double the time increment, in addition to other standard increases.

HOSTILE ENVIRONMENT VACC SUIT



Tech Level 13 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	8	Hostile Environ Vacc suit-8	4.6 kliters	35kg	Cr12,000
O	9	Hostile Environ Vacc suit-9	4.1 kliters	40kg	Cr16,000
O	12	Hostile Environ Vacc suit-12	3.7 kliters	10kg	Cr18,000
O	13	Hostile Environ Vacc suit-13	5.9 kliters	55kg	Cr100,000
O	14	Hostile Environ Vacc suit-14	5.7 kliters	45kg	Cr150,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Comments
O	8	see PLSS	Armor=6, encumbrance to Dex -3
O	9	see PLSS	Armor=7, encumbrance to Dex -3
O	12	see PLSS	Armor=8, encumbrance to Dex -3
O	13	see PLSS	Armor=12, encumbrance to Dex -3, powered
O	14	see PLSS	Armor=18, encumbrance to Dex -2, powered

PLSS USAGE RECORD (OPTIONAL)

Each square represents ____________ of usage

O TL8: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
O TL9: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
O TL12: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
O TL13: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
O TL14: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

NOTES:

DESCRIPTION

Hostile environment suits are usually hard molded and specially designed for corrosive or insidious atmospheric conditions. They have extra heavy shielding around the joints. This makes them heavier and more unwieldy, but when they are needed, nothing else will do.

The TL 8 suit protects against temperatures +150°C to -160°C and pressures up to 10 atm.

The TL 9 suit protects against temperatures +200°C to -180°C and pressures up to 10 atm.

The TL 12 suit protects against temperatures +500°C to -180°C and pressures up to 100 atm.

The TL 13 suit protects against temperatures +1300°C to -200°C and pressures up to 1000 atm.

The TL 14 suit protects against temperatures +1800°C to -250°C and pressures up to 1500 atm.

TASK LIBRARY

To put on or take off a hostile environ vacc suit:
Routine, Vacc Suit (or Battle Dress if powered), Dex, 1 min

To use a hostile environ vacc suit without incident:
Routine, Vacc Suit (or Battle Dress if powered), Dex (fateful, hazardous)
Referee: Roll once for short excursions — two or three times for longeroutings.

To apply a patch to a breached hostile environ vacc suit:
Difficult, Dex, 6 sec
Referee: Since a combat round is 6 sec, this task may take several rounds. After the first round, apply 2D damage to the character in the suit each round until the suit is patched. If the environment is *very hostile*, this task is Formidable.

To repair a damaged hostile environ vacc suit:
[varies], Mechanical, Dex, [varies]
Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage .... 1 min
minor damage .... 10 min
major damage ....2 hrs
destroyed ....4 hrs

For field repair, double the time increment, in addition to other standard increases.

UTILITY VEST

Tech Level 12 version illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	6	Utility Vest-6	7 liters	—	Cr100
O	8	Utility Vest-8	6 liters	—	Cr250
O	12	Utility Vest-12	4 liters	—	Cr600

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Duration	Comments
O	6	indefinite	Cotton Cloth, 6 liters of storage
O	8	indefinite	Ripstop Nylon Cloth, 7.5 liters of storage
O	12	indefinite	Levanex Cloth, 12 liters of storage

NOTES:

DESCRIPTION

The utility vest is a handy adjunct to the field excursion wardrobe. Its light weight and many storage pockets make it useful for carrying all manner of equipment. The vest can be easily put on and taken off because of its zipper closure in the front.

The tech 12 version of the vest is made of levanex, a high-tech fabric. Levanex is a light yet tough fabric that is impossible to rip. The fabic also acts as a good vapor barrier from the outside in, but ventilates well from the inside out. The pockets on the tech 12 version are a special stretch variation of levanex (called levanex-R). The pockets can be over-stuffed and they will stretch, and still remain tightly sealed — providing an excellent barrier to outside moisture. Levanex also resists lightly corrosive environments quite well.

TASK LIBRARY

To use a utility vest on a outing without incident:
Routine, Dex, Int (fateful)

Referee: Only roll if the vest not the tech 12 version. For a typical outing, roll once. For longer trips, roll two or three times.

To repair a damaged vest:
[varies], Dex, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 10 sec
minor damage ..... 1 min
major damage ..... 10 min
destroyed ..... 4 hrs

For field repair, double the time increment, in addition to other standard increases.

GRAV BELT

Tech Level 15 suit-belt illustrated

EQUIPMENT STATISTICS

	TL	Type	Vol	Wt	Price
O	12	Grav Belt-12	20 liters	15kg	Cr125,000
O	14	Grav Belt-14	16 liters	12kg	Cr110,000
O	15	Grav Belt-15	15 liters	10kg	Cr106,000

SUPPLEMENTAL STATISTICS (OPTIONAL)

	TL	Charge Duration	Operating Noise	Power Usage	Comments
O	12	1 hour	hum	5kw	Harness-belt only
O	14	4 hours	soft hum	4kw	Suit-belt not available
O	15	8 hours	none	3kw	All belt types available

USAGE RECORD (OPTIONAL)

Each square represents 1 hour of usage

O TL12: ☐

O TL14: ☐☐☐☐

O TL15: ☐☐☐☐☐☐☐☐

NOTES:

DESCRIPTION

Grav belts come in three styles: harness-belt, backbone-belt, and suit-belt. The illustration shows a tech level 15 suit-belt, which in many ways looks more like a short-sleeved suit with short pants than an actual belt.

A grav belt has a thrust of 300kg, for a typical maximum speed in a vacuum of 2,000km per hour and a vacuum cruising speed of 1,500km per hour. In an atmosphere, the belt has a top speed of 300kph, and a cruising speed of 225kph. In both environments, the nap-of-earth speed is 40kph.

TASK LIBRARY

To perform complicated maneuvers with a grav belt:
Routine, Grav Belt, Dex (hazardous)

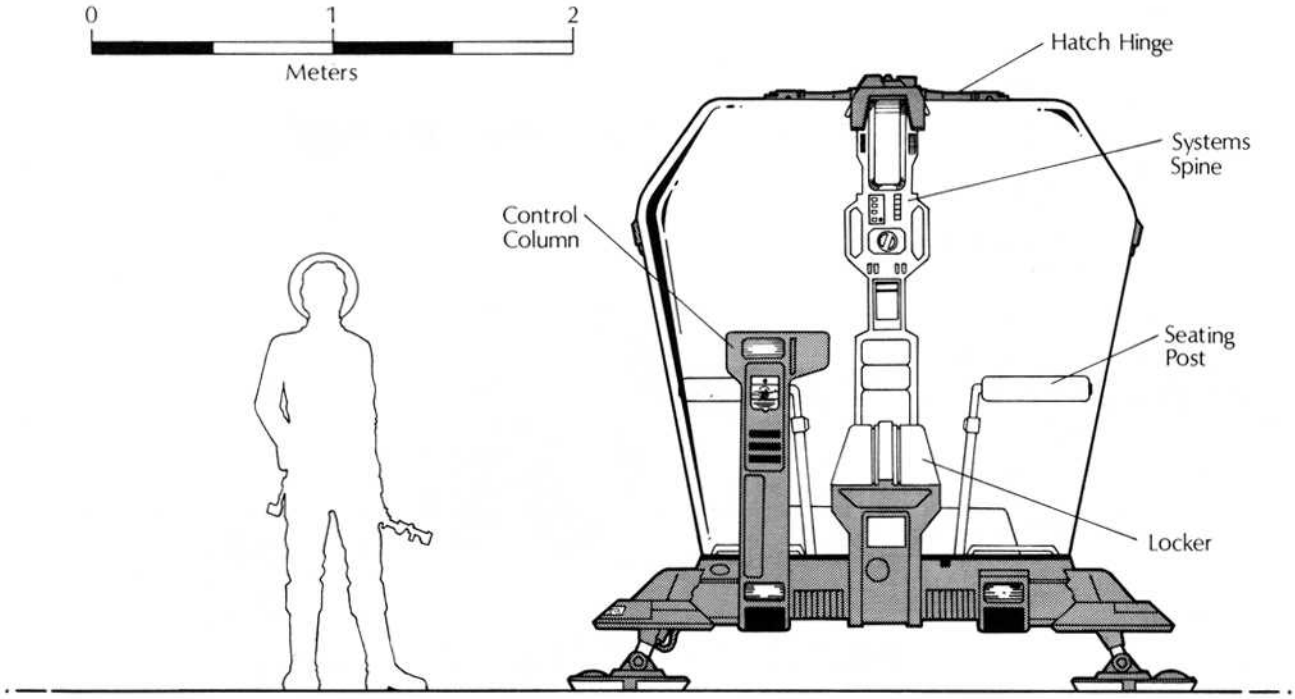
Referee: The time for this task depends on the maneuver. All complicated maneuvers are hazardous.

To repair a damaged grav belt:
[varies], Gravitics, Edu, [varies]

Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

- superficial damage .... 1 min
- minor damage .... 5 min
- major damage .... 2 hrs
- destroyed .... 5 hrs

For field repair, double the time increment, in addition to other standard increases.



FRONT VIEW

ENCLOSED TWO-MAN *CASLINE* G-TUBE

CraftID: *Casline* G-Tube, TL 12, Cr342,000
Hull: 1/2, Disp=0.5, Config=4USL, Armor=1F, Unloaded=0.9 tons, Loaded=1.0 tons
Power: 1/2, Fuel Cell x 2=0.18Mw, Dur=2/6
Loco: 1/2, LP Lt Grav, Thrust=1.2 tons, NOE=160kph, Cruise=225kph, Top=300kph, MaxAccel=0.25G
Commo: Radio=Cont (5,000km)
Sensors: Act EMS=Dist (5km), Headlights x 2, ActObjScan=Form
Off/Def: Hardpoints=1
Control: Dyn Link, HUD
Accom: Crew=1 (Operator), Seats=Cramped x 2, Env=Basic env, basic ls, inert comp
Other: Fuel=0.4kl, Cargo=0.14kl, ObjSize=Small, EmLevel=Moderate

The *Casline* class G-tube is essentially an enclosed, air-conditioned "grav belt" for two people.

The G-tube includes a heads-up status display for the operator, who should have air/raft skill or grav belt skill for safe operation. It has 2 seating posts (side by side), a 140 liter locker, a control panel, a heater/air conditioner, a sealed environment (the equivalent of a tech level 9 PLSS B for two people, giving a duration of 24 hours), landing and navigation lights, a continental range communicator, and a distant range full-band EMS sensor.

Each passenger also has enough room to carry up to 25 liters of equipment (50 liters total) in the riding area. The occupants can fit in the G-tube while wearing a tech level14+ vacc suit or a tech level 10+ light duty vacc suit. Standard vacc suits of tech level 13 or less are too bulky to allow the occupants to fit in the G-tube.

A fuel capacity of 400 liters provides the power for 48 hours hours of 1,200kg thrust.

The ride in the G-tube is very smooth. Although riders are not sitting, but rather leaning against one of the seat posts with their feet slipped under floor straps, inertial compensators guarantee comfort. Even if the vehicle were flying upside down, with their eyes closed the riders would be unaware of any sensation of motion.

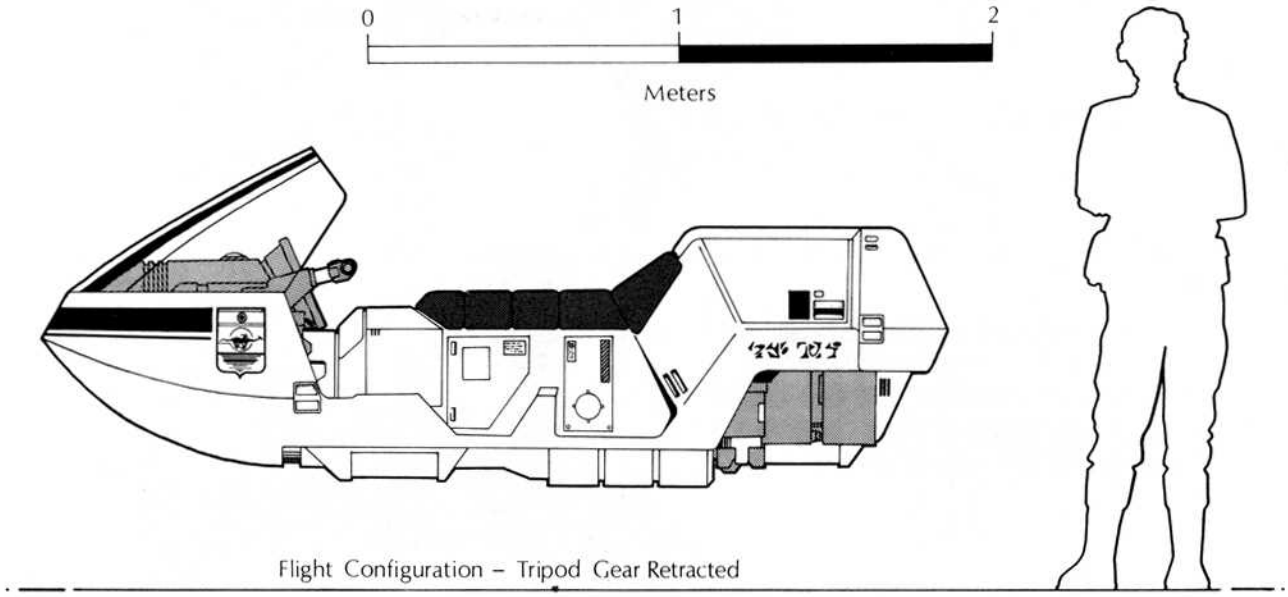
TASK LIBRARY:

To fly a g-tube without incident:
Routine, Grav Veh, Dex (fateful)
Referee: Roll once for short trips, two or three times for longer journeys.

To repair a damaged g-tube:
[varies], Gravitics, Edu, [varies]
Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 2 min
minor damage..... 15 min
major damage..... 6 hrs
destroyed..... 15 hrs

For field repair, double the time increment, in addition to other standard increases.



TWO MAN *TRASEA* GRAV "BIKE"

CraftID: *Trasea* Grav Bike, TL 12, Cr171,600
Hull: 1/2, Disp=0.25, Config=4SL, Armor=1F, Unloaded=1.0 tons, Loaded=1.1 tons
Power: 1/2, Fuel Cell x 3=0.27Mw, Dur=2/6
Loco: 1/2, LP Hvy Grav, Thrust=1.3 tons, NOE=160kph, Cruise=225kph, Top=300kph, MaxAccel=0.25G
Commo: Radio=Rgnl (500km)
Sensors: Act EMS=Dist (5km), Headlights x 2, ActObjScan=Form
Off/Def: Hardpoints=1
Control: Computer=0 x 2, DynLink, HUD
Accom: Crew=1 (Operator), Seats=Cramped x 2, Open-topped
Other: Fuel=0.6kl, Cargo=0.05kl, ObjSize=Small, EmLevel=Moderate

The *Trasea* class grav "bike" is a popular alternative to a grav belt. It costs very little more than a grav belt and has cargo space besides. In addition, it can carry a second rider, who can work (or shoot) undistracted while the pilot flies the craft.

The vehicle also includes complete computer control (with backup) allowing the operator to work undistracted while the craft flies itself to the desired destination. Manual control is recommended during hazardous or combat situation, however.

The craft's parabolic nose and windshield are designed both for streamlined flight and to protect its riders. Carrying 600 liters of fuel, the craft can mount 1,300kg of thrust for up to 48 continuous hours. In 8 hour shifts, the fuel supply will last for 6 full days. A hatch in the rear opens to a cargo space of 50 liters.

The grav bike has built-in avionics, giving it good nap-of-earth abilities, which the belt does not have. Since, however, the bike has no inertial compensators, certain precautions are necessary for NOE flights.

TASK LIBRARY:

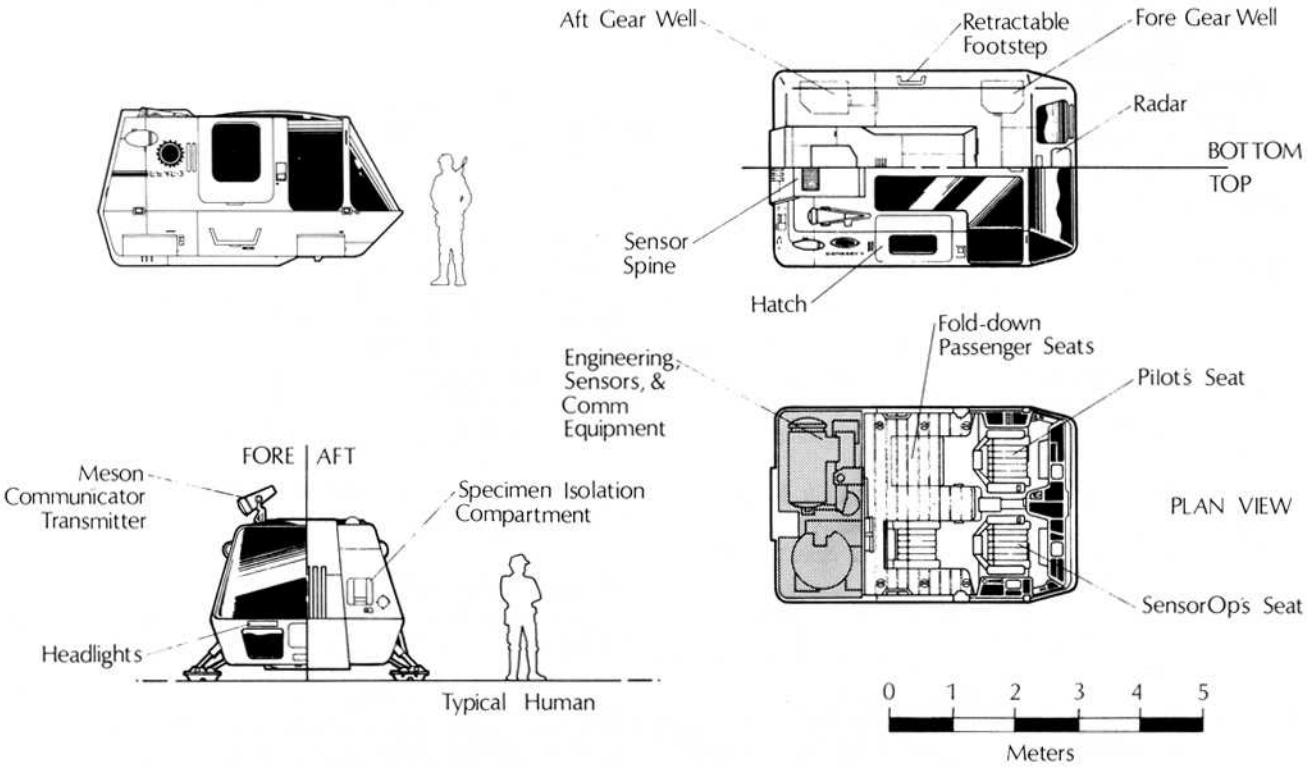
To fly a grav "bike" without incident:
Routine, Grav Veh, Dex (fateful)
Referee: Roll once for short trips, two or three times for longer journeys.

To avoid nausea on a grav bike NOE flight:
Difficult, Grav Veh, End (fateful)
Referee: One roll per NOE flight. If a mishap occurs:
Superficial — character is sick; roll again
Minor — character must slow craft or reroll as hazardous
Major — character must stop craft or reroll as hazardous.
Above tech level 10, drugs are available that make this task unnecessary.

To repair a damaged grav bike:
[varies], Gravitics, Edu, [varies]
Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage	2 min
minor damage	15 min
major damage	6 hrs
destroyed	15 hrs

For field repair, double the time increment, in addition to other standard increases.



FOUR MAN *HURRICANE* AIR/RAFT

CraftID: *Hurricane* Air/Raft, TL 15, Cr5,085,600
Hull: 3/7, Disp=3, Config=4USL, Armor=10G, Unloaded=10 tons, Loaded=17 tons
Power: 1/2, Fusion=6Mw, Dur=20/59
Loco: 1/2, Std Grav, Thrust=21 tons, NOE=190kph, Cruise=180kph, Top=240kph, MaxAccel=0.2G
Commo: Radio=Cont (5,000km) x 2, Meson=Cont (5,000km)
Sensors: Act EMS=Dist (50km), Neutrino=10kw, Pass EMS=VDist (50km), Headlights x 2, Densitometer=HiPen/1km, NAS Sensor=VLong (0.5km), ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Rout, PassObjPin=Rout, PassEngScan=Rout, PassEngPin=Rout (see page 46)
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Holo Dyn Link x 1, HUD
Accom: Crew=1 (Operator), Seats=Adequate x 4 Env=Basic env, basic ls, ext ls, grav plates, inert comp
Other: Fuel=4kl, Cargo=7kl, ObjSize=Small, EmLevel=Moderate

The *Hurricane* class air/raft is a popular model with allImperial military services, but especially popular with Scouts. More than 60,000 of these vehicles are in use by the Scouts throughout the Imperial region.

With its fuel supply of 4,000 liters, the air/raft has an operational duration of 20 full days, or 60 days with 8-hour shifts.

The air/raft's sealed environment can be pressurized to provide full life support for its crew. EMS active and passive sensors, a neutrino sensor, and a densitometer give a full range of information to the surveyors on board. A meson communicator allows near-instant contact with any other station within continental range.

Besides the pilot and three passengers, the air/raft can carry 7 kiloliters of cargo. With two passenger seats folded out of the way, the vehicle can carry twice as much cargo: 14 kiloliters in all.

Three *Hurricane* air/rafts are typically carried by a *Donosev* class Scout survey ship.

TASK LIBRARY:

To fly an air/raft without incident:
Routine, Grav Veh, Dex (fateful)
Referee: Roll once for short trips, two or three times for longer journeys.

To repair a damaged air/raft:
[varies], Gravitics, Edu, [varies]
Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 2 min
minor damage..... 20 min
major damage..... 8 hrs
destroyed..... 20 hrs

For field repair, double the time increment, in addition to other standard increases.

TL15 *KANKURUR* G-CARRIERTASK LIBRARY:

CraftID: *Kankurur* G-Carrier, TL 15, Cr10,630,600
Hull: 10/25, Disp=11, Config=4SL, Armor=10G, Unloaded=55 tons, Loaded=82 tons
Power: 1/2, Fusion=25Mw, Dur=20/60
Loco: 1/2, Std Grav, Thrust=99 tons, NOE=190kph, Cruise=180kph, Top=240kph, MaxAccel=0.2G
Commo: Radio=Cont (5,000km) x 2, Meson=Planetary (50,000km)
Sensors: Act EMS=Dist (50km), Pass EMS=VDist (50km), Neutrino=10kw, Densitometer=HighPen/1km, NAS Sensor=VLong (0.5km), Headlights x 2, ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Rout, PassObjPin=Rout, PassEngScan=Rout, PassEngPin=Rout
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Holo Dyn Link, HUD
Accom: Crew=1 (Operator), Seats=Roomy x 6, Env=Basic env, basic ls, ext ls, grav plates, inert comp
Other: Fuel=22kl, Cargo=27kl, ObjSize=Small, EmLevel=Moderate

The *Kankurur* class G-Carrier, manufactured by the Imperial megacorporation Ling Standard Products, is heavily used by the Scouts and the Navy. The craft mounts a full array of sensors and a planetary range meson communicator, which makes the *Kankurur* quite useful for survey and reconnaissance missions.

The *Kankurur* class was designed in 1095; the first model was commissioned in 1097. Individual models are named after significant life forms on member worlds of the Imperium. The kankurur is a large bird of prey native to Vland. Capable of carrying up to 20kg in its talons, the bird was trained and used like the Terran carrier pigeon. The kankurur could carry not only paper messages, but also small cargoes.

The vehicle is of tech level 15 construction throughout, with features to support both survey and exploration missions with full crews.

With its fuel supply of 22,000 liters, the air/raft has an operational duration of 20 full days; this equates to 60 days of 8-hour shifts.

With its ultraheavy grav modules providing 99 tons of thrust, the Scout G-carrier has a top speed of 240kph, with a cruising speed of 180kph and a NOE speed of 190kph.

The G-carrier's sealed environment can be pressurized to provide full life support for its crew. An airlock in the aft section opens to the roof as well as aft. A galley, four fold-up bunks, and a fresher allow extended missions.

EMS active and passive sensors, a neutrino sensor, and a densitometer give a full range of information to the surveyors on board. A meson communicator allows near-instant contact with any other station within planetary range.

Besides the pilot and five passengers, the G-carrier can carry 7 kiloliters of cargo in the main cabin and 20 kiloliters in the airlock. Unloaded, the craft weighs 55 tons; with crew and maximum cargo, it weights 88 tons. The G-carrier as described costs MCr10.631.

TASK LIBRARY:

To fly a G-carrier without incident:
Routine, Grav Veh, Dex (fateful)
Referee: Roll once for short trips, two or three times for longer journeys.

To repair a damaged G-carrier:
[varies], Gravitics, Edu, [varies]
Referee: Difficulty depends on the damage level: use the standard damage and repair guidelines. Time increments for shop repair are as follows:

superficial damage ..... 2 min
minor damage..... 20 min
major damage..... 8 hrs
destroyed..... 20 hrs

For field repair, double the time increment, in addition to other standard increases.

SENSOR OPERATION

Here are the Sensor Difficulty Tables (difficulty is by range) for the various vehicles presented in this section.

***Kankurur* G-Carrierand*Hurricane* Air/Raft:**

ActObjScan (active sensor search for objects):
ActObjPin (active sensor pinpoint of located objects):

M	L	VL	D	VD	RG	CN	PL	FQ	XQ+
—	S	S	S	R	R	D	F	I	—

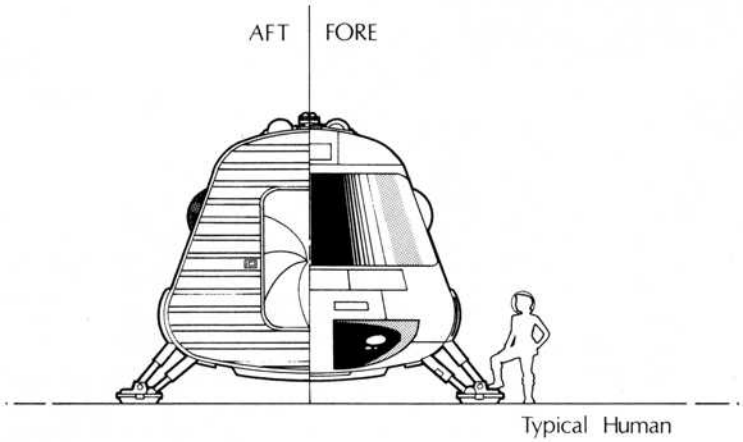
PasObjScan (passive sensor search for objects):
PasObjPin (passive sensor pinpoint of located objects):
PasEngScan (passive sensor search for sources):
PasEngPin (passive sensor pinpoint of located sources):

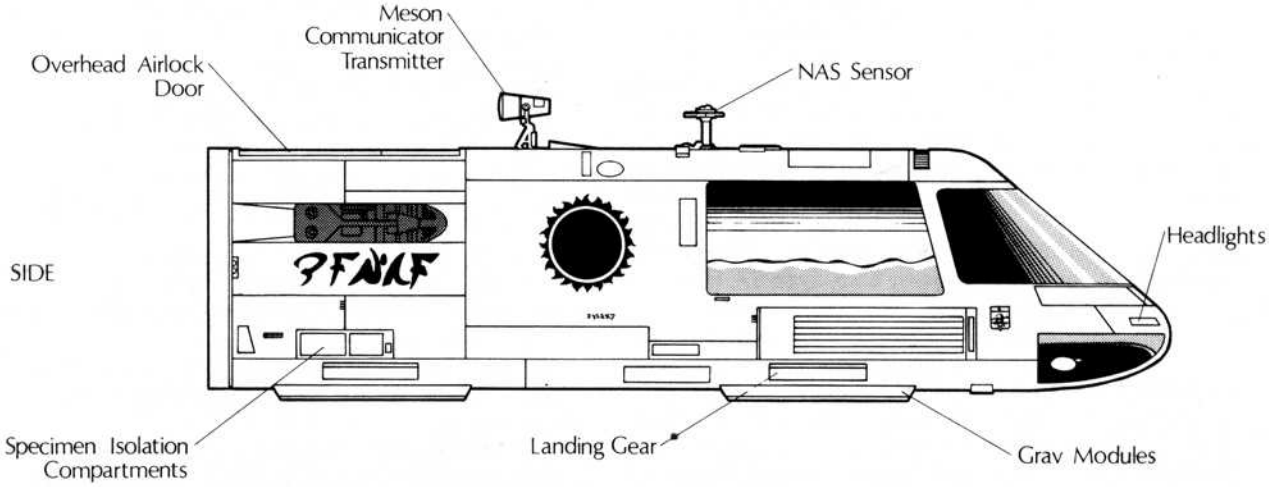
M	L	VL	D	VD	RG	CN	PL	FQ	XQ	IP+
—	—	S	S	S	R	R	D	F	I	—

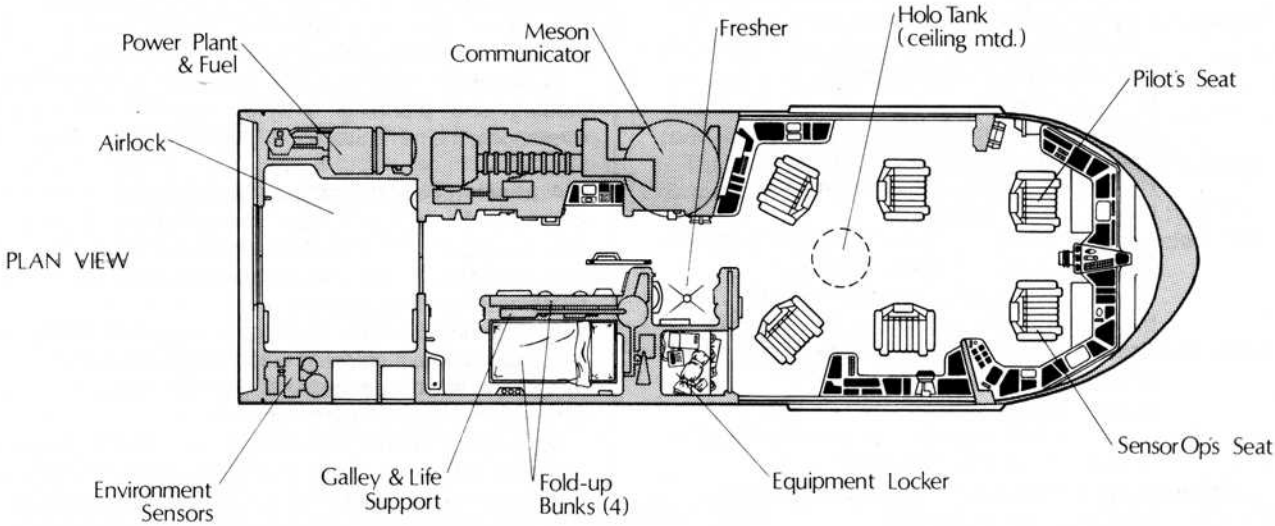
***Trasea* Grav "Bike" and *Casline* G-Tube:**

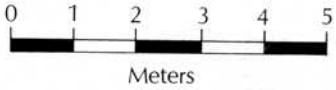
ActObjScan (active sensor search for objects):

M	L	VL	D	VD	RG	CN	PL	FQ+
S	S	S	R	D	D	F	I	—

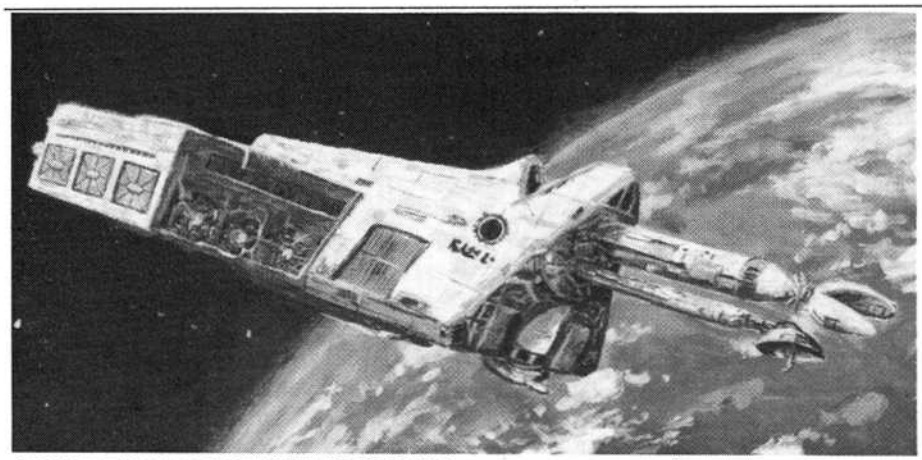








IISS Survey G-Carrier



DONOSEV CLASS SURVEY STARSHIP

Villemina Donosev held the post of Master Chief Surveyor of the Imperial Grand Survey when the First Survey was published in 420. Her unstinting devotion was instrumental in bringing the hundred-year project to a successful close. When a new class of ship was commissioned for the Second Survey, it was decided to name the class for her. Individual ships are named for famous scouts in the Imperial service.

The ship is categorized as "SZ", or "Scout experimental", and in fact three different versions of this ship have been built. The most recent, described here, was the result of improvements to sensor placement made during the Second Survey.

UNIVERSAL CRAFT PROFILE

CraftID: *Donosev* Scout Survey Ship, Type SZ, TL15, MCr145.177*
Hull: 360/900, Disp=400, Config=4USL, Armor=40G, Unloaded=3,590 tons, Loaded=4,270 tons
Power: 3/6, Fusion=3,565Mw, Duration=100
Loco: 18/36, Maneuver=2; 15/30, Jump=3; NOE=190kph, Agility=2
Commo: Radio=systemx2, MesonCom=regionalx2, LaserCom=systemx2, MaserCom=systemx2
Sensors: PassiveEMS=interstellarx2, ActiveEMS=farOrbitx2, Densitometer=highPen/1kmx2, Neutrino=1kwx3, ActObjScan=Rout, ActObjPin=Rout, PasObjScan=Rout, PasObjPin=Rout, PasEngScan=Simp, PasEngPin=Rout
Off/Def: Hardpoints=4, DefDM=+9
Control: Computer=5/fibx4, Panel=holodynamic linkx30, Special=headsUp holodisplayx10, large holodisplayx1, Environ=basic env, basic ls, extend ls, grav plates, inertial comp
Accomm: Crew=10 (Command=1, Bridge=1, Engineer=1, Maint=1, Flight=3, Medical=1, Survey Specialists=2), Staterooms=10, SubCraft=40-ton modular cutter + 1 fuel module + 1 lab module, 3-ton air/raftx3
Other: Cargo=270kl, Fuel=1,790kl, ObjSize=avg, EMLevel=moderate

*price includes cost of modular cutter and one extra module.

Using a 400-ton hull, the *Donosev* Class Survey Scout is used to continually resurvey the interior regions of the Imperium, updating maps and charts and maintaining beacons and markers for astrogation hazards.

Construction and material standards for exterior features, interior details, and interior conditions are typical of those found in Imperial military vessels.

As is the case with most modern Scout vessels, the *Donosev* Class Survey Scout is not equipped for use in hostile areas.

When a *Donosev* Class Survey Scout is on a survey (as opposed to exploration mission), its crew of 10 typically includes the following members with the minimum skill levels shown: a pilot (pilot-2), a navigator (navigation-2), a n engineer (engineering-2), a doctor (medical-3), a lead surveyor (survey-2), and several surveyors (survey-1). Air/raft-1, ship's boat-1, and survival-1 are other important skills that should be possessed by some combination of the surveyors.

The configuration shown here, with a small craft bay holding three *Hurrican* class air/rafts, is the most common. Twenty seven percent of the Donosev class vessels, however, are a variant design that carries one *Kankurur* class G-carrier instead of the three smaller air/rafts. In this version, the lower deck is an additional 2 meters high to accommodate the G-carrier's additional height. In addition, the landing bay is 1.5 meters wider to allow for the *Kankurur's* greater width.

The numbered areas shown on the deck plan are as follows:

1. Bridge: The foreward wall of the bridge contains a large window, giving a view of the area fore and starboard of the vessel. All of the non-engineering functions of the ship except for piloting can also be controlled from the holo pit (Area 41) when the ship is in orbit around a world or otherwise surveying a star system.

2. Pilot Station: The pilot station is always occupied by a Scout with a skill of at least pilot-2. Adjustments to an orbit are common during a survey, as are adjustments to ship orientation. The pilot from this station controls general operations of the ship, including instructions to engineering.

3. Navigator Station: The navigator is responsible for plotting and planning a ship's course. During survey operations, the navigator usually operates the mission control station.

4. Mission Control Station: The navigator sits here during a survey. He receives requests from the lead surveyor, who oversees operations in the holo pit. The navigator monitors the position of the ship and the status of ship sensors, and tells the pilot where the ship needs to be.

5. Engineer Station: The engineering station on the bridge is a slave panel, displaying status of the maneuver drive,the jump drive, and the power plant, as well as reporting on energy consumption by various ship operations.

6. Fuel Purification Plant: Free fuel can be scooped from a gas giant or ocean using the cutter, as long as the fuel is purified before it is used in the ship's engines or power plant.

7. Lounge: Scout survey voyages can be long and tedious; the ship's lounge is better than most found on military vessels. It includes both recreation and eating areas.

8. Galley: Food and food preparation equipment is housed here.

9. Stateroom: Staterooms on *Donosev* class vessels are

made to be comfortable for extended expeditions. Each stateroom is three tons, about fifty percent larger than typical starship staterooms.

10. Stateroom:

11. Stateroom:

12. Stateroom:

13. Stateroom:

14. Stateroom:

15. Stateroom:

16. Jump Drive: A 16-ton jump drive allows jump-3, using 120 tons of fuel, or shorter jumps at a cost of 40 tons per jump.

17. Jump Engineering Station: An engineer mans this station to calibrate the jump drive and to monitor the drive during entry into jump.

18. Maneuver Drive: A 20-ton maneuver drive allows 2G acceleration.

19. Cargo Hold: The cargo hold has a capacity of15 tons. The hold can be pressurized if desired. Special baffles reduce the amount that the hold's artificial atmosphere mixes with the atmosphere of the rest of the ship. Even so, most samples are kept in airtight containers.

20. Cargo Hold Airlock: The outer door to the hold is 4.5m wide and 3m tall.

21. Power Plant: A 12-ton power plant supplies 12 energy points, using 12 tons of fuel. This allows power for 4 weeks, including time spent in jump.

22. Power Plant Main Engineering Station: An engineer operates this station on an as-needed basis.

23. Power Plant Secondary Engineering Station: An engineer operates this station on an as-needed basis.

24. Power Plant Secondary Engineering Station: An engineer operates this station on an as-needed basis.

25. Computer: The Model/5 computer is supported by extensive data banks, accounting for its larger than normal size. About two trillion words of data are stored online. The massive processing capacity supports not only the usual bridge and engineering functions, but also the sensors and holo pit display. The main console is located in this area. The computer, avionics, sensors, and holo display use fully one-fourth of the ship's electrical power.

26. Air/Raft Garage Airlock: Access to the air/raft garage from within the ship is provided through this airlock.

27. Survey Module Hangar Airlock: Access to the survey module hangar from within the ship is provided through this airlock. Also at this location, an iris valve in the ceiling leads up to A Deck for emergency use.

28. Laboratory: The research laboratory houses special equipment for specimen study, as well as technical facilities forcalibration and maintenance of handheld survey devices.

29. Stateroom:

30. Air/Raft Garage Area A: Survey air/rafts hold four passengers (or two passengers and four tons of cargo) and are enclosed. Cruising speed is 100 kph.

31. Air/Raft Garage Area B:

32. Air/Raft Garage Area C:

33. Commander's Office: The pilot of a Scout survey ship is commander of the mission, and as such merits a private office as well as a stateroom.

34. Commander's Stateroom:

35. Avionics: Avionics equipment on a *Donosev* class vessel includes a transponder, a gyroscope, and general instruments for flying the ship.

36. Survey Module Hangar: Two 30-ton modules are available for use with the cutter: a fuel skimmer module and a survey module. The fuel skimmer module is intended to dive into gas giants and skim their hydrogen gas for fuel. The module may be used to dip water from oceans as well. It carries 28 tons of fuel. One trip into the atmosphere of a gas giant and back takes three hours, so the ship can be refueled in five trips, or 15 hours. The survey module is used for suborbital surveys, when a special-purpose, closer scan is needed.

37. Cutter Hangar: The cutter consists of a 20-ton frame, which is used in combination with one of the 30-ton modules. The combination is capable of 4G operations and carries a crew of one (pilot). When the survey module is used, a lead surveyor assists the pilot while up to four other surveyors gather data using the module's instruments. The cutter has a four-ton bridge with a Model/1 computer. When the cutter is operated without a module, it has a smaller total displacement and thus greater performance: its 4G acceleration is increased to 6G.

38. Cutter Hangar Airlock: Access to the cutter hangar from within the ship is provided through this airlock.

39. Survey Office: The lead surveyor uses this office to coordinate the ongoing gathering of information, and to assemble the data collected into its final form.

40. Lead Survey Stateroom:

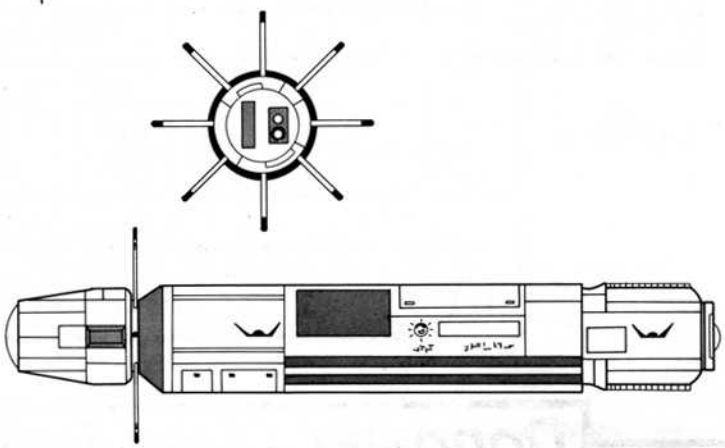
41. Holographic Survey Station: The "holo pit" has stations for the lead surveyor and four survey assistants. More detail on holo pit operations and procedures can be found elsewhere in this book.

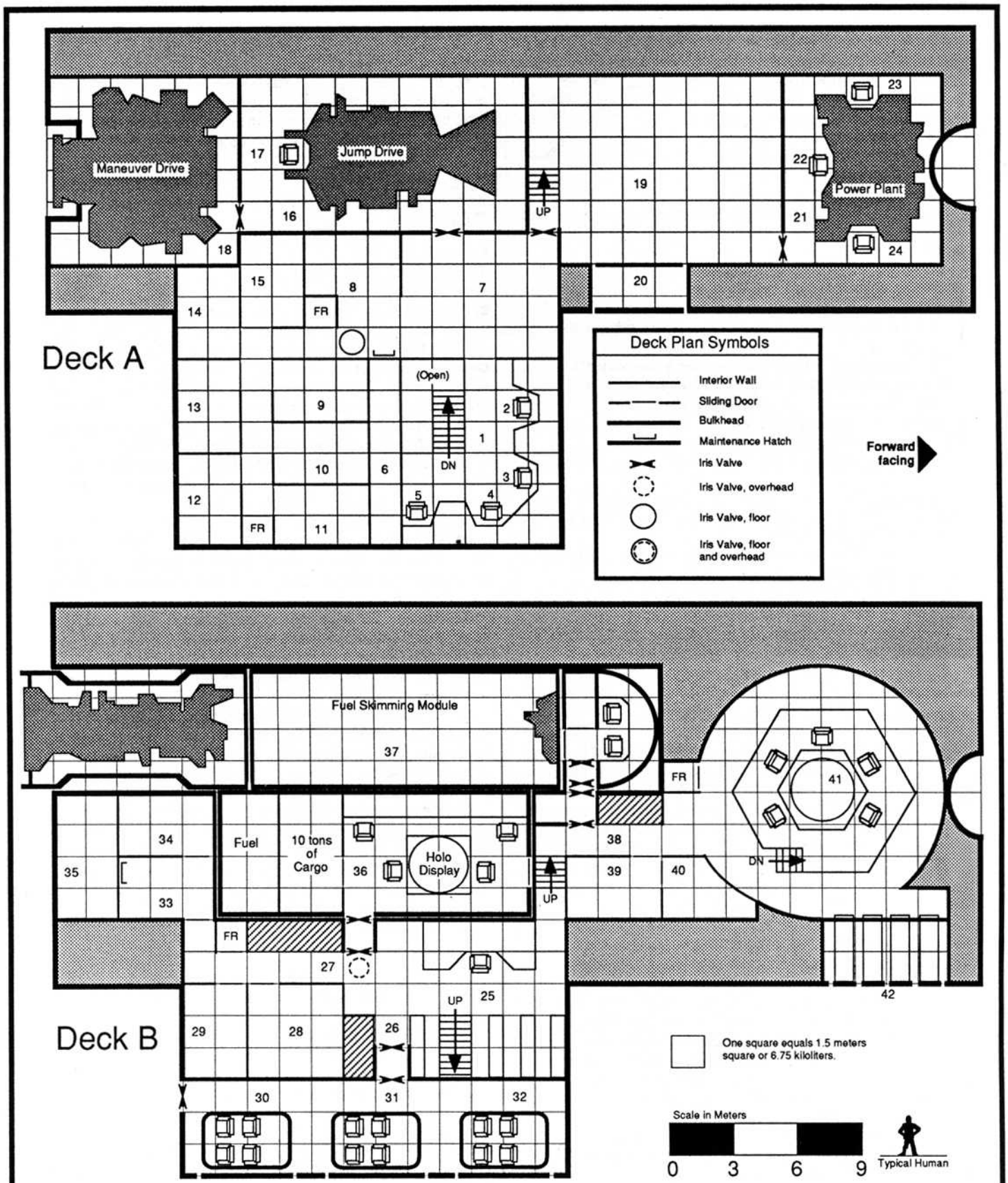
42. Probe Storage and Launching: A variety of special-purpose probes may be used during a world survey, particularly when unsafe conditions prevent the use of landing parties. These probes are stored and launched from this area.

As an example, Donosev vessels generally carry several remote NAS probes. The probe's batteries power its grav locomotion and sensors for up to 24 hours at a time, and its continental range communicator allows total control of its operations from the orbiting ship.

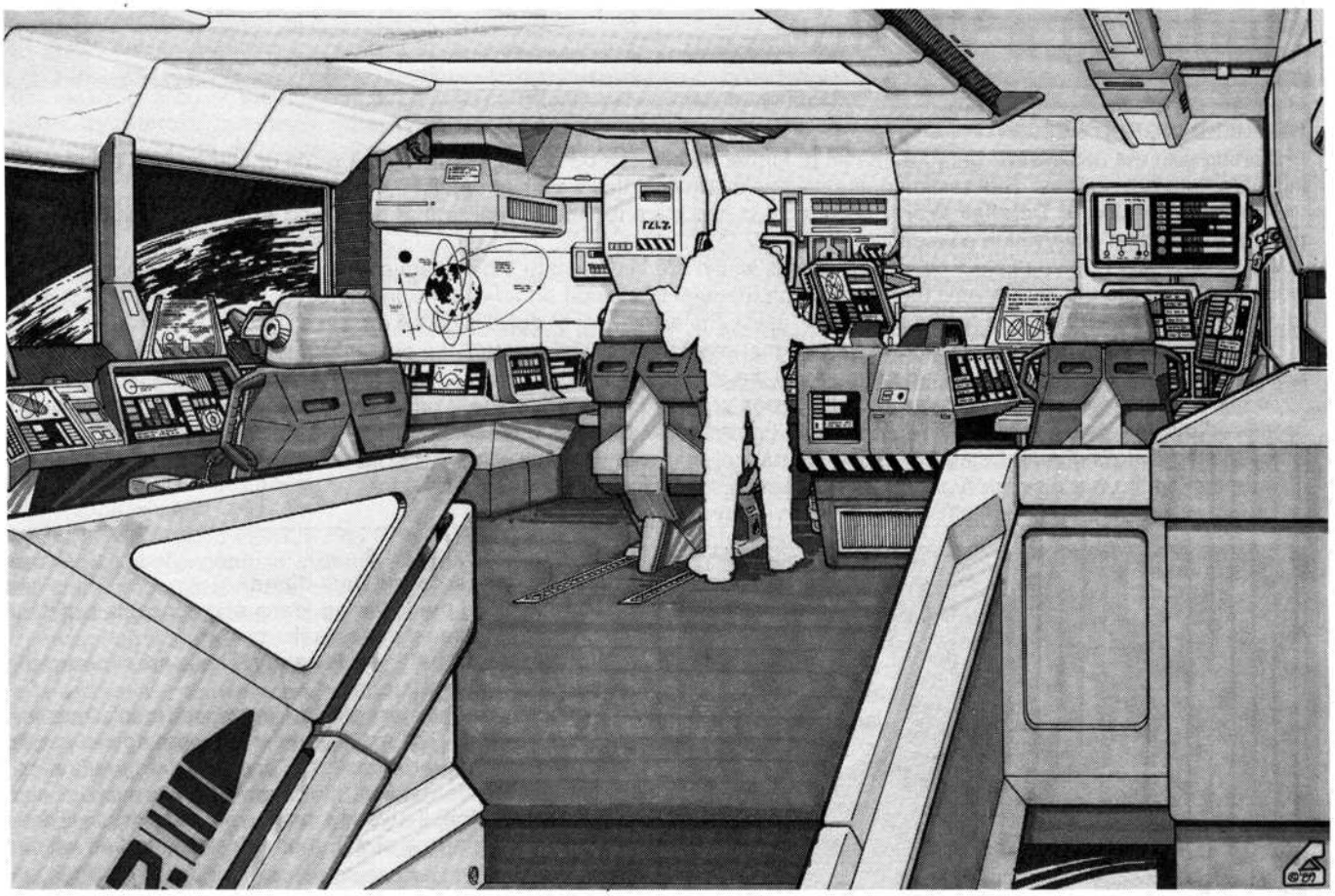
The neural activity sensor (the functional equivalent of a TL 15 NAS handheld model) is guided by a surveyor who can see and hear what is going on around the probe, by means of an audio microphone and a holographic camera, complete with telescopic and light intensifying abilities.

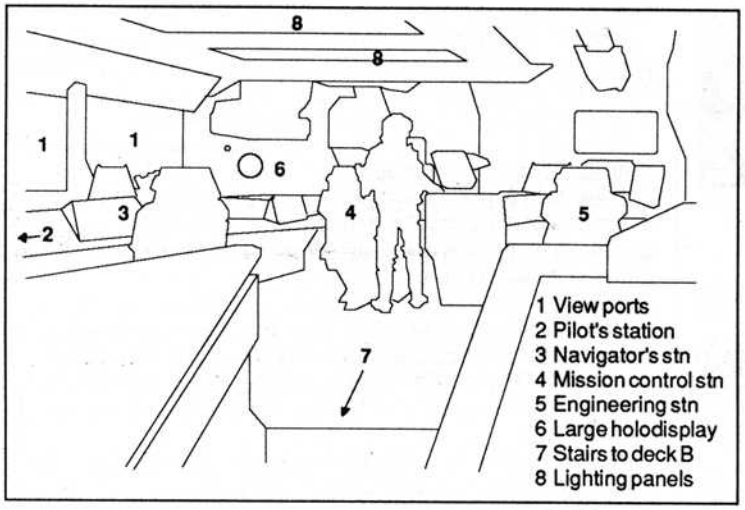
The probe, illustrated below, is a cylinder 0.1 meters in diameter and about 1 meter long:

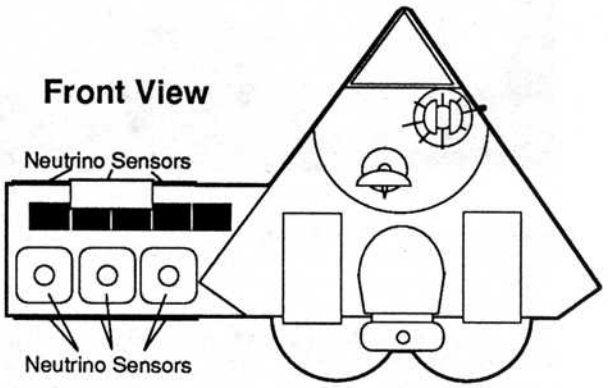


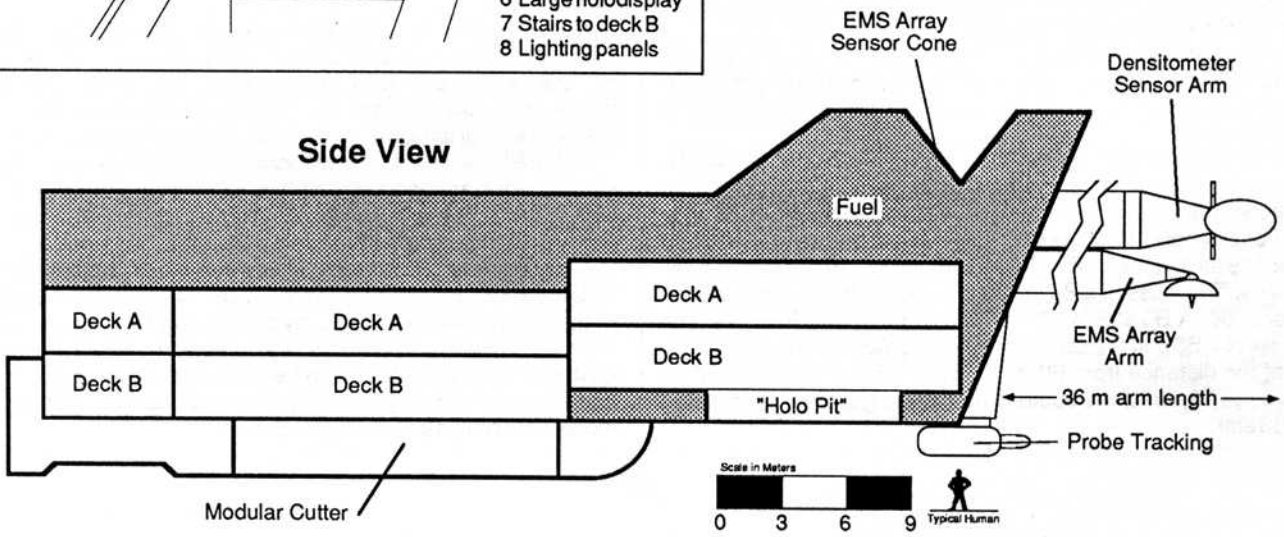


Donosev Class Scout Survey Ship




8
8
1
1
6
3
4
5
2
7
1 View ports
2 Pilot's station
3 Navigator's stn
4 Mission control stn
5 Engineering stn
6 Large holodisplay
7 Stairs to deck B
8 Lighting panels


Front View
Neutrino Sensors
Neutrino Sensors


EMS Array
Sensor Cone
Densitometer
Sensor Arm
Side View
Fuel
Deck A
Deck A
Deck B
Deck B
Deck A
Deck B
"Holo Pit"
EMS Array
Arm
36 m arm length
Probe Tracking
Modular Cutter
Scale in Meters
0
3
6
9
Typical Human

Building a World

DETAILED WORLD DESIGN

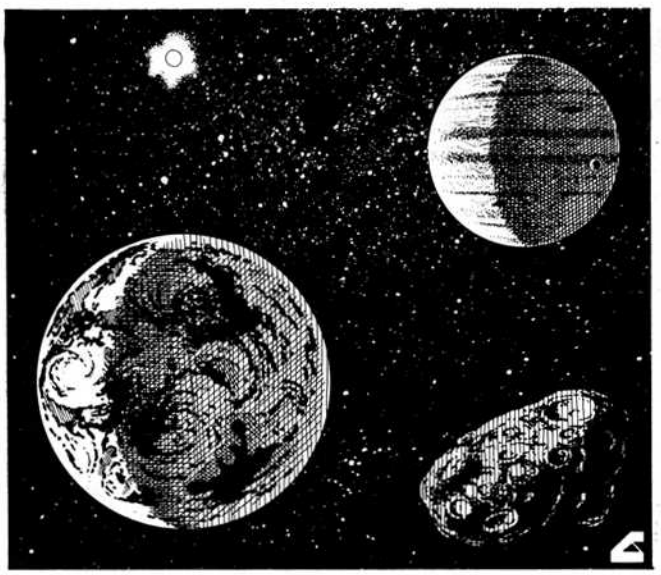
Starting with the basic UWP data , a myriad of further details can be added, resulting in a world or star system full of exciting adventure possibilities. This section presents how to arrive at this wealth of detail.

The Practicalities of Detailed World Design: It is important for you to realize that producing extra world detail with the rules in this section is *very* time consuming.

We recommend that you select only those details which are important to a given adventure. Alternatively, select a specific world and generate the details until there is enough material to support an adventure. In any case, the extra detail is tedious to produce, and the effort need not be expended unless the extra level of detail is called for.

(With experience generating detailed world designs, you can also "short circuit" the process somewhat by just estimating or picking reasonable values without going through all the steps.)

To make it easy to detail only the parts of the world you are interested in, the World Design step charts in this section are organized by Universal World Profile (UWP) digit. For example, to detail the items related to the UWP size digit, consult the *Size-Related Details* charts. Using just those charts, not only can you determine the world's size more exactly, but you can also determine the world's density, mass, gravity, and other size-related details.



DETAILED WORLD DESIGN

General Concepts And Definitions

General concepts and terms referred to on all the world building step charts are explained below.

Star System Orbital Zones: All through the step charts in world design, reference is made to "Orbital Zones". As an aid to you, the Star System Orbital Zones charts from page 27 of the **MegaTraveller** *Referee's Manual* have been reprinted at the front of the step charts section.

Interpolation: The data for stars is presented for the spectral types with decimal subclassifications 0 and 5. The decimal subclassifications 1, 2, 3, 4 or 6, 7, 8, 9 can be determined using interpolation.

Interpolation calls for determining a percentage of the distance the desired point is from an end point, and applying that percentage to the difference between the end points.

For example, the mass of a B3 Ia star can be interpolated from the Stellar Masses table in step 7a of the size related detail charts. The mass of a B0 Ia star is 60, while the mass of a B5 Ia star is 30. A B3 star is 3/5 of the distance from B0 to B5. The mass of a B3 star is thus equal to 60 (the B0 star mass) minus 3/5 of the distance from 60 to 30 (60-30=30) . Taking 3/5 of 30 gives us 18, which we subtract from 60, to get 42 — the mass of a B3 star.

SIZE-RELATED DETAILS

Important Concepts and Definitions

Understanding the following terms and concepts is helpful when using the size-related step charts.

World Mass, Density, and Gravity: These are expressed in terms of "earths", that is, earth=1.

Stellar Mass: The mass of a star, expressed in solar masses.

Orbital Period: The term "local year" refer's to a given world's orbital period, while the terms "year" and "standard year" refer to the Imperial standard year of 365 days of 24 hours each.

Rotation Period: If a world's rotation period is infinite (it does not spin about its axis at all), then it is tidally locked with its primary.

Axial Tilt: Axial tilt has no meaning if the world is tidally locked.

Orbital Eccentricity: Orbital eccentricities are generally small and minor in their effects on a world's environment. However, "extreme" orbital eccentricity can produce quite unusual effects, especially on otherwise Terran type worlds.

Seismic Stress Factor: The stress factor describe a world's likelihood of geologic activity.

Planetoid Belts: Planetoid belts (or asteroid belts) are accumulations of rock chunks and ice chunks not large enough to qualify as planets. A world size of zero in a planetary orbit indicates a planetoid belt is located there.

Detailing a planetoid belt is somewhat different from detailing a planet, and a special set of steps are provided. The special terms used in defining planetoid belts are discussed below.

Types of Planetoids: There are four basic types of planetoids that can be found in belts: nickel-iron, stony, carbonaceous, and icy.

Nickel-Iron Planetoids: Nickel-iron planetoids contain a high quantity of nickel-iron, and as such are sources of metal. Nickel-iron planetoids also frequently contain deposits of valuable dense metals or radioactives. Nickel-iron asteroids, the most valuable kind of asteroid, are typically a medium gray in color.

Stony Planetoids: The most common of all planetoids, these stony chunks are primarily just "big rocks" composed of silicon compounds. There is rarely any market for these asteroids. Stony asteroids generally are light gray and or tan in color.

Carbonaceous Planetoids: These planetoids are composed of carbon compounds somewhat like tar. The primary elements of these asteroids -- carbon, hydrogen, oxygen, and so on -- have value mainly in systems without a hospitable mainworld. Carbonaceous planetoids can be used to make oil, synthetics, and even food and water. Carbonaceous asteroids are commonly dark brown to dull black in color.

Icy Planetoids: Dirty ice-balls of frozen water, ammonia, and methane, these ice chunks are primarily of value as a source of hydrogen fuel. In systems where gas giants cannot be used for one reason or another, these asteroids become particularly valuable. Icy asteroids can vary in color throughout the spectrum, from bright white to dull black, depending on the impurities mixed in with the ice.

Belt Zones: Most belts exhibit a series of areas or zones where a high percentage of a given asteroid type can be found.

The Nickel-Iron Zone (N-Zone): This area contains mostly nickel-iron and stony planetoids. Some icy or carbonaceous asteroids may be found.

The Mixed Zone (M-Zone): This is a transitional zone where the proportions of nickel-iron and carbonaceous asteroids shift from the concentrations of the N-zone to those of the C-zone. The most common planetoid type in this zone is stony.

The Carbonaceous Zone (C-Zone): This term applies to the outer zone where mostly stony and carbonaceous asteroids may be found. If the belt has icy planetoids, they are most likely in this zone as well.

Ring Systems: In effect, a ring system is a planetoid belt orbiting a planet or gas giant instead of orbiting a star. Ring systems are predominately one planetoid type, either nickel-iron (rare), stony, carbonaceous, or icy.

An icy ring system is often spectacular — like Saturn's rings, for instance. A stony ring system (or the rare nickel-iron one) is less impressive, and a carbonaceous ring is often quite dark.

Gas Giants: Gas giants are unlike planets in many respects, differing in size, composition, atmosphere, as well as in other ways. Detailing a gas giant is different from detailing a planet — special steps in the charts cover gas giants.

Size: Size is the most obvious feature of a gas giant. Size ranges from 40,000 kilometers to 240,000 kilometers or more in diameter. Standard practice measures the diameter at the point where atmospheric pressure is 1 tmosphere.

Composition: If a solid core exists, it will be roughly the size of a large rocky planet, but surface conditions will be infinitely more hostile. Only the tremendous pressure of the encircling gas layers keeps such a hot rocky core in a solid state.

Surrounding the core is an ocean of liquid gas (usually hydrogen, ammonia, or methane) thousands of kilometers deep. The tremendous weight of the planet's atmosphere presses upon this ocean, causing it to behave like a sea of liquid metal with thermally and electrically conductive properties.

Atmosphere: Above the solid and liquid central regions of the planet lies the gaseous atmosphere itself. Here, a mix of hydrogen, helium, methane, ammonia, and many other gaseous compounds may exist. Winds can blow at speeds of up to 1,500 kilometers per hour in the atmosphere of a gas giant; tremendous convection currents rise, driven by the great heat of the core; massive permanent storms (such as the Great Red Spot of Jupiter and the Eye of Assiniboia) sometimes wreak havoc on vast areas capable of encompassing multiple worlds the size of Terra or Regina.

At the cloudtops, temperatures fall to around 150 degrees below zero celsius. Atmospheric pressure, drops to just a few atmospheres. Rain sometimes falls from these clouds: as water at higher altitudes, or as ammonia at lower ones.

Brown Dwarfs: A special type of large gas giant is the brown dwarf. A brown dwarf is an immense gas giants just short of the critical mass threshold needed to become a small star. Gravitational pressure is insufficient to ignite the dwarf's atmosphere into a sustained fusion reaction. Consequently, a brown dwarf gives off considerable heat, but shines less brightly than all but the smallest true stars.

Brown dwarfs can act as miniature primaries, providing heat and light for nearby worlds. Although brown dwarfs could theoretically warm satellites to habitable temperatures, satellites rarely orbit brown dwarfs. Solar system formation theory attributes this deficiency to accretion by the brown dwarf — the gravitational field of the growing brown dwarf attracts all matter in the vicinity, thereby making the formation of satellites highly unlikely. The brown dwarf's own composition also mitigates later satellite formation by collision with itself and other bodies.

ATMOSPHERE-RELATED DETAILS

Important Concepts and Definitions

Understanding the following terms and concepts is helpful when using the atmosphere-related step charts.

Atmospheric Composition: The various possible values from the charts are explained below:

Tainted Atmospheres: There are a variety of reasons why an atmosphere might be considered tainted:

Disease: Indicates the atmosphere carries microorganisms, viruses, fungi, spores or other such life forms which can be harmful to humans. It is possible that inhabitants (even humans native to the world) could be immune to these diseases, but visitors may be affected.

Gas Mix: Indicates that there is some element of the gas mix which is generally harmful to humans. Adaptation by humans is highly unlikely.

High Oxygen: Indicates an excessively high proportion of oxygen in the atmosphere. Persons breathing the atmosphere unaided may be subject to oxygen intoxication, loss of judgment and coordination, giddiness, and eventual unconsciousness. Adaptation by the inhabitants may occur.

Pollutants: Generally indicates that specific industrial chemicals, suspended debris, or radioactive pollutants are present in the atmosphere. Industrial worlds usually have this kind of taint. Pollutants are sometimes a specialized case of "gas mix".

Sulfur Compounds: Denotes a situation resulting from high volcanism. The world should be given a high seismic stress factor; volcanoes will be common. This is another case of gas mix.

Low Oxygen: Indicates that the proportion of oxygen is too low. Persons breathing the atmosphere unaided will pass out, and could suffer brain damage from an oxygen shortage. Adaptation by the inhabitants may occur.

Exotic Atmospheres: The gas mix of exotic atmospheres is unbreathable. For specific gas mixes, see the topic "Unusual Atmospheric Compositions" on the next page.

The notation "irritant" indicates the atmosphere is a borderline case between exotic and corrosive, possibly requiring more than a simple oxygen supply to survive. An "occasional corrosive" atmosphere is one which is generally exotic, but sometimes becomes corrosive. An example might be a nitrogen/oxygen atmosphere which, under certain conditions, precipitates nitric acid, a corrosive agent.

Corrosive Atmosphere: The corrosive atmosphere table concentrates on pressures and temperatures. See "Unusual Atmospheric Compositions" for specific gas mixes. An atmosphere may be corrosive because of the gas mix, or because of temperature effects.

Insidious Atmospheres: The table for insidious atmospheres gives the basic cause of the atmosphere's danger. See "Unusual Atmospheric Compositions".

"Gas mix" denotes that the atmosphere is composed of a highly corrosive combination of gases (or a gas which is simply difficult to keep out, such as simple hydrogen).

"Radiation" indicates the presence of high radioactivity; cumulative exposure limits activity outside the protection of heavily shielded structures.

Unusual Atmospheric Compositions: Exotic, corrosive, and insidious atmospheres require some special consideration concerning composition.

Few worlds have an atmosphere composed of a single chemical. Most atmospheres have a complex gas mix that includes a variety of specific elements, some in great amounts, others barely detectable.

A world's atmosphere consists of active and inert gases. On Terra, for example, the atmosphere consists of nitrogen (78%), oxygen (21%), carbon dioxide, argon and other gases (1%). While there is 3 times as much nitrogen (N_2) as there is oxygen (O_2), oxygen is the active gas in the Terran atmosphere; it is the oxygen that is essential to the chemical reactions of Terran life.

Thus when determining the composition of an unusual atmosphere, simply identify the atmosphere's active gas(es), which may only be a fraction of the total atmospheric gas mix.

Some of the possible gases are discussed below.

Carbon Dioxide (CO_2): A non-irritant gas, CO_2 occurs commonly, either by itself or in various combinations.

Worlds with carbon dioxide in the atmosphere may be in the early stages of developing carbon-based life (although within just a few hundred million years the atmosphere will have changed completely). On the other hand, the local life may be evolving in a totally alien direction — perhaps with life forms which draw their energy from sunlight (without using photosynthesis), or from thermal, radioactive, chemical, or even more unusual sources.

Carbon dioxide atmospheres have the property of trapping heat, causing a high greenhouse effect, which may force the world's base temperature far above the range in which humans can flourish without complete protective equipment. A runaway greenhouse effect (over 100%) can rapidly turn a world into a hostile inferno (and thus be rated as a corrosive or insidious atmosphere).

Nitrogen (N_2): A semi-irritant gas, nitrogen is relatively inert in atmospheres with standard temperatures and pressures. If nitrogen and oxygen are present in an atmosphere with unusual temperature and pressure conditions, the atmosphere becomes more hostile, forming nitrides (nitrogen-oxygen compounds) or nitric acid (NHO_3). Nitrogen occurs in world atmospheres more often than any other gas.

Methane (CH_4): A non-irritant gas, methane (also known as "natural gas") is dangerous if mixed at a low (7-14%) concentration with a standard oxygen-nitrogen atmosphere. Any spark can cause the methane to explode and burn fiercely. This can pose a hazard to adventurers if methane leaks into their habitat, space ship, or vacc suit. Pure methane is an odorless, colorless gas, making detection almost impossible.

It is unlikely that free oxygen will be found in an atmosphere containing a significant amount of methane. Methane generally occurs as an active component of the atmosphere on large, cold worlds (size 8+, base temperature below -20°C, dense or very dense atmosphere). There are exceptions — the moon Titan (size 3) in the Terran solar system has methane in its atmosphere, but it is also a very cold world.

Ammonia (NH_3): An irritant gas, ammonia requires protective measures even in mild concentrations. Unlike methane, ammonia has a sharp, pungent odor, and leaks are quickly noticed.

Worlds with ammonia are much like those with methane: large, cold, and with standard to very dense pressure.

Ammonia is postulated as an alternative to oxygen as a life-supporting gas. Ammonia is more active than oxygen, so a world harboring ammonia-based life will likely have a cold, very dense atmosphere.

Chlorine (Cl_2): An irritant gas, chlorine is geeenish-yellow in color, and a deadly poison even in small concentrations, although it can be detected by odor long before it reaches a lethal level. It is far more dangerous to exposed skin than ammonia, and requires head-to-toe protective clothing. An atmosphere with chlorine is corrosive in all but the smallest concentrations.

A world with a significant amount of chlorine in its atmosphere would have a mysterious and eerie environment, with the shifting yellow-green haze causing the landscape to waver in a murky green half-light, hiding and distorting objects and shapes.

The superior reactive properties of chlorine make it a prime candidate as a life-supporting gas. Chlorine is similiar to oxygen, reacting readily in the same ways as oxygen in various chemical processes. Life forms evolving in a chlorine atmosphere would be quite alien in appearance, and might be more active and energetic than their oxygen gas counterparts.

Fluorine (F_2): A corrosive gas, an atmosphere with fluorine are considered corrosive at best. Fluorine shares many properties with chlorine, including the possiblility of supporting completely alien forms of life. It is easily detected by smell and color, but can be quickly lethal if a significant leak occurs.

Sulfur Compounds: A variety of sulfur compounds can be found in various atmospheres, from non-irritant to corrosive.

Sulfur compounds in the atmosphere can result from prolonged heavy industrialization, or can occur naturally from heavy volcanic activity.

Sulfur compounds are a possible alternative to the more usual carbon-based organic chemistry. Such life forms would be totally alien.

Hydrogen (H_2): A non-irritant gas, hydrogen is not poisonous. However, like methane, hydrogen combines explosively with oxygen. A spark can cause an explosion, followed by the precipitation of water, the product of the combination of these two elements. Hydrogen will make up a significant proportion of the atmosphere on large, cold worlds, and is often found in combination with methane and ammonia.

The smallest and lightest of atoms, hydrogen poses a special problem that can require an atmosphere containing any significant amount of it to be rated insidious. The atoms are so small that they can seep right through fabrics, plastics, and even solid metal in a process known as diffusion. An airtight seal is not necessarily hydrogen-tight. Starship hulls and the walls of buildings can be sealed against hydrogen leakage; vacc suits, however, can not.

Further Considerations: Worlds with exotic atmospheres are essentially Terran in everything but atmosphere. An exotic irritant atmosphere with sufficient concentration of the active gas becomes corrosive. Corrosive effects requiring the use of a protective suit can be the result of factors other than just the gas mix. No matter what the gas mix, a very low or very high temperature will kill an unprotected human in a matter of minutes.

Worlds with extremely high temperatures can include oxygen, carbon dioxide, nitrogen, chlorine, fluorine, or sulfur compounds. Low temperature worlds tend to have methane, ammonia, and hydrogen in their atmosphere.

Corrosive atmospheres can, with sufficient concentrations or proper temperature and pressure, be considered insidious. For example, a world with a high percentage of chlorine at standard pressure and temperature can be expected to have large amounts of hydrogen chloride gas in the air and seas of hydrochloric acid. Hydrochloric acid would fall as rain.

When combining gases, their effects are combined. Some fairly common mixes are carbon dioxide; carbon dioxide and sulfur dioxide; methane, ammonia, and hydrogen; chlorine and nitrogen; fluorine and carbon dioxide; fluorine and sulfur tetrachloride; hydrogen; carbon dioxide and nitrogen; methane and ammonia; chlorine and carbon dioxide; chlorine and disulfur dichloride; and fluorine and nitrogen.

Native Life: Many worlds have locally evolved native life.

Note that a world can have a UWP population stat greater than zero and not have locally evolved native life. In this case, the local population is a transplant from another world. The world may harbor local plant and animal life forms, also transplanted.

Atmospheric Terraforming: Atmospheric terraforming refers to significant improvements in the world's original composition by its inhabitants. This type of terraforming is the most difficult and requires the highest tech level; it is not surprising, then, that it is also the least common.

If atmospheric terraforming has been conducted on the world, the old original atmosphere can be determined if desired. The atmospheric terraforming progression, from the best atmospheric conditions to the worst, is untainted, tainted, exotic, corrosive, and insidious.

The current world UWP atmosphere digit must remain unchanged, since the terraforming has already occurred.

Greenhouse Effect Terraforming: Greenhouse effect terraforming refers to global modifications to the world's original greenhouse effect by its inhabitants.

If global greenhouse effect terraforming has been conducted on the world, a more favorable base temperature can be recomputed using an abnormal greenhouse effect (any greenhouse effect improvement beyond 10% is uncommon).

Occasionally, the modification will result in a less favorable greenhouse effect, perhaps even to the point of an accidental runaway greenhouse effect (over 100%).

Albedo Terraforming: Albedo terraforming refers to global modifications to the world's original albedo (and thus its energy absorption) by its inhabitants.

If global albedo terraforming has been conducted onthe world, a more favorable base temperature can be recomputed using a modified energy absorption (any improvement beyond ±0.05 is uncommon). Occasionally, the modification results in an unfavorable energy absorption change.

Surface Atmospheric Pressure: The air pressure found at the "surface level" of a world. Surface level is identical to sea level on worlds with a hydrosphere; on other worlds, surface level is the level where the most significant fraction of a world's surface lies.

Results from the from the charts are in terms of atmospheres, a measure of pressure in which Terra's pressure rates at 1 atm. This surface atmospheric pressure can be manipulated to show the effects of different altitudes or depths (see the chapter "Using the World Data").

Surface Temperature: World surface temperatures have a major bearing on the process of detailing a world.

Tidally-Locked Worlds: Before determining temperature data, establish the world's rotation period to make sure that the world is not tidally locked. The chapters "Mapping the World" and "Using World Data" describe other considerations when dealing with tidally locked worlds.

Base Surface Temperature: The base surface temperature is an average, and thus an abstract figure. Avoid a literal reliance on statements like "the surface temperature of Caledon is 15°C", which is similar to saying "it was 20°C on the planet Earth today". Many locations on a world's surface can experience significant variations from the base temperature. The base temperature is, in fact, merely a starting point from which actual temperatures are calculated.

Orbital Eccentricity: Assign a time of year to apastron (furthest separation from the star) and periastron (closest approach). Eccentricity need not coincide with local seasons. A result of "extreme" orbital eccentricity is included in the charts to permit special, highly unusual cases. You can also assign a value higher than those given in the charts, and proceed from there. Such cases can produce quite unusual effects, especially on otherwise Terran worlds.

Orbital eccentricity also causes seasons to have different lengths; this is seen most in the lengths of transition seasons.

Axial Tilt and Seasons: A method used by many cultures to divide the local year into roughly equal segments. Two is a minimum, but additional subdivisions might be used for long planetary years. A typical year with four seasons includes: summer, winter and two transition periods (spring and fall). The world's axial tilt is usually the main determinant of seasonal variations.

Binary and Trinary Stars: The movements of binary and trinary suns require the calculation of luminosity for each of 3 points: closest approach, farthest separation, and the median distance. Using this information in the temperature formulas yields a base mean surface temperatures for each of these instances

POPULATION-RELATED DETAILS

Important Concepts and Definitions

Understanding the following terms and concepts is helpful when using the population-related step charts.

Cities: The term "city" is used to represent a conglomerate "urban region". For example, the entire southwestern region of California from Santa Barbara to San Diego is one "city" called simply *Los Angeles.*

Orbital Cities: Some or many of the cities generated may be in orbit rather than on the world's surface. Each orbital "city" may consist of one or more orbital habitats.

Progressiveness: Deals with a society's basic desire to improve and progress.

Progressiveness Attitude: Indicates how the local inhabitants will react to an idea or action that is new, unusual, or contrary to local precedent. The values results include:

Radical: The population prefers change to static conditions. In extreme cases, any new idea, no matter what its merits, is a good idea.

Progressive: The population believes change to be good and healthy. They readily accept promising new ideas.

Conservative: The population tends to be afraid of change. Extensive effort may be needed to convince them a change is needed.

Reactionary: The population believes all change to be bad and reacts strongly whenever change is suggested.

Progressiveness Action: Indicates the likelihood that the society will change or be in a state of flux. The possible values include:

Enterprising: The population exhibits a significant drive and desire to progress. Progress tends to be far-reaching.

Advancing: The population has a fair measure of drive. Definite measurable progress exits.

Indifferent: The population lacks a drive to progress. Some progress exists, but its movement borders on immeasurable.

Stagnant: The population's progress has ground to a complete standstill. In extreme cases, the lack of progress may have become regression.

Social changes of this type occur over a period of years, decades, and sometimes even a century or more. It is left to you to determine just how frequently the social changes occur. Changing the situation on a world is useful for reminding the players that the universe is not a static one.

Aggressiveness: Describes the society's basic combativeness and belligerence.

Aggressiveness Attitude: Indicates how the local inhabitants react to the thought of forcing themselves on others. The possible values include:

Expansionistic: The population prefers to use force; compromise is rarely an option.

Competitive: The population prefers the use of force, but does not rule out compromise as an option.

Unaggressive: The population prefers compromise to the use of force.

Passive: The population prefers inaction to the use of force.

Aggressiveness Action: Indicates likelihood that the locals will resort to the use of force to impose their will on others. The possible values include:

Militant: The population openly displays their military might. They readily express their support for solving problems using military means.

Neutral: The population seldom flaunts their military might. They readily express their willingness to fight in self-defense if needed.

Peaceable: The population never flaunts their military might. They suggest using force to solve problems only as a last resort.

Conciliatory: The population refrains from building any significant military might. They will do anything to avoid a military confrontation.

Extensiveness: Tells how cohesive the world's populace is on a local level, and how open the population is to being among the interstellar community.

Global Extensiveness: Indicates the likelihood that a given individual or group conforms to the local social views. The possible values include:

Monolithic: The world's population stands solidly united in its views. No observable dissension exists.

Harmonious: The world's populace generally agrees on major issues, although observable dissension may exist.

Discordant: The world's population strongly disagrees on major issues. Dissension definitely exists.

Fragmented: The world's population holds widely diverse views. Dissension is the rule.

Interstellar Extensiveness: Indicates the general reaction of the local population to obvious offworlders. The possible values include:

Xenophilic: The local populace prefers offworlders. In extreme cases, the locals treat offworlders with a nauseating devotion.

Friendly: The populace is congenial to offworlders. Locals often treat offworlders favorably.

Aloof: The populace reacts coolly to any offworlders. The local population may sometimes even be downright unfriendly.

Xenophobic: The populace has xenophobic tendencies. At the very least they have a severe distrust of any offworlders. In extreme cases, the locals abhor offworlders.

GOVERNMENT-RELATED DETAILS

Important Concepts and Definitions

Understanding the following terms and concepts is helpful when using the government-related step charts.

Government Organization: Any government must perform three functions, and whether or not the bodies performing these functions are differentiated by the government, it is instructive to look at them abstractly.

Legislative: The legislative branch of a government makes law. In simpler terms, the legislative branch tells everyone what to do.

Executive: The executive branch of a government enforces the law. In simpler terms, the executive branch makes sure that it is done.

Judicial: The judicial branch of a government interprets the law. In simpler terms, the judicial branch decides whether it was done right.

Naturally, no government is so cut and dried, even the early Terran example upon which this model is based. But it is convenient to distinguish these three functions for game purposes.

These duties may overlap, so one person or governmental body subsumes both the legislative and executive functions, for example. It may also be that the separate parts of the government share these functions. For example, a Ministry of Trade might set import taxes (legislative), collect those taxes (executive), and judge cases where the taxes have not been paid (judicial). In this case, the Ministry would exercise all three functions, but only in the arena of trade. Other parts of the government would have jurisdiction over other aspects of life.

The government digit assigned by the Scouts to a world corresponds most often to the legislative "branch", but may be derived from the structure of the executive or judicial "branches" if they seem more significant in their workings.

Government Types: The government details on the charts describe the representative authority and its type of organization. The possible values are:

Ruler: One to three powerful individuals control the functions of the government.

Elite Council: One group, with from four to a thousand members, confers and decides upon the acts of the government.

Several Councils: Several councils, whether equal in power or ranked according to some system, each exercise influence over the government.

Demos: The entire population decides the acts of the government. In many cases, various qualifications will be established to lessen the participation of some classes of citizens.

Religion: Most sophont species develop religions during their climb to civilization. Religion begins as an attempt to explain the world and the many questions of life, the universe, and existence. Religions often evolve into philosophical schools which set down modes of conduct intended to lead the believer to a better existence.

In the Imperium, there is freedom of religion. So long as the actions of a church or sect do not threaten the peace and security of the Imperial populace, the religious belief is acceptable. Religious organizations not in conflict with Imperial harmony are welcome on all civilized worlds.

Including religion in MegaTraveller is optional—those who are offended by the idea of developing new religions, or those who feel that religion will be passe in 50th Century and beyond can ignore the concept entirely. We leave it to you to invent the details of the beliefs, teachings, sacred texts, and so on.

The Religious Profile: This Profile is a series of seven codes describing the various aspects of a religion.

God View: This entry describes the religion's basic beliefs of a supreme being or beings and the part played by the deity/deities in everyday life.

Spiritual Aim: Describes the central tenet of the religion: the belief which defines the religion's appeal and promise. Actually, any given religion may have several of the beliefs given in the list in its scriptures, but the Spiritual Aim stat singles one out as dominant. Note that the aims listed still leave the referee with quite a bit of input into the actual religious beliefs and goals.

Devotion Required: Indicates the degree to which individual believers are involved in religion-oriented activities such as prayers, sacrifices, meditation, teaching, studying, and so on. It suggests both the "fanaticism" of the religion (how much it controls daily life) as well as the importance of religious activities to belief and acceptance by the religious community. In game terms, it adds insight into how the religion functions.

Organization Structure: Conveys the structure of the religious group. Rigid church hierarchies tend to be large, ponderous, dogmatic, shrouded in ritual or mysticism, and inaccesiblle to the common worshipper — while looser structures generally fail to recruit, collect, or direct in ways that promote the religion.

Liturgical Formality: Itemizes the nature of worship. "High Church" services, long on ritual but with little or no input allowed from the common worshipper, contrast sharply with less formal

sects that freely discuss, even question, the fundamentals of their faith as they explore its meanings and ramifications.

Missionary Fervor: Describes the degree to which the religion seeks out converts and supporters. Missionary Fervor indicates how likely an adherent is to strike up a religiously-oriented conversation, or how often church members may be pressured into contributions of time, money, or other support.

Numbers of Adherents: Indicates the number of followers. This is an exponent digit, identical to the UWP population code.

LAW-RELATED DETAILS

Important Concepts and Definitions

Understanding the following terms and concepts is helpful when using the law-related step charts.

It is more difficult to make precise rules for law levels than for government types. The law related details given on the charts are largely suggestions — you as referee must rely on your sense of the game to temper any law-related details.

Law Level: The degree to which the law interferes with individual actions. This level is affected to some degree by the type of government prevalent in the area. Still, two very similar governments may have widely different law levels. As a general rule of thumb, bureaucracies and dictatorships try to exert finer degrees of control than do democracies.

Law Level also indicates how vigorously laws are enforced. At low law levels, there may be no police: individual citizens must bring charges against lawbreakers themselves. At high law levels, police may be unrelenting in their pursuit of criminals, and statutes of limitations may not exist.

Uniformity Of Law: Who must observe the law? Do some laws apply to one group and not another? Or do the laws apply equally to all? Three categorizations answer these questions:

Undivided: In many governments, one set of laws applies equally to all. Advantages of this system are a consistency of justice and the resulting simplification of the judicial function.

Territorial: In some governments, different laws apply differently depending on where a person is. By moving across a territorial boundary, a given act may change from legal to illegal, or vice versa, even though the government has not changed.

Personal: It is not uncommon, unfortunately, for different laws to apply to different persons under the same governmental authority. The distinction applied by the government may be based on sex, religious beliefs, race, wealth, age, job, caste, tribal membership, or world of birth.

It is also possible for a government to combine these types of influence. For example, one set of laws may apply to Vargr in one area, while a second legal code applies to Vargr in another, while a third governs humans in both regions.

Detailed Law Levels: The law can involve itself in many different spheres of conduct. The following detailed law levels are given on the charts:

Weapons: How law level applies to possession and use of weapons is already detailed in the regular rules; keep in mind that these are general guidelines and may vary slightly from one government to another. The stricter the law level, the more weapons are restricted.

Trade: In the realm of business, the law can intrude in a number of ways. At the lowest levels, the only law might be caveat emptor—let the buyer beware. At higher levels, laws against fraud and deception may be enforced. At still higher levels, the state may prohibit certain types of businesses or regulate them by requiring licenses or other permits.

Criminal Law: What activities are considered to be crimes? At lower law levels, actions which use physical force to harm other individuals or their property are the only ones prohibited. At higher levels, almost any activity can be considered criminal.

Civil Law: Even if a particular action is not criminal, the situa-

SOME GOVERNMENT EXAMPLES

Regina: This subsector capital (Spinward Marches 1910 A788899-C) is an impersonal bureaucracy. The government related charts tell us Regina has 3 separate branches of government, with the judicial branch most prominent.

Looking at the charts, we see that impersonal bureaucracies always are "several councils"; checking the charts for the other branches tells us the executive branch is an elite council, and the legislative branch is a demos.

From this data, we use our imagination: with a law level of 9 and an impersonal bureaucratic court system, being arrested on Regina is an unpleasant experience. Suspects may be rounded up en masse when a crime has been committed, and it might be weeks after a trial has convicted one of them before the rest are finally cleared. Meanwhile, those arrested must report their whereabouts and activities to the police every few hours. However, the trials are usually fair.

The executive branch consists of 4 persons chosen by lot. Each year, 4 citizens are chosen at random to share the oversight of the government. Each has veto power over the other, providing a check against tyranny at the cost of inefficiency and no small degree of confusion. Once a citizen has served in this capacity, he is ineligible to serve again.

The inhabitants of Regina as a whole make the laws for the world. Laws are proposed by the judicial and executive branches, and weekly elections are held to confirm or reject these laws. A complicated computer network is used to conduct these elections. All native-born Reginans are eligible to vote, with no other restrictions. Thus immigrants have no voice in the government, but newborn babes, criminals, and the insane do, if they have Regina birth certificates.

Mora: Mora is the sector capital for the Spinward Marches, but of course it has its own local government. The step charts tell us the government of Mora (Spinward Marches 3124 AA99AC7-F) is split into 3 authorities, corresponding roughly to 1 for each branch. Next, we find that the judicial branch is the representative authority, so we know that it is a charismatic oligarchy from the government characteristic digit of C. Next, we discover this judiciary function is carried out by an elite council.

The charts tell us that the executive branch is also an elite council and we have a single ruler for the legislative branch.

Now to flesh out this information. Mora is a matriarchy, in which most of the governmental positions are held by women (determined by a flash of inspiration.) The courts of the world are headed by the "Eleven Brides", so called because their duties to the government are so demanding of their time that they do not take husbands, but rather are "married" to their work as judges. Laws (with a characteristic of 7) are stricter and more intrusive than those on Rhylanor, but are still about average for most of the worlds in the Imperium.

The executive branch is the "Caucus", 33 women who oversee the administrative activities of the government. There is no separate police force on Mora; the laws are carried out by the planet's army. (This was decided by looking at the "unaggressive" yet "militant" attitudes determined using the social rules of this book.)

The legislative branch consists of the Duchess Delphine the Matriarch, in her own right a charismatic dictator (although the Scouts published the world's government statistic based on the structure of the judicial branch). The Duchess makes all the laws herself, and so far she has done well enough at it that most Morans are happy under her rule.•

tion may involve a wrong committed against another person or his property, and the government may set up rules that allow the harmed individual to collect from the perpetrator. Often, such losses are the result of negligence.

Personal Freedom: What may a person say? With whom may he associate? Where can he travel? What books may he read? How can he worship? What can he think? These questions deal with personal freedoms.

TECHNOLOGY-RELATED DETAILS

Important Concepts and Definitions

Understanding the following terms and concepts is helpful when using the technology-related step charts.

Before you determine the Technology Profile, you must first determine the world's Social Outlook.

The Technology Profile: The profile consists of 14 entries detailing both the levels of technology commonly enjoyed by the populace and the levels of achievement on the world.

The Technology Profile is divided into three blocks:

- Common Tech Levels
- Achievement Tech Levels
- Novelty Tech Level

The Common Tech Levels: The common tech levels are divided into two values: high common, and low common.

High common is the highest level of technology commonly enjoyed by the world's population. This is the tech level typically encountered near the starport and in the most modern urban areas. This is also the tech level listed in the world's UWP stats.

Because high common represents the tech level of manufactured goods typically available near the local world's starports, most forms of equipment that a character might acquire near a starport will be of this tech level.

Low common represents the level of technology enjoyed by the bulk of the world's population. It can be much lower than the tech level of goods commonly available near the starport.

Low common indicates the minimum tech level the characters can always find on the world no matter where they go. The low common and high common tech levels may be the same, indicating there is a consistent level of technology worldwide.

When comparing the two common tech levels, the referee should decide who has access to any tech levels above the low common figure. This could be important in resolving encounters or in describing surroundings during an adventure.

As an illustration of how the high common and low common tech level works, consider Terra circa 1985. The high common tech level is 8, and the low common tech level is early tech level 6. Globally, the tech level enjoyed by the bulk of Terra's 5 billion population is the low common tech level of 6, even though certain areas (mostly urban North America, Europe, and some parts of Asia) possess the high common tech level of 8.

The Achievement Tech Levels: The achievement tech levels represent the best technology the world has been able to achieve locally. In the cases where the achievement tech level exceeds the high common tech level, the achievement tech level represents the forefront of technological research: a level of technology not yet available to the the general population.

The achievement tech levels are divided into: quality of life tech levels, transportation tech levels, and military tech levels.

Quality of Life technology encompasses five basic areas: energy production, computer/robotics, communications, medical, and environmental engineering. These technology areas are essential to the world's quality of life and form the basis for the technological achievements in the two other subgroups.

Energy Production Technology: Indicates the culture's ability to make use of energy. Use of energy is fundamental to many other technological developments. Once cheap fusion power comes on the scene, it supersedes all other forms of energy production. Where fusion plant size becomes a problem, batteries or fuel cells are still required.

Computers/Robotics Technology: Indicates the culture's progress in the creation and use of high-tech computer circuitry. Computers are fundamental to many other technological developments. The computers/robotics tech level determines the basic availability of computers and robots.

Communications Technology: Indicates the culture's use of long-range communication devices. Communications technology depends largely on developments in computers/robotics.

Medical Technology: Indicates the quality of biological research and medical care available. Medical technology also depends heavily on developments in computers/robotics.

Environmental Engineering Technology: Indicates the ability of the culture to manipulate their environment. It establishes the chance that terraforming projects are underway, and dictates how cities and large civil engineering works are constructed.

Transportation technology covers the four transportation areas: land, water, air, and space. Transport technology depends in a large part on quality of life achievements.

Land Transport Technology: Indicates the population's methods of land transport. Once grav locomotion arrives, land, water, and air transport merge.

Water Transport Technology: Indicates the population's achievements in transport over their oceans and seas. Special cases are waterworlds (where land transport is rare) and planets where grav vehicles are present, since grav locomotion blends land, sea, and air transport into a unified whole.

Air Transport Technology: Represents the availability of various forms of air transportation. Vacuum worlds have no air transport until gravitics are invented. Again, gravitic vehicles blend the various planet bound transportation technologies into a single technology. As grav locomotion improves, air transport ultimately merges with orbital space transport.

Space Transport Technology: Indicates the world's local achievements in space travel. Space transport is independent of breakthroughs in gravitics.

Military technology defines the two key technological areas: personal military and heavy (vehicle-based) military. Personal military technology depends a lot on the achievements attained in the quality of life group, while heavy military technology depends mostly on the achievements in the transportation technology group.

Personal Military Technology: Indicates the culture's advancements in personnel-carried weapons and armor. Personal military technology covers everything from clubs to disintegrator weapons.

Heavy Military Technology: Indicates the culture's advancements in long-range vehicle-oriented weapons and armor. Heavy weapon systems include such things as artillery, support weapons, and combat vehicles.

The Novelty Tech Level: The novelty tech level indicates the tech level that may sometimes be found on the world, but is far from common. The novelty tech level represents a level of local technology that is rarely encountered unless specifically sought out.

The novelty tech level is frequently higher than the high common tech level. Novelty technology can be the artifacts or products of a previous (sometimes more highly advanced) culture, imported goods from nearby advanced worlds, or local experimental prototypes.

STAR SYSTEM ORBITAL ZONES

1 Orbit Zones

The tables below show the conditions found in the various planetary orbits around stars.

Code	*Meaning*
-	Inside sphere of star (no planets possible).
—	Unavailable (planet vaporized).
I	Inner zone (hot and inhospitable).
H	Habitable zone (life may exist).
O	Outer zone (cold and inhospitable).

2 Orbit Zones for Star Size Ia (Bright Supergiant)

Orbit	*B0*	*B5*	*A0*	*A5*	*F0*	*F5*	*G0*	*G5*	*K0*	*K5*	*M0*	*M5*	*M9*
1	—	—	-	-	-	-	-	-	-	-	-	-	-
2	—	—	—	—	-	-	-	-	-	-	-	-	-
3	—	—	—	—	—	—	-	-	-	-	-	-	-
4	—	—	—	—	—	—	—	-	-	-	-	-	-
5	—	—	—	—	—	—	—	—	-	-	-	-	-
6	—	—	—	—	I	I	—	—	—	—	-	-	-
7	—	I	I	I	I	I	I	I	I	I	I	-	-
8	I	I	I	I	I	I	I	I	I	I	I	I	I
9	I	I	I	I	I	I	I	I	I	I	I	I	I
10	I	I	I	I	I	I	I	I	I	I	I	I	I
11	I	I	I	I	I	H	I	I	I	I	I	I	I
12	I	H	H	H	H	O	H	H	H	H	H	H	H
13	H	O	O	O	O	O	O	O	O	O	O	O	O
14	O	O	O	O	O	O	O	O	O	O	O	O	O

3 Orbit Zones for Star Size Ib (Weaker Supergiant)

Orbit	*B0*	*B5*	*A0*	*A5*	*F0*	*F5*	*G0*	*G5*	*K0*	*K5*	*M0*	*M5*	*M9*
1	—	—	—	—	—	—	—	-	-	-	-	-	-
2	—	—	—	—	—	—	—	—	-	-	-	-	-
3	—	—	—	—	—	—	—	—	-	-	-	-	-
4	—	—	—	—	—	I	I	—	—	-	-	-	-
5	—	—	I	I	I	I	I	I	I	—	-	-	-
6	—	I	I	I	I	I	I	I	I	I	I	-	-
7	—	I	I	I	I	I	I	I	I	I	I	I	-
8	I	I	I	I	I	I	I	I	I	I	I	I	I
9	I	I	I	I	I	I	I	I	I	I	I	I	I
10	I	I	I	H	H	H	H	H	H	I	I	I	I
11	I	H	H	O	O	O	O	O	O	H	H	I	I
12	I	O	O	O	O	O	O	O	O	O	O	H	H
13	H	O	O	O	O	O	O	O	O	O	O	O	O
14	O	O	O	O	O	O	O	O	O	O	O	O	O

4 Orbit Zones for Star Size II (Bright Giant)

Orbit	*B0*	*B5*	*A0*	*A5*	*F0*	*F5*	*G0*	*G5*	*K0*	*K5*	*M0*	*M5*	*M9*
1	—	—	—	—	—	—	—	—	—	-	-	-	-
2	—	—	—	I	I	I	I	I	I	—	-	-	-
3	—	—	I	I	I	I	I	I	I	I	-	-	-
4	—	—	I	I	I	I	I	I	I	I	I	-	-
5	—	I	I	I	I	I	I	I	I	I	I	-	-
6	—	I	I	I	I	I	I	I	I	I	I	I	I
7	I	I	I	I	I	I	I	I	I	I	I	I	I
8	I	I	I	H	H	H	H	H	I	I	I	I	I
9	I	I	H	O	O	O	O	O	H	H	I	I	I
10	I	I	O	O	O	O	O	O	O	O	H	I	I
11	I	H	O	O	O	O	O	O	O	O	O	H	H
12	H	O	O	O	O	O	O	O	O	O	O	O	O
13	O	O	O	O	O	O	O	O	O	O	O	O	O

5 Orbit Zones for Star Size III (Giant)

Orbit	*B0*	*B5*	*A0*	*A5*	*F0*	*F5*	*G0*	*G5*	*K0*	*K5*	*M0*	*M5*	*M9*
1	—	—	I	I	I	I	I	I	I	I	—	-	-
2	—	—	I	I	I	I	I	I	I	I	I	-	-
3	—	—	I	I	I	I	I	I	I	I	I	-	-
4	—	I	I	I	I	I	I	I	I	I	I	I	-
5	—	I	I	I	I	I	I	I	I	I	I	I	I
6	—	I	I	I	H	H	H	I	I	I	I	I	I
7	I	I	I	H	O	O	O	H	H	I	I	I	I
8	I	I	H	O	O	O	O	O	O	H	H	I	I
9	I	I	O	O	O	O	O	O	O	O	O	H	H
10	I	H	O	O	O	O	O	O	O	O	O	O	O
11	I	O	O	O	O	O	O	O	O	O	O	O	O
12	H	O	O	O	O	O	O	O	O	O	O	O	O
13	O	O	O	O	O	O	O	O	O	O	O	O	O

6 Orbit Zones for Star Size IV (Subgiant)

Orbit	*B0*	*B5*	*A0*	*A5*	*F0*	*F5*	*G0*	*G5*	*K0*
0	—	—	—	I	I	I	I	I	I
1	—	—	I	I	I	I	I	I	I
2	—	—	I	I	I	I	I	I	I
3	—	I	I	I	I	I	I	I	I
4	—	I	I	I	I	I	I	I	H
5	—	I	I	I	I	H	H	H	O
6	—	I	I	H	H	O	O	O	O
7	I	I	H	O	O	O	O	O	O
8	I	I	O	O	O	O	O	O	O
9	I	H	O	O	O	O	O	O	O
10	I	O	O	O	O	O	O	O	O
11	I	O	O	O	O	O	O	O	O
12	H	O	O	O	O	O	O	O	O
13	O	O	O	O	O	O	O	O	O

7 Orbit Zones for Star Size V (Main Sequence)

Orbit	*B0*	*B5*	*A0*	*A5*	*F0*	*F5*	*G0*	*G5*	*K0*	*K5*	*M0*	*M5*	*M9*
0	—	—	I	I	I	I	I	I	I	H	H	O	O
1	—	—	I	I	I	I	I	I	I	O	O	O	O
2	—	—	I	I	I	I	I	H	H	O	O	O	O
3	—	—	I	I	I	I	H	O	O	O	O	O	O
4	—	I	I	I	I	H	O	O	O	O	O	O	O
5	—	I	I	I	H	O	O	O	O	O	O	O	O
6	I	I	I	H	O	O	O	O	O	O	O	O	O
7	I	I	H	O	O	O	O	O	O	O	O	O	O
8	I	I	O	O	O	O	O	O	O	O	O	O	O
9	I	H	O	O	O	O	O	O	O	O	O	O	O
10	I	O	O	O	O	O	O	O	O	O	O	O	O
11	I	O	O	O	O	O	O	O	O	O	O	O	O
12	H	O	O	O	O	O	O	O	O	O	O	O	O
13	O	O	O	O	O	O	O	O	O	O	O	O	O

8 Orbit Zones for Star Size VI (White Dwarf)

Orbit	*F5*	*G0*	*G5*	*K0*	*K5*	*M0*	*M5*	*M9*
0	I	I	I	I	O	O	O	O
1	I	I	H	H	O	O	O	O
2	I	H	O	O	O	O	O	O
3	H	O	O	O	O	O	O	O
4	O	O	O	O	O	O	O	O

9 Orbit Zones for Star Size D (Subdwarf)

Orbit	*DB*	*DA*	*DF*	*DG*	*DK*	*DM*
0	H	O	O	O	O	O
1	O	O	O	O	O	O
2	O	O	O	O	O	O
3	O	O	O	O	O	O
4	O	O	O	O	O	O

SIZE RELATED DETAILS 1

1 Basic World Type

If the world is a gas giant, go to step 3a.

If the world size is 0 (asteroid/planetoid belt), go to step 4a.

Otherwise, continue on to step 2a.

2a Planet Diameter

Roll 2D-7 (giving a range from -5 to +5; reroll a "+5" result), multiply by 100 (-500 to +400), and add to the UWP size x 1,000. (If size S, UWP size is 0.6).

Multiply by 1.6 for a size in kilometers.

Example: A world has a UWP size of 5 (a basic diameter of 5,000 miles). We roll 2D-7 and get -3. Multiplying by 100 gives -300, which we subtract from the basic size of 5,000 to get 4,700 miles, a number we refine to 4,782 miles. Converting to kilometers (4,782 x 1.6) gives a final diameter of 7652 kilometers.

2b Planet Density

To determine a planet's density, first roll on the table below:

Dice (2D)	**DENSITY TYPE**
1-	Heavy Core
2-10	Molten Core
11-14	Rocky Body
15+	Icy Body

DMs:
If size 4–, DM+1
If size 6+, DM–2

If atm3–, DM+1
If atm6+, DM–2

If outer zone orbit, DM+6

Next, determine the exact density by rolling 3D on proper column below.

When done with this step, go to step 5.

Die Roll (3D)	*Heavy Core*	*Molten Core*	*Rocky Body*	*Icy Body*
3	1.10	0.82	0.50	0.18
4	1.15	0.84	0.52	0.20
5	1.20	0.86	0.54	0.22
6	1.25	0.88	0.56	0.24
7	1.30	0.90	0.58	0.26
8	1.35	0.92	0.60	0.28
9	1.40	0.94	0.62	0.30
10	1.45	0.96	0.64	0.32
11	1.50	0.98	0.66	0.34
12	1.55	1.00	0.68	0.36
13	1.60	1.02	0.70	0.38
14	1.70	1.04	0.72	0.40
15	1.80	1.06	0.74	0.42
16	1.90	1.08	0.76	0.44
17	2.00	1.10	0.78	0.46
18	2.25	1.12	0.80	0.48

Note: Density is expressed in standard densities (Terra=1, or 5.517 grams per cubic centimeter).

Example: A world has a UPP size of 5, an atmosphere of 2, and orbits in the habital zone. The Density Type table shows only a +1 DM for atmosphere 2. We roll 2D and get 11 with the DM, yielding a type of "Rocky Body".

Moving to the second table, rolling 3D on the Rocky Body column results in an 11, for a density (K) of 0.66 standard.

3a Gas Giant UWP Size

Depending on the gas giant size (small or large), roll on the appropriate table below to arrive at a UWP size.

SMALL GAS GIANT SIZE

Die (2D)	*UWP Size*
2	20
3	30
4	40
5	50
6	60
7	60
8	70
9	80
10	80
11	90
12	100

LARGE GAS GIANT SIZE

Die (3D)	*UWP Size*
3	110
4	120
5	130
6	140
7	150
8	150
9	160
10	170
11	180
12	190
13	200
14	210
15	220
16	230
17	240
18	Brown dwarf

Example: We have a large gas giant, so we roll 3D on the large gas giant table and get 14. Our large gas giant has a UWP size of 210 (210,000 miles).

3b Gas Giant Diameter

Roll 2D-7 (giving a range from -5 to +5; reroll a "+5" result), multiply by 1,000 (-5,000 to +4,000), and add to the UWP size x 1,000.

Multiply by 1.6 for a size in kilometers.

Example: A gas giant has a UWP size of 210. We roll 2D-7 and get 2. Multiplying the 2 by 1,000 gives 2,000, which we add to the basic size of 210,000 to get 212,000 miles. Converting to kilometers (212,000 x 1.6) gives a final diameter of 339,200 kilometers.

3c Gas Giant Density

Roll 3D on the table below to arrive at the gas giant's density.

Go to step 5 when done with this step.

Die Roll (3D)	*Gas Giant*
3	0.10
4	0.11
5	0.12
6	0.13
7	0.14
8	0.16
9	0.18
10	0.20
11	0.22
12	0.23
13	0.24
14	0.26
15	0.27
16	0.28
17	0.29
18	0.30

Note: If the density is less than 0.15, the gas giant has no solid core. If the density is between 0.15 and 0.25, the gas giant has a solid core of frozen gases. If the density is over 0.25, the gas giant has a solid rocky core.

Example: We roll 3D and get 9, giving our gas giant a density of 0.18, so it has a solid core of frozen gases.

5 World Mass

Compute the world's mass as:

$$M=K\times(R\div8)^3$$

Where:
M = Mass in standard masses (Terra=1).
K = Planet's density.
R = UWP size digit (use 0.6 for size S).

Example: A UWP size 5 world has a 0.66 density. Dividing 5 by 8 gives 0.625; 0.625 cubed is 0.244. Multiplying 0.244 by the density of 0.66 gives a mass of 0.161 standard.

6 World Gravity

Compute surface gravity as:

$$G=M\times(64\div R^2)$$

Where:
G = Gravity in standard gees(Terra=1).
M = Planet's mass.
R = UWP size digit (use 0.6 for size S).

Example: A UWP size 5 world has a mass of 0.161. Dividing 64 by 5 squared gives 2.56. Multiplying 2.56 by the mass of 0.161 yields a surface gravity of 0.41g.

4a Asteroid/Planetoid Diameter

Roll on the table below to determine the predominate body diameter in the asteroid/planetoid belt.

PREDOMINATE BODY DIAMETER

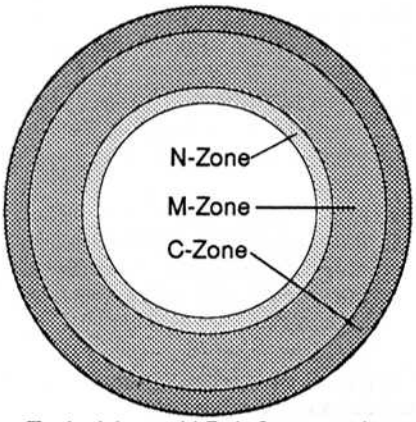
Die (2D)	*Diameter*	*Disp Tons*
2	1m	under 1 ton
3	5m	5 tons
4	10m	50 tons
5	25m	500 tons
6	50m	5,000 tons
7	100m	50,000 tons
8	300m	1 million tons
9	1km	50 million tons
10	5km	5 billion tons
11	50km	5 trillion tons
12	500km	5,000 trillion tons

Note: Thirty percent or more of the belt asteroids approach the predominate diameter. The rest are a variety of smaller sizes — although a very few planetoids (1 percent or so) may be larger. To find if any larger planetoids exist, roll on the table below.

MAXIMUM PLANETOID BODY DIAMETER

Die (1D)	*Result*
1	as rolled
2	as rolled
3	up to 1km
4	up to 10km
5	up to 100km
6	up to 1,000km

Example: Rolling 2D on the Predominate Body Diameter table gives a result of 7, or 100m (50,000 tons displacement). Further, rolling 1D on the Maximum Diameter table gives a result of 5, meaning that there may be a few planetoids whose diameter approaches 100 km. The diameter of the bodies in this belt is written as: 100m/100km.



Typical Asteroid Belt Cartography

4b Asteroid/Planetoid Belt Zones

Roll on the table below to determine the predominate belt zone.

Dice (2D)	**PREDOMINATE ZONE**
4-	N-Zone (nickel-iron)
5-8	M-Zone (mixed)
9+	C-Zone (carbonaceous and/or ice)

DMs:
Orbit inside habital zone, -4
Orbit outside habital zone, +2

Next, roll on the proper table below for the percentage size of all belt zones.

Dice (2D)	**N-ZONE PREDOMINATE**		
2	n-40	m-30	c-30
3	n-40	m-40	c-20
4	n-40	m-40	c-20
5	n-40	m-40	c-20
6	n-40	m-40	c-20
7	n-50	m-40	c-10
8	n-50	m-40	c-10
9	n-50	m-40	c-10
10	n-50	m-30	c-20
11	n-60	m-50	c-10
12	n-60	m-40	c-20

Dice (2D)	**M-ZONE PREDOMINATE**		
2	n-20	m-50	c-30
3	n-30	m-50	c-20
4	n-20	m-60	c-20
5	n-20	m-60	c-20
6	n-30	m-60	c-10
7	n-20	m-70	c-10
8	n-10	m-70	c-20
9	n-10	m-80	c-10
10	n-10	m-80	c-10
11	n-0	m-80	c-20
12	n-0	m-90	c-10

Dice (2D)	**C-ZONE PREDOMINATE**		
2	n-20	m-30	c-50
3	n-20	m-30	c-50
4	n-20	m-30	c-50
5	n-10	m-30	c-60
6	n-10	m-30	c-60
7	n-10	m-20	c-70
8	n-10	m-20	c-70
9	n-10	m-10	c-80
10	n-0	m-10	c-80
11	n-0	m-10	c-80
12	n-0	m-20	c-80

Note: The percentages given are approximate; they can vary by ±5 percent. When n-0 is given for the nickel-iron zone, there are not enough nickel-iron asteroids in the belt for it to have a discernable n-zone.

Example: Rolling 2D on the Predominate Zone table, we get an 11. The asteroid belt orbits in the habital zone, so we do not apply any DMs to our roll. A final result of 11 means the C-Zone is predominate.

Thus we roll 2D on the C-Zone Predominate table, getting a 9. Looking on the table, we see this gives us a result of "n-10 m-10 c-80". Roughly 10% of our belt is an n-zone, another 10% is an m-zone, and the remaining 80% is the c-zone.

4c Belt Orbit Width

Roll on the table below to determine the belt's orbit width in AUs.

Die (2D)	**BELT ORBIT WIDTH**
2	0.01 AU
3	0.05 AU
4	0.1 AU
5	0.1 AU
6	0.5 AU
7	0.5 AU
8	1.0 AU
9	1.5 AU
10	2.0 AU
11	5.0 AU
12	10.0 AU

DMs:
Orbit 1-4, DM-3
Orbit 5-8, DM-1
Orbit 9-12, DM+1
Orbit 13+, DM+2

Note: To convert a belt width in AUs to its width in kilometers, multiply by 150 million.

Example: The belt in question is in orbit 4, meaning we apply a DM of -3 to the roll on this table. We roll 2D and get a roll of 2 with the DMs, so this belt is only 0.01 AUs wide. To convert this width to kilometers, we multiply by 150 million, giving a belt width in kilometers of 1.5 million.

4d Belt Profile Notation

List the data from these tables in a single line to provide a summary profile of an asteroid belt. For example, list:

100m/100km, n-10 m-10 c-80,0.01AU for the belt from the examples in this section. Other belt profile examples include:

5m, n-0 m-80 c-20, 0.1AU

5km/100km, n-30 m-70 c-10, 1.5 AU

The latter belt looks to be a particularly rich one for belters, with its large body size, vast width, and relatively large n-zone.

7 Planet Orbital Period

Determine the orbital period for the world. This orbit is *around the central star.*

If the world is a satellite, then also compute the world's orbital period around the central planet (step 8).

7a Stellar Mass

Lookup the mass of the central star on one of the tables below.

STELLAR MASSES

Spectral Class	*Ia*	*Ib*	*II*	*III*
B0	60	50	30	25
B5	30	25	20	15
A0	18	16	14	12
A5	15	13	11	9
F0	13	12	10	8
F5	12	10	8.1	5
G0	12	10	8.1	2.5
G5	13	12	10	3.2
K0	14	13	11	4
K5	18	16	14	5
M0	20	16	14	6.3
M5	25	20	16	7.4
M9	30	25	18	9.2

Spectral Class	*IV*	*V*	*VI*	*Spec*	*D*
B0	20	18	—	B	0.26
B5	10	6.5	—	A	0.36
A0	6	3.2	—	F	0.42
A5	4	2.1	—	G	0.63
F0	2.5	1.7	—	K	0.83
F5	2	1.3	0.8	M	1.11
G0	1.75	1.04	0.6		
G5	2	0.94	0.528		
K0	2.3	0.825	0.430		
K5	—	0.570	0.330		
M0	—	0.489	0.154		
M5	—	0.331	0.104		
M9	—	0.215	0.058		

7b Orbital Distance

Lookup the orbital distance, below.

Orbit Nbr	*AU*
0	0.2
1	0.4
2	0.7
3	1.0
4	1.6
5	2.8
6	5.2
7	10.0
8	19.6
9	38.8
10	77.2
11	154.0
12	307.6
13	614.8
14	1,229.2
15	2,458.0
16	4,915.6
17	9,830.8
18	19,661.2
19	39,322.0
•	

7c Orbital Period

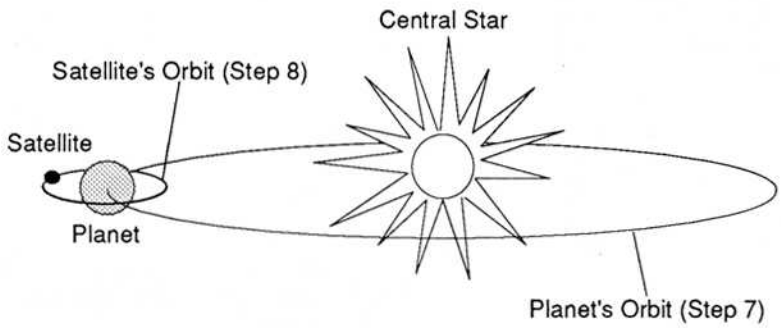
Using the following formula, compute the orbital period.

$$P = \sqrt{D^3/M}$$

Where:
P = Period in standard years. Multiply by 365.25 to convert to days.
D = Distance in AUs.
M = Mass of central star in solar masses.

Example: The central star is a type M5V, with a mass (M) of 0.331. The planet is in orbit 4, or a distance (D) of 1.6 AUs. The computation is: 1.6 cubed equals 4.096; dividing this by 0.331 yields 12.375; taking the square root gives us 3.52 standard years. Multiplying by 365.25 results in an orbital period of 1,285.7 standard days.

KEY TO ORBITAL PERIOD TYPES



8 Satellite Orbital Period

If the world is a satellite, then also compute the world's orbital period around the central planet. Otherwise, skip this step (go on to step 9).

8a Orbital Distance

Multiply the central planet's diameter by the satellite's orbital distance (in diameters) to get the satellite's orbital distance in kilometers.

Example: The diameter of the central planet is 5,678km, and the satellite orbits at 25 diameters. The satellite's orbital distance is 5,678 x 25, or 141,950km.

8b Orbital Period

Using the following formula, compute the orbital period.

$$P = \sqrt{\frac{(D/400{,}000)^3 \times 793.64}{M}}$$

Where:
P = Period in standard days.
D = Distance in kilometers.
M = Mass of central planet in earth masses.

Example: The central planet's mass (M) is 0.48. The satellite orbital distance (D) is 141,950km. The computation is: 141,950/400,000 and then cubed equals 0.0447; multiplying by 793.64 gives us 35.476; dividing this by 0.48 yields 73.908; taking the square root gives us an orbital period of 8.60 standard days.

9 Rotation Period

Compute the basic rotation period using the formula below:

$$P = (A \times 4) + 5 + M/D$$

Where:
P = Rotation period in standard days.
A = Dice roll: 2D-2.
M = For a planet, use the mass of central star in solar masses. For a satellite, use the mass of the central planet.
D = For a planet, use the distance from the central star in AUs. For a satellite, divide the distance from the central planet (in kilometers) by 400,000.

If the result is greater than 40, roll 2D and consult the table below:

ROTATION PERIOD

Dice (2D)	**SPECIAL CASES** *Rotation*
2	1Dx10 days (retrograde)
3	1Dx20 days
4	1Dx10 days
5	use rotation unchanged
6	tidal lock
7	tidal lock
8	tidal lock
9	use rotation unchanged
10	1Dx10 days
11	1Dx50 days
12	1Dx50 days (retrograde)

Note: Days are standard days consisting of 24 hours.

For results expressed in tens of days, further refine the figure if desired to get a result in exact days.

To further refine rotations expressed as days, add 1D-3 x 4 hours to the basic rotation period to arrive at a rotation period in actual hours.

For color, the exact rotation period can be further described in minutes (0-59) and seconds (0-59), if desired.

Example: Our planet orbits at 1.6 AUs from the central star, which has a mass of 0.331. Working our way through the rotation period formula: we roll 2D-2 and get 4. Multiplying by 4 and adding 5 yields 21. The star's mass of 0.331 divided by 1.6 gives us 0.20. Adding this to our 21 give us a rotation period of 21.2 standard hours, or 21 hours, 12 minutes.

Since the rotation period is less than 40 hours, we do not need to consult the special cases table.

We want a final rotation period expressed in minutes and seconds, so we settle on a detailed rotation of 21 hours, 12 minutes, and 2 seconds (21h 12m 2s).

10 Axial Tilt

Determine the world's axial tilt by rolling 2D on the table below:

Dice (2D)	**AXIAL TILT**
2-3	0° + (2D-2)
4-5	10° + (2D-2)
6-7	20° + (2D-2)
8-9	30° + (2D-2)
10-11	40° + (2D-2)
12	roll 1D below...
	1-2 50° + (2D-2)
	3 60° + (2D-2)
	4 70° + (2D-2)
	5 80° + (2D-2)
	6 90°

Example: Rolling 2D on the Axial Tilt table results in a 7, giving a table entry of 20° + (2D-2)°. Rolling 2D-2 gives a 7, for an axial tilt of 27°. We add some additional color and come up with a final detailed axial tilt of 27° 44' 7.4".

11 Orbital Eccentricity

Determine the world's orbital eccentricity by rolling 2D on the table below:

Dice (2D)	**ORBITAL ECCENTRICITY**
2-7	0.000
8	0.005
9	0.010
10	0.015
11	0.020
12	Roll 1D below...
	1 0.025
	2 0.050
	3 0.100
	4 0.200
	5 0.250
	6 extreme (ref's choice)

Example: We roll 2D on the Orbital Eccentricity table and get 11, indicating 0.020 as the eccentricity.

12 Seismic Stress Factor

The stresses which cause seismic activity stem from several sources, including the nature of the world, its distance from its star, the size and distance of planetary satellites and so on.

To compute a stress factor for a world:

$$F = X + P + M + S$$

Where:

F = Seismic Stress Factor for the world.

X = Roll of 1D-3.

P = Heavy Core = 1D-2.
Molten Core = 1D-3.
Rocky Body, Icy Body = 0.

M = Satellite diameter in km + (orbit number x 64). Compute for each satellite orbiting the world, and add all results together to get M.

S = Mass of central star in solar masses (step 7a) + world's orbital distance from the star in AUs (step 7b).

Example: A molten core world has 2 satellites (one, diameter1200 km, orbiting 7 diameters out and another, diameter 600 km, 25 diameters distant). The world orbits its star (stellar mass of 1.7) at 1.6 AU's. Rolling 1D-3 for X in the formula results in -1. Rolling 1D-3 for P (molten core) gives 3. Computing M: the first satellite is 1200+(7x64), or 2. The second satellite is 600+(25x64), or 0. Adding these values together for both satellites gives an M of 2. Finally, S is 1.7 + 1.6, or 1. The computed stress factor is thus -1+3+2+1, or 5.

ATMOSPHERE RELATED DETAILS 1

1 Atmospheric Composition

If the atmosphere is type 3, 5, 6, 8, D, E, or F, then the composition is: "standard oxygen-nitrogen mix." Proceed to step 2.

If the atmosphere is type 0 or 1, there is no atmosphere to speak of, so the composition is: "none." Proceed to step 2.

If the atmosphere is type 2, 4, 7, or 9, then the composition is: "standard oxygen-nitrogen mix, with ____ taint." To fill in the blank, roll on the composition table, below:

ATMOSPHERIC COMPOSITION

Dice (2D)	*Tainted (2,4,7,9)*
2	Disease
3	Gas Mix
4	High Oxygen
5	Pollutants
6	Sulfur Compounds
7	Pollutants
8	Sulfur Compounds
9	Pollutants
10	Low Oxygen
11	Gas Mix
12	Disease

If the atmosphere is type A, roll on the table below:

ATMOSPHERIC COMPOSITION

Dice (2D)	*Exotic (A)*
2	Very Thin, Irritant
3	Very Thin
4	Thin
5	Thin, Irritant
6	Standard
7	Standard, Irritant
8	Dense
9	Dense, Irritant
10	Very Dense
11	Very Dense, Irritant
12	Occasional Corrosive

If the atmosphere is type B, roll on the table below:

ATMOSPHERIC COMPOSITION

Dice (2D)	*Corrosive (B)*
2	Below -100°C
3	Very Thin,-100°C to -25°C
4	Very Thin,-25°C to 50°C
5	Very Thin, 50°C to 100°C
6	Normal,-200°C to -25°C
7	Normal,-25°C to 50°C
8	Normal, 50°C to 100°C
9	Very Dense,-200°C to -25°C
10	Very Dense,-25°C to 50°C
11	Very Dense, 50°C to 100°C
12	Over 100°C

If the atmosphere is type C, roll on the table below:

ATMOSPHERIC COMPOSITION

Dice (2D)	*Insidious (C)*
2	Gas Mix
3	Gas Mix
4	Radiation
5	Temperature
6	Pressure
7	Gas MIx
8	Pressure
9	Temperature
10	Radiation
11	Gas Mix
12	Gas Mix

Example: A world has an atmosphere UWP digit of 2 (very thin, tainted). Rolling 2D on the Atmospheric Composition table results in a roll of 4, giving a taint of high oxygen.

2 Surface Atmospheric Pressure

Roll 2D on the table below:

SURFACE ATMOSPHERIC PRESSURE (in atmospheres)

	Atmosphere Type					
Dice (2D)	*Trace (1)*	*V.Thin (2-3)*	*Thin* (4,5,F)*	*Std (6-7)*	*Dense (8-9)*	*Very Dense†*
2	0.01	0.10	0.43	0.76	1.50	2.50
3	0.05	0.12	0.45	0.80	1.60	5.00
4	0.05	0.14	0.48	0.85	1.70	10.00
5	0.06	0.16	0.50	0.90	1.80	25.00
6	0.06	0.18	0.50	0.95	1.90	50.00
7	0.07	0.20	0.50	1.00	2.00	100.00
8	0.07	0.23	0.55	1.00	2.00	150.00
9	0.07	0.25	0.60	1.10	2.20	200.00
10	0.08	0.30	0.65	1.20	2.20	250.00
11	0.08	0.35	0.70	1.30	2.40	500.00
12	0.09	0.40	0.75	1.40	2.40	750.00

*For type F atmospheres (thin, low), roll on this column and subtract 0.20.

†Very Dense atmospheres occur in atmosphere types D or E, or on the Atmospheric Composition table for atmospheres type A, B, or C.

Example: A world has an atmosphere UWP digit of 2 (very thin, tainted). Rolling 2D on the Surface Atmospheric Pressure table results in a roll of 2, giving a surface pressure of 0.10 atm.

3 Surface Temperature

The next series of steps allow you to determine detailed information about the world's surface temperature.

3a Stellar Luminosity

Lookup the luminosity of the central star on one of the tables below.

STELLAR LUMINOSITY

Spectral Class	*Ia*	*Ib*	*II*	*III*
B0	27.36	22.80	20.31	18.09
B5	21.25	14.70	11.68	9.05
A0	18.09	11.07	6.85	4.09
A5	16.87	10.40	5.40	3.08
F0	15.72	9.27	4.95	2.70
F5	15.03	8.45	4.75	2.56
G0	16.09	8.84	4.86	2.66
G5	17.27	9.49	5.22	2.94
K0	17.65	10.40	5.46	3.12
K5	18.09	11.95	7.04	4.23
M0	18.49	14.65	8.24	4.66
M5	18.95	17.27	11.05	6.91
M9	19.38	18.49	11.28	7.20

Spectral Class	*IV*	*V*	*VI*	*Spec*	*D*
B0	16.87	15.38	—	B	0.46
B5	6.69	6.12	—	A	0.27
A0	3.53	3.08	—	F	0.13
A5	2.47	2.00	—	G	0.09
F0	2.09	1.69	—	K	0.08
F5	1.86	1.37	0.99	M	0.07
G0	1.60	1.05	0.75		
G5	1.49	0.90	0.66		
K0	1.47	0.81	0.58		
K5	—	0.53	0.40		
M0	—	0.45	0.32		
M5	—	0.29	0.21		
M9	—	0.18	0.09		

Example: The central star is a type F5V, which has a luminosity of 1.37.

3b Orbit Factor

Lookup the orbit factor of the planet on the table below.

Orbit	*Factor*
0	836.345
1	591.385
2	447.045
3	374.025
4	295.693
5	223.523
6	164.021
7	118.277
8	84.484
9	60.046
10	42.569
11	30.140
12	21.326
13	15.085
14	10.668
15	7.544
16	5.335
17	3.772
18	2.667
19	1.886

Example: The planet, in orbit 4, has an orbit factor of 295.693.

ATMOSPHERE RELATED DETAILS 2

3c Energy Absorption

If the world atmosphere is type 0–3, lookup the value on the table below:

WORLD ATMOSPHERE 0-3

World Hyd	*Not Habital Zone*	*Habital Zone*
0	0.800	0.900
1	0.744	0.829
2	0.736	0.803
3	0.752	0.811
4	0.738	0.782
5	0.753	0.789
6	0.767	0.795
7	0.782	0.802
8	0.796	0.808
9	0.810	0.814
A	0.818	0.818

If the world atmosphere is type 4–9, lookup the value on the table below:

WORLD ATMOSPHERE 4-9

World Hyd	*Not Habital Zone*	*Habital Zone*
0	0.800	0.900
1	0.811	0.900
2	0.789	0.860
3	0.799	0.860
4	0.774	0.820
5	0.747	0.780
6	0.718	0.740
7	0.687	0.700
8	0.654	0.660
9	0.619	0.620
A	0.619	0.619

If the world atmosphere is type A–D, F, lookup the value on the table below:

WORLD ATMOSPHERE A-D, F

World Hyd	*Not Habital Zone*	*Habital Zone*
0	0.680	0.740
1	0.646	0.697
2	0.635	0.672
3	0.644	0.676
4	0.625	0.648
5	0.599	0.613
6	0.570	0.577
7	0.537	0.539
8	0.500	0.500
9	0.500	0.500
A	0.500	0.500

If the world atmosphere is type E, lookup the value on the table below:

WORLD ATMOSPHERE E

World Hyd	*Not Habital Zone*	*Habital Zone*
0	0.800	0.900
1	0.811	0.900
2	0.807	0.882
3	0.817	0.883
4	0.813	0.866
5	0.809	0.850
6	0.805	0.836
7	0.800	0.821
8	0.794	0.807
9	0.787	0.793
A	0.773	0.773

Example: A world has an atmosphere UWP digit of 2, a hydrosphere digit of 6, and orbits in the habital zone. Looking on the World Atmosphere 0–3 table, we see the energy absorption factor for this world is 0.767.

3d Greenhouse Effect

To determine the world's greenhouse effect, consult the table below:

GREENHOUSE EFFECT

Atmos Code	*Atmosphere Type*	*Greenhouse Effect*
0	None	1.00
1	Trace	1.00
2	Very Thin, Taint	1.00
3	Very Thin	1.00
4	Thin, Tainted	1.05
5	Thin	1.05
6	Standard	1.10
7	Standard, Tainted	1.10
8	Dense	1.15
9	Dense, Tainted	1.15
A	Exotic	see below
B	Corrosive	see below
C	Insidious	see below
D	Dense, High	1.15
E	Ellipsoid	1.10
F	Thin, Low	1.00

If the world's atmosphere is A, B, or C, roll 2D on the table below to determine the greenhouse effect.

EXOTIC ATMOSPHERES GREENHOUSE EFFECT

Die	*Atm A*	*Atm B, C*
2	1.2	1.2
3	1.2	1.3
4	1.3	1.4
5	1.3	1.5
6	1.4	1.6
7	1.4	1.7
8	1.5	1.8
9	1.5	1.9
10	1.6	2.0
11	1.6	2.1
12	1.7	2.2

Example: A world has an atmosphere UWP digit of 2. Consulting the Greenhouse Effect table, we find this world has a Greenhouse Effect of 1.00.

3e Base Temperature

Compute the base surface temperature using this formula:

$$T = L \times O \times E \times G$$

Where:

T = World's Base Mean Surface Temperature (in degrees Kelvin; subtract 273 to get degrees Celsius).
L = Luminosity of the central star.
O = Orbital factor for the world.
E = Energy absorption factor for the world.
G = Greenhouse effect for the world.

Example: A world orbits a star that has a luminosity of 1.37. The orbital factor for the world's orbit is 295.693. The world's energy absorption is 0.767, and the greenhouse effect is 1.00. Plugging these values into the formula we have: 1.37 x 295.693 x 0.767 x 1.00, giving us a base mean surface temperature of 310.7°K. Converting to degrees Celsius, we subtract 273, giving us a final base mean surface termperature of 37.7°C.

4 Orbital Eccentricity Effects

Compute the modification from orbital eccentricity using these formulas:

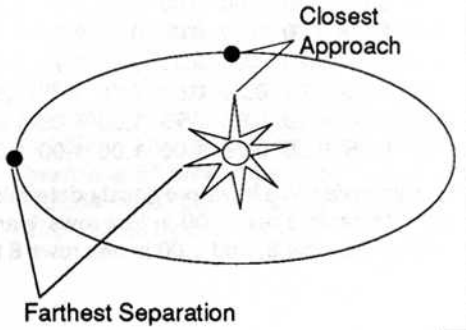
$$Tc = O \times +30$$
$$Tf = O \times -30$$

Where:

Tc = Temperature at closest approach.
Tf = Temperature at farthest separation.
O = Orbital eccentricity.

Example: We have previously determined a world to have an orbital eccentricity of 0.020. This gives a closest approach temperature modifier of +0.6°C and a farthest separation modifier of –0.6°C.

AN ECCENTRIC ORBIT



ATMOSPHERE RELATED DETAILS 3

5 Latitude Temperature Effects

Determine the temperature modification effects of latitude from the table below:

LATITUDE TEMPERATURE MODIFIERS

Hex Row	*Size 1*	*Size 3,2*	*Size 4,5*	*Size 6,7*	*Size 8,9*	*Size A*
1	+9	+12	+15	+18	+21	+24
2	+6	+8	+10	+12	+14	+16
3	+3	+4	+5	+6	+7	+8
4	0	0	0	0	0	0
5	-3	-4	-5	-6	-7	-8
6	-6	-8	-10	-12	-14	-16
7	-9	-12	-15	-18	-21	-24
8	-12	-16	-20	-24	-28	-32
9	-15	-20	-25	-30	-35	-40
10	-18	-24	-30	-36	-42	-48
11	-21	-28	-35	-42	-49	-56

Example: For a size 4 world, the latitude modifiers are: +15, +10, +5, 0, -5, -10, -15, -20, -25, -30, -35.

6a Axial Tilt Base Increase

Determine the maximum increase in temperature due to axial tilt (summer season) with this formula:

$$T = A \times +0.6$$

Where:

T = Base temperature increase during summer.

A = Axial tilt in degrees.

Example: We have previously determined a world to have an axial tilt of 27°. The base temperature increase is thus +16°C (rounded) in the summer.

6b Axial Tilt Base Decrease

Determine the maximum decrease in temperature due to axial tilt (winter season) with this formula:

$$T = A \times -1.0$$

Where:

T = Base temperature increase during summer.

A = Axial tilt in degrees.

Example: We have previously determined a world to have an axial tilt of 27°. The base temperature decrease is thus -27°C in the winter.

6c Axial Tilt Latitude Effects

Determine the axial tilt temperature factor for a given hex row from the table below:

AXIAL TILT EFFECTS

	Degree of Axial Tilt													
Hex Row	*0*	*1*	*2–3*	*4–5*	*6–8*	*9–12*	*13–16*	*17–22*	*23–28*	*29–34*	*35–44*	*45–59*	*60–84*	*85+*
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.75	1.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.75	1.00	1.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.75	1.00	1.00	1.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.75	1.00	1.00	1.00	1.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.75	1.00	1.00	1.00	1.00	1.00
6	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.75	1.00	1.00	1.00	1.00	1.00	1.00
7	0.00	0.00	0.00	0.00	0.25	0.50	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00
8	0.00	0.00	0.00	0.25	0.50	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
9	0.00	0.00	0.25	0.50	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10	0.00	0.25	0.50	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
11	0.25	0.50	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Example: We have previously determined a world to have an axial tilt of 27°. The axial tilt factors are: 0.00 in hex rows 1 and 2, 0.25 in hex row 3, 0.50 in hex row 4, 0.75 in hex row 5, and 1.00 in hex rows 6 to 11.

7a Length of Day and Night

To compute the length of daytime or nighttime divide the rotation period by 2.

Example: A world has a rotation period of 28 days. Dividing by 2, daytime or nighttime lasts 14 days.

7b Rotation-Luminosity Factor

Compute a rotation luminosity factor using the following formula:

$$R = L \div \sqrt{D}$$

Where:

R = Rotation-luminosity factor.

L = Luminosity for the primary star (from step 3a).

D = Distance from the primary star (in AUs).

Example: We have a world that is 1.6 AUs from a type F5V star. Looking at step 3a, we see the luminosity for the star is 1.37. Computing the square root of 1.6 gives 1.26. Dividing 1.37 by 1.26 yields a rotation luminosity factor of 1.09.

7c Daytime Rotation Effects

Compute the average temperature increase during the day from the table:

DAYTIME TEMPERATURE EFFECTS

Atm Pressure	*+Per Hour of Daylight*	*Absolute Maximum Plus Temperature*
None (0)	1.0°x R	(Base + 273) x 0.1 x R
Trace (1)	0.9°x R	(Base + 273) x 0.3 x R
V.Thin (2,3,F)	0.8°x R	(Base + 273) x 0.8 x R
Thin (4,5)	0.6°x R	(Base + 273) x 1.5 x R
Standard (6,7)	0.5°x R	(Base + 273) x 2.5 x R
Dense (8,9)	0.4°x R	(Base + 273) x 4.0 x R
V. Dense (D,E)	0.2°x R	(Base + 273) x 5.0 x R

Note: R is the rotation-luminosity factor from step 7b, above.

At no time can the +per hour of daylight exceed the absolute maximum plus temperature.

Example: A world with no atmosphere has a base mean surface temperature of 95°C, a rotation of 28 days, and an R of 1.09. Looking on the Rotation Temperature Effects table using the atmospheric pressure entry of "None", we find that we add 1.0° x 1.9, or 1.9° per hour. We have 336 hours of daylight (14 days x 24 hours per day), which means we would add 638°. However, the "absolute limit" column indicates that we can add at most +70°C ([95+273]x0.1x1.9).

7d Nighttime Rotation Effects

Compute the average temperature decrease during nighttime from the table:

NIGHTTIME TEMPERATURE EFFECTS

Atm Pressure	*–Per Hour of Night*	*Absolute Maximum Minus Temperature*
None (0)	20.0°C	(Base + 273) x 0.80
Trace (1)	15.0°C	(Base + 273) x 0.70
V.Thin (2,3,F)	8.0°C	(Base + 273) x 0.50
Thin (4,5)	3.0°C	(Base + 273) x 0.30
Standard (6,7)	1.0°C	(Base + 273) x 0.15
Dense (8,9)	0.5°C	(Base + 273) x 0.10
V. Dense (D,E)	0.2°C	(Base + 273) x 0.05

Note: The rotation-luminosity factor is not used for the nighttime calculations since the primary star does not shine on the world's night side.

At no time can the –per hour of night exceed the absolute maximum minus temperature.

Example: Computing the nighttime temperature drop for the same world as step 7b gives us -6720° C (20°Cx336 hours). However, the "absolute limit" column computation tells us at most we can subtract 294.4° C ([95+273]x0.80).

8 More Complex Situations

These rules favor an terran planet in a system with a single star. Systems with more than one star, or a world tidally locked with its star involve some special considerations.

Steps 9 and 10 discuss how to handle these more complex situations.

9 Binary or Trinary Stars

The problem with multiple star systems is how to handle the complex variations in the energy striking the planet from the other stars.

The easiest way to deal with such complexities is to treat the system as if it has a single star with a modified luminosity.

A close companion is easily dealt with by just adding the luminosity of the two stars together.

A far companion is so distant that its effect can be ignored.

A near companion orbiting among the planets presents the complex situation. Handle such a complex situation by computing three luminosity variations:

Closest Separation: Compute the effective luminosity addition for the closest approach of the companion star using this formula:

$$L_c = L \div \sqrt{C_d - W_d}$$

Where:

L_c = Effective luminosity added by the companion star at its closest separation from the world in question.

L = Luminsoity factor (from the table in step 3a) for the companion star.

C_d = Distance of the companion star from the primary star (in AUs).

W_d = Distance of the world from the primary star (in AUs).

Farthest Separation: Compute the effective luminosity addition for the farthest separation of the companion star using this formula:

$$L_f = L \div \sqrt{C_d + W_d}$$

Where:

L_f = Effective luminosity added by the companion star at its farthest separation from the world in question.

L = Luminsoity factor (from the table in step 3a) for the companion star.

C_d = Distance of the companion star from the primary star (in AUs).

W_d = Distance of the world from the primary star (in AUs).

Mean Separation: Compute the effective luminosity addition for the mean separation of the companion star using this formula:

Where:

$$L_m = L \div \sqrt{(C_d + W_d) \div 2}$$

L_m = Effective luminosity added by the companion star at its mean separation from the world in question.

L = Luminosity factor (from the table in step 3a) for the companion star.

C_d = Distance of the companion star from the primary star (in AUs).

W_d = Distance of the world from the primary star (in AUs).

Timing: Determine the timing of the temperature changes by examining the orbital periods of the companion star and the orbital period of the world.

Compute a base temperature and a temperature worksheet for the various luminosities.

Three base temperatures and three temperature worksheets are usually sufficient.

10 Tidally Locked Worlds

Temperature computations work differently if the world is tidally locked with its primary star.

The base temperature applies to the twilight region between the world's light and dark side, rather than hex row 4. By convention, the twilight region is in hex row 1 on the map (both rows on each side of the equator).

Further, by convention, the top hexrows are on the dayside, and the bottom hexrows are on the nightside.

Use the maximum plus for the daytime plus computed in step 7c, since daytime is effectively infinite.

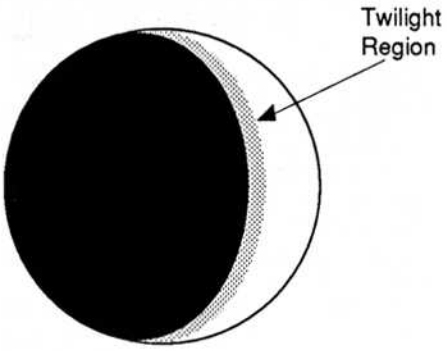
To determine the latitude mod per hexrow on the dayside, divide the daytime plus by the world's UWP size digit. (The dayside temperature must never exceed the maximum daytime plus in any hex row, however.)

Use the maximum minus for the nighttime minus computed in step 7d, since nighttime is effectively infinite.

To determine the latitude mod per hexrow on the nightside, divide the nighttime minus by the world's UWP size digit. (The nightside temperature must never exceed the maximum nighttime minus in any hex row, however.)

Axial tilt has no effect, since the world does not rotate.

Orbital eccentricity works just like normal.



Example: We have a tidally locked size 3 world with base temperature of 26°C. The world's maximum daytime plus is 57°C, and the maximum minus is 239°C. The latitude mod per dayside hexrow is 57 divided by 3, or 19°C. The latitude mod per nightside hexrow is 239 divided by 3, or 80°C.

11 Temperature Worksheet

Produce a temperature worksheet for the world, combining all of the temperature effects. A temperature worksheet is constructed as follows:

				HIGEST POSSIBLE TEMP COMPUTATION						LOWEST POSSIBLE TEMP COMPUTATION					
Col: 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Hex Row	Base Temp	Latitude Mod	Col 1+2	Summer Plus	Axial Tilt Factor	Col 4x5	Daytime Plus	Orbit Ecc Plus	Col 3+6+7+8	Winter Minus	Axial Tilt Factor	Col 11x12	Nighttime Minus	Orbit Ecc Minus	Col 3+12+ 13+14
1	9	+21	30	+16	0.00	+0	+5	+1	36	-26	0.00	+0	-7	-1	22
2	9	+14	23	+16	0.00	+0	+5	+1	29	-26	0.00	+0	-7	-1	15
3	9	+7	16	+16	0.25	+4	+5	+1	26	-26	0.25	-7	-7	-1	2
4	9	+0	9	+16	0.50	+8	+5	+1	23	-26	0.50	-13	-7	-1	-12
5	9	-7	2	+16	0.75	+12	+5	+1	20	-26	0.75	-20	-7	-1	-25
6	9	-14	-5	+16	1.00	+16	+5	+1	17	-26	1.00	-26	-7	-1	-39
7	9	-21	-12	+16	1.00	+16	+5	+1	10	-26	1.00	-26	-7	-1	-46
8	9	-28	-19	+16	1.00	+16	+5	+1	3	-26	1.00	-26	-7	-1	-53
9	9	-35	-26	+16	1.00	+16	+5	+1	-4	-26	1.00	-26	-7	-1	-60
10	9	-42	-33	+16	1.00	+16	+5	+1	-11	-26	1.00	-26	-7	-1	-67
11	9	-49	-40	+16	1.00	+16	+5	+1	-18	-26	1.00	-26	-7	-1	-74
			↑ Base Temp for Hex Row		↑ Axial Tilt Temp Plus in Summer				↑ Highest Temp for Hex Row						↑ Lowest Temp for Hex Row

Example: The worksheet above was constructed for a UWP size 8 world with a dense atmosphere, an axial tilt of 26°, a rotation period of 25 hours, and an orbital eccentricity of 0.020. The temperature values used were: base temperature of 9°C, summer plus of 16°C, winter minus of 26°C, daytime plus of 5°C, nighttime minus of 7°C, and an orbital eccentricity plus/minus of 1°C.

12 Native Life

Determine if native life exists on a world by rolling 2D roll for 10+, with the following DMs:

if atm 0, DM-3
if atm 4-9, DM+4
if hyd 0, DM-2
if hyd 2-8, DM+1
if base temp below -20°C, DM-1
if base temp over +30°C, DM-1
if primary star type G or K, DM+1
if primary star type F, A, or B, DM-1

Example: A world has a UWP atmosphere digit of 2, a UWP hydrosphere of 6, a base temperature of 18°C, and orbits a type F star. The net DM is zero. A roll of 2D gives a result of 12 meaning the world does have locally evolved native life.

13 Atmospheric Terraforming

Determine if atmospheric terraforming has occurred using the table below. Add all appropriate values to yield a number. Roll 2D for this number or less. The current UWP atmosphere digit remains unchanged, since the terraforming has already occurred.

Example: A size 2 world has an atmosphere of 6, hydrosphere of 4, a population of 9, a tech level of 12, and has no native life. Consulting the Wide ScaleTerraforming table for atmosphere yields a 7 (+2+0+0+1+2+2). Rolling 2D results in a 6: this world had widescale atmospheric terraforming performed sometime in its past.

14 Greenhouse Effect Terraforming

Determine if greenhouse effect terraforming has occurred using the table below. Add all appropriate values to yield a number. Roll 2D for this number or less. If greenhouse effect terraforming has occurred, consider altering the current greenhouse effect by up to ±10%. (Optionally, consider a runaway greenhouse effect of over 100%.)

Example: We use the same world as in step 10, and consult the Wide ScaleTerraforming table for greenhouse effect. We get an 8 (+2+0+0+2+2+2). Rolling 2D results in an 8: this world has done widescale greenhouse effect terraforming.

15 Albedo Terraforming

Determine if albedo terraforming has occurred using the table below. Add all appropriate values to yield a number. Roll 2D for this number or less. If albedo terraforming has occurred, consider altering the current energy absorption by up to ±0.05.

Example: Using the same world as the step 10 example again, we consult the Wide ScaleTerraforming table for albedo. We arrive at 9 (+2+0+0+2+3+2). Rolling 2D results in a 12: this world has not done any widescale albedo terraforming.

WIDE SCALE TERRAFORMING †

	Size					Atm		Hyd				Pop			Tech				Life*	
Type	1,2	3,4	5,6	7,8	9+	0	C	0	1-4	5-9	A	0-4	5-7	8+	0-4	5-8	9-11	12+	Yes	No
Atmosphere	+2	+1	0	-1	-2	-5	-5	-1	0	0	+1	-3	0	+1	-10	-1	+1	+2	-4	+2
Greenhouse	+2	+1	0	-1	-2	-5	-5	+1	0	+1	+2	-2	0	+2	-10	+1	+2	+2	-2	+2
Albedo	+2	+1	0	-1	-2	-5	0	+2	0	0	+1	-2	0	+2	-10	+1	+2	+3	-2	+2

*Life refers to life native to the world

† At least one hex on the world map has been affected by massive terraforming efforts

HYDROSPHERE RELATED DETAILS 1

1 HydrographicPercentage

Roll 2D-7 (giving a range from -5 to +5; reroll a "+5" result), and add to the UWP hydrographic digit x 10.

Example: A world has a UWP hydrographic digit of 6, representing a basic hydrographic percentage of around 60%. We roll 2D and get 6; subtracting the DM of 7 gives a result of -1. Adding this to the UWP digit of 6 x 10 gives 60–1, for a final detailed percentage of 59%.

2 Hydrographic Composition

In most cases, state that the hydrosphere of a world is "liquid water". However, a world's seas may vary under these conditions:

Tainted Atmosphere (2,4,7,9): An unusual gas mix can cause hydrographic composition to become tainted. Other times, the taint will have no effect. It is up to you to decide if the taint also affects the water.

Tainted water requires purification to be used for drinking or cooking. Tainted water is also usually dangerous to swimmers. State composition as "tainted liquid water".

Exotic Atmosphere (A): The hydrosphere on an exotic atmosphere world is "tainted liquid water" on a 2D roll of 10+; otherwise state the composition as "atmosphere related chemical mix".

Corrosive Atmosphere (B): The hydrosphere of such a world is rarely water. State the composition as "atmosphere related chemical mix".

Insidious Atmosphere (C): The makeup of the hydrosphere is dependent upon the nature of the atmosphere.

Extreme temperatures, pressures, or unusual gas mixes tend to exclude water; state the composition as "atmosphere related chemical mix".

Where radiation is the primary problem, the world may and may not have water. If it does have liquid water, it might be dangerous because of the radiation taint. If water is present, state the composition as "tainted liquid water", otherwise use "atmosphere related chemical mix".

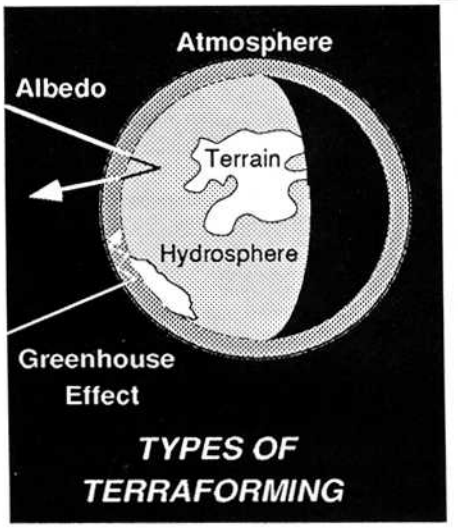
Example: A taint of high oxygen has no affect on our hydrosphere, so we state it as "liquid water."

3 Tectonic Plates

Only a molten or heavy core world has a chance of multiple major plates; rocky bodies and icy bodies automatically have only one tectonic plate.

The number of major plates on a molten or heavy core world is established by taking UWP size + UWP hydrosphere, and subtracting 2D. A result of 1 or less indicates that there is little geological activity on the planet, with the entire surface being one major plate (and, perhaps, a few minor plates).

Example: A molten core world has a UWP size of 8 and a UWP hydrosphere of 3, which yields a sum of 11. Subtracting a 2D roll of 5 means this world has 6 tectonic plates.



4 Hydrographic Terraforming

Consult the Wide Scale Terraforming table below to determine if hydrographic terraforming has already occurred on a world.

Add all the indicated values appropriate to the world conditions to yield a number. A throw of 2D for this number or less means hydrographic terraforming has been conducted on the world.

If hydrographic terraforming has ocurred, the old original hydrographic percentage can be determined if desired (the modification will rarely have been more than ±5%).

Do not change the current world UWP hydrographic digit, since the terraforming has already occurred.

Example: A size 2 world has an atmosphere digit of 6, a hydrosphere digit of 4, a population digit of 9, a tech level of 12, and does not have native life. Consulting the Wide Scale Terraforming table for hydrosphere yields a number of 11 (+2+0+1+2+3+3). Rolling 2D for this number (11 or less) results in an 8: this world has had global hydrographic terraforming performed sometime in the past. We decide the locals experimented with raising the hydrographic percentage, and after raising it an additional 1%, decided the effort was not worth it, and have discontinued the project.

5 Terrain Terraforming

Consult the Wide Scale Terraforming table below to set the chance that hex-sized terrain terraforming has occurred on a world.

Add all the indicated values appropriate to the world conditions to yield a number. A throw of 2D for this number or less means hex-sized terrain terraforming has occurred on the world.

Example: A size 2 world has an atmosphere digit of 6, a hydrosphere digit of 4, a population digit of 9, a tech level of 12, and does not have native life. Consulting the Wide Scale Terraforming table for terrain yields a number of 14 (+4+0+0+3+4+3). There is no need to roll 2D for this number: the result is automatic. This world has had hex-sized terrain terraforming performed — once again we stipulate that the terrain terraforming was the indirect result of the aborted hydrographic terraforming project.

WIDE SCALE TERRAFORMING †

	Size					Atm		Hyd				Pop			Tech				Life*	
Type	*1,2*	*3,4*	*5,6*	*7,8*	*9+*	*0*	*C*	*0*	*1-4*	*5-9*	*A*	*0-4*	*5-7*	*8+*	*0-4*	*5-8*	*9-11*	*12+*	*Yes*	*No*
Hydrosphere	+2	+1	0	-1	-2	-4	0	0	+1	+1	0	-2	0	+2	-10	+1	+2	+3	0	+3
Terrain	+4	+3	+2	+1	0	-4	0	+1	0	0	0	-2	0	+2	-10	+1	+3	+4	0	+3

*Life refers to life native to the world

† At least one hex on the world map has been affected by massive terraforming efforts

6 Continents and Oceans

Determine either the number of continents or the number of oceans. Which you do depends on the world's detailed hydrographic percentage from step 1.

If the percentage is 50% to 99%, consult the Continents table to determine the number of continents.

Should the detailed hydrographic percentage be 100%, then there is no significant land surface: the number of major and minor continents are both zero.

If the percentage is 1% to 49%, consult the Oceans table to determine the number of oceans.

A true 0% hydrosphere indicates there is no significant water surface (no free-standing water anywhere); the number of major and minor oceans is zero. This does not necessarily indicate the absence of water vapor in the air or in subterranean water supplies — there just isn't any usable surface water.

Example: A world has a UWP hydrographic digit of 6 and a hydrographic percentage of 59% from step 1, which means we must consult the Continents table. Rolling 1D+ (6x3) gives a result of 23. From the table, we find the world has 1D major continents and 2D-2 minor continents. After rolling the dice as indicated, we find the world has 1 major continent and 4 minor continents.

7 Volcanoes

To determine the number of volcanoes on the world, roll 2D-7 and add the seismic stress factor÷2 (drop fractions). Make this roll once for each continent, or 1D times where only one continent exists. The results give the number of important volcanoes on each land mass.

Undersea volcanoes can be ignored, except where undersea colonization is important (such as on a tech level 10+ water world). If they are determined, the same procedure applies, once per ocean or 1D times for a water world.

Example: A world has 6 continents and a stress factor of 5. Rolling six times, 2D-7 + stress factor÷2, gives: 2+3+0+2+0+3, or 10 notable volcanoes on the world.

Roll 1D + (UWP hydrographic code x 3)

CONTINENTS TABLE

(use when hydrographic percentage is 50% to 99%)

Die	*Major Continents*	*Minor Continents*	*Other Land Masses*
16	2D+1	1D-1	3D-3 Major islands, 2D archipelagoes
17	2D+1	2D-2	3D-3 Major islands, 2D archipelagoes
18	2D+1	3D-3	3D-3 Major islands, 2D archipelagoes
19	2D	1D-1	3D-3 Major islands, 2D archipelagoes
20	2D	2D-2	3D-3 Major islands, 2D archipelagoes
21	2D	3D-3	3D-3 Major islands, 2D archipelagoes
22	1D	1D-1	3D-3 Major islands, 2D archipelagoes
23	1D	2D-2	3D-3 Major islands, 2D archipelagoes
24	1D	3D-3	3D-3 Major islands, 2D archipelagoes
25	1D-1	1D	3D-3 Major islands, 2D archipelagoes
26	1D-1	2D	3D-3 Major islands, 2D archipelagoes
27	1D-1	3D	3D-3 Major islands, 2D archipelagoes
28	1D-2	1D-1	3D-3 Major islands, 2D archipelagoes
29	1D-3	1D-2	3D-3 Major islands, 2D archipelagoes
30	1D-4	1D-3	2D Major islands, 2D archipelagoes
31	0	0	1D-3 Major islands, 2D archipelagoes
32	0	0	Archipelagoes
33	0	0	Archipelagoes
34	0	0	Archipelagoes
35	0	0	No significant land surface
36	0	0	No significant land surface

Roll 1D + (UWP hydrographic code x 3)

OCEANS TABLE

(use when hydrographic percentage is 1% to 49%)

Die	*Major Oceans*	*Minor Oceans*	*Other Bodies of Water*
1	0	0	No significant water surface
2	0	0	No significant water surface
3	0	0	Scattered lakes
4	0	0	Scattered lakes
5	0	0	Scattered lakes
6	0	0	1D-3 Small seas, 2D scattered lakes
7	1D-4	1D-3	2D-3 Small seas, 2D scattered lakes
8	1D-4	1D-2	3D-3 Small seas, 2D scattered lakes
9	1D-3	1D-1	3D-3 Small seas, 2D scattered lakes
10	1D-3	1D-1	3D-3 Small seas, 2D scattered lakes
11	1D-2	1D-1	3D-3 Small seas, 2D scattered lakes
12	1D-2	2D-2	3D-3 Small seas, 2D scattered lakes
13	1D-1	1D-1	3D-3 Small seas, 2D scattered lakes
14	1D-1	2D-2	3D-3 Small seas, 2D scattered lakes
15	1D-1	3D-3	3D-3 Small seas, 2D scattered lakes
16	1D	1D-1	3D-3 Small seas, 2D scattered lakes
17	1D	2D-2	3D-3 Small seas, 2D scattered lakes
18	1D	3D-3	3D-3 Small seas, 2D scattered lakes
19	1	1D-1	3D-3 Small seas, 2D scattered lakes
20	1	2D-2	3D-3 Small seas, 2D scattered lakes
21	1	3D-3	3D-3 Small seas, 2D scattered lakes

HYDROSPHERE RELATED DETAILS 3

NATURAL RESOURCES

	Density				Atmosphere		Population		Technology				Life*	
Resource	Heavy Core	Molten Core	Rocky Body	Icy Body	Atm 4-9	Atm 0-3,A+	Pop 0-4	Pop 5+	Tech 0-3	Tech 4-6	Tech 7-11	Tech 12+	Yes	No
Agricultural	+1	+4	+4	-4	+1	- 3	0	0	+1	0	- 1	- 2	+5	0
Ores	+8	+7	+3	0	0	+1	0	0	+1	0	0	+1	0	0
Radioactives	+7	+5	+3	0	0	+1	0	0	+1	0	0	+1	0	0
Crystals	+6	+5	+2	0	0	0	0	0	+1	0	0	+1	0	0
Compounds	+5	+6	+1	-4	0	+1	0	0	+1	0	0	+1	+1	- 1

**Life:* "Life" refers to life native to the world

PROCESSED RESOURCES

	Density				Atmosphere		Population		Technology				Life*	
Resource	Heavy Core	Molten Core	Rocky Body	Icy Body	Atm 4-9	Atm 0-3,A+	Pop 0-4	Pop 5+	Tech 0-3	Tech 4-6	Tech 7-11	Tech 12+	Yes	No
Agroproducts	0	+1	+1	0	+2	0	+1	+2	+1	+2	+1	+1	+5	0
Metals	+2	0	0	-1	0	+1	–1	+1	–1	+2	+4	+5	0	0
Non-Metals	+1	0	0	-1	+1	+1	0	+1	0	+2	+4	+6	+3	0

**Life:* "Life" refers to life native to the world

MANUFACTURED GOODS

	Atmosphere		Population			Government				Technology				Life*	
Resource	Atm 4-9	Atm 0-3,A+	Pop 0-4	Pop 5-8	Pop 9+	Gov 0,1	Gov 2--6	Gov 7	Gov 8+	Tech 0-3	Tech 4-6	Tech 7-11	Tech 12+	Yes	No
Parts	0	+1	-1	+1	+2	-1	+1	+2	0	0	0	+2	+4	+1	0
Durables	0	+1	-1	+2	+3	-1	+1	+2	0	0	+1	+2	+3	+1	0
Consumables	0	+1	-1	+1	+4	-1	+1	+2	+1	0	+1	+2	+4	+1	0
Weapons	0	+1	-1	0	+1	0	+1	+3	+1	0	+1	+1	+2	+1	0

**Life:* "Life" refers to life native to the world

INFORMATION

	Population			Government				Law Level				Technology			
Resource	Pop 0-4	Pop 5-8	Pop 9+	Gov 0,1	Gov 2--6	Gov 7	Gov 8+	Law 0-2	Law 3-6	Law 7-9	Law A+	Tech 0-3	Tech 4-6	Tech 7-11	Tech 12+
Recordings	0	+1	+2	0	+1	+1	+2	0	+1	+2	+3	–3	+1	+2	+3
Artforms	0	+2	+3	0	+1	+2	0	0	0	0	0	+2	+1	+1	+1
Software	0	+1	+4	0	+1	+1	+1	0	+1	+2	+3	–9	0	+1	+4
Documents	–1	0	+1	0	+1	+2	+4	0	+2	+4	+6	0	+1	+3	+1

**Life:* "Life" refers to life native to the world

8 Resources and Goods

The Natural Resources table, Processed Resources table, Manufactured Goods table, and the Information table are used to set the chance of any particular resource or good being present on a world.

For each listed resource or good entry, add all the indicated values appropriate to the world conditions to yield a number. A throw of 2D for this number or less means the indicated resource or good is present on the world in significant quantities.

Example: A molten core world has an atmosphere digit of 2, a population digit of 5, a tech level of 7, and has native life. Consulting the Natural Resources table for agricultural goods yields a number of 5 (+4-3+0-1+5). Rolling 2D for this number (5 or less) results in a 7: this world does not readily have natural agricultural resources.

9 Weather Control

If the world's tech level is at least 8, weather control may have been introduced. Roll 2D — if the result is less than both the world's tech level and the world's population, weather control is practiced.

Example: A world's UWP tech level is 10 and its UWP population digit is 7. Rolling 2D gives 3, which is less than the tech level and the population digit. Weather control is practiced on this world.

POPULATION RELATED DETAILS 1

1 Total World Population

To determine the total world population, use the formula below:

$$T = M \times 10^P$$

where:
T = Total world population.
M = Population multiplier.
P = UWP population digit.

To get a more detailed population figure, also determine the second and third digits of the population figure.

Example: We have a world with a population multiplier of 6 and a UWP population digit of 7. We compute the total world population and get 60,000,000. We determine the second and third digits to be 9 and 3, for a final total world population of 69,300,000.

2 Cities If Population < 1,000,000

Roll 1D; if the result is greater than the UWP population digit, all inhabitants are in a single town or community. In this case, the world has one primary city and no secondary or tertiary cities; otherwise, go on to the following steps. If the UWP population digit is 3 or less, and this roll fails, there are no cities at all.

Example: A world has a UWP population digit of 4 and a total world population of 84,500. We roll 1D and get a 1 — we continue on to the next steps since we did not get greater than the population digit of 4. Had we rolled a 5 or more, all of the inhabitants would have been in a single city.

3 Cities

The following steps determine the number and size of the world's cities.

3a Very Large Cities (UWP Pop)

Occasionally, the bulk of a world's population may live in only a few very large cities. Roll 3D; if less than the world's UWP population digit, one or more large cities with a population digit *the same as the world's UWP population* exist on the world.

Determine the population multiplier of each city as a digit from 1 to 9. No matter what, the sum of all city population multipliers cannot exceed the world's population multiplier - 1.

Continue to create more cities until the limit of the world's population multiplier - 1 is reached.

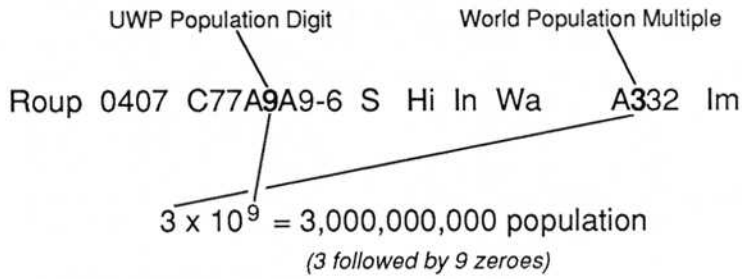
A world will quite often not have any cities of this size.

Example: A world has a population digit of A and a population multiple of 8. Rolling 3D results in 9, which is less than the UWP population of 10: cities with a population digit of 10 exist on the world. We determine the population multiplier of the first city to be 2. We roll the population multiplier for a second city and get 9.

The combined population multipliers for the two cities is 11, which is more than the world's population multiplier - 1, or 7 — so the second city can have a population multiplier no larger than 5. This way, the sum of the two city's population multipliers (2+5) does not exceed the world's population multiplier - 1 (7).

This world of 80 billion has two very large cities, one with 50 billion, and another with 20 billion.

Population information in the UWP



3b Unallocated Population

Once all the very large cities have been determined, compute how much of the population remains unallocated.

Subtract the population of the very large cities from the total world population. This result is the *available population* for the smaller primary cities (step 3c).

If there were no very large cities, the available population equals the total world population.

Example: We have a world with a total population of 84,700,000,000. Sutracting the population of the two very large cities of 53,400,000,000 and 21,300,000,000, we arrive at an unallocated population of 10,000,000,000. This is the population available for creating further large cities.

3c Large Cities (UWP Pop - 1)

Roll 2D; if less than the world's UWP population digit, one or more cities of with a population the size of the UWP population - 1 exist on the world.

Determine the population multiplier of each city. Continue rolling population multipliers for additional cities until the combined total of all the cities' populations equals or exceeds half of the available population.

Example: Continuing with the world above (a population digit of A and a population multiple of 8); rolling 2D results in 5, which is less than the UWP population digit of 10. Cities exist with a population digit of one less than the world's population digit — that is, cities with a population digit of 9 exist. Rolling for the population multiplier of the first city we get 7.

Our available population at this point is 10,000,000,000, so the result of 7 gives us a city with a population of 7 x 10^9, or 7,000,000,000 — which is more than half of the available population. Thus, we don't generate any more cities of this size.

The world has one primary city with a population of 7,350,000,000.

3d Unallocated Population

Once all the large cities have been determined, compute how much of the population remains unallocated.

Subtract the population of the large cities from the available population (determined in step 3b) to get the amount of population available for medium-large cities in step 3e.

Example: We have an available population of 10,000,000,000. Sutracting the population of the large cities of 7,350,000,000, we arrive at an unallocated population of 2,650,000,000. This is the population available for creating medium-large cities.

3e Medium-Large Cities (UWP Pop - 2)

Roll 1D; if less than the UWP population digit, cities of size UWP population - 2 exist on the world. Rather than roll for individual cities (which sometimes may amount to several dozen), use the following shortcut formula:

$$N = (A \div 10^P) \times (1D + 9)$$

Where:
N = Number (round fractions) of cities of size UWP population - 2.
A = Available population from step 3d.
P = World UWP population digit.
1D = Roll of 1 die.

Note: These cities are assumed to have an average population multiple of 5. When dealing with large numbers of cities (over 20), there will be 3D-3% of these cities with a population multiplier of 9. If we have 100 cities, for example, there will be 1 to 15 cities with a population multiplier of 9. This way, a reasonable number of the largest cities can be singled out and listed individually, if desired.

Example: Continuing with the example world, we roll 1D and get 3, which is less than the UWP population digit of 10 — cities of this size exist.

The world UWP population digit (P) for this world is 10, and the available population (A) is 2,650,000,000. We roll 1D to use in the computation and get 6. The calculation for the number of medium-large cities is thus (2,650,000,000 ÷ 10,000,000,000) x (6+9), or 3.9, which rounds to 4. The world has four cities with a population of about 500 million.

3f Unallocated Population

Once the medium-large cities have been determined, compute how much of the population remains unallocated.

Subtract the total population of the medium-large cities from the available population (determined in step 3d) to get the amount of population available for moderate-size cities in step 3e.

Example: We have an available population of 2,650,000,000. Subtracting the total population of the medium-large cities (500,000,000 x 4), we arrive at an unallocated population of 650,000,000. This is the population available for creating moderate-size cities.

3g Moderate-Size Cities (UWP Pop - 3)

Cities with a population digit of UWP population - 3 automatically exist on the world. Rather than roll for individual cities (which may amount to over a hundred), use the following shortcut formula:

$$N = (A \div 10^P) \times (1D + 9) \times 10$$

Where:
N = Number (round fractions) of cities of size UWP population - 3.
A = Available population from step 3f.
P = World UWP population digit.
1D = Roll of 1 die.

Note: see the note in step 3e. That note applies to this step as well.

Example: Using the example world, which has a world UWP population digit (P) of 10, and an available population (A) of 650,000,000. We roll 1D to use in the computation and get 2. The calculation for the number of moderate-sized cities is thus (650,000,000 ÷ 10,000,000,000) x (2+9) x 10, or 7.2, which rounds to 7. The world has seven cities with a population of about 50 million.

3h Unallocated Population

Once the moderate-size cities have been determined, compute the unallocated population.

Subtract the total population of the moderate-size cities from the available population determined in step 3f to get the amount of population available for small cities in step 3i.

Example: We have an available population of 650,000,000. Subtracting the total population of the moderate size cities (50,000,000 x 7), we arrive at an unallocated population of 300,000,000. This is the population available for creating small cities.

3i Small Cities (UWP Pop - 4)

Cities with a population digit of UWP population - 4 automatically exist on the world. Rather than roll for individual cities (which may amount to hundreds), use the following shortcut formula:

$$N = (A \div 10^P) \times (1D + 9) \times 100$$

Where:
N = Number (round fractions) of cities of size UWP population - 4.
A = Available population from step 3h.
P = World UWP population digit.
1D = Roll of 1 die.

Note: see the note in step 3e. That note applies to this step as well.

Example: Using the example world again — it has world UWP population digit (P) of 10, and an available population (A) of 300,000,000. We roll 1D to use in the computation and get 3.

The calculation for the number of small cities is thus (300,000,000 ÷ 10,000,000,000) x (3+9) x 100, or 36. The world has 36 cities with a population of about 5 million.

3j Unallocated Population

Once the small cities have been determined, compute the unallocated population.

Subtract the total population of the small cities from the available population (step 3h) to get the population available for very small cities in step 3k.

Example: We have an available population of 300,000,000. Subtracting the total population of the small cities (5,000,000 x 36), we arrive at an unallocated population of 120,000,000. This is the population available for creating very small cities.

3k Very Small Cities (UWP Pop - 5)

Cities with a population digit of UWP population - 5 automatically exist on the world. Rather than roll for individual cities (which may amount to many hundreds), use the following shortcut formula:

$$N = (A \div 10^P) \times (1D + 9) \times 1{,}000$$

Where:
N = Number (round fractions) of cities of size UWP population - 5.
A = Available population from step 3j.
P = World UWP population digit.
1D = Roll of 1 die.

Note: see the note in step 3e. That note applies to this step as well.

Example: Once again using the example world — it has world UWP population digit (P) of 10, and an available population (A) of 120,000,000. We roll 1D to use in the computation and get 1.

The calculation for the number of small cities is thus (120,000,000 ÷ 10,000,000,000) x (1+9) x 1,000, or 120. The world has 120 cities with a population of about 5 hundred thousand.

4 Primary, Secondary, Tertiary Cities

The cities with the largest population digits are designated as primary cities. Several of the largest population digit levels may be combined together as long as the total number of primary cities does not exceed 10.

Secondary cities are those with a population digit one less than the primary cities; tertiary cities are all the cities which remain whose population digit is at least one less than the secondary cities'.

5 Starports and Spaceports

The world starport/spaceport type is, of course, already known. Designate one primary city to include a starport/spaceport of the type in the world's UWP.

For each remaining primary city, roll 2D for less than or equal to the city population digit to place another port of that size in the city. If the roll fails, roll 1D on the table below to yield the primary city's port type.

STARPORTS AND SPACEPORTS

World Starport/Spaceport Class

Die	*A*	*B*	*C*	*D*	*E*	*X*	*F*	*G*	*H*	*Y*
1	D	F	H	H	Y	Y	H	Y	Y	Y
2	C	D	G	H	Y	Y	G	H	Y	Y
3	C	D	F	G	H	Y	G	H	H	Y
4	B	C	F	G	H	H	G	G	H	Y
5	B	C	E	G	H	H	F	G	H	Y
6	B	B	D	E	H	H	F	G	H	Y
7	B	B	C	E	E	H	F	G	H	Y
8	A	B	C	D	E	H	F	G	H	Y

DMs:
If city pop 6+, DM +1
If city pop 8+, DM +2

If the world's tech level is 5+, each city (primary, secondary, and tertiary) automatically has a spaceport of type H present.

If the world's tech level is 10+, each secondary city automatically has a spaceport of type F.

Example: A tech level 15 world has a type A starport, and a UWP population digit of 8. The world has 3 primary cities, 24 secondary cities, and 185 tertiary cities. One primary city automatically has a type A starport. Consulting the Starports and Spaceports table for the other two primary cities and rolling 1D (plus a DM of +2 because of the city population) gives two type B starports at the other primary cities. Since the world is tech level 15, the 24 secondary cities each automatically have a type F spaceport and all the 185 tertiary cities automatically have type H spaceports.

6 Orbital Cities

If a world has a type A, B, or C atmosphere, no native life, and its tech level is 9+, then roll 3D-3. If this roll is less than or equal to the world's population digit, then tech level - 6 of the population is in permanent orbit.

If the above is not true, then determine the number and size of orbital cities as below:

For class A starports, there is at least one orbital city (of at least secondary size) for each class A starport on the ground. There does not always need to be a ground class A starport — in some cases, the orbital class A starport is all there is.

For class B starports, there must be at one orbital city (of at least tertiary size) no matter how many class B starports are on the ground. There does not always need to be a ground class B starport at all: the orbital starport may be all there is.

For class C starports and class F spaceports, there is an orbital city on a roll of 2D for less than both the world's tech level and the world's population. The orbital city may be all there is in some cases; there may be no ground port. The orbital city can be no larger than secondary city size, and may be smaller.

In all cases, the absolute limit of the population that can be in permanent orbit is the world's tech level - 6.

Note: Worlds with a government type of 12 or more tend to have fewer inhabitants in orbit.

Example: A world has two ground class A starports, over 20 class F spaceports, a UPP population digit of A, and a tech level of 15. The absolute population limit that can be in orbit is 9 (billions). Two of the secondary cities are placed in orbit: one for each class A starport on the ground. We easily roll less than the tech level (15) and the population digit (10) on 2D, so we place another secondary city in orbit to serve the class F ground spaceports.

7 Social Outlook

The following steps (7a through 7c) allow you to determine the social outlook of the world's population.

7a Progressiveness

Roll 2D on the tables below to determine the progressiveness attitudes and actions of the world's population.

PROGRESSIVENESS

Dice (2D)	*Attitude*
2	Radical
3	Radical
4	Progressive
5	Progressive
6	Progressive
7	Progressive
8	Conservative
9	Conservative
10	Conservative
11	Conservative
12	Reactionary
13	Reactionary

DMs:
If Pop 6+, DM+1
If Pop 9+, DM+2

If Law A+, DM+1

Dice (2D)	*Action*
2	Enterprising
3	Enterprising
4	Enterprising
5	Enterprising
6	Advancing
7	Advancing
8	Advancing
9	Advancing
10	Indifferent
11	Indifferent
12	Indifferent
13	Stagnant

DMs:
If Conservative, DM+3
If Reactionary, DM+6

If Law A+, DM+1

Example: A world has a population digit of 8 and a law level of 9. We have a DM of +1 on the Attitude table — we roll 2D and get 6 with the DM, for a result of "Progressive".

We have no DMs on the Action table. We roll 2D, which results in a 7. The Action is "Advancing".

7b Aggressiveness

Roll 2D on the tables below to determine the aggressiveness attitudes and actions of the world's population.

AGGRESSIVENESS

Dice (2D)	*Attitude*
2	Expansionistic
3	Expansionistic
4	Competitive
5	Competitive
6	Competitive
7	Unaggressive
8	Unaggressive
9	Unaggressive
10	Unaggressive
11	Passive
12	Passive
13	Passive

DMs:
If Law A+, DM+1

Dice (2D)	*Action*
2	Militant
3	Militant
4	Militant
5	Neutral
6	Neutral
7	Neutral
8	Neutral
9	Peaceable
10	Peaceable
11	Peaceable
12	Conciliatory
13	Conciliatory

DMs:
If Expansionistic, DM-2
If Competitive, DM-1
If Passive, DM+2

If Law A+, DM+1

Example: Using the example world from step 7a again, we have a no DMs on the Attitude table. Rolling 2D gives 9, for a result of "Unaggressive".

We likewise have no DMs on the Action table. We roll 2D, and get a 10. The Action is "Peaceable".

7c Extensiveness

Roll 2D on the extensiveness tables to determine the global and interstellar extensiveness of the world's population.

EXTENSIVENESS

Dice (2D)	*Global*
2	Monolithic
3	Monolithic
4	Harmonious
5	Harmonious
6	Harmonious
7	Harmonious
8	Discordant
9	Discordant
10	Discordant
11	Discordant
12	Fragmented
13	Fragmented

DMs:
If Gov 2-, DM+1
If Gov 7, DM+4
If Gov F, DM-1
If Passive, DM+2

If Law 4-, DM+1
If Law A+, DM-1

Dice (2D)	*Interstellar*
2	Xenophilic
3	Xenophilic
4	Friendly
5	Friendly
6	Friendly
7	Friendly
8	Aloof
9	Aloof
10	Aloof
11	Aloof
12	Xenophobic
13	Xenophobic

DMs:
If Starport A, DM-2
If Starport B, DM-1
If Starport D, DM+1
If Starport E, DM+2
If Starport X, DM+3

If Conservative, DM+2
If Reactionary, DM+4

If Law A+, DM+1

Example: The example world (Gov 9, Starport A) has no DMs on the Global table. Rolling 2D gives 7, for a result of "Harmonious".

We have a -2 DM on the Interstellar table. Rolling 2D-2 gives 6, a result of "Friendly".

8a Number of Customs

Roll 1D to determine the number of prominent local customs. Then roll that many times on the table below to determine which follow-on table to use.

LOCAL CUSTOM S

Die	*Which Table*
1	Dressing Habits
2	Eating Habits
3	Living Quarters
4	Family Practices
5	Miscellaneous Customs 1
6	Miscellaneous Customs 2

Example: We roll 1D and get 3. Next we roll three times on the local customs table and get "Dressing Habits" twice, and "Miscellaneous Customs 2" once.

8b Dressing Habits

If the step 8a result was "Dressing Habits", roll 1D+1D on the table below. If the result has an asterisk (*), go to step 8h to find the practicing group.

DRESSING HABITS

Die+ Die	*Result*
11	Same clothes for all sexes
12	Unusual clothes*
13	Unusual clothes*
14	Unusual clothes*
15	Unusual headgear*
16	Unusual headgear*
21	Shaved heads*
22	Shaved heads*
23	Hair never cut*
24	Hair never cut*
25	Unusual hair color*
26	Unusual hair color*
31	Unusual hairdos*
32	Unusual hairdos*
33	Unusual hairdos*
34	Unusual eyebrows*
35	Unusual facial alterations*
36	Unusual body alterations*
41	Unusual fingernails*
42	Unusual fingernails*
43	Unusual toenails*
44	Unusual toenails*
45	Unusual cosmetics*
46	Unusual cosmetics*
51	Unusual cosmetics*
52	Unusual jewelery*
53	Unusual jewelery*
54	Unusual jewelery*
55	Unusual accessories*
56	Unusual accessories*
61	Unusual handgear*
62	Unusual handgear*
63	Tatooing on face*
64	Tatooing on body*
65	Tatooing on body*
66	Hidden tatooing*

*Roll on Practicing Group table (step 8h) to find which group practices custom.

Example: We roll 1D twice, getting a 6 and a 3, giving us "Tatooing on face". Rolling on the Practicing Group Table, we get "Scientific Figures" who do this.

8c Eating Habits

If the step 8a result was "Eating Habits", roll 1D+1D on the table below. If the result has an asterisk (*), go to step 8h to find the practicing group.

EATING HABITS

Die+ Die	*Result*
11	Unusual foods*
12	Unusual foods*
13	Unusual beverages*
14	Unusual beverages*
15	Unusual food preparation*
16	Unusual food perparation*
21	Segregated during meals*
22	Segregated during meals*
23	Vegetarians*
24	Vegetarians*
25	Carnivorous*
26	Carnivorous*
31	Omnivorous*
32	Omnivorous*
33	Certain colored food taboo*
34	Certain colored food taboo*
35	Certain shaped food taboo*
36	Certain food sources taboo*
41	Eat in special location*
42	Eat only in private*
43	Eat in special orientation*
44	Eat with unusual utensils*
45	Eat only at home*
46	Eat only at home*
51	Eat at unusual times*
52	Eat at unusual times*
53	Eat only certain times*
54	Eat only certain ways*
55	Rituals before eating*
56	Rituals after eating*
61	One sex eats other's leftovers
62	One age eats other's leftovers
63	One group eats other's leftovers**
64	One class eats other's leftovers
65	One race eats others leftovers
66	Cannibalistic*

*Roll on the Practicing Group table (step 8h) to determine which group practices the custom.

Example: We roll 1D twice, getting a 2 and a 6, giving us "Carnivorous". Rolling on the Practicing Group Table, we get "Certain Age Groups". We decide the elderly on this world must eat meat only.

8d Living Quarters

If the step 8a result was "Living Quarters", roll 1D+1D on the table below. If the result has an asterisk (*), go to step 8h to find the practicing group.

LIVING QUARTERS

Die+ Die	*Result*
11	Live privately*
12	Live privately*
13	Live apart in groups*
14	Live apart in groups*
15	Live in special locations*
16	Live in special locations*
21	Live at place of work*
22	Live at place of work*
23	Live at place of work*
24	Live under special conditions*
25	Live under special conditions*
26	Confined to quarters*
31	Live under special care*
32	Have extravagant quarters*
33	Have extravagant quarters*
34	Have minimal quarters*
35	Have minimal quarters*
36	Have minimal quarters*
41	Have unusual quarters*
42	Have unusual quarters*
43	Quarters are taboo**
44	Quarters are taboo**
45	Quarters are taboo**
46	Quarters must be visited**
51	Quarters must be visited**
52	Quarters must be visited**
53	Live with extended families*
54	Live with groom's family*
55	Live with bride's family*
56	Live with children's family*
61	Live with relatives*
62	Live in communal housing*
63	Live in communal housing*
64	Live in communal housing*
65	Live only in certain terrain*
66	Must move around*

*Roll on the Practicing Group table (step 8h) to determine which group practices the custom.

**Roll twice on the Practicing Group table (step 8h) to determine who is to visit or not visit whose quarters.

Example: We roll 1D twice, getting a 2 and a 1, giving us "Live at place of work". Rolling on the Practicing Group Table, we get "Certain geographic regions". We decide that on this world, those who live in undersea housing live where they work.

8e Family Practices

If the step 8a result was "Family Practices", roll 1D+1D on the table below. If the result has an asterisk (*), go to step 8h to find the practicing group.

FAMILY PRACTICES

Die+ Die	*Result*
11	Child named by ...*
12	Child named for living relative
13	Child named for dead relative
14	Child named for hero
15	Child named for ...*
16	Child named for object
21	Child renamed at adulthood
22	Child renamed when marries
23	Marriage arranged by ...*
24	Marriage performed by ...*
25	Marriage arranged by parents
26	Marriage arranged by parents
31	Marriage performed by parents
32	Marriage only within group*
33	Remarriage prohibited*
34	Remarriage required*
35	Groom's family pays dowery*
36	Bride's family pays dowery*
41	Dowery paid by outsider*
42	Very short marriages the rule*
43	Very long marriages the rule*
44	Non-marriage the rule*
45	Very short marriages prohibited*
46	Very long marriages prohibited*
51	Non-marriage prohibited*
52	Divorce and remarriage required*
53	Widow must marry husband's relative*
54	Widow/Widower must commit suicide*
55	Widower must marry wife's relative*
56	Onerous prerequisite to marriage*
61	Onerous prerequisite to marriage*
62	Marriage only at certain times*
63	Marriage must be blessed by ...*
64	Polyandry practiced*
65	Polygyny practiced*
66	Communal polygamy practiced*

*Roll on the Practicing Group table (step 8h) to determine which group practices the custom.

Example: We roll 1D twice, getting a 1 and a 3, and get "Child Named for dead relative".

8f Miscellaneous Customs 1

If the step 8a result was "Miscellaneous Customs 1", roll 1D+1D on the table below. If the result has an asterisk (*), go to step 8h to find the practicing group.

MISCELLANEOUS CUSTOMS 1

Die+ Die	*Result*
11	Unusual sleep location*
12	Unusual sleep time*
13	Unusual sleep duration*
14	Unusual sleep orientation*
15	Special language for ...*
16	Sacred symbols for*
21	Unusual duties for ...*
22	Anonimity required for ...*
23	Drinking/drugs prohibited*
24	Drinking/drugs required*
25	Bodily abuse prohibited*
26	Bodily abuse required*
31	Special privileges for ...*
32	Special privileges for ...*
33	Special privileges prohibited*
34	Unusual greetings*
35	Unusual greetings*
36	Unusual mannerisms for ...*
41	Unusual leavetakings*
42	Unusual secret societies*
43	Closed meetings taboo*
44	Psionics allowed for*
45	Psionics mean instant death*
46	Cloning allowed for*
51	Cloning required for*
52	Cloning prohibited for*
53	Robots allowed for*
54	Robots required for*
55	Robots prohibited for*
56	High-tech allowed for*
61	High-tech required for*
62	High-tech prohibited for*
63	Offworld contact allowed for*
64	Offworld contact required for*
65	Offworld contact prohibited for*
66	Unusual gift-giving customs*

*Roll on the Practicing Group table (step 8h) to determine which group practices the custom.

Example: We roll 1D twice, getting a 5 and a 5, giving us "Robots prohibited-for*". Rolling on the Practicing Group Table, we get "Certain sex". We decide that this world prohibits men from owning a robot.

8g Miscellaneous Customs 2

If the step 8a result was "Miscellaneous Customs 2", roll 1D+1D on the table below. If the result has an asterisk (*), go to step 8h to find the practicing group.

MISCELLANEOUS CUSTOMS 2

Die+ Die	*Result*
11	Free food/clothing required for*
12	Free food/clothing prohibited for*
13	Free education required for*
14	Free education prohibited for*
15	Unusual punishment required for*
16	Unusual punishment prohibited for*
21	Unusual training required for*
22	Unusual training prohibited for*
23	Unusual responsibilities*
24	Fixed times for visiting ...*
25	Bargaining/haggling required*
26	Bargaining/haggling prohibited*
31	Travelling far away required*
32	Travelling far away prohibited*
33	Unusual holidays for ...*
34	No holidays for ...*
35	Unusual leasure/recreation*
36	Regimented leasure/recreation*
41	Unusual maturity ceremony*
42	Unusual attitudes toward ...*
43	Unusual significance of flora*
44	Unusual significance of fauna*
45	Unusual significance of smell*
46	Unusual significance of sound*
51	Unusual significance of color*
52	Unusual significance of air*
53	Unusual significance of water*
54	Unusual significance of light*
55	Unusual significance of clothing*
56	Unusual significance of computers*
61	Unusual significance of technology*
62	Unusual significance of robots*
63	Unusual significance of art*
64	Unusual significance of superstition*
65	Daytime (siesta) rest period required*
66	Daytime (siesta) rest period prohibited*

*Roll on the Practicing Group table (step 8h) to determine which group practices the custom.

Example: We roll 1D twice, getting a 3 and a 3, giving us "Unusual holidays for...*". Rolling on the Practicing Group Table, we get the entire populace. We decide that this world has a "festival" that lasts 20 days, during which all work ceases.

8h Practicing Group

Once you have arrived at the given local custom, roll 1D. If the result is less than 4, all of the population practices the custom.

Otherwise, roll 1D+1D on the table below.

PRACTICING GROUP

Die+ Die	*Result*
11	Certain political groups
12	Certain political groups
13	Certain geographic regions
14	Certain geographic regions
15	Certain sex
16	Certain sex
21	Certain sex
22	Enforcement figures
23	Entertainment figures
24	Heroic Figures
25	Athletic Figures
26	Certain races
31	Certain races
32	Certain races
33	Religious figures
34	Religious figures
35	Military figures
36	Military figures
41	Certain occupations
42	Certain occupations
43	Political figures
44	Political figures
45	Medical figures
46	Medical figures
51	Certain age groups
52	Certain age groups
53	Scientific figures
54	Scientific figures
55	Academic figures
56	Academic figures
61	Low social class
62	Low social class
63	High social class
64	High social class
65	Convicted criminals
66	Convicted criminals

Example: We roll 1D first, to see if we even need to roll on this table. We get a 1, which is less than 4 — we do not go any further. The entire populace pratices this particular custom.

GOVERNMENT RELATED DETAILS 1

1 Representative Authority Guide

To determine the representative autority for a given government type, consult the table below. If the table below calls for a die roll, make it and then go to step 3.

GOVERNMENT ORGANIZATION GUIDE

Gov UWP	*Description*	*Action to take for... Representative Authority*
0	No government structure	No authority—skip to step 8
1	Company/Corporation	Consult step 2
2	Participating Democracy	Always *Demos*
3	Self-Perpetuating Oligarchy	Roll 1D: 1–4, *Elite Council*; 5–6, *Several Councils*
4	Representative Democracy	Consult step 2
5	Feudal Technocracy	Consult step 2
6	Captive Government	Consult step 2
7	Balkanization	Consult step 1a
8	Civil Service Bureaucracy	Always *Several Councils*
9	Impersonal Bureaucracy	Always *Several Councils*
10	Charismatic Dictator	Roll 1D: 1–5, *Ruler*; 6, *Elite Council*
11	Non-Charismatic Dictator	Roll 1D: 1–5, *Ruler*; 6, *Elite Council*
12	Charismatic Oligarchy	Roll 1D: 1–4, *Elite Council*; 5–6, *Several Councils*
13	Religious Dictatorship	Consult step 2, reroll if result is *Demos*
14	Religious Autocracy	Consult step 2, reroll if result is *Demos*
15	Totalitarian Oligarchy	Roll 1D: 1–4, *Elite Council*; 5–6, *Several Councils*

Example: A world has a UWP government type of 12. Consulting this guide, we find we must roll 1D to find the representative authority. We roll 1D and get 3, for a reuslt of "Elite Council". The leading (and thus representative) authority on this world is an elite council.

1a Balkinized Worlds

Roll 1D-1 to determine the number of major governmental powers on the world. Distribute the world's population UWP among the various governments.

Next, roll 2D-7+(world population UWP-1) to determine the local government type of each rival government. Ignore and reroll a result of 7.

Finally, roll 2D-7+local government type to determine the law level of each rival government.

Treat each rival government as an independent world government when using these rules to detail a government. Therefore, follow the rules in this section *for each government* to arrive at its detailed organization.

Example: A balkinized world has a population of 75,400,000. Rolling 1D-1 yields 5, giving us five major rival governments on the world. We arbitrarily distribute the population between them as follows: 1) 40 million, 2) 15 million, 3) 10 million, 4) 7 million, 5) 3 million.

Rolling for each rival government's type we get: 1) a 5 gov type, 2) a 5 gov type, 3) a 4 gov type, 4) a 3 gov type, and 5) a B government type.

Rolling for each rival government's law level we get: 1) a 9 law level, 2) an 8 law level, 3) a 3 law level, 4) a 7 law level, and 5) an E law level.

2 Representative Authority

Roll 2D on the table below to determine the representative authority's organization.

ORGANIZATION TYPES

Die	*Organization*
2	Demos
3	Elite Council
4	Elite Council
5	Elite Council
6	Ruler
7	Ruler
8	Several Councils
9	Several Councils
10	Several Councils
11	Several Councils
12	Demos

Example: A world's UWP government type is 4, so according to step 1, we roll 2D on the table in this step. The roll is 7, meaning the populace selects a single ruler as their sole representative.

3 Division of Authority

Roll 1D on the table below to determine the world's division of governmental authority.

DIVISION OF GOVERNMENT AUTHORITY

Die	*Division of Authority*
1	3-way division
2	3-way division
3	2-way division
4	2-way division
5	No division
6	No division

If the result is *2-way division*, go to step 6.

If the result is *No division*, go to step 8.

Otherwise, continue to step 4.

Example: We roll 1D on this table and find our government has a two-way division of authority. That means we then jump ahead to step 6.

4 3-Way Division

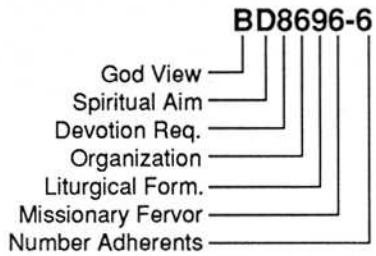
Roll 1D on the table below to determine the split of the three-way authority.

3-WAY GOVERNMENT AUTHORITY

Die	*Representative Authority*	*Other Authorities*
1	Executive	Legislative, Judicial
2	Executive	Legislative, Judicial
3	Legislative	Executive, Judicial
4	Legislative	Executive, Judicial
5	Judicial	Executive, Legislative
6	Judicial	Executive, Legislative

Example: We have a world that has a three-way split of government authority, so we roll 1D on this table. We get a 1, which means the representative authority is the executive section, while the other less prominent authorities are the legislative and judicial sections.

RELIGIOUS PROFILE



5 Organization of Other Authorities

Roll 2D on the table below for each of the other two government authorities to determine their organization. Having done that, go to step 8.

ORGANIZATION TYPES

Die	*Organization*
2	Demos
3	Elite Council
4	Elite Council
5	Elite Council
6	Ruler
7	Ruler
8	Several Councils
9	Several Councils
10	Several Councils
11	Several Councils
12	Demos

Example: We have a world that has an executive section that is run by a single, powerful ruler. We roll on this table for the judicial section and get "Elite Council". For the legislative section we get "Several Councils."

This world's government organization is very similar to that of the United States, with a single ruler in the executive section, an elite council for the judicial section, and several councils for the legislative section.

6 2-Way Division

Roll 1D on the table below to determine the split of the two-way authority.

2-WAY GOVERNMENT AUTHORITY

Die	*Representative Authority*	*Other Authority*
1	Executive & Judicial	Legislative
2	Executive & Judicial	Legislative
3	Executive & Legislative	Judicial
4	Executive & Legislative	Judicial
5	Executive & Legislative	Judicial
6	Legislative & Judicial	Executive

Example: A world has representative authority that is demos. Rolling once on this table we get a 3. The representative demos authority is executive and legislative, while the other authority is judicial.

7 Organization of Other Authority

Roll 2D on the table below for the other government authority to determine its organization.

ORGANIZATION TYPES

Die	*Organization*
2	Demos
3	Elite Council
4	Elite Council
5	Elite Council
6	Ruler
7	Ruler
8	Several Councils
9	Several Councils
10	Several Councils
11	Several Councils
12	Demos

Example: A world has an executive-legislative section that is demos. Rolling once on this table for the judicial section, we get "Several Councils".

8 Religious Profile (Optional)

If the world's government type is D or E, then details of the world government's religion may be useful. The follwoing series of steps allow developing a special religious profile for the religion.

However, if you find the idea of including religion in MegaTraveller to be offensive, then by all means, skip these steps.

8a God View

If the government is type D, roll 2D-2+UWP Tech Level on the God View table.

If the government is type E, roll 2D+3D-5 on the God View table.

Example: A world has a government type D and a tech level of 10. We roll 2D-2+10 on the god view table, and get a result of 16. We thus must chose the table maximum of 15 — Philosophical Atheism.

GOD VIEW

Level	*View*
0	Animism. All natural phenomena and objects (trees, rivers, wind, etc.) are caused or inhabited by spirits or demigods.
1	Polytheistic animism. Certain natural phenomena are associated with specific gods or goddesses, arranged in a distinct hierarchical order.
2	Polytheism. Multiple gods (probably with lingering animistic associations or titles) exist, each of roughly the same importance.
3	Rational polytheism. A multiplicity of gods is viewed as numerous different aspects of a handful of true divinities.
4	Dualism. Two mutually antagonistic gods or principles, one good and one evil, exist; their struggle is mirrored in nature and in moral/ethical problems.
5	Interactive Monotheism. A single god exists and is interested in the daily actions of sophonts.
6	Influential Monotheism. God interacts with sophonts only at key moments in life.
7	Crisis Monotheism. God is involved in mortal affairs only at crucial moments of history.
8	Remote monotheism. God exists, but is not generally available. A select few interactions in mortal affairs may occur from time to time.
9	Deism. God created the universe, but thereafter took no part in mortal affairs, and is permanently out of reach.
A(10)	Pantheism. God is not a personality—God is everything and everything is God.
B(11)	Agnosticism. It is impossible to know whether or not there is a God.
C(12)	Rational Atheism. A rejection of the existence of a Supreme Being on the basis of science, logic, or reasoning.
D(13)	Skeptical Atheism. A rejection of the existence of a Supreme Being on the basis of personal, non-rational conviction ("faith").
E(14)	Atheism. A total rejection of the existence of a Supreme Being; complete lack of religious beliefs.
F(15)	Philosophical Atheism. A failure to understand the concept of a Supreme Being. The question of religious beliefs is meaningless.

8b Spiritual Aim

Roll 2D-2+(God View ÷ 3) on the Spiritual Aim table.

Example: A world has a god view of 15. We roll 2D-2+5 on the Spiritual Aim table, and get 12. The believers seek to preserve the knowledge and wisdom of the past.

8c Devotion Required

Roll 2D-7+Spiritual Aim on the Devotion Required table.

Example: A world has a spiritual aim of 12. We roll 2D-7+12 on the Devotion Required table, and get 12. The believers must be involved in some annual observance.

8d Organization Structure

Roll 2D-7+Devotion Required on the Organization Structure table.

Example: A world has a devotion required of 12. We roll 2D-7+12 on the Organization Structure table, and get 15. No organization of any kind exists, so the religion is very personal. Since this is a religious dictatorship government, we decide the state religion must require every individual to prove they have performed their annual duty. Beyond that, no formal religious meetings or leaders exist.

SPIRITUAL AIM

Level	*Aim*
0	Worshippers are a chosen elite who deserve to dominate.
1	Worshippers will be rewarded in this life. Prayers are answered, regardless of their nature.
2	Worshippers will be saved from some imminent disaster.
3	Reincarnation with a karma doctrine. One's level in the next life is based on one's devotion and/or morality in this one.
4	Reincarnation is accomplished via personal choice of the next vehicle for the soul. Strength of character enables the individual to choose the best possible form for a new incarnation.
5	Statistical reincarnation causes a return in an essentially random form, but how one faces each life builds merit for an ultimate, distant afterlife.
6	Worshippers will be received into paradise when they die.
7	Worshippers will avoid being condemned to a place of eternal punishment (presumably, again, by going to paradise).
8	Ethical and moral standards are their own reward, regardless of the possibility of heavenly rewards or punishments.
9	Believers perform charitable acts to build a better society for posterity.
A(10)	Believers seek to promote peace, harmony, and order to improve the quality of life for all.
B(11)	Believers seek to expand the frontiers of knowledge through inquiry and speculation.
C(12)	Believers seek to preserve the knowledge and wisdom of the past.
D(13)	Believers seek to improve their own lives by self-discipline and training.
E(14)	An Epicurean philosophy—"Eat, drink, and be merry, for tomorrow we die." Hedonism is the only proper purpose in life.
F(15)	Nihilism—there is no purpose to life, and nothing to be gained by living. Beliefs along these lines are often symptomatic of a maladjusted or dangerously unstable society or personality.

DEVOTION REQUIRED

Level	*Frequency*
0	Constant devotion. No word, act, deed, or thought that isn't connected with religious belief should ever be tolerated.
1	Several times per hour
2	Hourly
3	Several times per day
4	Daily
5	Several days per week
6	Weekly
7	Semi-weekly
8	Monthly
9	Semi-monthly
A(10)	Quarterly
B(11)	Bi-annually
C(12)	Yearly
D(13)	Several times during life
E(14)	At least once before death
F(15)	None

ORGANIZATION STRUCTURE

Level	*Structure*
0	The religious hierarchy assumes the functions of government. A theocracy.
1	Rigid hierarchy answerable to a central authority with minimal decision-making at lower levels.
2	Rigid hierarchy with most decisions on a regional level.
3	Rigid hierarchy with most decisions on a planetary level.
4	Rigid hierarchy with most decisions on a local level.
5	Loose hierarchy answerable to a central authority with minimal decision-making at lower levels.
6	Loose hierarchy with most decisions on a regional level.
7	Loose hierarchy with most decisions on a planetary level.
8	Loose hierarchy with most decisions on a local level.
9	Loose hierarchy with most decisions up to individual worshippers.
A(10)	No organization above regional level.
B(11)	No organization above planetary level.
C(12)	No organization above local level.
D(13)	Local organization without regulations.
E(14)	Loose, highly informal organization.
F(15)	No organization of any kind.

8e Liturgical Formality

Roll 2D-7+Organization Structure on the Liturgical Formality table.

Example: A world has a organization structure of 15. We roll 2D-7+15 on the Liturgical Formality table, and get a 20. Since 15 is the highest you can go, we take that result. The state religion is highly personal, with no conversations about it allowed.

8f Missionary Fervor

Roll 2D-2 on the Missionary Fervor table.

Example: We roll 2D-2 on the Missionary Fervor table, and get a 6. Local citizens are willing to convert any individual who is interested (in private, of course) to the state religion.

8g Number of Adherents

Roll 3D-Missionary Fervor on the Number of Adherents table. The result cannot be less than the world UWP-1 for a state religion — otherwise reroll. If the result is greater than the local world population, then offworlders also subscribe to this religion.

Example: We have a world with a UWP population digit of 7. We roll 3D-6 on the Number of Adherents table, and get a 6, with is just at the limit. Several million people belong to the state religion.

LITURGICAL FORMALITY

Level	*Description*
0	"Word of God" is pronounced by living oracles (statues, computers, deified leaders, prophets, mediums, etc.). Services are tightly controlled by priesthood.
1	Holy writings exist, but are accessible only to the highest church authorities.
2	Holy writings are accessible only to certain specific levels of authority.
3	Services are conducted by rote in a "holy tongue" few worshippers understand.
4	Services are conducted by rote in common languages.
5	Very formal church ritual coupled with minimal teaching of holy writings.
6	Formal church ritual and very limited teaching.
7	Rituals are combined with moderate teaching.
8	Rituals are combined with an open teaching policy.
9	Emphasis is laid on communal teaching with limited ritual.
A(10)	Formal study groups focus on discussion and interpretation of church writings.
B(11)	Formal study groups include philosophical inquiry into questions not covered in holy writings, but under rigid methods of preserving the sanctity of fundamental topics.
C(12)	Informal study groups with extensive limitations on allowable subject matter.
D(13)	Highly informal liturgy with some limitations on topics of references.
E(14)	Complete informality. Open exchange of ideas and concepts in a conversational setting.
F(15)	Religion does not enter into conversations at any time; although some philosophical questions may crop up from time to time, no one organizes "services" or "worship" around such matters.

MISSIONARY FERVOR

Level	*Description*
0	Zealous and willing to convert any sophont.
1	Zealous among a limited number of sophont races.
2	Zealous but intolerant of other sophont races.
3	Active and willing to convert any sophont.
4	Active among a limited number of sophont races.
5	Active but intolerant of other sophont races.
6	Ordinary and willing to convert any sophont.
7	Ordinary among a limited number of sophont races.
8	Ordinary but intolerant of other sophont races.
9	Occasional.
A(10)	Conversion attempts are highly infrequent.

NUMBER OF ADHERENTS

Level	*Number*
0	1-9
1	10-99
2	100-999
3	1000-9999
4	10,000-99,999
5	100,000-999,999
6	1,000,000-9,999,999
7	10,000,000-99,999,999
8	100,000,000-999,999,999
9	1,000,000,000-9,999,999,999
A(10)	10,000,000,000-99,999,999,999
B(11)	100,000,000,000-999,999,999,999

1 Uniformity of Law

To determine the uniformity of law, roll 2D on the table below.

UNIFORMITY OF LAW

Die	*Uniformity*
2	Personal
3	Personal
4	Personal
5	Personal
6	Territorial
7	Territorial
8	Undivided
9	Undivided
10	Undivided
11	Undivided
12	Undivided

DMs:
+2 if Extensiveness Monolithic
-1 if law level A+

Example: A world has a law level of 12 and a global extensiveness of harmonious. Looking at the table above, we find we have a DM of -1. Rolling 2D on the table and applying the DM of -1 we get a 9. The uniformity of law on this world is "Undivided".

LEGAL PROFILE

9-B76AA

Overall
Weapons
Trade
Criminal Law
Civil Law
Personal Freedom

2 Legal Profile (Optional)

The world's UWP Law Level is used as the overall entry in the legal profile. To determine the other values in the legal profile, roll 2D-7+UWP government code for each entry.

Example: A world has a government of 8 and law level of 12.

The overall law level is 12. We roll 2D-7+8 for each of the other law level entries in the profile, and get C-AA575A as the legal profile.

TECHNOLOGY RELATED DETAILS 1

1 High Common Tech Level

The world's UWP tech level is the high common tech level.

Example: A world has a UWP tech level of C. This is also the high common tech level.

2a Low Common TL Limits

Determine the world's low common upper and lower tech level limits as follows:

Upper limit: High common.

Lower limit: High common ÷ 2 (drop fractions).

Example: A world has a high common of C. The low common upper limit is 12, and the lower limit is 6.

2b Low Common Tech Level

Determine the low common tech level by using the formula below:

T = H + M + P + G

where:

T = Low common tech level.
H = High common tech level.
M = Tech level modifier, determined by rolling 2D on the table below.

TECH LEVEL MODIFIER

Die	*TL Mod*
2	–1D
3	–2
4	–1
5	—
6	—
7	—
8	—
9	—
10	+1
11	+2
12	+1D

P = Tech level modifier based on world UWP population:
if world pop 5–, +1
if world pop 9+, –1

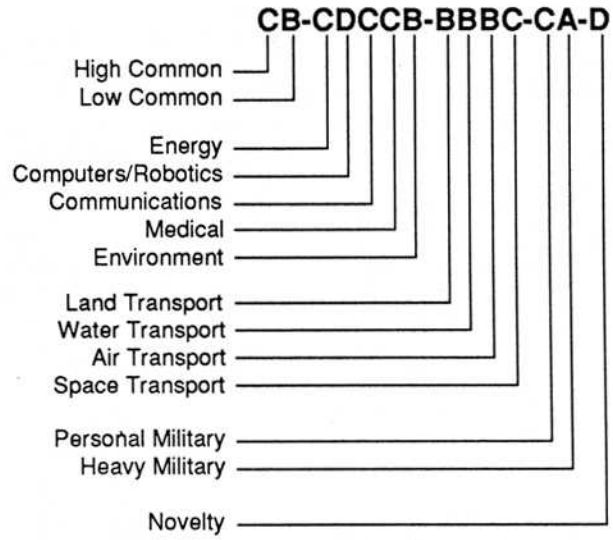
G = Tech level modifier based on global extensiveness:
if monolithic, +1
if discordant, –1
if fragmented, –2

The computed low common tech level must fit within the limits determined in step 2a.

Example: A world has a high common of C, a UWP population of 9 and a global extensiveness of harmonious. We roll 2D for the value of M and get 4, giving us -1 for M. Plugging the appropriate values into the formula we have: 12-1-1+0, or a low common tech level of 10, or A.

The value 10 easily fits within the limits of 12 and 6 from step 2a.

TECHNOLOGY PROFILE



3a Energy TL Limits

Determine the world's energy upper and lower tech level limits as follows:

Upper limit: High common + high common ÷ 5 (drop fractions).

Lower limit: High common ÷ 2 (drop fractions).

Example: A world has a high common of C. The energy upper limit is 14, and the lower limit is 6.

3b Energy Tech Level

Determine the low common tech level by using the formula below:

T = H + M

where:

T = Energy tech level.
H = High common tech level.
M = Tech level modifier, determined by rolling 2D on the table below.

TECH LEVEL MODIFIER

Die	*TL Mod*
2	–1D
3	–2
4	–1
5	—
6	—
7	—
8	—
9	—
10	+1
11	+2
12	+1D

The computed energy tech level must fit within the limits determined in step 3a.

Example: A world has a high common of C. We roll 2D for the value of M and get 4, giving us -1 for M. Plugging the appropriate values into the formula we have: 12-1, or an energy tech level of 11, or B.

The value 11 fits within the limits of 14 and 6 from step 3a.

4a Computer/Robotics TL Limits

Determine the world's computer/robotics upper and lower tech level limits as follows:

Upper limit: Energy upper limit.

Lower limit: Upper limit ÷ 3 (drop fractions).

Example: A world has an energy upper limit of 14. The computer/robotics TL limits are thus 14 and 11.

4b Computer/Robotics Tech Level

Determine the low common tech level by using the formula below:

T = H + M + P

where:

T = Computer/robotics tech level.
H = High common tech level.
M = Tech level modifier, determined by rolling 2D on the table below.

TECH LEVEL MODIFIER

Die	*TL Mod*
2	–1D
3	–2
4	–1
5	—
6	—
7	—
8	—
9	—
10	+1
11	+2
12	+1D

P = Tech level modifier based on world UWP population:
if world pop 5–, +1
if world pop 9+, –1

The computed tech level must fit within the limits determined in step 4a.

Example: A world has a high common of C, and a UWP population of 9. We roll 2D for M and get 7, giving us 0. Plugging the appropriate values into the formula we have: 12+0-1, or a computer/robotics tech level of 11, or B.

The value 11 just fits within the limits of 14 and 11 from step 4a.

5a Communications TL Limits

Determine the world's communication upper and lower tech level limits as follows:

Upper limit: Energy upper limit.

Lower limit: Upper limit ÷ 3 (drop fractions).

Example: A world has an energy upper limit of 14. The communication limits are 14 and 11.

5b Communications Tech Level

Determine the low common tech level by using the formula below:

T = C + M

where:

T = Communications tech level.
C = Computer/Robotics tech level.
M = Tech level modifier, determined by rolling 2D on the table below.

TECH LEVEL MODIFIER

Die	*TL Mod*
2	–1D
3	–2
4	–1
5	—
6	—
7	—
8	—
9	—
10	+1
11	+2
12	+1D

The computed communications tech level must fit within the limits determined in step 5a.

Example: A world has a computer/robotics tech level of 11. We roll 2D for the value of M and get 9, giving us 0 for M. Plugging the appropriate values into the formula we have: 11+0, or a communications tech level of 11, or B.

The value 11 is within the limits of 14 and 11 from step 5a.

6a Medical TL Limits

Determine the world's medical upper and lower tech level limits as follows:

Upper limit: Energy upper limit.

Lower limit: 0.

Example: A world has an energy upper limit of 14. The medical upper limit is 14 and its lower limit is 0.

6b Medical Tech Level

Determine the medical tech level by using the formula below:

T = C + M + I

where:

T = Medical tech level.
C = Computer/Robotics tech level.
M = Tech level modifier, determined by rolling 2D on the table below.

TECH LEVEL MODIFIER

Die	*TL Mod*
2	–1D
3	–2
4	–1
5	—
6	—
7	—
8	—
9	—
10	+1
11	+2
12	+1D

I = Tech level modifier based on Interstellar extensiveness: if xenophilic, +1

The computed medical tech level must fit within the limits determined in step 6a.

Example: A world has a computer/robotics tech level of 11, and an interstellar extensiveness of friendly. We roll 2D for the value of M and get 6, giving us 0 for M. Plugging the appropriate values into the formula we have: 11+0+0, or a medical tech level of 11, or B.

The value 11 is easily within the limits of 14 and 0 from step 6a.

7a Environment TL Limits

Determine the world's environment upper and lower tech level limits as follows:

Upper limit: Energy upper limit.

Lower limit: Upper limit - 5.

Example: A world has an energy upper limit of 14. The environment upper limit is 14 and its lower limit is 9.

7b Environment Tech Level

Determine the environment tech level by using the formula below:

T = H + M + A + H

where:

T = Environment tech level.
H = High common tech level.
M = Tech level modifier, determined by rolling 2D on the table below.
A = Tech level modifier based on the worlds UWP atmosphere: if atm not 5,6, or 8, +1
H = Tech level modifier based on the worlds UWP hydrosphere: if hyd is 0 or 10, +1

TECH LEVEL MODIFIER

Die	*TL Mod*
2	–1D
3	–2
4	–1
5	—
6	—
7	—
8	—
9	—
10	+1
11	+2
12	+1D

The computed environment tech level must fit within the limits determined in step 7a.

Example: A world has a high common tech level of C, a UWP atmosphere of 8 and a hydrosphere of 8. We roll 2D for the value of M and get 6, giving us 0 for M. Plugging the appropriate values into the formula we have: 11+0+0+0, or an environment tech level of 11, or B.

The value 11 is within the limits of 14 and 9 from step 7a.

8a Land Transport TL Limits

Determine the world's land transport upper and lower tech level limits as follows:

Upper limit: Energy upper limit.

Lower limit: Upper limit - 5.

Example: A world has an energy upper limit of 14. The land transport upper limit is 14 and its lower limit is 9.

8b Land Transport Tech Level

Determine the land transport tech level by using the formula below:

T = E + M + H

where:

T = Land Transport tech level.
E = Energy tech level.
M = Tech level modifier, determined by rolling 2D on the table below.

TECH LEVEL MODIFIER

Die	*TL Mod*
2	–1D
3	–2
4	–1
5	—
6	—
7	—
8	—
9	—
10	+1
11	+2
12	+1D

H = Tech level modifier based on the worlds UWP hydrosphere: if hyd is 10, –1

The computed land transport tech level must fit within the limits determined in step 8a.

Example: A world has an energy tech level of 11, and a hydrosphere of 8. We roll 2D for the value of M and get 9, giving us 0 for M. Plugging the values into the formula we have: 11+0+0, or a land transport tech level of 11, or B.

The value 11 is within the limits of 14 and 9 from step 8a.

9a Water Transport TL Limits

Determine the world's water transport upper and lower tech level limits as follows:

Upper limit: Land transport tech level.

Lower limit: Upper limit - 5.

Example: A world has a land transport tech level of 11. The water transport upper limit is 11 and its lower limit is 6.

9b Water Transport Tech Level

If the land transport tech level is 10 or more, then make the water transport tech level the same as the land transport tech level.

Otherwise, determine the water transport tech level by using the formula below:

T = L + M + H

where:

T = Water transport tech level.

L = Land transport tech level.

M = Tech level modifier, determined by rolling 2D on the table below.

TECH LEVEL MODIFIER

Die	*TL Mod*
2	–1D
3	–2
4	–1
5	—
6	—
7	—
8	—
9	—
10	+1
11	+2
12	+1D

H = Tech level modifier based on the worlds UWP hydrosphere:
if hyd is 0, -1

The computed water transport tech level must fit within the limits determined in step 9a.

Example: A world has a land transport tech level of 11, and a hydrosphere of 8. Since the land transport tech level is more than 10, then the water transport tech level becomes the same as the land transport tech level — 11 (or B).

10a Air Transport TL Limits

Determine the world's air transport upper and lower tech level limits as follows:

Upper limit: 9 if land transport tech level is below 10; otherwise the limit is the land tech level.

Lower limit: Upper limit - 5, but never less than 2.

Example: A world has a land transport tech level of 11. The air transport upper limit is 11 and its lower limit is 6.

10b Air Transport Tech Level

If the land transport tech level is 10 or more, then make the air transport tech level the same as the land transport tech level.

If the world's UWP atmosphere is 0, and the air transport upper limit is 9, then the air transport tech level is automatically 0.

Determine the air transport tech level by using the formula below:

T = E + M

where:

T = Air transport tech level.

E = Energy tech level.

M = Tech level modifier, determined by rolling 2D on the table below.

TECH LEVEL MODIFIER

Die	*TL Mod*
2	–1D
3	–2
4	–1
5	—
6	—
7	—
8	—
9	—
10	+1
11	+2
12	+1D

If the resulting air transport tech level is 2, then the air transport tech level automatically becomes 0.

The computed air transport tech level must fit within the limits determined in step 10a.

Example: A world has an energy tech level of 11, and a UWP atmosphere of 8. Since the land transport tech level is more than 10, then the air transport tech level becomes the same as the land transport tech level, which is 11 (or B) in this case.

11a Space Transport TL Limits

Determine the world's space transport upper and lower tech level limits as follows:

Upper limit: Energy upper limit.

Lower limit: Upper limit - 3.

Example: A world has an energy upper limit of 14. The environment upper limit is 14 and its lower limit is 11.

11b Space Transport Tech Level

Determine the space transport tech level by using the formula below:

T = X + M + S + I

where:

T = Space Transport tech level.

X = The lower of energy tech level or computers/robotics tech level.

M = Tech level modifier, *determined* by rolling 2D on the table below.

TECH LEVEL MODIFIER

Die	*TL Mod*
2	–1D
3	–2
4	–1
5	—
6	—
7	—
8	—
9	—
10	+1
11	+2
12	+1D

S = Tech level modifier based on the worlds UWP starport:
if starport A or B, +1

I = Tech level modifier based on the interstellar extensiveness:
if friendly or xenophilic, +1
if aloof or xenophobic, –1

The computed space transport tech level must fit within the limits determined in step 11a.

Example: A world has an energy tech level of 11 and a computer/robotics tech level of 11, a starport A and an interstellar extensiveness of friendly. We roll 2D for the value of M and get 9, giving us 0 for M.

Plugging the appropriate values into the formula we have: 11+0+1+1, or a space transport tech level of 13, or D.

The value 13 is within the limits of 14 and 11 from step 11a.

12a Personal Military TL Limits

Determine the world's personal military upper and lower tech level limits as follows:

Upper limit: Energy upper limit.

Lower limit: 0.

Example: A world has an energy upper limit of 14. The personal military upper limit is 14 and its lower limit is 0.

12b Personal Military Tech Level

Determine the personal military tech level by using the formula below:

T = E + M + A + B

where:

T = Personal military tech level.
H = Energy tech level.
M = Tech level modifier, determined by rolling 2D on the table below.
A = Tech level modifier based on the aggressiveness attitude:
if expansionistic, +1
if passive, –2
B = Tech level modifier based on the aggressiveness action:
if militant, +1
if conciliatory, –1

The computed personal military tech level must fit within the limits determined in step 12a.

Example: A world has an energy tech level of 11, an aggressiveness attitude of unaggressiveness, aggressiveness action of peaceable. We roll 2D for the value of M and get 10, giving us +1 for M. Plugging the appropriate values into the formula we have: 11+1+0+0, or a personal military tech level of 12, or C.

The value 12 is within the limits of 14 and 0 from step 12a.

13a Heavy Military TL Limits

Determine the world's heavy military upper and lower tech level limits as follows:

Upper limit: Energy upper limit.
Lower limit: 0.

Example: A world has an energy upper limit of 14. The environment upper limit is 14 and its lower limit is 0.

13b Heavy Military Tech Level

Determine the heavy military tech level by using the formula below:

T = L + M + A + B

where:

T = Heavy military tech level.
H = Land transport tech level.
M = Tech level modifier, determined by rolling 2D on the table below.
A = Tech level modifier based on the aggressiveness attitude:
if expansionistic, +1
if passive, –2
B = Tech level modifier based on the aggressiveness action:
if militant, +1
if conciliatory, –1

The computed heavy military tech level must fit within the limits determined in step 13a.

Example: A world has a land transport tech level of 11, an aggressiveness attitude of unaggressiveness, aggressiveness action of peaceable. We roll 2D for the value of M and get 3, giving us -2 for M. Plugging the appropriate values into the formula we have: 11-2+0+0, or a personal military tech level of 9.

The value 9 is within the limits of 14 and 0 from step 12a.

14 Novelty Tech Level

Determine the novelty tech level by following these guidelines:

• Find the highest UWP tech level from among the nearest class A starport worlds; this represents the "novelty import" tech level. If the local world's starport class is X, the novelty import tech level is zero.

• Find the highest achievement tech level; this represents the "local prototype" tech level.

• The referee can assign a tech level to a prior culture if he wishes; this represents the "local artifact" tech level. Otherwise, use zero for the local artifact tech level.

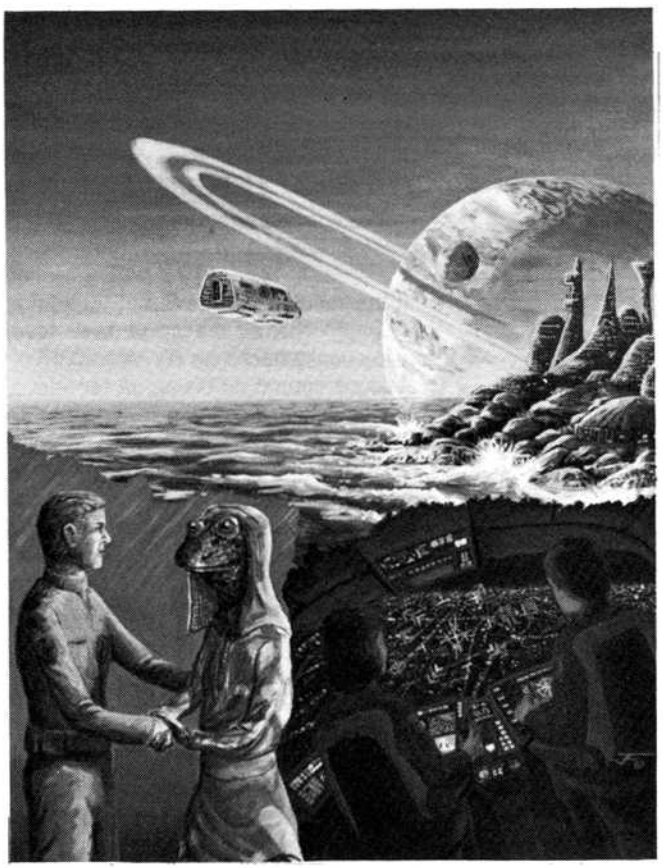
The highest of these tech levels becomes the novelty tech level.

Example: Of the class A starports near our example world, the highest tech level among the nearby worlds is the tech level 13.

The highest achievement tech level for the example world is the space transport tech level of 13.

We decide there was no prior culture on the example world, so the prior culture tech level is zero.

In comparing the three areas, we have a tie between the novelty import tech level of 13 and the prototype tech level of 13. So the novelty tech level of our example world is obviously 13.



Mapping a World

This chapter describes how to draw an accurately detailed world map from the data on the World Detail Sheet.

World Map Grid: Traveller uses a hex grid in the form of a flattened icosahedron (20-sided solid) for mapping the surface of a world, referred to as the "World Map Grid". By using the icosahedron, the world's surface is depicted with minimal distortion.

The World Map Grid is divided into twenty interlocking triangles (hereafter referred to as "map triangles") of 25 hexes each, for a total of 500 hexes per map. The equator is 35 hexes in length. Each hex is approximately 9° from north to south (top of the map is north, bottom is south, and equator is the center line). Two lines are also present, running at 30° N and 30° S latitude.

USEFUL MAPPING FORMULAS

When mapping a world, here are some useful formulas for scales and scale conversions:

Circumference of a sphere:	diameter in km x 3.14159
Hex scale in km:	circumference ÷ 35
Total nbr of world map hexes:	500
Number of hexes per triangle:	25

MAPPING TECTONIC PLATES

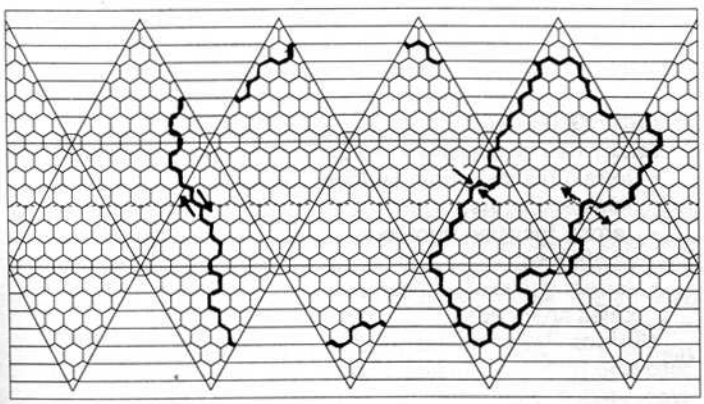
Tectonic plates come in a variety of shapes, occurring as blocks of contiguous hexes. The World Detail Sheet indicates the number of major tectonic plates a world has: roll on the table below to determine the number of hexes in each tectonic plate.

SIZE OF TECTONIC PLATES

Die	*Size in Hexes*
1	2D x 5
2	2D x 10
3	2D x 15
4	2D x 20
5	2D x 25
6	2D x 30

By default, the last tectonic plate is always as large as the number of hexes left on the world map grid. Exact placement of the plate boundaries is left to the one drawing the map; the key elements of reasonable plate boundaries are logic and imagination.

The plate boundaries are sketched lightly in pencil on the world map grid. They do not actually appear on the final map of the world, but are useful for determining the layout of continents and oceans, establishing seismic effects, and in locating certain terrain features on the final map.



Example: The world Regina, with tectonic plates mapped.

Tectonic Plate Movement: For each plate boundary, roll 2D to determine plate movement.

On 2-5, the plates are "converging"; 6-8, the plates are "transversing", and on 9-12 are "diverging".

Converging plates are coming together, causing heavy seismic activity and mountain building.

Transversing plates are moving sideways in relation to each other, forming prominent fault lines such as California's San Andreas fault.

Diverging plates are moving apart, creating vast trenches.

CONTINENTS AND OCEANS

Once the tectonic plates have been located, outlines of continents and oceans can be established.

This procedure is governed by the world's detailed hydrographic percentage. Notice that a world with a UWP hydrograpic digit of 0 may have an actual hydrographic percentage of 0% to 4%; a world with a UWP hydrographic digit of A may have an actual hydrographic percentage of 95% to 100%.

Mapping When the Hydrographic Percentage Is 0% to 49%: If the actual hydrographic percentage of a world is 1% to 49%, mapping determines the location of the oceans, seas, and lakes; the land area is located automatically as a by-product of locating the bodies of water. A true 0% hydrosphere indicates that no free standing water is present on the surface anywhere, and mapping proceeds directly to determining terrain.

Total Number of Water Hexes: Multiply the actual hydrographic percentage by 5. Thus, a world with an actual hydrographic percentage of 33% will have 165 water hexes.

Scattered Lakes: Scattered lakes are very small bodies of water; a hex containing scattered lakes is considered to be 1/2 of a hex of water surface. Scattered lakes are determined prior to calculating small seas, minor oceans, or major oceans; divide the number of scattered lakes by two and subtract it from the total number of water hexes.

If a planet's total hydrosphere is scattered lakes, there will be no significant sea or ocean; such a world is likely to have many swampy areas around these clusters of lakes.

If a planet's total hydrosphere is not scattered lakes, there will always be 2D hexes of scattered lakes present. See the "Other Bodies of Water" column on the Oceans Table (see the hydrographics related charts).

Small Seas: Small seas are bodies of water covering roughly 1 hex of water surface. The "Other Bodies of Water" column on the Oceans Table indicates how many small sea hexes a world has. The small sea hexes are deducted from the total number of water hexes before the size of major and minor oceans are established.

Major Oceans: A major ocean is a body of water that covers 15% or more of the world's water surface area. For example, if a world is determined to have 160 hexes covered by water, each major ocean must have at least 24 hexes. If there is only one major ocean, and no minor oceans present, almost all of the water surface of the world will be in a single body of water.

Minor Oceans: Any water surface left after major oceans have been designated is divided among the minor oceans present. A minor ocean covers less than 15% of the world's water surface area. Most minor oceans are small, often even less than 10% of the world's water surface area; establish the exact size as desired.

Any body of water can have major islands (roughly 1 hex of land area) and archipelagoes (roughly 1/2 hex of land area).

Mapping When the Hydrographic Percentage is 50% to 100%: If the actual hydrographic percentage of a world is 50% to 100%, mapping determines the location of the continents; the oceans are located automatically as a by-product of locating the land masses. Should the hydrographic percentage be 100%, then any land which is present on the world will be a few incidental islands, if there is any land at all.

Total Number of Land Hexes: Multiply the actual hydrographic percentage by 5 and subtract the result from 500. For example, a world with an actual hydrographic percentage of 83% will have 85 land hexes (500-[83x5]).

Archipelagoes: Archipelagoes are groupings of small islands, considered to be 1/2 of a hex of land surface. Archipelagoes are determined prior to calculating major islands, minor continents, or major continents; divide the number of archipelago hexes by two and subtract the result from the total number of land hexes.

If a planet's total land surface is not archipelagoes, there will still be 2D hexes of archipelagoes present. See the "Other Land Masses" column on the Continents Table (hydrographics related charts).

Major Islands: Major islands are land areas covering roughly 1 hex. The "Other Land Masses" column on the Continents Table indicates how many major island hexes a world has; deduct the number of major island hexes from the total number of land hexes before the size of major and minor continents are established.

Major Land Masses: A major land mass is an area of land covering at least 15% of the land surface area of the world. The Terran equivalents of major land masses are Eurasia (37%), Africa (20%), and North America (16%). The other continents are minor land masses according to these rules.

Minor Land Masses: Any land surface remaining after major continents have been designated is divided among the minor land masses. A minor land mass covers less than 15% of the world's land surface. Most minor land masses are less than 10% of a world's land surface; establish the exact size as desired.

Remember that any land mass can have land-locked small seas (roughly 1 hex of water area) and scattered lakes (roughly 1/2 hex of water area).

Placement: Once the general form of the world's continents and oceans has been developed, placement is next. This process requires a certain amount of creativity—and cannot be regulated by rules or random tables. General guidelines are given below, but you must be the final judge of what looks right for a specific world.

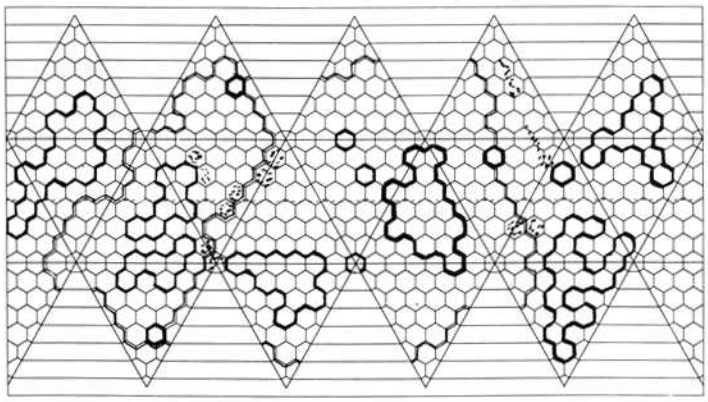
When placing continents, it is best to divide them up as evenly as possible among the various plates, ideally with one continent per plate. If there are more continents than plates, some continents must be doubled up on one plate. If there are fewer, some plates will lack a continent.

Overlap: As a continent is placed on a given plate, roll 2D. On 2-7, the continent is placed in the center of the plate with no overlap onto adjacent plates (unless it is too large to fit). On 8+, the continent is placed so that it overlaps onto an adjacent plate (the exact amount of overlap is up to you). An overlap can indicate the location of seismic disturbances, and can influence the charting of terrain features, especially mountain ranges. This is explained in detail later.

Isthmus: Any time two continents are separated by only one hex, they are joined by an isthmus on a roll of 9+.

Strait: Likewise, any time two oceans are separated by only one hex, they are joined by a strait on a roll of 9+.

The exact placement of features is, of course, up to you when creating the map, but the die rolls help introduce a certain degree of randomness.



Example: Map of Regina, with the land masses placed.

DRAWING THE MAP

Once the locations of the continents and oceans are known, they are sketched in. The size of each is determined as discussed previously.

Drawing the map is a creative process, balancing an eye for what is aesthetically pleasing with good judgment of the scientific possibilities. For example, even if you like the "nice, crinkly bits" of fjords, they might not look suitable as equatorial terrain, since fjords typically result from glaciation. (Some of these details suggest themselves when data on terrain and temperatures are assembled.)

Once the outlines of continents and oceans have been sketched in, the basic mapping step is complete. For further refinements, other data must be considered.

MAPPING TERRAIN

Terrain can be classified into three general categories:

- terrain resulting from surface features such as mountains and rivers;
- terrain resulting from local life forms, such as jungles or steppes;
- terrain artificially influenced by civilization, such as cities and roads.

Surface Features Terrain: Surface features include the following types: mountains, rugged, and open. An additional type, tundra, is any open hex adjacent to the freezing line of a world. Placement of surface features is described below.

Freezing Line: In the northern hemisphere, a world's permanent freezing line is located north of the hex row in which the temperature is below 0°C year-round. A similiar situation exists in the southern hemisphere.

A temperature worksheet is used to locate this hex row. (See atmosphere related details for guidelines on how to create this worksheet.)

Within the freezing line, place sheet ice on both land and water, and place tundra hexes on any open land hex in the hex row just beyond the freezing line.

Glaciation: If the world has ever experienced major changes in climate, it is possible that glaciation will have caused significant changes in terrain, primarily by carving mountains. Roll 1D-1; this is the number of hexes from the freezing line towards the equator that the polar caps once extended. Land areas within that radius have a greater chance of mountainous terrain (see "Mountains", below).

Where extreme variations in surface temperature occur regularly (from axial tilt, orbital eccentricity, or whatever), determine the limits of the freezing line at the coldest time of year, and use this as the baseline for the glaciation roll.

Mountains: Mountains are caused either by the actions of plate tectonics, or by the effects of glaciation. (Other causes are possible, but these are the primary causes.)

Mountain ranges are represented by mountain hexes, with rugged hexes often adjoining the mountain chains. Most mountains are placed along plate boundaries (see "Tectonic Plate Movement"). A total of [(2D-2)x1D]% of the land hexes are mountain or rugged; the exact number of each and their placement is up to you, but placement should conform roughly to the plate boundary.

Outward from the glaciation line determined previously, each "map triangle" can contain 1D additional rugged hexes (up to the limit of available land hexes, of course) with an equivalent number of mountain hexes.

Notable Volcanoes: Place the volcano hexes with a strong bias towards placement in converging or transversing plateboundary areas. First preference of placement should be rugged terrain or on islands and archipelagoes. Second preference is any hex adjacent to a mountain hexside.

Once all such hexes have been used up, other volcanoes may be placed freely.

Volcanic Hexes: In addition to major volcanoes, 1D-1 other volcanic hexes may optionally be placed anywhere on the world, ignoring plate boundaries but still following other preferences. A volcanic hex contains many smaller volcanoes of various sizes and conditions.

Volcanoes may influence the presence of certain resource types in specific areas.

Rivers: Rivers are optional, as they have little effect at this scale. They may be included for local "color", however.

On each continent (or within each map triangle containing at least 10 all-land hexes if there is only a single continent on the world) there will be 1D-1 major rivers. Major rivers are 1D hexes in length.

Placement of rivers varies. They generally originate in mountains, rugged areas, lakes, or small seas, and flow toward larger bodies of water. If rivers are available for a continent, and the continent includes jungle (determined below), at least one river should flow through that jungle. Rivers can be drawn to conform to hexsides, or they may be drawn within hexes instead, whichever you prefer.

Life Influenced Terrain: If no life is present on the world, all hexes are immediately considered desert. If life is present, follow the guidelines below in developing various terrain types.

Deserts: Deserts can occur in three different ways.

Continental deserts are placed on any continent where ten or more contiguous, non-rugged, non-tundra land hexes are present, and a dice throw greater than or equal to the world's UPP hydrographic digit is made. If a desert result occurs, roll 2D-1 for the number of desert hexes to be placed. Actual placement is left to the referee; except when necessary, deserts of this type do not occur in coastal hexes, but this is the only general limit. Where only one continent is present, check once per map triangle containing 10+ continguous open hexes, instead.

Windshadow deserts occur because of mountain barriers that block movement of air containing moisture. There will be H-1D such desert hexes, where H is the UWP hydrographic digit. Place them in any hex adjacent to rugged hexes or mountain hexsides, but never adjacent to water hexes. There are no other requirements, and the available hexes are divided as the referee desires.

Coastal deserts occur in coastal hexes. There will be H-2D coastal desert hexes, where H is the UWP hydrographic digit. They may be placed on any coastal hex within four hexes of the polar caps. Exact locations are up to you.

Jungles and Rain Forests: Jungle and Rainforest hexes are generally placed in regions where temperatures are between 20°C and 40°C. If a group of 10 contiguous, non-desert, non-rugged hexes exists on a continent within this temperature range (or a map triangle, where only one continent exists), and a throw less than or equal to the UWP hydrographic digit is made on 2D, a jungle will be present.

Contiguous hexes can also, for jungles only, include adjacent islands and archipelagoes. When a jungle exists, roll2D-1 for the number of jungle hexes to be placed.

Jungle and Rainforest hexes must be within 3 hexes of an ocean or sea, and may not be placed adjacent to desert hexes or outside the appropriate temperature range. Islands and archipelagoes may be included in the jungle placement process. Exact placement, within these guidelines, is up to you.

Open/Forest: All remaining hexes immediately become Open/Forest hexes. In the absence of civilization, these hexes will be heavily wooded, in some cases comparable to jungle.

Civilization Influenced Terrain: If there is intelligent life present on a world, additional terrain features may be present.

Cities: Placement of cities is largely a matter of personal choice, but a few general guidelines are noted.

At tech levels 0-3, cities of larger than population digit 5 should be placed only in open terrain (not jungles, deserts, oceans, ice caps, rugged, etc.).

Tech levels 4-6 permit placement of population digit 5+ cities in rugged or desert terrain, in addition to open terrain.

Tech levels 7-9 permit population digit 5+ cities to be placed in jungles, in addition to previous terrain types.

Tech levels 10+ allow placement of population digit 5+ cities in oceans or on ice caps. Thus, from tech level 10 and beyond, there are no barriers to settlement. At tech level 10+, it is also conceivable that each hex may hold a number of cities equal to the tech level, regardless of size.

Special Cases: In some cases, technological limitations may make city placement impossible. When this happens,

place the city anyway, but note the discrepancy. This should be explained in some reasonable fashion, to suit conditions on the world and personal taste in backgrounds. One good example might be an undersea city on a world with declining technology; the inhabitants are no longer capable of repairing problems, and hence are at the mercy of the first natural disaster that strikes.

Roads: Significant roads may be mapped if the tech level is between 5 and 10. Beyond tech level 10, the popularity of grav technology typically makes roads obsolete.

Settled" Hexes: Open hexes adjacent to cities will be settled. At tech level 11+, any hex adjacent to a city is automatically considered settled, including ocean hexes. Settled terrain is generally inhabited lightly, and given over to agriculture or occupied by small communities.

If the atmosphere is not between 4 and 9, there are no "settled" hexes regardless of technology.

Starports/SpacePorts: Starports may be placed in or adjacent to the city hexes they belong to. Spaceports are always placed in the city hex.

Terraforming: If a world has conducted terrain terraforming, one or more hexes have had their terrain type modified. The most common type of terrain terraforming is toimprove desert terrain into arable land (clear or settled) for agricultural use. The types of terrain terraforming include; from desert to prairie; from prairie to clear; from clear to wooded; from wooded to forest; from forest to rainforest; from rainforest to forest; from forest to wooded; from wooded to clear; from clear to prairie (accidental); and from prairie to desert (accidental).

Given sufficient time, the terraforming can include more than one level of transformation. An extreme (and rare) example of this would be to terraform desert into rainforest over a period of time.

The extent of the terraforming (how many hexes it includes) is up to the one mapping the world. Higher tech level terraforming (tech level 12+) tends to be more extensive.

ALIEN WORLDS

This material assumes roughly Terran conditions. This is a deliberate bias, but should not restrict you from creating otherworldly conditions. It is impossible to write rules for every eventuality and still to have a manageable book, so implementing rare and unusual conditions is left up to the individual referee and players.

For example, you may wish to have a jungle-type terrain that flourishes in different temperature ranges than given here. If so, extend the jungle rules to permit these alien jungles in appropriate areas. In another instance, a world known to hold the remnants of a post-nuclear holocaust culture might have a whole new type of desert ("radioactive") placed at various points.

Use these rules as a foundation: modifications can be (and, in fact, should be) logically created and consistently applied.

TIDALLY LOCKED WORLDS

A tidally locked world is a world that has an infinite rotation period with its primary star.

For such worlds, it is sometimes more convenient to treat the map projection differently than described above.

Tidally locked worlds keep the same hemisphere toward the star at all times and the other in perpetual darkness. There are great extremes of temperature from one side to the other, with the "twilight" band—the rim where the sun is always near the horizon—being the area usually (but not always) closest to livable temperatures.

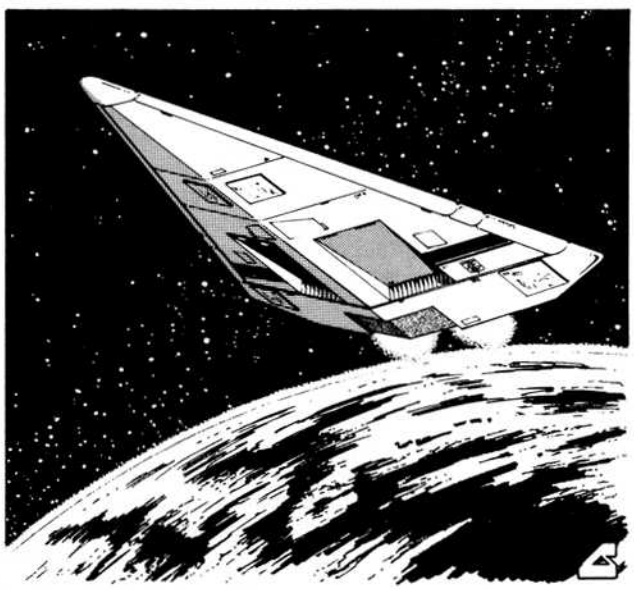
Since the area of greatest interest in terms of population and habitation is the twilight band, rather than the world's equator, a world map can be drawn in an alternate projection which more conveniently displays the twilight band.

The top of the grid is designated as the sunward side, the bottom as the nightside. The "equator" on the map becomes the twilight zone band. Along the center band, the north and south poles of the world may be located (17.5 hexes apart); half-way between them, an up-and-down line marking the equator may be inserted.

Keep in mind the unfamiliar orientation, however. This projection variant is very useful for twilight zone mapping, with the hot and cold regions to sunward and nightward slightly distorted, but also less frequently visited.

Rules for temperature variation must then be changed slightly to use these mapping conventions for dayside and nightside. The temperature is hottest at the top of the map, and coldest at the bottom. The base mean surface temperature occurs in the twilight band.

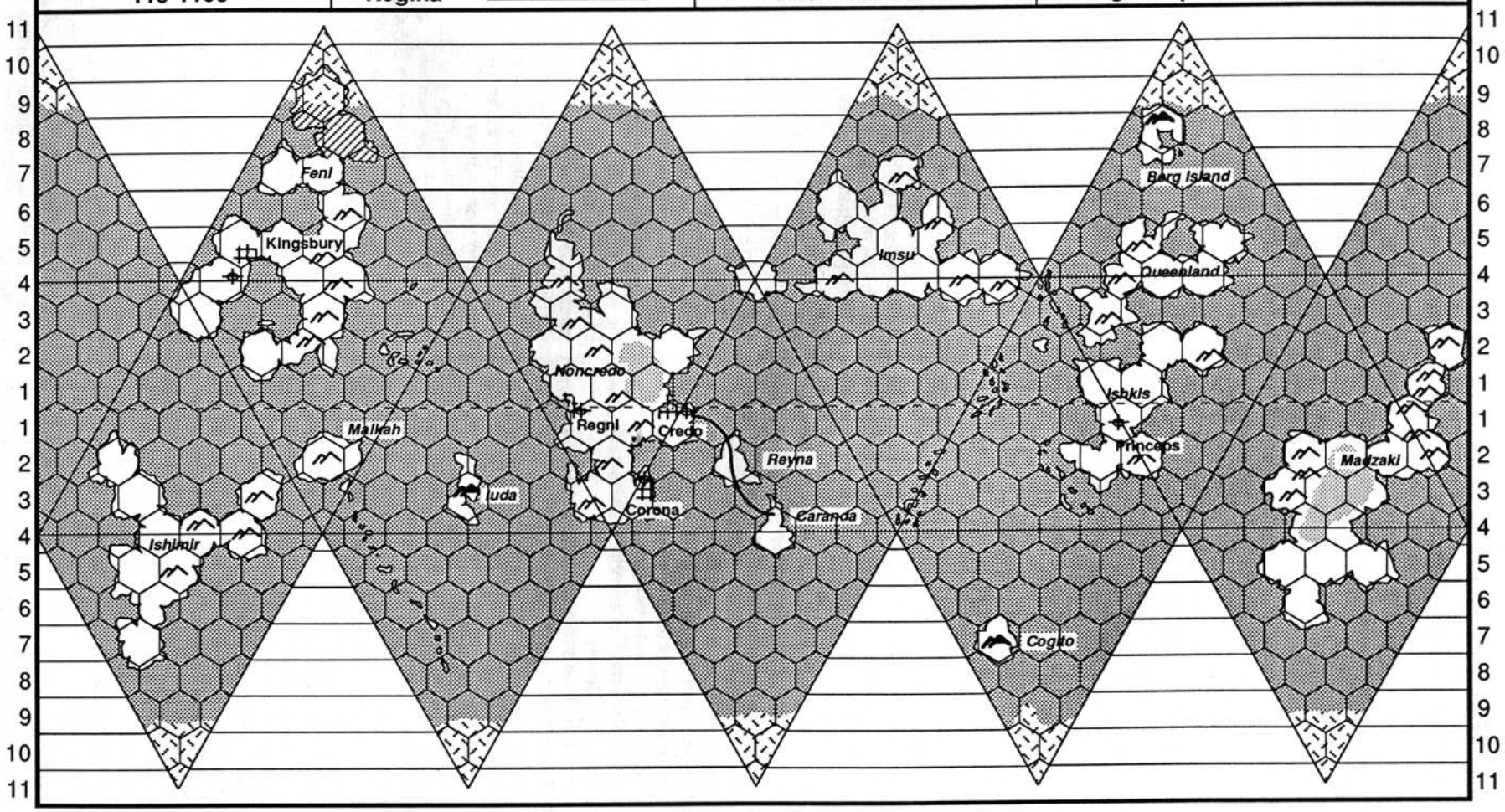
Such a world will be one of climatic extremes: only in a relatively thin band of constant twilight will life generally be able to flourish (though this depends on the base temperature). Mapping should reflect these surface conditions—ice sheets covering the cold regions, sunbaked deserts on the hot side.



WORLD MAP GRID

This geodesic map grid divides the spherical surface of any globe into twenty triangles, each of which is further divided into hexagons. Note terrain identities and other planetographic features of the world in these hexagons. Total number of map hexes per triangle: 25. Total number of map hexes: 500.

1. Date of Preparation	2. World Name *(and UWP)*	3. Hexagon Scale in Kilometers (circumference divided by 35)	4. Subsector and Sector Location of World
115-1106	Regina A7888999C	1 hex=1074 km	Regina/Spinward Marches



IS Form 21

World Map Grid (Large)

Using World Data

Sometimes just coming up with a reasonable interpretation for the last four stats of the basic world UWP (population, government, law level, and tech level) can be a real challenge. This section discusses difficult to interpret aspects of world data.

All of this information can be used to add extra spice to an adventure or campaign. World Builder's cultural data can be used to generate a rich homeworld background for player characters or major NPCs.

Local temperature, climate, weather, and seismic quakes all add color to an adventure. This section tells how to use world data to determine conditions and to generate unusual events. Information is also given on using law levels, fines and punishment, and even planetary defenses. Guidelines are also given for using a world's size and atmosphere as interesting complications in an adventure.

INTERPRETING WORLD UWP STATS

When trying to reconcile a world's UWP and data listing stats with one another, difficulties sometimes occur. This section examines the effects world data stats can have on each other. Understanding these relationships can make all the difference when deciphering a seemingly incompatible array of world stats.

Starports: The tech level of a world is seldom tied to the starport tech level. Most worlds consider the starport to be extraterritorial, and when the Scouts consider the world's technology ratings, they typically ignore any technology within the starport's bounds.

Even so, technology from a high-tech starport does "leak out" onto a lower tech world. This technology leakage is represented by the DMs used for starports when determining the world's tech level using the basic rules.

As an example of technology leakage, consider the US military bases in Vietnam in the early 1970s. The surrounding countryside was about tech level 4 to 5, while the military base was tech level 7. When a TL 7 truck was deemed unrepairable, the base might decide to sell the truck to the locals. The locals may get the truck running, although its performance is probably far short of what the base personnel consider acceptable.

The starport DMs also take into account the effects of interstellar trade on local tech levels.

No matter what the world's tech level is, starports always have a minimum tech level which exists within the starport's borders. These minimums are:

Class A Starport: TL 10
Class B Starport: TL 9
Class C Starport: TL 8
Class D Starport: TL 7
Class E Starport: TL 6
Class X Starport: TL 0

Thus if a world has a class A starport and a tech level less than 10, the starport tech level is always at least 10.

If the world's UWP tech level exceeds the minimum level for the starport, use the world UWP tech level as the tech level of the starport facilities.

Military Bases: The presence of Scout bases, Imperial Naval bases, and colonial Navy bases may or may not have an effect on the world's tech level.

In many cases, the base is ignored by the Scouts when considering tech level. To understand why, consider Edwards Air Force Base in California. Can commercial and private aircraft routinely use the Edwards Air Force Base facilities? No, they can't: it is a government military facility, and there are plenty of non-military facilities elsewhere. The same holds true of bases in most star systems.

On the other hand, some military bases are considered by the Scouts when they are determining the primary (i.e., the most prominent) world in the system, and its tech level. A corresponding example is the American Army forts of the old west. Anyone passing through could seek refuge in the fort and get supplies. The same holds true of bases in some star systems.

The bottom line on military bases is this: take your pick. The Scout base, Imperial Naval base, or colonial Navy base facilities can be declared as "included in the UWP" if you want to allow free access to the base's facilities. But the more common situation (especially if the world UWP doesn't seem to make sense in light of the military base) is to declare the military facilities as off-limits to commercial and private starships, and the base facilities as "not included in the UWP".

Zero Population Worlds: Some of the strangest planets in the Survey of the Imperium are listed as having no population, yet have a government, law level, or tech level. How can no people have government or technology? There are ways, and these ways can make a zero population planet into an exciting adventure situation.

First, remember that a zero population digit means from 0 to 9 people in permanent residence on or around the planet. Transients do not count, nor do military personnel stationed there for a few months or years. A zero-population world may be a park planet with a few caretakers, or a privately owned preserve of a noble; a tourist world without special facilities could have millions of visitors per year, yet a population digit of 0 and no permanent residents. It can be a research station, an automated starport, or a wilderness training planet for Imperial marines. Or it can be really empty, or have only developing races not yet counted as a true sentient race.

If a planet has a starport and tech level only, it is probably an automated port. The tech level does not necessarily refer to the starport. For instance, a B class port on a tech level 3 planet may be there as access to the remains of a vanished civilization, whose relics are tech 3. The tech level may refer to accommodations available on a hunting preserve world.

A class E starport, and a tech level of 5 or more (other digits 0) usually means a mechanical beacon of the indicated tech level. Occasionally an exile world or a hermitage also fits this class.

The range of governments (2D-7+pop) for zero-population worlds is 0–5. Here are some possible explanations for these governments when the world has a zero population digit:

0. "No government, or family bonds only" generally means that the few people on the world are responsible to someone offworld. Although rare, it is not unheard of that a single family will have laid claim a whole world and set out to tame it. This digit can also be used for the government of a military training ground, or any such situation where all the inhabitants are temporary.

1. "Company/corporation" means that this planet is wholly owned by a business. It may be a warehouse planet, or an executive resort, or it may be mined for valuable resources, either mechanically (with robots) or by crews in rotation, due perhaps to rigorous working conditions.

2. "Participating democracy" is the most natural government type for less than 10 people, but implies that they are on their own. A research group (self-supporting) might have such a government. So might a religious group in retreat. Castaways would develop one, but would be unlikely to remain on the world after a survey ship had arrived. Political exiles might rule themselves by mutual agreement.

3. A "self-perpetuating oligarchy" is usually rule by an elite noble class where blood line or some other selection process determines the succession. Many worlds in the core of the Imperium are privately owned by noble families and some are kept unpopulated except by those families and their retainers or robot servants. In addition, the Imperial government itself keeps a few worlds as parks or museums, and holds worlds with developing races in trust (under Scout management).

4. A "representative democracy" means that this world is represented in some other world's legislature (as a small colony perhaps), or that transients may be represented before a council of permanent residents. There are cases of planets claimed by educational institutions (often with relics of past civilizations) where students go, running the world with a representative government of their own. However, the students must still answer to the offworld faculty.

5. A "feudal technocracy" is likely to indicate a scientific group led by their top scholar. Under extreme conditions on a planet with valuable resources, prospectors might put themselves under the orders of a knowledgeable guide (a permanent resident) and this could be called a technocracy also.

A red zone with no population is usually either an exile world or a ruin with dangerous residues from a war. It may also be interdicted by Scout authority to protect indigenous flora and fauna.

All these factors and possibilities can be juggled to explain the particular UWP of any world with zero population. Thus, any zero population world can become an intriguing place, well worth exploring by your players.

LOCAL TEMPERATURE

Besides the effects shown in the world design section, some other factors can affect local termperature.

Altitude: If the locale is on a significantly elevated part of the planet (say a mountain or a plateau) the phenomenon known as "lapse rate" comes into play. Temperature decreases at a rate of 1° per 200 meters above "surface level" (sea level on worlds with oceans, or an arbitrary determination of the referee's on other worlds). Thus a point 1 kilometer above surface level will be 5° colder than a point at surface level, on the average.

Water: The presence of a significant body of water can also alter the local temperature. Water moderates temperatures in areas near it (say within 5 km) during the summer by minus 1-6°C and adds 1-6°C during winter.

The same holds true of day and night temperature variations near water—the same 1-6° variation lowers the day temperature and raises the night temperature in areas within 5 km of a large body of water.

Terrain Variations: Regardless of the atmosphere of the world, some locations experience random variation. A desert, for instance, will tend to have less heat retention at night than a smog-bound city. You may wish to assign modifiers to temperature based on such considerations.

Random Variations: The temperature calculations yield basic temperature ranges; various essential extremes will occur pushing temperatures up and down. Determining these random variations are up to the referee

WEATHER EFFECTS

The main type of weather affecting a session are fog and precipitation, which affects both visibility and movement.

Visibility: Fog and precipitation affect visibility in the same manner as night. Fog, rain, and snowfall increase the difficulty of all spotting tasks by one level.

Vision enhancement devices treat weather effects as night, with the following exceptions:

- IR devices (active and passive) do not work in rain or snowfall.
- Thermal imaging devices may see personnel only out to distant range in rain. They do not work in snowfall.
- Radar has its range cut in half in rain and snowfall; all-weather radar may see normally.
- Illum rounds, searchlights, and light amplification devices do not work in any reduced-visibility weather conditions.

Movement: After prolonged rainfall, normal ground will become mud. Wheeled vehicles pay double movement to move through snow; tracked vehicles move as normal.

PLANETARY ENVIRONMENT

The basic combat rules assume an Earth-like planet (size 8, with a standard atmosphere). Planets with different sizes, gravities, and atmospheres have various additional effects, as explained below.

Planetary Size: The distance to the horizon is the upper limit on spotting and direct fire range, and depends upon planetary size. The table below gives the range to the horizon on worlds of the diameter specified (in km). The number in parentheses is the world UWP size code.

Radius	*Range to Horizon*
800(1)	Very Long
1600(2)	Distant
2400(3)	Distant
3200(4)	Distant
4000(5)	Distant
4800(6)	Distant
5600(7)	Very Distant
6400(8)	Very Distant
7200(9)	Very Distant
8000(A)	Very Distant

Atmosphere Type: Atmosphere type has a number of effects. Thin, standard, and dense are all breathable; tainted atmospheres are breathable after poisonous gases have been filtered out. Very thin and trace atmospheres are too thin to breathe. Exotic, corrosive, and insidious atmospheres are very dense, unbreathable, and increasingly dangerous.

Air Cushion Vehicles (ACVs): When determining the speed of an ACV, divide by 2 for dense, exotic, corrosive, and isidious atmosphere worlds. An ACV will not work on trace or vacuum atmosphere worlds.

Energy Weapon Fire: The listed penetration/attenuation of an energy weapon (laser, plasma gun, or fusion gun) is

increased as shown on the table below for the stated atmospheres. These constants affect range for the purposes of penetration only, and do not alter the range at which a weapon may hit.

For example, a laser pistol-9 in a very thin atmosphere still requires a difficult task to hit at at long range, but still has a penetration of 4 at that range instead of 2.

Atm	*Pen Mod*
Vacuum	+3 bands
Trace	+2 bands
Very Thin	+1 band
Thin	No change
Standard	No change
Dense	No change
Exotic	-1 band
Corrosive	-1 band
Insidious	-1 band
Dense High	-1 band
Ellipsoid	No change
Thin Low	No change

UNDERSTANDING THE LAW DETAILS

Law is the influence that a government has over a population. At one end of the scale, anarchy prevails, and all are free to act under whatever whims move them at the moment. At the opposite extreme, the insidious fingers of the government reach into every nook and cranny of activity, no matter how personal.

When an individual breaks a law, the government reacts, to prevent the lawbreaker from committing the same crime again, to exact retribution for the victim, and to punish the wrongdoer.

Different civilizations conduct these tasks in different ways — the way each civilization does these tasks is through its laws.

Law Enforcement: Enforcement can be particularly important to the characters, because they may commit a crime unobserved. At a low law level, the transgression may be ignored by the authorities. If the law level is high, police will often be relentless in their hunt for the characters, using any available evidence they can find.

Law In The Imperium: With 11,000 worlds to choose from, there are a variety of lawmaking bodies in the Imperium. Depending on where the characters are, one or more of these may apply to their actions.

Local Law: At the local level, laws are different for each world, or even each country on balkanized worlds. These laws then extend only to behavior on that particular world, and characters can not be punished for actions they commit elsewhere.

In particular, note that the "law level" digit is meant to apply principally to the urban areas near a starport. Wilderness areas on a world usually have lower law levels, especially in the area of enforcement: where there are no police, there are no laws, as the Vargr say. At high tech levels, of course, it is easier for police to observe wrongdoings and collect clues even in uninhabited areas, so this distinction does not apply.

Local Interstellar Law: Sectors and subsectors can and do establish laws that must be obeyed on every world within their boundaries. Usually, these laws concern themselves with diplomatic relations and Imperial taxes. Characters should be aware, however, that laws at this level often establish extradition procedures. Adventurers who flee a world after committing a crime there may gather undue attention from police everywhere they go.

In a few cases, several member worlds in the Imperium may have a closer governmental relationship. The most common reason for this is a captive world or colony, but there are instances of worlds banding together into small political units. Local laws in these situations may extend over all the worlds involved.

Imperial Law: The Imperium for the most part is a trade protectorate, and its principal legal duties are protecting the space between member worlds from piracy and foreign attack. Imperial laws also set up a minimum standard of behavior for every world within its borders.

For example, murder (killing a sentient being without provocation) is an Imperial crime. Where local laws do not adequately prohibit murder, Imperial law would apply. Naturally, this rarely happens except in open space.

Imperial law is enforced by Imperial nobility and Imperial troops. Where possible, criminals are brought to the nearest world where a fair trial can be held under the procedures of the local law.

Crime And Punishment: Once a court has tried and convicted a criminal, it usually imposes some punishment. These vary by type, usually according to the kind of crime committed.

Fines: Small fines are often imposed for minor, non-violent offenses, but fines for trade law violations might be up in the millions of credits. For minor offenses, determine the fine by rolling 4D x Cr10. The fines for trade law violations are up to the referee.

Corporal Punishment: Usually applied for more serious crimes, corporal punishments are of three types.

Restrictions on activity are the mildest of corporal punishments, usually involving a prison term for some specified time. Under certain arrangements, criminals may be released early, but must report their activities to the authorities for some time after this release. For minor crimes, the jail term is usually 2D days. For local major crimes, on a 2D roll for less than the law level, the prison term is 4D years. If the 2D roll is equal or greater than the law level, the prison term becomes 1D+2 decades.

Injury and death may be inflicted upon the criminal as a punishment. Limbs are sometimes removed for theft, and murder and other serious crimes are often punished by death. Of particular note is Easter (Solomani Rim 1802), where looking at the ruler's face is punishable by being blinded. The referee must determine if this type of punishment exists for a given crime.

Banishment seems like a lenient punishment, but it is severe to the person who must leave his world or country and live apart from his family and friends. The early Greeks on Terra banished one of their countrymen every year by a vote of all the citizens (demos as defined above). Those punished in this way could return only after ten years of enforced absence. As with injury or death, the referee must determine if this type of punishment exists for a given crime.

Guidelines on Setting the Severity of Punishment: The harshness with which criminals are dealt varies considerably from world to world. A crime punishable by death on one world might merit only a small fine on another. Since it is impossible to give strict rules for every world, the following guidelines should help.

The severity of punishment varies inversely to the law level. That is, punishments are lax at the highest law levels

and more severe the lower the law level gets. This variation is easy to understand.

At low law levels, only the most serious offenses are considered to be criminal, and so naturally punishment for any crime is harsh. At the highest law levels, where every act is a crime and every citizen is a criminal, it is virtually impossible to punish every infraction, so minor offenses are often overlooked. Unfortunately, a character who upsets a minor bureaucrat on such a world may find himself receiving special visits from the police for these "crimes". (This is not to imply, either, that serious crimes are punished in a modest manner at high law levels.)

COORDINATING GOVERNMENT AND LAW LEVELS

The law level of a world can give an extra glimpse into the "enthusiasm" which the three branches of government show for their work. An infinite variety is possible by combining all the possible values of the different characteristics.

On a low law level world, the legislative branch will "keep it's nose out of people's business", promulgating only a minimum of laws to protect its citizenry. The small executive branch will also exert its influence in a minimal way to make sure that these laws are enforced. When lawbreakers are apprehended, the judicial branch will conduct quick trials, although often meting out harsh sentences for serious crimes.

On a high law level world, the legislative branch will interest itself in every sphere of activity, producing a multitude of laws. The executive branch, often weighed down in an inefficient bureaucratic structure, will enforce these laws in a heavy-handed way, often over the objections of the citizens. Trials might drag on for years, with the judicial branch swamped by a heavy work load made worse by overprecise procedural rules.

In game terms, characters will have many more dealings with individuals from the executive part of the government. Of course, if characters disobey laws they may also find themselves introduced to the judicial functions after being arrested by the executive branch.

CULTURAL BACKGROUND IN A HURRY

For practical purposes, you can use twentieth-century Western civilization as a cultural model for the Imperium. The cultural profile is progressive and advancing, competitive and neutral, discordant and friendly.

For very quick cultural details for any world, the Local Customs Tables in the population-related details subsection can be used even if no other part of this book is used, to immediately give a local flavor to any world.

Example: We want to develop local customs for Regina, which has a tech level of 12. We roll once on the Local Custom Table and get a 2, which tells us we need to roll on the Eating Habits table.

Rolling on the Eating Habits Table gives us "Unusual Foods*" on the table. The asterisk means we need to also roll on the Applicable Groups Tableto find out who eats the unusual foods. We roll and find that the low social classes have the unusual food.

Now our imagination must fill in the details. We decide that Reginans believe strongly in a "gleaning custom", where the lowest class citizens are expected to clean the tailings from a harvested field for much of their food supply.

UNDERSTANDING THE TECHNOLOGY PROFILE

The basic tech level in a world's UWP provides a general guide to the technology available on the world. The Technology Profile provides a detailed picture of the world's technological abilities.

By examining the achievement tech levels and comparing them to the high and low common tech levels, it is possible to draw some useful conclusions about conditions on the world.

Achievement Tech Level Greater Than High Common: This represents a technological area in which the world is forging ahead through experiments and research. Breakthroughs are occurring, but little practical use has yet to be made of the discoveries or inventions.

Characters may be able to locate and make use of this technology in an adventure if they are desperate, but any such technology likely consists of a handful of prototypes of dubious reliability.

Achievement Tech Level Between High Common and Low Common: This represents a technological area in which the world has local manufacturing and distribution capability. Research and development are ongoing, but no major breakthroughs have been made recently.

If the tech level is below high common, any high common items in this specific technology area are imported and likely cost more than usual.

Achievement Tech Level Less Than Low Common: This represents a technological area in which the world has great technological difficulty.

Many explanations for this exist:

- The world, for whatever reason, has no pressing need for this area of technology;
- The world may actually be expending great energy and resources trying to advance in this area, but efforts have yet to produce meaningful results. A technological disaster could be the cause of this; alternatively, some sort of "cultural block" could make research in this area impractical.
- The populace may prefer offworld goods to local goods—in other words, there is no market for this type of technology if it is locally manufactured.

If characters want items of low common tech level or above, and the technology area has an achievement level below low common, the items will be imported and very expensive.

The maximum tech level commonly encountered in the Imperium is 15, with an occasional tech level 16. Tech levels over 16 are almost never encountered in the official Traveller universe except as artifact tech levels. There is only one exception to this in the entire Imperium: Sabmiqys (Antares 2117). Sabmiqys possesses an active, developing tech 17 culture. But because of social reasons the population of Sabmiqys is planet bound. Their space transport tech level is 8: they are without jump drive capability.

OTHER TECH LEVEL NOTES

Worlds with a tech level of 10 or less often contain some areas on the world that have only been superficially explored. In cases where the tech level is 11 or more, then if the world's population code is less than 6, the world typically contains some superficially explored areas. Worlds with a tech level of 7 or less generally have several large unexplored regions.

PLANETARY DEFENSES

Planetary defenses are of two types: active and passive. Active systems are designed to inflict damage on enemy starships attempting to bombard the planet or land troops, while passive defense limit the ability of enemy forces to inflict damage on the world.

The most common form of active defense in the deep meson gun site. A deep meson gun is a meson gun of ship ordnance size burried in a deep underground chamber. As a planet itself is transparent to the meson beam, the meson gun can fire at any target desired, while the site itself is effectively impossible to locate. Only when the gun site's surface sensors and target acquisition devices have been destroyed or captured can the gun be silenced. This generally requires the use of ground troops or extensive planetary bombardment. At lower tech levels, laser and missile sites are used as well, but are much less effective and more vulnerable.

Passive defenses center on major population concentrations, and take the form of damper projectors and large (city-sized) meson screens. The atmosphere of a planet itself provides an effective shield against long-range laser and particle accelerator fire, although vacuum worlds lack this protection and thus generally surrender if an enemy bombardment force penetrates its system defense boats.

The vehicle design section and the starship design section can be used to develop the appropriate planetary defenses within these guidelines.

SEISMIC QUAKES

Seismic quakes of enough intensity to be noteworthy are rare, but do happen from time to time.

Implement a quake as a special predetermined event. Prefer worlds with a high planetary stress factor.

The quake is major if a roll of less than or equal the planet's stress factor is made; otherwise the quake is minor.

A major quake has a magnitude of 2D-2; a minor quake has a magnitude of 1D-1.

Quake Effects: Each character is "hit" by the quake if a roll on 2D of less than or equal to the quake magnitude is made against that character. A "to avoid" task using dexterity should be defined to enable the character to avoid the hit; if the throw is failed, he will suffer a mishap.

Aftershocks: A major quake will be followed by a number of "aftershocks" equal to the quake's magnitude, over a period of 2D hours following the initial quake. Minor quakes do not produce aftershocks.

Predicting or Controlling Seismic Activity: Reliable quake prediction appears at tech level 8. AtTL 8+, roll less than tech level on 2D to predict a quake. If successful, delay the quake, and warn the characters that it will occur.

At tech level 10, controlling quakes is often possible. On a 3D roll for the TL-, the quake magnitude can be reduced by TL ÷ 2 (round fractions down). The roll must be made individually for variousquakes. A DM-1 is allowed if the population of a city in the quake hex is 6+.

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World Builder's on Computer

$ 24.95 (IBM, Mac)
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UWP data for 37 sectors in and near the Imperium. The World Builder's program can read this data and generate world detail sheets to your heart's content.

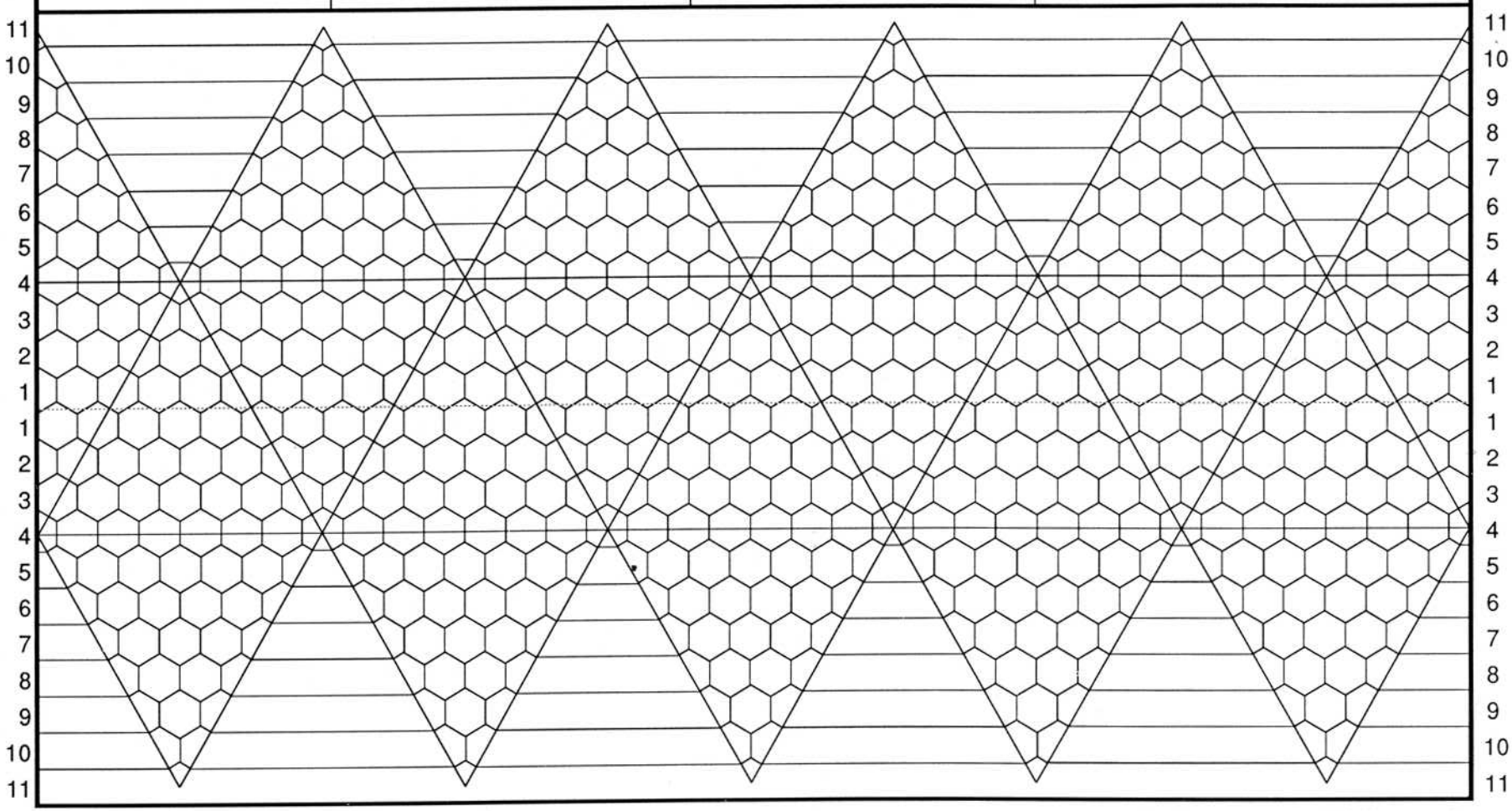
Index for World Builder's Handbook

Send a #10 SASE to Digest Group Publications, 8979 Mandan Ct., Boise, Idaho 83709

WORLD MAP GRID

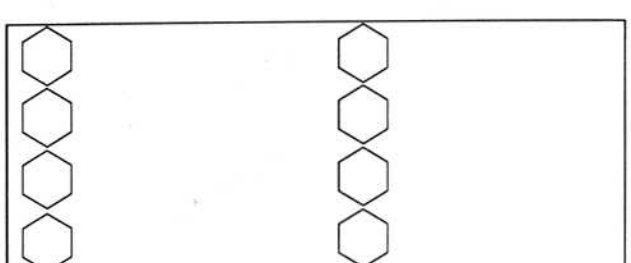
This geodesic map grid divides the spherical surface of any globe into twenty triangles, each of which is further divided into hexagons. Note terrain identities and other planetographic features of the world in these hexagons. Total number of map hexes per triangle: 25. Total number of map hexes: 500.

1. Date of Preparation	2. World Name *(and UPP)*	3. Hexagon Scale in Kilometers (circumference divided by 35)	4. Subsector and Sector Location of World



IS Form 21

World Map Grid (Large)



WORLD BUILDER'S HANDBOOK

Learn How the Imperial Scouts Survey and Explore New Worlds...

And Learn How to Build Exciting and Interesting New Worlds of Your Own With These Extensive Rules!

Contents include—

- **Survey Procedures:** Procedures used by the Scouts to survey and explore worlds.
- **Survey Equipment:** Thirty pages of detailed equipment sheets for players to use on survey and exploration missions. Includes sensors, personal-assist hardware, clothing and protective gear, vehicles, and complete plans of the *Donosev* Survey Starship used by the Scouts.
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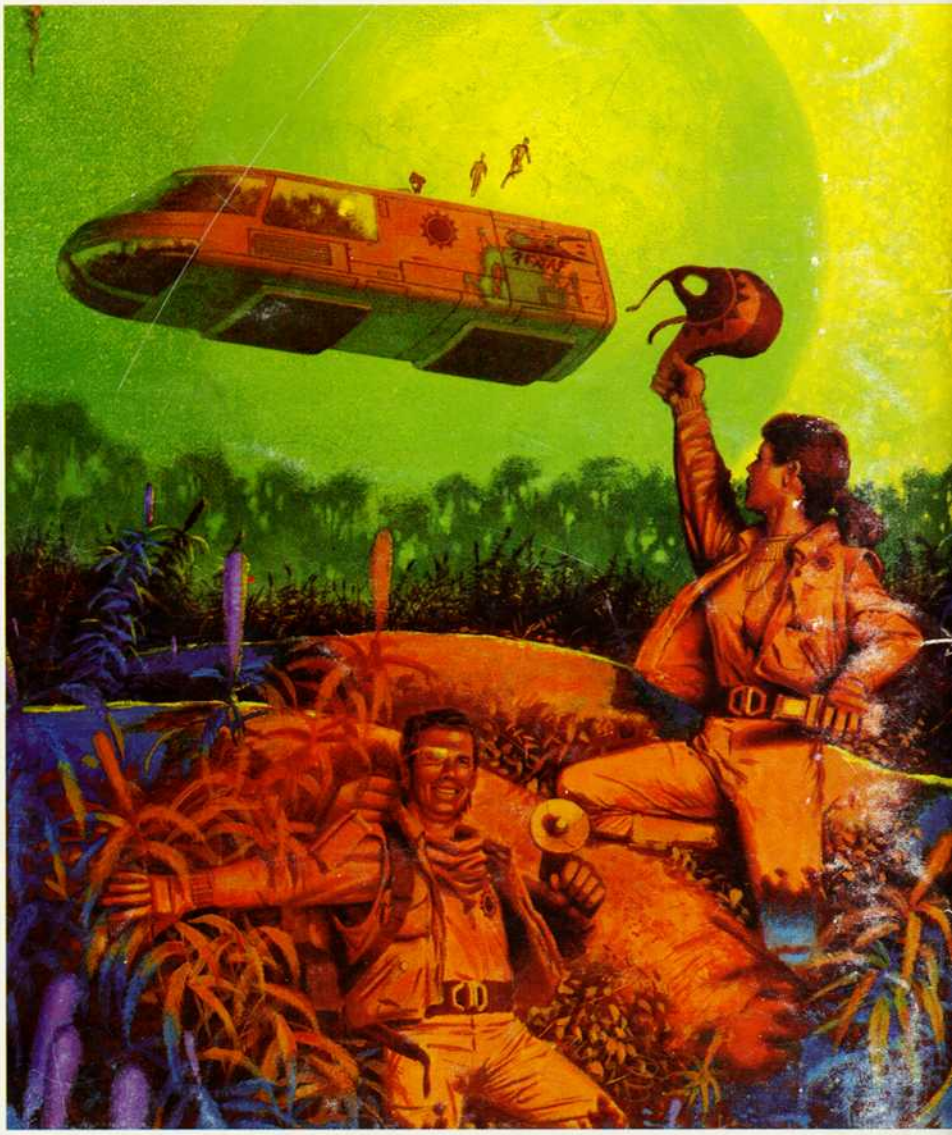
  - Asteroid Worlds
  - Gas Giants
  - Tidally-Locked Worlds
- **Mapping a World:** Guidelines on how to properly map the world you have built.

For Use With MegaTraveller—

This book is intended for use with **MegaTraveller**. It requires that you have a copy of the game rules.

A Scout survey team takes advantage of the first light on Deyis II, seeking to verify recent rumors of unusual lifeforms on the world. The Scout in the left foreground is pleased because his neural activity sensor has just registered a "semi-intelligent, unknown" lifeform 500 meters ahead. Meanwhile, his partner waives to her fellow Scouts hovering overhead in their *Kankurur* G-Carrier. The Scouts from the G-Carrier, in grav belts, are coming to help home in on the newly discovered lifeform.



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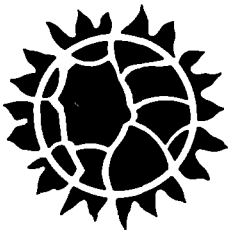

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Fighting Ships of the Shattered Imperium

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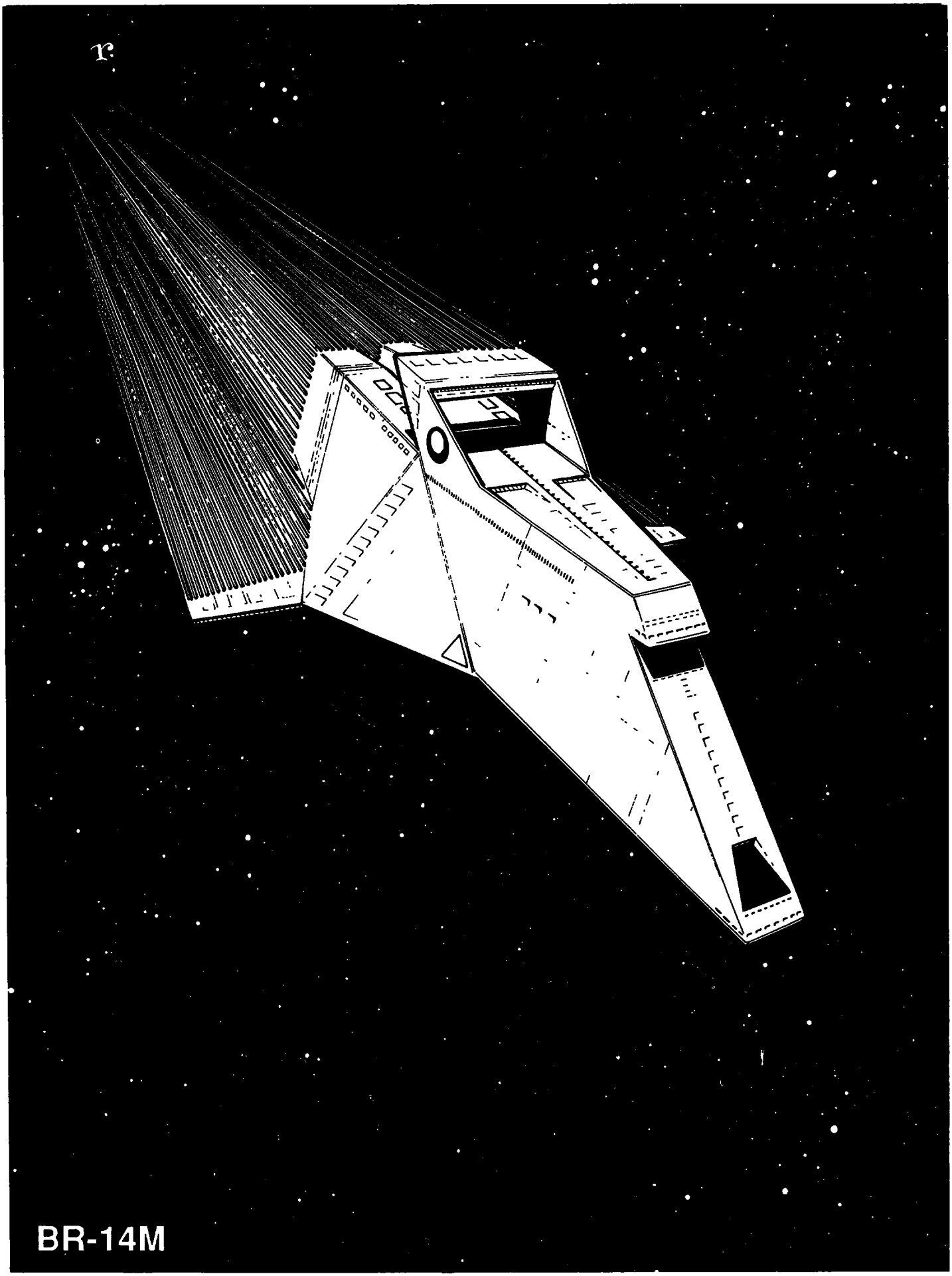
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Fighting Ships

Over the course of its 1000-year history, the Imperial Navy has developed and refined its needs for fighting ships based on its experience in conflicts with interstellar neighbors and in response to established internal needs for peacekeeping within the empire.

The Imperial Navy uses the term *ship* for any vessel capable of jump. It uses a variety of terms (including *boat*, *rider*, and *monitor*) to identify all other vessels.

MISSION OF THE IMPERIAL NAVY

The Third Imperium is a government of governments. The territory of the Imperium consists of nearly 10,000 star systems, each of which contains one or more inhabited worlds and many less-exploited worlds. Where there is a population, there is usually a government, and the Imperium encourages local government responsibility for the day-to-day activities of the world.

The Imperial Sea: In metaphor, the Imperium is a broad sea, with each world an island with its own government. The Imperium rules not the islands, but the sea of space between the worlds. Its responsibilities include encouragement, regulation, and protection of trade between worlds, regulation of interworld relations (diplomacy), and protection of the Imperium against dangers from its external and internal enemies.

But the Imperium is not without its planet bases. Most inhabited worlds have their own governments which rule with little or no Imperial interference. That still leaves the nearly 100,000 uninhabited worlds (most of them the frozen planets beyond the life zone) which are Imperial territory. That also leaves select planets which have always been Imperial territory—capitals, naval depots, restricted or protected worlds, and resource preserves.

The Navy's Mission: The Imperial Navy is the armed force which patrols the Imperial sea of stars. Its mission is to maintain the peace and security of the Imperium. The navy is the force that defends the Imperium against aggression by its neighbors. The navy is the force that protects internal trading and transport ships from piracy and raiders. Finally, the navy protects the worlds of the Imperium from each other.

The Imperial Navy is also the armed force used by the Imperium as its agency of conquest. The Imperial Navy is the only force capable of carrying the power of the Imperium into new territory. And the Imperial Navy is, by its very existence, a deterrent to the aggression of enemies of the Imperium.

The Organization of the Imperial Navy: The navy is organized into fleets, each of which is composed of squadrons, which are themselves composed of individual ships. The ships are the heart of the Imperial Navy, and the organizations containing them serve to provide direction and control over their actions.

FIVE BROAD SHIP TYPES

The Imperial Navy acknowledges five broad ship types in its service: scouts, escorts, cruisers, carriers, and battleships. Each type has its own function within the overall mission of the navy.

Battleships: The power of the Imperial Navy is concentrated in its battleships. The definition of a battleship is a ship which, due to its armament and protection, is capable of standing in the line of battle. When a battleship meets any lesser type of ship, its victory is almost guaranteed. When battleships on two sides meet, victory goes to the better armed, better armored, and better directed ship.

The broad type of battleship is further divided into many more clearly defined types. Besides battleships, there are dreadnoughts, battle riders, and battle tenders.

Dreadnought: A dreadnought is a superbattleship, designed to be the best possible battleship. The Imperial Navy places the dreadnought designation on its latest, most-effective battleships, redesignating them simply as battleships when their superior abilities are supplanted by newer construction.

The concept of dreadnought does not mean that battleships are not built as well. Due to the expense of dreadnoughts, the Imperial Navy also acquires battleships as such.

Battle Rider: A battle rider is a nonjump-capable vessel which is otherwise armed and armored like a battleship. By eliminating the jump drives and their associated controls and power plant support, the internal space they would occupy may be allocated to additional armor, weaponry, or agility. Of any two vessels of equal tonnage, a battle rider (which is not burdened with jump drives and required jump drive support) would logically be superior to a jump-capable battleship.

Battle Tender: A battle tender is a ship designed to carry battle riders into battle.

Cruisers. Cruisers are more lightly armored and less heavily armed than battleships. To unarmed, unarmored ships, this difference is negligible, since a cruiser can easily attack and destroy any noncombatant ships. Cruisers are assigned to support battleships and carry combat to areas where a battleship is not considered necessary.

Carriers: Carriers are designed to carry large numbers of small combat craft, which in turn attack the enemy's combatants or world surfaces.

Escorts: Escorts are vessels intended to protect and assist larger vessels. They are capable of independent action, but are usually assigned to support battleships and cruisers.

Scouts: Scouts are survey and exploration ships normally employed in the scout service. They are transferred to naval duty in time of war or when otherwise necessary. Many scout ships are couriers for the navy.

SEVEN BROAD FLEET TYPES

The Imperial Navy classifies its fleets by the type of activity they are expected to undertake: assault, battle, interdiction, penetration, strike, reserve, and depot. In these categories, reserve and depot are inactive ship pools not normally given tactical missions.

Assault fleets are assigned world attack missions. They are sent into a star system to carry surface forces to the mainworld in order to assault and conquer world surface territory. In easy cases, an assault fleet carries forces to a small, low population world which is easily reduced. The true challenge to an assault fleet is the high population world: The fleet will carry tens of thousands of troops for world-invasion operations, then resupply the beachhead that they establish, while helping repel the local force's efforts to eliminate the invasion forces.

Battle fleets are the main combat units of the navy. They are assigned battleships and are expected to meet and destroy any

enemy ships they encounter. By definition, battleships in battle fleets are the strongest forces the Imperial Navy can bring to bear.

Interdiction fleets are assigned siege-oriented missions. They are sent into a star system to surround its mainworld and stop all traffic to and from the world. They are also expected to conduct bombardments and containment operations which will force the mainworld to surrender.

Penetration fleets are given long-range raid missions. They are expected to drive deep into enemy territory and attack important objectives (like enemy bases, industry, starports, or shipyards). After they have destroyed their objectives, they must return to friendly territory. Penetration fleets are expected to be self-sufficient for long periods of time.

Strike fleets are strategic supplements to the battle fleets. They support the flanks of the battle fleets with maneuverability and firepower. Often a strike fleet will be assigned to clear a system that a battle fleet will need to pass through. Strike fleets are used for diversions while the battle fleet proceeds to its primary objective, and strike fleets protect the flanks of battle fleets in major battles.

Reserve fleets are primarily holding formations which provide the details of bureaucratic support until their ships are assigned to fleets with specific missions. The primary activity a reserve fleet undertakes is training.

Depot fleets are inactive ship pools. Ships which are not in service but which may be reactivated are assigned to the depot fleets.

FIVE BROAD SQUADRON TYPES

The Imperial Navy maintains five major squadron types: BatRons, CruRons, AssaultRons, TankRons, and ScoutRons. Any squadron type may be in any fleet type, depending on the specific mission being performed.

BatRon: Battle squadrons are created from battleships and are intended to meet the best of the enemy fleet, engage it, and destroy it. Their purpose is battle. Battle squadrons are usually reinforced with large numbers of auxiliary ships, including refueling shuttles, escorts, and support cruisers. In addition, they are accompanied by a number of fleet couriers which carry communications between squadrons.

CruRon: Cruiser squadrons are organized with cruisers and are intended to support BatRons in space combat. Although a cruiser cannot defeat a battleship in one-on-one combat, a number of cruisers can overwhelm a lone battleship, and this occasionally happens. The function of the CruRon is to hold or delay a BatRon early in a battle.

CruRons are strong units. When no BatRon is around, they are easily the strongest type of squadron available. In addition to supporting BatRons, they are given the mission of supporting planetary surface operations once the space battle has been won. Cruisers are the ships that bombard the planetary surface, conduct siege warfare, and cover the invading AssaultRons. CruRons are accompanied by a variety of auxiliaries, including shuttles, transports, and fleet couriers. Every CruRon is assigned a bulk ordnance carrier which resupplies it with bombs and missiles.

AssaultRon: The assault squadron is composed of troop transports and supporting ships. Capable of carrying hundreds of battalions of invading troops, the AssaultRon's mission is to transport troops, their equipment, and their supplies from star system to star system, and to deliver troops from orbit to a disputed planetary surface.

AssaultRons tend to be homogeneous units, each equipped with only one type of ship. Thus, the 10897th Imperial Assault Transport Squadron would be equipped for troop transport, while the 9705th Assault Invasion Squadron would be equipped to deliver the troops to an invasion beachhead on a world surface.

TankRon: Tanker squadrons are special-purpose units dictated by the need for Imperial Navy vessels to travel farther than their fuel tankage will allow. TankRons carry large quantities of fuel and are positioned to refuel other squadrons as they cross territory which would not otherwise provide fuel resources for them.

ScoutRons: Scout squadrons are composed of ships assigned to the Imperial Interstellar Scout Service. They rarely serve as ScoutRons; instead, the ships are assigned to other squadrons based on need. For example, many fleet couriers are considered scout-type ships. When a fleet courier assigned to BatRon 10 is sent with dispatches to BatRon 11, it is automatically reassigned to BatRon 11 when it arrives. Ships awaiting assignment to serving squadrons are assigned to a ScoutRon, as are ships being resupplied or undergoing repairs.

Squadron Classification: Squadrons are classified by their position within the hierarchy of the Imperium. Regular squadrons are front-line units equipped with the best possible ships and personnel. Colonial squadrons are equipped with obsolescent (but still serviceable, rather than obsolete) ships and with personnel with somewhat less training and experience. System squadrons are not jump-capable, but are rather equipped with SDBs and monitors, and staffed with local personnel.

Regular squadrons are assigned to the numbered fleets of the Imperium and stationed at naval bases within the Imperium. Regular squadrons carry the term *Imperial* in their name. For example, Imperial BatRon 11 is a regular squadron.

Colonial squadrons are assigned to the numbered reserve fleets of the subsectors. They are based at worlds which can provide personnel and technology to support them: worlds with tech code Early Stellar+ (TL9+) and High Population (Pop 9+). Colonial squadrons carry the term *colonial* in their name. For example, Colonial TankRon 4051 is a colonial squadron.

System squadrons are not assigned to any fleet. They are based in a home system with tech code Early Stellar+ (TL9+) and Moderate Population (Pop 4+). System squadrons carry either the term *defense* or the name of their system or both in their name. For example, Defense CruRon Regina is the system squadron for the Regina system. When several system squadrons are in a system, they are numbered as well.

Squadron Numbers: Squadrons are numbered for identification purposes. The number may precede the name (as in 172nd Battle Squadron) or it may follow the name (as in BatRon 172). Either system is acceptable.

The Effects of the Rebellion: The Rebellion has affected how squadrons are identified.

As the Rebellion has progressed, some individual squadrons have developed a loyalty to their commander as opposed to the Imperium or to a specific faction. In such cases, the squadron has taken the name of the commander (for example, CruRon Riksdotter is the former Imperial CruRon 500).

Changing loyalties have also forced changes in the use of the terms *Imperial* and *colonial* with regard to squadrons. The Imperium under Lucan continues to use the term *Imperial.*

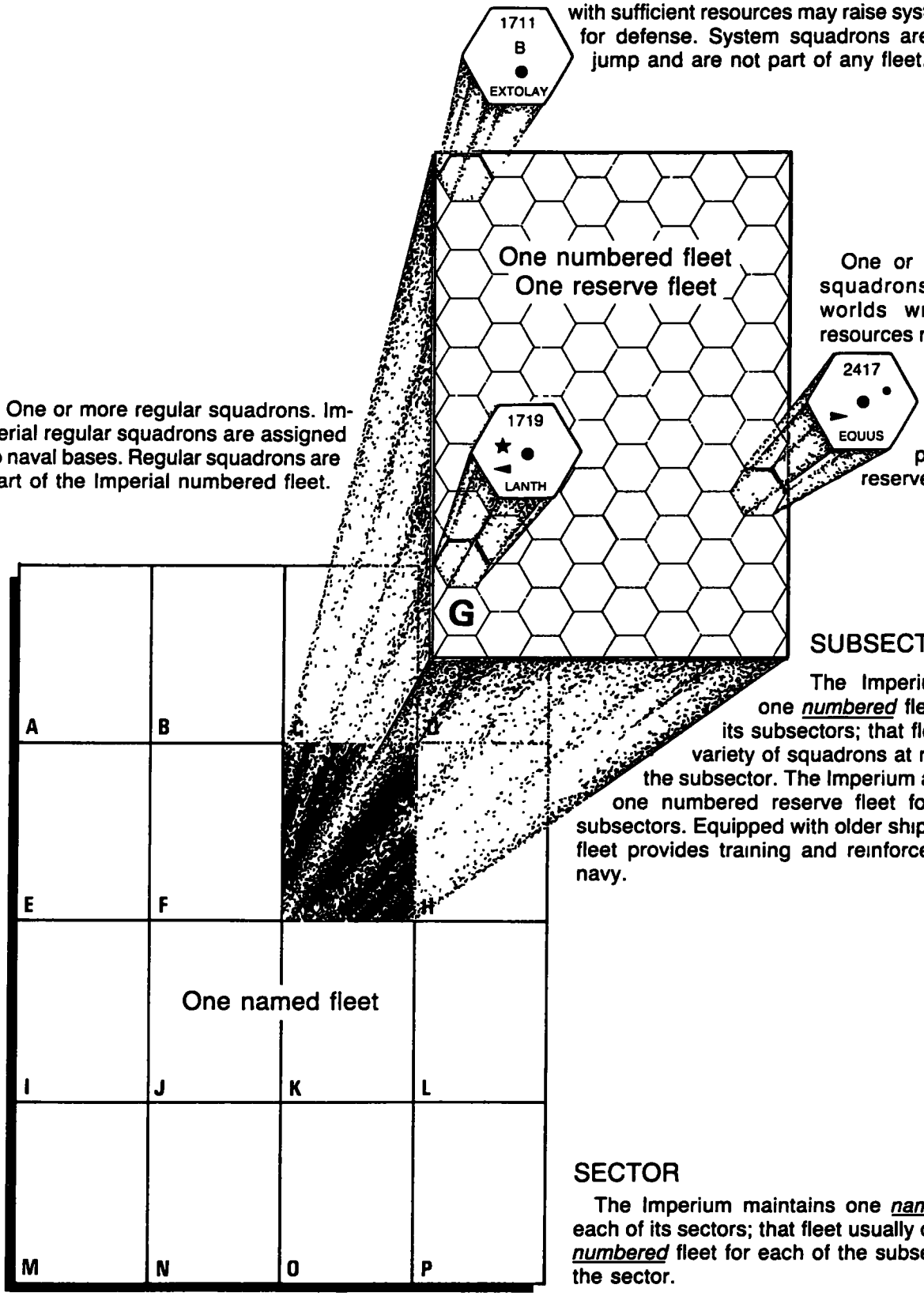
Dulinor of Ilelish maintains that he is the head of the Imperium, and as an article of faith also continues to use the term *Imperial.* Increasingly, squadrons are being identified by the term *Ilel* (which actually means *of Ilelish*, but by definition from Dulinor also means *Imperial*). For example, Ilel BatRon 23.

Squadrons loyal to Margaret's faction claim loyalty to the Imperium, but not to Lucan. They have replaced the term *Imperial* with *eagle* (recalling Margaret's heraldic symbol). For example, Eagle CruRon 560.

Vilani units have replaced *Imperial* with the Vilani word for star: *Sirka.* For example, Sirka BatRon 19 or Star BatRon 19.

Imperial Fleets and Squadrons

One or more system squadrons. Individual worlds with sufficient resources may raise system squadrons for defense. System squadrons are incapable of jump and are not part of any fleet.



One or more colonial squadrons. Individual worlds with sufficient resources may raise their own colonial squadrons. Colonial squadrons are part of the reserve fleet.

One or more regular squadrons. Imperial regular squadrons are assigned to naval bases. Regular squadrons are part of the Imperial numbered fleet.

SUBSECTOR

The Imperium maintains one *numbered* fleet for each of its subsectors; that fleet contains a variety of squadrons at naval bases in the subsector. The Imperium also maintains one numbered reserve fleet for each of its subsectors. Equipped with older ships, the reserve fleet provides training and reinforcements to the navy.

SECTOR

The Imperium maintains one *named* fleet for each of its sectors; that fleet usually contains one *numbered* fleet for each of the subsectors within the sector.

The League of Antares uses *league* instead of *Imperial* on its squadron designations. During the period when the league was part of the Julian Protectorate, the squadrons used *protectorate* instead of *league*. For example, League CruRon 341 or Protectorate CruRon 341.

Norris of Regina has refused to acknowledge the decline of the Imperium, but also refuses to ally with any of the factions of the Rebellion. On principle, he has continued to use the old terminology for squadron designations. Starting in about 1120, he began renaming both Imperial and colonial squadrons as domain squadrons. For example, the former Imperial BatRon 43 has become Domain BatRon 43.

The Federation of Daibei has substituted *federal* for *Imperial* (for example, Federal CruRon 998). Also, factions have established new numbering systems for squadrons as time has passed.

NAVAL ACTIVITY IN THE REBELLION

The Rebellion creates a unique naval situation: battles between forces which are equipped and trained more or less identically. The differences that are brought to battles result from the specific availability of forces and how they are committed by the faction's leaders.

Tactically, victory in battles of the Rebellion will go to the better tactician because, on the average, the forces in the fight are identical. Consequently, the edge goes to the side with strategic superiority: A faction which can accumulate and hold strategic advantage will ultimately prevail.

Missions in the Rebellion: The Imperial Navy forces, regardless of the faction they are fighting, have three specific missions:

- Conquer territory.
- Defend territory.
- Inflict losses on the enemy.

Conquer Territory: Each faction strives to include and govern as much territory as possible.

Many small systems with low populations are easily swayed by the mere presence of naval vessels from a specific faction. The systems are there for the taking; the faction need only send the proper number of ships to the system and declare that the system now "belongs" to it. For the most part, it is even possible to then leave the system ungarrisoned and undefended.

The fewer high population systems call for a greater display of naval power. They may be defended by local forces, and the conquering naval task force must be strong enough to avoid the potential embarrassment of a defender victory, no matter how short-lived. But naval forces are primarily a show of force. They interfere with commerce; they blockade a world from the rest of the Imperium. They can bomb a world back to the stone age, but such activity is counterproductive, and such barbaric tactics are appropriate only when a world is actively allied with an opposing faction in the Rebellion and refuses to stop.

Territory is also conquered when the enemy is driven from it. A star system occupied by an enemy fleet can be conquered by attacking that enemy and driving it from the system. A valuable star system may be the scene of continuing battles as one faction tries valiantly to conquer it and its defenders steadfastly refuse to be forced out.

Defend Territory: The necessary converse of territorial conquest is territorial defense. Once a faction has staked its claim to territory, it must defend it with sufficient energy and determination to repel the enemy. Ideally, a proper defense discourages the enemy before an attack is mounted. Proper naval defense of a system also helps the local population perceive that it is being defended (and for those with potential loyalties to the other side, that resistance is useless).

Inflict Losses: The ultimate resolution of the Rebellion depends on enough factions abandoning the fight. While territorial losses will help force such a result, factions also respond to naval losses. Thus, it becomes the mission of naval forces to seek out and destroy the enemy's naval forces. When such damage is inflicted with relatively small losses for the attacker, it is positive and beneficial. The pitfall to avoid is any appreciable losses to one's own side when attempting to inflict losses on the enemy.

PRIVATEERS

One role not normally taken by the Imperial Navy is that of privateer. Dating back to the days of sea navies, governments have issued letters of marque and reprisal which allow a ship captain to attack enemy shipping, and seize cargo and goods. Many smaller Imperial Navy ships have been issued such instructions by their faction and sent off to raid the trade lanes of the enemy.

The raided enemy has another word for this activity: piracy. To the raided enemy, pirates are little better than criminals, subject to harsh combat action if discovered and to the death penalty if captured.

Privateers lead a difficult existence. They cruise for months along the trade lanes, raiding shipping for goods and supplies. When successful, they also drive off the very ship traffic they need to survive and attract naval forces to suppress them. Virtually no port of call is safe for them, so small, clandestine bases become essential if their ships are to be hidden and resupplied. After a long mission, they return to their own territory for needed maintenance and new orders.

COURIERS

Communications remains an overriding concern for every faction in the Rebellion.

Each faction has reason to contact and communicate with almost every other faction at some time. However, such communications are always a delicate undertaking to be handled by carefully arranged courier missions.

SHIP LISTINGS

The data in this book covers some of the ships of the Imperial Navy on the eve of the Rebellion. The ships shown have been taken into service by virtually all factions of the Rebellion, and these ships (as well as other ships ranging from light cruisers and alien warships to converted merchants) have participated in the naval battles which have followed.

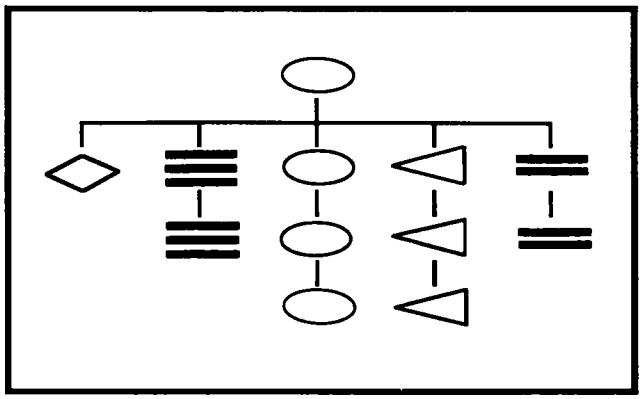
Ship Identification: Ships are identified by their type and tech level. Thus, the Imperial tech level 12 missile cruiser is shown as a CM 12 missile cruiser. This system has sufficient diversity to show most of the ships in the navy. Ships are grouped by broad class, with a short statement about ship type at the beginning of each chapter. Also included is a chart showing the evolution of the ship designs involved.

Ship Information: The basic Imperial ship information as shown in the **MegaTraveller Referee's Manual** is given for each ship. Especially interesting designs are also illustrated.

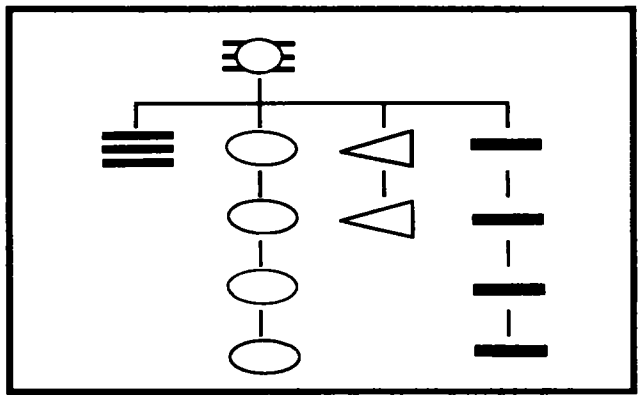
Batteries: Ship weapons information is shown with weapons ratings and battery quantities. In addition, the actual weapons installations with numbers of weapons are shown. Using this information, it is possible to rerate the batteries to other numbers if the individual commander so desires. For example, the BL-14 is shown with 300 batteries of BLaser-4 in the ship rating. The comments section shows that the BL-14 is equipped with triple-turret BLaser (900/3), which means 900 BLasers in triple mounts. They could be rerated as 150 BLaser-5, 90 BLaser-6, 60 BLaser-7, 42 BLaser-8, or 30 BLaser-9.

Imperial Squadron Organizations

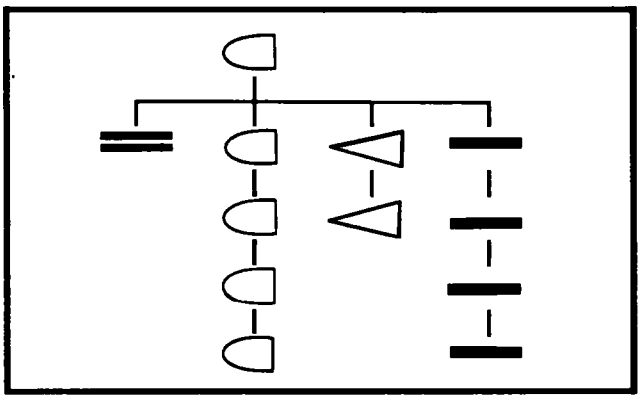
BATRON (Typical)



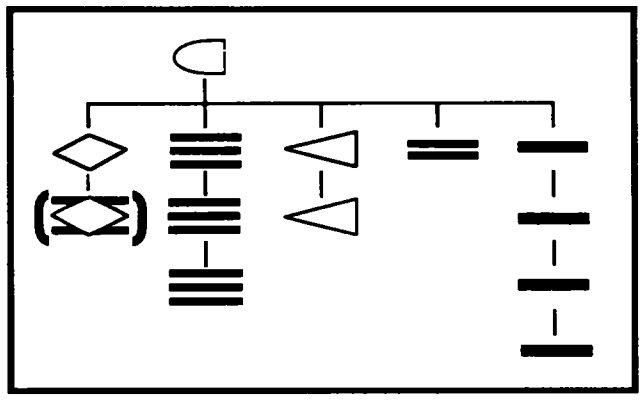
BATRON (Battle Rider)



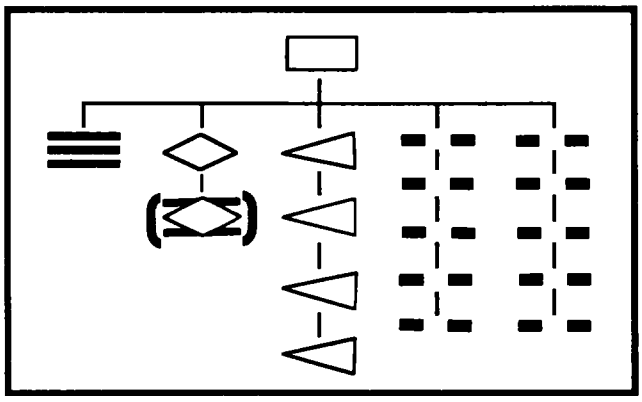
CRURON (Typical)



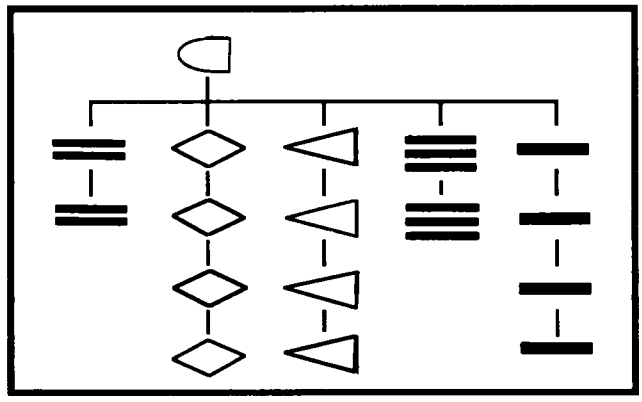
ASSAULTRON (Typical)

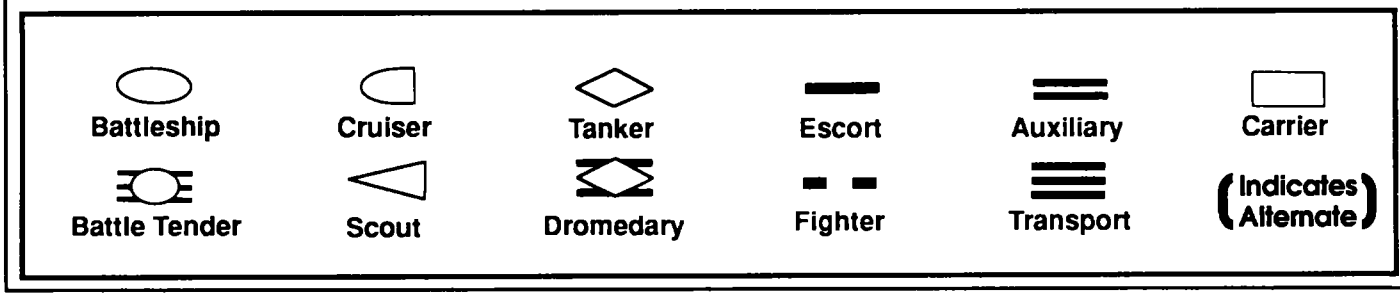


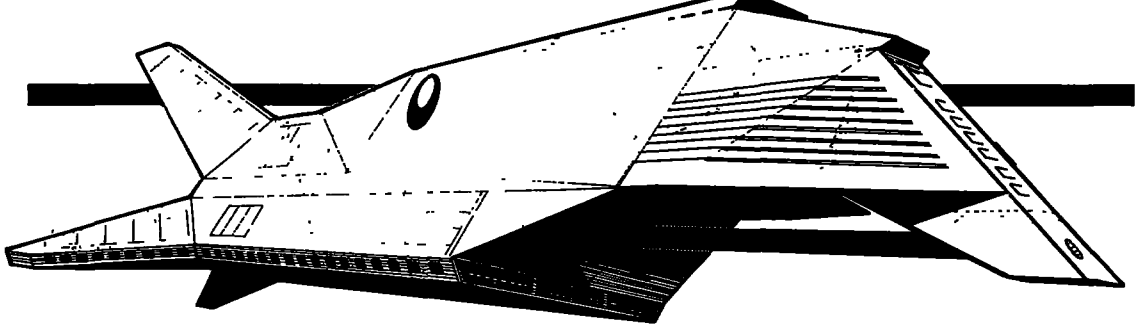
CRURON (Carrier)



TANKRON (Typical)







The battleships of the Imperium are designed to overcome any opponent in battle. As technology advances, these designs also advance, both to take advantage of any possible technological benefits, and to experiment with new strategies and construction techniques.

The technological basis for Imperial battleships is the BB-11. From it was developed the BB-12 and then the BB-13. The light battleship line (BL-13, BL-14, and BL-15) was based on the BB-12, but showed great innovation in producing a smaller tonnage vessel. The BS-15 and BM-15 are also members of this line.

At TL13, it was decided to produce a superbattleship, the BI-13, which was later developed into the BI-14. The BI-15 was an independent design.

The heavy battleship line (BH-14 and BH-15) is a hybrid of the lessons learned and techniques developed in both the BI-13 and the BB-13.

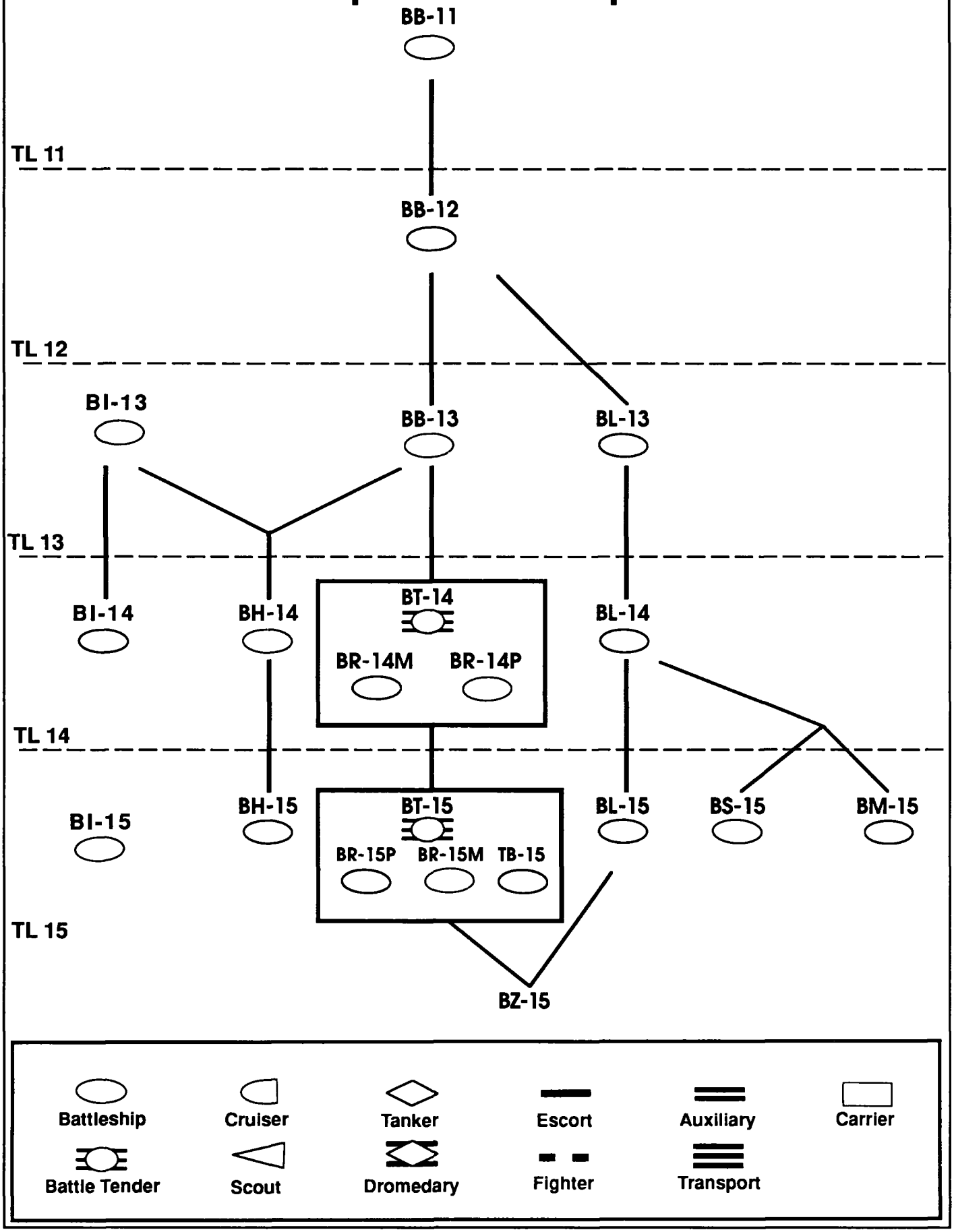
The battle rider system was developed in an attempt to produce the benefits of the BB-13 in greater numbers. The BT/R-14 system was the result. The BT/R-15 system is an evolution of the BT/R-14.

Finally, the BZ-15 takes the battle rider system one step further and places a battle rider on a battleship for combat support deployment. This design is a hybrid of the BT/R-15 system and the BL-15.

Battleships

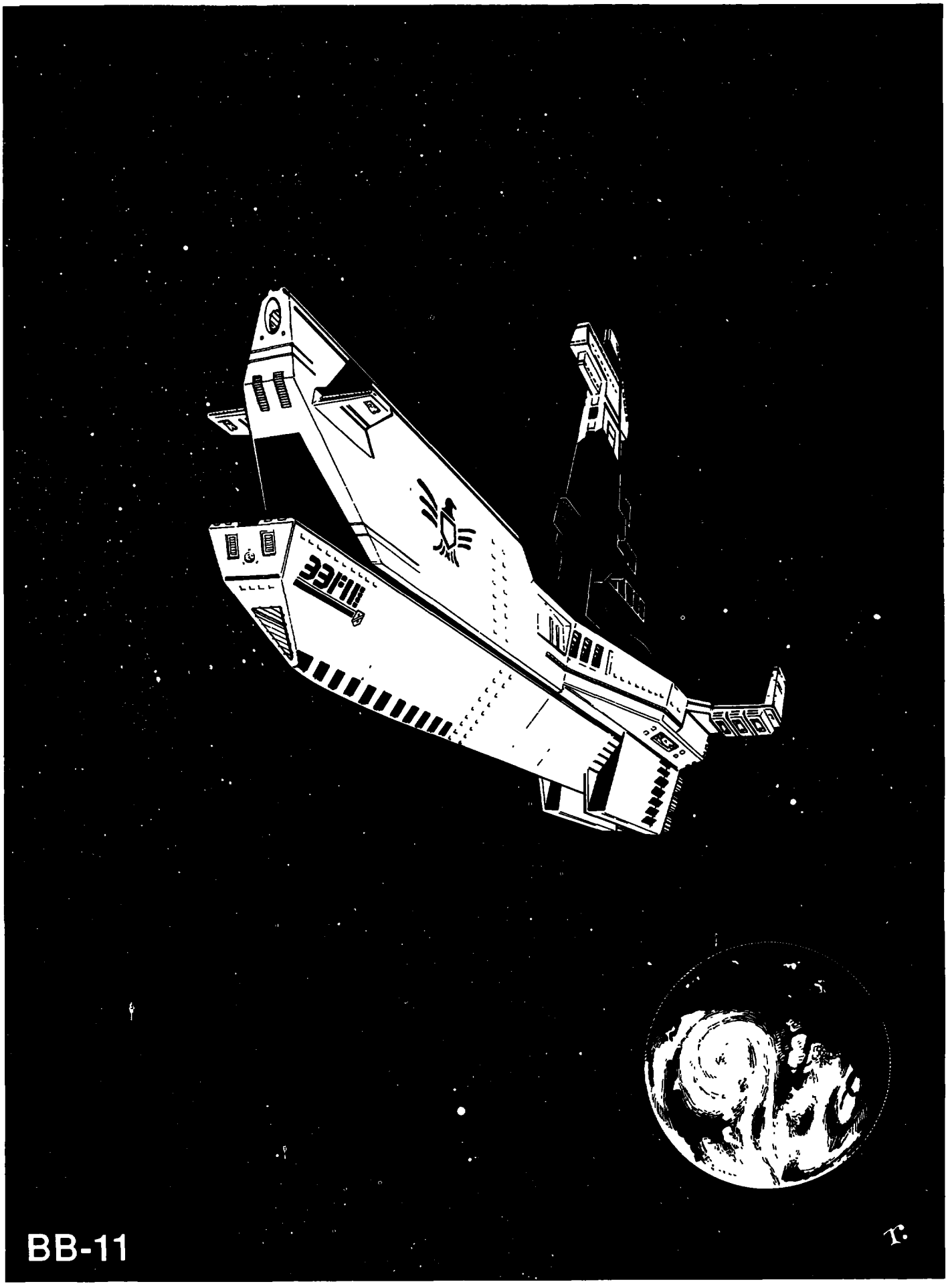
The power of the Imperial Navy is concentrated in its battleships. The definition of a battleship is a ship which, due to its armament and protection, is capable of standing in the line of battle. When a battleship meets any lesser type of ship, its victory is almost guaranteed. When battleships on two sides meet, victory goes to the better armed, better armored, and better directed ship.

Imperial Battleships



BB-11 BATTLESHIP

CraftID: Battleship, Type BB, TL=B (Average Stellar), MCr1,710,602
Hull: 270000/675000, Disp=300000, Config=4SL, Armor=110E,
Unloaded=172917086, Loaded=173042978
Power: 12252/24504, Fusion=3308183 Mw, Duration=30/90days
Loco: 21600/43200, Maneuver=3Gs, 8100/16200, Jump=2,
NOE=150, Cruise=2137.5kph, Top=2850kph,
Agility=0
Commo: RadioComm Planetary-11x1, RadioComm FarOrbit-11x1, RadioComm System-11x1,
LaserComm Planet-11x1, LaserComm FarOrbit-11x1, LaserComm System-11x1,
MaserComm Planet-11x1, MaserComm FarOrbit-11x1, MaserComm System-11x1
Sensors: EMM Packagex1,
EMS-A-11 FarOrbitx2, EMS-A-11 Planetaryx2,
EMS-P-11 Interplanetaryx2, EMS-P-11 SubStellarx2, EMS-P-11 Interstellarx2,
Jam EMS-A-11 FarOrbitx2, Jam EMS-A-11 Planetaryx2,
Neutrino (1000 Mw) Sensor-11x2,
HiPen Densit-0.001x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Formidable, PasObjPin=Formidable,
PasEngScan=Routine, PasEngPin=Formidable
Off: ParticleAccel=070, MesonGun=B0x
Batt. 5/0 Batt. 1/0
Bear. 3/0 Bear. 1/0
PlasmaGun=x50
Batt. 5
Bear. 3
Missiles=x84, BeamLaser=x4
Batt. 60/100 Batt. 100
Bear. 36/60 Bear. 60
Def: DefDM=3,
Sandcasters=xx7
Batt. 36
Bear 21
Control: Computer=Model/5x3,
Panel=CP-DynamicLinkedx107195, Special=HeadsUpDisplayx107195,
Environ=Basic Environment, Basic Life Support, Extended LS, Grav Plates, Inertial Compensators
Accom: Crew=23,778 (79x300),
(Bridge=218, Engineering=633, Maintenance=12,514,
Gunners=5465, Flight Crew=5465, Ship's Troops=300,
Command=3255, Stewards=797, Frozen Watch=0, Medical=196),
Additional Staterooms=200,
LowBerths=0 (FrozenWatch)+200 (Medical), EmergencyLowBerths=200,
SubCraft=30-ton craftx200,
Magazines=40 50-ton magazines (214 battery-rounds)
Other: Cargo=3156 tons (42,618 kliters),
Fuel=133218 tons (1798445 kliters), Fuel Purification Plant (purifies tankage in six hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=1260 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-7x50,
Spinal MesonGun-Bx1,
50-ton Bay PlasmaGun-5x50,
100-ton Bay Missile-8x60,
Triple Turret Missile (1200/3),
Triple Turret BLaser (1200/3),
Triple Turret Sand (360/3)
The BB-11 is little more than a jump-capable monitor. Its relatively low tech level does make it useful for the lower range of technologically endowed worlds of the Imperium.


BB-11

BB-12 BATTLESHIP

CraftID: Battleship, Type BB, TL=C (Average Stellar), MCr2,057,516
Hull: 270000/675000, Disp=300000, Config=3SL, Armor=110F,
Unloaded=145437392, Loaded=145562799
Power: 12622/25244, Fusion=3408059 Mw, Duration=24/72days
Loco: 21600/43200, Maneuver=3Gs, 10800/21600, Jump=3,
NOE=160, Cruise=2137.5kph, Top=2850kph,
Agility=0
Commo: RadioComm Planetary-12x1, RadioComm FarOrbit-12x1, RadioComm System-12x1,
LaserComm Planet-12x1, LaserComm FarOrbit-12x1, LaserComm System-12x1,
MaserComm Planet-12x1, MaserComm FarOrbit-12x1, MaserComm System-12x1
Sensors: EMM Packagex1,
EMS-A-12 FarOrbitx2, EMS-A-12 Planetaryx2,
EMS-P-12 Interplanetaryx2, EMS-P-12 SubStellarx2, EMS-P-12 Interstellarx2,
Jam EMS-A-12 FarOrbitx2, Jam EMS-A-12 Planetaryx2,
Neutrino (1 Mw) Sensor-12x2,
HiPen Densit-0.05x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Formidable
Off: ParticleAccel=080, MesonGun=K0x
Batt. 50 Batt. 1
Bear. 30 Bear. 1
PlasmaGun=x60
Batt. 6
Bear. 4
Missiles=x94, BeamLaser=xx5
Batt. 60/100 Batt. 120
Bear. 36/60 Bear. 72
Def: DefDM=4,
Sandcasters=xx5
Batt. 60
Bear. 36
Control: Computer=Model/6x3,
Panel=CP-DynamicLinkedx110404, Special=HeadsUpDisplayx110404,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=21,927 (73x300)
(Bridge=176, Engineering=605, Maintenance=12,905,
Gunners=4104, Flight Crew=4104, Ship's Troops=100,
Command=3001, Stewards=735, Frozen Watch=0, Medical=181),
Additional Staterooms=100,
LowBerths=100 (Medical), EmergencyLowBerths=100,
SubCraft=50-ton craftx60, 200-ton craftx10,
Magazines=40 50-ton magazines (214 battery-rounds)
Other: Cargo=6870 tons (92,757 kliters),
Fuel=132,705 tons (1,791,521 kliters), Fuel Purification Plant (purifies total fuel tankage in six hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=1260 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-8x50,
Spinal MesonGun-Kx1,
50-ton Bay PlasmaGun-6x50,
100-ton Bay Missile-9x60,
Triple Turret Missile (1200/3),
Triple Turret BLaser (1200/3),
Triple Turret Sand (360/3)

BB-13 BATTLESHIP

CraftID: Battleship, Type BB, TL=D (Average Stellar), MCr939,026
Hull: 270000/675000, Disp=300000, Config=3SL, Armor=100F,
Unloaded=62081751, Loaded=62244379
Power: 16856/33712, Fusion=4551220 Mw, Duration=24/72days
Loco: 13500/27000, Maneuver=2Gs, 13500/27000, Jump=4,
NOE=170, Cruise=1590kph, Top=2120kph,
Agility=0
Commo: RadioComm Planetary-13x1, RadioComm FarOrbit-13x1, RadioComm System-13x1,
LaserComm Planet-13x1, LaserComm FarOrbit-13x1, LaserComm System-13x1,
MaserComm Planet-13x1, MaserComm FarOrbit-13x1, MaserComm System-13x1
Sensors: EMM Packagex1,
EMS-A-13 FarOrbitx2, EMS-A-13 Planetaryx2,
EMS-P-13 Interplanetaryx2, EMS-P-13 SubStellarx2, EMS-P-13 Interstellarx2,
Jam EMS-A-13 FarOrbitx2, Jam EMS-A-13 Planetaryx2,
Neutrino (0.1 Mw) Sensor-13x2,
HiPen Densit-0.1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Difficult
Off: ParticleAccel=080, MesonGun=P0x
Batt. 50 Batt. 1
Bear. 30 Bear. 1
PlasmaGun=x60
Batt. 50
Bear. 30
Missiles=x95, BeamLaser=xx6
Batt. 60/100 Batt. 120
Bear. 36/60 Bear. 72
Def: DefDM=5,
MesonScreen-3,
NucDamper-3,
Sandcasters=xx7
Batt. 36
Bear. 22
Control: Computer=Model/7fibx3,
Panel=CP-HoloLinkedx9590, Special=HeadsUpHoloDisplayx9590,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=8462 (28x300)
(Bridge=49, Engineering=531, Maintenance=4054,
Gunners=2098, Flight Crew=2098, Ship's Troops=100,
Command=1158, Stewards=283, Frozen Watch=0, Medical=69),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=100,
SubCraft=50-ton craftx60, 200-ton craftx10,
Magazines=40 50-ton magazines (214 battery-rounds)
Other: Cargo=342 tons (4624 kliters),
Fuel=172,092 tons (2,323,251 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=1260 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-8x50,
Spinal MesonGun-Px1,
50-ton Bay PlasmaGun-6x50,
100-ton Bay Missile-9x60,
Triple Turret Missile (1200/3),
Triple Turret BLaser (1200/3),
Triple Turret Sand (360/3)

BI-13 DREADNOUGHT

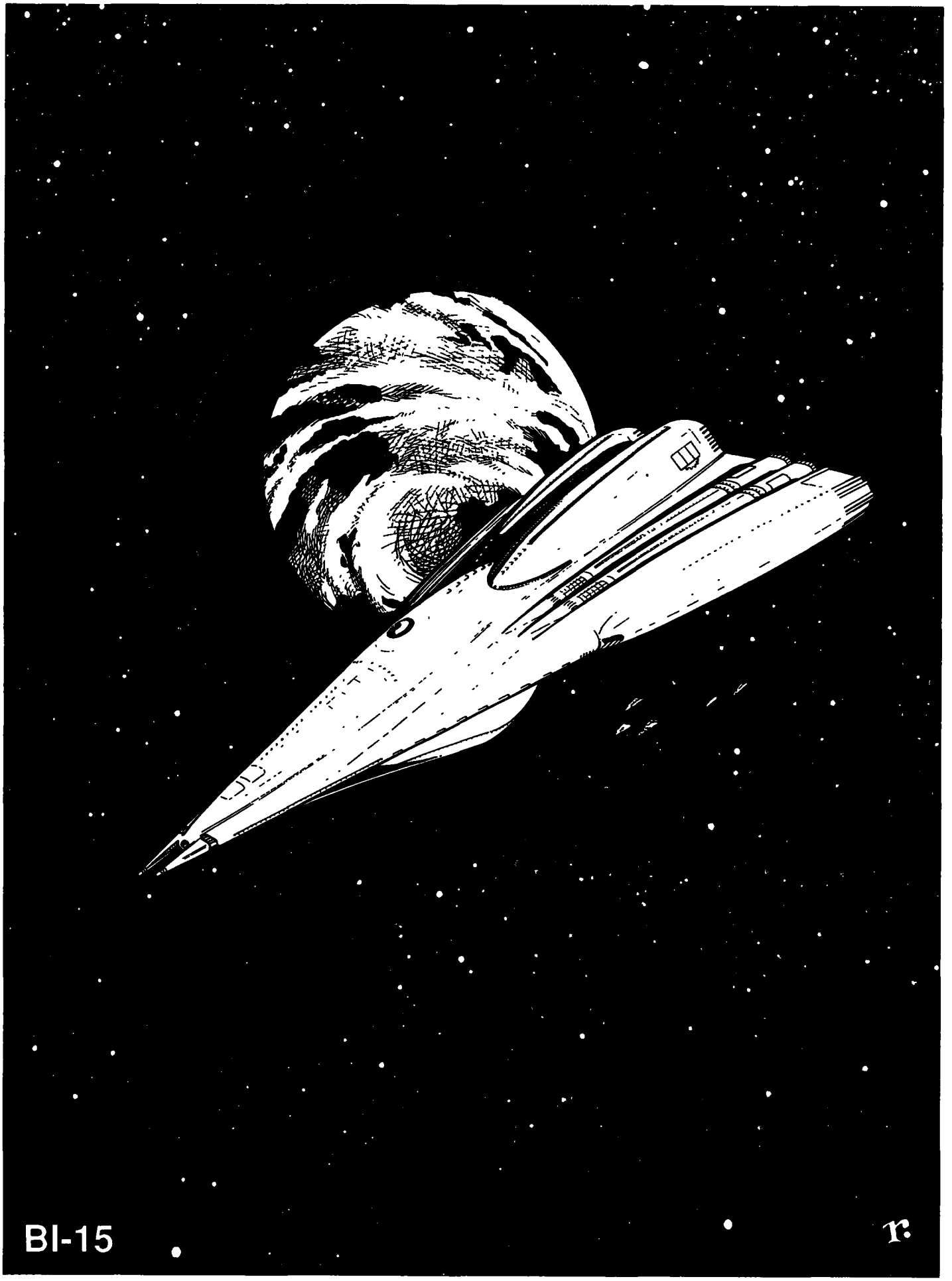
CraftID: Dreadnought, Type BI, TL=D (Average Stellar), MCr1,547,939
Hull: 630000/1575000, Disp=700000, Config=2SL, Armor=90F,
Unloaded=49092478, Loaded=49483193
Power: 41398/82796, Fusion=11177549 Mw, Duration=24/72days
Loco: 31500/63000, Maneuver=2Gs, 31500/63000, Jump=4,
NOE=170, Cruise=1590kph, Top=2120kph,
Agility=0
Commo: RadioComm Planetary-13x1, RadioComm FarOrbit-13x1, RadioComm System-13x1,
LaserComm Planet-13x1, LaserComm FarOrbit-13x1, LaserComm System-13x1,
MaserComm Planet-13x1, MaserComm FarOrbit-13x1, MaserComm System-13x1
Sensors: EMM Packagex1,
EMS-A-13 FarOrbitx2, EMS-A-13 Planetaryx2,
EMS-P-13 Interplanetaryx2, EMS-P-13 SubStellarx2, EMS-P-13 Interstellarx2,
Jam EMS-A-13 FarOrbitx2, Jam EMS-A-13 Planetaryx2,
Neutrino (0.1 Mw) Sensor-13x2,
HiPen Densit-0.1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Difficult
Off: ParticleAccel=080, MesonGun=P0x
Batt. 200 Batt. 1
Bear. 100 Bear. 1
Missiles=x97, BeamLaser=xx9
Batt. 200/90 Batt. 90
Bear. 100/45 Bear. 45
Def: DefDM=5,
MesonScreen-3,
NucDamper-3,
Sandcasters=xx9
Batt. 60
Bear. 30
Control: Computer=Model/7fibx3,
Panel=CP-HoloLinkedx31172, Special=HeadsUpHoloDisplayx31172,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=15,569 (22x700)
(Bridge=138, Engineering=1269, Maintenance=6106,
Gunners=4255, Flight Crew=4255, Ship's Troops=1000,
Command=2131, Stewards=522, Frozen Watch=0, Medical=128),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=100,
SubCraft=50-ton craftx10, 1000-ton craftx10,
Magazines=52 50-ton magazines (121 battery-rounds)
Other: Cargo=2079 tons (28,069 kliters),
Fuel=413,454 tons (5,581,634 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=2900 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-8x200,
Spinal MesonGun-Px1,
100-ton Bay Missile-9x200,
Triple Turret Missile (2700/3),
Triple Turret BLaser (2700/3),
Triple Turret Sand (1800/3)

BI-14 DREADNOUGHT

CraftID: Dreadnought, Type BI, TL=E (High Stellar), MCr1,657,290
Hull: 630000/1575000, Disp=700000, Config=2SL, Armor=91G,
Unloaded=30627975, Loaded=31019340
Power: 41517/83034, Fusion=11209827 Mw, Duration=24/72days
Loco: 31500/63000, Maneuver=2Gs, 31500/63000, Jump=4,
NOE=180, Cruise=1590kph, Top=2120kph,
Agility=0
Commo: RadioComm Planetary-14x1, RadioComm FarOrbit-14x1, RadioComm System-14x1,
LaserComm Planet-14x1, LaserComm FarOrbit-14x1, LaserComm System-14x1,
MaserComm Planet-14x1, MaserComm FarOrbit-14x1, MaserComm System-14x1,
EMS-A-14 FarOrbitx2, EMS-A-14 Planetaryx2,
EMS-P-14 Interplanetaryx2, EMS-P-14 SubStellarx2, EMS-P-14 Interstellarx2,
Jam EMS-A-14 FarOrbitx2, Jam EMS-A-14 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-0.25x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: ParticleAccel=090, MesonGun=S0x
Batt. 200 Batt. 1
Bear. 100 Bear. 1
Missiles=xA7, BeamLaser=xx9
Batt. 200/90 Batt. 90
Bear. 100/45 Bear. 45
Def: DefDM=6,
MesonScreen-3,
NucDamper-6,
Sandcasters=x9
Batt. 60
Bear. 30
Control: Computer=Model/8fibx3,
Panel=CP-HoloLinkedx21304, Special=HeadsUpHoloDisplayx21304,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=11,892 (16x700)
(Bridge=70, Engineering=936, Maintenance=4870,
Gunners=2692, Flight Crew=2692, Ship's Troops=1000,
Command=1628, Stewards=398, Frozen Watch=0, Medical=98),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=100,
SubCraft=50-ton craftx100, 1000-ton craftx10,
Magazines=52 50-ton magazines (121 battery-rounds)
Other: Cargo=4294 tons (57,974 kliters),
Fuel=414,142 tons (5,590,930 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=2900 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x200,
Spinal MesonGun-Sx1,
100-ton Bay Missile-Ax200,
Triple Turret Missile (2700/3),
Triple Turret BLaser (2700/3),
Triple Turret Sand (1800/3)

BI-15 DREADNOUGHT

CraftID: Dreadnought, Type BI, TL=F (High Stellar), MCr3,306,716
Hull: 630000/1575000, Disp=700000, Config=2SL, Armor=100G,
Unloaded=61476477, Loaded=61868003
Power: 41547/83094, Fusion=11217826 Mw, Duration=24/72days
Loco: 31500/63000, Maneuver=2Gs, 31500/63000, Jump=4,
NOE=190, Cruise=1590kph, Top=2120kph,
Agility=0
Commo: RadioComm Planetary-15x1, RadioComm FarOrbit-15x1, RadioComm System-15x1,
LaserComm Planet-15x1, LaserComm FarOrbit-15x1, LaserComm System-15x1,
MaserComm Planet-15x1, MaserComm FarOrbit-15x1, MaserComm System-15x1,
MesonComm System-15x1
Sensors: EMS-A-15 FarOrbitx2, EMS-A-15 Planetaryx2,
EMS-P-15 Interplanetaryx2, EMS-P-15 SubStellarx2, EMS-P-15 Interstellarx2,
Jam EMS-A-15 FarOrbitx2, Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: ParticleAccel=090, MesonGun=T0x
Batt. 200 Batt. 1
Bear. 100 Bear. 1
Missiles=xA7, BeamLaser=xx9
Batt. 200/90 Batt. 90
Bear. 100/45 Bear. 45
Def: DefDM=7,
MesonScreen-3,
NucDamper-9,
Sandcasters=xx9
Batt. 60
Bear. 30
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx20956, Special=HeadsUpHoloDisplayx20956,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=16277 (23x700)
(Bridge=56, Engineering=795, Maintenance=9159,
Gunners=2160, Flight Crew=2160, Ship's Troops=1000,
Command=2228, Stewards=545, Frozen Watch=0, Medical=134),
Additional Staterooms=200,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=100,
SubCraft=50-ton craftx100, 1000-ton craftx10,
Magazines=None
Other: Cargo=13,314 tons (179,742 kliters),
Fuel=414,313 tons (5,593,234 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in 12 hours),
EmLevel=Strong,
Battery Round=2900 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x200,
Spinal MesonGun-Tx1,
100-ton Bay Missile-Ax200,
Triple Turret Missile (2700/3),
Triple Turret BLaser (2700/3),
Triple Turret Sand (1800/3)


BI-15

BL-13 BATTLESHIP LIGHT

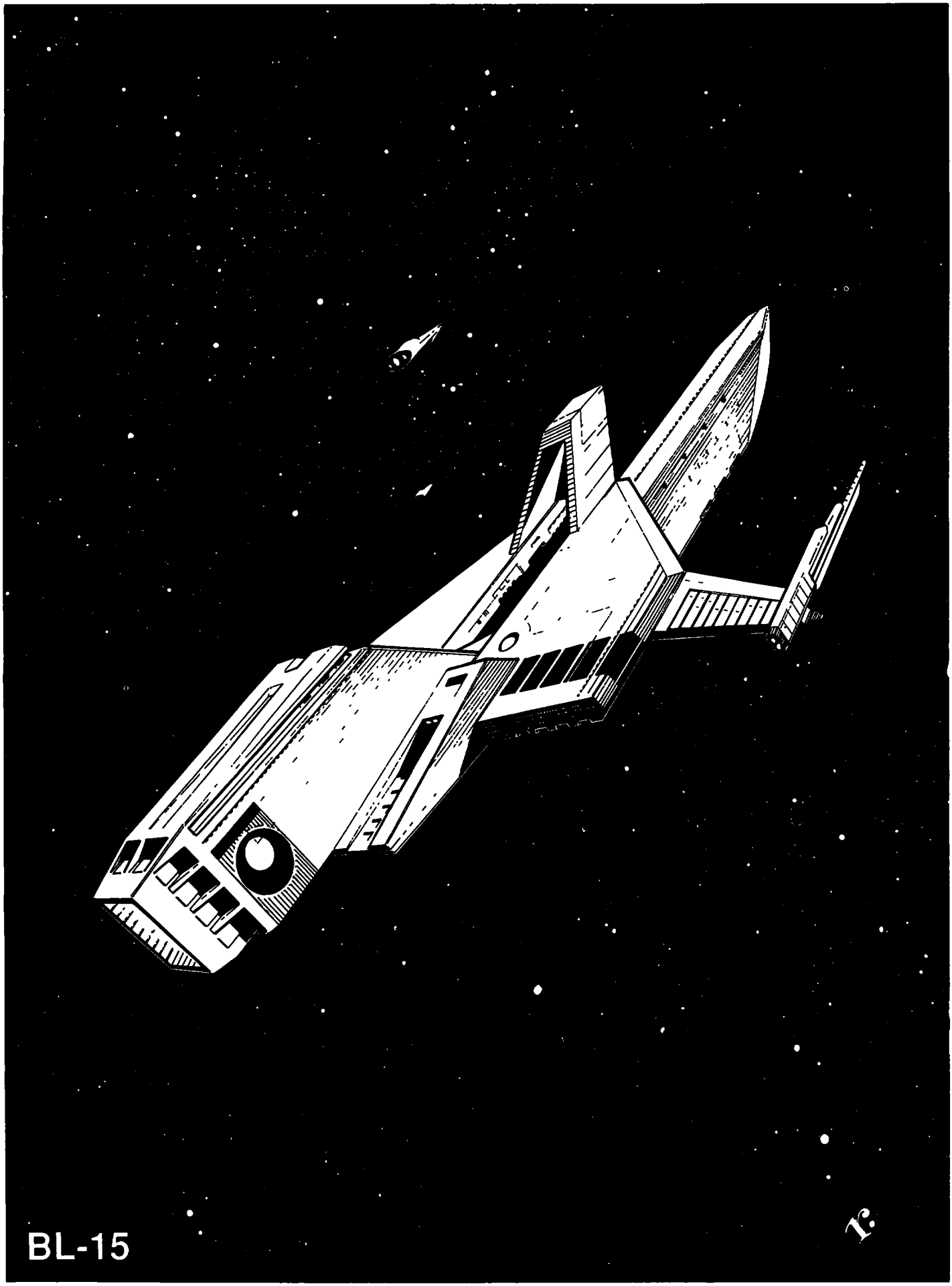
CraftID: Battleship Light, Type BL, TL=D (Average Stellar), MCr1,243,067
Hull: 180000/450000, Disp=200000, Config=4SL, Armor=110F,
Unloaded=110804440, Loaded=110900009
Power: 8876/17752, Fusion=2396757 Mw, Duration=24/72days
Loco: 14400/28800, Maneuver=3Gs, 9000/18000, Jump=4,
NOE=170, Cruise=2137.5kph, Top=2850kph,
Agility=0
Commo: RadioComm Planetary-13x1, RadioComm FarOrbit-13x1, RadioComm System-13x1,
LaserComm Planet-13x1, LaserComm FarOrbit-13x1, LaserComm System-13x1,
MaserComm Planet-13x1, MaserComm FarOrbit-13x1, MaserComm System-13x1
Sensors: EMM Packagex1,
EMS-A-13 FarOrbitx2, EMS-A-13 Planetaryx2,
EMS-P-13 Interplanetaryx2, EMS-P-13 SubStellarx2, EMS-P-13 Interstellarx2,
Jam EMS-A-13 FarOrbitx2, Jam EMS-A-13 Planetaryx2,
Neutrino (0.1 Mw) Sensor-13x2,
HiPen Densit-0.1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Difficult
Off: ParticleAccel=R80
Batt. 1/30
Bear. 1/20
FusionGun=x70
Batt. 30
Bear. 20
Missiles=x84, BeamLaser=xx5
Batt. 30/150 Batt. 150
Bear. 20/97 Bear. 97
Def: DefDM=5,
Sandcasters=xx7
Batt. 36
Bear. 23
Control: Computer=Model/7x3,
Panel=CP-HoloLinkedx12451, Special=HeadsUpHoloDisplayx12451,
Environ=Basic Environment, Basic Life Support,Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=8986 (44x200),
(Bridge=61, Engineering=340, Maintenance=5797,
Gunners=963, Flight Crew=963, Ship's Troops=100,
Command=1230, Stewards=301, Frozen Watch=0, Medical=74),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=400,
SubCraft=50-ton craftx60, 400-ton craftx10,
Magazines=34 50-ton magazines (246 battery-rounds)
Other: Cargo=584 tons (7888 kliters),
Fuel=101,130 tons (1,365,266 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=930 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccel-Rx1,
100-ton Bay ParticleAccelerator-8x30,
50-ton Bay FusionGun-7x30
50-ton Bay Missile-8x30,
Triple Turret Missile (900/3),
Triple Turret BLaser (900/3),
Triple Turret Sand (360/3)

BL-14 BATTLESHIP LIGHT

CraftID: Battleship Light, Type BL, TL=E (High Stellar), MCr1,242,734
Hull: 180000/450000, Disp=200000, Config=4SL, Armor=110G,
Unloaded=60330370, Loaded=60426542
Power: 8987/17974, Fusion=2426682 Mw, Duration=24/72days
Loco: 14400/28800, Maneuver=3Gs, 9000/18000, Jump=4,
NOE=180, Cruise=2137.5kph, Top=2850kph,
Agility=0
Commo: RadioComm Planetary-14x1, RadioComm FarOrbit-14x1, RadioComm System-14x1,
LaserComm Planet-14x1, LaserComm FarOrbit-14x1, LaserComm System-14x1,
MaserComm Planet-14x1, MaserComm FarOrbit-14x1, MaserComm System-14x1
Sensors: EMM Packagex1,
EMS-A-14 FarOrbitx2, EMS-A-14 Planetaryx2,
EMS-P-14 Interplanetaryx2, EMS-P-14 SubStellarx2, EMS-P-14 Interstellarx2,
Jam EMS-A-14 FarOrbitx2, Jam EMS-A-14 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-0.25x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: ParticleAccel=S90
Batt. 1/30
Bear. 1/20
FusionGun=x80
Batt. 30
Bear. 20
Missiles=x96, BeamLaser=xx4
Batt. 30/50 Batt. 300
Bear. 20/32 Bear. 195
Def: DefDM= 6,
NucDamper-6,
Sandcasters=xx5
Batt. 60
Bear. 39
Control: Computer=Model/8x3,
Panel=CP-HoloLinkedx9167, Special=HeadsUpHoloDisplayx9167,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=6634 (33x200)
(Bridge=35, Engineering=252, Maintenance=4267,
Gunners=676, Flight Crew=676, Ship's Troops=100,
Command=908, Stewards=222, Frozen Watch=0, Medical=54),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=400,
SubCraft=50-ton craftx60, 400-ton craftx10,
Magazines=45 50-ton magazines (326 battery-rounds)
Other: Cargo=5062 tons (68,342 kliters),
Fuel=101,769 tons (1,373,884 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=930 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccel-Sx1,
100-ton Bay ParticleAccelerator-9x30,
50-ton Bay FusionGun-8x30,
50-ton Bay Missile-9x30,
Triple Turret Missile (900/3),
Triple Turret BLaser (900/3),
Triple Turret Sand (360/3)

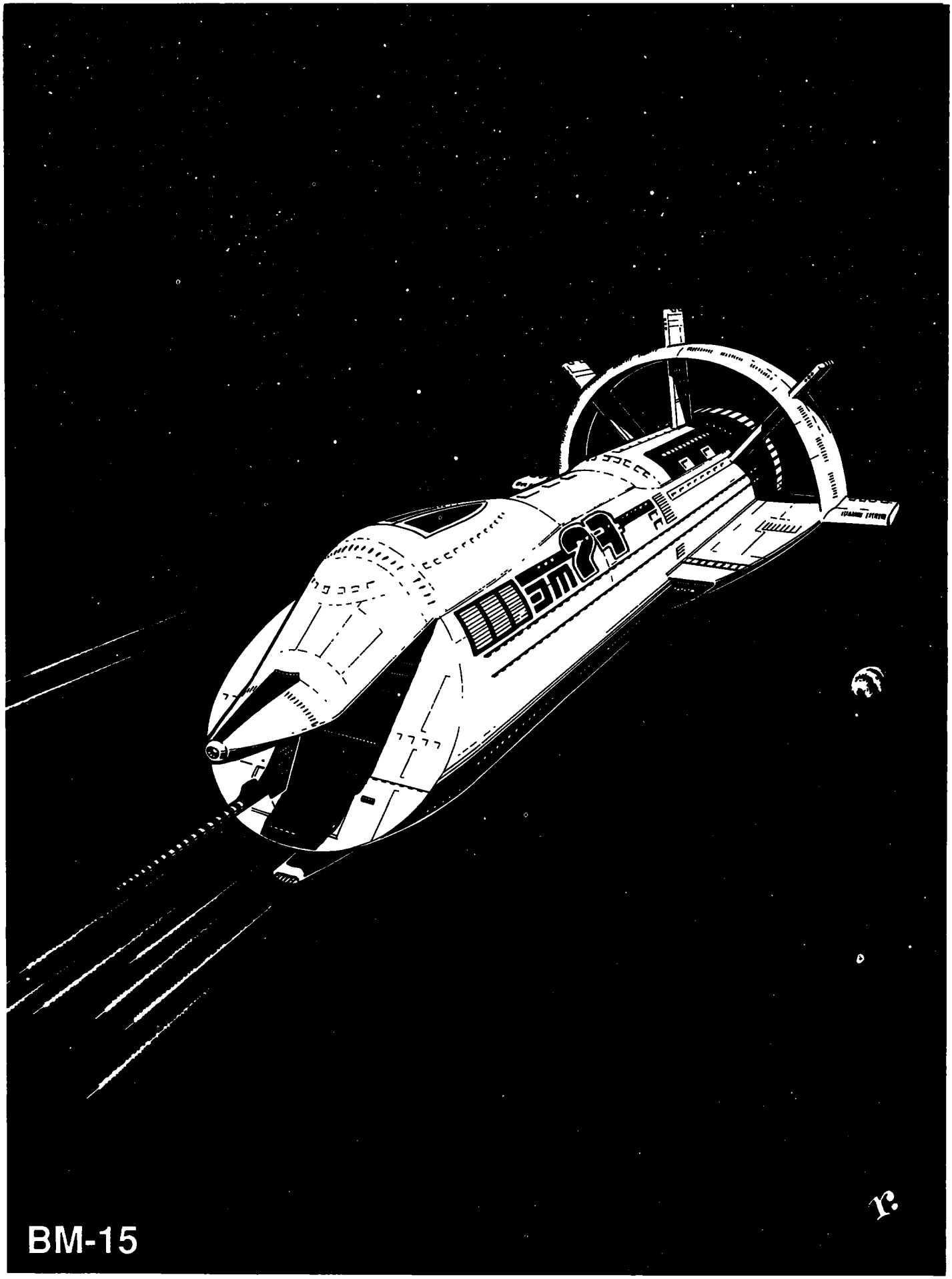
BL-15 BATTLESHIP LIGHT

CraftID: Battleship Light, Type BL, TL=F (High Stellar), MCr1,246,820
Hull: 180000/450000, Disp=200000, Config=4SL, Armor=110G,
Unloaded=60365891, Loaded=60467704
Power: 10459/20918, Fusion=2824163 Mw, Duration=23/69days
Loco: 14400/28800, Maneuver=3Gs, 9000/18000, Jump=4,
NOE=190, Cruise=2137.5kph, Top=2850kph,
Agility=0
Commo: RadioComm Planetary-15x1, RadioComm FarOrbit-15x1, RadioComm System-15x1,
LaserComm Planet-15x1, LaserComm FarOrbit-15x1, LaserComm System-15x1,
MaserComm Planet-15x1, MaserComm FarOrbit-15x1, MaserComm System-15x1
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2, EMS-A-15 Planetaryx2,
EMS-P-15 Interplanetaryx2, EMS-P-15 SubStellarx2, EMS-P-15 Interstellarx2,
Jam EMS-A-15 FarOrbitx2, Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: ParticleAccel=T90
Batt. 1/30
Bear. 1/20
FusionGun=x90
Batt. 30
Bear. 20
Missilesx96, BeamLaser=xx9
Batt. 30/50 Batt. 30
Bear. 20/33 Bear. 20
Def: DefDM=7,
MesonScreen-1,
NucDamper-9,
Sandcasters=xx7
Batt. 36
Bear. 23
Control: Computer=Model/9x3,
Panel=CP-HoloLinkedx7756, Special=HeadsUpHoloDisplayx7756,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=5654 (28x200)
(Bridge=27, Engineering=227, Maintenance=3616,
Gunners=555, Flight Crew=555, Ship's Troops=100,
Command=774, Stewards=189, Frozen Watch=0, Medical=46),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=200,
SubCraft=50-ton craftx60, 400-ton craftx5,
Magazines=50 50-ton magazines (362 battery-rounds)
Other: Cargo=2195 tons (29,632 kliters),
Fuel=107,738 tons (1,454,469 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=930 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccel-Tx1,
100-ton Bay ParticleAccelerator-9x30,
50-ton Bay FusionGun-9x30,
50-ton Bay Missile-9x30,
Triple Turret Missile (900/3),
Triple Turret BLaser (900/3),
Triple Turret Sand (360/3)


BL-15

BM-15 BATTLESHIP MISSILE

CraftID: Battleship Missile, Type BM, TL=F (High Stellar), MCr9,355,821
Hull: 450000/1125000, Disp=500000, Config=3SL, Armor=120G,
Unloaded=262454467, Loaded=262715092
Power: 14959/29918, Fusion=4039110 Mw, Duration=42/126days
Loco: 9000/18000, Maneuver=1Gs, 22500/45000, Jump=4,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-15x2, RadioComm FarOrbit-15x2, RadioComm System-15x2,
LaserComm Planet-15x2, LaserComm FarOrbit-15x2, LaserComm System-15x2,
MaserComm Planet-15x2, MaserComm FarOrbit-15x2, MaserComm System-15x2
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2, EMS-A-15 Planetaryx2,
EMS-P-15 Interplanetaryx2, EMS-P-15 SubStellarx2, EMS-P-15 Interstellarx2,
Jam EMS-A-15 FarOrbitx2, Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: MesonGun=T0x
Batt. 1
Bear. 1
Missiles=x90, BeamLaser=x6
Batt. 300 Batt. 600
Bear. 200 Bear. 300
Def: DefDM=7,
MesonScreen-1,
NucDamper-9,
Sandcasters=xx7
Batt. 150
Bear. 75
Control: Computer=Model/9x3,
Panel=CP-HoloLinkedx61857, Special=HeadsUpHoloDisplayx61857,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=37,188 (74x500)
(Bridge=148, Engineering=397, Maintenance=28741,
Gunners=1238, Flight Crew=1238, Ship's Troops=0,
Command=5090, Stewards=1247, Frozen Watch=0, Medical=307),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx10, 1000-ton craftx4,
Magazines=43 50-ton magazines (1451 battery-rounds)
Other: Cargo=15,313 tons (206,729 kliters),
Fuel=275,793 tons (3,723,211 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=200 missiles,
Electronic Circuit Protection
Comments: Spinal MesonGun-Tx1,
50-ton Bay Missile-9x200,
Triple Turret BLaser (6000/3),
Triple Turret Sand (1500/3)


BM-15

BH-14 BATTLE HEAVY

CraftID: Battle Heavy, Type BH, TL=E (High Stellar), MCr17,086,769
Hull: 630000/1575000, Disp=700000, Config=2SL, Armor=120G,
Unloaded=325892504, Loaded=326187686
Power: 23847/47694, Fusion=6438839 Mw, Duration=24/72days
Loco: 12600/25200, Maneuver=1Gs, 31500/63000, Jump=4,
NOE=180, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-14x1, RadioComm FarOrbit-14x1, RadioComm System-14x1,
LaserComm Planet-14x1, LaserComm FarOrbit-14x1, LaserComm System-14x1,
MaserComm Planet-14x1, MaserComm FarOrbit-14x1, MaserComm System-14x1
Sensors: EMM Packagex1,
EMS-A-14 FarOrbitx2, EMS-A-14 Planetaryx2,
EMS-P-14 Interplanetaryx2, EMS-P-14 SubStellarx2, EMS-P-14 Interstellarx2,
Jam EMS-A-14 FarOrbitx2, Jam EMS-A-14 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-0.25x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: ParticleAccel=050, MesonGun=S0x

Batt.	50	Batt.	1
Bear.	25	Bear.	1

Missiles=x90

Batt.	600
Bear.	300

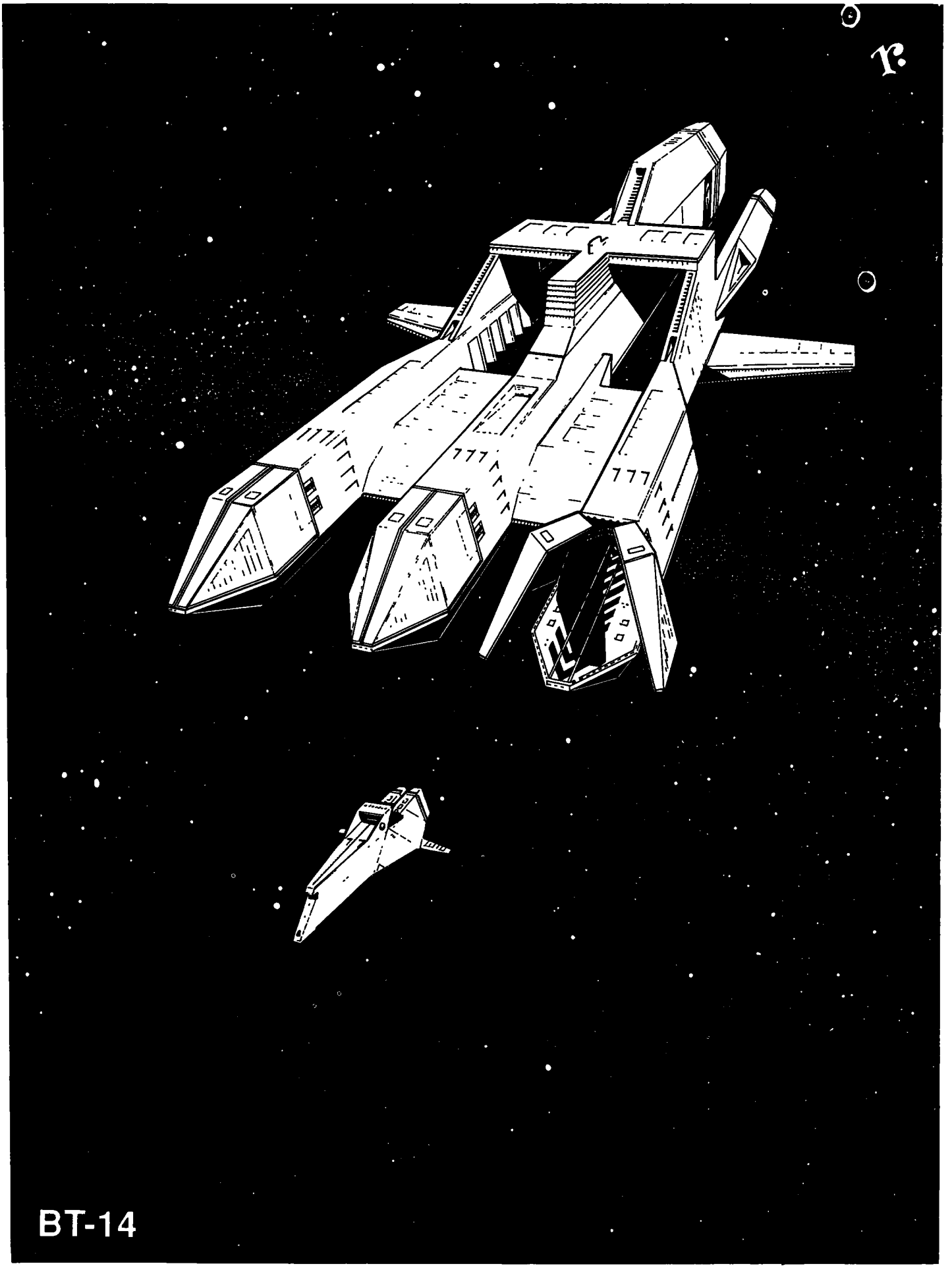
Def: DefDM=6,
MesonScreen-3,
NucDamper-6
Control: Computer=Model/8fibx3,
Panel=CP-HoloLinkedx125009, Special=HeadsUpHoloDisplayx125009,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=83,865 (119x700)
(Bridge=363, Engineering=687, Maintenance=61,274,
Gunners=1516, Flight Crew=1516, Ship's Troops=5000,
Command=11,480, Stewards=2812, Frozen Watch=0, Medical=693),
Additional Staterooms=500,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=200,
SubCraft=50-ton craftx20, 2000-ton craftx5,
Magazines=42 50-ton magazines (472 battery-rounds)
Other: Cargo=24,719 tons (333,711 kliters),
Fuel=312,361 tons (4,216,885 kliters), Fuel Purification Plant (purifies total fuel tankage in 60 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=600 missiles,
Electronic Circuit Protection
Comments: 50-ton Bay ParticleAccelerator-5x50,
Spinal MesonGun-Sx1,
50-ton Bay Missile-9x600

BH-15 BATTLE HEAVY

CraftID: Battle Heavy, Type BH, TL=F (High Stellar), MCr17,083,896
Hull: 630000/1575000, Disp=700000, Config=2SL, Armor=120G,
Unloaded=325885351, Loaded=326185141
Power: 24694/49388, Fusion=6667404 Mw, Duration=24/72days
Loco: 12600/25200, Maneuver=1Gs, 31500/63000, Jump=4,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-15x1, RadioComm FarOrbit-15x1, RadioComm System-15x1,
LaserComm Planet-15x1, LaserComm FarOrbit-15x1, LaserComm System-15x1,
MaserComm Planet-15x1, MaserComm FarOrbit-15x1, MaserComm System-15x1
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2, EMS-A-15 Planetaryx2,
EMS-P-15 Interplanetaryx2, EMS-P-15 SubStellarx2, EMS-P-15 Interstellarx2,
Jam EMS-A-15 FarOrbitx2, Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: ParticleAccel=050, MesonGun=T0x
Batt. 50 Batt. 1
Bear. 25 Bear. 1
FusionGun=x90
Batt. 40
Bear. 20
Missiles=x90, BeamLaser=xx4
Batt. 400 Batt. 30
Bear. 200 Bear. 15
Def: DefDM=7,
MesonScreen-3,
NucDamper-9
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx106030, Special=HeadsUpHoloDisplayx106030,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=71,396 (101x700)
(Bridge=247, Engineering=591, Maintenance=51,847,
Gunners=914, Flight Crew=914, Ship's Troops=5000,
Command=9773, Stewards=2394, Frozen Watch=0, Medical=590),
Additional Staterooms=500,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=200,
SubCraft=50-ton craftx20, 2000-ton craftx5
Magazines=100 50-ton magazines (1687 battery-rounds)
Other: Cargo=50060 tons (675,823 kliters),
Fuel=317,237 tons (4,282,712 kliters), Fuel Purification Plant (purifies total fuel tankage in 60 hours),
ObjSize=Large, Fuel Scoops (fills tanks in 5 hours),
EmLevel=Moderate,
Battery Round=400 missiles,
Electronic Circuit Protection
Comments: 50-ton Bay ParticleAccelerator-5x50,
Spinal MesonGun-Tx1,
50-ton Bay FusionGun-9x40,
50-ton Bay Missile-9x400,
Triple Turret BLaser (90/3)

BT-14 BATTLE TENDER

CraftID: Battle Tender, Type BT, TL=E (High Stellar), MCr382,528
Hull: 630000/1575000, Disp=700000, Config=4SL, Armor=65G,
Unloaded=6643911, Loaded=7030165
Power: 37639/75278, Fusion=10162555 Mw, Duration=22/66days
Loco: 12600/25200, Maneuver=1Gs, 37800/75600, Jump=5,
NOE=180, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-14x1, RadioComm FarOrbit-14x1, RadioComm System-14x1,
LaserComm Planet-14x1, LaserComm FarOrbit-14x1, LaserComm System-14x1,
MaserComm Planet-14x1, MaserComm FarOrbit-14x1, MaserComm System-14x1
Sensors: EMM Packagex1,
EMS-A-14 FarOrbitx2, EMS-A-14 Planetaryx2,
EMS-P-14 Interplanetaryx2, EMS-P-14 SubStellarx2, EMS-P-14 Interstellarx2,
Jam EMS-A-14 FarOrbitx2, Jam EMS-A-14 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-0.25x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin= Routine
Off: ParticleAccel=090
Batt. 10
Bear. 5
Missiles=x94
Batt. 10/10
Bear. 5/5
Def: DefDM=6,
MesonScreen-6,
NucDamper-6,
Sandcasters=xx4
Batt. 10
Bear. 5
Control: Computer=Model/8fibx3,
Panel=CP-HoloLinkedx2900, Special=HeadsUpHoloDisplayx2900,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=1807 (2x700)
(Bridge=8, Engineering=917, Maintenance=432,
Gunners=89, Flight Crew=89, Ship's Troops=0,
Command=247, Stewards=60, Frozen Watch=0, Medical=14),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=200,
SubCraft=50-ton craftx20,30000-ton craftx3,
Magazines=2 50-ton magazines (192 battery-rounds)
Other: Cargo=17,827 tons (240,671 kliters),
Fuel=408,734 tons (5,517,914 kliters), Fuel Purification Plant (purifies total fuel tankage in six hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=70 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x10,
50-ton Bay Missile-9x10,
Triple Turret Missile (60/3),
Triple Turret Sand (30/3)


BT-14

BR-14P BATTLE RIDER

CraftID: Battle Rider, Type BR, TL=E (High Stellar), MCr61,078
Hull: 27000/67500, Disp=30000, Config=4SL, Armor=90G,
Unloaded=3208944, Loaded=3218625
Power: 4742/9484, Fusion=1280507 Mw, Duration=9/27days
Loco: 3780/7560, Maneuver=5Gs, 0/0, Jump=0,
NOE=180, Cruise=2880kph, Top=3840kph,
Agility=0
Commo: RadioComm Planetary-14x2, RadioComm FarOrbit-14x2, RadioComm System-14x2,
LaserComm Planet-14x2, LaserComm FarOrbit-14x2, LaserComm System-14x2,
MaserComm Planet-14x2, MaserComm FarOrbit-14x2, MaserComm System-14x2
Sensors: EMM Packagex1,
EMS-A-14 FarOrbitx2,
EMS-P-14 SubStellarx2,
Jam EMS-A-14 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-0.25x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: ParticleAccel=S90, MesonGun=05x
Batt. 1/8 Batt. 4
Bear. 1/7 Bear. 4
Missiles=x94, BeamLaser=xx4
Batt. 10/5 Batt. 10
Bear. 9/5 Bear. 9
Def: DefDM=7,
MesonScreen-6,
NucDamper-6,
Sandcasters=xx3
Batt. 10
Bear. 9
Control: Computer=Model/8x3,
Panel=CP-HoloLinkedx296, Special=HeadsUpHoloDisplayx296,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=649 (21x30)
(Bridge=2, Engineering=64, Maintenance=151,
Gunners=301, Flight Crew=301, Ship's Troops=0,
Command=89, Stewards=21, Frozen Watch=0, Medical=5),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx8,
Magazines=1 50-ton magazines (270 battery-rounds)
Other: Cargo=485 tons (6555 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=10,244 tons (138,294 kliters), Fuel Purification Plant (purifies self fuel tankage in 10 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=25 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x8,
100-ton Bay MesonGun-5x4,
50-ton Bay Missile-9x10,
Triple Turret Missile (15/3),
Triple Turret BLaser (60/3),
Triple Turret Sand (30/3)

BR-14M BATTLE RIDER

CraftID: Battle Rider, Type BR, TL=E (High Stellar), MCr34,871
Hull: 27000/67500, Disp=30000, Config=4SL, Armor=80G,
Unloaded=1503837, Loaded=1511908
Power: 3953/7906, Fusion=1067486 Mw, Duration=9/27days
Loco: 2970/5940, Maneuver=4Gs, 0/0, Jump=0,
NOE=180, Cruise=2550kph, Top=3400kph,
Agility=0
Commo: RadioComm Planetary-14x2, RadioComm FarOrbit-14x2, RadioComm System-14x2,
LaserComm Planet-14x2, LaserComm FarOrbit-14x2, LaserComm System-14x2,
MaserComm Planet-14x2, MaserComm FarOrbit-14x2, MaserComm System-14x2
Sensors: EMM Packagex1,
EMS-A-14 FarOrbitx2,
EMS-P-14 SubStellarx2,
Jam EMS-A-14 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-0.25x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: ParticleAccel=090, MesonGun=S0x

Batt.	10	Batt.	1
Bear.	9	Bear.	1

Missiles=x90, BeamLaser=xx4

Batt.	10	Batt.	10
Bear.	9	Bear.	9

Def: DefDM=7,
MesonScreen-6,
NucDamper-6,
Sandcasters=xx4

Batt.	10
Bear.	9

Control: Computer=Model/8x3,
Panel=CP-HoloLinkedx257, Special=HeadsUpHoloDisplayx257,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=606 (20x30)
(Bridge=2, Engineering=53, Maintenance=63,
Gunners=376, Flight Crew=376, Ship's Troops=0,
Command=83, Stewards=20, Frozen Watch=0, Medical=5),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx2,
Magazines=1 50-ton magazines (675 battery-rounds)
Other: Cargo=61 tons (830 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=8539 tons (115,288 kliters), Fuel Purification Plant (purifies self fuel tankage in 10 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=10 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x8,
Spinal MesonGun-Sx1,
50-ton Bay Missile-9x10,
Triple Turret BLaser (60/3),
Triple Turret Sand (30/3)

BT-15 BATTLE TENDER

CraftID: Battle Tender, Type BT, TL=F (High Stellar), MCr146,616
Hull: 450000/1125000, Disp=500000, Config=3SL, Armor=40G,
Unloaded=2675504, Loaded=2859745
Power: 8516/17032, Fusion=2299331 Mw, Duration=22/66days
Loco: 9000/18000, Maneuver=1Gs, 27000/54000, Jump=5,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-15x1, RadioComm FarOrbit-15x1, RadioComm System-15x1,
LaserComm Planet-15x1, LaserComm FarOrbit-15x1, LaserComm System-15x1,
MaserComm Planet-15x1, MaserComm FarOrbit-15x1, MaserComm System-15x1
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2, EMS-A-15 Planetaryx2,
EMS-P-15 Interplanetaryx2, EMS-P-15 SubStellarx2, EMS-P-15 Interstellarx2,
Jam EMS-A-15 FarOrbitx2, Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: ParticleAccel=090
Batt. 10
Bear. 9
Missiles=x90, BeamLaser=xx4
Batt. 10 Batt. 10
Bear. 9 Bear. 9
Def: DefDM=7,
MesonScreen-9,
NucDamper-9,
Sandcasters=xx4
Batt. 10
Bear. 5
Control: Computer=Model/9fibx3
Panel=CP-HoloLinkedx940, Special=HeadsUpHoloDisplayx940
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=646 (1x500)
(Bridge=2, Engineering=383, Maintenance=27,
Gunners=80, Flight Crew=80, Ship's Troops=0,
Command=88, Stewards=21, Frozen Watch=0, Medical=5),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=200,
SubCraft=50-ton craftx20, 30000-ton craftx6
Magazines=2 50-ton magazines (1350 battery-rounds)
Other: Cargo=533 tons (7205 kliters),
Fuel=194,964 tons (2,632,023 kliters), Fuel Purification Plant (purifies total fuel tankage in six hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=10 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x10,
50-ton Bay Missile-9x10,
Triple Turret BLaser (60/3),
Triple Turret Sand (30/3)

BR-15P BATTLE RIDER

CraftID: Battle Rider, Type BR, TL=F (High Stellar), MCr497,454
Hull: 27000/67500, Disp=30000, Config=3SL, Armor=115G,
Unloaded=25512123, Loaded=25520281
Power: 3597/7194, Fusion=971230 Mw, Duration=10/30days
Loco: 4590/9180, Maneuver=6Gs, 0/0, Jump=0,
NOE=190, Cruise=3150kph, Top=4200kph,
Agility=0
Commo: RadioComm Planetary-15x2, RadioComm FarOrbit-15x2, RadioComm System-15x2,
LaserComm Planet-15x2, LaserComm FarOrbit-15x2, LaserComm System-15x2,
MaserComm Planet-15x2, MaserComm FarOrbit-15x2, MaserComm System-15x2
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2,
EMS-P-15 SubStellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: ParticleAccel=T90, MesonGun=09x
Batt. 1/10 Batt. 2
Bear. 1/9 Bear. 2
Missiles=x90, BeamLaser=xx4
Batt. 11 Batt. 10
Bear. 10 Bear. 9
Def: DefDM=8,
MesonScreen-9,
NucDamper-9,
Sandcasters=xx4
Batt. 10
Bear. 9
Control: Computer=Model/9x3,
Panel=CP-HoloLinkedx3088, Special=HeadsUpHoloDisplayx3088,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=2171 (72x30)
(Bridge=6, Engineering=45, Maintenance=1500,
Gunners=224, Flight Crew=224, Ship's Troops=0,
Command=297, Stewards=72, Frozen Watch=0, Medical=17),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=40-ton craftx5,
Magazines=1 50-ton magazines (613 battery-rounds)
Other: Cargo=33 tons (448 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=8633 tons (116,547 kliters), Fuel Purification Plant (purifies self fuel tankage in 10 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=11 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x10,
100-ton Bay MesonGun-9x2,
50-ton Bay Missile-9x11,
Triple Turret BLaser (60/3),
Triple Turret Sand (30/3)

BR-15M BATTLE RIDER

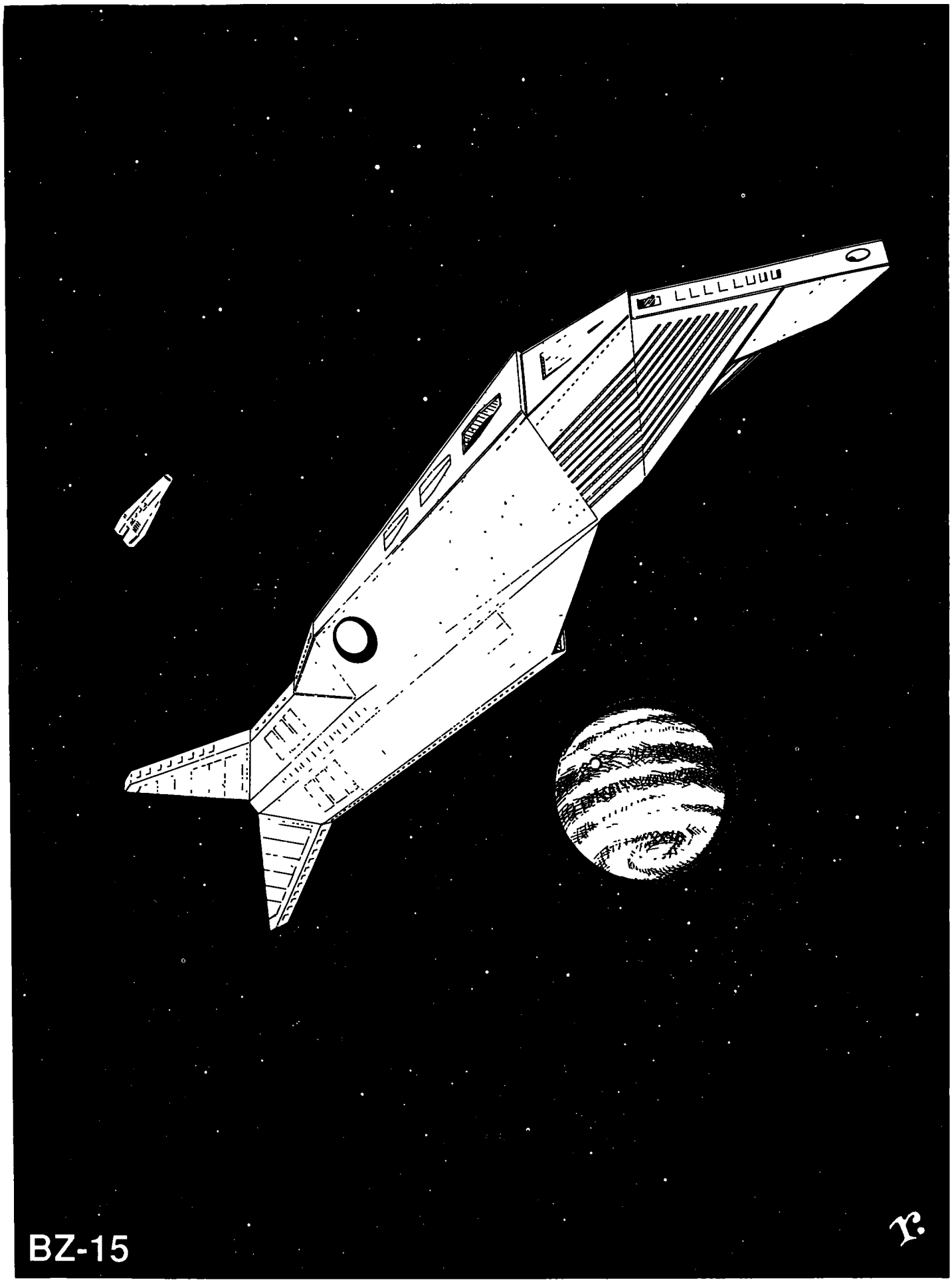
CraftID: Battle Rider, Type BR, TL=F (High Stellar), MCr146,094
Hull: 27000/67500, Disp=30000, Config=3SL, Armor=100G,
Unloaded=7157798, Loaded=7165284
Power: 3300/6600, Fusion=891178 Mw, Duration=10/30days
Loco: 4590/9180, Maneuver=6Gs, 0/0, Jump=0,
NOE=190, Cruise=3150kph, Top=4200kph,
Agility=0
Commo: RadioComm Planetary-15x2, RadioComm FarOrbit-15x2, RadioComm System-15x2,
LaserComm Planet-15x2, LaserComm FarOrbit-15x2, LaserComm System-15x2,
MaserComm Planet-15x2, MaserComm FarOrbit-15x2, MaserComm System-15x2
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2,
EMS-P-15 SubStellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: ParticleAccel=090, MesonGun=T0x
Batt. 8 Batt. 1
Bear. 7 Bear. 1
Missiles=x90, BeamLaser=xx4
Batt. 11 Batt. 10
Bear. 10 Bear. 9
Def: DefDM=8,
MesonScreen-9,
NucDamper-9,
Sandcasters=xx4
Batt. 10
Bear. 9
Control: Computer=Model/9x3,
Panel=CP-HoloLinkedx917, Special=HeadsUpHoloDisplayx917,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=803 (26x30),
(Bridge=2, Engineering=43, Maintenance=406,
Gunners=198, Flight Crew=198, Ship's Troops=0,
Command=110, Stewards=26, Frozen Watch=0, Medical=6),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=40-ton craftx6,
Magazines=1 50-ton magazines (613 battery-rounds)
Other: Cargo=90 tons (1221 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=7921 tons (106,941 kliters), Fuel Purification Plant (purifies self fuel tankage in 10 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=11 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x8,
Spinal MesonGun-Tx1,
50-ton Bay Missile-9x11,
Triple Turret BLaser (60/3),
Triple Turret Sand (30/3)

TB-15 TANKER BATTLE

CraftID: Tanker Battle, Type TB, TL=F (High Stellar), MCr32,872
Hull: 27000/67500, Disp=30000, Config=3SL, Armor=80G,
Unloaded=1479463, Loaded=1483420
Power: 1744/3488, Fusion=471104 Mw, Duration=10/30days
Loco: 4590/9180, Maneuver=6Gs, 0/0, Jump=0,
NOE=190, Cruise=3150kph, Top=4200kph,
Agility=0
Commo: RadioComm Planetary-15x2, RadioComm FarOrbit-15x2, RadioComm System-15x2,
LaserComm Planet-15x2, LaserComm FarOrbit-15x2, LaserComm System-15x2,
MaserComm Planet-15x2, MaserComm FarOrbit-15x2, MaserComm System-15x2
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2,
EMS-P-15 SubStellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: BeamLaser=xx4
Batt. 10
Bear. 9
Def: DefDM=8,
MesonScreen-9,
NucDamper-9,
Sandcasters=xx4
Batt. 10
Bear. 9
Control: Computer=Model/9x3,
Panel=CP-HoloLinkedx207, Special=HeadsUpHoloDisplayx207,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=160 (5x30)
(Bridge=2, Engineering=28, Maintenance=72,
Gunners=22, Flight Crew=22, Ship's Troops=0,
Command=22, Stewards=5, Frozen Watch=0, Medical=1),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx4,
Magazines=None
Other: Cargo=15,286 tons (206,369 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=4187 tons (56,532 kliters), Fuel Purification Plant (purifies self fuel tankage in six hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=0 missiles,
Electronic Circuit Protection
Comments: Triple Turret BLaser (60/3),
Triple Turret Sand (30/3)

BZ-15 BATTLE EXPERIMENTAL

CraftID: Battle Experimental, Type BZ, TL=F (High Stellar), MCr413,759
Hull: 450000/1125000, Disp=500000, Config=4SL, Armor=80G,
Unloaded=10625684, Loaded=10865907
Power: 23406/46812, Fusion=6319776 Mw, Duration=23/69days
Loco: 9000/18000, Maneuver=1Gs, 22500/45000, Jump=4,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-15x1, RadioComm FarOrbit-15x1, RadioComm System-15x1,
LaserComm Planet-15x1, LaserComm FarOrbit-15x1, LaserComm System-15x1,
MaserComm Planet-15x1, MaserComm FarOrbit-15x1, MaserComm System-15x1,
MesonComm System-15x1
Sensors: EMS-A-15 FarOrbitx2, EMS-A-15 Planetaryx2,
EMS-P-15 Interplanetaryx2, EMS-P-15 SubStellarx2, EMS-P-15 Interstellarx2,
Jam EMS-A-15 FarOrbitx2, Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: ParticleAccel=090, MesonGun=T0x
Batt. 90 Batt. 1
Bear. 45 Bear. 1
FusionGun=x90
Batt. 3
Bear. 2
Missiles=xA7, BeamLaser=xx9
Batt. 180/70 Batt. 70
Bear. 90/35 Bear. 35
Def: DefDM=7,
MesonScreen-3, NucDamper-9,
Sandcasters=xx7
Batt. 90
Bear. 45
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx10496, Special=HeadsUpHoloDisplayx10496,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=3360 (6x500)
(Bridge=33, Engineering=476, Maintenance=660,
Gunners=1472, Flight Crew=1472, Ship's Troops=100,
Command=460, Stewards=112, Frozen Watch=0, Medical=27),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx10, 30000-ton craftx3,
Magazines=None
Other: Cargo=3000 tons (40,501 kliters),
Fuel=254,204 tons (3,431,758 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in 0.1 hours),
EmLevel=Strong,
Battery Round=2280 missiles, Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x90,
Spinal MesonGun-Tx1,
50-ton Bay FusionGun-9x3,
100-ton Bay Missile-Ax180,
Triple Turret Missile (2100/3),
Triple Turret BLaser (2100/3),
Triple Turret Sand (900/3)


BZ-15

BS-15 BATTLESHIP STRIKE

CraftID: Battleship Strike, Type BS, TL=F (High Stellar), MCr1,234,337
Hull: 180000/450000, Disp=200000, Config=4SL, Armor=110G,
Unloaded=59857999, Loaded=59979879
Power: 5850/11700, Fusion=1579664 Mw, Duration=42/126days
Loco: 3600/7200, Maneuver=1Gs, 12600/25200, Jump=6,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-15x1, RadioComm FarOrbit-15x1, RadioComm System-15x1,
LaserComm Planet-15x1, LaserComm FarOrbit-15x1, LaserComm System-15x1,
MaserComm Planet-15x1, MaserComm FarOrbit-15x1, MaserComm System-15x1
Sensors: EMM Package x1,
EMS-A-15 FarOrbit x2, EMS-A-15 Planetary x2,
EMS-P-15 Interplanetary x2, EMS-P-15 SubStellar x2, EMS-P-15 Interstellar x2,
Jam EMS-A-15 FarOrbit x2, Jam EMS-A-15 Planetary x2,
Neutrino (0.01 Mw) Sensor-14 x2,
HiPen Densit-1 x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: ParticleAccel=T00, MesonGun=09x

Batt.	1	Batt.	5
Bear.	1	Bear.	4

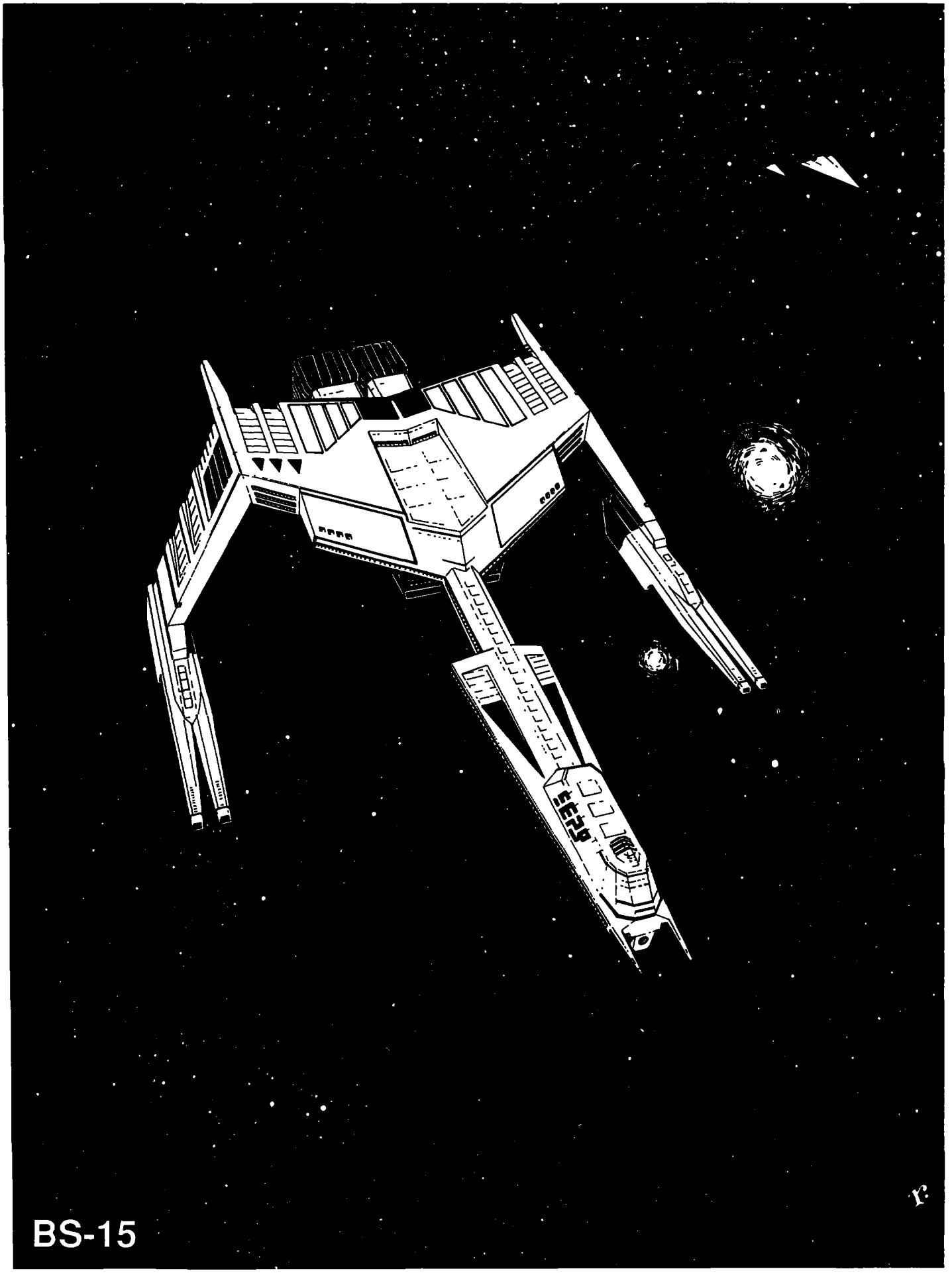
Missiles=x90, BeamLaser=xx6

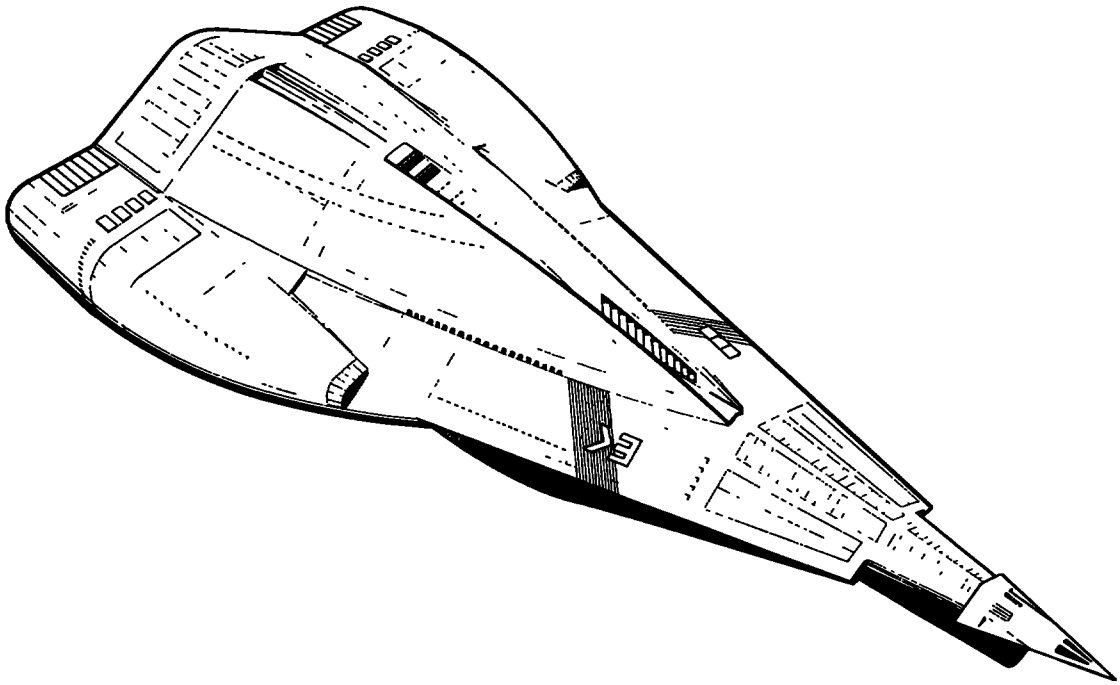
Batt.	100	Batt.	90
Bear.	65	Bear.	70

Def: DefDM=7,
MesonScreen-1,
NucDamper-9,
Sandcasters=xx7

Batt.	36
Bear.	30

Control: Computer=Model/9x3,
Panel=CP-HoloLinked x7711, Special=HeadsUpHoloDisplay x7711,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew= 5274 (26x200)
(Bridge=27, Engineering=195, Maintenance=3633,
Gunners=458, Flight Crew=458, Ship's Troops=0,
Command=722, Stewards=176, Frozen Watch=0, Medical=43),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craft x10, 1000-ton craft x2,
Magazines=50 50-ton magazines (3375 battery-rounds)
Other: Cargo=2233 tons (30,151 kliters),
Fuel=128,974 tons (1,741,150 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
EmLevel=Moderate,
Battery Round=100 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccelerator-T x1,
100-ton Bay MesonGun-9x5,
50-ton Bay Missile-9x100,
Triple Turret BLaser (900/3),
Triple Turret Sand (360/3)


BS-15



The standard cruiser at tech level 11 is the CA-11. It has developed and evolved through the tech levels to the present CA-15. At the same time, a variety of variants have been produced which take advantage of the basic CA-11/-15 structures and devote them to specialized uses.

The CM-12 missile cruiser was developed to emphasize the power benefits of missile armaments.

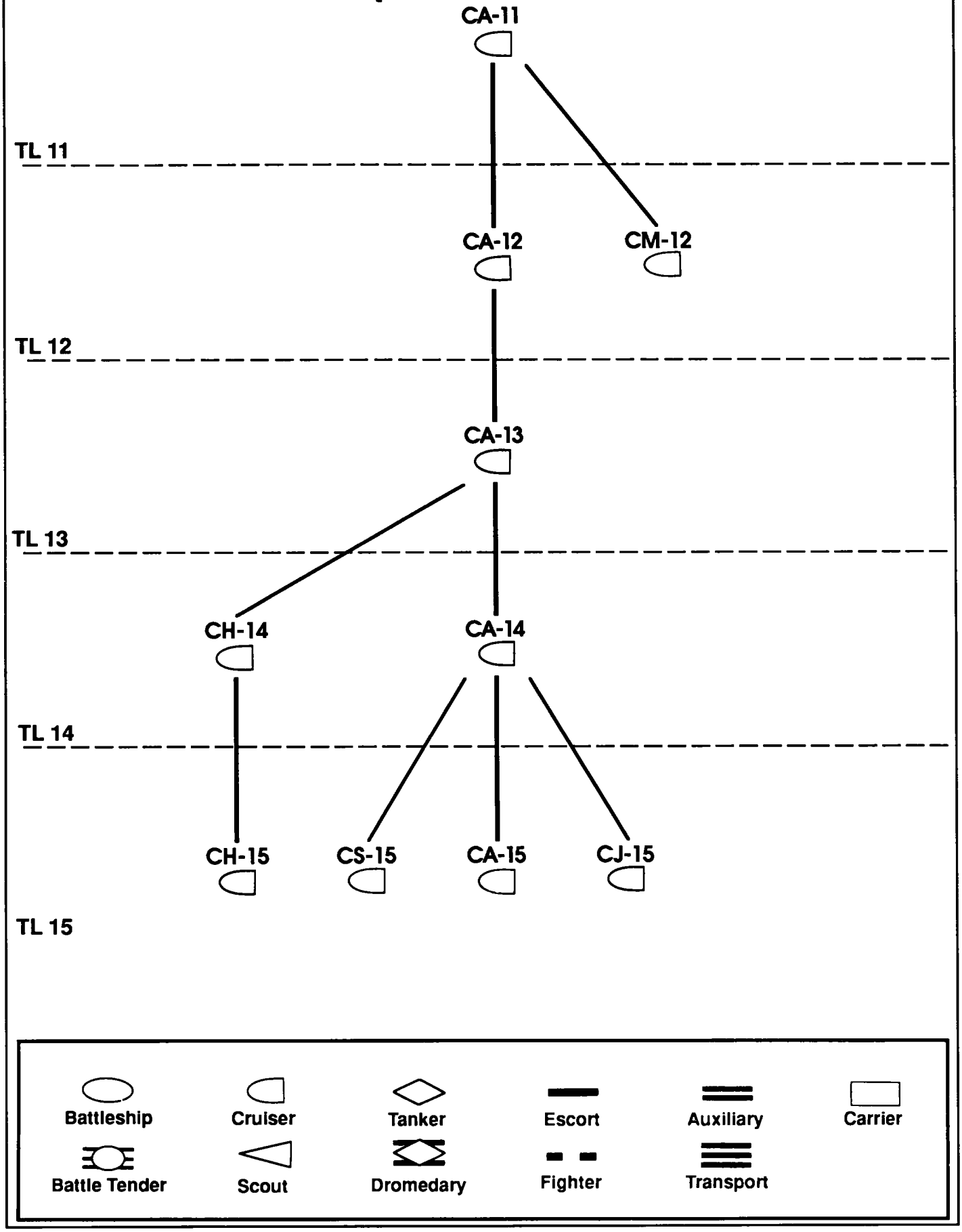
The CH-14 and CH-15 series were developed as a heavier cruiser.

The CJ-15 Rift cruiser was produced to allow cruiser patrols within the Rift and carries the higher jump drive capacities that such operations require.

Cruisers

Cruisers are more lightly armored and less heavily armed than battleships. To unarmed, unarmored ships, this difference is negligible since a cruiser can easily attack and destroy any noncombatant ships. Cruisers are assigned to support battleships and carry combat to areas where a battleship is not considered necessary.

Imperial Cruisers



CA-11 CRUISER ARMORED

CraftID: Cruiser Armored, Type CA, TL=B (Average Stellar), MCr54,601
Hull: 90000/225000, Disp=100000, Config=4SL, Armor=60E,
Unloaded=1921344, Loaded=1965556
Power: 6019/12038, Fusion=1625386 Mw, Duration=22/66days
Loco: 9900/19800, Maneuver=4Gs, 2700/5400, Jump=2,
NOE=150, Cruise=2550kph, Top=3400kph,
Agility=1
Commo: RadioComm Planetary-11x2, RadioComm FarOrbit-11x2, RadioComm System-11x2,
LaserComm Planet-11x2, LaserComm FarOrbit-11x2, LaserComm System-11x2,
MaserComm Planet-11x2, MaserComm FarOrbit-11x2, MaserComm System-11x2
Sensors: EMM Packagex1,
EMS-A-11 FarOrbitx2,
EMS-P-11 SubStellarx2,
Jam EMS-A-11 Planetaryx2,
Neutrino (1000 Mw) Sensor-11x2,
HiPen Densit-0.001x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Formidable, PasObjPin=Formidable,
PasEngScan=Routine, PasEngPin=Formidable
Off: ParticleAccel=K70
Batt. 1/10
Bear. 1/7
Missiles=x83, BeamLaser=xx6
Batt. 60/20 Batt. 13
Bear. 42/14 Bear. 9
Def: DefDM=4,
Sandcasters=xx4
Batt. 50
Bear. 33
Control: Computer=Model/5fibx3,
Panel=CP-DynamicLinkedx3477, Special=HeadsUpDisplayx3477,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew= 2457 (24x100)
(Bridge=6, Engineering=274, Maintenance=32,
Gunners=1217, Flight Crew=1217, Ship's Troops=400,
Command=333, Stewards=81, Frozen Watch=24, Medical=20),
Additional Staterooms=0,
LowBerths=24 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx10, 100-ton craftx10,
Magazines=10 50-ton magazines (375 battery-rounds)
Other: Cargo=2085 tons (28150 kliters),
Fuel=46785 tons (631602 kliters), Fuel Purification Plant (purifies total fuel tankage in six hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=180 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccel-Kx1,
100-ton Bay ParticleAccelerator-7x10,
100-ton Bay Missile-8x60,
Triple Turret Missile(120/3),
Triple Turret BLaser(195/3),
Triple Turret Sand(150/3)
This design sacrifices armor (60 versus the desired 80) and endurance (only 22 days) in order to meet other performance requirements.

CA-12 CRUISER ARMORED

CraftID: Cruiser Armored, Type CA, TL=C (Average Stellar), MCr56,494
Hull: 90000/225000, Disp=100000, Config=3SL, Armor=57F,
Unloaded=1549537, Loaded=1596772
Power: 5949/11898, Fusion=1606336 Mw, Duration=21/63days
Loco: 9900/19800, Maneuver=4Gs, 3600/7200, Jump=3,
NOE=160, Cruise=2550kph, Top=3400kph,
Agility=1
Commo: RadioComm Planetary-12x2, RadioComm FarOrbit-12x2, RadioComm System-12x2,
LaserComm Planet-12x2, LaserComm FarOrbit-12x2, LaserComm System-12x2,
MaserComm Planet-12x2, MaserComm FarOrbit-12x2, MaserComm System-12x2
Sensors: EMM Packagex1,
EMS-A-12 FarOrbitx2,
EMS-P-12 SubStellarx2,
Jam EMS-A-12 Planetaryx2,
Neutrino (1 Mw) Sensor-12x2,
HiPen Densit-0.05x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Formidable
Off: ParticleAccel=Q80
Batt. 1/10
Bear. 1/7
Missiles=x93, BeamLaser=xx6
Batt. 60/20 Batt. 13
Bear. 42/14 Bear. 9
Def: DefDM= 5
Sandcasters=xx4
Batt. 50
Bear. 35
Control: Computer=Model/6fibx3
Panel=CP-DynamicLinkedx122, Special=LgHoloDisplayx122
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=1819 (18x100)
(Bridge=5, Engineering=251, Maintenance=61,
Gunners=1032, Flight Crew=1032, Ship's Troops=100,
Command=249, Stewards=61, Frozen Watch=0, Medical=15),
Additional Staterooms=10,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx10, 100-ton craftx5,
Magazines=10 50-ton magazines (375 battery-rounds)
Other: Cargo=569 tons (7693 kliters),
Fuel=49984 tons (674796 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=180 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccel-Qx1,
100-ton Bay ParticleAccelerator-8x10,
100-ton Bay Missile-9x60,
Triple Turret Missile(120/3),
Triple Turret BLaser(195/3),
Triple Turret Sand(150/3)
The upgrade of the J-2 TL-11 CA to J-3 TL-12 necessitates some tradeoffs:
Slight reductions in ship's troops, endurance, armor, and subcraft are needed to offset the added jump-drive and fuel requirements of the new design.

CA-13 CRUISER ARMORED

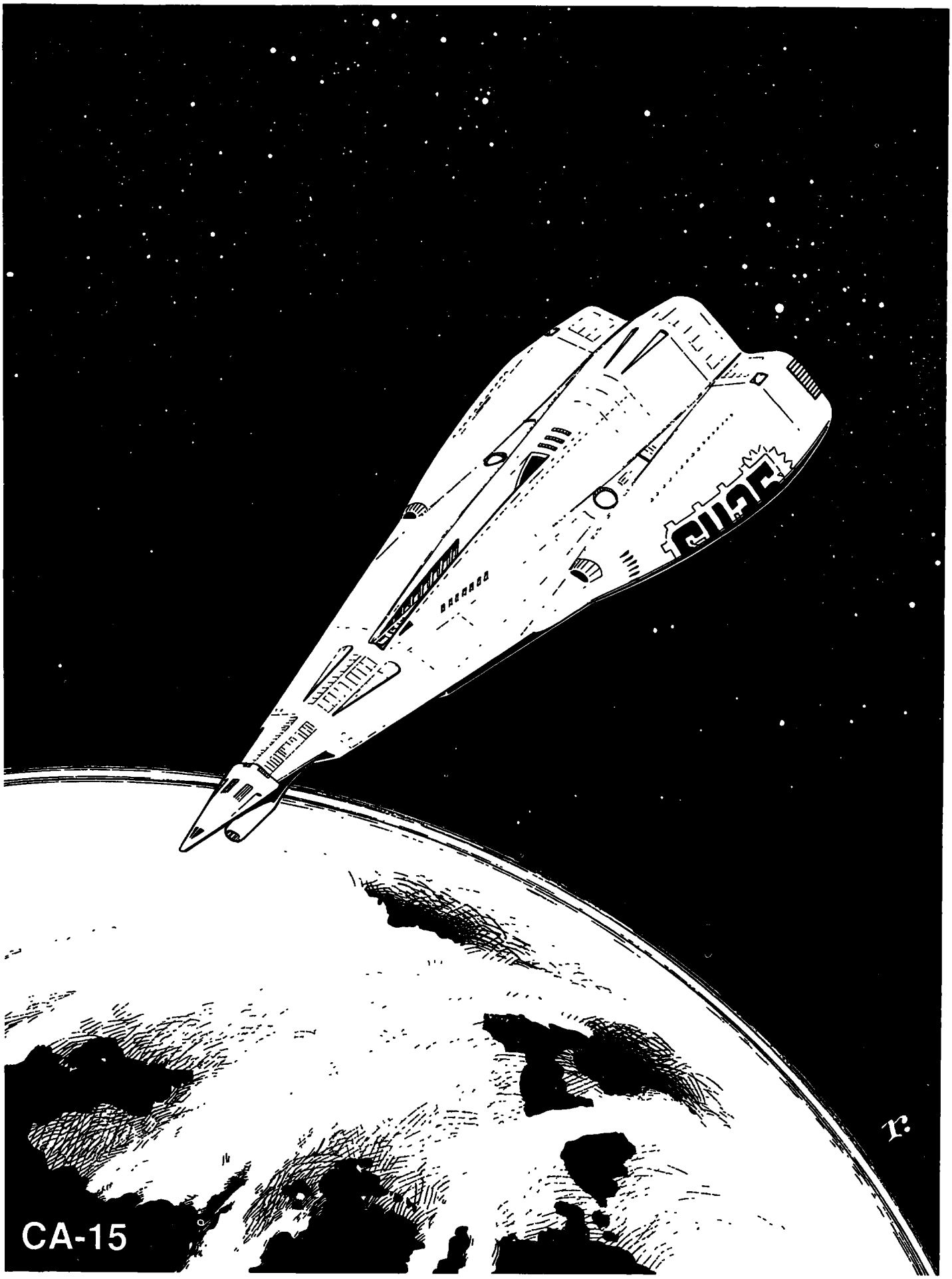
CraftID: Cruiser Armored, Type CA, TL=D (Average Stellar), MCr99,870
Hull: 90000/225000, Disp=100000, Config=3SL, Armor=75F,
Unloaded=4118485, Loaded=4165185
Power: 4844/9688, Fusion=1308124 Mw, Duration=21/63days
Loco: 9900/19800, Maneuver=4Gs, 4500/9000, Jump=4,
NOE=170, Cruise=2550kph, Top=3400kph,
Agility=0
Commo: RadioComm Planetary-13x2, RadioComm FarOrbit-13x2, RadioComm System-13x2,
LaserComm Planet-13x2, LaserComm FarOrbit-13x2, LaserComm System-13x2,
MaserComm Planet-13x2, MaserComm FarOrbit-13x2, MaserComm System-13x2
Sensors: EMM Packagex1,
EMS-A-13 FarOrbitx2,
EMS-P-13 SubStellarx2,
Jam EMS-A-13 Planetaryx2,
Neutrino (0.1 Mw) Sensor-13x2,
HiPen Densit-0.1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Difficult
Off: ParticleAccel=R40
Batt. 1/17
Bear. 1/13
Missiles=x93, BeamLaser=xx8
Batt. 60/40 Batt. 10
Bear. 42/28 Bear. 7
Def: DefDM=5,
NucDamper-3,
Sandcasters=xx4
Batt. 50
Bear. 35
Control: Computer=Model/7fibx3,
Panel=CP-HoloLinkedx1038, Special=HeadsUpHoloDisplayx1038,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=1592 (15x100)
(Bridge=4, Engineering=187, Maintenance=263,
Gunners=684, Flight Crew=684, Ship's Troops=100,
Command=218, Stewards=53, Frozen Watch=0, Medical=13),
Additional Staterooms=10,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx10, 100-ton craftx10,
Magazines=3 50-ton magazines (112 battery-rounds)
Other: Cargo=2202 tons (29732 kliters),
Fuel=49,418 tons (667,147 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=180 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccel-Rx1,
50-ton Bay ParticleAccelerator-4x17,
100-ton Bay Missile-9x60,
Triple Turret Missile (120/3),
Triple Turret BLaser (210/3),
Triple Turret Sand (150/3)
The TL-13 Heavy Cruiser is the first such design to achieve what the Imperial Navy considers minimum acceptable performance: J-4 and 4-Gs.

CA-14 CRUISER ARMORED

CraftID: Cruiser Armored, Type CA, TL=E (High Stellar), MCr124,234
Hull: 90000/225000, Disp=100000, Config=2SL, Armor=80G,
Unloaded=3589000, Loaded=3637370
Power: 5195/10390, Fusion=1402782 Mw, Duration=21/63days
Loco: 9900/19800, Maneuver=4Gs, 4500/9000, Jump=4,
NOE=180, Cruise=2550kph, Top=3400kph,
Agility=0
Commo: RadioComm Planetary-14x2, RadioComm FarOrbit-14x2, RadioComm System-14x2,
LaserComm Planet-14x2, LaserComm FarOrbit-14x2, LaserComm System-14x2,
MaserComm Planet-14x2, MaserComm FarOrbit-14x2, MaserComm System-14x2
Sensors: EMM Packagex1,
EMS-A-14 FarOrbitx2,
EMS-P-14 SubStellarx2,
Jam EMS-A-14 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-0.25x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: ParticleAccel=S90
Batt. 1/15
Bear. 1/13
Missiles=xA3, BeamLaser=xx8
Batt. 60/50 Batt. 11
Bear. 42/35 Bear. 8
Def: DefDM=6,
OptiNucDamper-1,
Sandcasters=xx4
Batt. 50
Bear. 35
Control: Computer=Model/8fibx3,
Panel=CP-HoloLinkedx938, Special=HeadsUpHoloDisplayx938,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=1315 (13x100)
(Bridge=2, Engineering=142, Maintenance=275,
Gunners=492, Flight Crew=492, Ship's Troops=100,
Command=180, Stewards=44, Frozen Watch=0, Medical=10),
Additional Staterooms=10,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx10, 100-ton craftx10,
Magazines=4 50-ton magazines (128 battery-rounds)
Other: Cargo=305 tons (4129 kliters),
Fuel=51,185 tons (691,001 kliters), Fuel Purification Plant (purifies total fuel tankage in six hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=210 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccel-Sx1,
100-ton Bay ParticleAccelerator-9x15,
100-ton Bay Missile-Ax60,
Triple Turret Missile (150/3),
Triple Turret BLaser (225/3),
Triple Turret Sand (150/3)

CA-15 CRUISER ARMORED

CraftID: Cruiser Armored, Type CA, TL=F (High Stellar), MCr124,009
Hull: 90000/225000, Disp=100000, Config=2SL, Armor=80G,
Unloaded=3582156, Loaded=3630455
Power: 5180/10360, Fusion=1398779 Mw, Duration=21/63days
Loco: 9900/19800, Maneuver=4Gs, 4500/9000, Jump=4,
NOE=190, Cruise=2550kph, Top=3400kph,
Agility=0
Commo: RadioComm Planetary-15x2, RadioComm FarOrbit-15x2, RadioComm System-15x2,
LaserComm Planet-15x2, LaserComm FarOrbit-15x2, LaserComm System-15x2,
MaserComm Planet-15x2, MaserComm FarOrbit-15x2, MaserComm System-15x2
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2,
EMS-P-15 SubStellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: ParticleAccel=T90
Batt. 1/15
Bear. 1/13
Missiles=xA3, BeamLaser=xx8
Batt. 60/40 Batt. 10
Bear. 42/28 Bear. 7
Def: DefDM=7,
OptiNucDamper-1,
Sandcasters=xx4
Batt. 50
Bear. 35
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx813, Special=HeadsUpHoloDisplayx813,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=1224 (12x100)
(Bridge=2, Engineering=120, Maintenance=214,
Gunners=390, Flight Crew=390, Ship's Troops=200,
Command=166, Stewards=40, Frozen Watch=12, Medical=10),
Additional Staterooms=10,
LowBerths=12 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx10, 100-ton craftx10,
Magazines=5 50-ton magazines (160 battery-rounds)
Other: Cargo=1104 tons (14,915 kliters),
Fuel=51,110 tons (689,992 kliters), Fuel Purification Plant (purifies total fuel tankage in six hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=210 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccel-Tx1,
100-ton Bay ParticleAccelerator-9x15,
100-ton Bay Missile-Ax60,
Triple Turret Missile (150/3),
Triple Turret BLaser (210/3),
Triple Turret Sand (150/3)


CA-15

CM-12 CRUISER MISSILE

CraftID: Cruiser Missile, Type CM, TL=C (Average Stellar), MCr134,895
Hull: 90000/225000, Disp=100000, Config=3SL, Armor=80F,
Unloaded=5874039, Loaded=5914667
Power: 4354/8708, Fusion=1175719 Mw, Duration=22/66days
Loco: 9900/19800, Maneuver=4Gs, 3600/7200, Jump=3,
NOE=160, Cruise=2550kph, Top=3400kph,
Agility=0
Commo: RadioComm Planetary-12x2, RadioComm FarOrbit-12x2, RadioComm System-12x2,
LaserComm Planet-12x2, LaserComm FarOrbit-12x2, LaserComm System-12x2,
MaserComm Planet-12x2, MaserComm FarOrbit-12x2, MaserComm System-12x2
Sensors: EMM Packagex1,
EMS-A-12 FarOrbitx2,
EMS-P-12 SubStellarx2,
Jam EMS-A-12 Planetaryx2,
Neutrino (1 Mw) Sensor-12x2,
HiPen Densit-0.05x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Formidable
Off: ParticleAccel=080, MesonGun=K0x
Batt. 2 Batt. 1
Bear. 2 Bear. 1
Missiles=x93, BeamLaser=xx2
Batt. 60/50 Batt. 30
Bear. 42/35 Bear. 21
Def: DefDM=4,
NucDamper-1,
Sandcasters=xx4
Batt. 30
Bear. 21
Control: Computer=Model/6fibx3,
Panel=CP-DynamicLinkedx240, Special=LgHoloDisplayx240,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=4881 (48x100)
(Bridge=20, Engineering=219, Maintenance=568,
Gunners=3108, Flight Crew=3108, Ship's Troops=50,
Command=668, Stewards=163, Frozen Watch=0, Medical=40),
Additional Staterooms=5,
LowBerths=0 (FrozenWatch)+5 (Medical). EmergencyLowBerths=0,
SubCraft=50-ton craftx10, 100-ton craftx5,
Magazines=14 50-ton magazines (262 battery-rounds)
Other: Cargo=288 tons (3892 kliters),
Fuel=42991 tons (580389 kliters), Fuel Purification Plant (purifies total fuel tankage in 15 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=360 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-8x2,
Spinal MesonGun-Kx1,
100-ton Bay Missile-9x60,
Triple Turret Missile (300/3),
Triple Turret BLaser (90/3),
Triple Turret Sand (90/3)

CS-15 CRUISER STRIKE

CraftID: Cruiser Strike, Type CS, TL=F (High Stellar), MCr122,203
Hull: 90000/225000, Disp=100000, Config=3SL, Armor=80G,
Unloaded=3236079, Loaded=3291511
Power: 5369/10738, Fusion=1449682 Mw, Duration=30/90days
Loco: 1800/3600, Maneuver=1Gs, 3600/7200, Jump=3,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=1
Commo: RadioComm Planetary-15x1, RadioComm FarOrbit-15x1, RadioComm System-15x1,
LaserComm Planet-15x1, LaserComm FarOrbit-15x1, LaserComm System-15x1,
MaserComm Planet-15x1, MaserComm FarOrbit-15x1, MaserComm System-15x1
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2,
EMS-P-15 SubStellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: ParticleAccel=090, MesonGun=T4x

Batt.	10	Batt.	1/2
Bear.	7	Bear.	1/2

FusionGun=x90

Batt.	10
Bear.	7

Missiles=xA4, BeamLaser=xx6

Batt.	50/25	Batt.	25
Bear.	35/18	Bear.	14

Def: DefDM=8,
NucDamper-9,
Sandcasters=xx3

Batt.	20
Bear.	14

Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx609, Special=HeadsUpHoloDisplayx609,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=1151 (11x100)
(Bridge=2, Engineering=93, Maintenance=270,
Gunners=357, Flight Crew=357, Ship's Troops=0,
Command=157, Stewards=38, Frozen Watch=0, Medical=9),
Additional Staterooms=10,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=10-ton craftx100, 100-ton craftx5,
Magazines=9 50-ton magazines (303 battery-rounds)
Other: Cargo=821 tons (11,085 kliters),
Fuel=58,658 tons (791,885 kliters), Fuel Purification Plant (purifies total fuel tankage in 60 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=200 missiles, Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x10,
Spinal MesonGun-Tx1,
50-ton Bay MesonGun-4x2,
50-ton Bay FusionGun-9x10,
100-ton Bay Missile-Ax50,
Triple Turret Missile (150/3),
Triple Turret BLaser (150/3),
Triple Turret Sand (60/3)

CH-14 CRUISER HEAVY

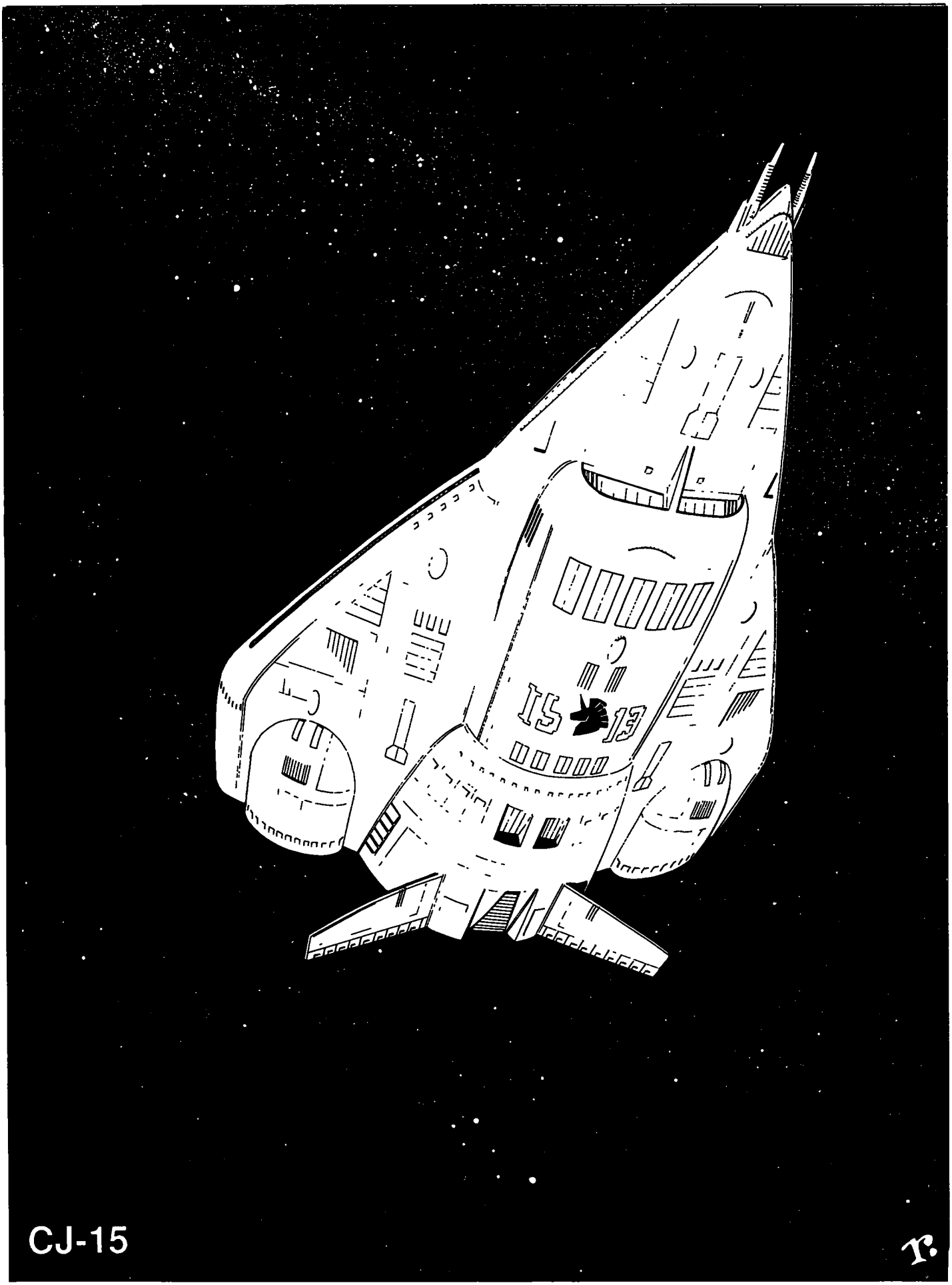
CraftID: Cruiser Heavy, Type CH, TL=E (High Stellar), MCr92,765
Hull: 90000/225000, Disp=100000, Config=4SL, Armor=80G,
Unloaded=3220757, Loaded=3250276
Power: 3221/6442, Fusion=869820 Mw, Duration=21/63days
Loco: 4500/9000, Maneuver=2Gs, 2700/5400, Jump=2,
NOE=180, Cruise=1590kph, Top=2120kph,
Agility=0
Commo: RadioComm Planetary-14x2, RadioComm FarOrbit-14x2, RadioComm System-14x2,
LaserComm Planet-14x2, LaserComm FarOrbit-14x2, LaserComm System-14x2,
MaserComm Planet-14x2, MaserComm FarOrbit-14x2, MaserComm System-14x2
Sensors: EMM Packagex1,
EMS-A-14 FarOrbitx2,
EMS-P-14 SubStellarx2,
Jam EMS-A-14 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-0.25x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: ParticleAccel=S50
Batt. 1/10
Bear. 1/7
FusionGun=x80
Batt. 10
Bear. 7
Missiles=xA4, BeamLaser=xx7
Batt. 60/20 Batt. 15
Bear. 42/14 Bear. 10
Def: DefDM=6,
NucDamper-6,
Repulsors=x3x, Sandcasters=xx4
Batt. 1 Batt. 50
Bear. 1 Bear. 35
Control: Computer=Model/8fibx3,
Panel=CP-HoloLinkedx744, Special=HeadsUpHoloDisplayx744,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=1522 (15x100)
(Bridge=2, Engineering=82, Maintenance=155,
Gunners=452, Flight Crew=452, Ship's Troops=500,
Command=208, Stewards=51, Frozen Watch=0, Medical=12),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx5, 100-ton craftx10,
Magazines=3 50-ton magazines (112 battery-rounds)
Other: Cargo=2627 tons (35,472 kliters),
Fuel=31,236 tons (421,694 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=180 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccel-Sx1,
50-ton Bay ParticleAccelerator-5x10,
50-ton Bay FusionGun-8x10,
100-ton Bay Missile-Ax60,
Triple Turret Missile (120/3),
Triple Turret BLaser (225/3),
Triple Turret Sand (150/3),
50-ton Repulsor Bayx1

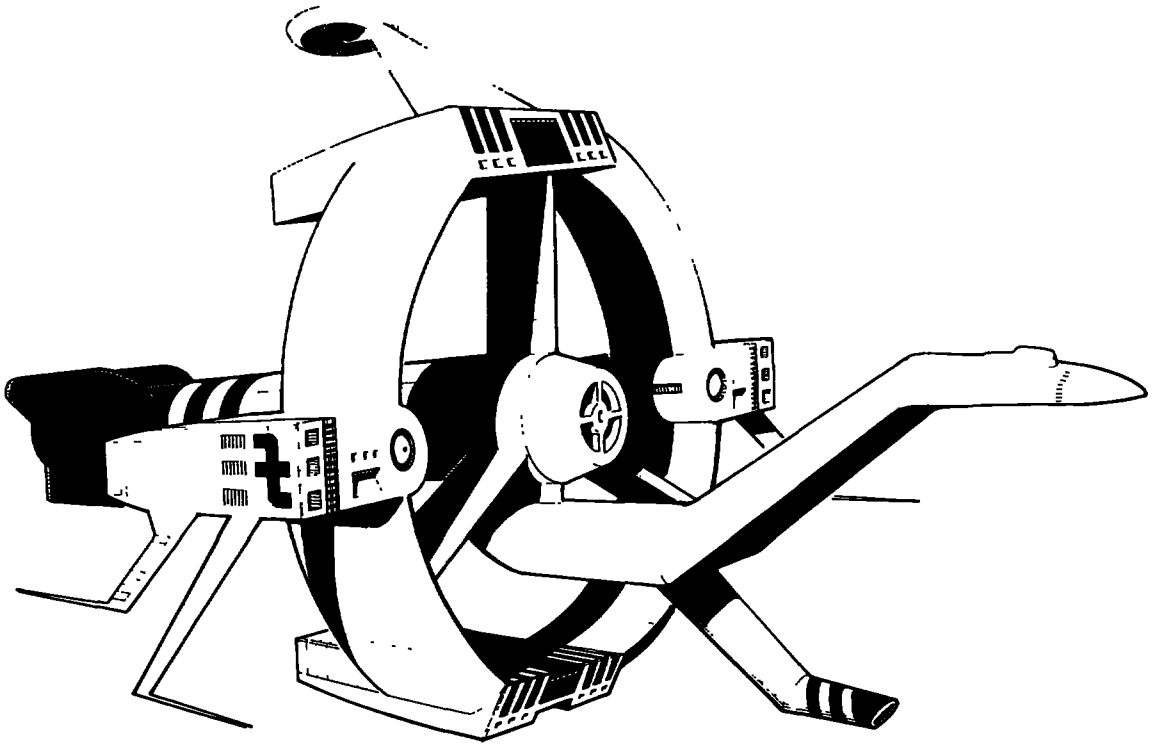
CH-15 CRUISER HEAVY

CraftID: Cruiser Heavy, Type CH, TL=F (High Stellar), MCr397,217
Hull: 90000/225000, Disp=100000, Config=4SL, Armor=100G,
Unloaded=15880338, Loaded=15936248
Power: 3263/6526, Fusion=88118 Mw, Duration=50/150days
Loco: 4500/9000, Maneuver=2Gs, 3600/7200, Jump=3,
NOE=190, Cruise=1590kph, Top=2120kph,
Agility=0
Commo: RadioComm Planetary-15x2, RadioComm FarOrbit-15x2, RadioComm System-15x2,
LaserComm Planet-15x2, LaserComm FarOrbit-15x2, LaserComm System-15x2,
MaserComm Planet-15x2, MaserComm FarOrbit-15x2, MaserComm System-15x2
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2,
EMS-P-15 SubStellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: ParticleAccel=T50
Batt. 1/10
Bear. 1/7
FusionGun=x90
Batt. 10
Bear. 7
Missiles=xA4, BeamLaser=xx7
Batt. 60/20 Batt. 16
Bear. 42/14 Bear. 11
Def: DefDM=7
NucDamper-9
Repulsors=x5x, Sandcasters=xx4
Batt. 1 Batt. 50
Bear. 1 Bear. 35
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx2537, Special=HeadsUpHoloDisplayx2537,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew= 2527 (25x100)
(Bridge=5, Engineering=80, Maintenance=1060,
Gunners=362, Flight Crew=362, Ship's Troops=500,
Command=346, Stewards=84, Frozen Watch=0, Medical=20),
Additional Staterooms=30,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=200,
SubCraft=50-ton craftx10, 100-ton craftx10,
Magazines=3 50-ton magazines (112 battery-rounds)
Other: Cargo=995 tons (13445 kliters),
Fuel=59163 tons (798709 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=180 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccel-Tx1,
50-ton Bay ParticleAccelerator-5x10,
50-ton Bay FusionGun-9x10,
100-ton Bay Missile-Ax60,
Triple Turret Missile (120/3),
Triple Turret BLaser (240/3),
Triple Turret Sand (150/3),
50-ton Bay Repulsorx1

CJ-15 CRUISER IMPERIAL

CraftID: Cruiser Imperial, Type CJ, TL=F (High Stellar), MCr119,900
Hull: 90000/225000, Disp=100000, Config=2SL, Armor=80G,
Unloaded=3371134, Loaded=3426607
Power: 3291/6582, Fusion=888816 Mw, Duration=30/90days
Loco: 4500/9000, Maneuver=2Gs, 6300/12600, Jump=6,
NOE=190, Cruise=1590kph, Top=2120kph,
Agility=0
Commo: RadioComm Planetary-15x2, RadioComm FarOrbit-15x2, RadioComm System-15x2,
LaserComm Planet-15x2, LaserComm FarOrbit-15x2, LaserComm System-15x2,
MaserComm Planet-15x2, MaserComm FarOrbit-15x2, MaserComm System-15x2
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2,
EMS-P-15 Interstellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: ParticleAccel=T90
Batt. 1/10
Bear. 1/7
Missiles=xA3, BeamLaser=xx6
Batt. 60/50 Batt. 10
Bear. 42/35 Bear. 7
Def: DefDM=7,
OptiNucDamper-1,
Repulsors=x5x, Sandcasters=xx4
Batt. 1 Batt. 50
Bear. 1 Bear. 35
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx761, Special=HeadsUpHoloDisplayx761,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=1017 (10x100)
(Bridge=2, Engineering=108, Maintenance=231,
Gunners=360, Flight Crew=360, Ship's Troops=100,
Command=139, Stewards=34, Frozen Watch=0, Medical=8),
Additional Staterooms=10,
LowBerths=0 (FrozenWatch)+10 (Medical), EmergencyLowBerths=250,
SubCraft=50-ton craftx5, 100-ton craftx5,
Magazines=10 50-ton magazines (321 battery-rounds)
Other: Cargo=588 tons (7948 kliters),
Fuel=58,701 tons (792,473 kliters), Fuel Purification Plant (purifies total fuel tankage in six hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=210 missiles,
Electronic Circuit Protection
Comments: Spinal ParticleAccel-Tx1,
100-ton Bay ParticleAccelerator-9x10,
100-ton Bay Missile-Ax60,
Triple Turret Missile (150/3),
Triple Turret BLaser (150/3),
Triple Turret Sand (150/3),
50-ton Bay Repulsorx1


CJ-15



The massive fleet carrier VF-11 was produced to provide support for the vast numbers of fighters that fleet tactics require. The size and design of the VF-11 call for an independent refueling tanker, the TV-11. The technological development of the VF-11 into the VF-12 also called for a similar tanker, but rather than design a new vessel, the TV-11 was used without change.

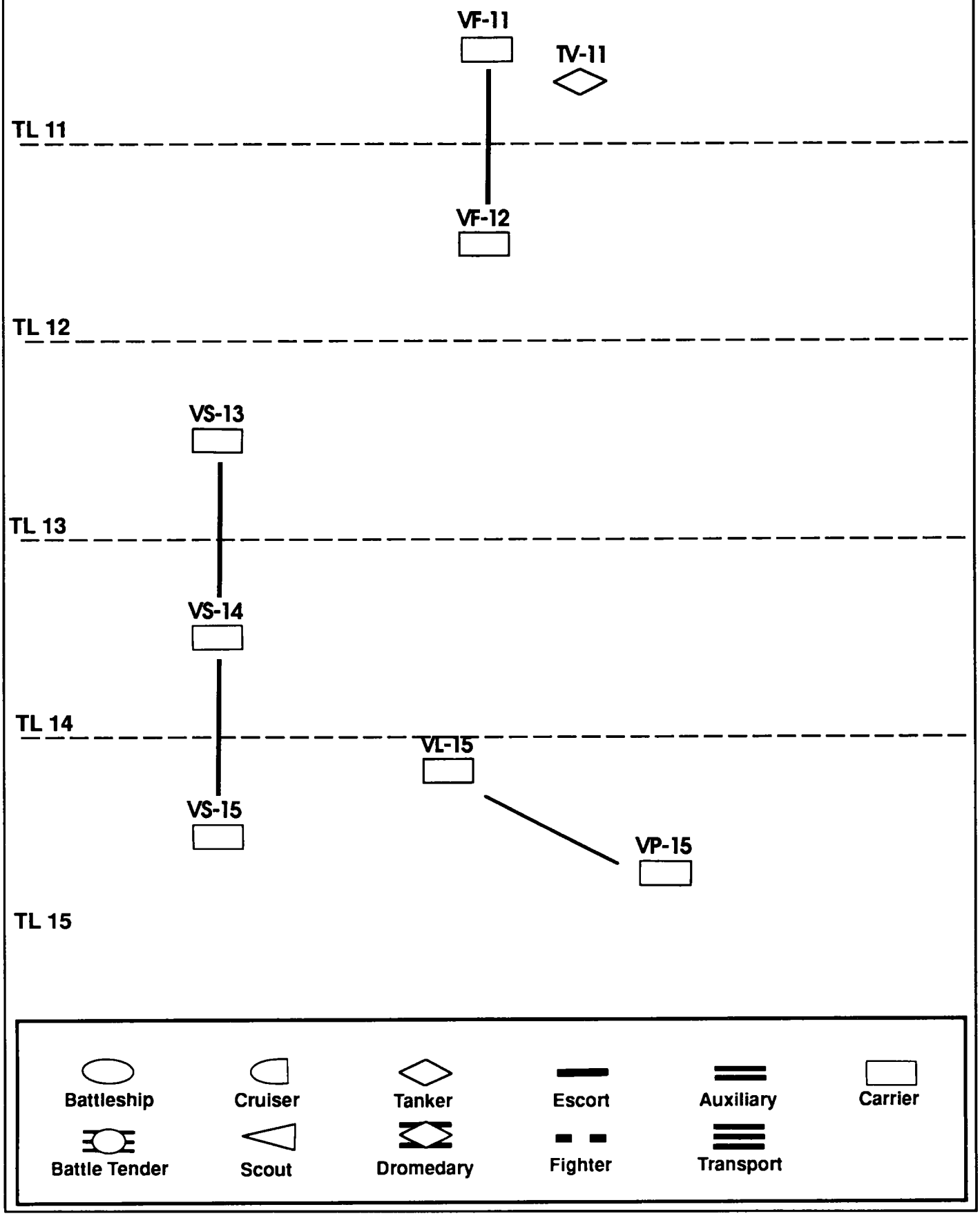
The VS-13/-15 series is a new line of carriers designed independent of the VF-11/-12 series.

The higher-tech trend is to smaller carriers. The VL-15 light carrier and the even smaller VP-15 pocket carrier are examples of this trend.

Carriers

Carriers are designed to carry large numbers of small combat craft, which in turn attack the enemy's combatants or world surfaces.

Imperial Carriers



VF-12 CARRIER FLEET

CraftID: Carrier Fleet, Type VF, TL=B (Average Stellar), MCr17,476
Hull: 90000/225000, Disp=100000, Config=7, Armor=46E,
Unloaded=622247, Loaded=641797
Power: 789/1578, Fusion=213292 Mw, Duration=30/90days
Loco: 1800/3600, Maneuver=1Gs, 2700/5400, Jump=2,
NOE=150, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-11x2, RadioComm FarOrbit-11x2, RadioComm System-11x2,
LaserComm Planet-11x2, LaserComm FarOrbit-11x2, LaserComm System-11x2,
MaserComm Planet-11x2, MaserComm FarOrbit-11x2, MaserComm System-11x2
Sensors: EMM Packagex1,
EMS-A-11 FarOrbitx2,
EMS-P-11 SubStellarx2,
Jam EMS-A-11 Planetaryx2,
Neutrino (1000 Mw) Sensor-11x2,
HiPen Densit-0.001x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Formidable, PasObjPin=Formidable,
PasEngScan=Routine, PasEngPin=Formidable
Off: Missiles=x72
Batt. 10/50
Bear. 7/35
Def: DefDM=3,
Sandcasters=xx4
Batt. 50
Bear. 35
Control: Computer=Model/5fibx3,
Panel=CP-DynamicLinkedx1300, Special=HeadsUpDisplayx1300,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=1293 (12x100)
(Bridge=2, Engineering=101, Maintenance=-1,
Gunners=47, Flight Crew=47, Ship's Troops=100,
Command=175, Stewards=42, Frozen Watch=12, Medical=10),
Additional Staterooms=200,
LowBerths=12 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx400, 10000-ton craftx1,
Magazines=20 50-ton magazines (900 battery-rounds)
Other: Cargo=28595 tons (386045 kliters),
Fuel=20687 tons (279285 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large,
EmLevel=Moderate
Battery Round=150 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (150/3),
Triple Turret Sand (150/3),
50-ton Missile Bay-7x10

TV-12 TANKER VEHICLE

CraftID: Tanker Vehicle, Type TV, TL=B (Average Stellar), MCr1178
Hull: 9000/22500, Disp=10000, Config=3SL, Armor=40E,
Unloaded=50692, Loaded=50871
Power: 78/156, Fusion=21297 Mw, Duration=10/30days
Loco: 180/360, Maneuver=1Gs, 0/0, Jump=0,
NOE=150, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm FarOrbit-11x2,
LaserComm FarOrbit-11x2
Sensors: EMS-P-11 Interplanetaryx2,
Neutrino (1000 Mw) Sensor-11x2,
HiPen Densit-0.001x2,
ActObjScan=Impossible (No Active EMS), ActObjPin=Impossible (No Active EMS),
PasObjScan=Formidable, PasObjPin=Formidable,
PasEngScan=Routine, PasEngPin=Formidable
Def: DefDM=4
Control: Computer=Model/5fibx3,
Panel=CP-DynamicLinkedx7, Special=HeadsUpDisplayx7,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=13 (1x10)
(Bridge=2, Engineering=3, Maintenance=4,
Gunners=0, Flight Crew=0, Ship's Troops=0,
Command=1, Stewards=0, Frozen Watch=0, Medical=1),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=20-ton craftx1,
Magazines=None
Other: Cargo=8782 tons (118,569 kliters),
Fuel=189 tons (2555 kliters), Fuel Purification Plant (purifies total fuel tankage in 60 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Electronic Circuit Protection

VF-12 CARRIER FLEET

CraftID: Carrier Fleet, Type VF, TL=C (Average Stellar), MCr21,767
Hull: 90000/225000, Disp=100000, Config=7, Armor=46F,
Unloaded=712254, Loaded=737097
Power: 1567/3134, Fusion=423307 Mw, Duration=30/90days
Loco: 4500/9000, Maneuver=2Gs, 2700/5400, Jump=2,
NOE=160, Cruise=1590kph, Top=2120kph,
Agility=0
Commo: RadioComm Planetary-12x2, RadioComm FarOrbit-12x2, RadioComm System-12x2,
LaserComm Planet-12x2, LaserComm FarOrbit-12x2, LaserComm System-12x2,
MaserComm Planet-12x2, MaserComm FarOrbit-12x2, MaserComm System-12x2
Sensors: EMM Packagex1,
EMS-A-12 FarOrbitx2,
EMS-P-12 SubStellarx2,
Jam EMS-A-12 Planetaryx2,
Neutrino (1 Mw) Sensor-12x2,
HiPen Densit-0.05x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Formidable
Off: Missiles=xx2
Batt. 50
Bear. 35
Def: DefDM=4,
Sandcasters=xx4
Batt. 50
Bear. 35
Control: Computer=Model/6fibx3,
Panel=CP-DynamicLinkedx380, Special=LgHoloDisplayx380,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=1457 (14x100)
(Bridge=26, Engineering=115, Maintenance=12,
Gunners=40, Flight Crew=40, Ship's Troops=0,
Command=199, Stewards=48, Frozen Watch=0, Medical=12),
Additional Staterooms=200
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=40-ton craftx500, 10000-ton craftx1,
Magazines=20 50-ton magazines (900 battery-rounds)
Other: Cargo=12,759 tons (172,254 kliters),
Fuel=26,288 tons (354,890 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large,
EmLevel=Moderate,
Battery Round=150 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (150/3),
Triple Turret Sand (150/3)

VF-12

VS-13 CARRIER STRIKE

CraftID: Carrier Strike, Type VS, TL=D (Average Stellar), MCr27,564
Hull: 90000/225000, Disp=100000, Config=3SL, Armor=46F,
Unloaded=664408, Loaded=695495
Power: 1096/2192, Fusion=296102 Mw, Duration=30/90days
Loco: 1800/3600, Maneuver=1Gs, 4500/9000, Jump=4,
NOE=170, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-13x3, RadioComm FarOrbit-13x3, RadioComm System-13x3,
LaserComm Planet-13x3, LaserComm FarOrbit-13x3, LaserComm System-13x3,
MaserComm Planet-13x3, MaserComm FarOrbit-13x3, MaserComm System-13x3
Sensors: EMM Package×1,
EMS-A-13 FarOrbit×2, EMS-A-13 Planetary×2,
EMS-P-13 Interplanetary×2, EMS-P-13 SubStellar×2, EMS-P-13 Interstellar×2,
Jam EMS-A-13 FarOrbit×2, Jam EMS-A-13 Planetary×2,
Neutrino (0.1 Mw) Sensor-13×2,
HiPen Densit-0.1×2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Difficult
Off: Missiles=xx4, BeamLaser=xx4
Batt. 50 Batt. 100
Bear. 35 Bear. 70
Def: DefDM=5,
NucDamper-3,
Sandcasters=xx4
Batt. 100
Bear. 70
Control: Computer=Model/7fib×3,
Panel=CP-HoloLinked×456, Special=HeadsUpHoloDisplay×456,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=1828 (18×100)
(Bridge=2, Engineering=99, Maintenance=22,
Gunners=129, Flight Crew=129, Ship's Troops=0,
Command=250, Stewards=61, Frozen Watch=0, Medical=15),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=30-ton craft×600, 100-ton craft×10,
Magazines=40 50-ton magazines (900 battery-rounds)
Other: Cargo=18,175 tons (245,370 kliters),
Fuel=32,896 tons (444,096 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round= 300 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (300/3),
Triple Turret BLaser (300/3),
Triple Turret Sand (300/3)

VS-14 CARRIER STRIKE

CraftID: Carrier Strike, Type VS, TL=E (High Stellar), MCr27,457
Hull: 90000/225000, Disp=100000, Config=3SL, Armor=46G,
Unloaded=537502, Loaded=568399
Power: 1068/2136, Fusion=288598 Mw, Duration=30/90days
Loco: 1800/3600, Maneuver=1Gs, 4500/9000, Jump=4,
NOE=180, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-14x3, RadioComm FarOrbit-14x3, RadioComm System-14x3,
LaserComm Planet-14x3, LaserComm FarOrbit-14x3, LaserComm System-14x3,
MaserComm Planet-14x3, MaserComm FarOrbit-14x3, MaserComm System-14x3
Sensors: EMM Packagex1,
EMS-A-14 FarOrbitx2, EMS-A-14 Planetaryx2,
EMS-P-14 Interplanetaryx2, EMS-P-14 SubStellarx2, EMS-P-14 Interstellarx2,
Jam EMS-A-14 FarOrbitx2, Jam EMS-A-14 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-0.25x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: Missiles=xx4, BeamLaser=xx4
Batt. 50 Batt. 100
Bear. 35 Bear. 70
Def: DefDM=6,
Sandcasters=xx4
Batt. 100
Bear. 70
Control: Computer=Model/8fibx3,
Panel=CP-HoloLinkedx380, Special=HeadsUpHoloDisplayx380,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=1739 (17x100)
(Bridge=2, Engineering=73, Maintenance=16,
Gunners=88, Flight Crew=88, Ship's Troops=0,
Command=238, Stewards=58, Frozen Watch=0, Medical=14),
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=30-ton craftx600, 100-ton craftx10,
Magazines=40 50-ton magazines (900 battery-rounds)
Other: Cargo=18727 tons (252825 kliters),
Fuel=32695 tons (441395 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=300 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (300/3),
Triple Turret BLaser (300/3),
Triple Turret Sand (300/3)

VS-15 CARRIER STRIKE

CraftID: Carrier Strike, Type VS, TL=F (High Stellar), MCr35,898
Hull: 90000/225000, Disp=100000, Config=3SL, Armor=49G,
Unloaded=638897, Loaded=679820,
Power: 1153/2306, Fusion=311426 Mw, Duration=30/90days
Loco: 1800/3600, Maneuver=1Gs, 6300/12600, Jump=6,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-15x3, RadioComm FarOrbit-15x3, RadioComm System-15x3,
LaserComm Planet-15x3, LaserComm FarOrbit-15x3, LaserComm System-15x3,
MaserComm Planet-15x3, MaserComm FarOrbit-15x3, MaserComm System-15x3
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2, EMS-A-15 Planetaryx2,
EMS-P-15 Interplanetaryx2, EMS-P-15 SubStellarx2, EMS-P-15 Interstellarx2,
Jam EMS-A-15 FarOrbitx2, Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: Missiles=xx4, BeamLaser=xx4
Batt. 50 Batt. 100
Bear. 35 Bear. 70
Def: DefDM=7,
NucDamper-9,
Sandcasters=xx4.
Batt. 100
Bear. 70
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx481, Special=HeadsUpHoloDisplayx481,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=1852 (18x100)
(Bridge=2, Engineering=81, Maintenance=18,
Gunners=171, Flight Crew=171, Ship's Troops=0,
Command=253, Stewards=62, Frozen Watch=0, Medical=15),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=30-ton craftx600, 100-ton craftx10,
Magazines=10 50-ton magazines (187 battery-rounds)
Other: Cargo=4259 tons (57,509 kliters),
Fuel=43,304 tons (584,613 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=360 missiles,
Electronic Circuit Protection
Comments: 50-ton Bay Missile-9x60,
Triple Turret Missile (300/3),
Triple Turret BLaser (300/3),
Triple Turret Sand (300/3)

VL-15 CARRIER LIGHT

CraftID: Carrier Light, Type VL, TL=F (High Stellar), MCr3152
Hull: 9000/22500, Disp=10000, Config=4SL, Armor=40G,
Unloaded=54878, Loaded=58360
Power: 164/328, Fusion=44394.25071673 Mw, Duration=30/90days
Loco: 180/360, Maneuver=1Gs, 450/900, Jump=4,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-15x3, RadioComm FarOrbit-15x3, RadioComm System-15x3,
LaserComm Planet-15x3, LaserComm FarOrbit-15x3, LaserComm System-15x3,
MaserComm Planet-15x3, MaserComm FarOrbit-15x3, MaserComm System-15x3
Sensors: EMS-A-15 FarOrbitx2,
EMS-P-15 SubStellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine,
Off: Missiles=xx3, BeamLaser=xx4

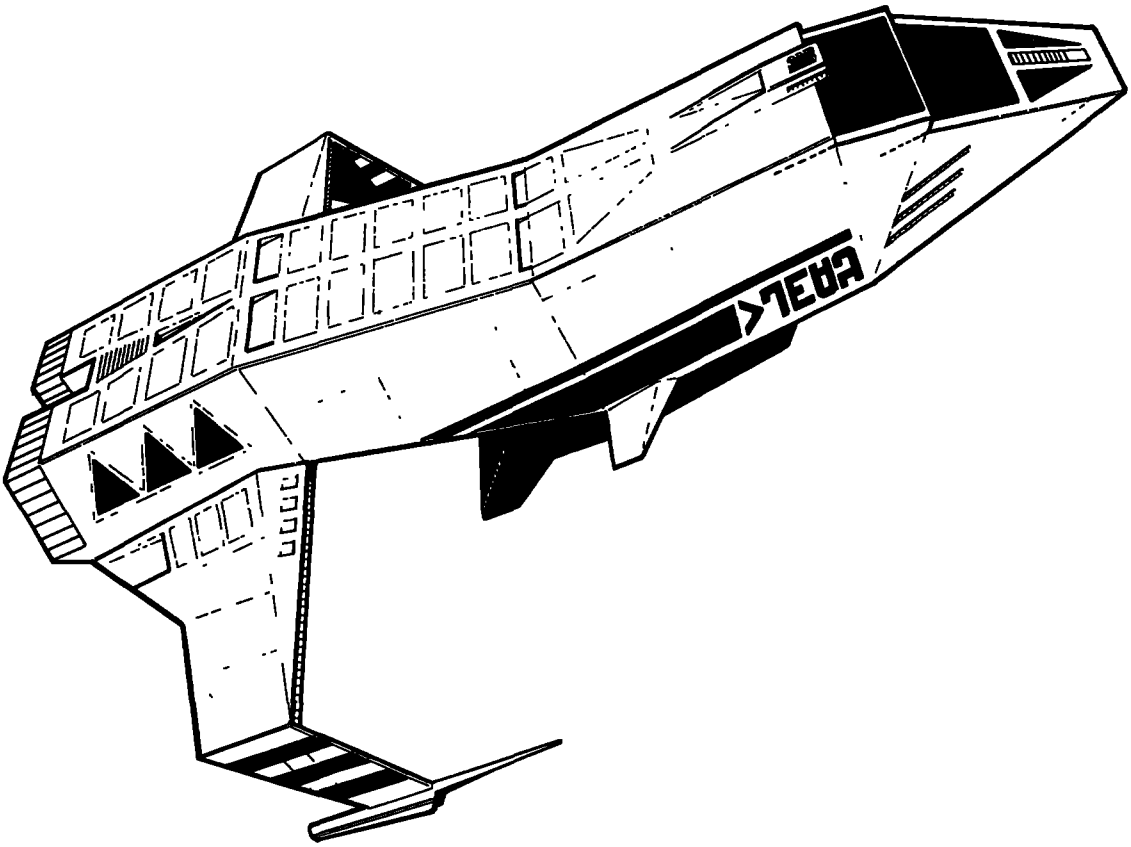
Batt.	30	Batt.	30
Bear.	30	Bear.	30

Def: DefDM=8,
OptiNucDamper-1
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx22, Special=HeadsUpHoloDisplayx22,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=302 (30x10)
(Bridge=2, Engineering=7, Maintenance=1,
Gunners=24, Flight Crew=24, Ship's Troops=0,
Command=41, Stewards=10, Frozen Watch=0, Medical=2),
Additional Staterooms=30,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=30,
SubCraft=20-ton craftx100, 100-ton craftx3,
Magazines=4 50-ton magazines (300 battery-rounds)
Other: Cargo=622 tons (8397 kliters),
Fuel=3683 tons (49,731 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=90 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (90/3),
Triple Turret BLaser (90/3)

VP-15 CARRIER PROVINCIAL

CraftID: Carrier Provincial, Type VP, TL=F (High Stellar), MCr8252
Hull: 27000/67500, Disp=30000, Config=4SL, Armor=40G,
Unloaded=163588, Loaded=174194
Power: 517/1034, Fusion=139615 Mw, Duration=30/90days
Loco: 540/1080, Maneuver=1Gs, 1350/2700, Jump=4,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-15x3, RadioComm FarOrbit-15x3, RadioComm System-15x3,
LaserComm Planet-15x3, LaserComm FarOrbit-15x3, LaserComm System-15x3,
MaserComm Planet-15x3, MaserComm FarOrbit-15x3, MaserComm System-15x3
Sensors: EMS-A-15 FarOrbitx3,
EMS-P-15 SubStellarx3,
Jam EMS-A-15 Planetaryx3,
Neutrino (0.01 Mw) Sensor-14x3,
HiPen Densit-1x3,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: BeamLaser=xx6
Batt. 30
Bear. 27
Def: DefDM=8,
OptiNucDamper-1,
Sandcasters=xx4
Batt. 60
Bear. 54
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx101, Special=HeadsUpHoloDisplayx101,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=968 (32x30)
(Bridge=2, Engineering=21, Maintenance=1,
Gunners=47, Flight Crew=47, Ship's Troops=0,
Command=132, Stewards=32, Frozen Watch=0, Medical=8),
Additional Staterooms=30,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=100,
SubCraft=20-ton craftx350, 100-ton craftx5
Other: Cargo=999 tons (13491 kliters),
Fuel=11223 tons (151511 kliters), Fuel Purification Plant (purifies total fuel tankage in 6 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Strong,
Battery Round=0 missiles,
Electronic Circuit Protection
Comments: Triple Turret BLaser (300/3),
Triple Turret Sand (180/3)

VP-15



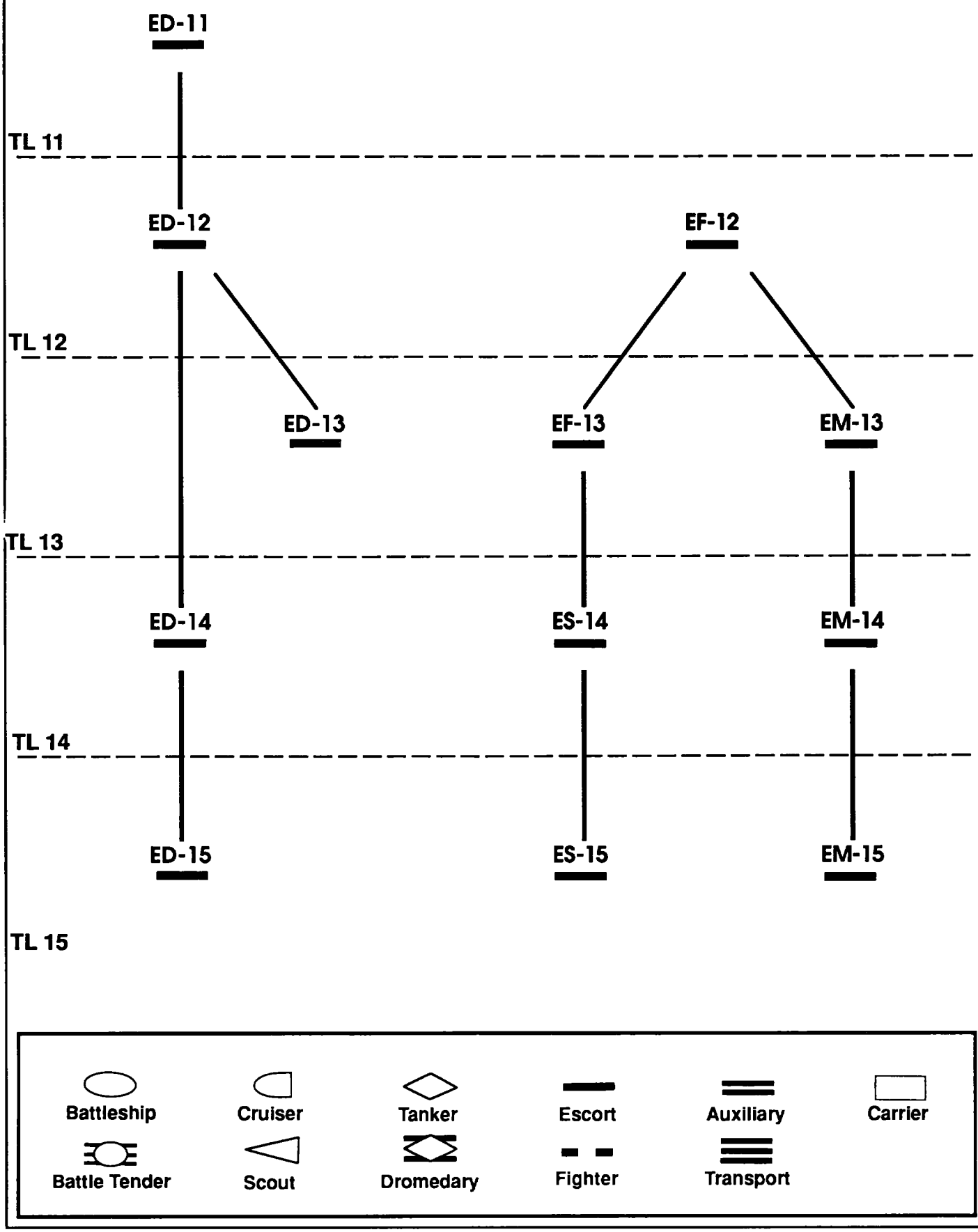
The mainstay of the escort fleet is the ED series. These escort destroyers are typical of Imperial needs. The ED-13, derived from the ED-12, was relatively unsuccessful, and the naval architects returned to the ED-12 for inspiration for the later ED-14.

The EF-12 served as the design basis for two divergent ship types: the escort fleet (and later escort strike designs) and the escort missile EM-13/-15.

Escorts

Escorts are vessels intended to protect and assist larger vessels. They are capable of independent action, but are usually assigned to support battleships and cruisers.

Imperial Escorts



ED-11 ESCORT DESTROYER

CraftID: Escort Destroyer, Type ED, TL=B (Average Stellar), MCr7651
Hull: 9000/22500, Disp=10000, Config=1SL, Armor=60E,
Unloaded=262304, Loaded=267618
Power: 687/1374, Fusion=185536 Mw, Duration=25/75days
Loco: 990/1980, Maneuver=4Gs, 270/540, Jump=2,
NOE=150, Cruise=2550kph, Top=3400kph,
Agility=1
Commo: RadioComm FarOrbit-11x2,
LaserComm Planet-11x2,
MaserComm FarOrbit-11x2
Sensors: EMM Packagex1,
EMS-A-11 FarOrbitx2,
EMS-P-11 SubStellarx2,
Jam EMS-A-11 Planetaryx2,
Neutrino (1000 Mw) Sensor-11x2,
HiPen Densit-0.001x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Formidable, PasObjPin=Formidable,
PasEngScan=Routine, PasEngPin=Formidable
Off: ParticleAccel=070
Batt. 2
Bear. 2
Missiles=xx2, BeamLaser=xx6
Batt. 45 Batt. 6
Bear. 45 Bear. 6
Def: DefDM=5,
Sandcasters=xx5
Batt. 5
Bear. 5
Control: Computer=Model/5fibx3,
Panel=CP-DynamicLinkedx473, Special=HeadsUpDisplayx473,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=172 (17x10)
(Bridge=2, Engineering=30, Maintenance=24,
Gunners=73, Flight Crew=73, Ship's Troops=10,
Command=23, Stewards=5, Frozen Watch=0, Medical=1),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx2,
Magazines=1 50-ton magazines (75 battery-rounds)
Other: Cargo=204 tons (2759 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=5623 tons (75,911 kliters), Fuel Purification Plant (purifies self fuel tankage in six hours),
ObjSize Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=90 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-7x2,
Triple Turret Missile (90/3),
Triple Turret BLaser (90/3),
Triple Turret Sand (30/3)

ED-12 ESCORT DESTROYER

CraftID: Escort Destroyer, Type ED, TL=C (Average Stellar), MCr7599
Hull: 9000/22500, Disp=10000, Config=1SL, Armor=60F,
Unloaded=235384, Loaded=240763
Power: 668/1336, Fusion=180540 Mw, Duration=23/69days
Loco: 990/1980, Maneuver=4Gs, 360/720, Jump=3,
NOE=160, Cruise=2550kph, Top=3400kph,
Agility=1
Commo: RadioComm FarOrbit-12x2,
LaserComm Planet-12x2,
MaserComm FarOrbit-12x2
Sensors: EMM Packagex1,
EMS-A-12 FarOrbitx2,
EMS-P-12 SubStellarx2,
Jam EMS-A-12 Planetaryx2,
Neutrino (1 Mw) Sensor-12x2,
HiPen Densit-0.05x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Formidable
Off: ParticleAccel=080
Batt. 2
Bear. 2
Missiles=xx2, BeamLaser=xx6
Batt. 45 Batt. 6
Bear. 45 Bear. 6
Def: DefDM=6,
Sandcasters=xx5
Batt. 5
Bear. 5
Control: Computer=Model/6fibx3,
Panel=CP-DynamicLinkedx14, Special=LgHoloDisplayx14,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=148 (14x10)
(Bridge=2, Engineering=27, Maintenance=18,
Gunners=62, Flight Crew=62, Ship's Troops=10,
Command=20, Stewards=4, Frozen Watch=0, Medical=1),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx2,
Magazines=1 50-ton magazines (75 battery-rounds)
Other: Cargo=124 tons (1682 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=5691 tons (76,829 kliters), Fuel Purification Plant (purifies self fuel tankage in six hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=90 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-8x2,
Triple Turret Missile (90/3),
Triple Turret BLaser (90/3),
Triple Turret Sand (30/3)

ED-13 ESCORT DESTROYER

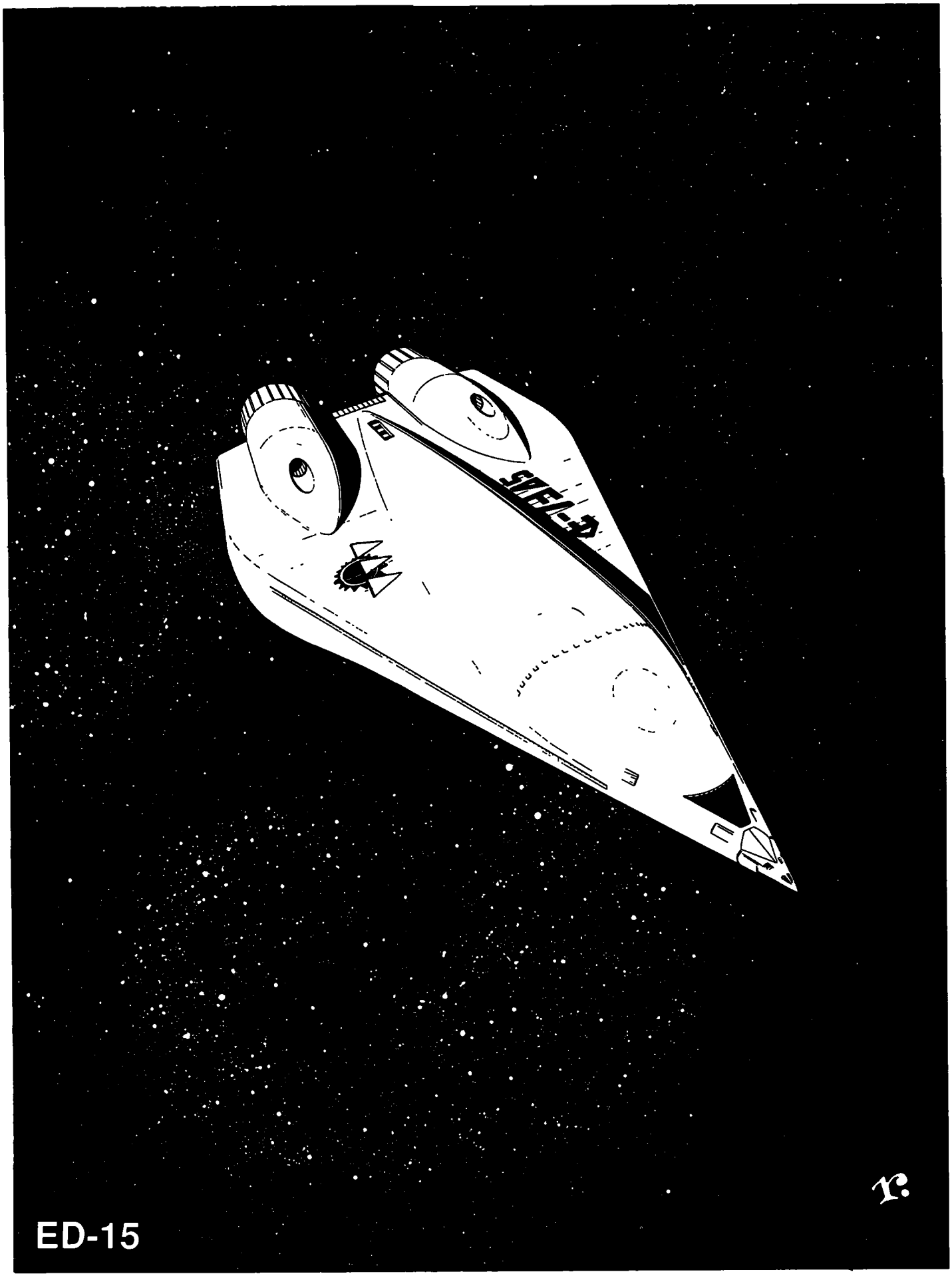
CraftID: Escort Destroyer, Type ED, TL=D (Average Stellar), MCr7742
Hull: 9000/22500, Disp=10000, Config=1SL, Armor=60F,
Unloaded=235693, Loaded=241254
Power: 613/1226, Fusion=165598 Mw, Duration=23/69days
Loco: 990/1980, Maneuver=4Gs, 450/900, Jump=4,
NOE=170, Cruise=2550kph, Top=3400kph,
Agility=1
Commo: RadioComm FarOrbit-13x2,
LaserComm Planet-13x2,
MaserComm FarOrbit-13x2
Sensors: EMM Packagex1,
EMS-A-13 FarOrbitx2,
EMS-P-13 Interplanetaryx2,
Jam EMS-A-13 FarOrbitx2,
Neutrino (0.1 Mw) Sensor-13x2,
HiPen Densit-0.1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Difficult
Off: ParticleAccel=080
Batt. 1
Bear. 1
Missiles=xx4, BeamLaser=xx7
Batt. 20 Batt. 6
Bear. 20 Bear. 6
Def: DefDM=7
Control: Computer=Model/7fibx3,
Panel=CP-HoloLinkedx76, Special=HeadsUpHoloDisplayx76,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=107 (10x10)
(Bridge=2, Engineering=21, Maintenance=15,
Gunners=47, Flight Crew=47, Ship's Troops=0,
Command=14, Stewards=3, Frozen Watch=0, Medical=1),
Additional Staterooms=3,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=40-ton craftx2,
Magazines=1 50-ton magazines (55 battery-rounds)
Other: Cargo=3 tons (42 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=5885 tons (79455 kliters), Fuel Purification Plant (purifies self fuel tankage in six hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=121 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-8x1,
100-ton Bay Missile-9x1,
Triple Turret Missile (120/3),
Triple Turret BLaser (90/3)

ED-14 ESCORT DESTROYER

CraftID: Escort Destroyer, Type ED, TL=E (High Stellar), MCr7417
Hull: 9000/22500, Disp=10000, Config=2SL, Armor=60G,
Unloaded=163565, Loaded=169012
Power: 566/1132, Fusion=152999 Mw, Duration=24/72days
Loco: 990/1980, Maneuver=4Gs, 450/900, Jump=4,
NOE=180, Cruise=2550kph, Top=3400kph,
Agility=1
Commo: RadioComm FarOrbit-14x2,
LaserComm Planet-14x2,
MaserComm FarOrbit-14x2
Sensors: EMM Packagex1,
EMS-A-14 FarOrbitx2,
EMS-P-14 SubStellarx2,
Jam EMS-A-14 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-0.25x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: ParticleAccel=090
Batt. 1
Bear. 1
Missiles=xx4, BeamLaser=xx7
Batt. 20 Batt. 6
Bear. 20 Bear. 6
Def: DefDM=8,
OptiNucDamper-1,
Sandcasters=xx5
Batt. 5
Bear. 5
Control: Computer=Model/8fibx3,
Panel=CP-HoloLinkedx61, Special=HeadsUpHoloDisplayx61,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=124 (12x10)
(Bridge=2, Engineering=15, Maintenance=5,
Gunners=38, Flight Crew=38, Ship's Troops=30,
Command=17, Stewards=4, Frozen Watch=0, Medical=1),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx6,
Magazines=1 50-ton magazines (56 battery-rounds)
Other: Cargo=35 tons (474 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=5763 tons (77,813 kliters), Fuel Purification Plant (purifies self fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=120 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x1,
Triple Turret Missile (120/3),
Triple Turret BLaser (90/3),
Triple Turret Sand (30/3)

ED-15 ESCORT DESTROYER

CraftID: Escort Destroyer, Type ED, TL=F (High Stellar), MCr7757
Hull: 9000/22500, Disp=10000, Config=2SL, Armor=60G,
Unloaded=166674, Loaded=172229
Power: 670/1340, Fusion=180975 Mw, Duration=21/63days
Loco: 990/1980, Maneuver=4Gs, 450/900, Jump=4,
NOE=190, Cruise=2550kph, Top=3400kph,
Agility=1
Commo: RadioComm FarOrbit-15x2,
LaserComm Planet-15x2,
MaserComm FarOrbit-15x2,
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2,
EMS-P-15 SubStellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: ParticleAccel=090
Batt. 2
Bear. 2
Missiles=x90, BeamLaser=xx4
Batt. 4 Batt. 20
Bear. 4 Bear. 20
Def: DefDM=9,
MesonScreen-1,
OptiNucDamper-1,
Sandcasters=xx5
Batt. 5
Bear. 5
Control: Computer=Model/9x3,
Panel=CP-HoloLinkedx48, Special=HeadsUpHoloDisplayx48,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=76 (7x10)
(Bridge=2, Engineering=14, Maintenance=8,
Gunners=37, Flight Crew=37, Ship's Troops=0,
Command=10, Stewards=2, Frozen Watch=0, Medical=1),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=40-ton craftx1,
Magazines=1 50-ton magazines (1687 battery-rounds)
Other: Cargo=12 tons (174 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=5878 tons (79,355 kliters), Fuel Purification Plant (purifies self fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=4 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay ParticleAccelerator-9x2,
50-ton Bay Missile-9x4,
Triple Turret BLaser (60/3),
Triple Turret Sand (30/3)


ED-15

EF-12 ESCORT FLEET

CraftID: Escort Fleet, Type EF, TL=C (Average Stellar), MCr3059
Hull: 7200/18000, Disp=8000, Config=4SL, Armor=40F,
Unloaded=75628, Loaded=79797
Power: 334/668, Fusion=90327 Mw, Duration=40/120days
Loco: 576/1152, Maneuver=3Gs, 216/432, Jump=2,
NOE=160, Cruise=2137.5kph, Top=2850kph,
Agility=0
Commo: RadioComm Planetary-12x1, RadioComm FarOrbit-12x1, RadioComm System-12x1,
LaserComm Planet-12x1, LaserComm FarOrbit-12x1, LaserComm System-12x1,
MaserComm Planet-12x1, MaserComm FarOrbit-12x1, MaserComm System-12x1
Sensors: EMM Packagex1,
EMS-A-12 FarOrbitx2, EMS-A-12 Planetaryx2,
EMS-P-12 Interstellarx2,
Jam EMS-A-12 Planetaryx2,
Neutrino (1 Mw) Sensor-12x2,
HiPen Densit-0.05x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Formidable
Off: ParticleAccel=040
Batt. 1
Bear. 1
PlasmaGun=x60
Batt. 1
Bear. 1
Missiles=x80, BeamLaser=xx4
Batt. 3 Batt. 15
Bear. 3 Bear. 15
Def: DefDM=6
Control: Computer=Model/6x3,
Panel=CP-DynamicLinkedx157, Special=HeadsUpDisplayx157,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=162 (20x8)
(Bridge=2, Engineering=15, Maintenance=-7,
Gunners=66, Flight Crew=66, Ship's Troops=50,
Command=22, Stewards=5, Frozen Watch=0, Medical=1),
Additional Staterooms=0,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx4,
Magazines=None
Other: Cargo=458 tons (6190 kliters),
Fuel=4411 tons (59,557 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize Large, Fuel Scoops (fills tanks in 5 hours),
EmLevel=Faint,
Battery Round=3 missiles,
Electronic Circuit Protection
Comments: 50-ton Bay ParticleAccelerator-4x1,
50-ton Bay PlasmaGun-6x1,
50-ton Bay Missile-8x3,
Triple Turret BLaser (90/3)

EF-12

EM-13 ESCORT MISSILE

CraftID: Escort Missile, Type EM, TL=D (Average Stellar), MCr1939
Hull: 4500/11250, Disp=5000, Config=2SL, Armor=40F,
Unloaded=45561, Loaded=48085
Power: 177/354, Fusion=48023 Mw, Duration=45/135days
Loco: 360/720, Maneuver=3Gs, 135/270, Jump=2,
NOE=170, Cruise=2137.5kph, Top=2850kph,
Agility=0
Commo: RadioComm Planetary-13x1, RadioComm FarOrbit-13x1, RadioComm System-13x1,
LaserComm Planet-13x1, LaserComm FarOrbit-13x1, LaserComm System-13x1,
MaserComm Planet-13x1, MaserComm FarOrbit-13x1, MaserComm System-13x1
Sensors: EMM Packagex1,
EMS-A-13 FarOrbitx2, EMS-A-13 Planetaryx2,
EMS-P-13 Interstellarx2,
Jam EMS-A-13 Planetaryx2,
Neutrino (0.1 Mw) Sensor-13x2,
HiPen Densit-0.1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Difficult
Off: Missiles=x90, BeamLaser=xx4

Batt.	3	Batt.	10
Bear.	3	Bear.	10

Def: DefDM=7,
NucDamper-3
Control: Computer=Model/7x3,
Panel=CP-HoloLinkedx50, Special=HeadsUpHoloDisplayx50,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=105 (21x5)
(Bridge=2, Engineering=7, Maintenance=7,
Gunners=27, Flight Crew=27, Ship's Troops=50,
Command=14, Stewards=3, Frozen Watch=0, Medical=1),
Additional Staterooms=4,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx4,
Magazines=1 50-ton magazines (2250 battery-rounds)
Other: Cargo=166 tons (2243 kliters),
Fuel=2670 tons (36057 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Faint,
Battery Round=3 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay Missile-9x3,
Triple Turret BLaser (30/3)

EM-15 ESCORT MISSILE

CraftID: Escort Missile, Type EM, TL=F (High Stellar), MCr2207
Hull: 4500/11250, Disp=5000, Config=2SL, Armor=40G,
Unloaded=40800, Loaded=43532
Power: 151/302, Fusion=41021 Mw, Duration=45/135days
Loco: 360/720, Maneuver=3Gs, 225/450, Jump=4,
NOE=190, Cruise=2137.5kph, Top=2850kph,
Agility=0
Commo: RadioComm Planetary-15x1, RadioComm FarOrbit-15x1, RadioComm System-15x1,
LaserComm Planet-15x1, LaserComm FarOrbit-15x1, LaserComm System-15x1,
MaserComm Planet-15x1, MaserComm FarOrbit-15x1, MaserComm System-15x1
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2, EMS-A-15 Planetaryx2,
EMS-P-15 Interstellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: Missiles=xA0, BeamLaser=xx4

Batt.	3	Batt.	10
Bear.	3	Bear.	10

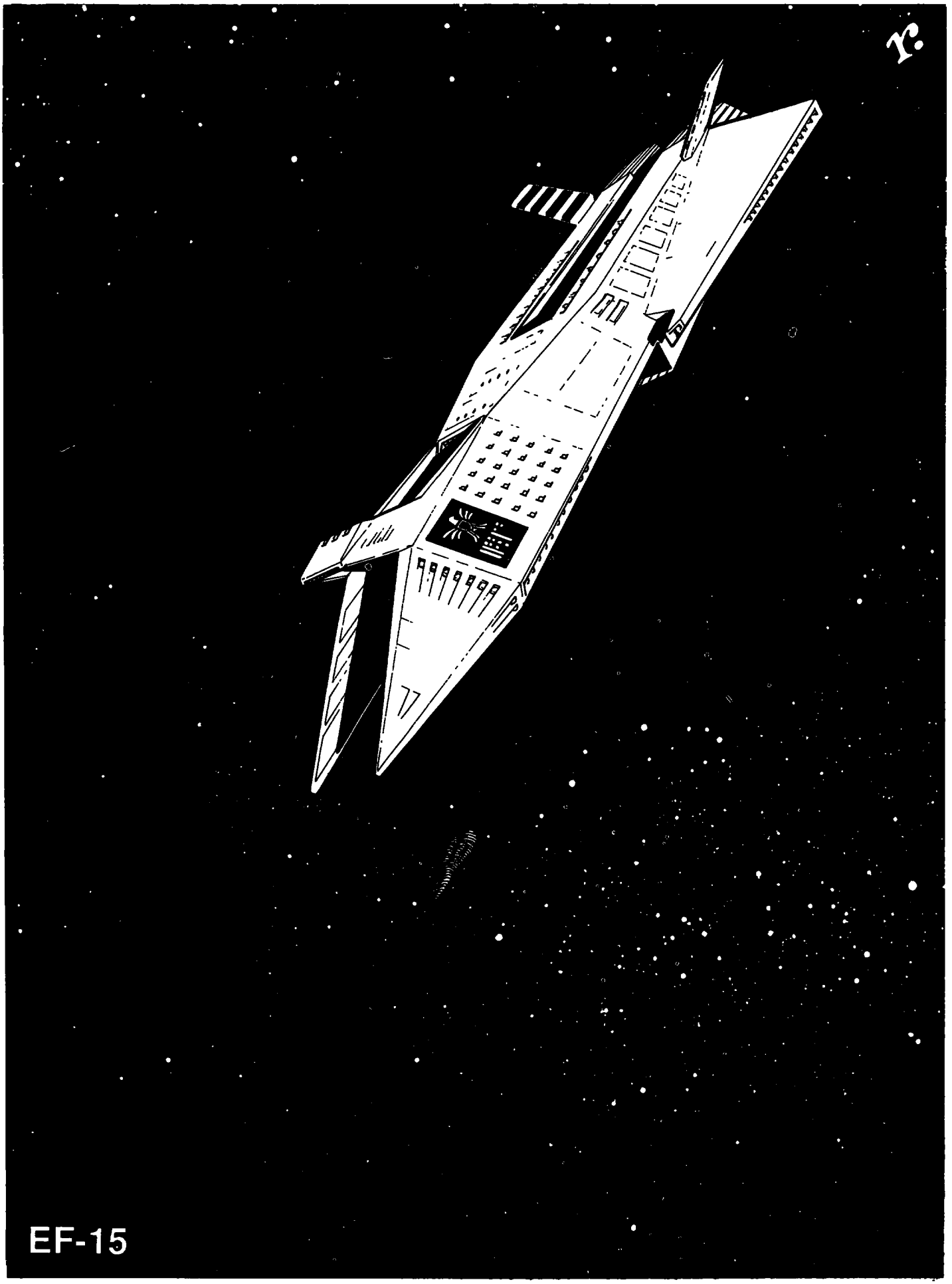
Def: DefDM=9,
OptiNucDamper-1
Control: Computer=Model/9x3,
Panel=CP-HoloLinkedx16, Special=HeadsUpHoloDisplayx16,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=84 (16x5)
(Bridge=2, Engineering=5, Maintenance=-8,
Gunners=15, Flight Crew=15, Ship's Troops=50,
Command=11, Stewards=2, Frozen Watch=0, Medical=1),
Additional Staterooms=4,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx3,
Magazines=1 50-ton magazines (2250 battery-rounds)
Other: Cargo=13 tons (184 kliters),
Fuel=2890 tons (39,026 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Faint,
Battery Round=3 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay Missile-Ax3,
Triple Turret BLaser (30/3)

EF-15 ESCORT FLEET

CraftID: Escort Fleet, Type EF, TL=F (High Stellar), MCr9215
Hull: 18000/45000, Disp=20000, Config=4SL, Armor=40G,
Unloaded=195092, Loaded=206487
Power: 980/1960, Fusion=264695 Mw, Duration=30/90days
Loco: 1980/3960, Maneuver=4Gs, 900/1800, Jump=4,
NOE=190, Cruise=2550kph, Top=3400kph,
Agility=0
Commo: RadioComm Planetary-15x1, RadioComm FarOrbit-15x1, RadioComm System-15x1,
LaserComm Planet-15x1, LaserComm FarOrbit-15x1, LaserComm System-15x1,
MaserComm Planet-15x1, MaserComm FarOrbit-15x1, MaserComm System-15x1
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2, EMS-A-15 Planetaryx2,
EMS-P-15 Interstellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Difficult, ActObjPin=Difficult,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: Missiles=xx5, BeamLaser=xx6

Batt.	15	Batt.	36
Bear.	14	Bear.	34

Def: DefDM=8,
OptiNucDamper-1
Control: Computer=Model/9x3,
Panel=CP-HoloLinkedx48, Special=HeadsUpHoloDisplayx48,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=122 (6x20)
(Bridge=2, Engineering=24, Maintenance=1,
Gunners=66, Flight Crew=66, Ship's Troops=0,
Command=16, Stewards=4, Frozen Watch=0, Medical=1),
Additional Staterooms=10,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=50-ton craftx4,
Magazines=2 50-ton magazines (75 battery-rounds)
Other: Cargo=412 tons (5570 kliters),
Fuel=12,058 tons (162,790 kliters), Fuel Purification Plant (purifies total fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=180 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (180/3),
Triple Turret BLaser (360/3)


EF-15

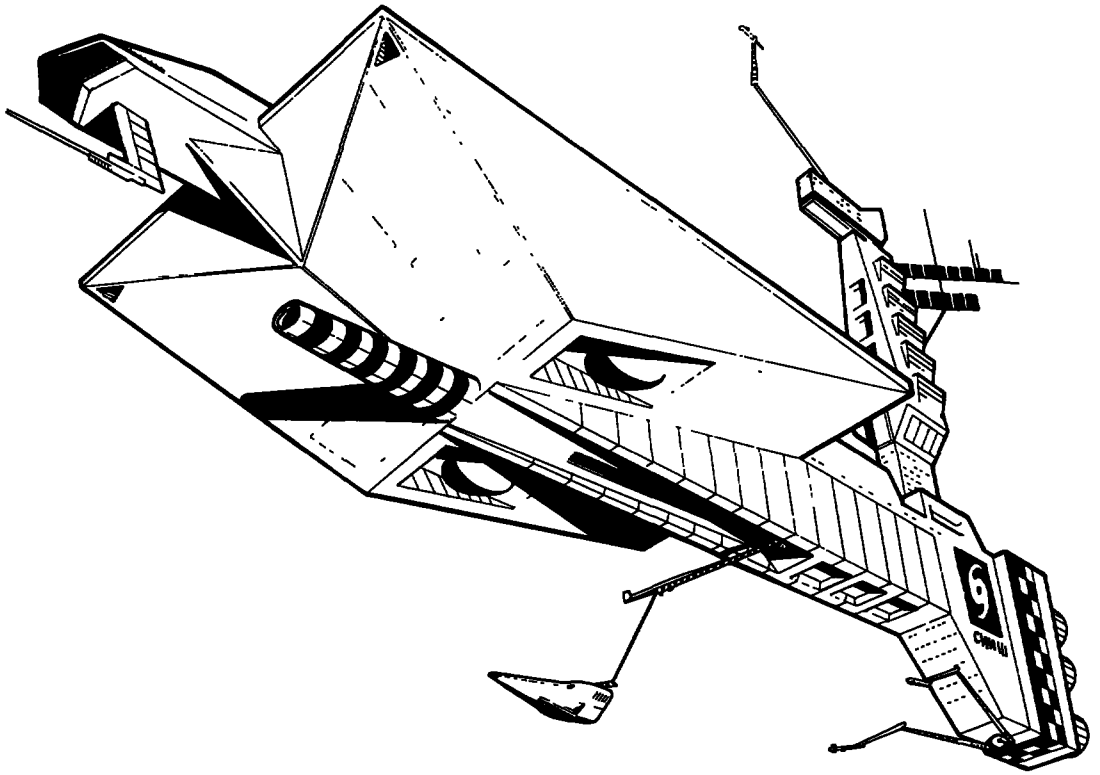
FS-15 STRIKE FIGHTER

Craft ID: Strike Fighter, Type FS, TL15, MCr 116.0584+6.121
Hull: 18/45, Disp=20, Config=1AF, Armor=40G,
Unloaded=349.873 tons, Loaded=354.9324 tons
Power: 7/10, Fusion=1152,
Noncombat Duration (no weapons or agility=5/15),
Combat Duration=1/3
Loco: 5/8, Maneuver=6,
NOE=190kph, Cruise=2835kph, Top=3780kph,
Vacuum Cruise=3150kph, Vacuum Top=4200kph
Commo: Laser=System×3, Radio=System×3
Sensors: EMMask, ActiveEMS=System, PassiveEMS=System,
Densitometer=LoPen/250km, Neutrino=10Kw,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Simple, PasEngPin=Routine
Off: PulseLaser=xx2, Missile=x02

Batt.	2	Batt.	1
Bear.	2	Bear.	1

Def: DefDM=+17
Control: Computer=9×3, Panel=Holodynamic Link×21,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators, Airlock
Accom: Crew=2 (Pilot=1, Commander=1), small stateroom=1,
roomy seat=2
Other: Cargo=3, Fuel=29.421, Fuel Scoops,
HE battery-rounds=36
ObjSize=Average, EMLevel=Moderate (none if noncombat)
Comments: The standard Imperial strike fighter. This fighter is the minimum size capable of mounting thruster plates, so it is the minimum size practical for deep space combat. Its large Mod/9 computer allows it to fight on even terms with much larger vessels, and its small size and high agility make it very hard to hit. One small stateroom is provided for the crew of two, allowing for longer missions.

FS-15



Tankers and support ships are always necessary in the Imperial Navy. Originally, the navy produced ships for two separate functions: tanker (TF-11/-12) and resupply (TM-11/-12).

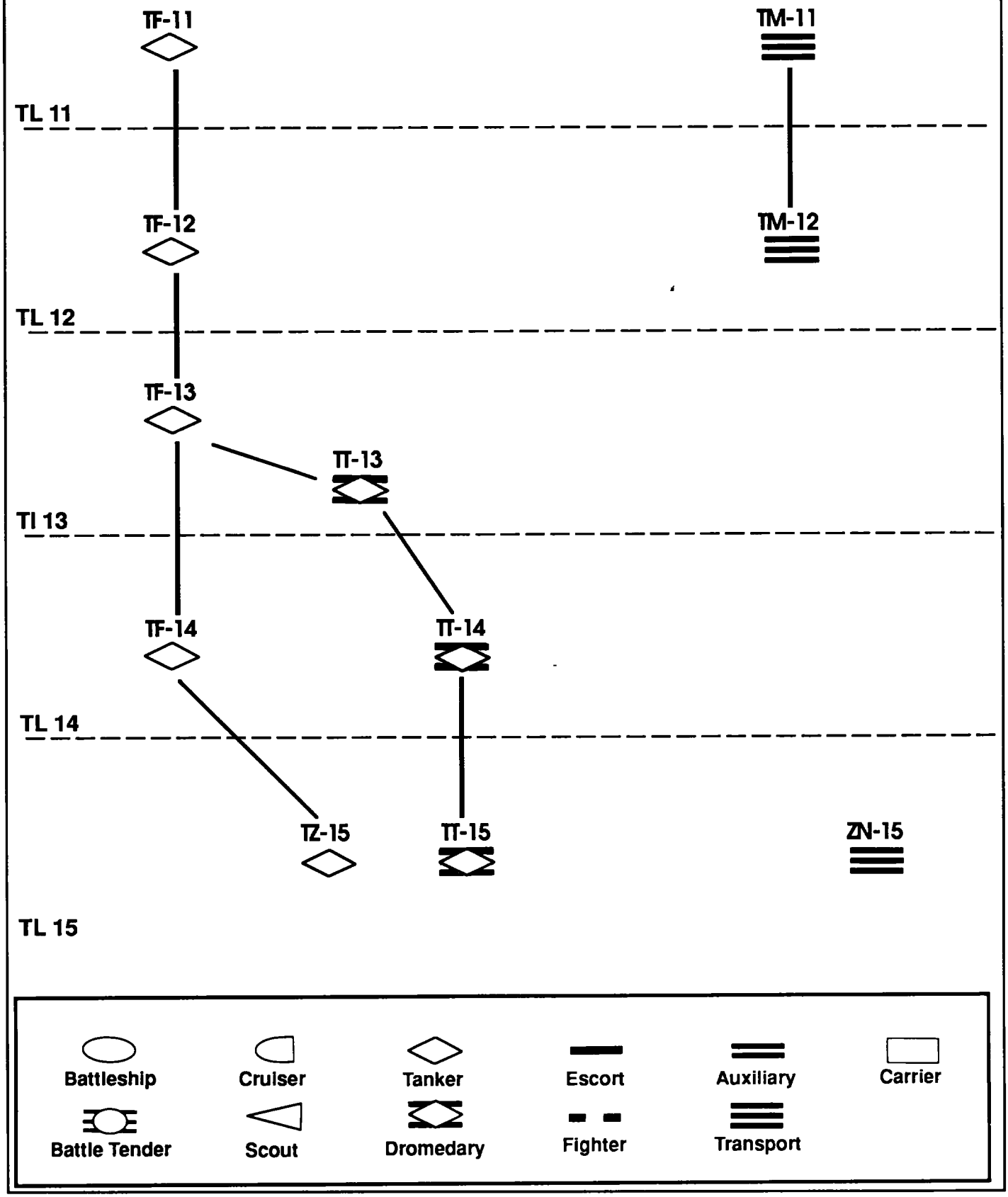
At tech level 13, the TF-13 was improved to create the Dromedary TT-13, a combined tanker and resupply ship. Although the TT-14 and TT-15 were produced in prototype form, they did not show sufficient advantage over the TT-13 and have not been produced in quantity.

The TZ-15 is a special-purpose ship: the Rift tanker designed to support operations in the sparse territory of the Rifts.

Auxiliaries

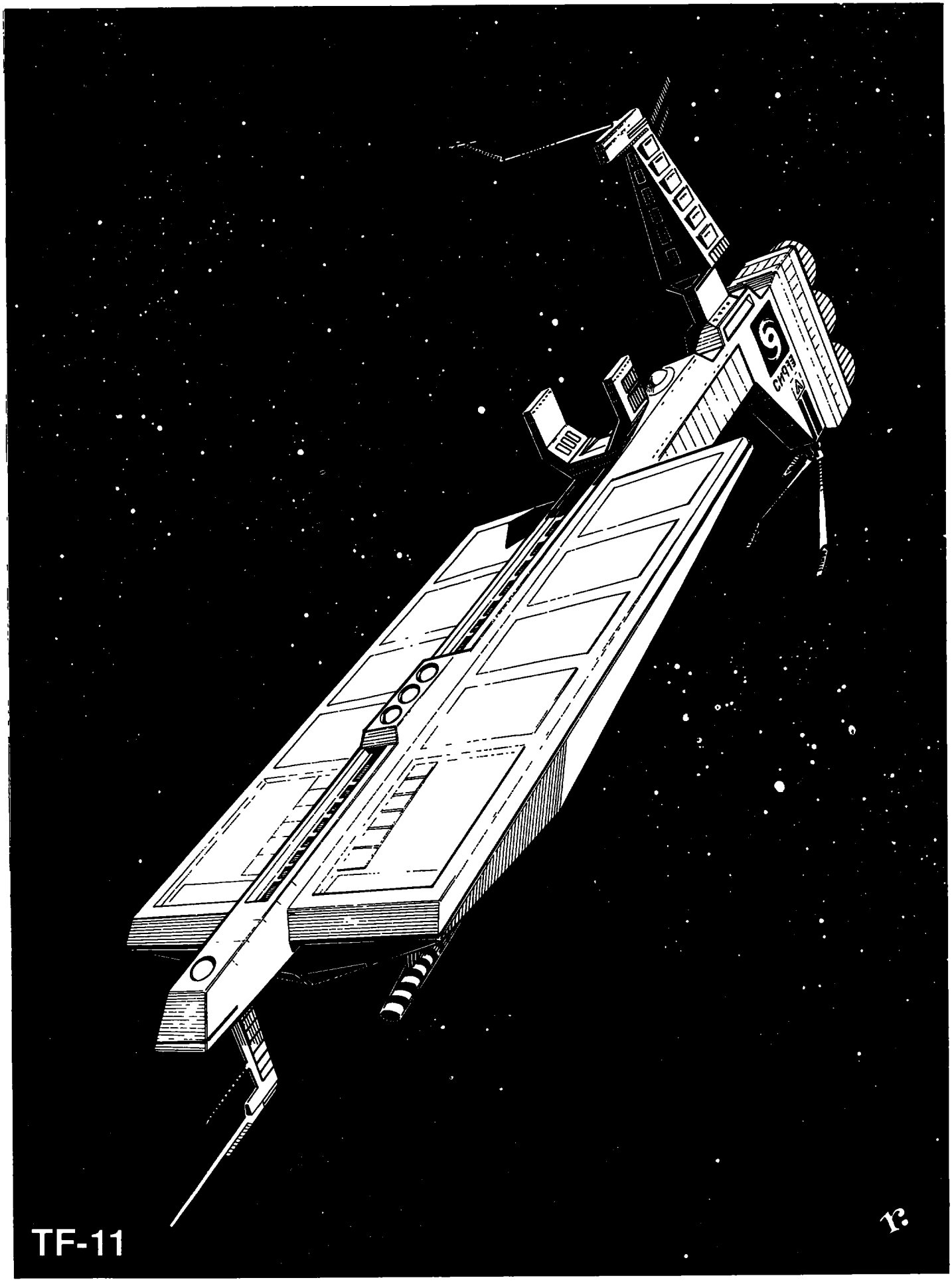
Auxiliaries are supposed to be the noncombatants of the fleet. They linger on the fringes of the battle area and resupply the fighting ships with fuel, missiles, and provisions. Many are not armed, but experience says some auxiliaries do face combat and need to be capable of at least defending themselves.

Imperial Auxiliaries



TF-11 TANKER FLEET

CraftID: Tanker Fleet, Type TF, TL=B (Average Stellar), MCr84,225
Hull: 450000/1125000, Disp=500000, Config=4SL, Armor=40E,
Unloaded=2159756, Loaded=2253364
Power: 4556/9112, Fusion=1230130 Mw, Duration=22/66days
Loco: 9000/18000, Maneuver=1Gs, 13500/27000, Jump=2,
NOE=150, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-11x2, RadioComm System-11x2,
LaserComm Planet-11x2, LaserComm System-11x2,
MaserComm Planet-11x2, MaserComm System-11x2
Sensors: EMS-A-11 FarOrbitx2,
EMS-P-11 SubStellarx2,
Jam EMS-A-11 Planetaryx2,
Neutrino (1000 Mw) Sensor-11x2,
HiPen Densit-0.001x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Formidable, PasObjPin=Formidable,
PasEngScan=Routine, PasEngPin=Formidable
Off: Missiles=xx4, BeamLaser=xx3
Batt. 10 Batt. 40
Bear. 5 Bear. 20
Def: DefDM=3,
Sandcasters=xx4
Batt. 40
Bear. 20
Control: Computer=Model/5fibx3,
Panel=CP-DynamicLinkedx5460, Special=HeadsUpDisplayx5460,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=855 (1x500)
(Bridge=20, Engineering=516, Maintenance=57,
Gunners=75, Flight Crew=75, Ship's Troops=0,
Command=117, Stewards=28, Frozen Watch=0, Medical=7),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=100-ton craftx5, 1000-ton craftx5,
Magazines=10 50-ton magazines (562 battery-rounds)
Other: Cargo=321,103 tons (4,334,894 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=99,055 tons (1,337,254 kliters), Fuel Purification Plant (purifies self fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Strong,
Battery Round=120 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (120/3),
Triple Turret BLaser (120/3),
Triple Turret Sand (120/3),
Required fuel tankage=99,055 tons,
Carries additional 300,000 tons of fuel for distribution,
Cargo and stores=21,000 tons


TF-11

TF-12 TANKER FLEET

CraftID: Tanker Fleet, Type TF, TL=C (Average Stellar), MCr85,414
Hull: 450000/1125000, Disp=500000, Config=3SL, Armor=40F,
Unloaded=2067910, Loaded=2174288
Power: 4472/8944, Fusion=1207600 Mw, Duration=35/105days
Loco: 9000/18000, Maneuver=1Gs, 13500/27000, Jump=2,
NOE=160, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-12x2, RadioComm System-12x2,
LaserComm Planet-12x2, LaserComm System-12x2,
MaserComm Planet-12x2, MaserComm System-12x2,
Sensors: EMS-A-12 FarOrbitx2,
EMS-P-12 SubStellarx2,
Jam EMS-A-12 Planetaryx2,
Neutrino (1 Mw) Sensor-12x2,
HiPen Densit-0.05x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Formidable
Off: Missiles=xx2, BeamLaser=xx3

Batt.	40	Batt.	10
Bear.	20	Bear.	5

Def: DefDM=4,
Sandcasters=xx4

Batt.	40
Bear.	20

Control: Computer=Model/6fibx3,
Panel=CP-DynamicLinkedx299, Special=LgHoloDisplayx299,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=722 (1x500)
(Bridge=23, Engineering=437, Maintenance=59,
Gunners=40, Flight Crew=40, Ship's Troops=0,
Command=99, Stewards=24, Frozen Watch=0, Medical=5),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=0,
SubCraft=100-ton craftx5, 1000-ton craftx5,
Magazines=5 50-ton magazines (281 battery-rounds)
Other: Cargo=308,172 tons (4,160,324 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=112,569 tons (1,519,692 kliters), Fuel Purification Plant (purifies self fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Strong,
Battery Round=120 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (120/3),
Triple Turret BLaser (30/3),
Triple Turret Sand (120/3),
Required fuel tankage=99,055 tons,
Carries additional 300,000 tons of fuel for distribution,
Cargo and stores=8000 tons

TF-13 TANKER FLEET

CraftID: Tanker Fleet, Type TF, TL=D (Average Stellar), MCr98,220
Hull: 450000/1125000, Disp=500000, Config=4SL, Armor=40F,
Unloaded=2,211,333, Loaded=2,356,554
Power: 4472/8944, Fusion=1207652 Mw, Duration=50/150days
Loco: 9000/18000, Maneuver=1Gs, 18000/36000, Jump=3,
NOE=170, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-13x2, RadioComm System-13x2,
LaserComm Planet-13x2, LaserComm System-13x2,
MaserComm Planet-13x2, MaserComm System-13x2
Sensors: EMS-A-13 FarOrbitx2,
EMS-P-13 SubStellarx2,
Jam EMS-A-13 Planetaryx2,
Neutrino (0.1 Mw) Sensor-13x2,
HiPen Densit-0.1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Difficult
Off: Missiles=xx3, BeamLaser=xx4

Batt.	40	Batt.	10
Bear.	20	Bear.	5

Def: DefDM=5,
Sandcasters=xx4

Batt.	40
Bear.	20

Control: Computer=Model/7fibx3,
Panel=CP-HoloLinkedx989, Special=HeadsUpHoloDisplayx989,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=614 (1x500)
(Bridge=4, Engineering=403, Maintenance=33,
Gunners=30, Flight Crew=30, Ship's Troops=0,
Command=84, Stewards=20, Frozen Watch=0, Medical=5),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=0,
SubCraft=100-ton craftx5, 1000-ton craftx5,
Magazines=5 50-ton magazines (281 battery-rounds)
Other: Cargo=261,959 tons (3,536,452 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=153,673 tons (2,074,591 kliters), Fuel Purification Plant (purifies self fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Strong,
Battery Round=120 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (120/3),
Triple Turret BLaser (30/3),
Triple Turret Sand (120/3),
Required fuel tankage=153,673 tons,
Carries additional 250,000 tons of fuel for distribution,
Cargo and stores=11,000 tons

TF-14 TANKER FLEET

CraftID: Tanker Fleet, Type TF, TL=E (High Stellar), MCr98,226
Hull: 450000/1125000, Disp=500000, Config=4SL, Armor=40G,
Unloaded=1976441, Loaded=2101372
Power: 4472/8944, Fusion=1207591 Mw, Duration=30/90days
Loco: 9000/18000, Maneuver=1Gs, 18000/36000, Jump=3,
NOE=180, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-14x2, RadioComm System-14x2,
LaserComm Planet-14x2, LaserComm System-14x2,
MaserComm Planet-14x2, MaserComm System-14x2
Sensors: EMS-A-14 FarOrbitx2,
EMS-P-14 SubStellarx2,
Jam EMS-A-14 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-0.25x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: Missiles=xx3, BeamLaser=xx4

Batt.	40	Batt.	10
Bear.	20	Bear.	5

Def: DefDM=6,
Sandcasters=xx4

Batt.	40
Bear.	20

Control: Computer=Model/8fibx3,
Panel=CP-HoloLinkedx721, Special=HeadsUpHoloDisplayx721
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=461 (0x500)
(Bridge=2, Engineering=297, Maintenance=24,
Gunners=22, Flight Crew=22, Ship's Troops=0,
Command=63, Stewards=15, Frozen Watch=0, Medical=3),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=0,
SubCraft=100-ton craftx5, 1000-ton craftx5,
Magazines=5 50-ton magazines (281 battery-rounds)
Other: Cargo=284,504 tons (3,840,806 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=132,202 tons (1,784,732 kliters), Fuel Purification Plant (purifies self fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Strong,
Battery Round=120 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (120/3),
Triple Turret BLaser (30/3),
Triple Turret Sand (120/3),
Required fuel tankage=132,202 tons,
Carries additional 270,000 tons of fuel for distribution,
Cargo and stores=14,000 tons

TF-15 TANKER FLEET

CraftID: Tanker Transport, Type TF, TL=F (High Stellar), MCr98,335
Hull: 450000/1125000, Disp=500000, Config=4SL, Armor=40G,
Unloaded=1972776, Loaded=2117677
Power: 4444/8888, Fusion=1200026 Mw, Duration=50/150days
Loco: 9000/18000, Maneuver=1Gs, 18000/36000, Jump=3,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-15x2, RadioComm System-15x2,
LaserComm Planet-15x2, LaserComm System-15x2,
MaserComm Planet-15x2, MaserComm System-15x2
Sensors: EMS-A-15 FarOrbitx2,
EMS-P-15 SubStellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: Missiles=xA0
Batt. 1
Bear. 1
Def: DefDM=7,
Sandcasters=xx4
Batt. 40
Bear. 20
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx612, Special=HeadsUpHoloDisplayx612,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=394 (0x500)
(Bridge=2, Engineering=252, Maintenance=19,
Gunners=6, Flight Crew=6, Ship's Troops=10,
Command=54, Stewards=13, Frozen Watch=0, Medical=3),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=0,
SubCraft=100-ton craftx5, 1000-ton craftx5,
Magazines=500 50-ton magazines (3,375,000 battery-rounds)
Other: Cargo=238,924 tons (3,225,478 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=153,334 tons (2,070,015 kliters), Fuel Purification Plant (purifies self fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Strong,
Battery Round=1 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay Missile-Ax1,
Triple Turret Sand (120/3)

TT-13 TRANSPORT TANKER

CraftID: Tanker Transport, Type TT, TL=D (Average Stellar), MCr98,280
Hull: 450000/1125000, Disp=500000, Config=4SL, Armor=40F,
Unloaded=2210027, Loaded=2354928
Power: 4444/8888, Fusion=1200037 Mw, Duration=50/150days
Loco: 9000/18000, Maneuver=1Gs, 18000/36000, Jump=3,
NOE=170, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-13x2, RadioComm System-13x2,
LaserComm Planet-13x2, LaserComm System-13x2,
MaserComm Planet-13x2, MaserComm System-13x2
Sensors: EMS-A-13 FarOrbitx2,
EMS-P-13 SubStellarx2,
Jam EMS-A-13 Planetaryx2,
Neutrino (0.1 Mw) Sensor-13x2,
HiPen Densit-0.1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Difficult, PasObjPin=Difficult,
PasEngScan=Routine, PasEngPin=Difficult
Off: Missiles=x90
Batt. 1
Bear. 1
Def: DefDM=5,
Sandcasters=xx4
Batt. 40
Bear. 20
Control: Computer=Model/7fibx3,
Panel=CP-HoloLinkedx996, Special=HeadsUpHoloDisplayx996,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=598 (1x500)
(Bridge=4, Engineering=402, Maintenance=31,
Gunners=10, Flight Crew=10, Ship's Troops=10,
Command=82, Stewards=20, Frozen Watch=0, Medical=4),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=0,
SubCraft=100-ton craftx5, 1000-ton craftx5,
Magazines=500 50-ton magazines (3375000 battery-rounds)
Other: Cargo=237,665 tons (3,208,485 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=153,334 tons (2,070,022 kliters), Fuel Purification Plant (purifies self fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Strong,
Battery Round=1 missiles,
Electronic Circuit Protection
Comments: 100-ton Bay Missile-9x1,
Triple Turret Sand (120/3),
Required fuel tankage=153,334 tons,
Carries additional 100,000 tons of fuel for distribution,
Cargo and stores=137,000 tons

TZ-15 TANKER RIFT

CraftID: Tanker Rift, Type TZ, TL=F (High Stellar), MCr141,332
Hull: 630000/1575000, Disp=700000, Config=4SL Armor=40G,
Unloaded=2684912, Loaded=2859729
Power: 6248/12496, Fusion=1687157 Mw, Duration=30/90days
Loco: 12600/25200, Maneuver=1Gs, 25200/50400, Jump=3,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-15x2, RadioComm System-15x2,
LaserComm Planet-15x2, LaserComm System-15x2,
MaserComm Planet-15x2, MaserComm System-15x2
Sensors: EMS-A-15 FarOrbitx2,
EMS-P-15 SubStellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: Missiles=xx3, BeamLaser=xx4
Batt. 40 Batt. 10
Bear. 20 Bear. 5
Def: DefDM=7,
Sandcasters=xx4
Batt. 40
Bear. 20
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx892, Special=HeadsUpHoloDisplayx892,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=544 (0x700)
(Bridge=2, Engineering=352, Maintenance=41,
Gunners=18, Flight Crew=18, Ship's Troops=0,
Command=74, Stewards=18, Frozen Watch=0, Medical=4),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+100 (Medical), EmergencyLowBerths=0,
SubCraft=100-ton craftx5, 1000-ton craftx5,
Magazines=1 50-ton magazines (56 battery-rounds)
Other: Cargo=403,125 tons (5,442,188 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=184,990 tons (2,497,376 kliters), Fuel Purification Plant (purifies self fuel tankage in 60 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Strong,
Battery Round=120 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (120/3),
Triple Turret BLaser (30/3),
Triple Turret Sand (120/3),
Required fuel tankage=184,990 tons,
Carries additional 400,000 tons of fuel for distribution,
Cargo and stores=3000 tons

TM-11 TANKER MISSILE

CraftID: Tanker Missile, Type TM, TL=B (Average Stellar), MCr32,666
Hull: 180000/450000, Disp=200000, Config=4SL, Armor=40E,
Unloaded=886125, Loaded=922906
Power: 1689/3378, Fusion=456202, 19000545 Mw, Duration=22/66days
Loco: 3600/7200, Maneuver=1Gs, 5400/10800, Jump=2,
NOE=150, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-11x2, RadioComm System-11x2,
LaserComm Planet-11x2, LaserComm System-11x2,
MaserComm Planet-11x2, MaserComm System-11x2
Sensors: EMS-A-11 FarOrbitx2,
EMS-P-11 SubStellarx2,
Jam EMS-A-11 Planetaryx2,
Neutrino (1000 Mw) Sensor-11x2,
HiPen Densit-0.001x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Formidable, PasObjPin=Formidable,
PasEngScan=Routine, PasEngPin=Formidable
Off: Missiles=xx2, BeamLaser=xx3

Batt.	40	Batt.	40
Bear.	26	Bear.	26

Def: DefDM=3,
Sandcasters=xx4

Batt.	40
Bear.	26

Control: Computer=Model/5fibx3,
Panel=CP-DynamicLinkedx2542, Special=HeadsUpDisplayx2542,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=413 (2x200)
(Bridge=4, Engineering=204, Maintenance=23,
Gunners=75, Flight Crew=75, Ship's Troops=0,
Command=56, Stewards=13, Frozen Watch=0, Medical=3),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=100-ton craftx5, 1000-ton craftx5,
Magazines=1000 50-ton magazines (56,250 battery-rounds)
Other: Cargo=77,209 tons (1,042,321 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=38,921 tons (525,437 kliters), Fuel Purification Plant (purifies self fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Strong,
Battery Round=120 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (120/3),
Triple Turret BLaser (120/3),
Triple Turret Sand (120/3)

TM-12 TANKER MISSILE

CraftID: Tanker Missile, Type TM, TL=C (Average Stellar), MCr38,684
Hull: 180000/450000, Disp=200000, Config=4, Armor=40E,
Unloaded=944752, Loaded=990983
Power: 1689/3378, Fusion=456239 Mw, Duration=22/66days
Loco: 3600/7200, Maneuver=1Gs, 7200/14400, Jump=3,
NOE=150, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-11x2, RadioComm System-11x2,
LaserComm Planet-11x2, LaserComm System-11x2,
MaserComm Planet-11x2, MaserComm System-11x2
Sensors: EMS-A-11 FarOrbitx2,
EMS-P-11 SubStellarx2,
Jam EMS-A-11 Planetaryx2,
Neutrino (1000 Mw) Sensor-11x2,
HiPen Densit-0.001x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Formidable, PasObjPin=Formidable,
PasEngScan=Routine, PasEngPin=Formidable
Off: Missiles=xx2, BeamLaser=xx3

Batt.	40	Batt.	40
Bear.	26	Bear.	26

Def: DefDM=3,
Sandcasters=xx4

Batt.	40
Bear.	26

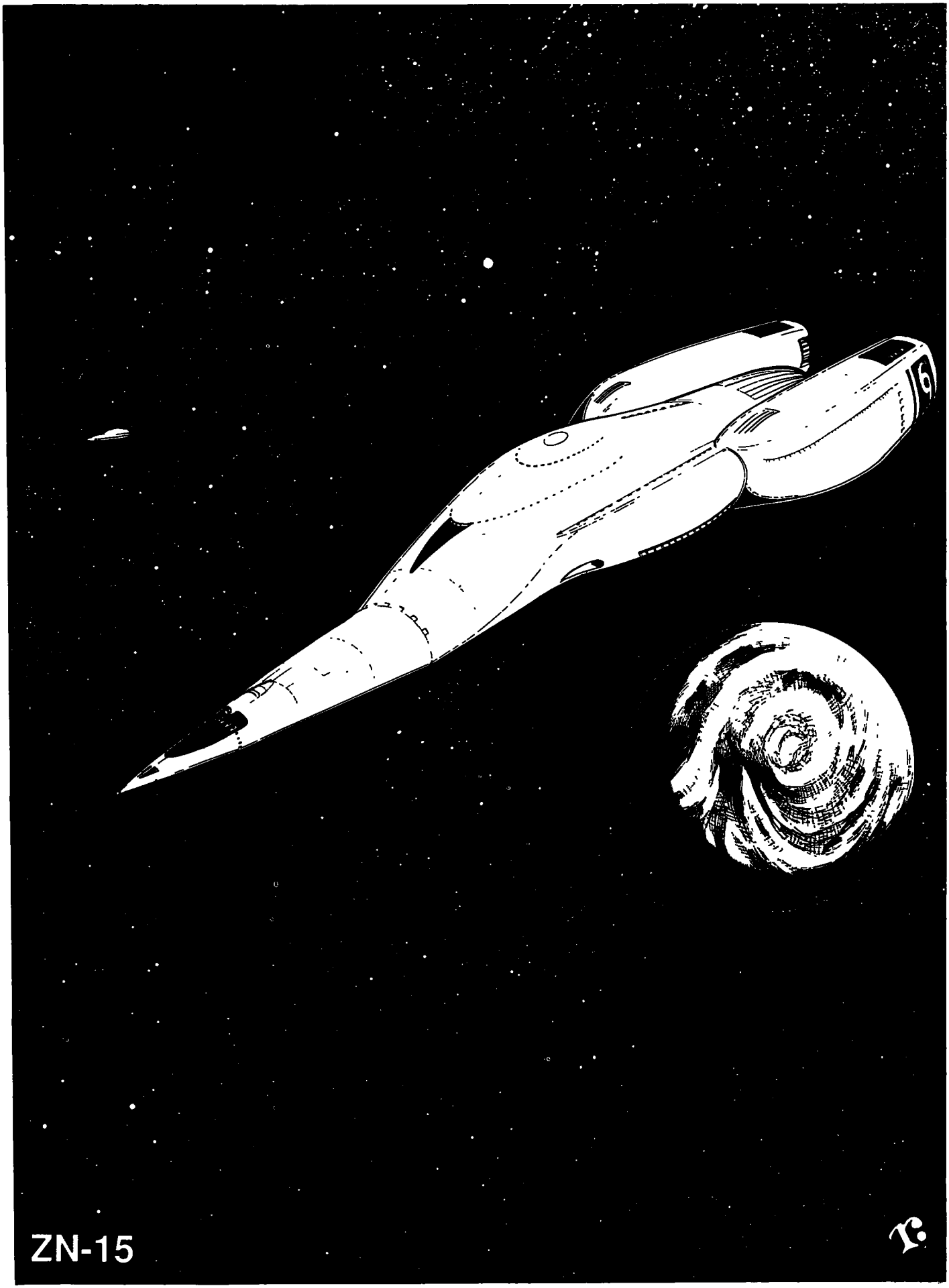
Control: Computer=Model/5fibx3,
Panel=CP-DynamicLinkedx2962, Special=HeadsUpDisplayx2962,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates
Accom: Crew=471 (2x200)
(Bridge=5, Engineering=251, Maintenance=23,
Gunners=75, Flight Crew=75, Ship's Troops=0,
Command=64, Stewards=15, Frozen Watch=0, Medical=3),
Additional Staterooms=100,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=100-ton craftx5, 1000-ton craftx5,
Magazines=1000 50-ton magazines (56250 battery-rounds)
Other: Cargo=64,925 tons (876,493 kliters), 300,000 tons is fuel tankage for distribution,
Fuel=48,922 tons (660,447 kliters), Fuel Purification Plant (purifies self fuel tankage in 12 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Strong,
Battery Round=120 missiles,
Electronic Circuit Protection
Comments: Triple Turret Missile (120/3),
Turret BLaser (120/3),
Triple Turret Sand (120/3)

ZN-15 SPECIAL NONSTANDARD

CraftID: Special Nonstandard, Type ZN, TL=F (High Stellar), MCr24,909
Hull: 67500/168750, Disp=75000, Config=1SL, Armor=40G,
Unloaded=423526, Loaded=470292
Power: 2932/5864, Fusion=791815 Mw, Duration=49/147days
Loco: 1350/2700, Maneuver=1Gs, 2700/5400, Jump=3,
NOE=190, Cruise=900kph, Top=1200kph,
Agility=0
Commo: RadioComm Planetary-15x1, RadioComm FarOrbit-15x1, RadioComm System-15x1,
LaserComm Planet-15x1, LaserComm FarOrbit-15x1, LaserComm System-15x1,
MaserComm Planet-15x1, MaserComm FarOrbit-15x1, MaserComm System-15x1
Sensors: EMM Packagex1,
EMS-A-15 FarOrbitx2,
EMS-P-15 SubStellarx2,
Jam EMS-A-15 Planetaryx2,
Neutrino (0.01 Mw) Sensor-14x2,
HiPen Densit-1x2,
ActObjScan=Routine, ActObjPin=Routine,
PasObjScan=Routine, PasObjPin=Routine,
PasEngScan=Routine, PasEngPin=Routine
Off: MesonGun=T9x
Batt. 1/1
Bear. 1/1
FusionGun=x90
Batt. 10
Bear. 8
Missiles=xx3, BeamLaser=xx4

Batt.	20	Batt.	20
Bear.	15	Bear.	15

Def: DefDM=8, MesonScreen-9, NucDamper-9, BlackGlobe-1,
Sandcasters=xx4
Batt. 20
Bear. 15
Control: Computer=Model/9fibx3,
Panel=CP-HoloLinkedx158, Special=HeadsUpHoloDisplayx158,
Environ=Basic Environment, Basic Life Support, Extended Life Support, Grav Plates, Inertial Compensators
Accom: Crew=403 (5x75)
(Bridge=2, Engineering=59, Maintenance=5,
Gunners=236, Flight Crew=236, Ship's Troops=0,
Command=55, Stewards=13, Frozen Watch=0, Medical=3),
Additional Staterooms=10,
LowBerths=0 (FrozenWatch)+0 (Medical), EmergencyLowBerths=0,
SubCraft=10-ton craftx10, 100-ton craftx2,
Magazines=None
Other: Cargo=688 tons (9291 kliters),
Fuel=49,487 tons (668,087 kliters), Fuel Purification Plant (purifies total fuel tankage in 60 hours),
ObjSize=Large, Fuel Scoops (fills tanks in five hours),
EmLevel=Moderate,
Battery Round=60 missiles,
Electronic Circuit Protection
Comments: Spinal MesonGun-Tx1,
100-ton Bay MesonGun-9x1,
50-ton Bay MesonGun-4x1,
50-ton Bay FusionGun-9x10,
50-ton Bay Repulsor-5x10,
Triple Turret Missile (60/3),
Triple Turret BLaser (60/3),
Triple Turret Sand (60/3)


ZN-15

Knightfall

The Legacy of the Long Night.

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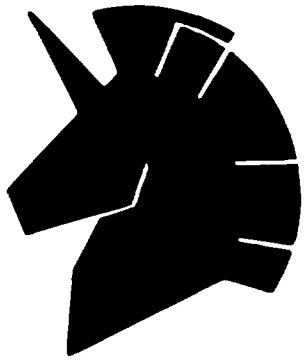

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96-page book GDW 0220. $10.
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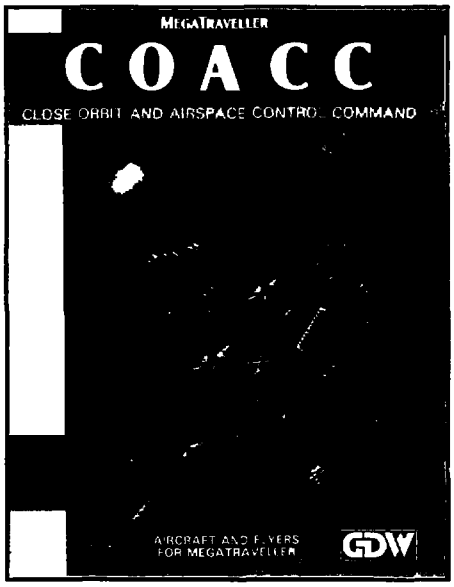

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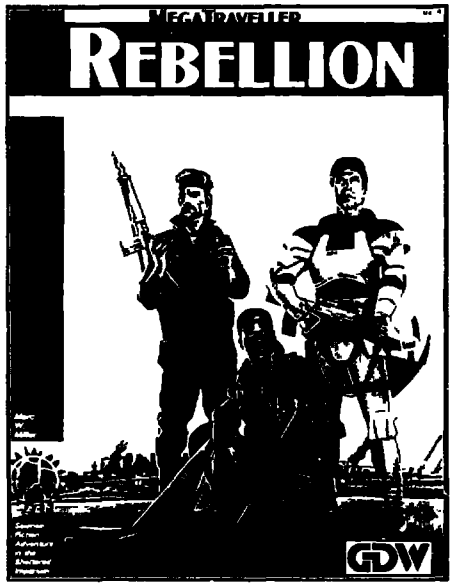

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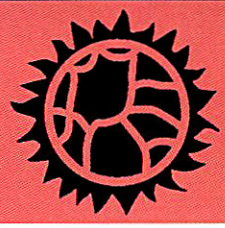
101 VEHICLES



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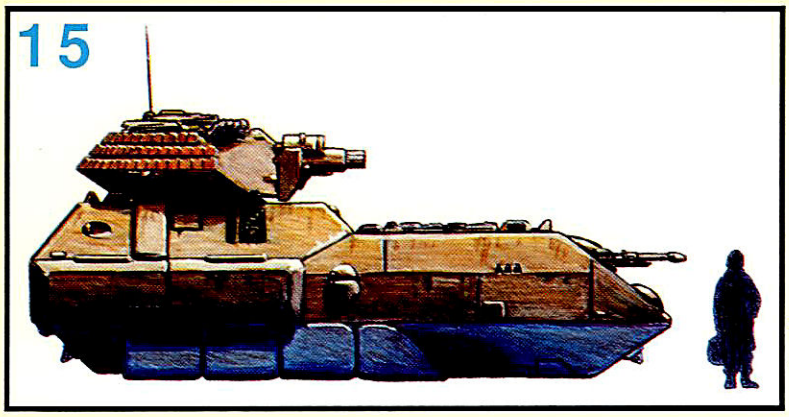


CraftID: Sword Worlds *Gram* Grav Tank, TL11, MCr13.282
Hull: 5/12, Disp=5, Config=4USL, Armor=55E, Unloaded=215 tons, Loaded=218 tons
Power: 1/2, Fusion=18Mw, Dur=20/60
Loco: 1/2, LP Hvy Grav, Thrust=400 tons, NOE=150kph, Cruise=720kph, Top=960kph, MaxAccel=0.8G
Commo: Radio=Cont (5,000km)
Sensors: Laser Sensor, EM Mask, Headlights x 2
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Plasma PA-11	—	—	44/5	20	VDist(5.1)	2	15	H	40
3cm AutoCan	HE	500	2	6	VLong(3.5)	4	3	M	200
	HEAP	500	5	4	VLong(3.5)	4	—	M	200
	KEAP	500	4	4	VLong(3.5)	4	—	M	200

Def: Prismatic Aerosol x 8
TL 10 Stabilization, TL 11 Point Defense
Control: Computer=0/bis x 2, Dyn Link x 4, HUD x 4
Accom: Crew=3 (Cmdr, driver, gunner), Seats=Roomy x 4, Env=Basic env, basic ls, ext ls, inert comp
Other: Fuel=13.5kl, Cargo=3.2kl, ObjSize=Average, EmLevel=Moderate

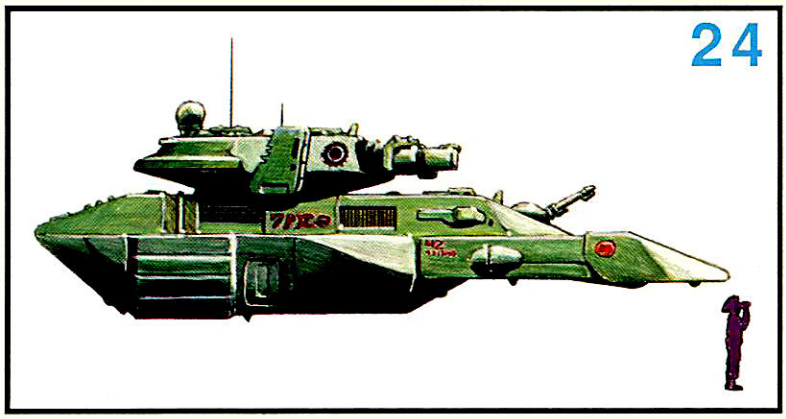
TL 11 SWORD WORLDS *GRAM* GRAV TANK

This Sword Worlds *Gram* class grav tank is heavy on armor and power, very light on sensors. It is used in massive battle lines where it can rely on data from forward observers and deployed sensors. This is typical of the brute force approach used by Sword Worlds in combat.

CraftID: *Invader* Light Grav Tank, TL14, MCr42.977
Hull: 9/12, Disp=10, Config=4AF, Armor=50G, Unloaded=152 tons, Loaded=155 tons
Power: 2/4, Fusion=60Mw, Dur=8/25
Loco: 2/4, LP Hvy Grav, Thrust=900 tons, NOE=180kph, Cruise=2,730kph, Top=3,640kph, MaxAccel=4.8G
Commo: Radio=Sys (1,000 AU), Maser=Sys (1,000 AU)
Sensors: Pass EMS=Cont (5,000km), Act EMS=Cont (5,000km), Densitometer=HiPen/250m, Neutrino=10kw, EM Mask, Pass Audio=Dist (5km), Pass Mag=VDist (50km), Act Audio=Dist (5km), Headlights x 2
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Fusion FY-14	—	—	71/5	30	VDist(21)	2	45	H	40

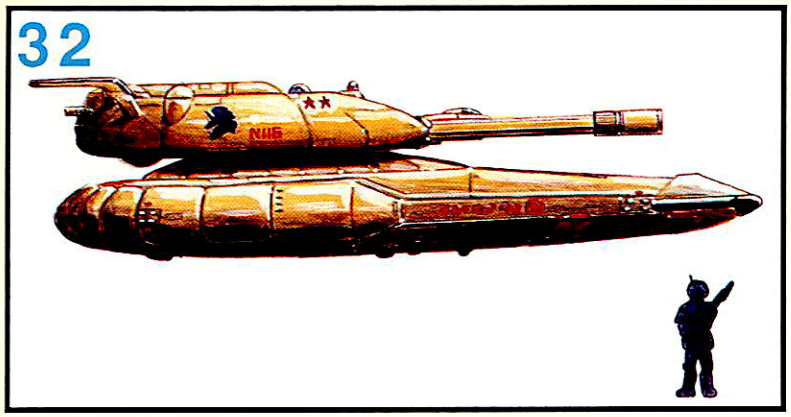
Def: Sandcaster, PGMP-14
Control: Computer=3/fib x 4, Holo Link x 4, HHUD x 4
Accom: Crew=4 (Cmdr, driver, gunner=2), Seats=Roomy x 4, Env=Basic env, basic ls, ext ls, grav plates, inert comp



Other: Fuel=10kl, Cargo=3.5kl, ObjSize=Average, EmLevel=Faint

TL14 *INVADER* LIGHT GRAV TANK

The *Invader* class grav tank, built by the Military Technologies Group of Ling Standard Products, is popular on many tech 14 worlds in the Imperium.



CraftID: *Trepida* Grav Tank, TL 14, MCr20.6
Hull: 12/29, Disp=10, Config=4SL, Armor=40G, Unloaded=110 tons, Loaded=125 tons
Power: 2/4, Fusion=126Mw, Dur=43/130
Loco: 1/2, Std Grav, Thrust=400 tons, NOE=180kph, Cruise=750kph, Top=1,000kph, MaxAccel=0.9G
Commo: Radio=Cont (5,000km), Maser=Dist (5km) x 2
Sensors: EM Mask, Pass EMS=VDist (50km), Cont (5,000km), Act EMS=Dist (5km) x 2, ActObjScan=Form, ActObjPin=Form, PassEngScan=Form
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Fusion RFX-14	—	—	67/5	30	VDist(18)	3	45	H	80

Def: Prismatic Aerosol x 2, Sandcaster x 2
Control: Computer=3x2, Dyn Link, HUD, Env=Basis env, basic ls, ext ls, grav plates, inert comp
Accom: Crew=2 (Operator/gunner, cmdr), Seats=Roomy x 2, Bunks=2
Other: Fuel=73kl, Cargo=10kl, ObjSize=Small, EmLevel=Faint

TL14 *TREPIDA* GRAV TANK

The *Trepida* class became the standard issue Imperial grav tank (at least at the high end of the technology level scale) in 1109, and is widely distributed within the Imperium.

101 Vehicles

MegaTraveller means that high adventure revolves around *travelling*. The journey to adventure starts with that ubiquitous construct known to all travellers: the vehicle.

This book contains over 100 official **MegaTraveller** vehicle designs. Ready for immediate use, these vehicles should prove invaluable to any campaign. Each vehicle includes a detailed illustration and a complete **MegaTraveller** craft profile.

This book has been designed to serve as your primary reference whenever characters need a vehicle. All the basic vehicle designs from the **MegaTraveller** *Imperial Encyclopedia* and the *Rebellion Sourcebook* have been included, as well as many designs from classic (pre-**MegaTraveller**) **Traveller** works. Together with the more than 70 totally new designs, these vehicles should fill any need that may arise in an adventure session.

The designs in this book serve as excellent examples of the **MegaTraveller** craft design system, and as a source of inspiration for your own custom vehicle designs. New weapon tables expand your options as you arm your vehicle in preparation for the rebellion.

TYPES OF VEHICLES

The vehicles in this book are grouped into three categories: military, paramilitary, and civilian.

Military vehicles are typically armed, have extensive armor and are clearly militarily oriented. Vehicles from a variety of minor and major races depict the different military doctrines these aliens have. An example of a purely military vehicle is a grav tank.

Paramilitary vehicles are militarily oriented in their basic design, but their actual use need not be military. Paramilitary vehicles often have a limited amount of armor, and occasionally are armed with a light weapon. An example of a paramilitary vehicle is an armored all-terrain vehicle (ATV).

Civilian vehicles are never armed, and are clearly non-military in their purpose. Such craft vary in their specific purpose, all the way from providing basic transportation to being the embodiment of luxury itself. This category also includes scientific and research vehicles. An example of a non-military vehicle is a four-person air/raft.

Within each of the three categories, the vehicles are in order by tech level, with the lower tech level designs coming first, followed by the higher tech level designs.

THE FORMAT

Each vehicle is presented using the same format: a profile (side-view) picture of the vehicle, the official **MegaTraveller** universal craft profile (UCP), and a brief narrative containing some notes about the vehicle.

If a vehicle does not list any race name, such as "Zhodani" or "Aslan", then the vehicle is "Imperial".

Some craft profile entries have been added or altered slightly from the suggested format presented in the **MegaTraveller** *Referee's Manual* in an effort to more accurately present the vehicle's capabilities. These modifications include:

MaxAccel: For flying vehicles, especially those that can go outside the atmosphere, top vacuum speed has no real meaning. Other than the speed of light, there really is no such thing as "top speed" in a vacuum. The craft can accelerate as long as it wants, and can attain any speed desired — limited only by its duration and acceleration. Therefore, acceleration in Gs is a more sensible and useful number than top vacuum speed, since it tells you how quickly the craft can *change* its speed. Once you know the craft's maximum acceleration rate, you can compute the travel time using the basic travel time formula found in the *Referee's Companion* from GDW.

Therefore, Top Vacuum Speed has been replaced by MaxAccel.

Top Speed: This value applies to a craft operating in a standard atmosphere only. Note that wheeled, tracked, and legged vehicles are subject to the same top speed restrictions as flying craft, based on their streamlining. For example, an unstreamlined wheeled vehicle can never exceed 300 kph in a standard atmosphere. If the wheeled vehicle needs to go faster, it must be streamlined, just as any flying vehicle.

CREDITS

Multiple names are listed alphabetically by last name.

Vehicle Designs: Rob Caswell, William W. Connors, Joe D. Fugate Sr., Howard Leidner, Aleatha Parker, Nancy Parker, Robert Parker, Tom Peters

Art Direction: Rob Caswell

Cover Painting: Tom Peters

Color Vehicle Illustrations: Rob Caswell, Joe D. Fugate Sr.

Interior Vehicle Illustrations: Rob Caswell, Joe D. Fugate Sr., Bryan Gibson, Karl JM. Martin, Tom Peters

Layout and Typography: Patricia Fugate

Edited by: Gary L. Thomas

A special thanks to Howard Leidner, who endured the ordeal of testing the original craft design system, and who provided 25 vehicle designs for this book.

VEHICLE DESIGN: ADDITIONAL CONSIDERATIONS

In producing the vehicle designs for this book, some general observations can be made about vehicle design in general.

- If an air cushion vehicle has to carry any amount of a cargo load, the vehicle must be made very large in order to allow for the necessarily massive air cushion locomotion.
- Mass has a significant effect on grav vehicle speed (not totally surprising). However, mass has a much lesser effect on ground vehicle speed.
- If its control point (CP) needs are very low, a craft can get by without a computer. The "linked" control panel units have a limited amount of computer intelligence built into them. A control panel unit with a volume of 1 kiloliter involves much more than just the control panel face -- the volume includes all the circuitry links necessary to make the control panel work. In fact, very little of the control panel

MISCELLANEOUS SLUG THROWERS TABLE

TL	Type	Power	Vol	Wt	Price	Range	Sig	ROF
6	18cm MRL-6 tube	0.010	3.600	3.600	5,000	—		1
	Short range rocket*	—	0.003	0.001	170	Distant (9)	H	
	Medium range rocket*	—	0.004	0.002	340	Distant (18)	H	
	40 long range rocket*	—	0.005	0.003	510	Distant (32)	H	
8	3cm Autocannon-8	0.002	0.350	0.350	11,000	VLong (3.5)	M	200
	200 round ammo hopper	—	0.100	0.100	1,000	—		
	Ground tripod/pintel mount	—	0.050	0.050	250	—		
10	12cm Remote MRL-10 tube	0.020	2.000	2.000	5,000	—		1
	Short range rocket*	—	0.002	0.001	75	Distant (7)	H	
	Medium range rocket*	—	0.003	0.002	150	Distant (13)	H	
	Long range rocket*	—	0.004	0.003	225	Distant (22)	H	
11	6cm Light MRL-11 tube	0.004	0.120	0.006	500	—		1
	Short range rocket*	—	0.001	0.001	11	V. Long (4)	M	
	Medium range rocket*	—	0.002	0.002	22	Distant (6)	M	
	Long range rocket*	—	0.003	0.003	33	Distant (10)	M	

*Select HE, HEAP, or KEAPER warhead. Treat as a mortar round for determining penetration, damage and danger space.

HEAVY SLUG THROWERS (CREW SERVED)

TL	Type	Power	Vol	Wt	Price
5	Medium Machinegun-5	—	0.010	0.010	1,500
	100 round ammo belt	—	0.003	0.003	120
	Ground tripod/pintel mount	—	0.025	0.025	300
	Water cooling jacket	—	0.019	0.019	400
6	Heavy Machinegun-6	—	0.015	0.015	3,000
	100 round ammo belt	—	0.010	0.010	250
	Ground tripod/pintel mount	—	0.040	0.040	400
	Water cooling jacket	—	0.034	0.034	500
7	Light Machinegun-7	—	0.006	0.006	1,200
	100 round ammo belt	—	0.003	0.003	120
	Ground tripod/pintel mount	—	0.010	0.010	250
7	5.5mm Gatling Gun-7	0.001	0.070	0.070	12,350
	2,500 round ammo hopper	—	0.031	0.031	2,250
	Ground tripod/pintel mount	—	0.200	0.200	1,250
7	7mm Gatling Gun-7	0.002	0.100	0.100	15,500
	2,500 round ammo hopper	—	0.062	0.062	3,000
	Ground tripod/pintel mount	—	0.300	0.300	1,500
8	5.5mm Gatling Gun-8	0.001	0.080	0.080	19,500
	5,000 round ammo hopper	—	0.062	0.062	4,500
	Ground tripod/pintel mount	—	0.250	0.250	1,350
8	7mm Gatling Gun-8	0.002	0.100	0.100	23,500
	5,000 round ammo hopper	—	0.125	0.125	6,000
	Ground tripod/pintel mount	—	0.300	0.300	1,750
10	VRF Gauss Gun-10	0.004	2.000	2.000	200,000
	1,000 round ammo hopper	—	0.300	0.300	6,000
	Ground tripod/pintel mount	—	4.000	4.000	4,500

TL	Type	Pwr	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
8	Beam Laser	0.5	5/2	4	Dist(2.5)	2	1.5	H	40
		1.0	10/2	5	Dist(5.0)	2	3.0	H	40
		5.0	28/3	10	VDist(25)	2	4.5	H	40
		10.0	36/3	20	VDist(50)	2	15	H	40
		25.0	47/4	50	Rgnl(125)	2	30	H	40
		50.0	55/4	100	Rgnl(250)	2	45	H	40
13	Beam Laser	0.5	6/2	5	Dist(2.5)	2	1.5	L	40
		5.0	30/3	12	VDist(25)	2	4.5	L	40
		25.0	49/4	60	Rgnl(125)	2	30	L	40

TL	Type	Pwr	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
8	Pulse Laser	1.0	6/2	4	Dist(2.5)	3	1.5	H	80
		2.0	13/2	5	Dist(5.0)	3	3.0	H	80
		10.0	30/3	10	VDist(25)	3	4.5	H	80
		20.0	38/3	20	VDist(50)	3	15	H	80
		50.0	49/4	50	Rgnl(125)	3	30	H	80
		100.0	57/4	100	Rgnl(250)	3	45	H	80
13	Pulse Laser	1.0	7/2	5	Dist(2.5)	3	1.5	L	80
		10.0	33/3	12	VDist(25)	3	4.5	L	80
		50.0	51/4	60	Rgnl(125)	3	30	L	80

volume is actual "panel". As a rough guide, the maximum number of control panel units that one person can operate and monitor is 12 kiloliters.

• Vehicle 23 includes a robot brain instead of a computer (see *Book 8: Robots* from GDW for information on creating a robot brain). A robot brain can take the place of the computer and one crew member. The question comes up, then: if the robot brain can replace a computer, what is its CP multiplier? The answer we came up with is simple, and we think fits quite well with the craft design system: 250 per point of robot brain intelligence.

This has some interesting implications to the computer table on page 81 of the *Referee's Manual.* Notice that if 250 CP is intelligence 1, then a tech level 16 model 11 computer (CP multiplier of 200) is almost intelligence 1. A tech 17 model 12 computer (CP multiplier of 1,000) is intelligence 4. Thus you can see that by tech level 17, starship computers themselves become truly intelligent. In essence, then, synaptic CPU units have become reliable enough by tech 17 that they can be trusted as a common portion of the best craft computers.•

TL	Type	Ammo	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
8	3cm Autocannon	HE	2	6	VLong(3.5)	4	3	M	200
		HEAP	5	4	VLong(3.5)	4	—	M	200
		KEAP	4	4	VLong(3.5)	4	—	M	200

Tech Level Modifications:

HE Pen/Attn: +1 for every 2 tech levels over 8.
HE Dngr Spc: +10 meters for every 3 tech levels over 8.
HEAP Pen/Attn: TL 9-10, +5. TL 11-12, +7. TL 13+, +9.
KEAP Pen/Attn: +1 for every 3 tech levels over 8.

TL	Type	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
10	Standard Plasma PA-10	44/5	20	VDist(5.1)	2	15	H	40
11	Standard Plasma PA-11	44/5	20	VDist(5.1)	2	15	H	40
11	Standard Plasma PB-11	54/5	20	VDist(7.8)	2	30	H	40
12	Standard Plasma PB-12	54/5	20	VDist(7.8)	2	30	H	40
12	Standard Plasma PC-12	64/5	20	VDist(12)	2	45	H	40
13	Standard Plasma PC-13	64/5	20	VDist(12)	2	45	H	40

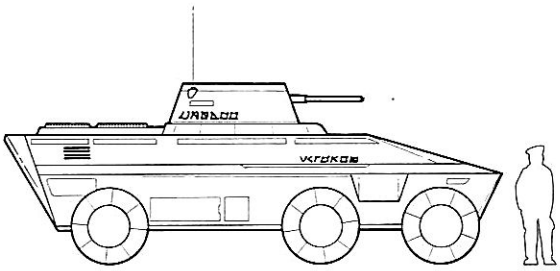
TL	Type	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
12	Rapid Pulse Plasma RPA-12	44/5	20	VDist(5.1)	3	15	H	80
13	Rapid Pulse Plasma RPA-13	44/5	20	VDist(5.1)	4	15	H	160
13	Rapid Pulse Plasma RPB-13	54/5	20	VDist(7.8)	3	30	H	80
14	Rapid Pulse Plasma RPA-14	44/5	20	VDist(5.1)	5	15	H	320
14	Rapid Pulse Plasma RPB-14	54/5	20	VDist(7.8)	4	30	H	160
14	Rapid Pulse Plasma RPC-14	64/5	20	VDist(12)	3	45	H	80
15	Rapid Pulse Plasma RPA-15	44/5	20	VDist(5.1)	6	15	H	640
15	Rapid Pulse Plasma RPB-15	54/5	20	VDist(7.8)	5	30	H	320
15	Rapid Pulse Plasma RPC-15	64/5	20	VDist(12)	4	45	H	160

TL	Type	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
12	Standard Fusion FX-12	67/5	30	VDist(18)	2	45	H	40
13	Standard Fusion FX-13	67/5	30	VDist(18)	2	45	H	40
13	Standard Fusion FY-13	71/5	30	VDist(21)	2	45	H	40
14	Standard Fusion FY-14	71/5	30	VDist(21)	2	45	H	40
14	Standard Fusion FZ-14	79/5	30	VDist(30)	2	45	H	40
15	Standard Fusion FZ-15	79/5	30	VDist(30)	2	45	H	40

TL	Type	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
14	Rapid Pulse Fusion RFX-14	67/5	30	VDist(18)	3	45	H	80
15	Rapid Pulse Fusion RFX-15	67/5	30	VDist(18)	4	45	H	160
15	Rapid Pulse Fusion RFY-15	71/5	30	VDist(21)	3	45	H	80
16	Rapid Pulse Fusion RFX-16	67/5	30	VDist(18)	5	45	H	320
16	Rapid Pulse Fusion RFY-16	71/5	30	VDist(21)	4	45	H	160
16	Rapid Pulse Fusion RFZ-16	79/5	30	VDist(30)	3	45	H	80

MILITARY VEHICLES

1



TL 6 *PENETRATOR* ARMORED CAR

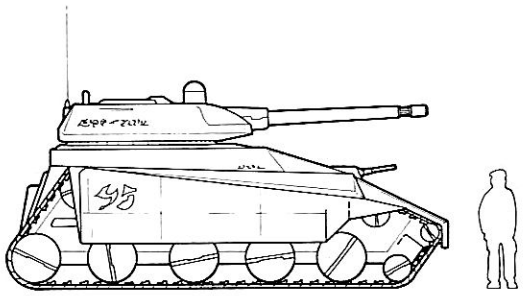
As military vehicles go, the *Penetrator* class armored car is cheap, which makes it very popular with national and planetary armies on very low tech worlds. Small mercenary forces find it attractive for swift raids and reconnaissance in more urban territory. Its low off-road speed renders it less than ideal for back-country fighting.

CraftID: Imperial *Penetrator* Armored Car, TL 6, Cr15,000
Hull: 1/2, Disp=1, Config=4USL, Armor=6B, Unloaded=5 tons, Loaded=11.1 tons
Power: 1/2, Imp Int Comb=0.40Mw, Dur=8/25
Loco: 1/2, Wheels=6, P/W=36, Road=170kph, Off-road=20kph
Commo: Radio=VDist (50km)
Sensors: Headlights x 2
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
HMG x 2	—	200	6/3	3	VLong(1.5)	3	—	H	80

Def: —
Control: Enhanced Mech
Accom: Crew=2 (Driver, gunner), Seats=Adequate x 2
Other: Fuel=5kl, Cargo=1.0kl, ObjSize=Small, EmLevel=Moderate

2



TL 6 *DIVINE RETRIBUTION* LIGHT BATTLE TANK

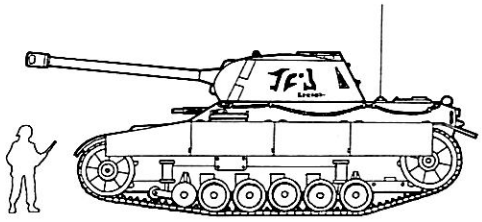
The *Divine Retribution* class light battle tank is typical of the tanks found in many lower-tech armies throughout the Spinward Marches. Its class name comes from its original homeworld, a religious dictatorship. The *Divine Retribution* is particularly prized for its see-in-the-dark capabilities.

CraftID: Imperial *Divine Retribution* Tank, TL 6, Cr470,900
Hull: 2/5, Disp=2, Config=4USL, Armor=12B, Unloaded=24 tons, Loaded=27.3 tons
Power: 1/2, Imp Int Comb=1.2Mw, Dur=1/3
Loco: 1/2, Tracks, P/W=44, Road=80kph, Off-road=24kph
Commo: Radio=Rgnl (500km)
Sensors: Radar=Dist (5km), Act IR x 4, Pass IR x 4, Headlights x 2, ActObjScan=Form, PassEngScan=Impos
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
6cm HiV	HE	25	9	10	Dist(10)	—	—	H	14
	HEAP	25	10	8	Dist(10)	—	—	H	14
	KEAPER	25	22	9	Dist(10)	—	—	H	14
	Flech.	25	—	2	Dist(10)	—	150	H	14
HMG x 2	—	100	6/3	3	VLong(1.5)	2	—	M	80

Def: Smoke Discharger x 6
Control: Computer=0bis x 2, Enhanced Mech x 2
Accom: Crew=4 (Cmdr, driver, gunners x 2), Seats=Adequate x 4 , Env=Basic env, basic ls, ext ls
Other: Fuel=2.5kl, Cargo=0.2kl, ObjSize=Small, EmLevel=Moderate

3



TL 6 *D'WOR* TRACKED TANK

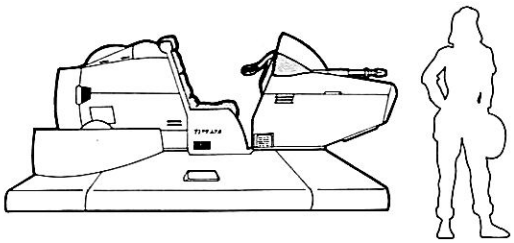
The *D'wor* class tracked tank is a popular fighting vehicle on very low tech worlds. The *D'wor's* combination of armor, mounted weapons, and speed make it a durable and feared weapon on the battlefield.

CraftID: *D'wor* Tracked Tank, TL 6, Cr108,800
Hull: 2/6, Disp=2, Config=4USL, Armor=26B, Turret=25%, Unloaded=36.4 tons, Loaded=41.1 tons
Power: 1/2, Imp Int Comb=0.52 Mw, Dur=3 hrs
Loco: 1/3, Tracks, Road=45 kph, Off-road=23kph, P/W=13
Commo: Radio=Cont (5,000km)
Sensors: Headlights x 2
Off: Hardpoints=1,WeaponStabilize=20kph

	Ammo	*Rds*	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
8cm HiV	HE	100	14	12	Dist(16)	—	20	H	10
LMG x 3		1000	3/3	3	VLong(1.0)	2	—	H	60

Def: Smoke x 6
Control: Enhanced Mech x 43,
Accom: Crew=5 (Operator, gunner x 2, cmdr/gunner, loader), Seats=Cramped x 5, Env=Basic env
Other: Fuel=0.1 kl, Cargo=4.6kl, ObjSize=Small, EmLevel=Moderate

4



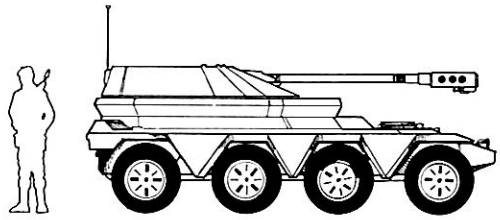
TL 8 *SURVEYOR* HOVER-BUGGY

The *Surveyor* class hover-buggy is originally from the world of Champa in Solomani Rim Sector. Recently several nearby Imperial worlds purchased a few of these vehicles.

In the Champa army, the mounted weapon is usually a RAM GL, a LMG, or even a HMG. Imperial Starport Security usually mounts a laser rifle, and sometimes a FGMP.

CraftID: *Surveyor* Hover-buggy, TL 8, Cr2,466,600
Hull: 1/2, Disp=0.75, Config=6USL, Armor=25C, Unloaded=13.7 tons, Loaded=15.6 tons
Power: 1/2, MHD Turbine=2.4Mw, Dur=9 hrs
Loco: 1/2, Air Cushion, Thrust=18 tons, CruiseAtm=30kph, TopAtm=45kph, Max Accel=0.15G
Commo: Radio=Cont (5,000km)
Sensors: All Weather Radar=Rgnl (500km), Ladar=VDist(50km), Laser Sensor, Headlights x 1 ActObjScan=Diff, ActObjPin=Diff, PassEngScan=Form
Off/Def: Weapon mount on outside of hull, just behind and above driver's right shoulder. Weapon must operate on its own power pack. There is a remote firing control on the control panel.
Control: Computer=0fib x 2, Elect Link x 1
Accom: Crew=1 (Driver/gunner)
Other: Fuel=1kl, Cargo=1.9kl, ObjSize=Small, EmLevel=Moderate

5



TL 8 *VIGIL* RECON ACV

The *Vigil* class air cushion vehicle (ACV) is a valuable recon vehicle used by the military forces of many low-tech worlds, especially those with high hydrographic ratings. The *Vigil* serves well for offshore patrols and as an adjunct to the local wet navy. Some starports on low-tech worlds also use the *Vigil* as as a perimeter patrol vehicle.

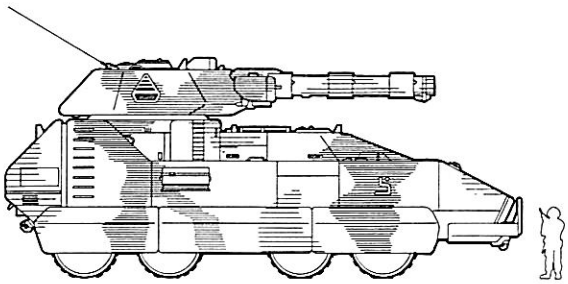
The vehicle includes a tarp so that it may be enclosed in bad weather. The *Vigil* requires a crew of two: a driver who sits on the right, and a gunner who sits on the left.

CraftID: *Vigil* Recon ACV, TL 8, Cr1,517,600
Hull: 2/4, Disp=2, Config=4USL, Armor=20C, Unloaded=24.7 tons, Loaded=26.2 tons
Power: 1/2, Gas Turbine=4.5 Mw, Dur=5 hrs
Loco: 1/2, Air Cushion, Thrust=37 tons, Cruise=90kph, Top=120kph, MaxAccel=0.40Gs
Commo: Radio=Cont (5,000km), Maser=VDist (50km),
Sensors: EM Mask, Radar=Cont (5,000km), Laser Sensor, Ladar=Dist (5km), Headlights x 2, ActObjScan=Diff, ActObjPin=Form, PassEngScan=Form
Off: Hardpoints=1

	Ammo	*Rds*	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
6cm HiV	HE	1200	9	10	Dist(10)	—	10	H	15

Def: Smoke Screen, Anti-Laser Aerosol
Control: Computer=0 x 2, Elect Link
Accom: Crew=2 (Driver, gunner), Seats=Cramped x 2, Env=Basic env (includes tarp)
Other: Fuel=1.5 kl, Cargo=0.4 kl, ObjSize=Small, EmLevel=Faint

6



TL 8 *FUSILLADE* ARMORED CAR

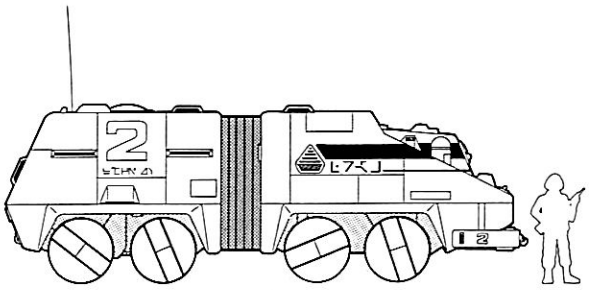
The *Fussilade* class armored car is suitable for intimidating a populace or fereting out an armed enemy. It possesses nearly every sensor possible at tech level 8. Other models, seating one less man and carrying more cargo, are used by banks, jewelers, and governments for the transport of valuables. Some of these models may be equipped with non-lethal weapons to subdue any would-be holdup men.

CraftID: *Fusillade* Armored Car, TL 8, Cr5,795,300
Hull: 11/27, Disp=12, Config=45L, Armor=25C, Unloaded=96 tons, Loaded=173 tons
Power: 3/6, MHD Turbine=42Mw, Dur=2/7
Loco: 3/6, Wheels=8, P/W=243, Road=140kph, Off-road=30kph
Commo: Radio=Cont (5,000km), Maser=Cont (5,000km)
Sensors: All Weather Radar=Cont (5,000km), Ladar=Rgnl (500km), Laser Sensor, Pass IR x 3, Adv Act IR x 3, Image Enh x 3, Pass Audio=Dist (5km), Pass Mag=VDist (50km), Pass Rad=VDist (50km), Headlights x 4, ActObjScan=Diff, ActObjPin=Diff, PassEngScan=Form
Off: Hardpoints=1

	Ammo	*Rounds*	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
4cm MD	HE	500	6	8	Dist(10)	—	10	L	20
	HEAP	2000	5	6	Dist(10)	—	—	L	20
	KEAPER	2000	15	7	Dist(10)	—	—	L	20
	Flech.	500	—	2	Dist(10)	—	150	L	20

Def: —
Control: Computer=2bis, Elect Link x 3
Accom: Crew=3 (Cmdr=1, driver=1, gunner=1), Seats=Roomy x 3 , Env=Basic env, basic ls
Other: Fuel=70kl, Cargo=7.1kl, ObjSize=Avg, EmLevel=Moderate

7

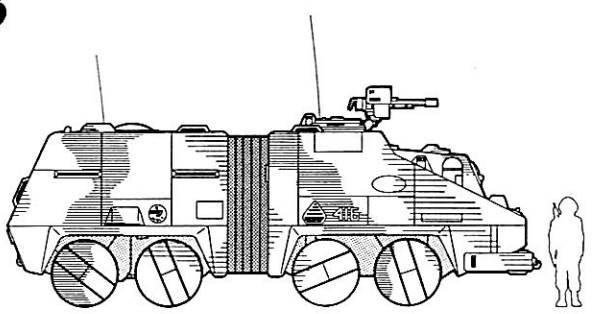


TL8 *SEPOY* APC

The *Sepoy* class armored personnel carrier derives its name from a historical event in the India province on Terra. In the days before a unified world government, the name *Sepoy* was given to the native soldiers employed by the British nation around -2750 on old Terra. While soldiers, these men were also slaves of a sort to the British national government. Thus the name seems highly appropriate to unwilling troops on any world, but especially to conscripts.

CraftID: *Sepoy* APC, TL 8, Cr1,560,700
Hull: 4/9, Disp=4 , Config=4USL, Armor=23C, Unloaded=33 tons, Loaded=38 tons
Power: 1/2 MHD Turbine=13.2Mw, Dur=10 hrs
Loco: 1/2, Wheels=8, P/W=350, Road=300kph, Off-road=60kph
Commo: Radio=Cont (5,000km), Maser=Cont (5,000km)
Sensors: All Weather Radar=Cont (5,000km), Ladar=Rgnl (500km), Laser Sensor, PassIR x 3, Adv Act IR x 3, Pass Audio=Dist (5km), Pass Mag=VDist (50km), Pass Rad=VDist (50km), Headlights x 6, ActObjScan=Diff, ActObjPin=Diff, PassEngScan=Form
Off/Def: Hardpoints=1
Control: Computer=0, Elect Link
Accom: Crew=1 (Driver), Seats=Cramped x 11, Env=Basic env, basic ls
Other: Fuel=4kl, Cargo=0.6kl, ObjSize=Small, EmLevel=Moderate

8



TL8 *STORM TROOPER* APC

The *Storm Trooper* class vehicle looks similar to the *Sepoy* except that it is armed with a small turret mounting a 3cm auto-cannon.

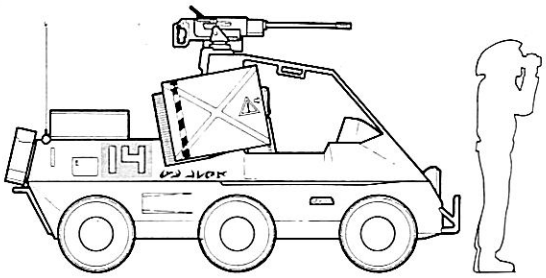
However, in terms of performance, the *Storm Trooper* is markedly different from the *Sepoy.* Namely, the *Storm Trooper* sacrifices speed for duration.

CraftID: *Storm Trooper* APC, TL 8, Cr1,504,300
Hull: 4/10, Disp=4, Config=4USL, Armor=23C, Unloaded=24 tons, Loaded=39 tons
Power: 2/4, MHD Turbine=0.8Mw, Dur=16/48
Loco: 2/4, Wheels=8, P/W=20.6, Road=70kph, Off-road=10kph
Commo: Radio=Cont (5,000km), Maser=Cont (5,000km)
Sensors: All Weather Radar=Cont (5,000km), Ladar=Rgnl (500km), Laser Sensor, Pass IR x 3, Adv Act IR x 3, Pass Audio=Dist (5km), Pass Mag=VDist (50km), Pass Rad=VDist (50km), Headlights x 6, ActObjScan=Diff, ActObjPin=Diff, PassEngScan=Form
Off: Hardpoints=1

	Rds	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
3cm AutoCannon	5000	5/3	4	VLong(3.5)	4	—	M	200

Def: —
Control: Computer=0, Elect Link x 2
Accom: Crew=2 (Driver=1, gunner=1), Seats=Cramped x 12, Env=Basic env, basic ls
Other: Fuel=14kl, Cargo=1.7kl, ObjSize=Small, EmLevel=Moderate

9



TL 8 *INQUIRY* VERY LIGHT RECON ATV

The *Inquiry* class light all-terrain vehicle finds itself being used on low-tech worlds by both army and marine forces, as well as at starports by the security forces alongside the *Vigil* class ACV. This vehicle is also sometimes sold to mercenary units. There is an unarmed civilian version of this craft available for Cr19,600.

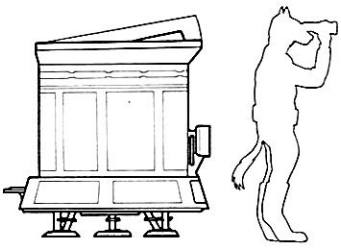
CraftID: *Inquiry* VLt Recon ATV, TL 8, Cr24,100
Hull: 1/2, Disp=0.75, Config=4USL, Armor=18C, Unloaded=3.9 tons, Loaded=5.2 tons
Power: 1/2, Imp Int Comb=0.40Mw, Dur=3.5 hrs
Loco: 1/2, Wheels=6, P/W=77, Road=170kph, Off-road=25kph
Commo: Radio=Rgnl (500km)
Sensors: Headlights x 2
Off: Hardpoints=1

	Ammo	*Rds*	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
HMG	—	100	6/3	3	VLong(1.5)	3	—	H	80
MRLx2	HE	8	24	24	varies*	—	35	H	4
	HEAP	8	45	18	varies*	—	—	H	4

*Range depends on the type of rocket: short=distant(9), medium=distant(18), and long=distant(32).

Def: —
Control: Elect x 2
Accom: Crew=3 (Cmdr/observer, driver, gunner), Seats=Cramped x 3, Open-topped, Env=Intake compressor
Other: Fuel=88 liters, Cargo=1.2kl, ObjSize=Small, EmLevel=Moderate

10



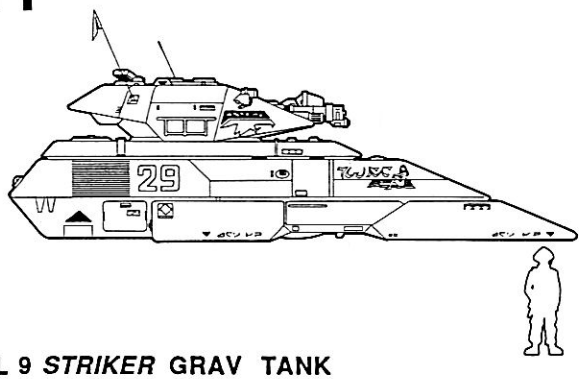
TL 9 VARGR *BUCCANEER* GRAV PLATFORM

The *Buccaneer* class grav platform is one of the frequently encountered small vehicles that come from the Vargr Extents. This vehicle is used mainly by corsair bands such as the dreaded Kforuzeng, as well as by many military and mercenary units. The *Buccaneer* is imported into the Imperium by Akerut and Oberlindes.

This vehicle can be found at starports being put to a variety of uses including cargo handling, security, and scouting surveys.

CraftID: Vargr *Buccaneer* Grav Platform, TL 9, Cr161,500
Hull: 1/2, Disp=0.25 , Config=3SL, Armor=2D, Unloaded=1.4 tons, Loaded=1.5 tons
Power: 1/2, Fusion=0.5Mw, Dur=3/9
Loco: 1/2, Std Grav, Thrust=2.5 tons, NOE=130 kph, Cruise=750kph, Top=1,000kph
Commo: Radio=Rgnl (500km)
Sensors: Radar=Rgnl (500km), Headlights x 1, ActObjScan=Diff
Off: None initially installed. The weapon and its pintle mount are optional equipment. The installed weapon is usually a HMG. Add Cr3,100.
Def: —
Control: Computer=0, Elect Link
Accom: Crew=1 (Driver=1), Psgrs=1, Seats=None, Open-topped
Other: Fuel=58 liters, Cargo=44 liters, ObjSize=Small, EmLevel=Moderate

11



CraftID: *Striker* Grav Tank, TL 9, Cr13,6739,900
Hull: 7/16, Disp=6.6, Config=1SL, Armor=55D, Unloaded=522 tons, Loaded=523 tons
Power: 5/10, Fusion=124 Mw, Dur=1/3
Loco: 1/3, Std Grav, Thrust=735 tons, NOE=130 kph, Cruise=360kph, Top=480kph, MaxAccel=0.4G
Commo: Radio=Cont x 2 (5,000km), Maser=Dist (5km)
Sensors: EM Mask, All Weather Radar=Dist (5km), Adv Act IR, Adv Image Enh, Headlights x 2, ActObjScan=Form, PassEngScan=Form
Off: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Pulse Laser	0	49/4	50	Rgnl(125)	4	30	H	160
7mm Gatling	15000	3/3	3	Dist(1.2)	3	—	H	100
HMG	300	6/3	3	VLong(1.5)	2	—	M	40

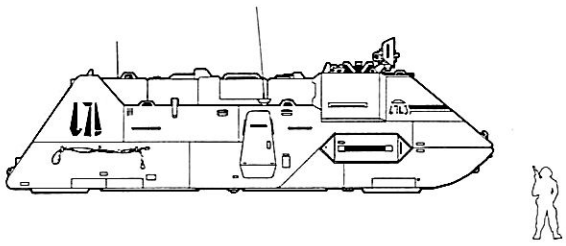
Def: Smoke x 2, Anti-Laser Aerosol x 4
Control: Computer=0/bis x 2, Comp Link x 5, Headsup Displayx2
Accom: Crew=2 (Operator/gunner, cmdr), Seats=Roomyx2, Env=,Basic env, basic ls
Other: Fuel=4.5 kl, Cargo=0.7 kl, ObjSize=Small, EmLevel=Moderate

TL 9 *STRIKER* GRAV TANK

The *Striker* class grav tank is a good example of state-of-the-art tech level 9 technology. It mounts an impressive array of tech 9 sensors and a powerful model 0/bis computer. This combination provides enough assistance that it allows the gunnery duties to be combined with those of the operator, thus requiring only a crew of two: the operator/gunner and a commander.

The *Striker's* armor and powerful 50-megawatt pulse laser render it a formidable foe on the battlefield.

12



CraftID: *Tarsan* G-Carrier, TL 10, Cr4,564,100
Hull: 8/18, Disp=8, Config=3USL, Armor=24E, Unloaded=51 tons, Loaded=64 tons
Power: 1/2, Fusion=12Mw, Dur=63/188
Loco: 1/2, LP Hvy Grav, Thrust=100 tons, NOE=140kph, Cruise=225kph, Top=300kph, MaxAccel=0.6G
Commo: Radio=Cont (5,000km), Maser=Cont (5,000km)
Sensors: All Weather Radar=Dist (5km), Laser Sensor, Pass IR, Adv Act IR, Image Enh, ActObjScan=Form, PassEngScan=Form
Off: Hardpoints=1

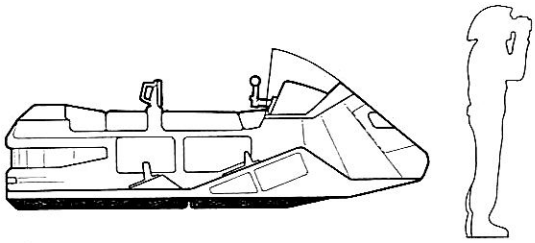
	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Beam Laser	0	28/3	10	VDist(25)	2	4.5	H	40

Def: Prismatic Aerosol x 6
Control: Computer=0fib x 2, Dyn Link x 2, HUD x 2
Accom: Crew=2 (Driver=1, gunner=1), Psgrs=10, Seats=Roomy x 12, Env=Basic env, basic ls, ext ls, inert comp, airlock
Other: Fuel=27kl, Cargo=11kl, ObjSize=Small, EmLevel=Moderate

TL 10 *TARSAN* G-CARRIER

The *Tarsan* class G-carrier can carry a double squad into any environment. Seating is roomy enough to allow soldiers to wear full gear in transport and keep their weapons at hand. The transport's life support systems will protect from chemical or biological warfare agents, and the vehicle's armor provides reasonable protection against radiation for short periods.

13



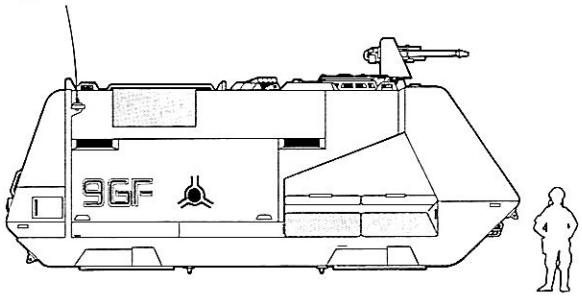
TL 10 *SWALLOW* FLYCYCLE FC-10A

The *Swallow* class flycycle has excellent performance figures. Unlike many grav cycles, this particular design includes integral inertial compensators.

This vehicle can also be used by mercenaries, if the weapon is fixed forward, and if an energy weapon uses a separate power pack.

CraftID: *Swallow* Flycycle FC-10A, TL 10, Cr317,600
Hull: 1/2, Disp=0.35, Config=1USL, Armor=10E, Unloaded=3.2 tons, Loaded=3.3 tons
Power: 1/2, Fusion=1Mw, Dur=6/17
Loco: 1/2, Std Grav, Thrust=4.5 tons NOE=140kph, Cruise=225kph, Top=300kph, MaxAccel=0.25G
Commo: Radio=Rgnl (500km)
Sensors: Radar=Rgnl (500km), Headlights x 1, ActObjScan=Diff, ActObjPin=Diff
Off/Def: Hardpoints=1
Control: Computer=0 x 2, Comp Link, HUD
Accom: Crew=1 (Driver=1), Psgrs=1, Env=Basic env, inert comp, Open-topped
Other: Fuel=0.2kl, Cargo=0.1kl, ObjSize=Small, EmLevel=Moderate

14



TL 11 SWORD WORLDS *MASALA* GRAV APC

The *Masala* class grav armored personnel carrier hails from the Sword Worlds Confederation, and is used by the military's mechanized infantry battalion. The only other place this vehicle may be encountered is Garda-Vilis (Garda-Vilis/Vilis/Spinward Marches) in support of the Tanoose Freedom League (TFL), along with rumored Zhodani commandos.

CraftID: Sword Worlds *Masala* Grav APC, TL 11, Cr6,204,000
Hull: 5/12, Disp=5, Config=45L, Armor=43E, Unloaded=20 tons, Loaded=53 tons
Power: 1/2, Fusion=4Mw, Dur=94/282
Loco: 1/2, LP Hvy Grav, Thrust=125 tons, NOE=190kph, Cruise=750kph, Top=1,000kph, MaxAccel=1.3G
Commo: Radio=Rgnl (500km)
Sensors: Headlights x 2

	Ammo	*Rds*	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
3cm AutoCannon	HE	3000	2	3	VLong(3.5)	4	4.5	H	200
	HEAP	3000	6	2	VLong(3.5)	4	—	H	200
	KEAP	3000	5	2	VLong(3.5)	4	—	H	200

Off: Hardpoints=1
Def: Prismatic Aerosol x 8
Control: Computer=1bis x 2, Dyn Link x 2, HUD x 2
Accom: Crew=3 (Cmdr=1, driver=1, gunner=1), Seating=Cramped x 15, Env=Basic env, basic ls
Other: Fuel=13.5kl, Cargo=2kl, ObjSize=Small, EmLevel=Moderate

15 TL 11 SWORD WORLDS *GRAM* GRAV TANK

See inside front cover.

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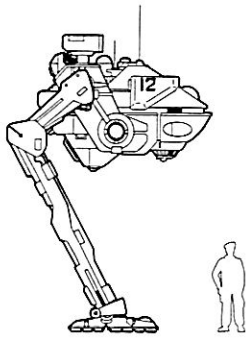


TL 12 DYNCHIA *SIEGA* STRIDER

The *Siega* class strider of the Dynchia (a minor human race) is perhaps one of the most unusual sights that can be seen. With its deck-mounted laser-turret and twin triple-tube MRL's, the *Siega* can take good care of itself, and is often used in a light armor support role for marine infantry.

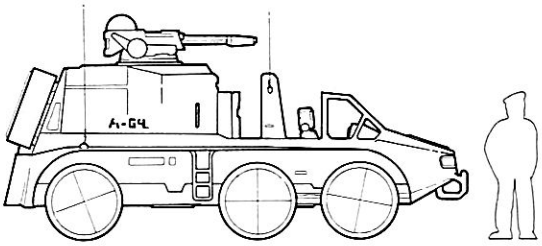
CraftID: Dynchia *Siega* Light Attack/Recon Strider, TL 12, Cr13,974,600
Hull: 5/12, Disp=5, Config=7USL, Armor=24F, Unloaded=60 tons, Loaded=64
Power: 1/2, Fusion=21Mw, Dur=20/60
Loco: 1/2, Legs, P/W=330, Road=200kph, Off-road=60kph
Commo: Radio=Cont (5,000km), Maser=Cont (5,000km)
Sensors: EMS Act=Rgnl (500km), Densitometer=Hi Pen/50m, EMS Pass=Cont (5,000km), EMS Jammer=Rgnl (500km), Neutrino Sensor=1Mw, EM Mask, Headlights x 2, ActObjScan=Diff ActObjPin=Diff, PassObjScan=Diff, PassObjPin=Diff, PassEnScan=Diff, PassEnPin=Form
Off: Hardpoints=1

	Ammo	*Rds*	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Beam Laser	0	—	36/3	20	VDist(50)	2	15	H	40
MRL x 2	HEAP	6	50	12	varies*	—	—	H	3
	KEAPER	6	29	14	varies*	—	—	H	3

*Range depends on type of rocket: short=distant(7), medium=distant(13), and long=distant(22).

Def: Sandcaster
Control: Computer=4fib, Dyn Link, HUD
Accom: Crew=1(Driver/gunner), Seat=Cramped, Environ=Basic env, basic ls
Other: Fuel=10kl, Cargo=3kl, ObjSize=Small, EmLevel=Faint

17



TL 12 DYNCHIA *SURVU* RECON VEHICLE

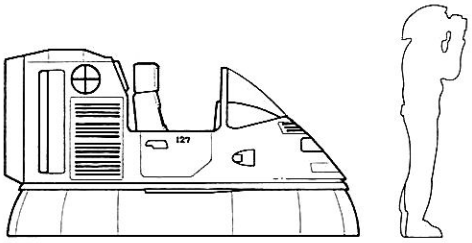
The *Survu* class wheeled recon vehicle is an exquisite example of the Dynchia (a minor human race) warrior-ethic design engineering.

CraftID: Dynchia *Survu* Recon Vehicle, TL 12, Cr6,662,700
Hull: 3/7, Disp=3, Config=4USL, Armor=41F, Unloaded=62 tons, Loaded=64 tons
Power: 1/2, Fusion=18Mw, Dur=18/54
Loco: 1/2, Wheels=6, P/W=284, Road=240kph, Off-road=35kph
Commo: Radio=Rgnl (500km), Maser=Rgnl (500km)
Sensors: All Weather Radar=Cont (5,000km), Ladar=Cont (5,000km), Laser Sensor, Pass IR x 2, Adv Act IR x 2, Adv Image Enh x 2, Pass Audio=Dist (5km), Pass Mag=VDist (50km), Pass Rad=VDist (50km), Headlights x 4, ActObjScan=Diff, ActObjPin=Diff, PassEngScan=Form
Off: Hardpoints=1

	Ammo	*Rds*	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Beam Laser	0	—	36/3	20	VDist(50)	2	15	H	40

Def: —
Control: Computer=2bis, Dyn Link x 2, HUD
Accom: Crew=2 (Cmdr/driver, gunner), Seats=Roomy x 2, Open-topped
Other: Fuel=8kl, Cargo=0.6kl, ObjSize=Small, EMLevel=Moderate

18



TL 12 SOLOMANI *SCUD* RECON ACV

The *Scud* class air cushion vehicle was first employed at the end of the Solomani Rim War (990-1002) for light scouting duties, as well as for lightning-quick hit-and-run raids. The *Scud's* ancestry as a vehicle design philosophy can be traced all the way back to the time of the Interstellar Wars (-2408 to -2219).

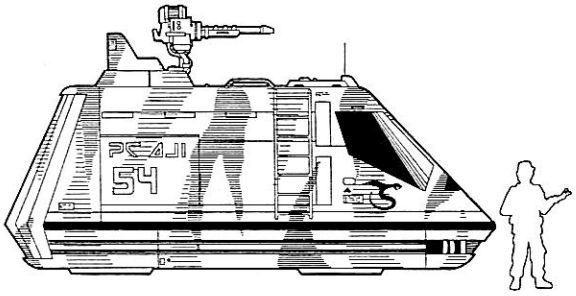
Today, the *Scud* still serves on many medium-tech worlds in the Solomani military.

CraftID: Solomani *Scud* Recon ACV, TL 12, Cr2,274,100
Hull: 1/2, Disp=0.5, Config=1USL, Armor=4F, Unloaded=20 tons, Loaded=20 tons
Power: 1/2, Fusion=6Mw, Dur=12 hrs
Loco: 1/2, Air Cushion, Thrust=25 tons, Cruise=120kph, Top=160kph, MaxAccel=0.24G
Commo: Radio=Rgnl (500km)
Sensors: Ladar=Rgnl (500km), Headlight, ActObjPin=Diff
Off: Hardpoints=1

	Ammo	*Rds*	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Beam Laser	—	—	10/2	5	Dist(5)	2	3.0	H	40
PGMP-12	—	40	20/1	12	Dist	—	4.5	H	—

Def: —
Control: Computer=0bis x 2, Dyn Link
Accom: Crew=1 (Driver/gunner), Seats=1 (external), Open-topped
Other: Fuel=0.1kl, Cargo=0.012kl, ObjSize=Small, EmLevel=Moderate

19



TL 12 *KUUM* GRAV APC

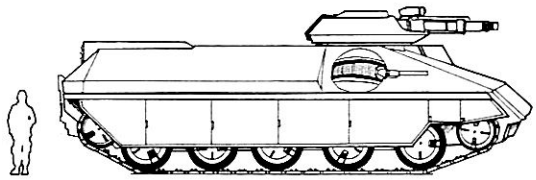
The *Kuum* class armored personnel carrier is a craft favored by many organized mercenary groups. Its heavy armor plating and fast speed give it good protection against many weapons. The *Kuum* carries up to ten combat-equipped soldiers.

CraftID: *Kuum* Grav APC, TL 12, Cr1,209,900
Hull: 3/7, Disp=3, Config=4SL, Armor=26F, Unloaded=30 tons, Loaded=37 tons
Power: 1/2, Fusion=7 Mw, Dur=5/15
Loco: 1/2, Std Grav, Thrust=66 tons, NOE=160 kph, Cruise=720kph, Top=960kph, MaxAccel=0.80G
Commo: Radio=Cont x 2 (5,000km)
Sensors: Act EMS=Vdist (50km), Pass EMS=VDist (50km), Headlights x 2, ActObjScan=Diff, ActObjPin=Diff, PassEngScan=Form
Off: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
VRF Gauss	10000	21/4	10	VDist(4.5	4	—	L	300

Def: Smoke x 2, Prismatic Aerosol x 4
Control: Computer=0/bis x 2, Dyn Link x 7
Accom: Crew=2 (Operator, cmdr), Seats=Cramped x 12, Env=Basic env, basic ls
Other: Fuel=1.3 kl, Cargo=6.8 kl, ObjSize=Small, EmLevel=Moderate

20



TL 13 SOLOMANI *BLITZKRIEG* LIGHT TANK

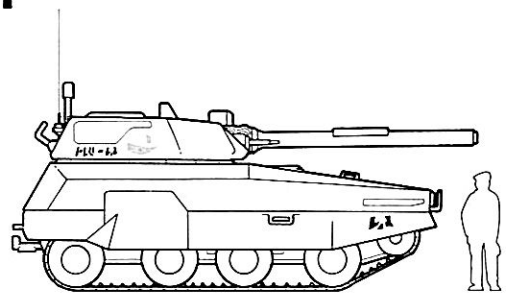
The *Blitzkrieg* class light battle tank was encountered often by Imperial Forces during the Solomani Rim War (990-1002). This tank was encountered by Imperial ground forces on nearly every world garrisoned by the Solomani.

CraftID: Solomani *Blitzkrieg* Light Battle Tank, TL13, Cr13,991,200
Hull: 9/22, Disp=10, Config=4SL, Armor=42F, Unloaded=221 tons, Loaded=238 tons
Power: 2/4 (ECP), Fusion=66Mw, Dur=20/60
Loco: 2/4 (ECP), Tracks, P/W=277, Road=405kph, Off-road=80kph
Commo: Radio=Cont (5,000km), Laser=Rgnl (500km), Maser=Rgnl (500km)
Sensors: All Weather Radar=Cont (5,000km), Ladar=Cont (5,000km), Radio Jammer=Cont (5,000km), Radar Jammer=Cont (5,000km), Radar Direction Finder, Pass IR x 4, Adv ActIR x 4, Image Enh x 4, Laser Sensor, EM Mask, Headlights x 4, ActObjScan=Diff, ActObjPin=Diff, PassEng Scan=Form
Off: Hardpoints=1

	Ammo	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Fusion FY-13	—	71/5	30	VDist(21)	2	45	H	40
Beam Laser	—	28/3	10	VDist(25)	2	4.5	L	40

Def: Sandcaster
Control: Computer=0/fib, Holo Link x 5, HUD x 5
Accom: Crew=5 (Cmdr=1, driver=1, gunner=3), Seats=Roomy x 5, Env=Basic env, basic ls, extended ls, inert comp
Other: Fuel=27kl, Cargo=15kl,ObjSize=Average, EmLevel=Faint

21



TL 13 DARRIAN *YORIN* LIGHT TANK

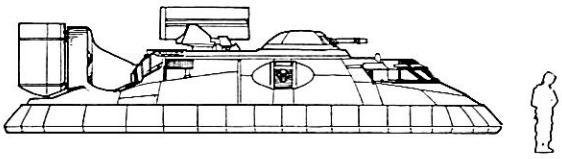
The *Yorin* class light tank is the highest tech level vehicle currently produced by the Darrians. When equipment of higher tech levels is needed, they procure tech level 14 equipment from the Imperium, as well as some occasional tech 15 gear. The *Yorin* is used by both the army and marines in the Darrian Confederation. It is named for the falcon-like avian native to the Darrian homeworld.

CraftID: Darrian *Yorin* Light Scout Tank, TL 13, Cr1,377,100
Hull: 1/3, Disp=1, Config=4USL, Armor=30F, Unloaded=19.9 tons, Loaded=21.8 tons
Power: 1/2, Fusion=6Mw, Dur=8/24
Loco: 1/2, Tracks, P/W=275, Road=400kph, Off-road=80kph
Commo: Radio=Rgnl (500km), Maser=Cont (5,000km)
Sensors: All Weather Radar=Rgnl (500km), Ladar=Rgnl (500km), Pass IR x 2, Pass Audio=Dist (5km), Pass Magnetic=VDist (50km), Adv Act IR x 2, Adv Image Enh x 2 Headlights x 2, ActObjScan=Diff, ActObjPin=Diff, PassEngScan=Form
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Pulse Laser	0	—	13/2	5	Dist(5)	3	3.0	L	80
HMG	—	100	6/3	3	VLong(1.5)	3	—	H	80

Def: —
Control: Computer=0/bis, Dyn Link x 2
Accom: Crew=2 (Cmdr/driver=1, gunner=1), Seats=Adequate x 2, Env=Basic env, basic ls
Other: Fuel=1.9kl, Cargo=0.06kl, ObjSize=Small, EmLevel=Moderate

22



TL 13 DARRIAN *HUNTER* AC TANK

The *Hunter* class air cushion tank is used by the Darrian Confederation military forces, both for its recon and combat capabilities.

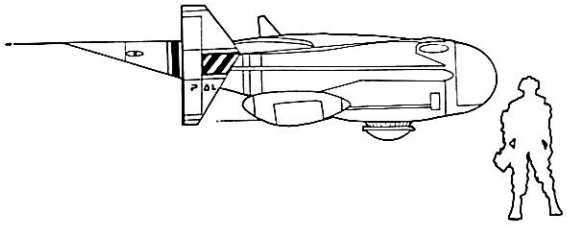
CraftID: Darrian *Hunter* Scout Tank ACV, TL13, Cr43,924,300
Hull: 7/17, Disp=7.5, Config=4SL, Armor=42F, Unloaded=210 tons, Loaded=215 tons
Power: 1/2, Fusion=126Mw, Dur=3/9
Loco: 1/2, Air Cushion, Thrust=250 tons, Cruise=33kph, Top=45kph, MaxAccel=0.16G
Commo: Radio=Rgnl (500km), Maser=Cont (5,000km)
Sensors: All Weather Radar=Rgnl (500km), Ladar=Cont (5,000km), Laser Sensor, Pass IR x 6, Pass Audio=Dist (5km), Pass Rad=VDist (50km), Adv Image Enh x 6, Neutrino=100kw, Densitometer=Hi Pen/100m, Headlights x 6, ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Diff, PassObjPin=Diff, PassEngScan=Diff, PassEngPin=Diff
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Pulse Laser	—	—	49/4	50	Rgnl(125)	3	30	L	80
VRF Gauss	—	30K	21/4	10	VDist(4.5)	4	—	L	300
18cm MRL	HE	20	28	24	varies*	—	55	H	2
	HEAP	20	59	18	varies*	—	—	H	2
	KEAPER	20	35	22	varies*	—	—	H	2

*Range depends on type of rocket: short=distant(9), medium=distant(18), long=distant(32).

Def: Prismatic Aerosol
Control: Computer=2/bis x 2, Holo Link x 6
Accom: Crew=6 (Cmdr=1, driver=1, gunner=4), Seats=Adequate x 6, Env=Basic env, basic ls, extended ls
Other: Fuel=5kl, Cargo=5kl, ObjSize=Average EmLevel=Moderate

23



TL 13 *ESSOR* RECON DRONE

The *Essor* recon drone is piloted by a built-in robot brain, programmed for Grav Vehicle-4 and Recon-4 skill. The optional crew position is for an observer/sensor specialist who rides along in order to perform an onsite evaluation of the reconnaissance data. The *Essor* is designed to weave its way through enemy lines, acquire as much data as possible, and return. Alternately, the data is compressed and "squirt-transmitted" to an orbiting comsat.

CraftID: *Essor* Recon Drone, TL 13, Cr875,800
Hull: 2/5, Disp=2, Config=2SL, Armor=4F, Unloaded=4.3 tons, Loaded=9.7 tons
Power: 1/2, Fusion=2.2Mw, Dur=80/240
Loco: 1/2, Std Grav, Thrust=19 tons, NOE=170kph, Cruise=810kph, Top=1,000kph, MaxAccel=0.9G
Commo: Radio=Sys (1,000 AU) x 2
Sensors: EM Mask, Act EMS=VDist (50km), Pass EMS=VDist (50km), Headlights x 4, ActObjScan=Diff, ActObjPin=Diff, PassEngScan=Form
Off: Hardpoints=1
Def: Smoke x 2
Control: Robot Brain (Int 5, Edu 3), Holo Link, HUD
Accom: Crew=1 (optional observer), Seat=Cramped, Env=Basic env
Other: Fuel=7kl, Cargo=5.4kl, ObjSize=Small, EmLevel=Faint

24 TL14 IMPERIAL *INVADER* GRAV TANK

See inside front cover.

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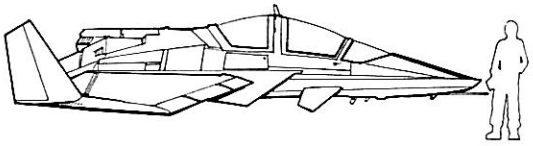


TL 14 ZHODANI *PREBLSHIENCHIASHAV* ATTACK SPEEDER

The Zhodani *Preblshienchiashav* (Imperial designation:*Princely Lord*) attack speeder made its debut during the Fourth Frontier War. The speeder is a good example of Zhodani military craft design philosphy: fast and deadly. In addition, the *Preblshienchiashav* has exceptionally good armor. This vehicle and its cousin the *Silent Grasp* were responsible for more fear and panic among the Imperial populace in the Spinward Marches than any other Zhodani fighting vehicle in the Fourth Frontier War.

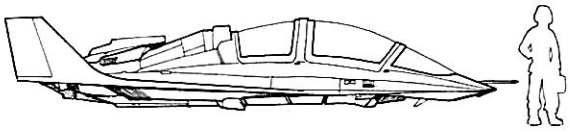
CraftID: Zhodani *Preblshienchiashav* Attack Speeder, TL 14, MCr8.05

Hull: 4/11, Disp=4.8, Config=4AF, Armor=56G, Unloaded=171.6 tons, Loaded=171.8 tons
Power: 2/4, Fusion=68.7Mw, Dur=4/12
Loco: 1/3, LP Hvy Grav, Thrust=310 tons, NOE=180kph, Cruise=720kph, Top=960kph, MaxAccel=0.8G
Commo: Radio=Rgnl (500km) x 2
Sensors: EM Mask, Act EMS=Cont (5,000km), Neutrino=1Mw, Pass EMS=Cont (5,000km), Headlights x 2, Densitometer=LowPen/50m, Act EMS Jammer=Cont (5,000km), ActObjScan=Diff, ActObjPin=Diff PassObjScan=Rout, PassObjPin=Diff, PassEngScan=Rout, PassEngPin=Form
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Pulse Laser	—	—	51/4	60	Rgnl(125)	3	30	H	80

Def: Prismatic Aerosol x 2
Control: Computer=2/bis x 2, Dyn Link, HUD
Accom: Crew=2, Seats=Adequate x 2, Env=Basic env, basic ls, grav plates, inertial comp
Other: Fuel=11.0kl, Cargo=0.14kl, ObjSize=Small, EmLevel=Moderate

26



TL 14 ZHODANI *ADRTLETLVRA* ATTACK SPEEDER

The Zhodani *Adrtletlvra* (Imperial designation:*Silent Grasp*) attack speeder is similar to the *Princely Lord.* The *Silent Grasp* is faster and has slightly less armor. In addition, the *Silent Grasp* mounts a fusion gun instead of a pulse laser — a shorter range, but more deadly weapon.

The *Silent Grasp* looks so much like a *Princely Lord* that the two craft are often confused by civilians and military observers alike. Only with sensitive high-tech sensors or close visual contact can the two craft be distinguished.

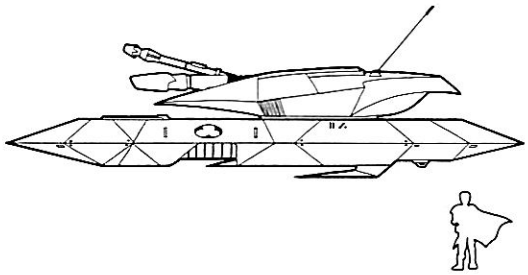
CraftID: Zhodani *Adrtletlvra* Attack Speeder, TL 14, MCr7.734

Hull: 4/10, Disp=4.4, Config=4AF, Armor=50G, Unloaded=125.0 tons, Loaded=125.2 tons
Power: 1/3, Fusion=60.3Mw, Dur=4/12
Loco: 1/3, LP Hvy Grav, Thrust=310 tons, NOE=180kph, Cruise=1,190kph, Top=1,590kph, MaxAccel=1.4G
Commo: Radio=Rgnl (500km) x 2,
Sensors: EM Mask, Act EMS=Cont (5,000km), Neutrino=1Mw, Pass EMS=Cont (5,000km), Headlights x 2, Densitometer=LowPen/50m, Act EMS Jammer=Cont (5,000km), ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Rout, PassObjPin=Diff, PassEngScan=Rout, PassEngPin=Form
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Fusion RFX-15	—	—	67/5	30	VDist(18)	3	45	H	80

Def: Prismatic Aerosol x 2
Control: Computer=2/bis x 2, Dyn Link, HUD
Accom: Crew=2 (Operator, cmdr/gunner), Seats=Adequate x 2, Env=Basic env, basic ls, grav plates, inertial comp
Other: Fuel=9.6kl, Cargo=0.14kl, ObjSize=Small, EmLevel=Moderate

27



TL 14 ZHODANI *QIKNAVRA* GRAV TANK

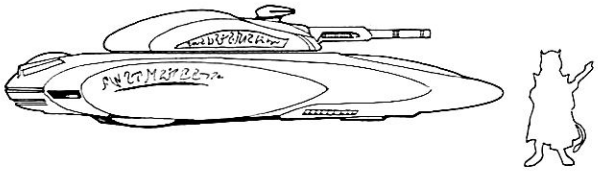
The *Qiknavra* (Imperial designation *Z-80)* class is one of the Zhodani's newest grav tank designs. The craft is intended to be an inexpensive, yet highly survivable vehicle on the battlefield. To date, the Zhodani have kept the complete vehicle details a secret from the Imperium. The statistics given below are known only by the Zhodani.

CraftID: *Qiknavra* Grav Tank, TL 14, Cr2,853,800
Hull: 12/30, Disp=10, Config=4SL, Armor=40G, Unloaded=184 tons, Loaded=188 tons
Power: 2/5, Fusion=91.7Mw, Dur=30/90
Loco: 1/2, Std Grav, Thrust=400 tons, NOE=180kph, Cruise=750kph, Top=1,000kph, MaxAccel=1G
Commo: Radio=Rgnl (500km) x 2
Sensors: EM Mask, Act EMS=Dist (50km), Neutrino=1Mw, Pass EMS=VDist (50km), Headlights x 2, Densitometer=LowPen/50m, ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Rout, PassObjPin=Diff, PassEngScan=Diff, PassEngPin=Form
Off: Hardpoints=1

	Ammo	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Pulse Laser	0	51/4	60	Rgnl(250)	3	30	L	80
VRF Gaussx2	20000	21/4	10	VDist(4.5)	4	—	L	300

Def: Prismatic Aerosol x 2
Control: Computer=2/bis x 2, Dyn Link, HUD
Accom: Crew=2 (Operator/gunner, cmdr), Seats=Roomy x 2, Env=Basic env, basic ls, ext ls, grav plates, inertial comp
Other: Fuel=110kl, Cargo=3.4kl, ObjSize=Small, EmLevel=Faint

28



TL 14 ASLAN *FIREBOLT* SUPPORT VEHICLE

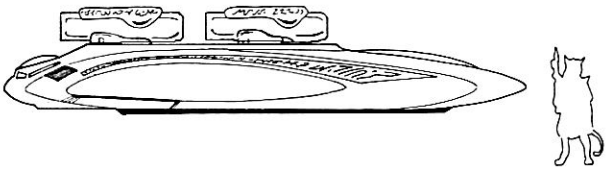
The *Firebolt* class support vehicle is used by allied clans and mercenary units, most notably the Teahleikhoi (Setting Sun) Regiment. The *Firebolt* and *Thundercrackers* are usually carried together aboard a transport starship. The number carried often varies, but a typical load is six *Firebolts* and two *Thundercrackers.*

CraftID: Aslan *Firebolt* Direct Fire Support Vehicle, TL 14, Cr6,065,800
Hull: 4/10, Disp=4.5, Config 7SL+turret, Armor=47G, Unloaded=64 tons, Loaded=78 tons
Power: 1/2, Fusion=54Mw, Dur=9/28
Loco: 1/2, Grav, Thrust=125 tons, NOE=180kph, Cruise=540kph, Top=720kph, MaxAccel=0.6G
Commo: Radio=Rgnl (500km), Maser=Rgnl (500km)
Sensors: All Weather Radar=Rgnl (500km), Ladar=Rgnl (500km), ActObjScan=Diff, ActObjPin=Diff
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Plasma PB-12	0	0	54/5	20	VDist(7.8)	2	30	H	40
VRF Gauss	—	30K	21/4	10	VDist(4.5)	4	—	L	300

Def: —
Control: Computer=3fib x 2, Holo Link x 3
Accom: Crew=3 (Cmdr=1, driver=1, gunner=1), Seats=Roomy x 3, Env=Basic env, basic ls, extended ls, inert comp
Other: Fuel=7kl, Cargo=12kl, ObjSize=Small, EmLevel=Moderate

29



TL 14 ASLAN *THUNDERCRACKER* SUPPORT VEHICLE

The Aslan *Thundercracker* class support vehicle is used alongside the *Firebolt* by allied clans and mercenary units, most notably the Teahleikhoi (Setting Sun) Regiment. As with the *Firebolt*, the *Thundercracker* is usually carried aboard transport starships.

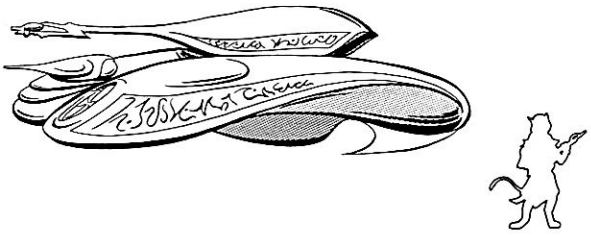
CraftID: Aslan Thundercracker Support Vehicle,TL14, Cr19,208,600
Hull: 4/10, Disp=4.3, Config 7SL, Armor=56G, Unloaded=107 tons, Loaded=114 tons
Power: 1/2, Fusion=27Mw, Dur=9/27
Loco: 1/2, Grav, Thrust=185 tons, NOE=180kph, Cruise=540kph, Top=720kph, MaxAccel=0.6G
Commo: Radio=Rgnl (500km), Maser=Rgnl (500km)
Sensors: All Weather Radar=Rgnl (500km), Ladar=Rgnl (500km), ActObjScan=Diff, ActObjPin=Diff
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
VRF Gauss	—	30K	21/4	10	VDist(4.5)	4	—	L	300
18cm MRL	HE	30	28	24	varies*	—	55	H	3
	HEAP	30	59	18	varies*	—	—	H	3
	KEAPER	30	35	22	varies*	—	—	H	3

*Range depends on type of rocket: short=distant(9), medium=distant(18), long=distant(32).

Def: —
Control: Computer=3/fib x 2, Holo Link x 3
Accom: Crew=3 (Cmdr=1, driver=1, gunner=1), Seats=Roomy x 3, Env=Basic env, basic ls, ext ls, inert comp
Other: Fuel=6.5kl, Cargo=14kl, ObjSize=Average, EmLevel=Moderate

30



TL 14 ASLAN *FTAOHTE* SUPPORT VEHICLE

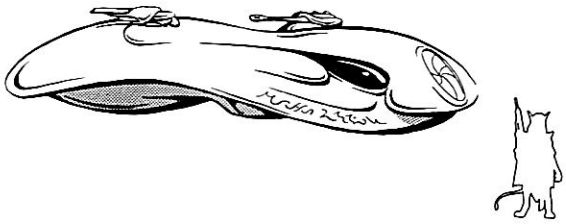
The *Ftaohte (Lightning)* class grav support vehicle is a popular combat vehicle among many Aslan clans. Like many high-tech Aslan vehicles, the extensive sensors on the vehicle allow the commander to act as both operator and commander.

CraftID: Aslan *Ftaohte*, TL 14, Cr6,686,300
Hull: 6/15, Disp=6, Config=7SL, Armor=50G, Unloaded=176 tons, Loaded=194 tons
Power: 2/5, Fusion=89Mw, Dur=5/15
Loco: 1/2, Std Grav, Thrust=320 tons, NOE=180kph, Cruise=540kph, Top=720kph, MaxAccel=0.6G
Commo: Radio=Rgnl (500km) x 2
Sensors: Act EMS=Dist (50km), Neutrino=1Mw, Pass EMS=VDist (50km), Headlights x 2, ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Rout, PassObjPin=Diff, PassEngScan=Diff, PassEngPin=Form
Off: Hardpoints=1

	Ammo	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Pulse Laser	0	7/2	5	Dist(2.5)	3	1.5	L	80
VRF Gauss	20000	21/4	10	VDist(4.5)	4	—	L	300

Def: Smoke x 2, Prismatic Aerosol x 10
Control: Computer=0/bis x 2, Holo Link x 22, HUD
Accom: Crew=2 (Cmdr/operator, gunner), Seats=Roomy x 2, Env=Basic env, basic ls, grav plates, inert comp
Other: Fuel=18kl, Cargo=18kl, ObjSize=Small, EmLevel=Moderate

31



TL 14 ASLAN *TIHKA* GRAV SUPPORT VEHICLE

The *Tihka (Thunderer)* class grav support vehicle is a commonly used support vehicle among several Aslan clans. The operator and commander positions are combined, since the multitude of sensors on the vehicle allow the commander to operate the vehicle with little extra effort.

CraftID: Aslan *Tihka*, TL 14, Cr3,010,600
Hull: 5/14, Disp=6, Config=7SL, Armor=54G, Unloaded=125 tons, Loaded=141 tons
Power: 1/2, Fusion=28Mw, Dur=5/15
Loco: 1/2, Std Grav, Thrust=220 tons, NOE=180kph, Cruise=450kph, Top=600kph, MaxAccel=0.5G
Commo: Radio=Rgnl (500km) x 2
Sensors: Act EMS=Dist (50km), Neutrino=1Mw, Pass EMS=VDist (50km), Headlights x 2, ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Rout, PassObjPin=Diff, PassEngScan=Diff, PassEngPin=Form
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
12cm MRL	HE	20	22	16	varies*	—	55	H	2
	HEAP	20	52	14	varies*	—	—	H	2
	KEAPER	10	30	14	varies*	—	—	H	2
VRF Gauss		20K	21/4	10	Vdist(4.5)	4	—	L	300

*Range depends on type of rocket: short=distant(7), medium=distant(13), long=distant(22).

Def: Smoke x 2, Prismatic Aerosol x 10
Control: Computer=0/bis x 2, Holo Dyn Link x 1, HUD
Accom: Crew=2 (Operator/cmdr, gunner), Seats=Roomy x 2, Env=Basic env, basic ls, grav plates, inert comp
Other: Fuel=6kl, Cargo=16kl, ObjSize=Small, EmLevel=Moderate

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TL 14 *TREPIDA* GRAV TANK

See inside front cover.

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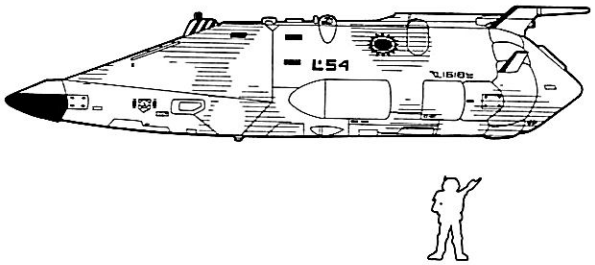


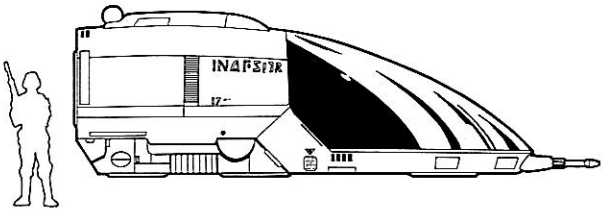
TL 14 *ASTRIN* GRAV APC

The *Astrin* class grav armored personnel carrier was developed as a companion to the *Trepida* grav tank to carry troops into battle. Its deployment has followed the *Trepida* by about three years.

The *Astrin* carries up to 10 combat-equipped soldiers.

CraftID: *Astrin* Grav APC, TL 14, MCr18
Hull: 12/29, Disp=10, Config=4SL, Armor=40G, Unloaded=100 tons, Loaded=130 tons
Power: 2/4, Fusion=120Mw, Dur=40/120
Loco: 1/2, Std Grav, Thrust=400 tons, NOE=180kph, Cruise=750kph, Top=1,000kph, MaxAccel=0.9G
Commo: Radio=Cont (5,000km), Maser=Dist (5km) x 2
Sensors: EM Mask, Pass EMS=VDist (50km), Cont (5,000km), Act EMS=Dist x 2, ActObjScan=Form, ActObjPin=Form, PassEngScan=Form
Off: Hardpoints=1
Def: Prismatic Aerosol x 2, Sandcaster x 2
Control: Computer=3 x 2, Panel=Dyn, HUD, Env=Basic env, basic ls, ext ls, grav plates, inert comp
Accom: Crew=2 (Operator/gunner, cmdr), Seats=Roomy x 2, Adequate x 10
Other: Fuel=73kl, Cargo=10kl, ObjSize=Small, EmLevel=Faint

34



TL 15 *INQUISITOR* GRAV SLED

The *Inquisitor* class grav sled was developed in the early 1100's, just prior to the onslaught of the Fifth Frontier War.

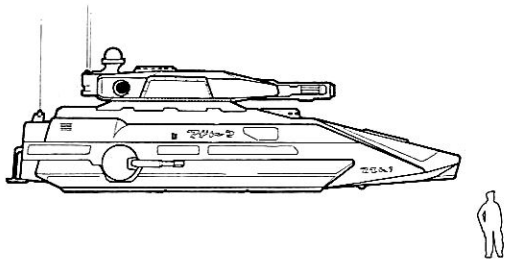
The *Inquisitor* is used at Naval bases and depots for base security, or as an early warning platform to assist other Naval vessels.

CraftID: *Inquisitor* Recon Grav Sled, TL 15, Cr33,292,800
Hull: 6/14 Disp=6, Config=1SL, Armor=45G Unloaded=51 tons, Loaded=53 tons
Power: 2/4 (ECP), Fusion=63Mw, Dur=4/12
Loco: 2/4 (ECP), LP Hvy Grav, Thrust=500 tons, NOE=190kph ,Cruise=750kph, Top=1,000kph, MaxAccel=6G
Commo: Meson=Cont (5,000 km), Maser=Sys (1,000 AU)
Sensors: Pass EMS=Substellar (100,000 km), Act EMS=Far Orbit (500,000 km), EMS Jammer=Far Orbit (500,000 km), Densitometer=Hi Pen/1 km, Neutrino=10Kw, NAS Sensor=VLong (0.5km), Pass Audio=Dist (5km), Pass Mag=VDist (50km), Act Audio (Sonar)=Dist (5km), EM Mask, Holorecorders=2, Headlights=2, ActObjScan=Rout, ActObjPin=Rout, PassObjScan=Routine, PassObjPin=Rout, PassEngScan=Simp, PassEngPin=Rout
Off: Hardpoints=1

	Ammo	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Fusion RFX-15	—	67/5	30	VDist(18)	4	45	H	160

Def: TL 15 Point Defense
Control: Computer=2/bis x 2 with ECP, Holo Link x 2, HUD x 2
Accom: Crew=2 (Cmdr/driver, sens op/gunner) Seats=Roomy x 2, Env=Basic ls, ext ls, grav plates, inert comp
Other: Fuel=7kl, Cargo=2kl, ObjSize=Small, EmLevel=Faint

35



TL 15 *LANCER* COMBAT VEHICLE

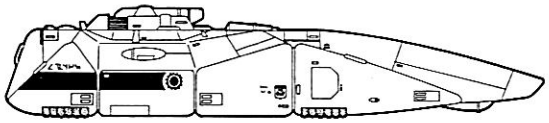
The *Lancer* class combat vehicle is among the most significant additions to the military vehicle inventory since the *Inquisitor* recon grav sled.

CraftID: *Lancer*, TL15, Cr67,534,300
Hull: 18/45, Disp=20, Config=1SL, Armor=50G, Unloaded=251 tons, Loaded=258 tons
Power: 2/4, Fusion=252Mw, Dur=10/30
Loco: 2/4, LP Hvy Grav, Thrust=1,500 tons, NOE=190kph, Cruise=750kph, Top=1,000kph, MaxAccel=4G
Commo: Radio=Sys (1,000 AU), Maser=Sys(1,000 AU), Meson=Cont (5,000km)
Sensors: Act EMS=Far Orbit (500,000km), Pass EMS=Substellar (100,000 AU), Densitometer=HiPen/1km, Neutrino=10kw, EMS Jam=Far Orbit (500,000km), Pass Audio=Dist (5km), Pass Mag=VDist (50km), Pass Rad=VDist (50km), EM Mask, Act Audio=Dist (5km), NAS=VLong (0.5km), Headlights x 2, ActObjScan=Rout, ActObjPin=Rout, PassObjScan=Rout, PassObjPin=Rout, PassEngScan=Simp, PassEngPin=Rout
Off: Hardpoints=1

	Ammo	Rds	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
RPY-15	0	—	71/5	30	Vdist(21)	3	—	H	80
Beam Laser	0	—	49/4	60	Rgnl(125)	2	—	L	40

Def: Prismatic Aerosol
Control: Computer=3/fib x 2, Holo Link x 5, HUD x 5, (all ECP)
Accom: Crew=5 (Cmdr, driver, gunner=3), Troops=24, Seats=Roomy x 5, Adequate x 24, Env=Basic env, basic ls, ext ls, grav plates, inert comp, airlock
Other: Fuel=30kl, Cargo=5kl, ObjSize=Average, EmLevel=Faint

36



TL 15 *EMPRESS* GRAV APC

The *Empress* class grav armored personnel carrier is a popular model with the Imperial Marines. The craft is fast, heavily armored, and mounts an RPY-15 fusion gun — making it an ideal personal carrier for military campaigns.

CraftID: *Empress* Grav APC, TL 15, Cr9,835,700
Hull: 12/30, Disp=13, Config=4SL, Armor=60G, Unloaded=305 tons, Loaded=332 tons
Power: 2/4, Fusion=135Mw, Dur=14/42
Loco: 1/2, Std Grav, Thrust=600 tons, NOE=190kph, Cruise=720kph, Top=960kph, MaxAccel=0.8G
Commo: Radio=Cont (5,000km) x 2, Meson=Rgnl (500km)
Sensors: EM Mask, Act EMS=Dist (50km), Pass EMS=VDist (50km), Headlights x 2, ActObjScan=Diff, ActObjPin=Diff, PassEngScan=Form
Off: Hardpoints=1

	Ammo	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Fusion RFY-15	0	71/5	30	VDist(21)	3	45	H	80

Def: Smoke x 5, Prismatic Aerosol x 5
Control: Computer=0/bis x 2, Holo Dyn Link x 2, HUD
Accom: Crew=2 (Operator, cmdr), Seats=Adequate x 10, Env=Basic env, basic ls, ext ls, grav plates, inert comp
Other: Fuel=68kl, Cargo=27kl, ObjSize=Small, EmLevel=Moderate

PARAMILITARY VEHICLES

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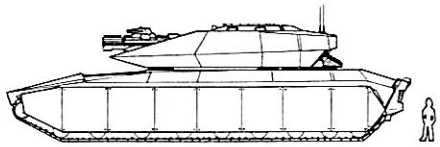


TL 9 *LAGERHEDD* ARMORED FIGHTING VEHICLE

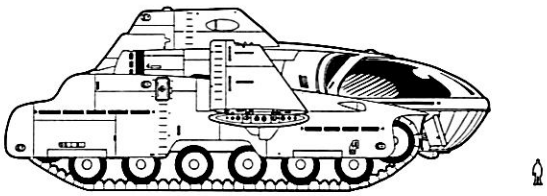
The *Lagerhedd* class illustrates a different philosophy in low-tech armored fighting vehicles: duration and near-total automation. The *Lagerhedd* is designed to be operated by only a single crewmember, with an optional co-operator. As far as duration, the vehicle can operate for up to *eight standard days* without needing to be refueled.

CraftID: *Lagerhedd* Tracked AFV, TL 9, Cr21,951,800
Hull: 23/56, Disp=20, Config=1USL, Armor=26D, Unloaded=570 tons, Loaded=584 tons
Power: 7/17, Fusion=201Mw, Dur=8/24
Loco: 8/21, Tracks, Road=110kph, Off-road=44kph, P/W=344
Commo: Radio=Cont (500km)
Sensors: All Weather Radar=Dist (5km), Adv Act IR, Adv Image Enh, Headlights x 6
Off: Hardpoints=1

	Ammo	Pen/ Attn	Dmg	Max Range	Auto Tgts	Dngr Spc	Sig	ROF
Pulse Laser x2	0	57/4	100	Rgnl(250)	4	45	H	160
LMG x 8	1000	3/3	3	VLong(1.0)	2	—	H	60

Def: Smoke x 6
Control: Computer=3/fib, Computer Link x 18, HUD x 2
Accom: Crew=1 (Operator/cmdr), Seats=Roomy x 6, Env=Basic env, basic ls
Other: Fuel=58kl, Cargo=13.5kl, ObjSize=Small, EmLevel=Moderate

38

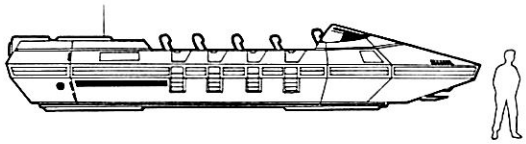


TL 10 *GASHEDA* UNDERSEA ATV

The *Gasheda* is designed primarily as an undersea all-terrain vehicle. The craft diplaces over 160 tons — nearly as large as a starship. The *Gasheda* has complete accommodations for up to six occupants.

CraftID: *Gasheda* Undersea ATV, TL 10, Cr7,747,000
Hull: 148/369, Disp=164, Config=4USL, Armor=16E, Unloaded=184 tons, Loaded=241 tons
Power: 1/2, Fusion=5.7Mw, Dur=30/90
Loco: 131/327, Tracks, Road=110kph, Off-road=66kph, P/W=23
Commo: Radio=Cont (500km) x 2
Sensors: Env Sensor, Act Audio (pinger)=5km, Pass EMS=VDist (5km), Headlights x 10, Densitometer=Low Pen/Surface, ActObjScan=Form, PassObjScan=Form, PassObjPin=Imp
Off/Def: Hardpoints=1
Control: Computer=2/bis x 2, Dyn Link x 3, HUD
Accom: Crew=(Operator,cooperator), Seats=Small Stateroom x 6, Env=Basic env, basic ls, ext ls
Other: Fuel=6kl, Cargo=57kl, ObjSize=Average, EmLevel=Faint

39

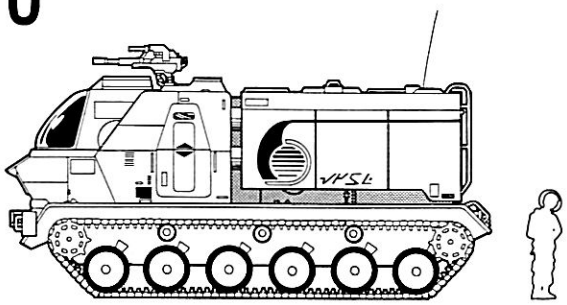


TL 10 *TRAVELER* OPEN AIR/RAFT

The *Traveler* class open-topped air/raft serves well in a variety of uses, from carrying passengers to ferrying small parcels of cargo. The *Traveler* , a larger air/raft, thus has room for up to eight passengers besides the operator.

CraftID: *Traveler* Open Air/Raft, TL 10, Cr950,700
Hull: 3/7, Disp=4, Config=4USL, Armor=4E, Unloaded=17 tons, Loaded=23 tons
Power: 1/2, Fusion=6.5Mw, Dur=20/59
Loco: 1/2, Std Grav, Thrust=30 tons, NOE=140kph, Cruise=270kph, Top=360kph, MaxAccel=0.3G
Commo: Radio=Cont (5,000km) x 2
Sensors: Act EMS=VDist (50km), Headlights x 4, ActObjScan=Diff, ActObjPin=Diff
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Dyn Link x 6
Accom: Crew=1 (Operator), Seats=Adequate x 9, Env=Basic env, grav plates, inertial comp
Other: Fuel=4.5kl, Cargo=5.4kl, ObjSize=Small, EmLevel=Moderate

40



TL10 *HORRONON* ATV

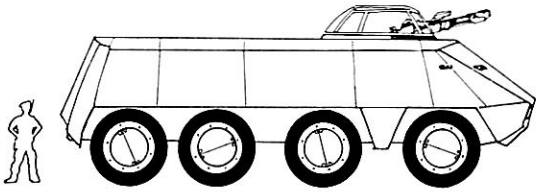
The *Horronon* class all-terrain vehicle was designed primarily for use as a police or rescue vehicle. The police version is shown here. The rescue vehicle does not mount a weapon.

CraftID: *Horronon* ATV, TL 10, Cr1,246,700
Hull: 10/26, Disp=11, Config=4USL, Armor=16E, Unloaded=49 tons, Loaded=106 tons
Power: 1/2, Fusion=11Mw, Dur=50/150
Loco: 2/5, Tracks, Road=120kph, Off-road=70kph, P/W=101
Commo: Radio=Cont (500km) x 2
Sensors: Act EMS=VDist (50km), Pass EMS=VDist (50km), Headlights x 4, ActObjScan=Diff, PassObjScan=Diff, PassObjPin=Imp, PassEngScan=Form
Off: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Pulse Laser	0	30/3	10	VDist(25)	3	4.5	H	40

Def: Smoke x 5, Anti-Laser Aerosol x 2
Control: Computer/0, Dyn Link x 3, HUD
Accom: Crew=2 (Operator, cmdr), Seats=Roomy x 6, Bunk, LowBerth, Env=Basic env, basic ls, ext ls
Other: Fuel=20kl, Cargo=57kl, ObjSize=Small, EmLevel=Moderate

41



TL12 *MADWICK* ATV

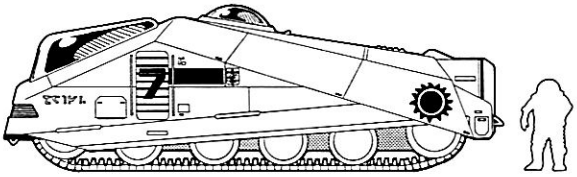
The *Madwick* class is a quite popular ATV, often carried on board starships as the planetside vehicle.

CraftID: *Madwick* ATV, TL 12, Cr1,002,100
Hull: 9/24, Disp=10, Config=4USL, Armor=18F, Unloaded=36 tons, Loaded=63 tons
Power: 1/2, Fusion=8.7Mw, Dur=40/120
Loco: 1/3, Wheels, Road=150kph, OffRoad=45kph, P/W=136,
Commo: Radio=Cont (500km)
Sensors: Act EMS=VDist (50km), Headlights x 4, Densitometer=Surface, ActObjScan=Form, PassObjScan=Diff, PassObjPin=Imp
Off: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Plasma PA-10	0	44/5	20	VDist(5.1)	2	15	H	40

Def: Smoke x 2, Anti-Laser Aerosol x 2
Control: Computer/0, Dyn Link x 3, HUD
Accom: Crew=1 (Operator), Seats=Roomy x 17, Env=Basic env, basic ls, ext ls
Other: Fuel=13kl, Cargo=27kl, ObjSize=Small, EmLevel=Moderate

42



TL 12 *ARGOSY* ATV

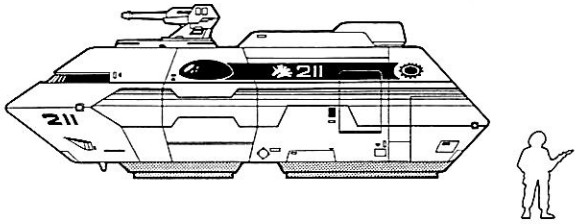
The *Argosy* class all-terrain vehicle is a well-liked design. It has an excellent duration for travelling away from civilization, a good off-road speed, and plenty of room. It typically mounts a plasma PA-10 — a particularly nasty weapon for a paramilitary design.

CraftID: *Argosy* ATV, TL 12, Cr1,002,500
Hull: 9/24, Disp=10, Config=4USL, Armor=18F, Unloaded=39 tons, Loaded=95 tons
Power: 1/2, Fusion=8.7Mw, Duration=50/150
Loco: 1/2, Tracks, P/W=91, Road=140 kph, Off-road=60kph
Commo: Radio=Cont (5,000km)
Sensors: Active EMS=VDist (50km), Headlights x 4, Densitometer=Low Pen/Surface, ActObjScan=Form, PassObjScan=Diff, PassObjPin=Imp
Off: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Plasma PA-10	0	44/5	20	VDist(5.1)	2	15	H	40

Def: Smoke x 2, Anti-Laser Aerosol x 2
Control: Computer/0, Dyn Link x 3, HUD
Accom: Crew=2 (Operator, gunner), Seats=Roomy x 12, Env=Basic env, basic ls, ext ls
Other: Fuel=16kl, Cargo=57kl, ObjSize=Small, EmLevel=Moderate

43



TL 12 *RESOLVE* G-CARRIER

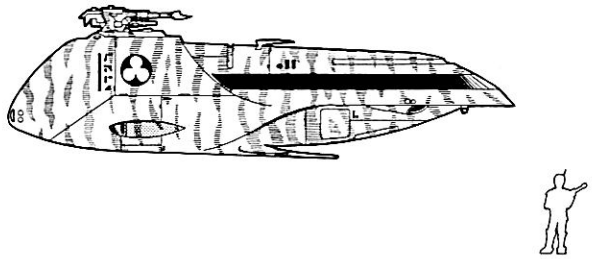
The *Resolve* class G-carrier serves admirably either as a light military APC or as an armored air/raft in paramilitary or civilian applications. When used for non-military purposes, the *Resolve* is often unarmed.

CraftID: *Resolve* G-Carrier, TL 12, Cr3,559,700
Hull: 9/23, Disp=10, Config=4SL, Armor=10F, Unloaded=76 tons, Loaded=103 tons
Power: 1/2, Fusion=26Mw, Dur=15/45
Loco: 1/2, Std Grav, Thrust=140 tons, NOE=160kph, Cruise=315kph, Top=420kph, MaxAccel=0.35G
Commo: Radio=Cont (5,000km) x 2
Sensors: Act EMS=Dist (50km), Neutrino=1Mw, Pass EMS=VDist (50km), Headlights x 2, Densitometer=HiPen/1km, NAS Sensor=VLong, ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Diff, PassObjPin=Diff, PassEngScan=Diff, PassEngPin=Form
Off: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Beam Laser	0	5/2	4	Dist(2.5)	2	1.5	H	40

Def: Smoke x 2, Anti-Laser Aerosol x 2
Control: Computer=0/bis x 2, Dyn Link, HUD
Accom: Crew=2 (Operator, gunner), Seats=Roomy x 14, Env=Basic env, basic ls, ext ls, grav plates, inert comp
Other: Fuel=14kl, Cargo=27kl, ObjSize=Small, EmLevel=Moderate

44



TL 12 ZHODANI *IAVCHIEQL* G-CARRIER

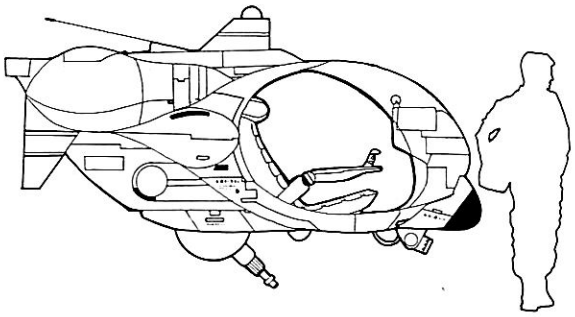
The *Iavchieql* class G-carrier is a good example of Zhodani light vehicle design philosphy: weaponry is preferred over armor. Also, sensors are less powerful than those in equivalent Imperial craft — presumably because the Zhodani place more stock in psionics as a supplement to sensors.

CraftID: Zhodani *Iavchieql* G-Carrier, TL 12, Cr3,991,100
Hull: 9/22, Disp=10, Config=4SL, Armor=8F, Unloaded=95 tons, Loaded=122 tons
Power: 1/3, Fusion=38Mw, Dur=16/48
Loco: 1/2, Std Grav, Thrust=160 tons, NOE=160kph, Cruise=270kph, Top=360kph, MaxAccel=0.3G
Commo: Radio=Cont (5,000km) x 2, Maser=VDist (50km)
Sensors: Act EMS=Dist (5km), Neutrino=1Mw, Pass EMS=VDist (50km), Headlights x 3 Densitometer=LowPen/1m, ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Diff, PassObjPin=Form, PassEngScan=Diff, PassEngPin=Form
Off: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	
Plasma RPA-12	0	44/5	20	VDist(5.1)	3	15	H	80

Def: Smoke, Prismatic Aerosol x 3
Control: Computer=0/bis x 2, Dyn Link, HUD
Accom: Crew=2 (Operator, gunner), Seats=roomy x 14, Env=Basic env, basic ls, ext ls, grav plates, inert comp
Other: Fuel=21kl, Cargo=26kl, ObjSize=Small, EmLevel=Moderate

45



TL 12 *VENERY* POLICE SPEEDER

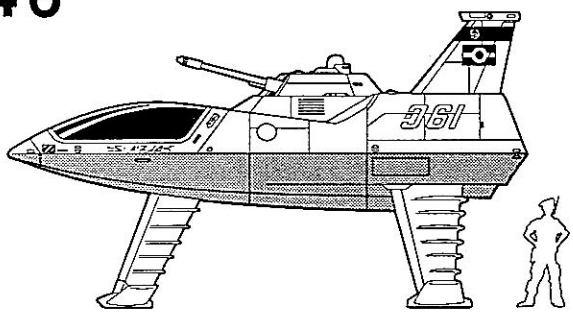
The *Venery* class police speeder is meant for patrol of urban environments and high-speed pursuit. It is equipped with both active and passive EMS sensors, which give it excellent night and bad-weather vision. In addition, the *Venery* is equipped with several searchlights to aid in spotting criminals at night. Similar vehicles can be found throughout human space in use by the local worlds' law enforcement agencies.

CraftID: *Venery* Police Speeder, TL 12, Cr918,200
Hull: 1/4, Disp=1.6, Config=2SL, Armor=4F, Unloaded=12 tons, Loaded=18 tons
Power: 1/2, Fusion=3.7Mw, Duration=30/90
Loco: 1/2, Std Grav, Thrust=34 tons, NOE=170kph, Cruise=810kph, Top=1,080kph, MaxAccel=0.9G
Commo: Radio=Sys (1,000AU) x 2
Sensors: Act EMS=Dist (5km), Pass EMS=VDist (50km), Headlights x 6, ActObjScan=Form, ActObjPin=Form, PassEngScan=Form
Off: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
VRF Gauss	2,000	21/4	10	VDist(4.5)	4	—	L	300

Def: Smoke x 2
Control: Computer=0 x 2, Holo Link, HUD
Accom: Crew=1 (Operator), Seat=Roomy, Env=Basic env
Other: Fuel=4kl, Cargo=5.4kl, ObjSize=Small, EmLevel=Moderate

46



TL 13 *VIEUS* HYDROFOIL

The *Vieus* class grav-thrusted hydrofoil illustrates a technique sometimes used for high-tech watercraft: grav-thrust propulsion. The watercraft does not have enough thrust to actually fly, but instead has just enough thrust to propel it forward on its foils. The combination of fusion power and grav propulsion makes the *Vieus* a quiet vessel even when nearby.

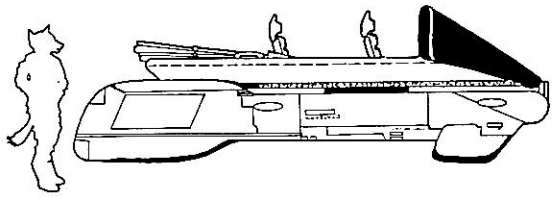
The *Vieus* hydrofoil is quite fast for a surface watercraft, able to reach 110kph. Many higher-tech worlds use such fast surface watercraft for patrol and courier duty in their wet navies.

Craft ID: *Vieus* Grav-Thrusted Hydrofoil, TL 13, Cr987,400
Hull: 2/4, Disp=1.5, Config=1SL, Armor=26F, Turret=15%, Unloaded=22 tons, Loaded=34 tons
Power: 1/2, Fusion=12Mw, Dur=18/54
Loco: 1/2, Grav Thrust=18 tons, Cruise=80kph, Top=110kph
Commo: Radio=Cont (5,000km) x 3, Maser=VDist (50km)
Sensors: ActEMS=VDist (50km), PassEMS=VDist (50km), Headlights x 2, ActObjScan=Diff, ActObjPin=Difficult, PassEngScan=Form
Off: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Pulse Laser	0	33/3	12	VDist(25)	3	4.5	L	80

Def: Smoke x 5, PrismaticAerosol x 10
Control: Computer=0, Holo Dyn Link x 30
Accom: Crew=2 (Driver=1, gunner=1), Seats=Cramped x 2, Env=Basic env
Other: Fuel=9kl, Cargo=3kl, ObjSize=Small, EmLevel=Moderate

47

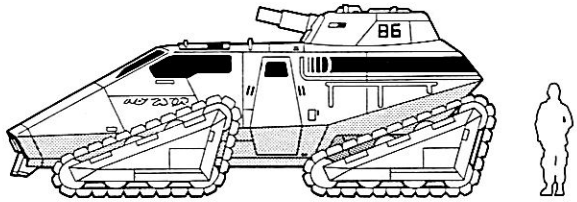


TL 13 VARGR *OEGHAEGHZ RRUERRGH* AIR/RAFT

The *Oeghaeghz Rruerrgh* (Imperial designation *Luck's Paw*) class air/raft is one of the more popular Vargr grav vehicles found in and around the Extents. The seats are quite roomy, and the convertible roof does much to lessen the uncomfortable effects of rainy or hot sunny weather. As with most Vargr vehicles, these air/rafts are often painted in bright or gaudy multi-color paint schemes. Many non-Vargr consider both the vehicle's body contours and typical paint schemes to be quite tasteless.

CraftID: Vargr *Oeghaeghz Rruerrgh* Air/Raft, TL 13, Cr586,900
Hull: 2/6, Disp=2.5, Config=4USL, Armor=4E, Unloaded=7.5 tons, Loaded=11.5 tons
Power: 1/2, Fusion=4Mw, Duration=12/36
Loco: 1/2, Std Grav, Thrust=14.5 tons, NOE=160 kph, Cruise=225kph, Top=300kph, MaxAccel=0.25G
Commo: Radio=Cont (5,000km)
Sensors: Active EMS=VDistant (50km), Headlights x 3, ActObjScan=Diff, ActObjPin=Diff
Off: Hardpoints=1
Def: —
Control: Computer=0/bis x 2, Dyn Link x 4
Accom: Crew=1 (Operator), Seats=Roomy x 6, Environ=Basic env, grav plates, inert comp
Other: Fuel=2kl, Cargo=4kl, ObjSize=Small, EmLevel=Moderate

48

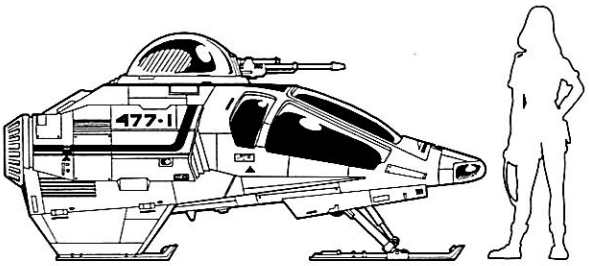


TL 13 *OR-E-CULL* ATV

The *Or-E-Cull* class ATV is a small all-terrain vehicle designed for speed.

CraftID: *Or-E-Cull* ATV, TL 13, Cr148,700
Hull: 4/10, Disp=4, Config=4USL, Armor=1F, Unloaded=10 tons, Loaded=10.2 tons
Power: 1/2, Fusion=0.4Mw, Dur=50/150
Loco: 2/4, Tracks, Road=175kph, Off-road=55kph, P/W=39
Commo: Radio=Cont (500km)
Sensors: Act EMS=VDist (50km), Pass EMS=VDist (50km), Headlights x 2, ActObjScan=Diff,PassObjScan=Diff, PassObjPin=Imp, PassEngScan=Form
Off/Def: Hardpoints=1
Control: Computer/0, Dyn Link x 1, HUD
Accom: Crew=1 (Operator), Seats=Roomy x 6, Env=Basic env, basic ls, ext ls
Other: Fuel=0.8kl, Cargo=0.15kl, ObjSize=Small, EmLevel=Moderate

49



TL 14 *DASHI* HUNTERFOIL

The *Dashi* class grav-thrusted hunterfoil is similiar to the *Vieus* in concept; a high-tech watercraft with grav-thrust propulsion. The *Dashi* has just enough thrust to propel it forward on its foils, but not enough to fly. As with the *Vieus*, grav propulsion also makes the *Dashi* a quiet operating vessel.

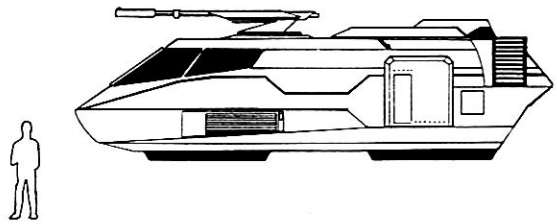
The *Dashi* hunterfoil can race along at up to 125kph on the surface. The *Dashi* is a versatile craft, and can also operate submerged at up to 25kph.

CraftID: *Dashi* Hunterfoil, TL 14, Cr99,700
Hull: 1/2, Disp=1, Config=2SL, Armor=1G, Unloaded=2 tons, Loaded=6 tons
Power: 1/2, Fusion=1Mw, Dur=5/15
Loco: 1/2, Std Grav, Thrust=5 tons, Cruise=90kph, Top=125kph, Submerged=25kph, MaxAccel=0.8G
Commo: Radio=Cont (5,000km) x 2
Sensors: Act EMS=Dist (5km), Act Audio (pinger)=Dist (5km), Headlights x 2, ActObjScan=Form
Off: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Beam Laser	0	5/2	4	Dist(2.5)	2	1.5	H	40

Def: Smoke x 2, Prismatic Aerosol x 4
Control: Computer=0 x 2, Dyn Link x 2,
Accom: Crew=2 (Operator, gunner), Seats=Adequate x 2, Env=Basic env, basic ls
Other: Fuel=0.2kl, Cargo=4kl, ObjSize=Small, EmLevel=Moderate

50



TL 15 *LOPEC* G-CARRIER

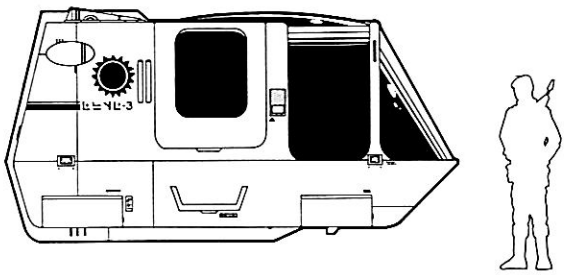
The *Lopec* class G-carrier is an enclosed military or quasi-military grav vehicle. Similar in concept to an armored air/raft, the G-carrier has a gun mount and an armored rear hatch door.

CraftID: *Lopec* G-Carrier, TL 15, MCr14.44
Hull: 7/18, Disp=8, Config=1USL, Armor=10G, Unloaded=20 tons, Loaded=48 tons
Power: 1/2, Fusion=54Mw, Dur=10/30
Loco: 1/2, Std Grav, Thrust=53 tons, NOE=120kph, Cruise=90kph, Top=120kph
Commo: Radio=Sys (1,000 AU)
Sensors: PassEMS=VDist (50km), ActEMS=VDist (50km), ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off/Def: HardPoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Fusion RFX-15	0	67/5	30	VDist(18)	4	45	H	160

Control: Computer=0 x 2, Panel=Holo Dyn Link, HUD, Env=Basic env, basic ls, inert comp
Accom: Crew=1 (Operator=1), Seats=Roomy x 4
Other: Cargo=27kl, Fuel=13kl, ObjSize=Small EmLevel=Faint

51

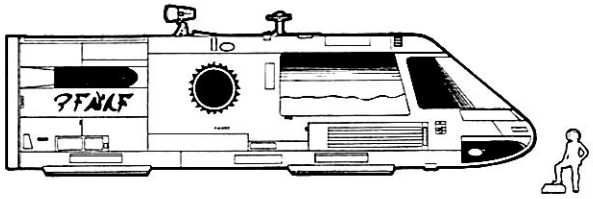


TL 15 *HURRICANE* AIR/RAFT

The *Hurricane* class air/raft is a popular model with allImperial military services, but especially popular with Scouts. The craft mounts a full array of sensors and a continental range meson communicator, which makes it a valuable platform for planetside survey and reconnaissance missions. The Scout's main survey vessel, the *Donosev* class, is designed to carry three *Hurricane* class air/rafts in its small craft bay.

CraftID: *Hurricane* Air/Raft, TL 15, Cr5,085,600
Hull: 3/7, Disp=3, Config=4USL, Armor=10G, Unloaded=10 tons, Loaded=17 tons
Power: 1/2, Fusion=6Mw, Dur=20/59
Loco: 1/2, Std Grav, Thrust=21 tons, NOE=190kph, Cruise=180kph, Top=240kph, MaxAccel=0.2G
Commo: Radio=Cont (5,000km) x 2, Meson=Cont (5,000km)
Sensors: Act EMS=Dist (50km), Neutrino=10kw, Pass EMS=VDist (50km), Headlights x 2, Densitometer=HiPen/1km, NAS Sensor=VLong (0.5km), ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Rout, PassObjPin=Rout, PassEngScan=Rout, PassEngPin=Rout
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Holo Dyn Link x 1, HUD
Accom: Crew=1 (Operator), Seats=Adequate x 4 Env=Basic env, basic ls, ext ls, grav plates, inert comp
Other: Fuel=4kl, Cargo=7kl, ObjSize=Small, EmLevel=Moderate

52



TL 15 *KANKURUR* G-CARRIER

The *Kankurur* class G-Carrier, manufactured by the Imperial megacorporation Ling Standard Products, is heavily used by the Scouts and the Navy. The craft mounts a full array of sensors and a planetary range meson communicator, which makes the *Kankurur* quite useful for survey and reconnaissance missions.

CraftID: *Kankurur* G-Carrier, TL 15, Cr10,630,600
Hull: 10/25, Disp=11, Config=4SL, Armor=10G, Unloaded=55 tons, Loaded=82 tons
Power: 1/2, Fusion=25Mw, Dur=20/60
Loco: 1/2, Std Grav, Thrust=99 tons, NOE=190kph, Cruise=180kph, Top=240kph, MaxAccel=0.2G
Commo: Radio=Cont (5,000km) x 2, Meson=Planetary (50,000km)
Sensors: Act EMS=Dist (50km), Pass EMS=VDist (50km), Neutrino=10kw, Densitometer=HighPen/1km, NAS Sensor=VLong (0.5km), Headlights x 2, ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Rout, PassObjPin=Rout, PassEngScan=Rout, PassEngPin=Rout
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Holo Dyn Link, HUD
Accom: Crew=1 (Operator), Seats=Roomy x 6, Env=Basic env, basic ls, ext ls, grav plates, inert comp
Other: Fuel=22kl, Cargo=27kl, ObjSize=Small, EmLevel=Moderate

CIVILIAN VEHICLES

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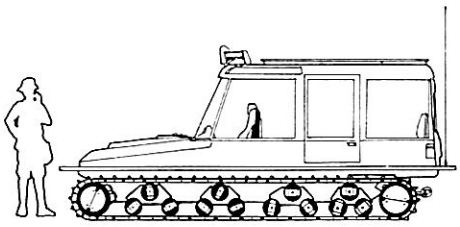


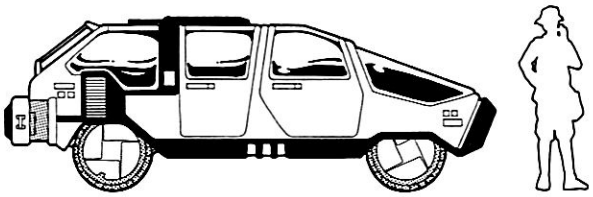
TL 5 SOLOMANI *SHACKLETON* EXPLORER

The *Shackleton* class explorer is a rugged, widely used vehicle, even on planets above tech level 5. The main reason for this is the simplicity of the *Shackelton's* design, and its ease of upkeep even under polar conditions.

The *Shackleton* does not need the extensive shielding against cold that most grav vehicles must have in order to protect their circuits. This vehicle usually needs only a chemical additive to its fuel and lubricants to keep going in the worst arctic weather.

CraftID: Solomani *Shackleton* Tracked Vehicle, TL 5, Cr8,900
Hull: 2/5, Disp=2, Config=4USL, Armor=4A, Unloaded=8 tons, Loaded=20 tons
Power: 1/2, Int Comb=0.5Mw, Dur=5/15
Loco: 1/2, Tracks, P/W=25.5, Road=70kph, Off-road=30kph
Commo: Radio=Cont (5,000km)
Sensors: —
Off/ Def: Hardpoints=1
Control: Basic Mech x 2
Accom: Crew=1 (Driver=1), Seats=Adequate x 3, Env=Basic env
Other: Fuel=7kl, Cargo=4kl, ObjSize=Small, EmLevel=Moderate

54

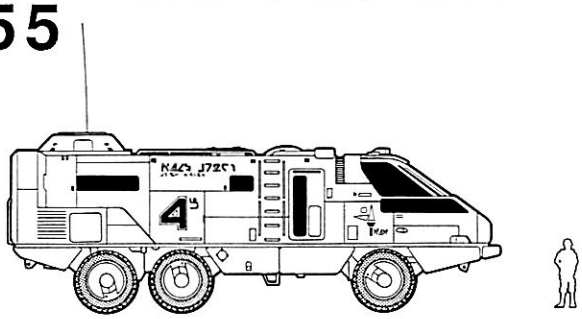


TL 5 *LETRA* GROUND CAR

The *Letra* ground car is an ordinary self-powered vehicle suitable for use in civilized areas on low-tech worlds.

CraftID: *Letra* Ground Car, TL 5, Cr3,100
Hull: 2/5, Disp=2, Config=4USL, Armor=4B, Unloaded=4 tons, Loaded=5 tons
Power: 1/2, Int Comb=0.1Mw, Dur=6 hrs
Loco: 1/2, Wheels, Road=80kph, Off-road=25kph
Commo: — (some have a radio receiver)
Sensors: —
Off/Def: HardPoints=1
Control: Panel=Mech, Env=Basic env
Accom: Crew=1 (Operator=1), Seats=Cramped x 6
Other: Cargo=1kl, Fuel=0.072kl, ObjSize=Small, EmLevel=Faint

55



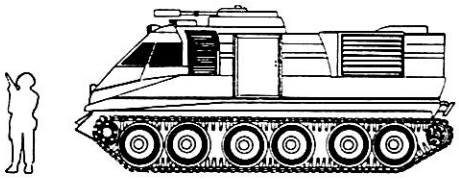
TL 6 *BUNDAN* WHEELED ATV

The *Bundan* wheeled all-terrain vehicle is a wheeled vehicle used on low-tech worlds for exploration.

CraftID: *Bundan* Wheeled ATV, TL 6, Cr46,400
Hull: 9/23, Disp=10, Config=4USL, Armor=6B, Unloaded=28 tons, Loaded=55 tons
Power: 1/2, Int Comb=2Mw, Dur=4 /12
Loco: 1/2, Wheels, Road=100kph, Off-road=35kph
Commo: — (some have a radio receiver)
Sensors: —
Off/Def: HardPoints=1
Control: Panel=Mech, Env=Basic env, basic ls
Accom: Crew=1 (Operator=1), Seat=Roomy x 17
Other: Cargo=25kl, Fuel=18kl, ObjSize=Small, EmLevel=Faint

CraftID: *Permax* Tracked ATV, TL 6, Cr49,600
Hull: 9/23, Disp=10, Config=4USL, Armor=6B, Unloaded=47 tons, Loaded=74 tons
Power: 1/2, Int Comb=2Mw, Dur=4/12 hrs
Loco: 1/2, Tracks, Road=80kph, Off-road=50kph
Commo: Radio=Rgnl (500km)
Sensors: —
Off/Def: HardPoints=1
Control: Panel=Mechl, Env=Basic env, basic ls
Accom: Crew=1 (Operator=1), Seat=Roomy x 17
Other: Cargo=25kl, Fuel=18kl, ObjSize=Small, EmLevel=Faint

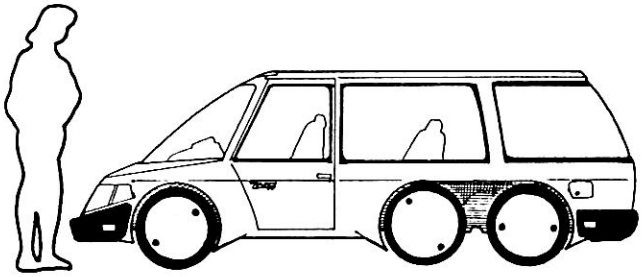
56



TL 6 *PERMAX* TRACKED ATV

The *Permax* tracked ATV is used on low-tech worlds for exploration.

57



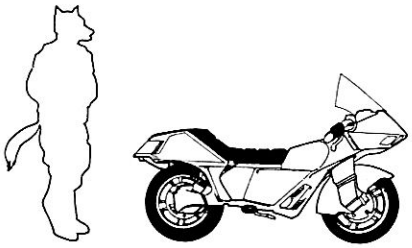
TL 8 *JAK RABBIT* GROUND CAR

The *Jak Rabbit* class ground car is typical of similar vehicles found on industrial and pre-stellar worlds across the Imperium. On worlds without central commuter control systems, its quick handling and tight turning radius make it far more maneuverable than most larger craft. Prior to the advent of grav vehicles, craft of this style are commonplace.

CraftID: *Jak Rabbit* Ground Car, TL 8, Cr3,500
Hull: 1/2, Disp=0.05, Config=4USL, Armor=4B, Unloaded=1.5, Loaded=2.4
Power: 1/2, Implnt Comb=0.02Mw, Dur=4 hrs
Loco: 1/2, Wheels, Road=80kph, Off-road=15kph
Commo: — (some have a radio receiver)
Sensors: Headlights x 2
Off/Def: Hardpoints=1
Control: Basic Mech
Accom: Crew=1 (Operator=1), Seats=Cramped x 4, Env=Basic env
Other: Cargo=0.8kl, Fuel=0.125kl, ObjSize=Small, EmLevel=Moderate

CraftID: Vargr *Sourztourrgh* Motorcycle, TL 8, Cr520
Hull: 1/1, Disp=0.06, Config=0USL, Armor=1B, Unloaded=0.35 tons, Loaded=0.45 tons
Power: 1/2,Implnt Comb=0.5Mw,Dur=4 hrs
Loco: 1/2,Wheels, Road=185kph,Off-road=35kph
Commo: — (some have a radio receiver)
Sensors: Headlight
Off/Def: Hardpoints=1
Control: Basic Mech
Accom: Seats=1, Open-topped
Other: Cargo=0, Fuel=0.1kl, ObjSize=Small, EmLevel=Moderate

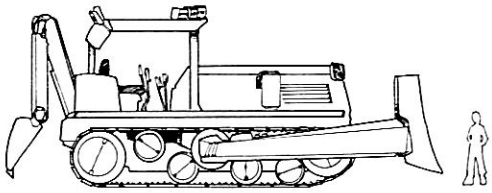
58



TL 8 VARGR *SOURZTOURRGH* MOTORCYCLE

The Vargr-built *Sourztourrgh* (brave corsair) class motorcycle is, like many Vargr craft, a mechanic's nightmare. Built for raw speed, it has an inefficient engine which has a higher than average failure rate. Still, with a fierce advertising campaign to back it up, it sells well among young Vargr. On human worlds, similar vehicles abound as well. Once again, they are made to appeal to the young, who, like their canine counterparts, long to be a "roukhthaeghz" or leader of the pack.

59

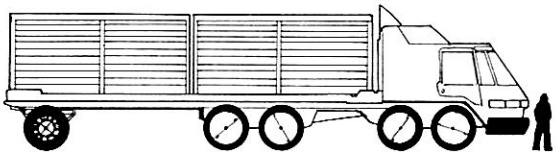


TL 8 *CINTO* CONSTRUCTION VEHICLE

The *Cinto* class is a typical example of a low-tech basic construction vehicle.

CraftID: *Cinto* Construction Vehicle, TL 8, Cr7,300
Hull: 1/2, Disp=1, Config=4USL, Armor=10B, Unloaded=6 tons, Loaded=7 tons
Power: 1/2, Imp Int Comb=0.08Mw, Dur=3 hrs
Loco: 1/2, Tracks, Road=75kph, Off-road=15kph, P/W=11
Commo: Radio=Cont (500km)
Sensors: Headlights x 6
Off/Def: Hardpoints=1
Control: Enhanced Mech
Accom: Crew=1, Seats=Adequate, Env=Basic env
Other: Fuel=0.03kl, Cargo=0.7kl, Excavation Blade, ObjSize=Small, EmLevel=Moderate

60



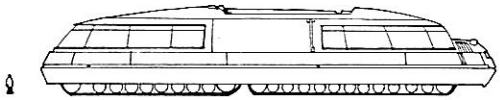
TL 8 *HUGHESTON* TRANSPORTER

The *Hugheston* Model FH-4800 cargo transporter, alhough rather unusual because of its turbine drive system, is a good example of long-range freight transports employed by many societies which haven't attained gravitics technology. The craft is designed for long-distance travel on pavement at moderate, constant speeds while transporting a large amount of cargo.

The FH-4800 is divided into two parts: the control cabin and the cargo module. Only the cabin area is provided with life support equipment, although various models of the FH-4800 come with extras such as refrigerated, heated, or airtight cargo modules. In such cases, of course, the cargo space is reduced by as much as 10 percent.

CraftID: *Hugheston* Cargoload Transporter, TL 8, Cr252,600
Hull: 14/34, Disp=15, Config=4USL, Armor=4B, Unloaded=21 tons, Loaded=180 tons
Power: 1/2, MHD Turbine=5Mw, Dur=24 hrs
Loco: 1/2, Wheels, Road=95kph, Off-road=20kph
Commo: Radio=Cont (5,000km)
Sensors: Headlights x 2
Off/Def: HardPoints=1
Control: Computer=0/bis, Elect Link
Accom: Crew=2 (Operator=1), Seats=Roomy x 2, Bunk, Env=Basic env, basic ls, ext ls
Other: Cargo=150kl, Fuel=4kl, ObjSize=Average, EmLevel=Moderate

61

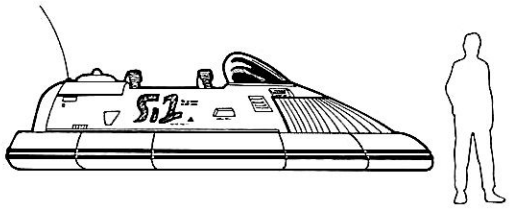


TL 9 *AQUANAUT* RESTAURANT

The *Aquanaut* tracked undersea restaurant gives its customers a close-up view of fascinating marine life while they enjoy their meal. Tours of coral reefs or ancient wrecks are offered with formal suppers, while other meals are served at one underwater location. A meal for two with a tour usually costs around Cr100, although this varies widely from planet to planet. Seating capacity is 85 customers.

CraftID: *Aquanaut* Undersea Restaurant, TL 9, Cr3,062,400
Hull: 50/124, Disp=55, Config=3SL, Armor=18B, Unloaded=251 tons, Loaded=344 tons
Power: 1/2, Fusion=20Mw, Dur=60/180
Loco: 2/4, Tracks, P/W=58, Road=110kph Off-road=45kph
Commo: Laser=Rgnl (500km)
Sensors: Headlights x 20, Act Audio=Dist (5km), ActObjScan=Form
Off/Def: Hardpoints=1
Control: Computer=0bis, Computer Link x 33
Accom: Crew=15 (Driver=1, engineer=1, maint=1, steward=12), Seats=Roomy x 100, Env=Basic env, basic ls, ext ls, airlock
Other: Fuel=43kl, Cargo=80kl, ObjSize=Average, EmLevel=Faint

62



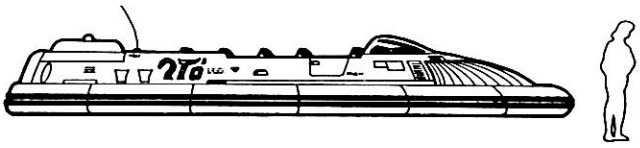
TL 9 *RHONOR* SCOUT ACV

The *Rhonor* class air cushion vehicle (ACV) serves well as a fast forward scout or courier vehicle, particularly in regions with swamp, grasslands, ice fields or other relatively flat terrain. The *Rhonor* is a popular vehicle for expeditions to these relatively flat wilderness areas on some lower-tech worlds. By carrying extra fuel, the operating range of this vehicle can be extended slightly.

The vehicle includes a tarp and frame so that it may be "enclosed" during periods of bad weather.

CraftID: *Rhonor* Scout ACV, TL 9, Cr157,100
Hull: 1/2, Disp=0.5, Config=4SL, Armor=1D, Unloaded=2 tons, Loaded=2.5 tons
Power: 1/2, MHD Turbine=0.4Mw, Dur=1/3
Loco: 1/2, Air Cushion, Thrust=4 tons, Cruise=110kph, Top=150kph, MaxAccel=0.5G
Commo: Radio=Cont (5,000km)
Sensors: All Weather Radar=VDist (5km), Headlights x 2, ActObjScan=Form
Off/Def: Hardpoints=1, Smoke
Control: Computer=0, Elect Link
Accom: Crew=1 (Operator), Seats=Cramped x 3, Env=Basic env
Other: Fuel=0.4kl, Cargo=0.1kl, ObjSize=Small, EmLevel=Moderate

63



TL 9 *RHEENA* PASSENGER ACV

The *Rheena* class air cushion vehicle (ACV) can carry up to 15 passengers and over 40 kiloliters of cargo, making it a popular passenger hovercraft, especially for wilderness expeditions. The *Rheena* serves well as a multi-purpose transport vehicle on lower-tech worlds. By carrying extra fuel, the operating range of this vehicle can be extended.

The vehicle includes a tarp and frame so that it may be "enclosed" during periods of bad weather.

CraftID: *Rheena* Passenger ACV, TL 9, Cr1,436,000
Hull: 5/14, Disp=6, Config=4SL, Armor=1D, Unloaded=25 tons, Loaded=46 tons
Power: 1/2, MHD Turbine=5.6Mw, Dur=1/3
Loco: 1/2, Air Cushion, Thrust=55 tons, Cruise=45kph, Top=60kph, MaxAccel=0.2G
Commo: Radio=Cont (5,000km)
Sensors: All Weather Radar=VDist (5km), Headlights x 2, ActObjScan=Form
Off/Def: Hardpoints=1, Smoke
Control: Computer=0, Elect Link
Accom: Crew=1 (Operator), Seats=Cramped x 16, Env=Basic env
Other: Fuel=7kl, Cargo=14kl, ObjSize=Small, EmLevel=Moderate

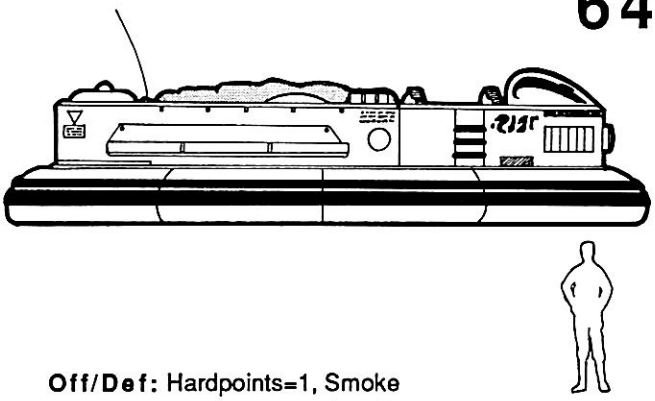
TL 9 *AVI* CARGO ACV

The *Avi* class air cushion vehicle (ACV) can carry nearly 90 kiloliters of cargo (6 displacement tons' worth). As a cargo hovercraft, the *Avi* is one of the more popular designs, particularly for expeditions into relatively flat wilderness areas on lower-tech worlds. By carrying extra fuel, the operating range of this vehicle can be extended.

The vehicle includes a tarp and frame so that it may be "enclosed" during periods of bad weather.

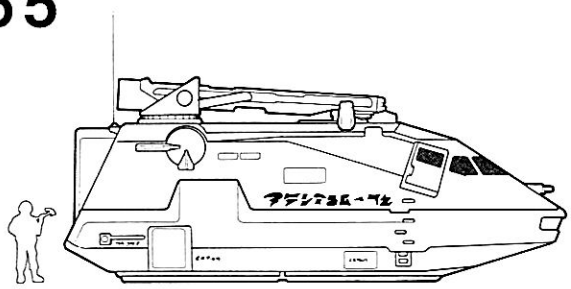
CraftID: *Avi* Passenger ACV, TL 9, Cr9,050,800
Hull: 7/18, Disp=20, Config=4SL, Armor=1D, Unloaded=8 tons, Loaded=13 tons
Power: 3/8, MHD Turbine=36Mw, Dur=1/3
Loco: 1/2, Air Cushion, Thrust=359 tons, Cruise=45kph, Top=60kph, MaxAccel=0.2G
Commo: Radio=Cont (5,000km)
Sensors: All Weather Radar=VDist (5km), Headlights x 2, ActObjScan=Form

64



Off/Def: Hardpoints=1, Smoke
Control: Computer=0, Elect Link x 12
Accom: Crew=1 (Operator), Seats=Cramped x 4, Env=Basic env
Other: Fuel=54kl, Cargo=88kl, ObjSize=Small, EmLevel=Moderate

65



TL 10 *MOTHERLODE* MINING GRAV

The *Motherlode* mining grav is used for locating, mining, and transporting raw ore to a processing facility in a multitude of environments.

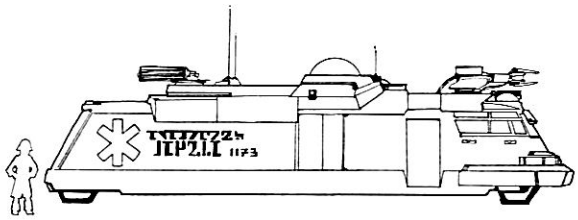
CraftID: *Motherlode*, TL 10, Cr3,392,800
Hull: 10/24, Disp=10.5, Config=4SL, Armor=1D, Unloaded=49 tons, Loaded=55 tons
Power: 1/2, Fusion=12Mw, Dur=7/21
Loco: 1/2, Grav, Thrust=80 tons, NOE=135kph, Cruise=405kph, Top=540kph, MaxAccel=.45G
Commo: Radio=VDist (50km)
Sensors: Radar=VDist (50km), Laser Sensor, Echo Sounder, Mineral Analyzer, Headlights x 2, ActObjScan=Diff, ActObjPin=Diff, PassEngScan=Form
Off/Def: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Pulse Laser	0	12/2	5	Dist(5)	3	3.0	H	80

Control: Computer=0/bis x 2, Computer Link x 2
Accom: Crew=2 (Driver=1, gunner=1), Seats=Adequate x 4, Small Stateroom x 3, Env=Basic env, basic ls, extended ls, inert comp, airlock
Other: Fuel=3kl, Cargo=5kl, ObjSize=Small, EmLevel=Moderate, Crane Cap=1 ton

CraftID: *Lifesaver* Ambulance Air/Raft, TL 10, Cr309,400
Hull: 5/12, Disp=5, Config=4SL, Armor=1B Unloaded=11 tons, Loaded=13 tons
Power: 1/2, MHD Turbine=2.4Mw, Dur=20 hrs
Loco: 1/2, Std Grav, Thrust=20 tons, NOE=150kph, Cruise=450kph, Top=600kph, MaxAccel=0.5G
Commo: Radio=Rgnl (5,000km)
Sensors: Headlight, Pass IR
Off/Def: Hardpoints=1
Control: Computer=0, Dyn Link x 5
Accom: Crew=3 (Driver=1, medic=2), Seats=Adequate x 1, Cramped x 2, Bunk x 1, Emergency Low Berth x 1, Env=Basic env, basic ls for patient
Other: Fuel=2kl, Cargo=0.5kl, ObjSize=Small, EmLevel=Moderate

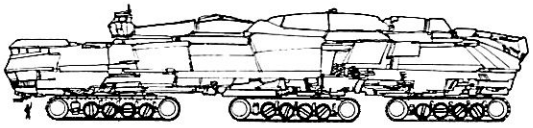
66



TL 10 *LIFESAVER* AMBULANCE

The great advantage of a grav ambulance is that it can pick up injured people from anywhere: wilderness, tops of buildings, crowded city streets.

67



TL 10 *TIAMAT* MINING CRAWLER

The *Tiamat* mining vessel is a self-contained colony for 50 people and can stay undersea for three to six months at a time. The colony's depth capability is 10 km. Sternmetal markets the *Tiamat* on any world that has deep seas and mineral deposits beneath them.

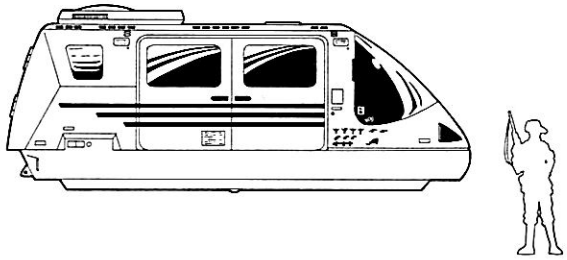
CraftID: *Tiamat* Crawler, TL 12, MCr13.785
Hull: 450/1125, Disp=500, Config=4USL, Armor=40B, Unloaded=964 tons, Loaded=5,000 tons
Power: 2/4, Fusion=36Mw, Dur=46/139
Loco: 10/20, Tracks, P/W=7, Road=70kph, Off-road=15kph
Commo: Laser=Cont (5,000km)
Sensors: Headlight (rotatable), Act IR, Act Audio=Dist(5 km), Mag=VDist (50 km),Video Rec, ActObjScan=Form, ActObjPin=Form, PassObjScan=Diff
Off/Def: Hardpoints=1
Control: Computer=2/bis, Elect Link x 70
Accom: Crew=14 (Bridge=2,engineer=4, maint=7, medic=1), Small Stateroom x 50, Env=Basic env, basic ls, extended ls
Other: Fuel=60kl, Cargo=4,000kl, Hvy Robot Arm, ObjSize=Avg, EmLevel=Faint

TL 10 *QUEST* HUNTER AIR/RAFT

The *Quest* class hunter air/raft, manufactured by the Imperial megacorporation Ling Standard Products, is a popular grav vehicle for exploratory excursions into wilderness areas. The *Quest* sports a completely enclosed and sealed environment, complete with extended life-support facilities (food and waste recycle).

CraftID: LSP *Quest* Hunter Air/Raft, TL 10, Cr801,500
Hull: 2/5, Disp=2, Config=4SL, Armor=4E, Unloaded=8.3 tons, Loaded=8.7 tons
Power: 1/2, Fusion=2.5Mw, Dur=31/94
Loco: 1/2, LP Hvy Grav, Thrust=13 tons, NOE=140kph, Cruise=405kph, Top=540kph, MaxAccel=0.45G
Commo: Radio=Cont (5,000km)
Sensors: Act EMS=Dist (5km), Pass EMS=VDist (50km), Headlights x 2, ActObjScan=Form, PassEngScan=Form

68

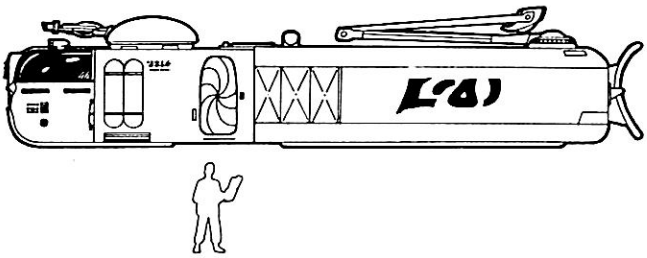


Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, DynLink x 1, HUD
Accom: Crew=1 (Operator), Seats=Adequate x 6, Env=Basic env, basic ls, grav plates, inert comp
Other: Fuel=2.9kl, Cargo=0.4kl, ObjSize=Small, EmLevel=Moderate

69 TL 10 IMPERIAL *SIRVAAN* AIR/RAFT

See inside back cover.

70



TL 10 *JACQUES* MINING VEHICLE

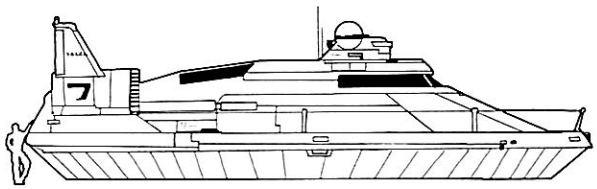
The *Jacques* class mining vehicle is designed to locate, mine, and transport ore from a variety of environments. Under certain circumstances, this grav vehicle can be a useful alternative to an all-terrain vehicle or air/raft as a shipboard vehicle.

CraftID: *Jacques* Grav Mining Vehicle, TL 10, Cr2,639,500
Hull: 9/23, Disp=10, Config=4USL, Armor=4E, Unloaded=67 tons, Loaded=161 tons
Power: 1/2, Fusion=27Mw, Dur=1/3 days
Loco: 1/2, Std Grav, Thrust=180 tons, NOE=120kph, Cruise=90kph, Top=120kph, MaxAccel=0.1G
Commo: Radio=VDist (50km)
Sensors: Act EMS=Dist (5km), Headlights x 5 (includes 2 spotlights), ActObjScan=Form, ActObjPin=Form
Off/Def: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Pulse Laser	0	6/2	4	Dist(2.5)	3	1.5	H	80

Control: Computer=0/bis x 2, Dyn Link x 25
Accom: Crew=2 (Operator, gunner), Seats=Roomy x 4, Env=, basic env, basic ls, ext ls, grav plates
Other: Fuel=1kl, Cargo=95kl, Loading Crane, ObjSize=Small, EmLevel=Moderate

71

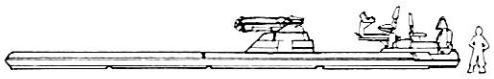


TL 11 *TAVEE-GHO* RECREATIONAL ACV

The *Tavee-Gho* recreational air cushion vehicle is a popular all-terrain travel home for tech level 11. The *Tavee-Gho* can traverse relatively flat land terrain with ease, and does quite well on all but the roughest bodies of water. Fold-up bunks are located in the common area, along with food storage and preparation facilities. Three luxurious staterooms make the *Tavee-Gho* an enjoyable craft to take on vacations and on extended wilderness excursions.

CraftID: *Tavee-Gho* Recreational ACV, TL 11, Cr5,387,100
Hull: 18/45, Disp=20, Config=6SL, Armor=1E, Unloaded=82 tons, Loaded=96 tons
Power: 1/2, Fusion=13.4Mw, Duration=20/60
Loco: 2/4, Air Cushion, Thrust=130 tons, Cruise=80kph, Top=105kph, MaxAccel=0.35G
Commo: Radio=Cont (5,000km)
Sensors: Act EMS=VDist (50km), Headlights x 5, ActObjScan=Diff
Off/Def: Hardpoints=1
Control: Computer=0, Computer Link x 1, HUD
Accom: Crew=1 (Operator), Bunks x 4, Stateroom x 3, Env=Basic env, basic ls
Other: Fuel=1.4kl, Cargo=13.5kl, ObjSize=Small, EmLevel=Faint

72



CraftID: *Demeter* Grav Wagon, TL 11, Cr107,100
Hull: 3/7, Disp=3, Config=4USL Open, Armor=4B, Unloaded=11 tons, Loaded=30 tons
Power: 1/2, MHD Turbines=4.8Mw, Dur=20 hrs
Loco: 1/2, Std Grav, Thrust=40 tons, NOE=75kph, Cruise=225kph, Top=300kph, MaxAccel=.33G
Commo: Radio=Dist (5km)
Sensors: Headlight
Off/Def: Hardpoints=1
Control: Elect x 32
Accom: Crew=3, Seats=Adequate x 3, Env=Basic env
Other: Fuel=4kl, Cargo=17kl, Hvy Robot Arm

TL 11 *DEMETER* GRAV WAGON

Grav-powered farm implements became popular on most worlds as soon as they were available because they do not disturb the crops they tend. Thus "row" crops can be planted in dense patches to shade out weeds and save water, and grains are never matted down by tractor wheels. The *Demeter* is a typical grav wagon whose robot arm may control assorted attachments (sold separately), or simply load cargo into the open cargo section. Said cargo may occupy 17kl or be heaped even higher, but should weigh no more than 15 tons or the vehicle will lose speed. If slow travel is acceptable, 20 tons may be carried.

73

CraftID: *Artica* Refrigerated Delivery Van, TL 11, Cr766,000
Hull: 4/9, Disp=4, Config=4SL, Armor=4B, Unloaded=6 tons, Loaded=53 tons
Power: 1/2, Storage Batt=0.9Mw, Solar Cells=.045Mw
Loco: 1/2, Wheels, P/W=18, Road=120kph, Off-road=25kph
Sensors: Headlight
Off/Def: Hardpoints=1
Control: Computer=0, Dyn Link, HUD
Accom: Crew=1,Seat=Adequate, Env=Basic env
Other: Cargo=47kl, ObjSize=Small, EmLevel=Moderate

TL 11 *ARCTICA* REFRIGERATED DELIVERY VAN

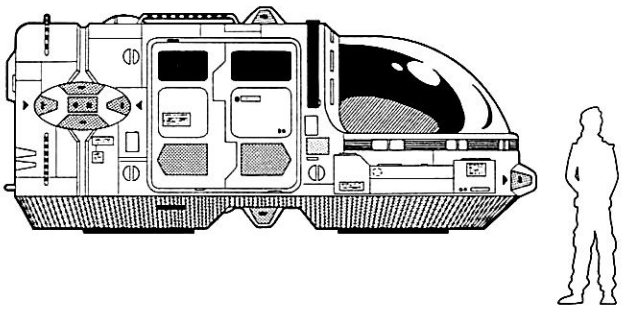
The *Arctica* refrigerated delivery van is self-loading and solar powered. It is guaranteed to deliver your cargo fresh, and it's cheap for the service it gives. There are different models for liquids and solids. The refrigeration can be augmented to handle liquified gases.

The strangest use to which it was ever put was as the travelhome for a delegation of methane breathers from Argonos to Sardia. These dignitaries found the modified van very comfortable at -70°C. A view window had been installed to allow them to see the exotic scenery of their hosts' "hellishly hot" planet.

74 TL 11 *COVA* ENCLOSED AIR/RAFT

See inside back cover.

75

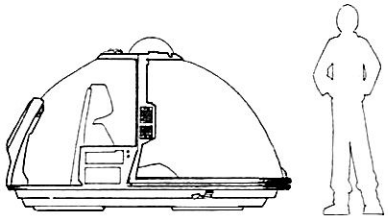


TL 11 *AURUM SEEKER* BUGGY

The *Aurum Seeker* class air/raft "buggy" is specifically designed to serve as a belter's grav vehicle. The craft mounts a low penetration densitometer, making the craft useful for examining surface deposits of asteroids up close, without requiring the belter to actually go on an outside excursion in a vacc suit.

CraftID: *Aurum Seeker* Buggy, TL 11, MCr1.293
Hull: 4/9, Disp=4, Config=4USL, Armor=4E, Unloaded=26 tons, Loaded=46 tons
Power: 1/2, Fusion=9.7Mw, Dur=8/25
Loco: 1/2, Std Grav, Thrust=55 tons, NOE=150kph, Cruise=135kph, Top=180kph, MaxAccel=0.15G
Commo: Radio=Cont (5,000km) x 2
Sensors: Act EMS=VDist (50km), Mag=VDist(50km), Densitometer=Low Pen/Surface, Headlights x 4, ActObjScan=Diff, PassObjScan=Form, PassObjPin=Imp
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Dyn Link, HUD
Accom: Crew=1 (Operator), Seats=Roomy x 5, Env=Basic env, basic ls, grav plates, inert comp
Other: Fuel=3kl, Cargo=20kl, ObjSize=Small, EmLevel=Moderate

76

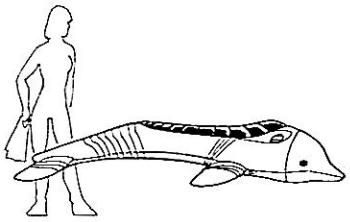


TL 12 *ZEUS* LUXURY FLOAT CHAIR

This is the ultimate in individual luxury transport, the limousine of grav chairs. The *Zeus* float chair has very roomy seating (it can carry two for a private conference). The onboard computer can fly the craft without human attention, so that the rider may use his time working, talking on the radio, or relaxing with a drink. A robot tentacle serves as a butler. Various decoration schemes and custom modifications are available, but the amenities added cannot weigh more than 150kg without sacrificing speed.

CraftID: *Zeus* Luxury Grav Chair, TL 12, Cr92,000
Hull: 1/1, Disp=0.5, Config=4USL, Armor=4F, Unloaded=0.48 tons, Loaded=.56 tons
Power: 1/2, Fuel Cell=0.05Mw, Dur=4/12
Loco: 1/2, Hvy Grav, Thrust=1 ton, NOE=75kph, Cruise=225kph, Top=300kph, MaxAccel=0.9Gs
Commo: Radio=Rgnl (500km)
Sensors: Headlight, Act IR
Off/Def: Hardpoints=1
Control: Computer=0, Dyn Link
Accom: Seat=Very Roomy, Env=Basic env
Other: Fuel=0.03kl, Robot Tentacle, ObjSize=Small, EmLevel=Faint

77

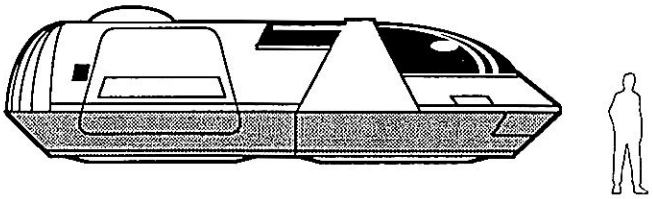


TL 12 *CETACEAN* RECREATIONAL DOLPHIN

The *Cetacean* is intended for hours of fun in the sea. The rider can glide through the water, driven by a powerful fluke, mingling with dolphin schools and even communicating with them via recordings of dolphin words. Like a real dolphin, the craft is supplied with sonar. The radio is usable only at the surface. The fuel cell has fuel for 30 hours of enjoyment, but no more than 4 hours at a time are recommended for comfort. Recently, a modified version of this vehicle has been put out for use by researchers working with the Lasat race on Zur.

CraftID: *Cetacean* Recreational Dolphin, TL 12, Cr12,000
Hull: 1/1, Disp=0.25, Config=7SL, Armor=12F, Unloaded=0.74 tons, Loaded=0.81 tons
Power: 1/2, Fuel Cell=0.03Mw, Dur=30 hrs
Loco: 1/2, Legs (fluke), Cruise=35kph, Top=50kph
Commo: Radio=VDist (50km)
Sensors: Act Audio=Dist (5km), ActObjScan=Form
Off/Def: Hardpoints=1
Control: Elect x 3
Accom: Crew=1, Seat=Cramped x 1, Env=Basic env, basic ls
Other: Fuel=0.006kl, ObjSize=Small, EmLevel=Faint

78



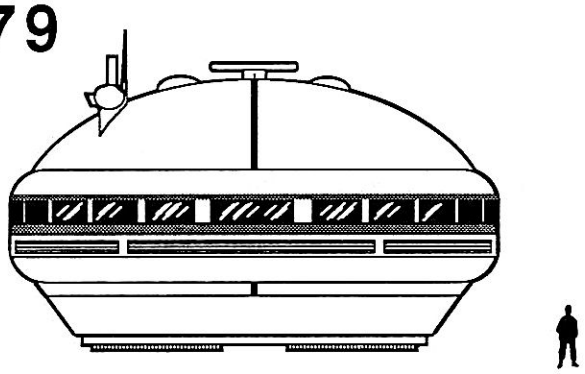
TL 12 *PROTEAN* EMERGENCY RESPONDER

Far more than a common ambulance or fire truck, the General Products *Protean* Model 2970 Emergency Response Vehicle (ERV) is designed to cope with a wide variety of accidents and disasters without assistance. It includes a wide variety of sensors useful for anything from pinpointing a radiation leak to locating survivors in the ruins of a collapsed building. Further, standard models include a high pressure cannon which fires a flame retardant foam for use in combatting any manner of conflagration. As a rule, the "cargo" space is filled with various emergency equipment and first aid supplies and the 10 persons on board are all highly trained disaster relief specialists.

Despite the expensive price tag, the versatility of this unit makes it a better buy than specialized craft which cost far less but are equipped for only a single type of crisis.

CraftID: *Protean* Emergency Response Vehicle, TL 12, Cr85,772,000
Hull: 9/23, Disp=10, Config=4SL, Armor=5F, Unloaded=98 tons, Loaded=129 tons
Power: 1/2, Fusion=40Mw, Dur=5/15
Loco: 1/2, LP Lt Grav, Thrust=200 tons, NOE=150kph, Cruise=450kph, Top=600kph, MaxAccel=0.5G
Commo: Radio=Cont (5,000km)
Sensors: Synthetic Vision, Densitometer=Hi Pen/50m, Pass Audio=Dist (5km), Act Audio=Dist (5km), Env Sensor, Mag=VDist(50km), Radiation=VDist(50km), All Weather Radar=Cont (5,000km), ActObjScan=Diff, ActObjPin=Diff, PasObjScan=Diff, PasObjPin=Diff
Off/Def: Hardpoints=1
Control: Computer=2 x 2, Dyn Link x 2, Large Holo
Accom: Crew=2 (Operator=2), Seats=Adequate x 10, Env=Basic env, basic ls, ext ls, grav plates, inert comp, airlock
Cargo: Cargo=41.257kliters, Fuel=.36kliters, ObjSize=Average, EmLevel=Moderate

79

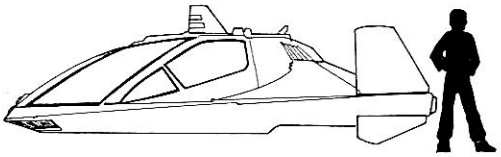


TL 12 *WINDRIDER* WEATHER LAB

Weather prediction becomes a more exact science when instruments can be taken up where the action is. The *Windrider* goes even further and takes meteorologists up with their instruments, in a craft that can follow developing fronts from place to place.

CraftID: *Windrider* Grav Weather Lab, TL 12, Cr7,284,300
Hull: 27/68, Disp=30, Config=5SL, Armor=8D, Unloaded=88 tons, Loaded=96 tons
Power: 1/2, Fusion=20Mw, Dur=16/48
Loco: 1/2, Hvy Grav, Thrust=100 tons, NOE=15kph, Cruise=45kph, Top=60kph, MaxAccel=0.1G
Commo: Maser=Dist (5km)
Sensors: Environment Sensors, Pass EMS=VDist (50km), PassEngScan=Form
Off/Def: Hardpoints=1
Control: Computer=1, Holo Link x 6, Large Holo
Accom: Crew=6 x 2 (Driver=2, scientist=10), Small Staterooms=6, Seats=Roomy x 6, Env=Basic env, basic ls, extended ls
Other: Fuel=96kl, ObjSize=Small, EmLevel=Moderate

80

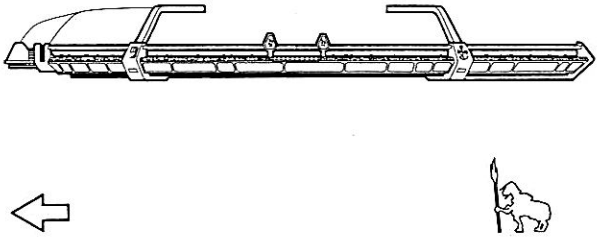


TL 12 *HASS* GRAV MINISUB

The *Hass* class grav minisub is a good example of the application of grav technology to other than atmospheric flight. The minisub can make speeds up to 25kph, which is relatively fast for a small underwater vehicle.

CraftID: *Hass* Minisub, TL 12, Cr71,100
Hull: 1/2, Disp=0.5, Config=4SL, Armor=4F, Unloaded=1.0 tons, Loaded=1.1 tons
Power: 1/2, Fuel Cell x 3=0.27Mw, Dur=2/6
Loco: 1/2, LP Hvy Grav, Thrust=1.3 tons, Cruise=20kph, Top=25kph, MaxAccel=0.02G
Commo: Radio=Rgnl (500km)
Sensors: Act EMS=Dist (5km), Act Audio (pinger)=Dist(5km), Headlights x 2, ActObjScan=Form
Off/Def: Hardpoints=1
Control: HUD
Accom: Crew=1 (Operator), Seats=Cramped x 2 (reclining), Env=Basic env, basic ls
Other: Fuel=0.6kl, Cargo=0.03kl, ObjSize=Small, EmLevel=Moderate

81



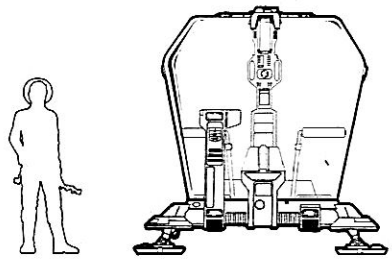
TL 12 K'KREE *KUKR'NG'B* GRAV PLATFORM

The *Kukr'ng'b* class platform is a typical K'kree design: spacious and open to the elements, with a floor (10m x 27m) covered in grass. This design includes a windscreen and inertial compensators to make for a smooth, pleasant ride. Also included are safety "roll bars" to protect the occupants in case the platform were to flip in an accident.

CraftID: K'kree *Kukr'ng'b* Grav Platform, TL 12, Cr4,583,700
Hull: 18/45, Disp=20, Config=4USL, Armor=4F, Unloaded=122 tons, Loaded=222 tons
Power: 2/4, Fusion=47Mw, Dur=33/100
Loco: 1/2, Std Grav, Thrust=280 tons, NOE=160kph, Cruise=225kph, Top=300kph, MaxAccel=0.25G
Commo: Radio=Cont (5,000km) x 2
Sensors: Act EMS=Dist (5km), Headlights x 6, ActObjScan=Form
Off/Def: Hardpoints=1
Control: Computer=0/bis, Dyn Link, HUD
Accom: Crew=1 (Operator), Passengers=12, Env=Basic env, grav plates, inert comp
Other: Fuel=57kl, Cargo=50kl, ObjSize=Small, EmLevel=Faint

CraftID: *Casline* G-Tube, TL 12, Cr342,000
Hull: 1/2, Disp=0.5, Config=4USL, Armor=1F, Unloaded=0.9 tons, Loaded=1.0 tons
Power: 1/2, Fuel Cell x 2=0.18Mw, Dur=2/6
Loco: 1/2, LP Lt Grav, Thrust=1.2 tons, NOE=160kph, Cruise=225kph, Top=300kph, MaxAccel=0.25G
Commo: Radio=Cont (5,000km)
Sensors: Act EMS=Dist (5km), Headlights x 2, ActObjScan=Form
Off/Def: Hardpoints=1
Control: Dyn Link,HUD
Accom: Crew=1 (Operator), Seats=Cramped x 2, Env=Basic env, basic ls, inert comp
Other: Fuel=0.4kl, Cargo=0.14kl, ObjSize=Small, EmLevel=Moderate

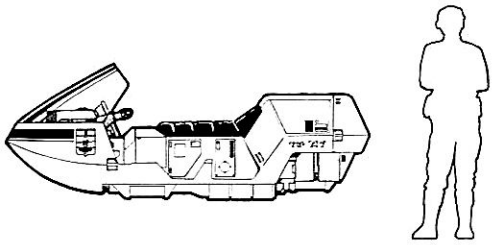
82



TL 12 *CASLINE* G-TUBE

The *Casline* class G-tube is essentially an enclosed grav belt for two. However, unlike the grav belt, the ride in the G–tube is very smooth because of its inertial compensators.

83



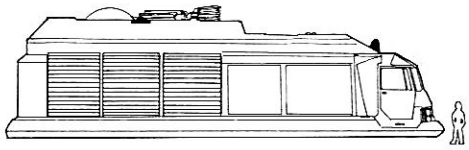
TL 12 *TRASEA* GRAV "BIKE"

The *Trasea* class grav "bike" is a popular alternative to a grav belt and costs very little more. The vehicle includes complete computer control (with backup) allowing the operator to work undistracted while the craft flies itself to the desired destination. In addition, the craft has more cargo space than a grav belt, can carry a passenger, and includes avionics allowing it to fly nap-of-earth at 160kph.

CraftID: *Trasea* Grav Bike, TL 12, Cr171,600
Hull: 1/2, Disp=0.25, Config=4SL, Armor=1F, Unloaded=1.0 tons, Loaded=1.1 tons
Power: 1/2, Fuel Cell x 3=0.27Mw, Dur=2/6
Loco: 1/2, LP Hvy Grav, Thrust=1.3 tons, NOE=160kph, Cruise=225kph, Top=300kph, MaxAccel=0.25G
Commo: Radio=Rgnl (500km)
Sensors: Act EMS=Dist (5km), Headlights x 2, ActObjScan=Form
Off/Def: Hardpoints=1
Control: Computer=0 x 2, DynLink, HUD
Accom: Crew=1 (Operator), Seats=Cramped x 2, Open-topped
Other: Fuel=0.6kl, Cargo=0.05kl, ObjSize=Small, EmLevel=Moderate

CraftID: *Thorian-Kur* Mobile Repair Shop, TL13, Cr8,005,000
Hull: 11/30, Disp=13, Config=4SL, Armor=4C, Unloaded=127 tons, Loaded=157 tons
Power: 1/2, Fusion=6Mw, Dur=30/90
Loco: 1/2, LP Hvy Grav, Thrust=200 tons, Cruise=250kph, Top=330kph, MaxAccel=0.3G
Commo: Radio=Cont (5,000km)
Sensors: All Weather Radar=Rgnl (500km), Synthetic Vision, ActObjScan=Diff, ActObjPin=Diff
Off/Def: Hardpoints=1
Control: Computer=0/bis,Holo Dyn Link, HUD
Accom: Crew=1 (Operator=1), Seats=Adequate x 4 , Env=Basic env, basic ls, extend ls, airlock
Other: Cargo=29kl, fuel=7.2kl, VLt Robot Arm x 2, Hvy Robot Arm x 2, ObjSize=Average, EmLevel=Moderate

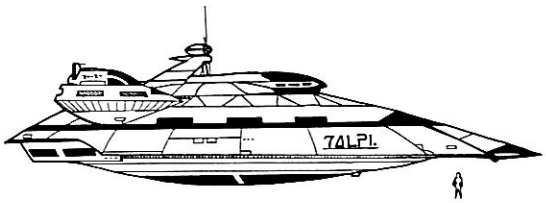
84



TL 13 *THORIAN-KUR* REPAIR SHOP

The *Thorian-Kur* mobile repair shop has become a common sight on many worlds across the Imperium, in commercial and military service. With its 100 tons of vehicle diagnostic and repair equipment, it can make needed repairs to even the most complex vehicles on the spot.

85

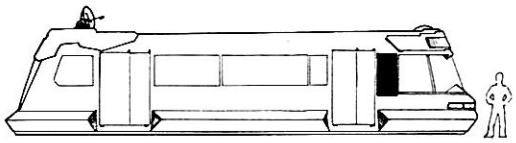


TL 13 *SANS SOUCI* GRAV YACHT

The *Sans Souci* grav yacht is the ultimate millionaire's portable mansion. Equipped with high-tech armor and sensors, it provides adequate protection against many hazards. The craft is also quite fast, and can run away from most would-be attackers. The interior of each *Sans Souci* is custom designed to the owner's taste; some models even include a swimming pool.

CraftID: *Sans Souci* Grav Yacht, TL 13, Cr23,244,200
Hull: 90/225, Disp=100, Config=6SL, Armor=10F, Unloaded=342 tons, Loaded=370 tons
Power: 4/10, Fusion=170Mw, Duration=30/90
Loco: 1/2, Std Grav, Thrust=700 tons, NOE=170kph, Cruise=720kph, Top=960kph, MaxAccel=0.8G
Commo: Radio=Cont (5,000km)
Sensors: Act EMS=Rgnl (500km), Pass EMS=Cont (5,000km), Headlights x 4, ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Diff, PassObjPin=Rout, PassEngScan=Rout, PassEngPin=Rout
Off/Def: Hardpoints=1
Control: Computer=4 x 2, Holo Link, HUD
Accom: Crew=1 (Operator), Stateroom x 14, Env=Basic env, basic ls, ext ls, grav plates, inert comp
Other: Fuel=205kl, Cargo=27kl, ObjSize=Average, EmLevel=Faint

86

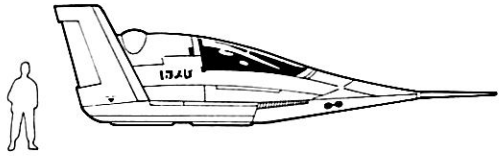


TL 13 *WANDERER* AIRBUS

Mass transport is not as popular on some planets as it once was, but tour groups still get together for chartered rides to points of interest. The *Wanderer* will take 10 people in comfort (or 14 a bit more cramped) to any point on a planet in a day or less. It is air-conditioned, provided with restrooms, and the seats can recline. Huge view windows line the sides and roof. On some hops the driver will take it to the very edge of the stratosphere for a spectacular view of the night sky, but only if no meteor showers are expected. All such buses carry repair kits for accidental punctures, and oxygen masks in case the pressure should drop.

CraftID: *Wanderer* Grav Airbus, TL 13, Cr997,600
Hull: 4/9, Disp=4, Config=4SL, Armor1D, Unloaded=5 tons, Loaded=8.7 tons
Power: 1/2, Fusion=3Mw, Dur=30/90
Loco: 1/2, Hvy Grav, Thrust=20 tons, NOE=350kph, Cruise=1,050kph, Top=1,400kph, MaxAccel=1.2G
Commo: Radio=Rgnl (500km)
Sensors: All Weather Radar=VDist (50km), Headlights x 4, ActObjScan=Diff, ActObjPin=Diff
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Dyn Link x 10
Accom: Crew=1 (Driver), Seats=Roomy x 11, Env=Basic env, basic ls
Other: Fuel=3.6kl, Cargo=2.5kl, ObjSize=Small, EmLevel=Moderate

87

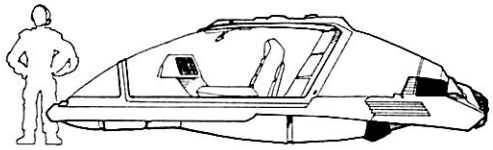


TL 13 *DUONE* RAPID SPEEDER

The *Duone* class rapid speeder, an exceedingly fast grav vehicle, is a preferred craft in a variety of settings. Businesses use the craft to travel around a planet's globe to conduct their meetings and transactions in a timely manner. Government institutions use the craft for ferrying heads of state to critical hotspots at a moment's notice. Shipping organizations use the *Duone* to offer their customers rapid courier service. The rich often own a *Duone* for its sheer speed — either because they enjoy the exhilaration of the velocity, or because the cares of their estates leave them precious little time to waste.

CraftID: *Duone* Sport Speeder, TL 13, Cr3,819,200
Hull: 3/7, Disp=3, Config=1AF, Armor=4F, Unloaded=14 tons, Loaded=23 tons
Power: 1/2, Fusion=6Mw, Duration=10/30
Loco: 1/2, Std Grav, Thrust=140 tons, NOE=170kph, Cruise=2,880kph, Top=3,840kph, MaxAccel=5G
Commo: Radio=Cont (5,000km)
Sensors: Act EMS=VDist (50km), Headlights x 2, ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Diff, PassObjPin=Rout, PassEngScan=Rout, PassEngPin=Rout
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Holo Link, HUD
Accom: Crew=1 (Operator), Seats=Roomy x 4, Env=Basic env, basic ls, grav plates, inert comp
Other: Fuel=2.4kl, Cargo=9.5kl, ObjSize=Small, EmLevel=Moderate

88

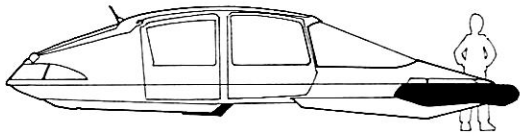


TL 13 *STRIKE-IT-RICH* PROSPECTOR'S BUBBLE

The *Strike-It-Rich* prospector's bubble speeds an asteroid miner's work with its maneuverable size, densitometer, and sampling arm. No further need to don a space suit and carry hand tools to an asteroid for sampling. The bubble is designed to be used from a base or larger vessel on a daily basis as it has no sleeping facilities. Thus a team usually has one man parked in their ore ship, digging, while one prospects for the next site. The bubble can also be used as an individual landing vehicle from planetary orbit.

CraftID: *Strike-It-Rich* Prospector's Bubble, TL 13, Cr1,851,000
Hull: 1/3, Disp=1, Config=5SL, Armor=40F, Unloaded=15 tons, Loaded=18 tons
Power: 1/2, Fusion=3Mw, Dur=21/62
Loco: 1/2, Hvy Grav, Thrust=45 tons, NOE=170kph, Cruise=1,200kph, Top=1,600kph, MaxAccel=1.4G
Commo: Radio=Sys (1,000 AUs)
Sensors: Headlight, Densitometer=Low Pen/50m, PassObjScan=Diff, PassObjPin=Diff
Off/Def: Hardpoints=1
Control: Computer=0, Holo Link x 2
Accom: Crew=1, Seats=Adequate x 1, Env=Basic env, basic ls
Other: Fuel=2.5kl, Cargo=3kl, Hvy Robot Arm, ObjSize=Small, EmLevel=Moderate

89



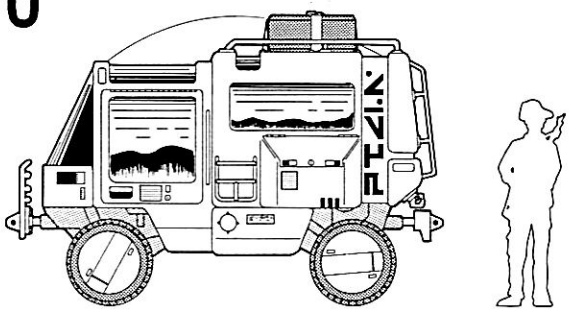
TL 13 *PLANET-HOPPER* GRAV FAMILY CAR

This high-tech family vehicle permits commuting between planets and their satellites (natural or artificial) or even travel between inner-system planets when they are in opposition. It is not designed for long-haul comfort, however. Seats can be reclined into beds so that two or more drivers can take turns at the controls, but only pre-packaged meals can be brought along. There is no artificial grav, but the constant acceleration and deceleration necessary to make good time between stops should render eating comfortable enough. Sanitation is provided for.

On-planet travel is quicker and more comfortable than hopping between orbital complexes and ground. An optional control unit allows the craft to interface with local traffic control systems where these are used.

CraftID: *Planet-hopper* Family Car, TL 13, Cr2,633,400
Hull: 3/7, Disp=3, Config=3SL, Armor=40F, Unloaded=26 tons, Loaded=32 tons
Power: 1/2, Fusion=2Mw, Dur=42/125
Loco: 1/2, Hvy Grav, Thrust=80 tons, NOE=250kph, Cruise=750kph, Top=1,000kph, MaxAccel=1.2G
Commo: Radio=Planetary (50,000km)
Sensors: All Weather Radar=VDist (50km) ActObjScan=Diff, ActObjPin=Diff
Off/Def: Hardpoints=1
Control: Computer=0 x 3, Computer Link x 11, HUD
Accom: Crew=1 (Driver), Seats=Long-term Adequate x 4, Env=Basic env, basic ls, extended ls
Other: Fuel=3kl, Cargo=5kl, ObjSize=Small, EmLevel=Moderate

90

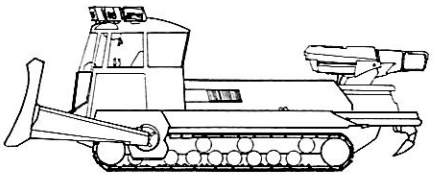


TL 14 *ANATAA* TWO-MAN ROVER

The *Anataa* class may seem a bit anachronistic in a tech 14 society, but the vehicle is in high demand on breathable atmosphere worlds where conditions make it difficult or dangerous to fly in grav vehicles. The *Anataa* is ideal for two people and their extended expedition gear.

CraftID: *Anataa* Two-Man Rover, TL 14, Cr86,200
Hull: 1/2, Disp=0.5, Config=4USL, Armor=4G, Unloaded=0.5 tons, Loaded=0.7 tons
Power: 1/2, Fusion=0.03Mw, Dur=30/90
Loco: 1/2, Wheels, Road=185kph, Off-road=55kph, P/W=45
Commo: Radio=Cont (500km) x 2
Sensors: Act EMS=Dist (5km), Headlights x 4, NAS Sensor=Long (0.25km), ActObjScan=Form, ActObjPin=Form
Off/Def: Hardpoints=1
Control: Computer=0/bis, Dyn Link x 2
Accom: Crew=1 (Operator), Seats=Roomy x 2, Env=Basic env
Other: Fuel=0.04kl, Cargo=0.14kl, ObjSize=Small, EmLevel=Moderate

91



TL 14 *SHO* CONSTRUCTION VEHICLE

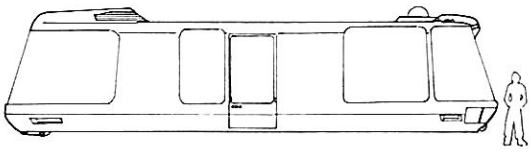
The *Sho* class is a popular construction vehicle on high-tech worlds in the Imperium. It mounts a densitometer to determine the elements being encountered, and a plasma gun for blasting bedrock for excavation.

CraftID: *Sho* Construction Vehicle, TL 14, Cr558,700
Hull: 1/2.25, Disp=1, Config=4USL, Armor=12B, Unloaded=18.6 tons, Loaded=19.2 tons
Power: 1/2, Fusion=8Mw, Dur=2/6
Loco: 1/2, Tracks, Road=175kph, Off-road=70kph, P/W=419
Commo: Radio=Cont (500km),
Sensors: Act EMS=Dist (5km), Headlights x 3, Densitometer=Surface, ActObjScan=Form, PassObjScan=Rout, PassObjPin=Imp
Off/Def: Hardpoints=1

	Ammo	*Pen/ Attn*	*Dmg*	*Max Range*	*Auto Tgts*	*Dngr Spc*	*Sig*	*ROF*
Plasma PA-10	0	44/5	20	VDist(5.1)	2	15	H	40

Control: Computer=0, Dyn Link x 2, HUD
Accom: Crew=1 (Operator), Seat=Adequate, Env=Basic env, basic ls
Other: Fuel=0.6kl, Cargo=0.55kl, Excavation Blade, ObjSize=Small, EmLevel=Moderate

92

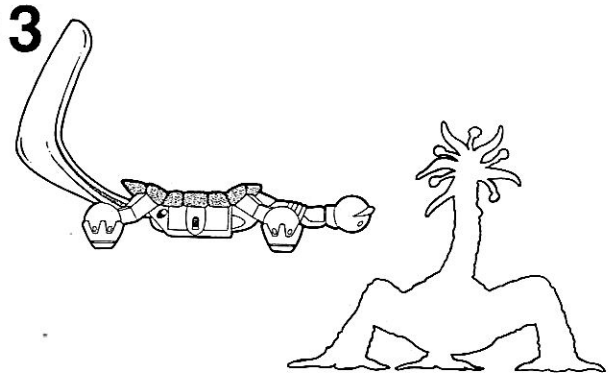


TL 14 *CLOUD NINE* GRAV HOUSEBOAT

For all footloose, well-to-do families, the Cloud Nine grav houseboat provides maximum comfort and convenience anywhere in the world. Take a vacation or live in the sky permanently; the house has over a year's supply of fuel, and water recycling capability. Furniture, appliances, and storage are built in or bolted down for minimum mess if the ride gets rough. Two offices are in the standard model so that a working couple can keep working, staying in touch with employers or employees by radio.

CraftID: *Cloud Nine* Grav Houseboat, TL 14, Cr1,996,000
Hull: 27/68, Disp=30, Config=4USL, Armor=4G, Unloaded=17 tons, Loaded=32 tons
Power: 1/2, Fusion=3Mw, Dur=417/1,250 Top=300kph, MaxAccel=0.26G
Commo: Radio=Cont (5,000km)
Sensors: Floodlights x 8
Control: Computer=0/bis x 2, Holo Dyn Link x 12
Accom: Bedroom=3, Kitchen=1, Living/Dining=1, Office=2, Bath=2, Env=Basic env
Other: Fuel=50kl, Water tank=5kl, Water Distillation=1, Obj Size=small EmLevel=Moderate

93



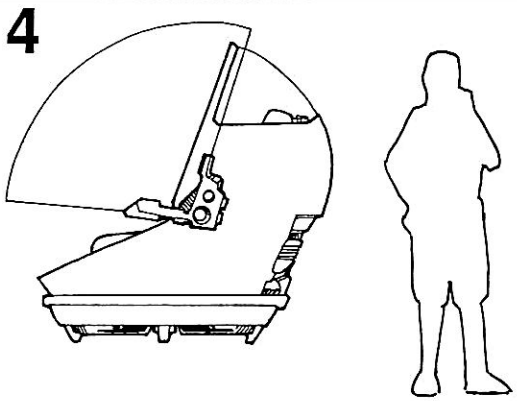
TL 14 HIVER *TIMLA* PERSONAL GRAV SLED

The *Timla* class personal grav sled is typical of the personal grav transportation vehicles used by the hivers. Velocity is controlled by exerting pressure on the front sphere (either left or right). The operator uses the rear sphere to control the craft's altitude and direction.

The Hivers are particularly fond of the *Timla* design because it includes inertial compensators, which makes for an extremely smooth ride, even when maneuvering in heavy traffic.

CraftID: Hiver *Timla* Grav Sled, TL 14, Cr288,500
Hull: 1/2, Disp=0.75, Config=7USL, Armor=1G, Unloaded=1.3 tons, Loaded=2.0 tons
Power: 1/2, Fusion=0.5Mw, Dur=67/200
Loco: 1/2, Std Grav, Thrust=3 tons, NOE=180kph, Cruise=225kph, Top=300kph, MaxAccel=0.25G
Commo: Radio=Rgnl (500km)
Sensors: Act EMS=Dist (5km), Headlights x 2, ActObjScan=Form
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Holo Dyn Link, HUD
Accom: Crew=1, Seats=Roomy, Open-topped, Env=Inert comp
Other: Fuel=1.5kl, Cargo=0.7kl, ObjSize=Small, EmLevel=Moderate

94

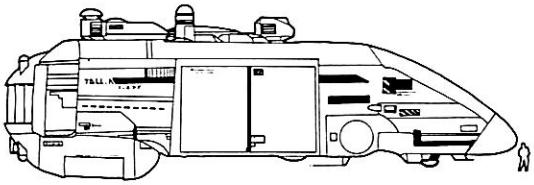


TL 15 *PETER PAN* CHILD'S FLOAT CHAIR

Parents may rest assured when they tuck their children into the *Peter Pan* commuter bubble. Young passengers are guaranteed to reach the destination that has been programmed at home, since the computer will not accept program changes in flight without radio authorization from the parent. There is an automatic distress signal in case of mechanical failure and forced landing. A child can literally go anywhere in the world on one fuel tank, and refills cost less than two credits. The use of rest stops is necessary, however, as there are no extended life support facilities in the bubble.

CraftID: Imperial *Peter Pan* Float Chair, TL 15, Cr76,200
Hull: 1/1, Disp=0.25, Config=5SL, Armor=4F, Unloaded=0.47 tons, Loaded=0.56 tons
Power: 1/2, Fuel Cells=0.54Mw, Dur=4/12
Loco: 1/2, Grav, Thrust=2 tons, NOE=240kph, Cruise=720kph, Top=960kph, MaxAccel=0.8G
Commo: Radio=VDist (50km)
Sensors: Radar=Dist (5km), ActObjScan=Form, ActObjPin=Form
Off/Def: Hardpoints=1 (squirt gun, maybe?)
Control: Computer=0, Elect Link
Accom: Crew=1, Seats=Cramped x 1, Env=Basic env
Other: Fuel=0.04kl, Cargo=0.5kl, ObjSize=Small, EmLevel=Moderate

95

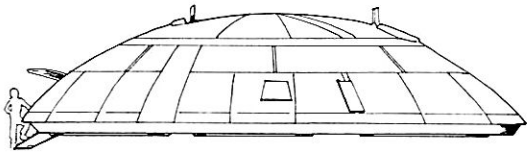


TL 15 *ZEFF* GRAV CARGO TRANSPORT

The *Zeff* grav cargo transport is typically seen on many high-tech worlds in human space. For moving cargo on-planet, there are very few methods as cost effective. On frontier worlds, these vehicles often mount defensive armament and carry extra crew to repel unauthorized boarders. The *Zeff* is the high-tech equivalent of the oceangoing tramp steamer seen on low-tech worlds, slowly winding from city to city on circuits that always terminate at the planetary main starport.

CraftID: *Zeff* Grav Cargo Transport, TL 15, Cr5,889,200
Hull: 90/225, Disp=100, Config=6SL, Armor=1G, Unloaded=243 tons, Loaded=1,055 tons
Power: 3/8, Fusion=275Mw, Duration=30/90
Loco: 2/6, Std Grav, Thrust=1,750 tons, NOE=170 kph, Cruise=540kph, Top=720kph, MaxAccel=0.6G
Commo: Radio=Cont (5,000km)
Sensors: Active EMS=Rgnl (500km), Headlights x 4, ActObjScan=Diff, ActObjPin=Diff, PassObjScan=Rout, PassObjPin=Rout, PassEngScan=Rout, PassEngPin=Rout
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Holo Link, HUD
Accom: Crew=1 (Operator), Seat=Roomy, Stateroom x 2, Env=Basic env, basic ls, ext ls, grav plates, inert comp
Other: Fuel=297kl, Cargo=810kl, ObjSize=Average, EmLevel=Faint

96

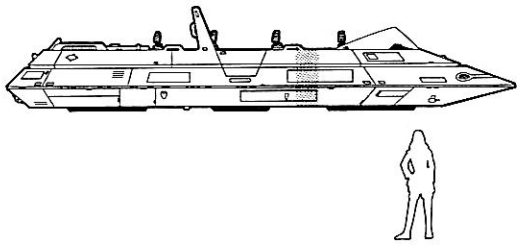


TL 15 *ATHENE* GRAV LOUNGE

This mobile lounge is popular with private clubs and business executives because of its seclusion and luxurious atmosphere. It is also often used for international or interplanetary negotiations. At such times it is, of course, heavily guarded by escort fighters. The lounge itself is defenseless, but its EMM package includes special bug-proofing features to render all inside conversations secure.

CraftID: *Athene* Grav Lounge, TL 15, Cr2,134,800
Hull: 15/36, Disp=16, Config=6SL, Armor=4G, Unloaded=8 tons, Loaded=12.5 tons
Power: 1/2, Fusion=2Mw, Dur=100/300
Loco: 1/2, Hvy Grav, Thrust=20 tons, NOE=180kph, Cruise=540kph, Top=720kph, MaxAccel=0.6G
Commo: Radio=Rgnl (500km)
Sensors: All Weather Radar=Rgnl (500km), EM Mask
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Holo Link x 20
Accom: Crew=6 (Driver=2, steward=4), Psgrs=30 Seats=Roomy x 36, Env=Basic env, basic ls
Other: Fuel=3.6kl, Cargo=1kl, ObjSize=Small, EmLevel=None

97

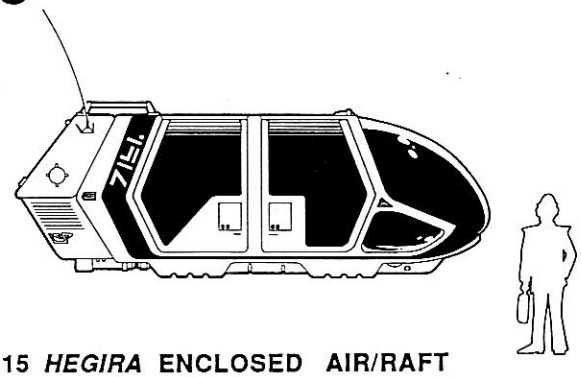


TL 15 *SKY FLOATER* OPEN-TOP AIR/RAFT

The *Sky Floater* is common on high-tech worlds, it is efficient and inexpensive.

CraftID: *Sky Floater* Open-Top Air/Raft, TL 15, Cr275,000
Hull: 2/5, Disp=2, Config=4SL, Armor=4G, Unloaded=1.6 tons, Loaded=7.2 tons
Power: 1/2, Fusion=1.5Mw, Dur=60/180
Loco: 1/2, Std Grav, Thrust=8.0 tons, NOE=120kph, Cruise=90kph, Top=120kph
Commo: Radio=Planetary (50,000km)
Sensors: PassEMS=VDist (50km), ActEMS=VDist (50km), ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Form
Off/Def: HardPoints=1
Control: Computer=0 x 2, Holo Dyn link x 5, Env=Basic env
Accom: Crew=1 (Operator=1), Seats=Roomy x 4
Other: Cargo=5.4kl, Fuel=3.3kl, ObjSize=Small, EmLevel=Faint

98



TL 15 *HEGIRA* ENCLOSED AIR/RAFT

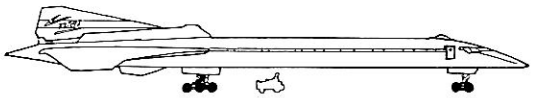
The *Hegira* enclosed air/raft is another of the most common vehicles on high-tech worlds; it has a slightly higher cost but correspondingly more comfort than the open version.

CraftID: *Hegira* Enclosed Air/Raft, TL 15, Cr389,000
Hull: 3.6/9, Disp=4, Config=1USL, Armor=4G, Unloaded=5 tons, Loaded=19 tons
Power: 1/2, Fusion=0.25Mw, Dur=60/180
Loco: 1/2, Std Grav, Thrust=20.6 tons, NOE=120kph, Cruise=90kph, Top=120kph
Commo: Radio=Planetary (50,000km)
Sensors: PassEMS=VDist (50km), ActEMS=VDist (50km), ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Form
Off/Def: HardPoints=1
Control: Computer=0 x 2, Holo Dyn Link, HUD, Env=Basic env, basic ls, inertial comp
Accom: Crew=1 (Operator), Seats=Roomy x 4
Other: Fuel=8kl, Cargo=13.5kl, ObjSize=Small, EmLevel=Faint

99 TL 15 IMPERIAL *METERIOR* SPEEDER

See inside back cover.

100

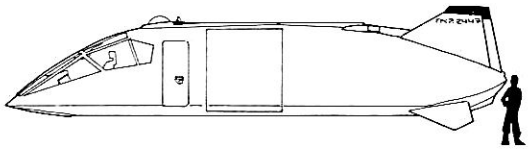


TL 15 *TACHCEL* HYPERGRAV TRANSPORT

The *Tachcel* hypergrav transport vehicle is typical of the ultra-fast grav passenger vehicles available at high tech levels. The *Tachcel* soars above the atmoshere for much of its flight, allowing it to far exceed its atmospheric speed limit of 4,200kph. Beyond the atmosphere, the *Tachcel* can continue to accelerate at 6 gees, making it possible to reach any location on a size 8 world in under an hour.

CraftID: HyperGrav Transport, TL 15, Cr 2,659,000
Hull: 18/45, Disp=20, Config=1AF, Armor=4G, Unloaded=50 tons, Loaded=59.0 tons
Power: 1/2, Fusion=54.6Mw, Dur=2/6
Loco: 1/2, Std Grav, Thrust=347 tons, Cruise=3,150kph, Top=4,200kph, MaxAccel=6G
Commo: Radio=Cont (5,000km) x 3
Sensors: Act EMS=VDist (50km), Pass EMS=VDist (50km), Headlights x 2, ActObjScan=Diff, ActObjPin=Difficult, PassEngScan=Form
Off/Def: Hardpoints=1
Control: Computer=0, Holo Dyn Link, HUD, Env=Basic env, basic ls, grav plates, inert comp
Accom: Crew=2 (Pilot=1, copilot=1), Seats=Cramped x 2, Adequate x 62, Roomy x 10
Other: Fuel=3.9kl, Cargo=9.5kl, ObjSize=Small, EMLevel=Faint

101

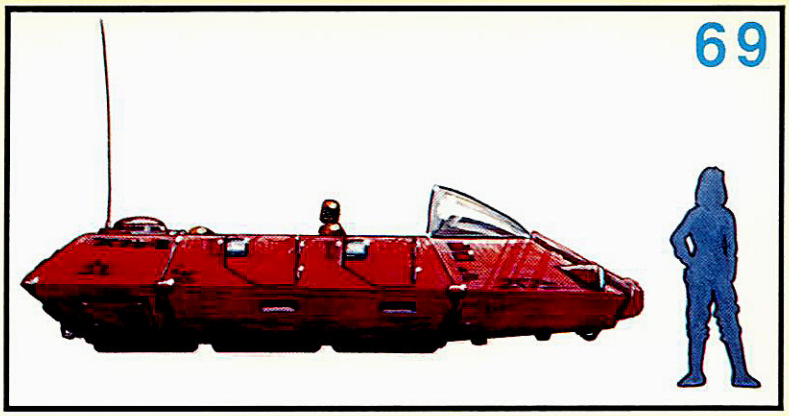


TL 16 *HERMES* GRAV LANDING SHUTTLE

The *Hermes* is a popular model for a subordinate craft on much larger vessels such as the *Olympus* planetary pleasure cruisers, but is also often used alone, to carry people and cargo from surface to orbit and vice versa. Its speed is not great but it is a reliable workhorse. Artificial grav makes it comfortable for ground-lubbers even after orbit is achieved.

CraftID: *Hermes* Grav Landing Shuttle, TL 16, Cr797,900
Hull: 4/9, Disp=4, Config=4SL, Armor=4G, Unloaded=3, Loaded=17
Power: 1/2, Fusion=3.5Mw, Dur=4/12
Loco: 1/2, Lt Grav, Thrust=20 tons, NOE=45kph, Cruise=135kph, Top=180kph, MaxAccel=0.15G
Commo: Maser=Rgnl (500km)
Sensors: All Weather Radar=VDist (50km), ActObjScan=Diff, ActObjPin=Diff
Off/Def: Hardpoints=1
Control: Computer=0 x 2, Holo Link x 10
Accom: Crew=1 (Driver), Seat=Roomy, Adequate x 10, Env=Basic env, basic ls, grav plates
Other: Fuel=0.5kl, Cargo=13kl, ObjSize=Small, EmLevel=Moderate

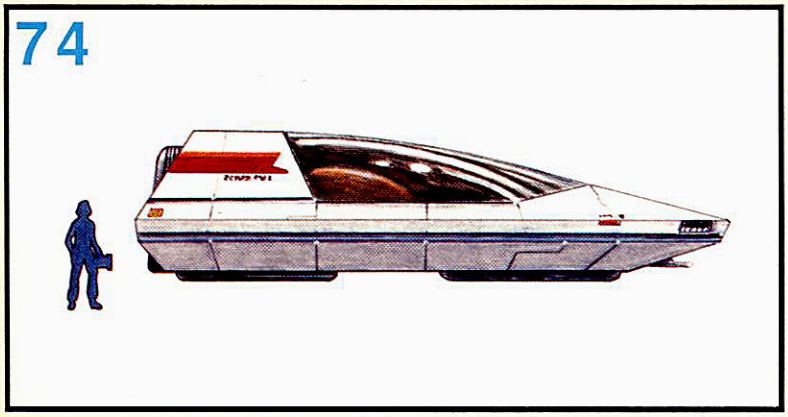
CraftID: LSP *Sirvaan* Air/Raft, TL 10, Cr295,900
Hull: 1/2, Disp=0.75, Config=4USL, Armor=4E, Unloaded=1.3 tons, Loaded=1.4 tons
Power: 1/2, Fuel Cell x 4=0.36Mw, Duration=4/12
Loco: 1/2, LP Hvy Grav, Thrust=1.7 tons, NOE=140 kph, Cruise=135kph, Top=180kph, MaxAccel=0.15G
Commo: Radio=Cont (5,000km)
Sensors: Act EMS=Dist (5km), Headlights x 2, ActObjScan=Form
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Dyn Link
Accom: Crew=1, Seats=Cramped x 4
Other: Fuel=1.5 kl, Cargo=0.14 kl, ObjSize=Small, EmLevel=Moderate



TL10 *SIRVAAN* AIR/RAFT

The *Sirvaan* class air/raft, manufactured by the Imperial megacorporation Ling Standard Products, can be found in all areas of the Imperium.

The *Sirvaan* includes a tarp to protect its occupants from the elements during bad weather.

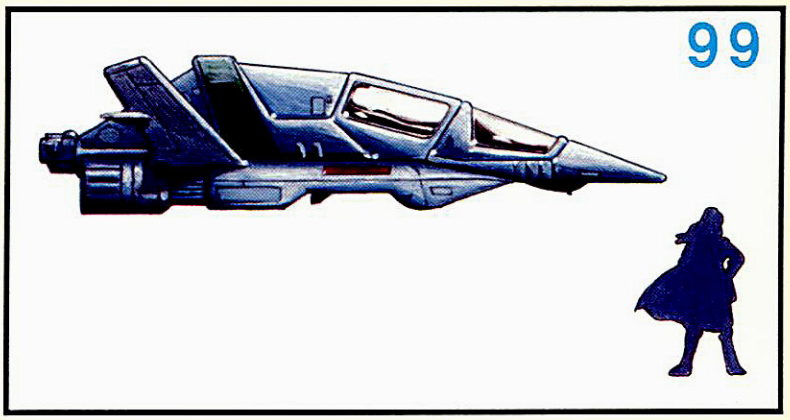


TL11 *COVA* ENCLOSED AIR/RAFT

The *Cova* class air/raft serves well as a multi-purpose passenger and cargo van, and is especially popular for commercial applications.

CraftID: *Cova* Enclosed Air/Raft, TL 11, MCr1.159
Hull: 4/9, Disp=4, Config=4USL, Armor=4E, Unloaded=23 tons, Loaded=36 tons
Power: 1/2, Fusion=8.4Mw, Duration=8/25
Loco: 1/2, Std Grav, Thrust=42 tons, NOE=150 kph, Cruise=135kph, Top=180kph, MaxAccel=0.15G
Commo: Radio=Cont (5,000km) x 2
Sensors: Act EMS=VDist (50km), Headlights x 4, ActObjScan=Diff
Off/Def: Hardpoints=1
Control: Computer=0/bis x 2, Dyn Link, HUD
Accom: Crew=1 (Operator), Seats=Adequate x 9, Env=Basic env, basic ls, grav plates, inert comp
Other: Fuel=2.5kl, Cargo=13.5kl, ObjSize=Small, EmLevel=Moderate

CraftID: *Meterior* Speeder, TL 15, MCr1.36
Hull: 5/14, Disp=6, Config=1AF, Armor=4G, Unloaded=19 tons, Loaded=25 tons
Power: 1/2, Fusion=54Mw, Duration=45/135
Loco: 1/2, StdGrav Trust=52 tons, NOE=190 kph, Cruise=810kph, Top=1080kph
Commo: Radio=Sys (1,000 AU)
Sensors: PassiveEMS=VDist (50km), ActiveEMS=VDist (50km), ActObjScan=Diff, ActObjPin=Diff, PasEngScan=Rout
Off/Def: HardPoints=1
Control: Computer=0 x 2, Holo Link, HUD Env=basic env, basic ls, inertial comp
Accom: Crew=1 (Operator), Seats=Roomy x 2
Other: Fuel=58kl, Cargo=2kl, ObjSize=Small, EmLevel=Faint



TL15 *METERIOR* SPEEDER

The *Meterior* Speeder is a streamlined grav-powered craft intended for high-speed transport between points on a world surface.

101 VEHICLES

AN ILLUSTRATED CATALOG

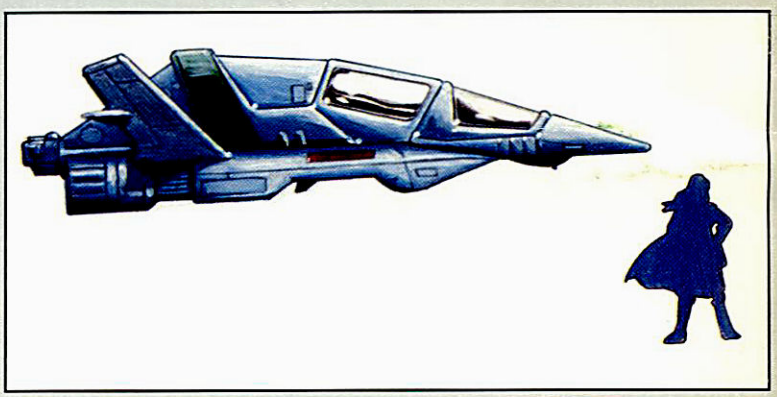
Official MegaTraveller Designs

Here under one cover are 101 different vehicles for use in **MegaTraveller** games. Every single vehicle comes with a detailed illustration, a description, and an official Universal Craft Profile. You will know what each vehicle can (and can't) do, what the vehicle looks like, and what the vehicle costs.

If you're just starting to design your own vehicles, this book has more than a hundred examples. If you already have several designs of your own, here are 101 more to add to your campaign.

Whether you're a **MegaTraveller** player or a referee, *101 Vehicles* gives you all the vehicles you need to travel insystem at higher tech levels. Vehicles include—

- **Military Vehicles:** Designs ranging from the early Imperial *Penetrator* armored car to the latest *Inquisitor* and *Lancer* class special-purpose vehicles.
- **Paramilitary Vehicles:** Land, sea, and air vehicles, including the *Gashedda* submarine, the Vargr "floater", and the IISS *Kankurur* survey G-carrier.
- **Civilian Vehicles:** Everything from the first automobile to the mobile undersea restaurant, the massive K'kree grav platform, the asteroid prospector's bubble, the Hiver grav sled, the hypersonic grav passenger liner, and the *Olympian* shuttle.
- **Classic Vehicles:** Designs from earlier **Traveller** works, fully updated and detailed for the times of the Shattered Imperium.



- **MegaTraveller Vehicles:** Designs from the *Imperial Encyclopedia* and the *Rebellion Sourcebook*, including details on the top-secret Zhodani *Z-80* and the Imperial *Trepida* grav tanks.
- **Alien Vehicles:** Designs from a variety of major and minor races, demonstrating the different design philosophies they follow.
- **Design System Examples:** Vehicles that show just how to use the **MegaTraveller** vehicle design system.
- **Vehicle Weaponry:** New tables for use with vehicles, expanding your design options for armed craft.
- **Index:** A complete index to all 101 vehicles.

For Use With MegaTraveller

This module is intended for use with **Traveller** or **MegaTraveller**. It requires that you have a copy of the game rules.

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DGP-871-0795

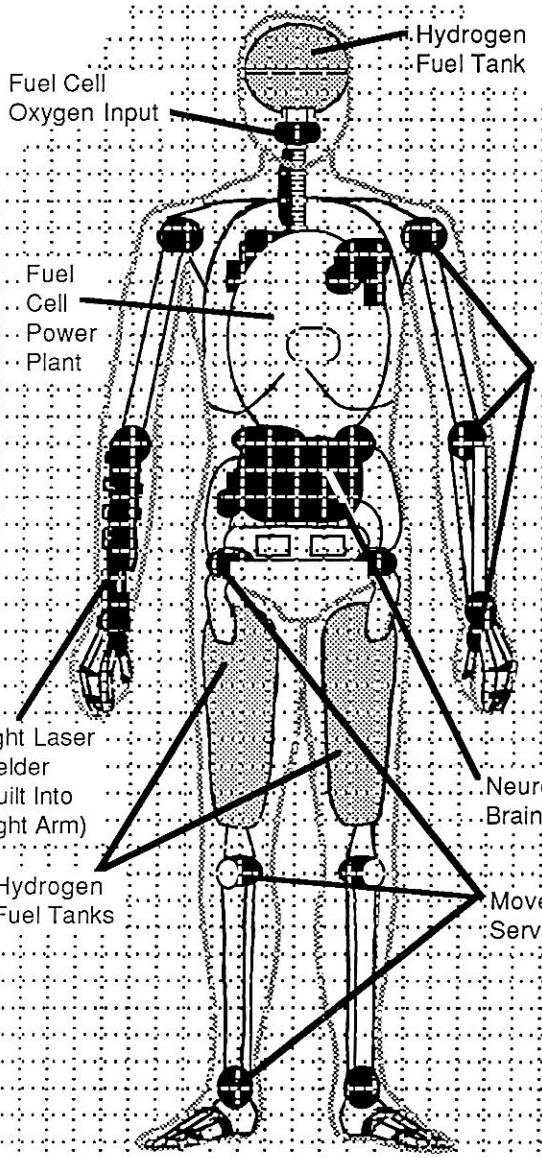
Approved for Use With *Traveller*

101 Robots

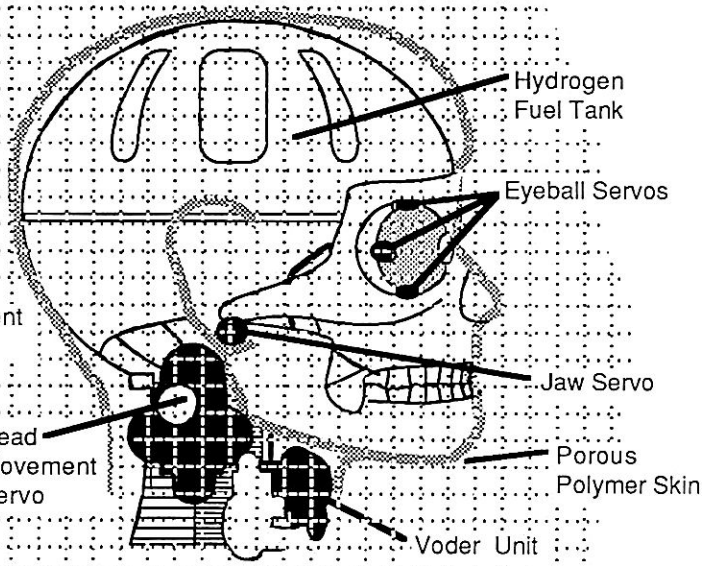
An Illustrated Catalog

Digest Group Publications

Advanced Pseudobiological Model 101



Robot, full front view



Head, Side View

Design Notes:

- See Chart 2-A for details of electrofiber attachments for tractable pseudomuscles
- See Chart 2-B for details of porapoly non-tractable pseudomuscle contours.
- See Chart 2-C for touch sensor diagram.
- See Chart 3-A for details of light laser welder built into right arm.
- See Chart 4-A for coolant flow diagram.
- See Chart 5-A for details of neurocircuit Brain.

101 Robots

Traveller is a game of the far future, and nothing gives the game that futuristic feeling as well as robots do. Here are over one hundred official robot designs, at your fingertips and ready for use in any **Traveller** campaign. Also included are some additional robot design notes, as well as descriptions of new skills, sensors, devices, and weapons to use in your own robot designs.

The 101 Robots

There are basically three reasons why a particular robot might appear in this book. One reason for a robot to be chosen for inclusion is its common use in the Imperium or bordering areas. Examples of this would be many of the cargo bots and the Zhodani warbots. A few of these robots are not innovative or otherwise unusual, but the higher probability of encountering them warrants their places in this book.

Other robots are included in this book to demonstrate the flexibility of the robot design system from *Book 8: Robots*. Some of these robots are described in two or three versions, and their descriptions discuss the design tradeoffs. Examples of these are the Tukera Traders and the Ship Shepherds.

A third group of robots is included just because they are interesting in one way or another, whether or not they are commonly encountered in **Traveller**. Some of these robots are highly intelligent (or quite unintelligent). Others have devices or software installed that are not normally associated with robots. Others emphasize some facet of life at high tech levels.

Types of Robots

A variety of means to categorize robots exists. For this book, we grouped robots according to the following definitions:

Dumbots: The robot has an intelligence of 4 or less. If the robot falls under any other category, however, it is not a dumbot.

Utility Robots: The robot has an intelligence greater than 4, but no more than one skill has a level of 2.

Assistants: The robot has an intelligence of 5 or greater, and it has two or more skills at level 2 or greater or has at least one skill at level 3.

Expert Robots: The robot has some skill at level 4.

Law Enforcement and Security Robots: The robot fulfills some role in the legal system.

Warbots: The robot is routinely used on a battlefield.

Medical Robots: The robot is used in medicine.

Pseudobiological Robots: The robot is configured as chassis 6.

If a robot fits into one of the last four categories, it is not considered as belonging to one of the first four categories.

Within each category, the robots are ordered by tech level.

The Robot Descriptions

The descriptions in *101 Robots* follow the standard Universal Robot Profile format described in *Book 8: Robots*. The first line of each URP contains the codes for the robot's chassis size and configuration, power supply, locomotion, head and other appendages, brain hardware and software, and apparent characteristics. For the exact meaning of the URP codes, see *Book 8*.

Included in the URP is a summary of other pertinent data, including the price, weight, fuel capacity, duration, tech level, thrust, chassis damage points, armor type, appendages, sensors, devices, weapons, and application programs.

Following the URP summary is a description of the robot. For the most part, the descriptions are straightforward, but in a few instances, the descriptions are taken from news articles or even advertisements for the robots. Many of the descriptions include special information dealing with the game.

Robots in Society

Robots become technologically feasible in **Traveller** at tech level 12, and at this tech level, characters will begin to encounter robots in their day-to-day activities. The economic advantages of robots over humans increase until at tech level 13, robots can be found in businesses, fancier hotels and restaurants, and many private homes. At tech level 14, this trend starts to reverse itself, until at tech level 15 one can judge the exclusivity of an establishment by its human (or sentient) help.

ROBOT DESIGN: ADDITIONAL CONSIDERATIONS

Master/Slave Robots

The master/slave configuration of robots is a common one, particularly for industrial robots, dumbots, and Hiver and K'kree robots. Many warbots also have master/slave capabilities.

There are two types of networks possible: those with a single master and multiple slaves, and those with multiple masters and multiple slaves.

To determine how many robots can be tied together in a single master/multiple slave network, add the intelligence of the master and the intelligence of the slaves together. Divide this number by 2, and the result gives the number of possible slaves in the network. The master must have a minimum intelligence of 3. (The slaves may or may not have a brain themselves.)

In the multiple master/multiple slave network, each robot is simultaneously a master and a slave. The advantage of this system is that large problems (particularly those spread over a wide geographic area) can be worked on by several robots at once. Any robot in such a network must have a minimum intelligence of 3. Examples of this configuration can be found in the Weather Control Robot and the Ship Shepherd Robots.

Many warbots are configured in a multiple master/multiple slave network, in order to provide external brain backups. In case one robot's brain is damaged, it can use the processing power of one of its co-robots to continue operating.

If a slave is using a skill from the master's brain, the effective intelligence of the slave robot is the master's intelligence minus 1. If the master is controlling any number of slave robots, the effective intelligence of the master is also its own intelligence minus 1. (Note in particular that this affects every robot in a multiple master/multiple slave configuration.) If a slave is using

CREDITS FOR *101 ROBOTS*

Robot Designs.....Gary L. Thomas, Robert Parker, Nancy Parker, Joe D. Fugate Sr.
Robot Illustrations.....Joe D. Fugate Sr., Robert Parker, Rob Caswell
Introductory Material...Gary L. Thomas, Joe D. Fugate Sr.
Cover painting by Joe D. Fugate Sr.
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a skill it has, its own intelligence is the effective intelligence.

Electronic Circuit Protection Effects on Combat

When a robot has electronic circuit protection, its weight and cost increase by a factor of 1.5. When you calculate hit and destroy values for the robot, multiply the chassis values by the same factor of 1.5. When the robot takes a hit, ignore the hit if it is the first hit on a particular component, and count the hit as a chassis hit instead. The second hit on a component is "unprotected" and counts normally.

Retractable Appendages

Heads and arms on a robot can be retractable, as long as the storage space within the body of the robot is accounted for in the design process. The volume required for the head, for the purposes of the game, is the same as its internal volume. The volume required for an arm or tentacle is equal to 0.5 liters per kilogram. For example, a retractable light arm takes up 2.5 liters from the robot's chassis volume.

Multiple Heads

Robots can be designed with multiple heads, as long as the total head volume does not exceed 40% of the chassis volume. For example, a robot could have three rotating heads, each having a volume of 10% of the chassis volume, giving a total additional volume of 30%.

Multiple Power Plants

The gap between fuel cells and fusion power plants is wide, and there are many circumstances where an intermediate amount of power is desired. In these cases, the robot can be constructed with more than one power plant, giving a total power supply equal to the sum of the individual power outputs.

For example, a robot with three Type 6 fuel cells would have a total power supply available of 270 kw at tech level 12. Remember to count the fuel consumption of each plant when computing the robot's operating time.

"Plug-in" Robots

A robot may not have any power supply, particularly if it is a fixed unit that just plugs into a wall (such robots must have power interfaces, of course). To indicate in the URP that a robot has no internal power supply, put an "x" in the appropriate positions (power supply and batteries). In this book, the Assembler Robot is an example of this.

Touch Sensors

All robot arms are built with an appropriate standard amount of tactile feedback, i.e., the fingers have a normal amount of touch sensitivity without including separate "touch sensors" in the robot. The touch sensors on the design list refer to sensors for the robot's body. This explains why the power, weight, and cost for touch sensors are multiplied by the chassis size to determine the actual values.

Hidden Costs of Software

When designing a robot, it is all too easy to look over the list of skills and be misled by the apparently inexpensive costs for software. Putting vast amounts of programming into a robot can have an expensive side effect: the robot's brain jumps in price.

Remember that every time a program takes "only" two units of space, the brain must increase by that amount. If the software is CPU-resident, the costs can increase quite rapidly. Furthermore, excessive skill levels can require that even more CPU or storage space be allocated, because robot brains are limited in the same way that sentient brains are for the number of skills allowed. The total levels of skills can not exceed the sum of the robot's intelligence and education.

If you do insist on a vast amount of software, the easiest way to increase the number of allowable skills is to increase the amount of standard storage. For an example of this technique in use, see the Hiver Bruiser Robot in this book.

How to Use This Book for Robot Encounters

The index lists all of the robots from the encounter tables found in *Book 8: Robots*. If you are using *Book 8*, you can instantly find an example of any robot by finding its name in the index.

Many of the robots in this book are not appropriate for "random" encounters, but referees are encouraged to use these robots in preplanned adventure settings.

NEW DESIGN FEATURES

New Skills

Performer: The robot can perform in front of an audience and hold the audience's interest, using whatever related "talent" skill applies (such as musical). The skill level represents the "population" level of the audience that the robot is qualified to perform for: skill level 1 means audiences up to 10, skill level 2 means audiences up to 100, etc. Requires emotion simulation.

Musical: The robot can use and play a variety of musical instruments. If the robot has a voder, this skill also gives the robot the ability to sing. Performer skill is needed if the robot is to play or sing in front of an audience.

Cinematography: Gives the robot the ability to use a camera (still, 2D video, or 3D holographic) in a manner beyond simply recording what it sees. The robot will seek out good camera angles, compose for maximum interest, and so on. Skill level 1 is sufficent for the robot to be used as a "newsreel" camera operator, while skill level 3 allows the robot to be used as the camera operator in a full-scale movie production.

Agriculture: The robot can properly plant and harvest crops, match the crop to the environment, and maximize crop yield through the use of fertilizers, planting techniques, hydroponics, and so on. Higher skill levels increase the robot's ability to cope with harsh and difficult crop growing situations.

Janitorial: The robot can properly clean and maintain living and working areas, doing routine sweeping, mopping, dusting, polishing, vacuuming, and scrubbing. Higher skill levels allow the robot to work faster and still maintain quality.

Athletics: Gives the robot an understanding of athletic activities and how to perform them. Higher skill levels confer a more in-depth understanding of athletics and a greater ability to critique specific activities.

Lab Tech: Enables the robot to understand and perform basic laboratory operations such as working with chemical substances or using lab equipment. Higher skill levels provide a greater precision when working in the lab and a greater understanding of more exotic or complicated lab equipment.

Meteorology: Provides the robot with an in-depth understanding of weather patterns and weather prediction. Higher skill levels also allow the robot to practice weather control: skill level 2 allows the robot to perform primitive weather control, while skill level 4 gives the robot expert weather control ability.

Terraforming: The robot can plan and execute macro-level terrain alteration. Skill level 1 permits local terraforming (less than one full hex on a world map), skill level 2 allows terraforming an entire hex, and skill level 3+ provides the ability to execute multi-hex terraforming projects.

Biology: Allows the robot to recognize and categorize living organisms both familiar and unfamiliar. By observing the lifeform, the robot may discern the lifeform's characteristics, ecological classification, and potential hazards to other lifeforms. This skill also permits the robot to estimate the potential uses of the lifeform (e.g., whether the organism is commercially valuable, whether it can be eaten). Higher skill levels allow the robot to form proper conclusions with less detailed knowledge of the organism's physical structure.

Physics: Provides the robot with an in-depth understanding of force, energy, and its effects on matter. This allows the robot to discern what force may have affected an object, what caused an unknown phenomenon, or to categorize an unknown energy source. The robot may also provide an estimate of what application of force or energy will be needed to have the desired affect. Skill level 3+ permits the robot to form proper conclusions about a phenomonen which it did not personally observe (e.g., what caused a 100-year old crater).

Chemistry: Allows the robot to analyze chemical compounds or to synthesize new chemical compounds from old ones. Chemistry skill requires access to proper equipment in order to be used. Higher skill levels improve the robot's ability to find trace elements in an analysis, or to synthesize complex compounds (such as drugs or crystaliron). Chemistry skill applies only to inanimate matter, not living organisms.

Genetics: Genetics is treated as a combination of biology and chemistry skill, with the chemistry involving living matter instead of inanimate matter. Genetics allows performing laboratory chemical analysis of living organisms (see chemistry skill), or laboratory biolgical study of living organisms (see biological skill). Skill level 3+ allows attempting to synthesize new forms of living matter, which may include cloning.

Forensic: Allows the robot to gather and interpret evidence available at the scene of a crime or accident. Skill level 1 confers basic detective skills, level 4 is an expert investigator.

History (specify major race): Provides the robot with a vast knowledge base containing historical details about a specific major race's region of space. History has no skill level since it is always put in storage and never put in the CPU.

Psychology (specify race): Allows the robot to diagnose and treat behavioral abnormalities. The robot may be able to elicit certain reactions or predict an individual's behavior in advance. Use in conjunction with the reaction table for the specified race. Requires emotion simulation.

Architect: Allows the robot to plan and design structures, from buildings and bridges, to starports and entire cities. Higher skill levels allow producing a more reliable plan in a shorter time.

Construction/Fabrication: This provides the robot with the know-how needed to efficently build the structure designed by an architect. Higher skill levels allow the robot to work faster and more efficiently, while still maintaining quality.

New Sensors, Devices, and Weapons

Environment Sensor Package: An array of sensors for sensing the environment immediately surrounding the robot. Includes: temperature, moisture, and pressure sensing.

Active Audio Sensor (SONAR): Allows the robot to use reflected sound waves in a fluid to locate and track objects.

Neural Activity Sensor: Provides the robot with the ability to remotely detect lifeforms (by sensing brain wave activity) out to a range of 250 meters.

Molecular Analyzer (Sniffer): Gives the robot the ability to perform a chemical analysis search for as little as 1 part per 10 million of the compound being sought. Each analysis is time consuming, however, and takes an average of 1 hour.

Sandcaster: Provides a mini-sandcaster for use as a defense against starship laser fire in a zero-G environment.

Microspotlight: A small, precise version of the spotlight.

Surgical Laser: A precision laser welder/cutter that is much more exacting than a laser welder.

Financial Package: Gives the robot a built-in safety deposit box for credit notes, a set of debit/credit card readers for common cards, and special money handling hardware.

Music Synthesizer: A specialized multivoice unit that accurately imitates a wide array of musical tones and instruments.

Agricultural Package: Provides an array of plant tending implements.

Gauss Pistol, ACR, Accelerator: These weapons are equivalent to the corresponding weapons in *Book 4: Mercenary.*

NEW APPLICATION PROGRAMS

Description	*Space*	*Price(CR)*
Performer†	3	300
Musical	6	500
Cinematography	2	400
Agriculture	4	300
Janitorial	2	200
Athletics	3	400
LabTech	2	400
Meteorology	4	500
Terraforming	4	500
Biology	8	500
Physics	8	500
Chemistry	8	500
Physical Sophontology (specify race)	6	600
Genetics	10	1200
Forensic	5	800
History (specify major race)*	10	500
Psychology (specify race)†	12	1200
Architect	6	400
Construction/Fabrication	2	400

† Requires emotion simulation
* Cannot be put in CPU: can only be put in storage

NEW DEVICES

Device	*Power*	*Wt(kg)*	*Price(Cr)*
Sandcaster	5.0	14.0	1250
Microspotlight	0.3	0.3	150
Surgical laser	2.5	5.0	10000
Financial Package	1.0	4.0	1000
Music Synthesizer	10.0	15.0	5000
Agricultural Package	7.5	50.0	750
Mass Sensor (grav shielded)	20.0	10.0	10000

NEW SENSORS

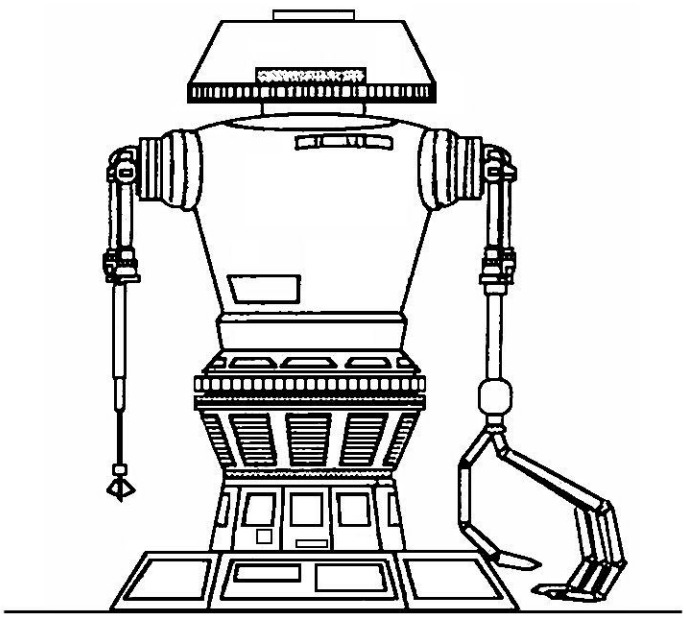
Sensor	*Power*	*Wt(kg)*	*Price(Cr)*
Environment Sensor Pkg	4.0	4.0	1500
Active Audio Sensor (SONAR)	5.0	20.0	5000
Neural Activity Sensor	4.0	10.0	40000
Molecular Analyzer (Sniffer)	30.0	25.0	50000

NEW WEAPONS

Weapon	*Power*	*Wt(kg)*	*Price(Cr)*
Gauss Pistol	2.5	1.5	1000
ACR	2.5	4.0	1500
Accelerator Rifle	2.0	3.0	1200

Dumbots

Dumbots are robots with intelligence of 4 or less. These robots are among the most commonly encountered within the Imperium, because they are cheap and efficient at their jobs. They usually have only one or two skills at proficiency level 1 or 2, but occasionally a dumbot will have a skill level of 3.



Front View

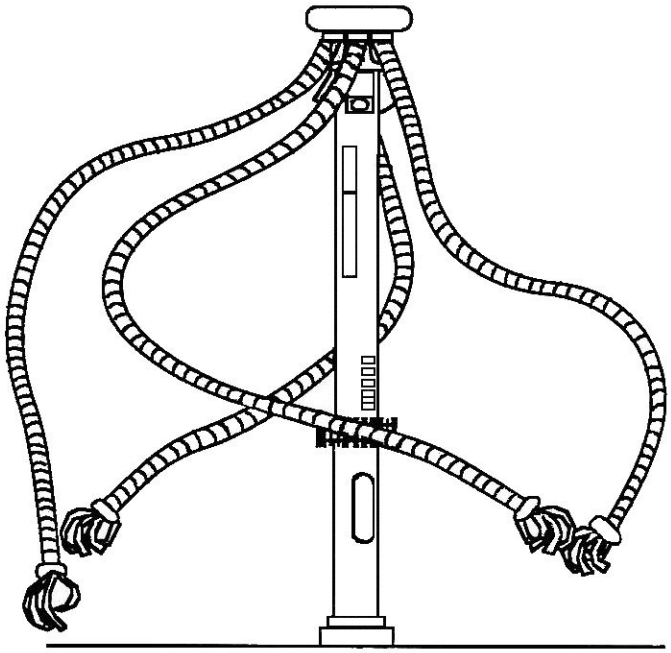
1. ANIMAL CARE ROBOT
522xA-F2-JL112-M622 Cr90,100 140kg
Fuel=34.9 Duration=7.3 days TL=12
23/58 (mesh)
1 Lt arm, 1 med arm
1 Head (15%)
Basic sensor pkg (eyes: +1 lt inten,+1 pass IR)
Voder
Radio (distant range)
Medical instrument pkg
Body/Snub pistol
Medical-2, Body/Snub Pistol-2

The Intect AF-390 animal care robot is programmed to feed and tend a variety of creatures, regardless of the environ- mental conditions in which they live. The AF-390 is often found in research labs, zoos, and occasionally agricultural installations. The animal care robot can also assist in tracking and recovering any animals which escape, using its heightened vision and its LSV-64 snub pistol.

The pistol uses tranquilizer ammunition; the robot's programming permits it to estimate the size and metabolism of the target and automatically adjust the dosage of these darts.

Generally, an installation will have several of these robots, which communicate over their radios with one central computer. This master unit can give them special instructions for the treatment of certain animals. The AF-390 can also inform such a central computer of animal escapes or other intruders.

The medical instrument package included in the AF-390 is used for veterinary work.

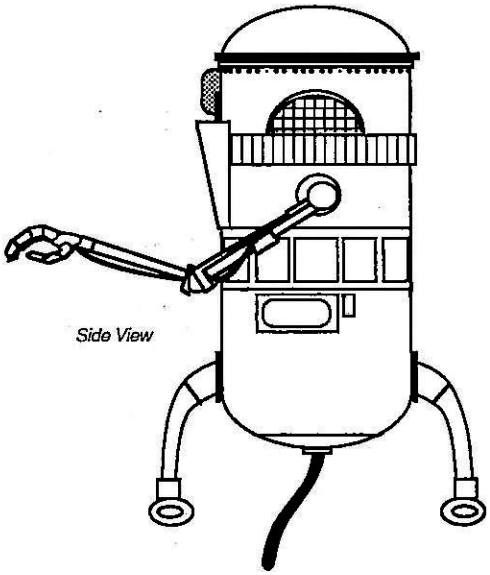


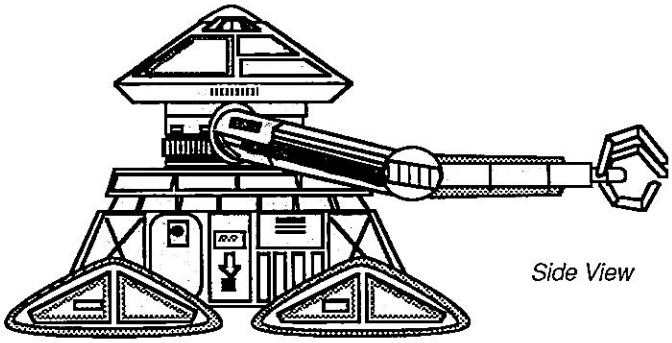
2. ASSEMBLER ROBOT
30xx0-04-LB000-MF11 Cr47,700 155kg
Fuel=(external power) Duration=(unlimited) TL=12
10/25 (no armor)
4 Med tentacles
2 Eyes, touch sensors
Power interface, brain interface
4 Lt laser welders (in tentacles)
Mechanical tool pkg

The Naasirka SS1 assembler robot has no power plant, no locomotion, and a very limited brain, yet it is one of the most common robots used within the Imperium. For less than Cr50,000, a factory owner can install an SS1 and replace one or two human workers. Reconfiguring an entire assembly line can be expensive in the initial cash outlay, but over the years the accrued savings can be considerable.

Robots have other advantages over human workers in assembly tasks: robots are willing to work 24 hours a day, perform repetitious tasks without becoming bored or sloppy, and never strike or take sick leave as long as they are well maintained. One added expense for the industrialist is the hiring of robotics engineers, who must instruct these robots and keep them in good condition.

SS1 robots are typically fixed in their locations, with dedicated power lines and brain interface cables. From a central location, the engineers can reprogram a whole factory at once.





3. BARTENDER ROBOT
22xxA-01-CC111-6521 Cr67,800 30kg
Fuel=(external power) Duration=(unlimited) TL=12
4/10 (mesh)
Twin track unit suspension
1 Lt arm
1 Eye, 1 ear
Financial pkg
Power interface
Video display (2D)
Steward-1

Rolling back and forth behind its counter, the MNF-350 bartender knows just enough to keep its customers happy. With its steward-1 skill and light arm, it is capable of mixing any concoction requested. The financial package software can instantly convert any standard exchange units used in the vicinity and compute the correct change. The financial package hardware, on the other hand, is set up to receive most standard forms of payment, including Imperial credit notes, financial transfer cards, and the local currency.

The robot's memory can keep track of the entire inventory of the establishment, while remembering "favorite recipes" of the regular customers. At the owner's discretion, the MNF-350 can also be programmed to grant credit to regulars. Without emotion simulation, this bartender is not adept at listening to cus- tomers' woes, but like other dumbots, it performs its functions proficiently and cheaply.

A few optional features are available for this robot. If a customer is inebriated to the point of not being able to pronounce his order clearly, the robot can be programmed not to serve him any more drinks and in some cases can even call a taxi for him.

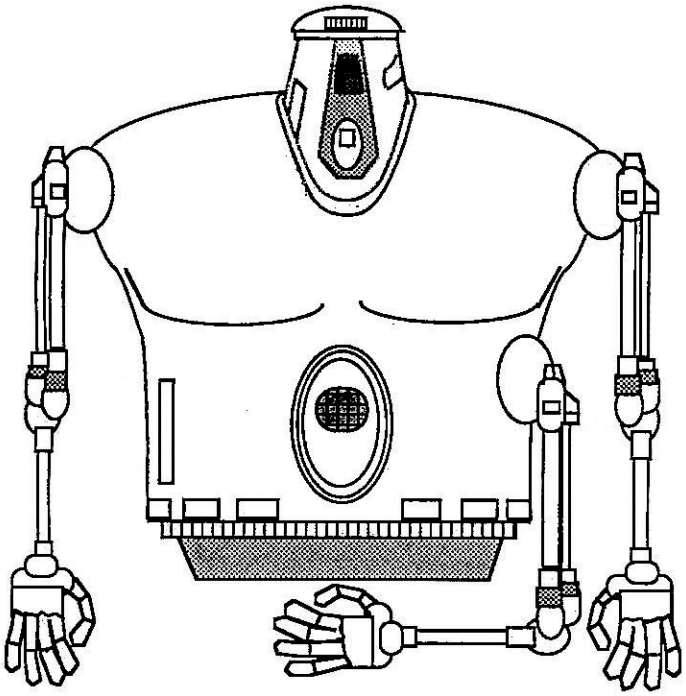
4. CARGO HANDLER ROBOT
716xB-N2-GC111-R421 Cr75,200 480kg
Fuel=75.3 Duration=7.8 days TL=12
56/140 (mesh)
1 Head (40%)
2 Hvy arms
Basic sensor pkg, voder
Cargo Handling-3

The tech level 12 cargo robot provides an excellent example of the economics of using robots. Docks, airports, spaceports, and starports all have irregular traffic flows, but when cargo needs to be loaded or unloaded, time is money. At the same time, keeping extra personnel on hand for the busy times can be wasteful during slack periods.

A cargo robot like the Intect D1-B described here is an ideal solution to this problem. Sentient workers may cost an employer upwards of Cr20,000 a year for an eight-hour shift. Other costs to an employer could include taxes, retirement plans, vacation pay, and the expense of training new employees.

A cargo robot, on the other hand, can work three shifts a day and requires no fringe benefits other than fuel and regular maintenance. At this rate of savings, the robot pays for itself in little more than a year. If taken care of, the robot has a useful life of up to 40 years.

The cargo handling skill of this robot is excellent; it is efficient in its use both of time and space.



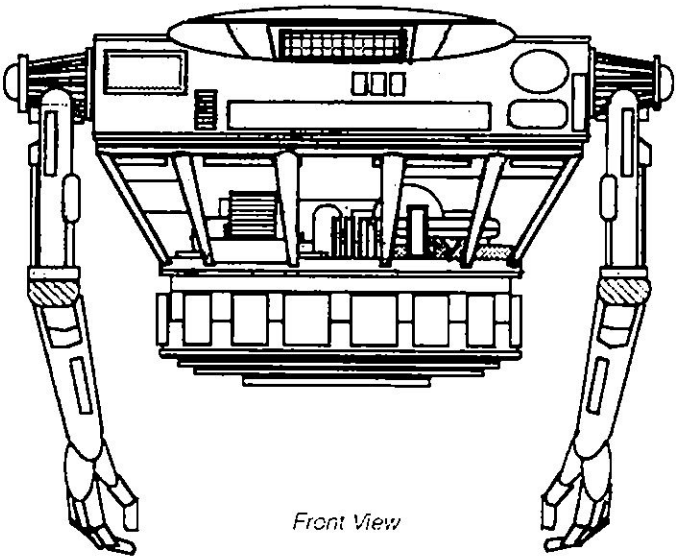
Front View

5. DESKBOT
35xx0-03-LP223-JC45 Cr204,300 50kg
Fuel=(external power) Duration=(unlimited) TL=12
10/25 (mesh)
3 Lt arms
Basic sensor pkg, voder
Program interface, power interface
Video recorder (2D)
Video display (2D)
Administration-2, General Language-2
Emotion Simulation

The Naasirka Z-16 is typical of many administrative dumbots, often called "deskbots". Designed without power plant or locomotion, the Z-16 can handle most simple administrative tasks with a minimum of sentient interference.

For example, many Travellers' Aid Society Hostels have installed Z-19 deskbots to perform guest registration tasks. (The Z-19 is a tech level 15 version of the Z-16. Other than a higher intelligence because of the more advanced brain hardware, the designs are similar.) Guests are satisfied, both because the Z-19 is often more efficient than sentient help, and also because its emotion simulation programming can greet visitors in a courteous way.

In many office applications, the Z-16's three light arms can be very handy, particularly where "paperless" systems have not yet replaced "paper shuffling" systems. Deskbots are often used as stenographers, despite their high cost for such a purpose, because many high-level administrators are not proficient in the use of data-entry devices. Deskbots, with their transcription abilities and instant feedback, serve well in this regard.



Front View

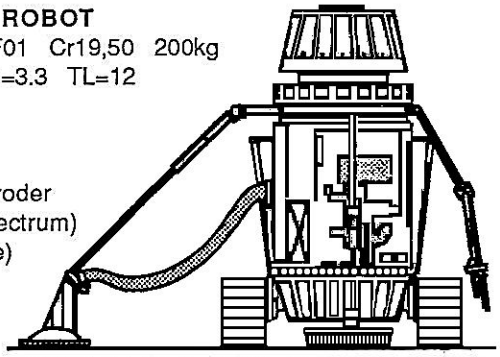
6. HEAVY AGROBOT
805xD-02-5M002-RF03 Cr22,200 340kg
Fuel=234 Duration=27.9 TL=12 Thrust=1000kg
70/175 (no armor)
2 Hvy arms
Basic sensor pkg
Brain interface
Radio (distant range)
Hvy farming pkg
Cargo Handling-2, Grav Vehicle-1

The agrobot is one reason that populations have been able to expand to so many marginal worlds. This large open-frame robot has little if any intelligence, yet it capably performs its duties, tending the food supply for literally billions of sentients.

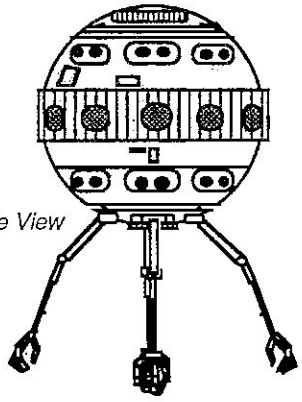
Equipped with an ultra heavy duty grav module, the Odyssey 500 agrobot can travel anywhere on a world's surface while carrying several hundred kilograms of supplies. A variety of peripheral devices enable it to plow, irrigate, plant, weed, and harvest crops. In fact, turned loose in an appropriate area, an agrobot can clear ground and tend it by itself through the entire growing cycle. This ability explains why agrobots are so often carried on colonization ships.

One agrobot can tend about 4 square kilometers, depending on the crop and planetary conditions. Radio communication is used to relay instructions and other information back and forth between a far-ranging agrobot and its home base. Typically, an agrobot will return to its home base only to refuel, or to carry supplies to and from the fields.

7. JANITORIAL ROBOT
523xB-L4-3B000-9F01 Cr19,50 200kg
Fuel=19.9 Duration=3.3 TL=12
24/60 (mesh)
4 V lt arms
Head (20%)
Basic sensor pkg, voder
Spotlight (visual spectrum)
Radio (distant range)
Janitorial tool pkg
Janitorial-1



The popular Intect Model AJ-62 is found on many Imperial worlds.



Side View

8. ZERO-G HYDROPONIC FARMER ROBOT
330x0-04-DB101-6F11 Cr79,200 40kg
Fuel=20.4 Duration=8.5 TL=12
10/20 (mesh)
4 V lt arms
Basic sensor pkg
Zero-G maneuver pkg
Agriculture-2

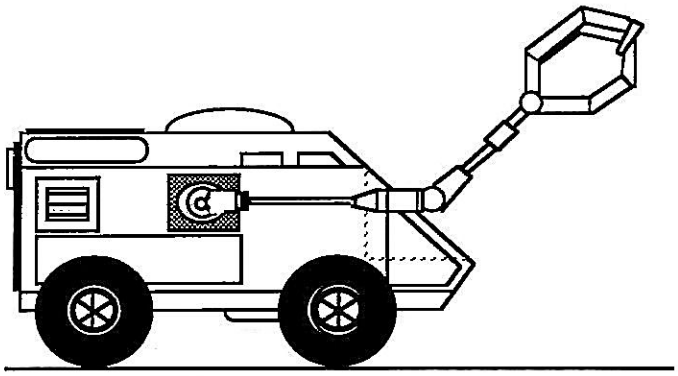
Both large and small orbital complexes and other small closed ecologies need food supplies for their inhabitants, and this food can be supplied in a number of ways. Whatever the size of the complex, most supply their own food rather than import it.

Large orbital complexes may have large or small world populations beneath them. If the world population is small, this is generally because the planet's surface is uninhabitable. If the world's population is large, it generally indicates that the world's resources are already stretched to the limit in supplying the needs of those inhabitants.

Again, when the orbital complex's population is small, it may be a research station, far from any regular supply route.

For this reason, most orbital complexes have some food production facilities (or "farms", as they were once called at lower tech levels). Since artificial gravity is expensive, these areas of a complex are usually weightless. (This also frees the production facilities from the effects of geotropic growth, and allows more control over the crop.)

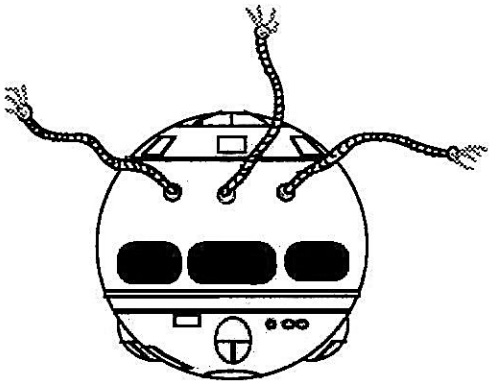
For these farms, the TB-29B is ideal. Inexpensive and reliable, this robot has a skill of hydroponics-2, enabling it to properly tend a hydroponic farm. Its zero-G maneuver package is all that it needs for locomotion, at a cost of only Cr2,000.



Side View

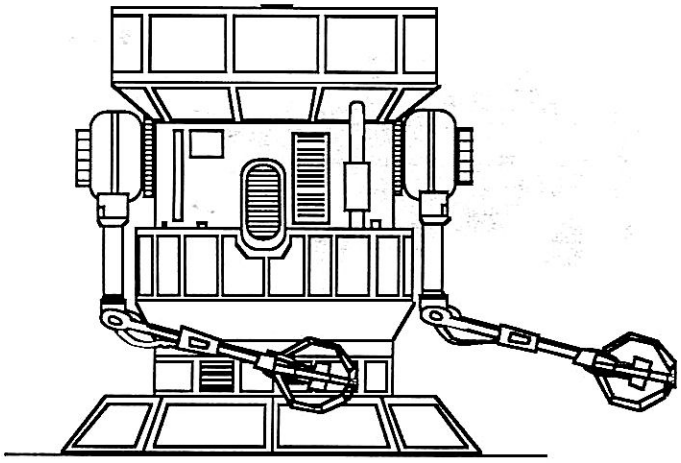
9. MINI COURIER ROBOT
21x0A-01-3B000-2501 Cr19,600 21kg
Fuel=(batteries) Duration=2.1 hrs TL=12
4/10 (mesh)
1 V lt arm
1 Eye, 1 ear
Power interface
Radio (distant range)

The 927S mini courier robot is designed for light office use; it is ideal for transporting light materials back and forth between different offices and desks. Material carried typically includes papers, file folders, holocrystal cartridges, and memos.

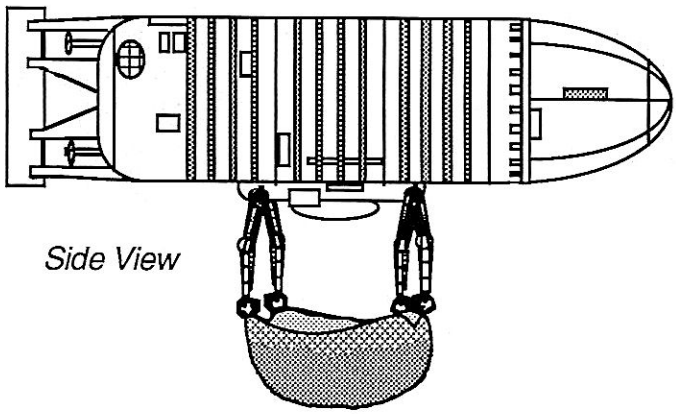


10. ORCHARD AGROBOT
432xF-03-9M003-4F03 Cr95,600 90kg
Fuel=15.7 Duration=3.3 TL=12 Thrust=200kg
16/40 (mesh)
3 V lt tentacles
Basic sensor pkg
Brain interface
Grav Vehicle-1, Cargo Handling-1

The Naasirka 3B2 was originally developed on a world where the existing machinery was not up to the burden of extensive tree farming and harvesting. Once perfected, versions of this robot spread widely through the Imperium. Within Naasirka itself, the extensive testing period is still remembered in the epithet used occasionally for the machine, "dumtreebot".



Front View



Side View

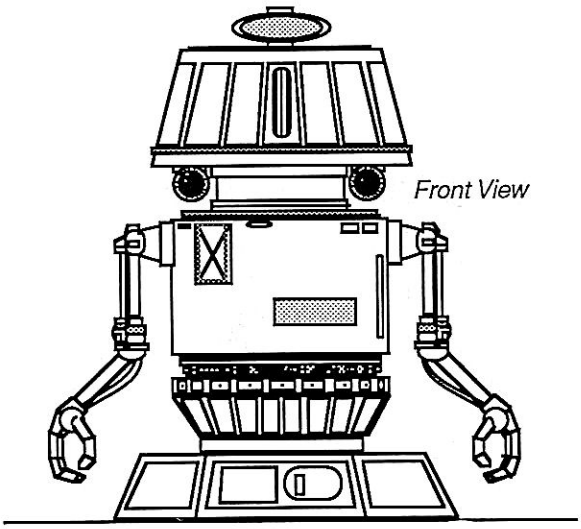
11. MECHANIC DUMBOT
825xB-02-LP113-P636 Cr111,700 500kg
Fuel=120.9 Duration=14.4 TL=12
70/175 (mesh)
2 Med arms
1 Eye (+1 lt inten), 1 ear, voder
Spotlight (visual spectrum)
Program interface
Lt laser welder
Mechanical, electronic, metalwork tool pkgs
Electronic-3, Mechanical-3, Gravitics-3

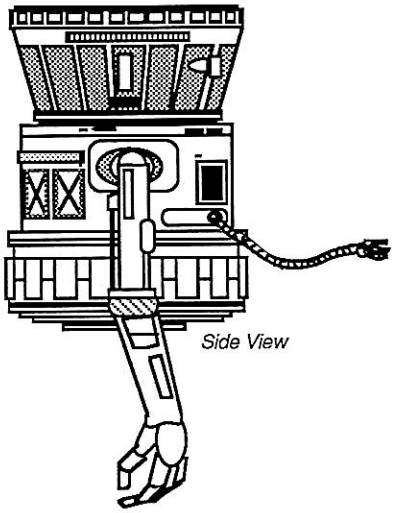
The garage mechanic robot can maintain most vehicles, whether run by internal combustion or gravitics. Its program interface enables it to select the information module appropriate to the vehicle it must repair. The vehicle's owner can tell it, with a restricted vocabulary, what is wrong, or it can conduct a complete inspection and diagnose the problem itself.

12. UNDERSEA HARVESTER ROBOT
D24x0-04-KM101-W513 Cr84,500 610kg
Fuel and Oxygen=2919.7 Duration=45.1 TL=12
600/1500 (mesh)
4 Hvy arms
1 Eye, sonar
Spotlight (visual spectrum)
Aqua maneuver pkg
Environment sensor pkg
Hunting-3

A real boon to worlds with large oceans teeming with edible sealife, this robot harvests the sealife with a high efficiency. Its ability to find and catch seafood is almost uncanny considering its low intelligence and low level software. This efficiency is largely due to 3 factors.

First, the robot's sensors are excellent, allowing it to spot its prey with accuracy. Second, the robot is hunting fish in their own element. Third, the robot can hunt for extended periods if necessary, because its fuel supply will last about 45 days. The fuel storage is segmented, so that as fish are caught they can be stored in empty sections of the tanks. This hold is refrigerated.





13. CARGO HANDLER ROBOT
321xA-L2-CC111-N531 Cr76,500 110kg
Fuel=5.6 Duration=1.5 TL=13
13/31 (mesh)
2 Med arms
Head (25%)
Basic sensor pkg, voder
Spotlight (visual spectrum)
Cargo Handling-1

The Naasirka JP-3 is quite ordinary in all of its features. It uses wheels for locomotion, as did simple carts at the lowest tech levels. Its sensors and devices are plain, using its voder only for emergency purposes. Its limited brain allows it only a cargo handling skill level of 1. But this robot is important enough to be included in this book, because it is perhaps the most common robot encountered by characters who travel in space.

Naasirka's marketing efforts have succeeded in placing this robot everywhere a ship cargo handler is desired.

14. ADVANCED CARGO HANDLER ROBOT
723xD-N4-LP114-RF36 Cr96,100 370kg Thrust=1000kg
Fuel=74.5 Duration=12.4 TL13
50/140 (mesh)
2 Hvy arms, 2 lt tentacles
Head (40%)
Basic sensor pkg, voder
2 Spotlights (visual spectrum)
Program interface
Radio (distant range)
Cargo Handling-3, Extra Language-3, Grav Vehicle-2, Security-1

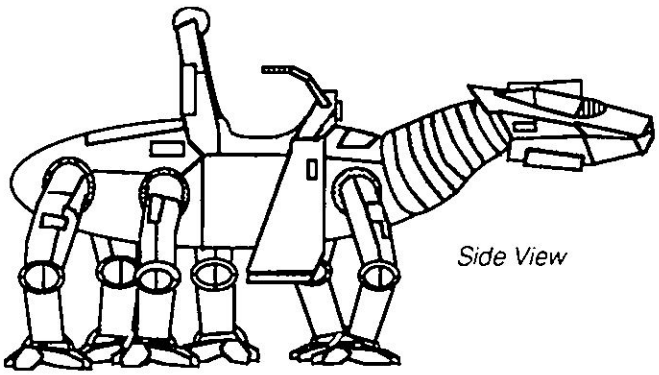
Here is another cargo robot, this one with some advanced features, a better brain, and a variety of software, but of course at a higher cost. Different uses and site sophistication determine which model might be used.

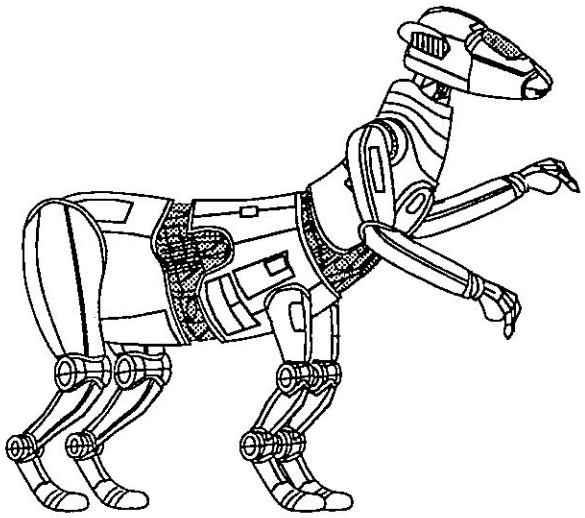
The ANH-Q1 uses one ultra heavy duty grav module for locomotion, giving the cargo bot 1,000 kg of thrust with a total weight of only 370 kg. With its two heavy arms, it can thus handle cargos safely up to about 600 kg in mass. Its light tentacles take over when smaller, more fragile cargo needs to be loaded.

The brain in this unit is much more sophisticated than is necessary for a simpler cargo robot, but it does have its advantages. The JP-3 described above must be programmed by someone with robotics skill. The ANH-Q1 can be instructed in its tasks by almost any employee. With the extra language software, the employee can even speak another language.

Cargo handling-3 gives this cargo bot a skill level just below that found in expert systems. A shipowner can be sure that every cubic millimeter of hold space is used efficiently if this robot loads the ship. The robot's security programming insures that precious cargoes can be loaded (and watched over) with equal efficiency.

The ANH-Q1 has been configured with a lot of extra brain storage. This allows it to store shipping schedules, bills of lading, and cargo manifests easily. The storage capacity can also be used to load additional software for special-purpose applications. The program interface makes this data transfer process almost automatic.





15. RECREATIONAL RIDING ROBOT
854x6-L0-GM115-J633 Cr86,000 310kg
Fuel=285.8 Duration=39.7 TL=13
88/219 (mesh)
6 Legs
Head (25%)
Basic sensor pkg (eyes: +2 lt inten; ears: +2 extra sen)
2 Spotlights (visual spectrum)
Acoustical speaker
Radio (distant range)
Recon-2, Survival-1, Fire Fighting/Rescue-1, Hunting-1
Emotion Simulation

The Myran R1b riding robot is the ultimate in high-tech recreational all terrain vehicles. The robot has all the advantages of an intelligent pack animal (like the rhurta of Ideshe) without any of the disadvantages (daily feeding, annoying digestive wastes, or fatigue).

The R1b is extremely intelligent, with simulated emotions —which makes the robot more like a recreational companion than a simple "beast of burden".

16. SERVANT VALET ROBOT (K'kree)
953x4-52-LL212-P942 Cr193,800 330kg
Fuel=384 Duration=59.8 TL=13
105/263 (mesh)
Head (5%)
4 Legs
2 Med arms
2 Eyes, 2 ears, voder
1 Olfactory sensor (+1 extra sen), touch sensors
Odor emitter
Valet-2
Emotion Simulation

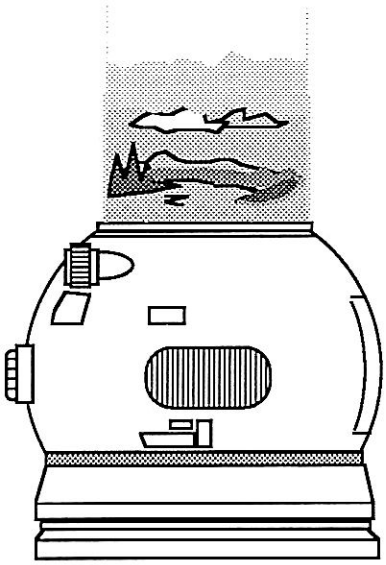
It is all too easy to see aliens as humans in funny suits, but this mistaken view obscures a correct understanding of alien behavior. The role of this robot, for example, is quite different among the K'kree than a similar human-contoured robot would be among humans.

The K'kree are a gregarious race, with complex social interactions between members of a herd. Among many humans, the ownership and use of a valet robot would be a sign of higher social status, but among the K'kree, the exact opposite is the case. An important K'kree would use another K'kree as valet; the use of a robot for the purpose would betray an inability to influence other family members.

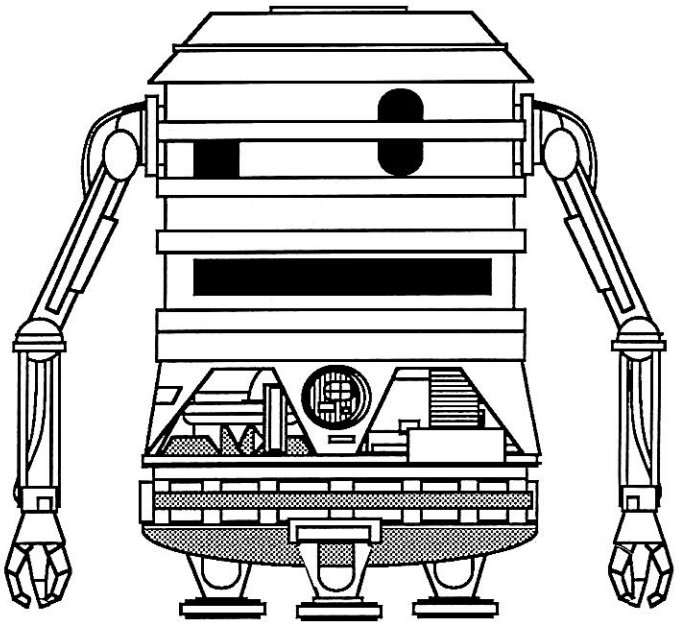
(An exception to this, of course, would be the case of a small family group, or one in which illness or war depleted the number of members.)

Once this cultural difference is understood, we can look at the valet itself. Contoured as a K'kree, with four legs and two arms, this unit is much larger than a valet robot would be in human space. The K'kree do not see this size as a disadvantage, but rather point to the fact that it allows the robot to operate for 60 days between fuelings. If the robot operates typical valet hours, it could run for several months at a time.

The odor emitter on the valet is used mainly to mask its own odor, rather than to artificially perfume the air around it. The odor used is up to the owner, but it should be noted that there is no attempt to make the valet smell like a real K'kree. Artificial flavors for this are not "genuine" enough for the K'kree's sensitive nose; natural flavors would be out of the question.



Side View



Front View

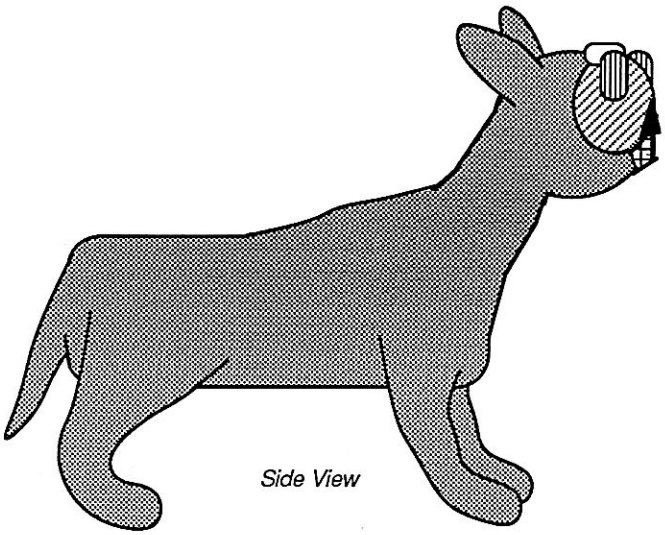
17. TOUR GUIDE ROBOT
531xC-00-AM110-5B33 Cr86,500 90kg
Fuel=30.5 Duration=8.5 TL=13
20/50 (mesh)
1 Eye, 1 ear, voder
Acoustical speaker
Spotlight (visual spectrum)
Radio (distant range)
Holodisplay (TL13)

The tour guide sphere may be found in almost any city popular with tourists. Made by Naasirka, it can operate both indoors and outdoors but is not usually used in old ruins or rough terrain. Its education holds a large fund of information solely about its territory, but its intellectual capacity is insufficient to raise its lectures above a standardized and somewhat tedious level.

18. TRASHBOT (Zhodani)
401xE-02-BL103-NF32 Cr86,800 110kg
Fuel=14.8 Duration=4.1 TL=14 Thrust=400kg
16/40 (no armor)
2 Mdm arms
Basic sensor pkg, voder
Janitorial tool pkg
Cargo Handling-2, Janitorial-2, Grav Vehicle-1

This trashbot is used by the Zhodani nobility. Wandering around an office, it continually picks up waste and stores it in a trash receptacle that it carries with it. When full, the robot dumps it at a local disposal location, then returns to its trash patrol.

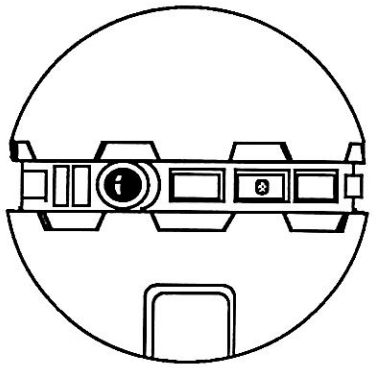
The janitorial tool package can instantly shred any material fed into it. This ability makes this robot ideal for security applications, and it can be found in many Zhodani government offices.



19. PET ROBOT
05x34-A0-5B001-0731 Cr61,800 26kg
Fuel=(batteries) Duration=2.9 TL=15
1/3 (mesh)
4 Legs
Head (10%)
Basic sensor pkg, audio speaker
Emotion Simulation

The furred petbot is an endearing little creature, with many advantages over living pets. It never creates a mess, or jumps up on the table, or sheds, or otherwise misbehaves.

Although without any useful skills, at one thing it excels: it snuggles up to its master or mistress and purrs or groans with pseudoemotional pleasure. With its intelligence of 3, it is capable of learning many tricks to amuse its owner.



20. PRIVATE EYE ROBOT
13x3F-01-00000-4F00 Cr105,400 27kg
Fuel=(batteries) Duration=3.6 hrs TL=15 Thrust=100kg
1/3 (mesh)
1 Lt tentacle (retractable)
1 Eye, 1 ear
Acoustical speaker
Power interface
Slave unit
Radio (distant range)
Automatic pistol

The F6 private eye is a popular brainless model deployed in many installations where security is a concern. Inexpensive and mobile, these small robots meet a real need.

The radio/slave unit is tied to a control panel operated by a sentient guard, who can direct the robot to any location and orientation within range. Video screens on the control panel allow the guard to see whatever the robot sees and to hear whatever the robot hears.

Operating such a control panel is a skilled task, increasing in difficulty as the number of robots controlled increases. A careful guard will halt (that is, hover) one robot in mid-air before he attempts to maneuver another.

Some locations require more active measures, and for these a number of peripheral devices are available at extra cost. One popular addition is a visual spectrum spotlight, which augments the abilities of the visual sensor.

Another device often installed is an automatic pistol, which can be accurately aimed by the guard from his remote station. A light tentacle can be installed to provide a simple fetching and carrying capability.

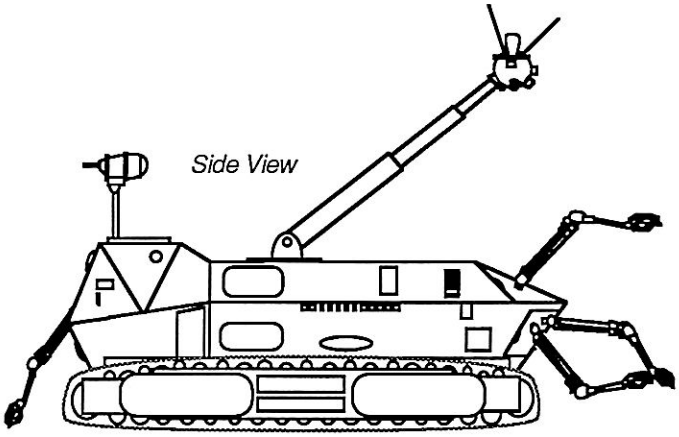
This robot is also sometimes used by another class of independent entrepreneurs for quite a different purpose. Imagine the shock of a pedestrian on a tech 15 world as he is suddenly greeted by an F6 robot, hovering quietly in front of him.

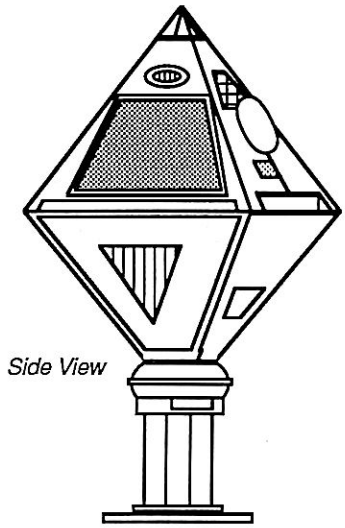
With the automatic pistol trained on the quarry, the robot's audio speaker voices a simple request: "Your money or your life!" Once the victim has dropped his wallet, the robot grabs it in its tentacle and whisks back to its illicit operator.

Thus criminals can rob from the safety of their homes, at distances up to 5km away. Naturally, law enforcement agencies respond to this threat in various ways, which need not be detailed here.

Utility Robots

Utility robots have higher intelligence than dumbots, but their highest skill level is never greater than 2. Utility robots can be found in almost every environment, whether in office buildings, on farms, under the sea, or in the vacuum of space.





21. ROADBOT (Solomani)
D17xB-58-MP225-WD55 Cr543,000 2,970kg
Fuel=1718.9 Duration=95.5 TL=12
630/1575 (mesh)
8 Med arms
Head (5%)
4 Eyes (+1 tele, +1 lt inten, +1 pass IR, +1 act IR)
Basic sensor pkg, magnetic, mass sensors
12 Spotlights (visual spectrum)
Program interface
Laser welder
Metalwork tool pkg
Construction/Fabrication-2, Cargo Handling-1, Demolition-1, Survey-1

The FR-12 Roadbot is a specialized construction robot used for the building of roads. It can, with very little modification, be used for laying pads and building supports for magnelift and monorail right of ways.

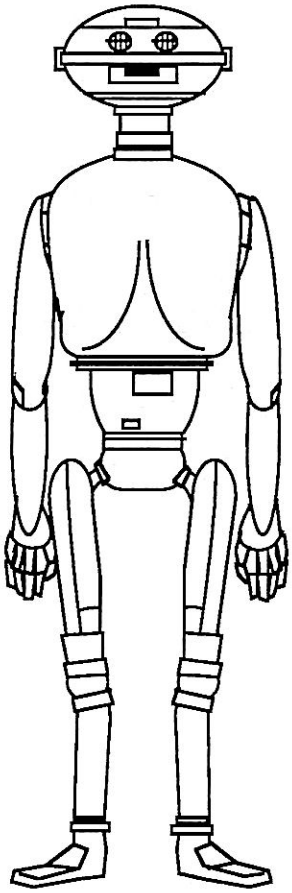
This robot is found mainly in the Solomani Rim and Solomani Sphere where the use of gravitics is not as advanced as would be usual elsewhere. However, the Imperium has on rare occasions lent such robots to tech 6 through 11 worlds when an extreme state of emergency has dictated the rapid building or rebuilding of roads to ease and speed the recovery from the emergency. This is a very unusual occurrence.

22. DESKBOT
31xx0-00-LM223-2753 Cr187,400 30kg
Fuel=(external power) Duration=(unlimited) TL=13
10/25 (mesh)
1 Eye, 1 ear, voder
Power interface, brain interface
Video recorder (2D), video display (2D)
Financial pkg
Steward-1, Administration-1
Emotion Simulation

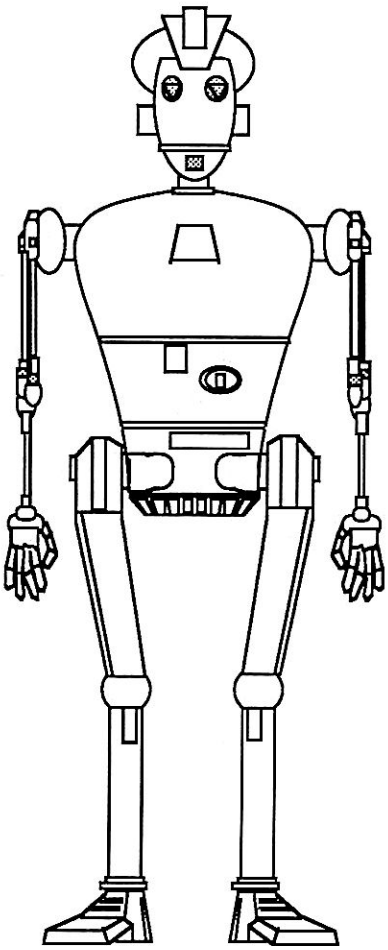
The Star Servants H2X deskbot is one of the real workhorses in the deskbot market. Its full command capability and varied packages make it a very flexible and useful deskbot.

The H2X-4 model has been especially useful in the hotel business. In the TAS hostels, some 20% use this robot as their front desk and communications operator. The H2X-4 does have an extra communications package not listed for the bare bones, generic model usually shown in Star Servants' deskbot catalog. Other models are found in offices throughout the Imperium.

The desk robot may be found acting as receptionist in offices, hotels, museums, and schools throughout the Imperium. It is usually tied into a building communication system so it can announce callers (or call security if something is wrong). It carries extensive information on its job internally and can obtain other information from computers elsewhere in the building. Hotel deskbots have key and money storage in built-in vaults and can process credit cards as well as make change. Most deskbots are plugged into ordinary power outlets, but some have battery power for six hours' operation in the event of a power failure. The high cost of this robot's brain reflects its need to communicate with the public in natural language.



Front View



Front View

23. LIBRARIAN ROBOT
552x2-L2-NT323-FB7F Cr359,600 150kg
Fuel=12.2 Duration=2.5 TL=13
26/63 (mesh)
2 Lt arms
Head (25%)
Basic sensor pkg (ears: +1 extra sen), voder
Program interface
Radio (distant range), video recorder (2D)
Instruction-2, Administration-1
Emotion Simulation

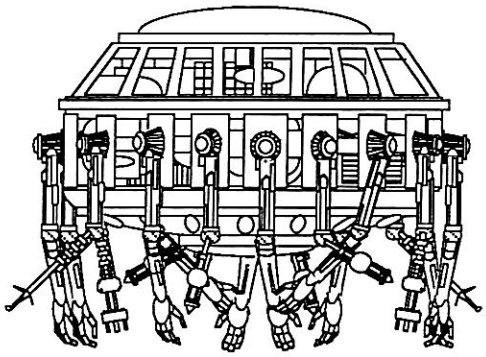
Don't ask the Evix library robot an open-ended question. For some reason, a quirk in this machine's basic programming has given it a compulsion to lecture whenever it is given an opening. Other than this minor quirk, it is a helpful library assistant. Even though originally designed in 1050, the reliability and usefulness of this design have not diminished over the years. Very few modifications have been made in newer models outside of exchanging the original powerplant for a more up-to-date, efficient one. The new robots are just as pedantic as the older ones.

24. COACH ROBOT
552x2-A2-MM323-NA83 Cr310,500 170kg
Fuel=54.2 Duration=11.3 TL=14
22/55 (mesh)
2 Med arms
Head (10%)
2 Eyes, 2 ears, touch sensors
Athletics-2, Instruction-1
Emotion Simulation

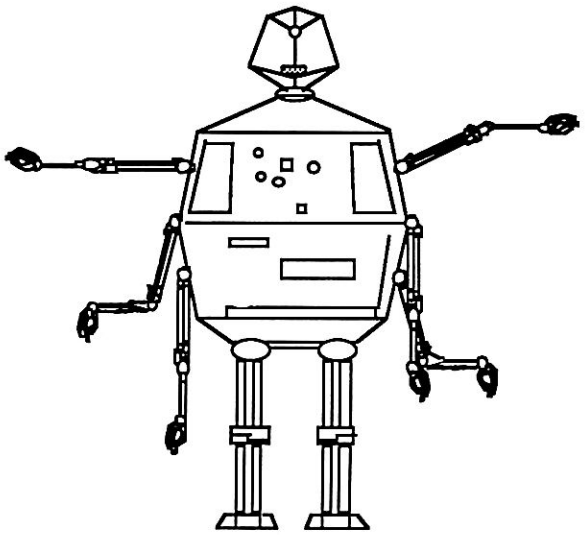
"Do you want to learn a new sport, brush up an old one, or do you need a referee? Maybe you need a coach for your school, hospital, or industrial recreation. If the answer to any of the above is yes, then you need Nogaali's Coachbot."

This robot can be programmed with the rules for 10 or 12 sports. It cannot play at a high level of competence, but it is good at coaching you and improving your form.

25. CONSTRUCTION ROBOT
C0AxD-NJ-LE112-ZF51 Cr366,000 5,200kg
Fuel=1486.5 Duration=41.3 TL=14 Thrust=15000kg
560/1400 (mesh)
18 Hvy arms
Head (40%)
4 Basic sensor pkgs
20 Spotlights (visual spectrum)
Slave unit
Radio (distant range)
4 Janitorial, 4 metalwork, 4 carpentry tool pkgs
Grav Vehicle-1, Construction/Fabrication-1



One of the big advantages of the Hedron LV5 construction robot is the elimination of the need for cranes, construction air/rafts, or other lifting devices. The LV5 can pick up any needed part and fasten it into place. After the job is done, these robots can also do the major cleanup before leaving the jobsite.

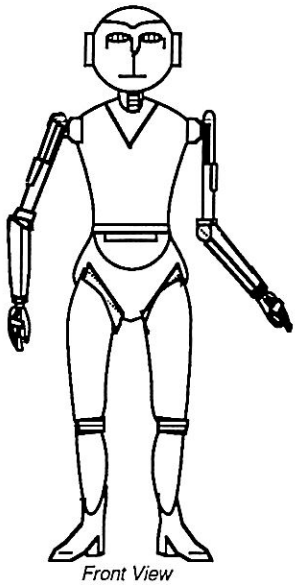


26. LAB TECHNICIAN ROBOT
624x2-A7-LL211-MF52 Cr187,000 220kg
Fuel=69 Duration=9.6 TL=14
33/83 (mesh)
6 Lt arms, 1 v lt tentacle
Head (10%)
1 Eye (+1 pass IR), 1 ear, 1 olfactory sensor (+1 extra sen), magnetic, radiation sensors
Acoustical speaker
Program interface
Lab Tech-1

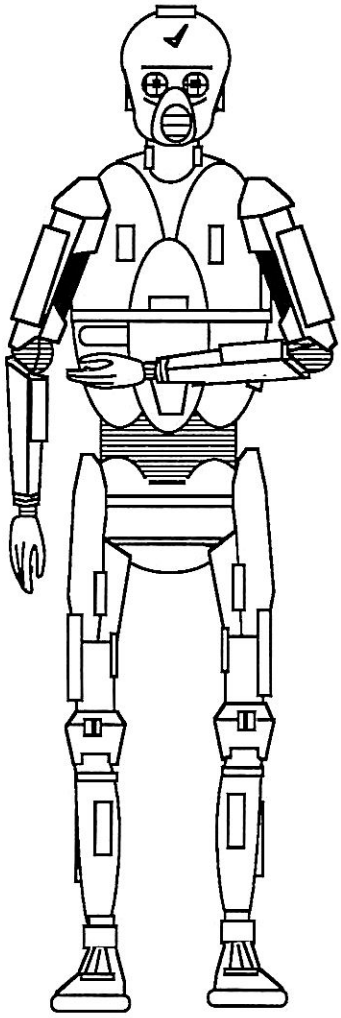
Every scientist needs his lab assistant, and what better assistant could he have than the IA-4690-LSY lab technician from Solens? This robot is factory equipped with most of the sensors needed for experiments and standard laboratory safety procedures, yet costs less than the average secretary robot—a most impressive package.

27. SECRETARY ROBOT
353x2-L2-MM223-CC73 Cr203,800 160kg
Fuel=9.7 Duration=1.6 TL=14
12/30 (mesh)
2 Lt arms
Head (20%)
2 Eyes, 2 ears, voder, touch sensors
Brain interface
Administration-2, Valet-1
Emotion Simulation

Fondly known as the mini-secretary by most of its owners, the UV-49-4901 line of contoured but diminutive secretaries have been especially popular with businesses, particularly manufacturers that keep their offices open for more than one standard shift. The robot's flexibility and ability to learn make them very helpful. Even during off shifts, when everyone else has gone home from the offices, this secretary can keep on working, updating files, taking orders, receiving and posting messages, and performing many of the clerical tasks that are necessary to keep a business running smoothly.



Front View

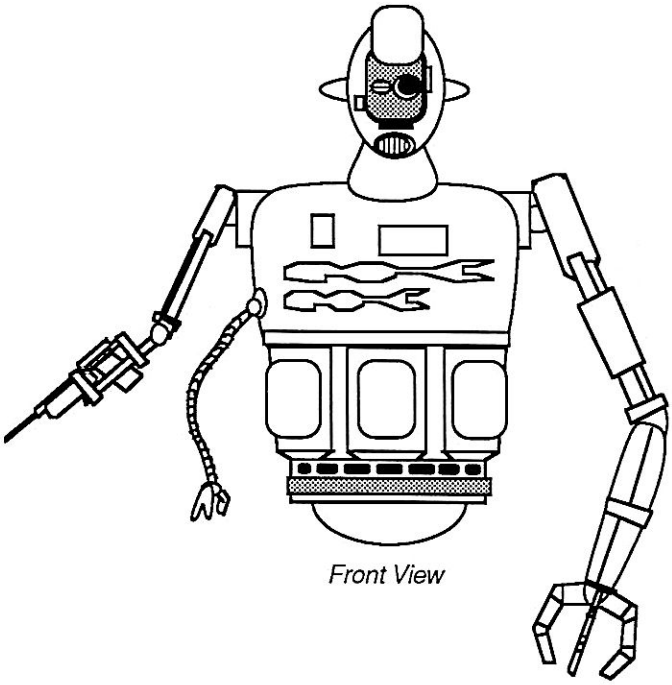


Front View

28. BARTENDER ROBOT
553x2-A2-LM223-NA63 Cr182,700 190kg
Fuel=53.7 Duration=8.9 TL=14
22/55 (mesh)
2 Med arms
Head (10%)
2 Eyes, 2 ears, voder
Psychology-1, Steward-1
Emotion Simulation

Makhidkarun's sympathetic bartender robot has an eminently bendable ear. Besides programs for serving drinks, handling payments and cleaning the premises, he possesses a basic pychology program, primarily geared for listening. His emotion simulation program is full of understanding phrases. If the situation seems to call for real help, the robot can come up with logical suggestions. If a customer becomes belligerent, however, this robot is more than strong enough to bounce him.

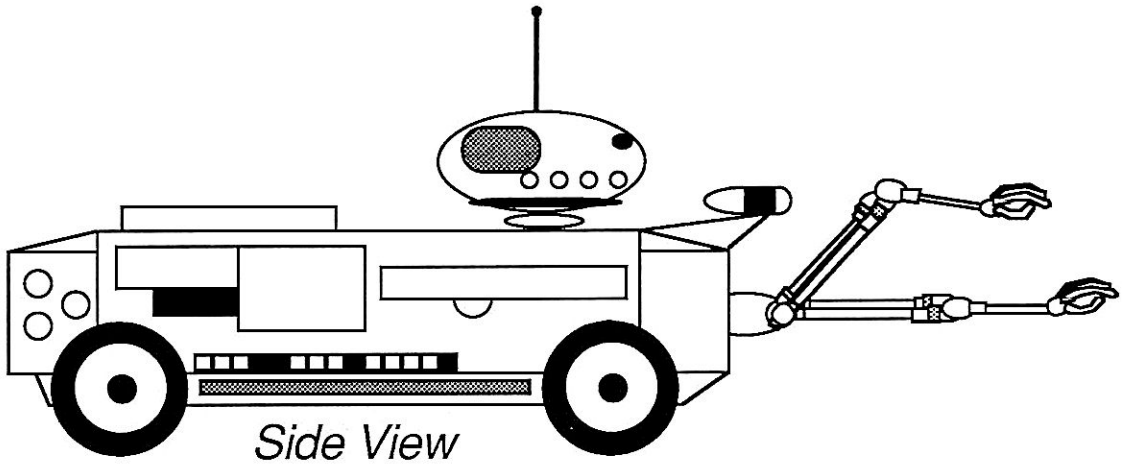
Referee: This robot can be used as a source of rumors in an adventure.



Front View

29. STARPORT MECHANIC ROBOT
753xE-F3-LL115-PF52 Cr158,800 310kg
Fuel=44.5 Duration=7.4 TL=15 Thrust=2400kg
46/115 (mesh)
1 Lt arm, 1 hvy arm, 1 v lt tentacle
Head (15%)
Basic sensor pkg (eyes: +1 tele), magnetic, radiation sensors
Spotlight (visual spectrum)
Brain interface
Lt laser welder
Mechanical, electronic, metalwork tool pkgs
Engineering-2, Grav Vehicle-1, Electronic-1, Mechanical-1, Gravitics-1

The Star Servants Model 63MEK49 starport mechanic is a heavy duty grav-powered model, capable of mending or replacing entire sections of hull. Its tentacle contains microscopic vision and a tiny spotlight for working inside control panels.



30. GENERAL WORK ROBOT
622xA-N2-LP227-J877 Cr234,000 195kg
Fuel=87.9 Duration=18.3 TL=15
42/104 (mesh)
2 Lt arms
Head (40%)
Basic sensor pkg (eyes: +1 tele, +1 lt inten, +1 pass IR; ears: +1 extra sen)
Magnetic, radiation, mass, neutrino sensors
Acoustical speaker
Spotlight (visual spectrum)
Power interface, brain interface, program interface
Radio (distant range)
TL15 holo recorder (3D)
Lt laser welder
Mechanical, electronic tool pkgs
Holodisplay (TL 15)
Steward-1, Electronic-1, Mechanical-1, Fire Fighting/Rescue-1, Gravitics-1, Communications-1
Emotion Simulation

Sharurshid has manufactured the Mashkuliid line of robots in one form or another for over 900 years. All of these robots have been up-to-date, all-round workbots and the latest of these is no exception. The BPD8-72 Mashkuliid is equipped with an unusually complete set of sensors, devices and interfaces that allows it to adapt to just about any work situation. It cannot handle heavy loads, but other than that it suffers few limitations as to the nature of job that it can take on.

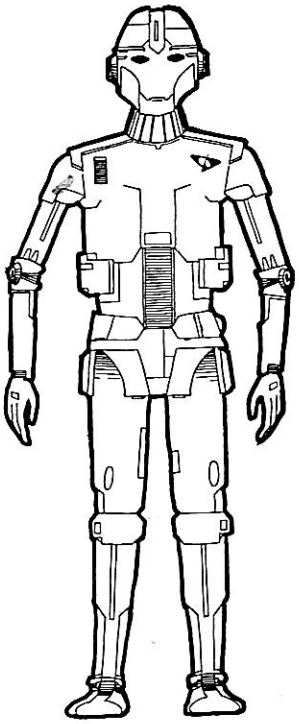
Sharurshid not only sells these robots; they also form an important part of its robotic workforce, at times so much so that one is reminded of the original derivation of Mashkuliid: *Mashek* =work; *Kakuliid*=slave or peasant worker.

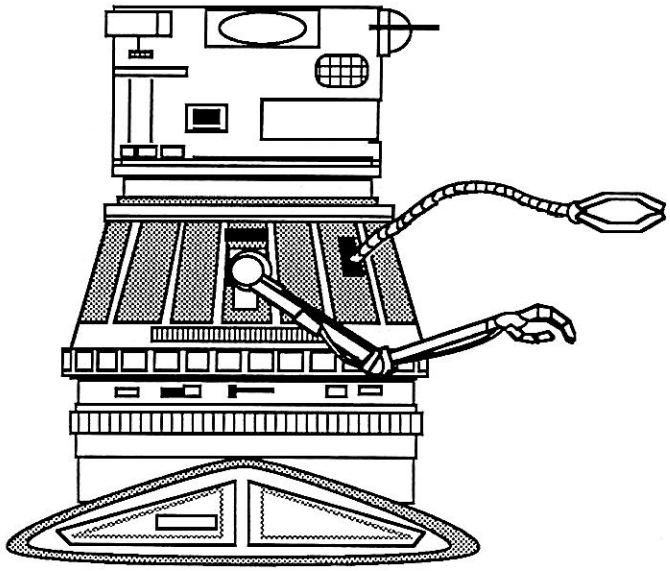
31. GENERAL WORK ROBOT (MILITARY SPEC)
622xA-N2-LP22B-J877 Cr364,600 330kg
Fuel=87.9 Duration=18.3 TL=15
63/158 (cloth)
2 Lt arms
Head (40%)
Basic sensor pkg (eyes: +1 tele, +1 lt inten, +1 pass IR; ears: +1 extra sen)
magnetic, radiation, mass, neutrino sensors
Acoustical speaker
Spotlight (visual spectrum)
Power interface, brain interface, program interface
Radio (v distant range)
Counter ECM
TL15 holo recorder (3D)
Lt laser welder
Mechanical, electronic tool pkgs
Obscuration device
Holodisplay (TL15)
Electronic circuit protection
Steward-1, Survival-1, Electronic-1, Mechanical-1, Tactics-1, Recon-1, Fire Fighting/Rescue-1, Cargo Handling-1, Gravitics-1, Communications-1
Emotion Simulation

In response to growing tensions along several Imperial borders, Sharurshid has started marketing a military version of its latest Mashkuliid robot, called the Janizary YV-50981. This robot has all the features of the Mashkuliid models plus ECM protection and military software. Although a recent product in this form, it has so far proven itself to be as valuable in the military as it has in civilian situations.

Assistant Robots

Assistant robots have more intelligence and better skills than utility robots, but are not as skilled as expert robots. Assistant robots often perform functions that are hazardous, or which take place in unpleasant environments. Other assistants are used because they can inexpensively replace sentient workers.





Side View

32. RASHUSH ORIGINAL ROBOT
653x2-A2-NP226-N856(A) Cr297,400 210kg
Fuel=79.3 Duration=13.2 TL=12
33/83 (mesh)
2 Mdm arms
Head (10%)
Basic sensor pkg, voder
Steward-3, Valet-3, Medical-1, Fire Fighting/Rescue-1, Instruction-1
Emotion Simulation

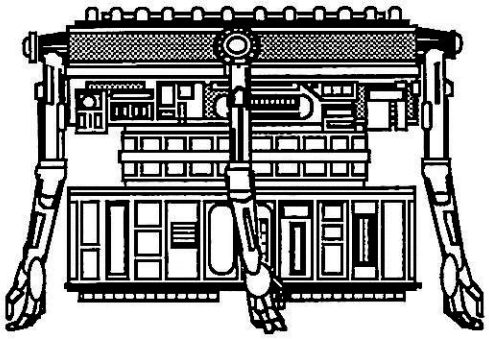
An operating replica of Naasirka's original Rashush can be found in the famous "Hall of Robots" on Shudusham (the home of the Shudusham Robotics Conference which meets once every 10 years.). The original Rashush was first produced in -2008 (during the Rule of Man). Because of Naasirka's aggressive marketing strategy, use of the Rashush valet robot spread rapidly.

The old Rashush is surprisingly intelligent for a tech level 12 design—its intelligence of 5 raises it above the ranks of those robots commonly called "dumbots". Because of this, the Rashush could easily be instructed by an average layman who did not possess robot operation skill. Compared to the modern Rashush line, the old Rashush design was relatively cheap: a mere Cr290,000. The single biggest factor contributing to the Rashush's low price: it used a fuel cell power plant instead of the batteries used by the modern Rashush designs.

33. STARPORT MECHANIC ROBOT
726xB-N4-LN114-LF24 Cr101,000 460 kg
Fuel=54.7 Duration=5.7 TL=12
56/140 (mesh)
2 Lt arms, 2 lt tentacles (retractable)
Head (40%)
4 Eyes, 2 ears), voder
2 Spotlights (visual spectrum)
Program interface
Lt laser welder
Mechanical, electronic tool pkgs
Engineering-3, Electronic-1, Mechanical-1, Gravitics-1

One of the most interesting of the frontier area robots is Tukera's 232-BHR-7 starport mechanic. This robot is unique for a single chassis robot in that it can work on two repair jobs at once if they are in the same area, or, if two sets of hands are needed on the same job, the two sets of hands can cooperate.

This robot was not designed for doing heavy hull repairs or lifting. Instead it was designed for doing delicate work inside control consoles and smaller machinery inside a starship.



34. CONSTRUCTION ROBOT
926xD-04-JM113-VF33 Cr91,700 610kg
Fuel=237.9 Duration=24.8 TL=13 Thrust=2000kg
100/250 (mesh)
4 Hvy arms
Basic sensor package, voder
2 Spotlights (visual spectrum)
Radio (distant range)
Mechanical tool pkg
Mechanical-3, Grav Vehicle-1, Construction/Fabrication-1

The Naasirka V100 medium construction robot is not as proficient as a heavy construction robot for large buildings with heavy components, but it is an excellent robot assistant for building a house or a small commercial building.

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35. ROGUE COURIER ROBOT
552x2-L2-NM323-FB83 Cr421,500 230kg
Fuel=66.4 Duration=13.8 TL=13
24/60 (combat armor)
2 Lt arms
Head (20%)
Basic sensor pkg
Laser pistol
General Vehicle-3, Laser Pistol-2, Survival-1

Experiments with synaptic processing can lead to unfortunate results if sufficient care is not taken. At tech level 13, reliable operation cannot be guaranteed at synaptic processing levels exceeding 15%.

This sad example of technology gone astray used 25% synaptic processing. Six prototypes were constructed, and all six developed "robot psychoses" because of the excessive synaptic units used in their brains.

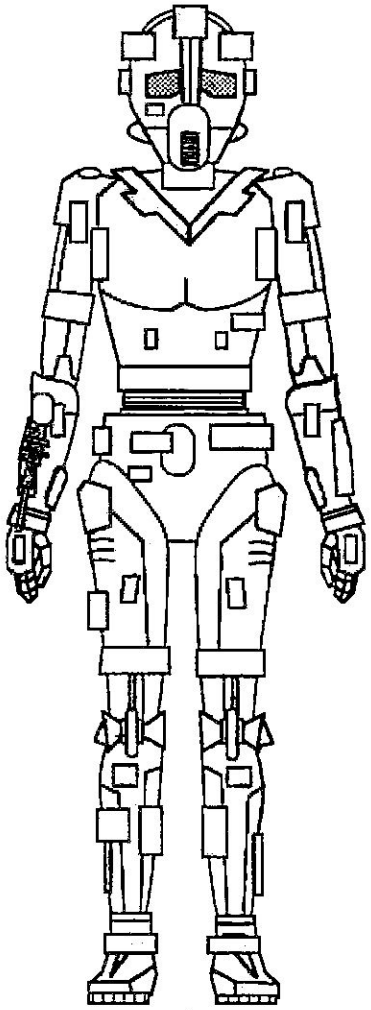
The scientists involved in the project were lax in following standard robotics experimentation procedure, which would have been to test the brains independently before installing them in armed units. The results were tragic.

All six robots, set loose on what the scientists called "real test missions", went on a rampage that continues to this day. Two of the robots have since been recaptured and destroyed, but four of them still operate independently, following no human orders.

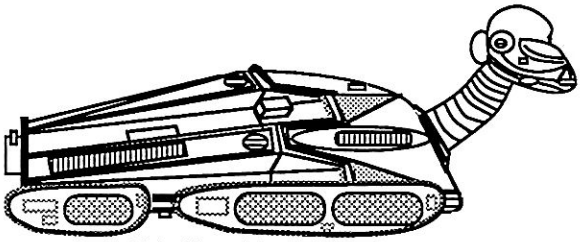
These robots have been implicated in a number of crimes, including fuel theft, vehicle theft, starship hijacking, armed robbery, murder, and interstellar flight to escape prosecution.

Robot owners, of course, are held legally responsible for their robots' actions. The technicians who constructed these machines are now safely under lock and key. From time to time, another crime is committed by one of the four robots still at large. When this happens, the scientists are retried under the new charges and their sentences are extended.

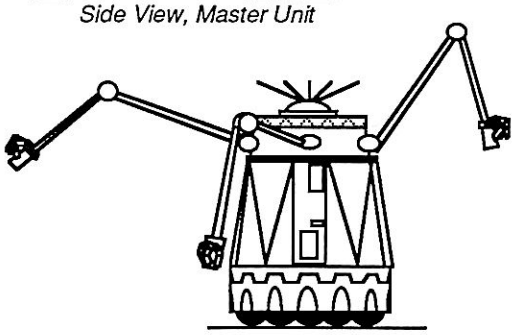
The scientists who built these wayward machines were funded by a research grant administered by the Imperial Navy. The negative publicity resulting from this experiment caused a decrease in funding which seriously hampered some very promising ongoing research by other roboticists.



Front View



Side View, Master Unit



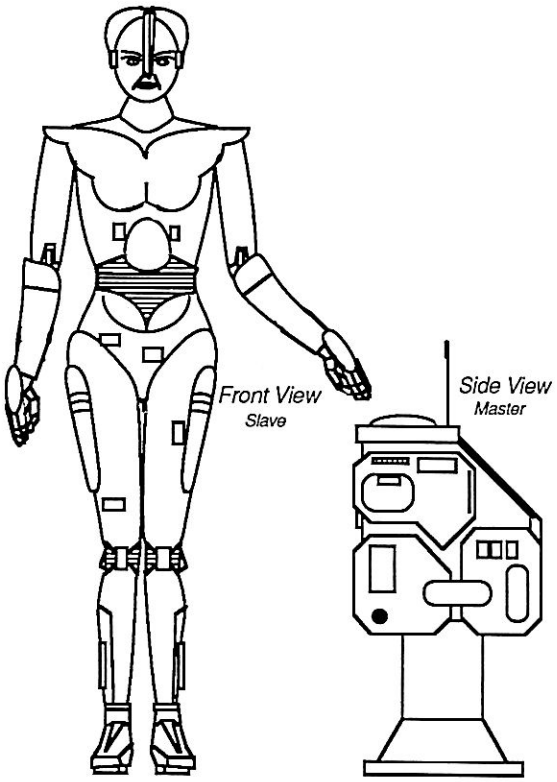
Slave Unit

36. WORKER MASTER ROBOT (K'kree)
712xB-50-MQ215-A568 Cr250,200 190kg
Fuel=51.4 Duration=10.7 TL=13
42/105 (mesh)
Head (5%)
Basic sensor pkg, voder
Master unit
Radio (distant range)
Electronic-3, Mechanical-3, Engineering-2, Security-2,
Fire Fighting/Rescue-2

!nig'xk Corporation makes utility maintenance robots for the Two Thousand Worlds. Most of their designs are small "herds" of a master and several slaves. This masterbot can be in charge of electric system maintenance, firefighting, police work, public transportation maintenance, or just about anything else a city manager needs done. Each job has its own group of slaves.

37. WORKER SLAVE ROBOT (K'kree)
321xA-04-00000-6E00 Cr23,000 80kg
Fuel=3 Duration=19.2 hrs TL13
10/25 (mesh)
4 V lt arms
Basic sensor pkg (ears: +1 extra sen), magnetic sensor
Slave unit
Radio (distant range)
Electronic tool pkg
Odor emitter

These cylindrical slavebots keep their "herd" together by odor while working on electrical systems. Three of them can be commanded by one master unit. Most K'Kree power cables are underground to avoid spoiling the wide open landscape, and are located in conduits large enough to admit these workers.

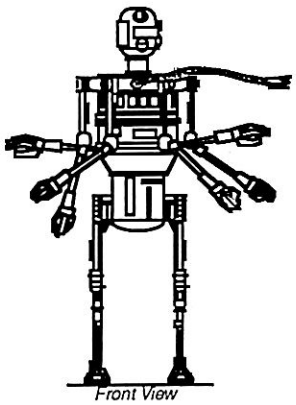


38. WAITRESS MASTER ROBOT
21xx0-00-LC111-1661 Cr212,500 9kg
Fuel=(external power) Duration=(unlimited) TL=13
4/10 (mesh)
Power interface
Master unit
Radio (distant range)
Steward-3

The waitress master unit is the brains for the slaves below. It is merely a box with radio communications and brains, using plug-in power.

39. WAITRESS SLAVE ROBOT
553x2-A2-00000-F900 Cr7,300 160kg
Fuel=80 Duration=13.3 TL=13
22/55 (mesh)
2 Lt arms
Head (10%)
2 Eyes, 2 ears, voder
Slave unit
Radio (distant range)

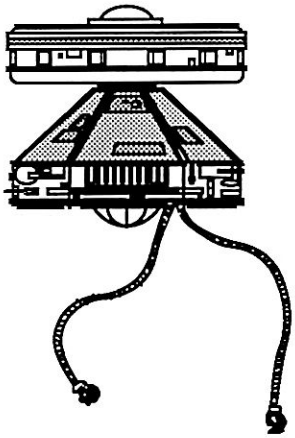
Naasirka's waitress robots can be found in many high-tech restaurants across the Imperium. They are contoured to resemble attractive women because market research indicated that customers preferred such service. The actual waitress units are quite brainless, being controlled by a master unit out of sight in the kitchen. The master unit can control 3 slave units and transmit their orders to the chefs.



Front View

40. LAB TECHNICIAN ROBOT
623x2-A7-LL211-MF52 Cr186,600 200kg
Fuel=79 Duration=13.2 TL=14
33/83 (mesh)
6 Lt arms, 1 v lt tentacle
Head (10%)
1 Eye (+1 pass IR), 1 ear, 1 olfactory sensor (+1 extra sen), magnetic, radiation sensors
Acoustical speaker
Lab Tech-3

Naasirka's Labtech886 can be programmed for any type of laboratory, including areas too dangerous for humans. Its olfactory sensor is in fact a "sniffer" capable of identifying chemical molecules precisely. Its multiple arms enable it to carry out the tasks of several humans at once.



41. HOSTILE ENVIRONMENT SURVEYOR ROBOT
B19xD-NA-NQ327-TF88 Cr1,059,200 6,270kg
Fuel and oxy=308.1 Dur=10.7 days TL=14 Thrust=7000kg
420/1050 (combat armor)
10 Hvy tentacles (retractable)
Head (40%)
2 Basic sensor pkgs (eyes: +4 tele, +4 lt inten, +4 pass IR, +4 act IR; ears: +4 extra sen), voder
Touch sensors (+1 extra sen), 2 magnetic, 2 radiation, 4 mass, 2 neutrino sensors
4 Spotlights (visual spectrum)
2 Radios (continental range)
Extensive counter ECM
TL14 holo recorder (3D), electronic circuit protection
Laser rifle, 2 RAM auto grenade launchers, 2 Gauss rifles
Survival-3, Grav Vehicle-2, Forward Obs-2, Recon-2, Weapon Handling-3, Survey-3, Prospecting-1

When originally designed, this combination of warbot and survey robot was greeted with scepticism by most Scouts but, as the OSF-4 Survey Commando proved itself over and over in the field, the scepticism changed to gratitude for making the life of a Scout a little easier and much more survivable.

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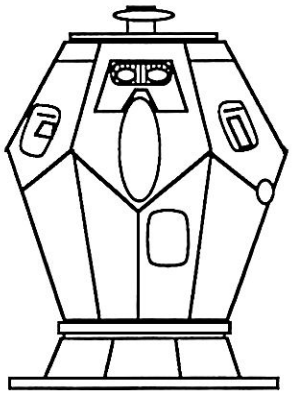
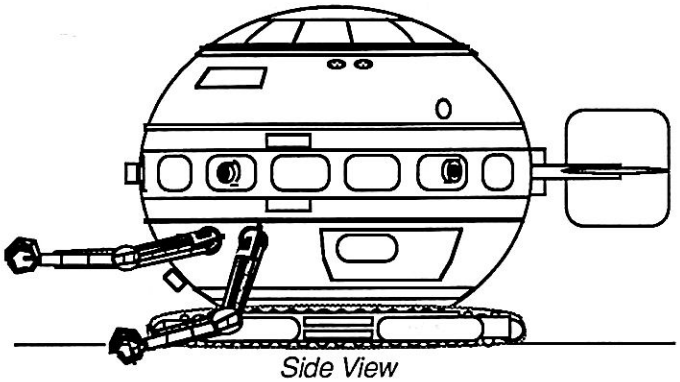
42. TAXI ROBOT
21xx0-00-LL221-1862 Cr177,100 15kg
Fuel=(external power) Duration=(unlimited) TL=14
4/10 (mesh)
2 Eyes, 2 ears
Power interface
Radio (distant range)
Financial pkg
General Vehicle-1

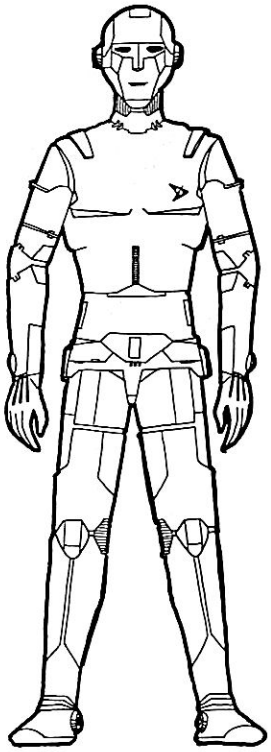
Naasirka makes the taxibot found almost everywhere in the Imperium. The taxibot's vehicle skill is appropriate to the vehicles used on a particular planet; the robot can be mounted rigidly in its vehicle, with electronic connections to the controls. It is not a talkative cabbie, and in fact has no voder. Its financial package handles all forms of payment and requires no tipping. On planets with centralized traffic control, the taxibot will be a slave unit.



Front View



Side View



43. UNDERSEA MINER ROBOT (Solomani)
B37xB-04-LB101-V441 Cr420,300 1,510kg
Fuel and Oxygen=653 Duration=4.0 TL=14
200/500 (combat armor)
4 Hvy arms
6 Eyes, magnetic, mass sensors
4 Spotlights (visual spectrum)
Aqua maneuver pkg
2 Laser welders
Metalwork tool pkg
Prospecting-3

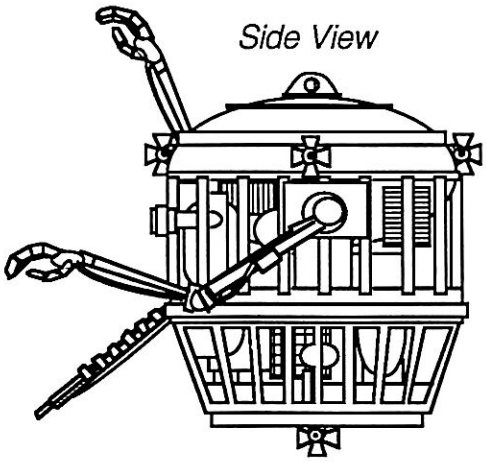
Panstellar's model 21B underwater mining robot was designed to prospect the oceans of Terra and has been exported all over the Solomani Sphere. An onboard densitometer and prospecting skill make this robot independent of any prior seafloor sampling. Heavy arms have drill and shovel attachments and can set explosives to break ore free. The miner usually tows ore barges which have independent flotation devices to take them up to floating refineries when full. Note that because of the lack of available oxygen underwater, the huge fuel space of this robot can only keep it below for 4 days at a time.

44. RASHUSH MODEL 2
65x22-A2-MP326-JC85 Cr982,200 250kg
Fuel (batteries) Duration=8.8 hrs. TL=14
33/83 (mesh)
2 Lt arms
Head (10%)
Basic sensor pkg (eyes: +1 lt inten; ears: +2 extra sen; olfactory: +1 extra sen)
Voder, touch sensors (+extra sen), taste sensor
Power interface
Radio (distant range)
TL14 holo recorder (3D)
Steward-3, Valet-3, Instruction-2, Medical-1,
Fire Fighting/Rescue-1
Emotion Simulation

The Rashush Model 2 is Naasirka's "cheap" Rashush model, coming in at just under 1 million credits. The Model 2 is considered by some to be "the poor man's Rashush".

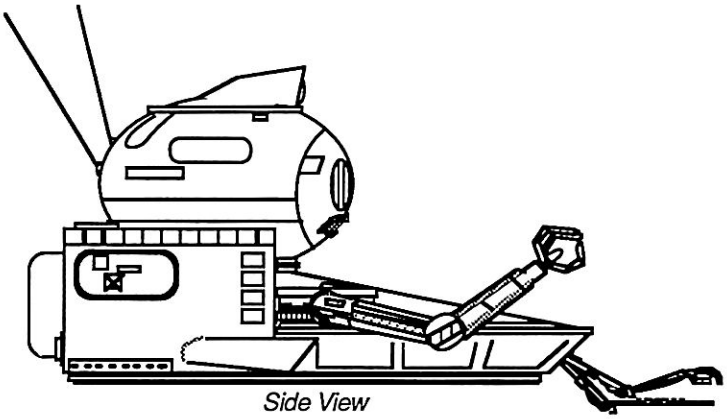
The Model 2 shares many general characteristics with the more expensive Rashush Model 1 (see the Rashush Model 1 under Expert Robots). While the Model 2 is not an expert valet, it is fully qualified as a valet-3. The Model 2 is still quite intelligent, with a rated intelligence level of 8.

Like the Model 1, the Model 2 runs on batteries instead of a fuel cell. Naasirka plays up the implied safety of batteries versus fuel cells in its advertising for the modern Rashush line by claiming that their robots are "the safest robots in existence". Naasirka's marketing strategy apparently works, since the Rashush robots are among the most commonly encountered battery-powered household robots anywhere in the Imperium.



45. VACUUM STATION REPAIR ROBOT
504x0-03-LN113-PA54 Cr106,200 280kg
Fuel=13.5 Duration=1.9 TL=14
20/50 (no armor)
3 Med arms
2 Eyes (+1 tele), touch sensors (+1 extra sen)
Spotlight (visual spectrum)
Power interface
Zero-G maneuver pkg
Radio (continental range)
Laser welder
Mechanical, electronic, metalwork tool pkgs
Electronic-3, Mechanical-3, Zero-G Movement-2

With many starship lines going increasingly toward unmanned, automated stations for refueling dumps and emergency stations, Nichols Manufacturing designed and built the 7017-AR repairbot to help maintain those stations. This robot not only keeps the stations in good repair, but can also help with a limited amount of repairs on a starship.

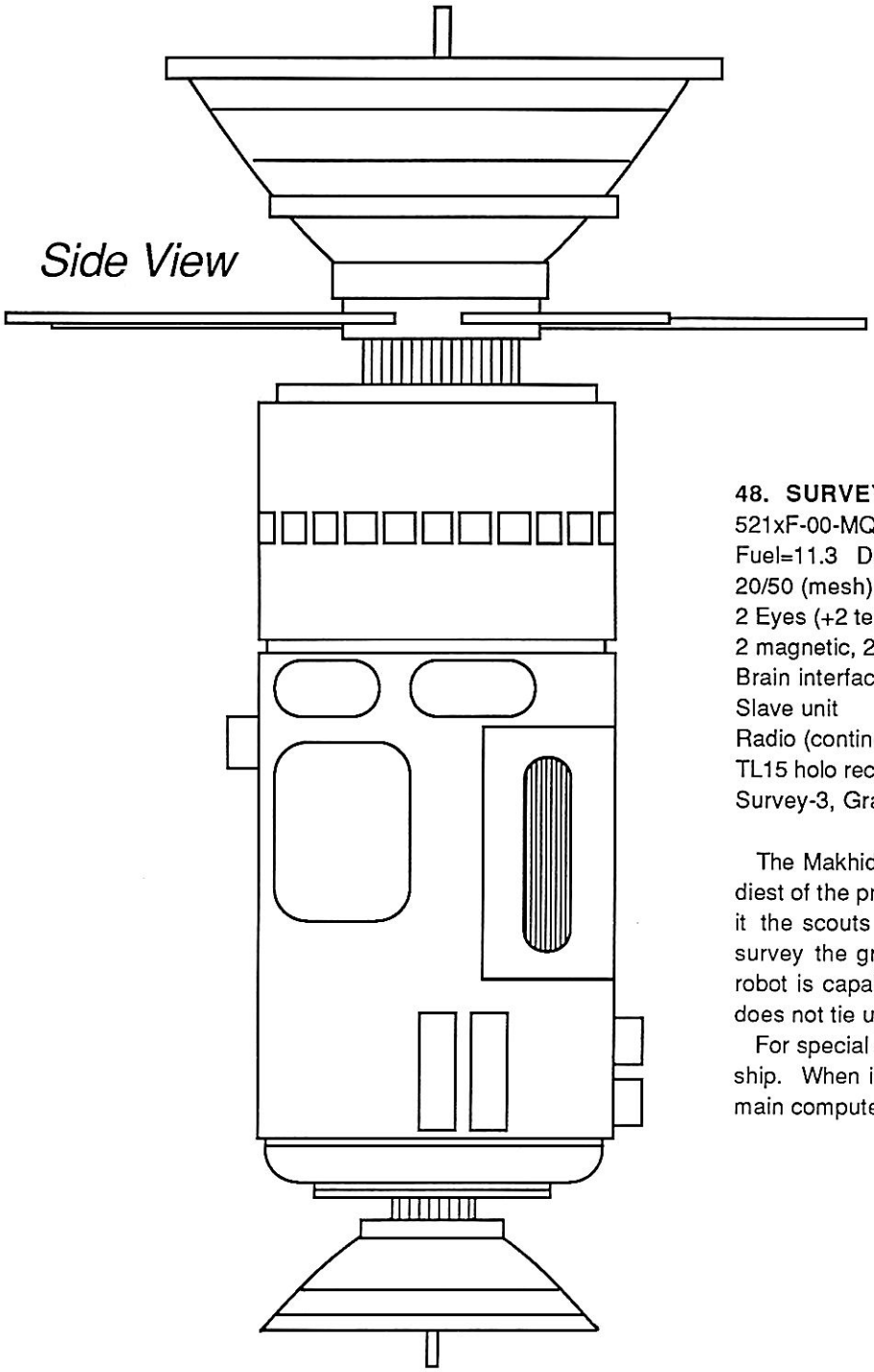


46. PLANETARY RESCUE MASTER ROBOT
716xD-N4-MM323-RF93 Cr344,400 330kg
Fuel=132.3 Duration=13.8 TL=15 Thrust=1000kg
56/140 (mesh)
2 Lt arms, 2 hvy arms
Head (40%)
Basic sensor package, voder, touch sensors, magnetic, radiation, mass, neutrino sensors
Acoustical speaker
Spotlight (visual spectrum)
Aqua maneuver pkg
Master unit
Radio (regional range)
Laser welder
Medical instrument pkg
Fire Fighting/Rescue-3, Medical-1, Grav Vehicle-1

The planetary rescue robot master can find and rescue persons anywhere on land or undersea. Most high-tech, high population worlds in Core sector have at least one available. With two heavy arms and two light arms, it can lift a large vehicle or break it open to extract injured persons. It has only medical-1 capability and first aid equipment, but its gravs can transport the injured quickly to a hospital. The master can control up to four slaves to assist it in search patterns and major excavations.

47. PLANETARY RESCUE SLAVE ROBOT
616xD-N4-00000-RF61 Cr39,800 310kg
Fuel=130 Duration=13.5 TL=15 Thrust=1000kg
42/105 (mesh)
2 Lt arms, 2 hvy arms
Head (40%)
Basic sensor pkg, voder, touch sensors, magnetic, radiation, mass, neutrino sensors
Acoustical speaker
Spotlight (visual spectrum)
Aqua maneuver pkg
Slave unit
Radio (regional range)
Laser welder
Medical instrument pkg

Rescue slaves have all the physical capabilities of the rescue master, but they rely entirely on the master's brain. A master and four slaves can lift the debris of a fallen building and stabilize it from the inside while victims are carried to safety. The units are operative in up to 2,000 meters of water, which makes rescue and salvage operations possible anywhere on a continental shelf on most worlds. In order to raise a ship or submarine, they must carry down extra grav units, since their own surplus thrust is insufficient for any but the smallest ships.



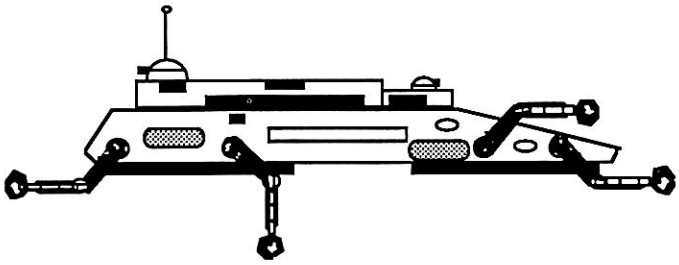
48. SURVEY PROBE ROBOT
521xF-00-MQ222-5F88 Cr392,000 80kg
Fuel=11.3 Duration=3.1 TL=15 Thrust=300kg
20/50 (mesh)
2 Eyes (+2 tele, +2 lt inten, +2 pass IR),
2 magnetic, 2 radiation, 2 NAS sensors
Brain interface
Slave unit
Radio (continental range)
TL15 holo recorder (3D)
Survey-3, Grav Vehicle-2

The Makhidkarun TP21 surveybot probe is one of the handiest of the probes available to the Imperial Scout Service. With it the scouts can increase many fold their ability to cover and survey the ground of the particular planet under study. This robot is capable of working on its own to a certain extent, and does not tie up an extra air/raft and pilot for its work.

For special sweeps, it can also be slaved to an air/raft, or to a ship. When in this mode, it transmits its data directly to the main computer of the master vessel.

Expert Robots

Expert robots have high skill levels, and they usually have a high intelligence to match. In most cases, the expert robot is skilled at only one thing. In this sense, experts are just dumbots with a higher skill level.



49. AGRICULTURAL SLAVE ROBOT

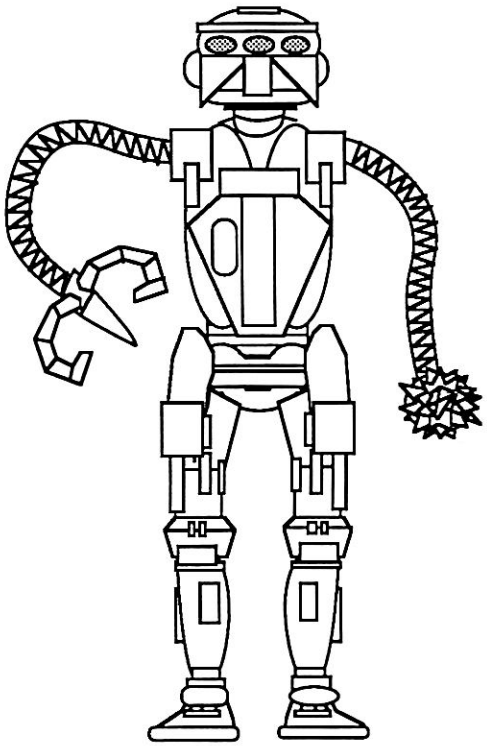
D19xD-08-00000-YF00 Cr271,800 4,600kg
Fuel=2170 Duration=75.3 TL=12 Thrust=4000kg
600/1500 (mesh)
8 Hvy arms
2 Eyes
4 Spotlights (visual spectrum)
Power interface
Slave unit
Radio (v distant range)
8 Agricultural pkgs

Agricultural slave units have heavy arms to which the necessary tools for the day's task can be attached (without outside help). They are, therefore, plows, cultivators, sprayers of insecticides and weed killers, and harvesting combines in one machine. Lighter robots with more manual dexterity must be used for crops which require pruning or tying, or which are very easily crushed in harvesting and packing. Spotlights enable the units to work around the clock and the robots have fuel enough for nearly three months. Use of these agrobots has tripled the amount of land under cultivation on several low-population agricultural worlds.

50. AGRICULTURAL MASTER ROBOT

41xx0-00-NM222-4693 Cr439,300 20kg
Fuel=(external power) Duration=(unlimited) TL=12
16/40 (mesh)
Power interface
Master unit
Radio (v distant range)
Video display (2D)
Agriculture-4, Grav Vehicle-2

The agriculture master unit can handle four slaves in any land farming application. It has extra grav vehicle skill to enable it to keep all four slaves moving independently without errors or collisions. One master unit with a set of slaves can farm up to 10 square kilometers with minimal human decision-making input.



Front View

51. BOXER ROBOT

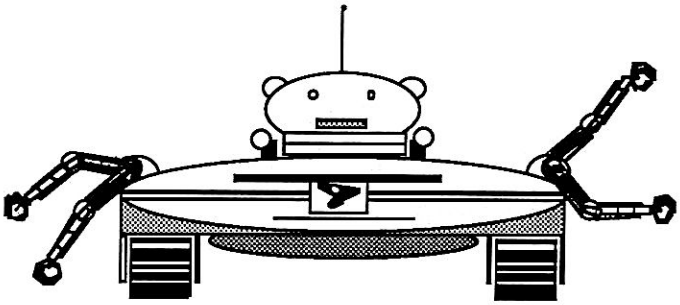
556x2-L2-ML201-LA32 Cr292,300 670kg
Fuel=2.9 Duration=7.2 hours TL=12
36/99 (combat armor)
2 Hvy tentacles
Head (20%)
3 Eyes, electronic circuit protection
Close Combat-4

Robot boxing is just one of many growing spectator sports involving robots. The Orycole Model 169 described here is an excellent example of an entrant in the 700 kg weight class. More complex robots could be built for this class, but it must be remembered that most robots on the losing side are destroyed, so cost is an important factor in the design.

The Model 169 has two special-purpose heavy tentacles. One of these tentacles ends in nothing more than a heavy bulb, hardened so as to do the most damage when striking its opponent. The other tentacle ends in a heavy-duty gripping appendage, designed to hold on to an opponent; the powerful contraction of this "hand" can crush metal if given the chance.

Three recessed eyes are provided, since an eye can be rendered useless with a single well placed blow, and a blind robot is an easily defeated robot.

On worlds where gambling is legal, huge sums of money are won or lost from betting on robot duels lasting only seconds. This robot does not carry much fuel, both for safety's sake and because long-term operation is unnecessary.



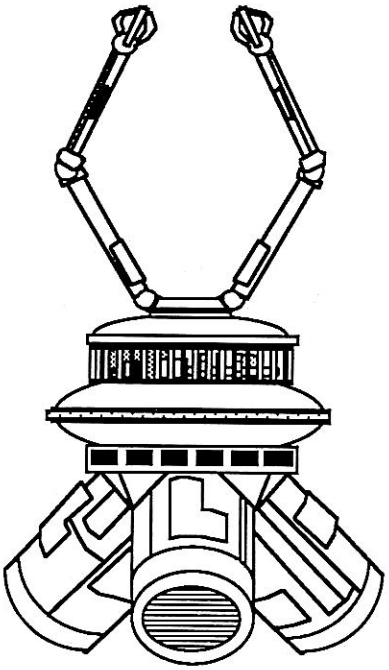
52. CARGO HANDLER MASTER ROBOT
646xB-M4-LM221-V543 Cr187,000 540kg
Fuel=7.4 Duration=18.5 hours TL=12
41/101 (mesh)
4 Hvy arms
Head (35%)
2 Eyes, 2 ears, voder
2 Spotlights (visual spectrum)
Master unit
Radio (distant range)
Cargo Handling-4

One of the earliest robot designs still in general use in the Imperium today is the ZV-3663 Biraakid cargo multibot. This robot was also one of the first to succesfully use the multibot concept of a master robot, supervising and assisting several slave robots. Originally designed and manufactured by the now defunct Sharad Kiir Robots Company, when the company closed down this design was taken over by Naasirka along with several others.

Although this model is considered to be thoroughly obsolete, Naasirka still manufactures and distributes it on more primitive worlds. However, on most worlds with modern robots this model has been superceded by newer cargo handlers.

53. CARGO HANDLER SLAVE ROBOT
646xB-M4-BB000-V301 Cr12,000 530kg
Fuel=30.5 Duration=3.2 TL=12
41/101 (mesh)
4 Hvy arms
Head (35 %)
2 Eyes, 2 ears, voder
2 Spotlights (visual spectrum)
Slave unit
Radio (distant range)

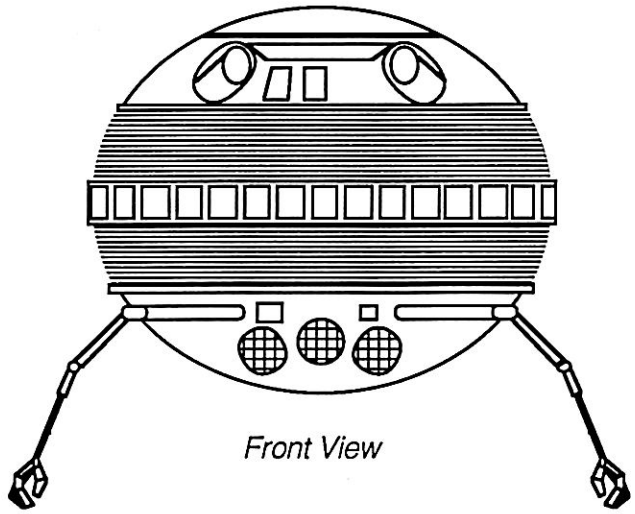
The ZV-361 cargo slavebot contains an excellent sensory package, but it merely passes the information along to the master robot of the team for processing. The usual number of these slaves handled by the master robot is two.

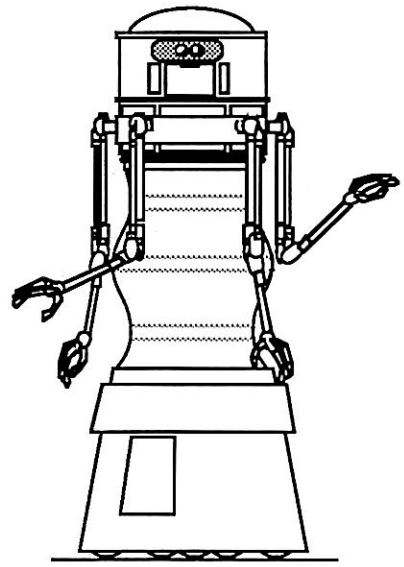


Top View

54. PROSPECTOR ROBOT
706xE-N2-LP003-RF16 Cr81,800 350kg
Fuel=43.7 Duration=4.5 TL=12 Thrust=1200kg
42/105 (no armor)
2 Hvy arms
Head (40%)
Basic sensor pkg, voder, magnetic, radiation, mass sensors
Radio (continental range)
Video recorder (2D)
Prospecting-4, Pilot-2, Grav Vehicle-1

The "Belter's Partner" can fit inside the bridge of a Seeker ship, from where it can fly the ship while the human crew is occupied. The robot can also function outside the ship, moving under its own power and collecting valuable data about an asteroid belt or planet's surface.





55. CAMERA OPERATOR ROBOT
432xF-02-LM221-6F53 Cr274,000 100kg
Fuel=10.5 Duration=2.2 TL=13 Thrust=200kg
16/40 (mesh)
2 V lt arms
3 Spotlights (visual spectrum)
Program interface
Radio (distant range)
2 TL13 holo recorders (3D)
Holodisplay (TL13)
Cinematography-4, Grav Vehicle-1

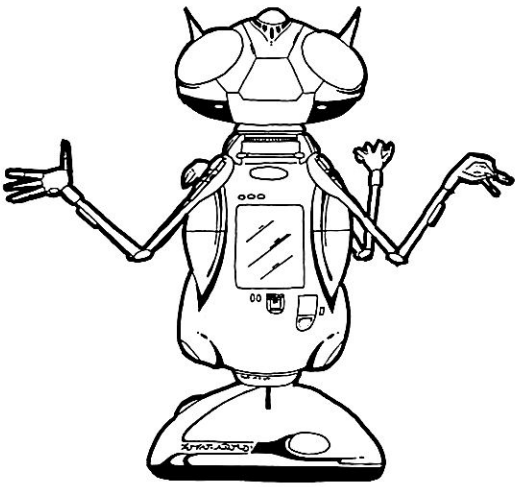
430xF-02-LM221-6F73 Cr274,000 50kg
Fuel=30.5 Duration=12.7 TL=15 Thrust=200kg
16/40 (mesh)
2 V lt arms
3 Spotlights (visual spectrum)
Program interface
Radio (distant range)
2 TL15 holo recorders (3D)
Holodisplay (TL15)
Cinematography-4, Grav Vehicle-1

The 476-INLAV camera robot is a journalist's best friend. The small, grav-powered robot can go where no human can go, recording an event from close up.

The robot also finds some use in advertising and motion pictures. The newer model is smaller and smarter at a slightly higher price.

56. EXPERT CHEF ROBOT
522xA-L4-JF111-LB31 Cr75,900 130kg
Fuel=37.9 Duration=7.9 TL=13
24/60 (mesh)
4 Lt arms
Head (20%)
Basic sensor pkg, touch sensors, taste sensor
Power interface
Steward-4

Makhidkarun's Model 777 Cordon Bleu expert chef is programmed to prepare the delicacies of hundreds of human-inhabited worlds. His steward program also keeps an inventory of supplies and orders fresh foods as necessary. While he can operate on a fuel cell, he also has a power interface to save fuel when working near outlets. Many of these chefs do their own marketing to choose meats and produce for daily specials. The services of the Cordon Bleu line of robots are, of course, expensive, but the robots are far less temperamental than human culinary artists, and they can work with four hands at once, which people often wish they could. The robot costs about two to three years wages for a human chef.



57. ADMINISTRATION ROBOT (Aslan)
32xx0-A4-NP325-LF85 Cr330,500 50kg
Fuel=(external power) Duration=(unlimited) TL=14
11/28 (mesh)
4 Lt arms
Head (10%)
Basic sensor pkg
Power interface, program interface
Video recorder (2D), video display (2D)
Administration-4, Legal-2, Trader-2, Extra Language-1
Emotion Simulation

This standard model of adminbot is used in several "female" positions in Aslan society. Its programming allows it to aid in running schools, farms, industries, or shops. Sometimes this model is used as supercargo on starships to handle buying and selling within the Hierate. Its extra language is usually Galanglic, but it does not speak. All communications are printed on video display or hardcopy. More advanced models are available that can move and that can talk using a voder.

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58. COURIER ROBOT
553x2-L2-LC111-FB51 Cr170,300 380kg
Fuel=62.5 Duration=10.4 TL=14
36/90 (combat armor, reflec)
2 Lt arms
Head (20%)
2 Eyes (+1 pass IR), 2 ears, voder,
1 olfactory sensor (+1 extra sen)
Radio (continental range)
Extensive counter ECM
Obscuration device, electronic circuit protection
Security-4

Spinward Specialties, one of the newest robot manufacturers in the Spinward Marches, specializes in contoured chassis courier robots such as this one, unarmed but heavily armored.

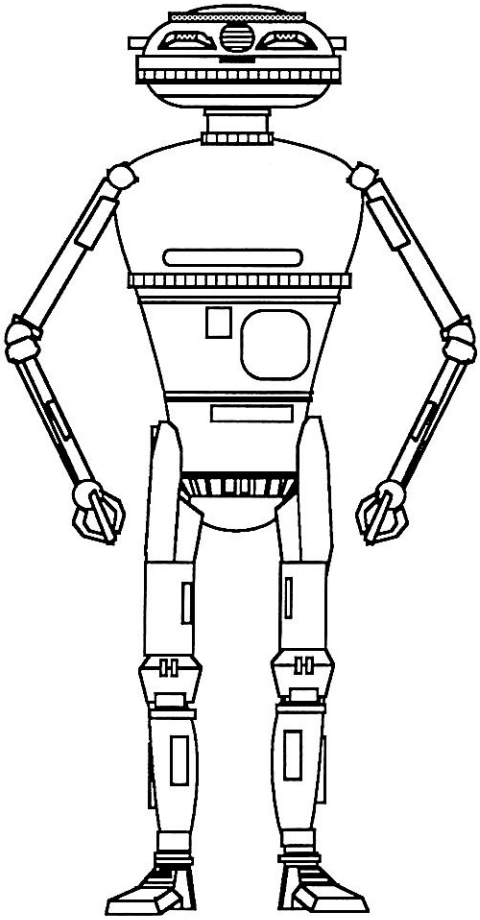
Quoting a Spinward Specialties advertisement: "The R3A courier can handle it! No matter what the job, the circumstances, or the cargo, the R3A courier can handle it.

"Item: A bank on Pretoria used an R3A to transport bank credit cards between its main office and its branch locations. Four would-be hijackers attacked it with a variety of weaponry, including two A41 submachineguns. The R3A radioed for police assistance, and the perpetrators were apprehended. No loss of cargo resulted; the R3A itself needed only a new wax job.

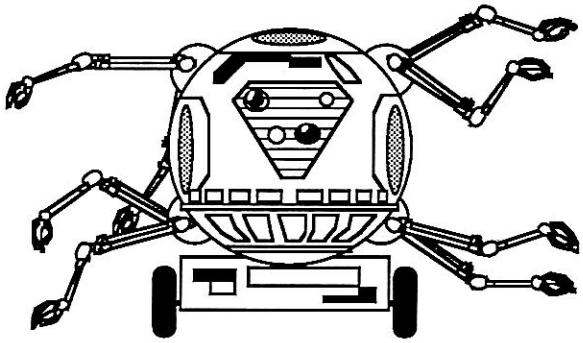
"Item: A jeweler on Carthage leased an R3A to carry rare coins to a customer halfway around the world. An electronics wizard attempted to jam the robot's circuits, using a technique he had found successful on many other couriers. The R3A was unaffected by his interference, and when authorities arrested him (thanks to the R3A's notification) a large cache of stolen gems was recovered from his apartment.

"Item: A businessman on Urnas had just bought an R3A, and was walking it out to his air/raft. The courier's ultra-sensitive olfactory sensor detected a bomb planted in the vehicle by one of the businessman's competitors. The businessman's life was saved, and he bought six more R3A couriers.

"If you have material that just has to get there, get an R3A --from Spinward Specialties, the courier experts."

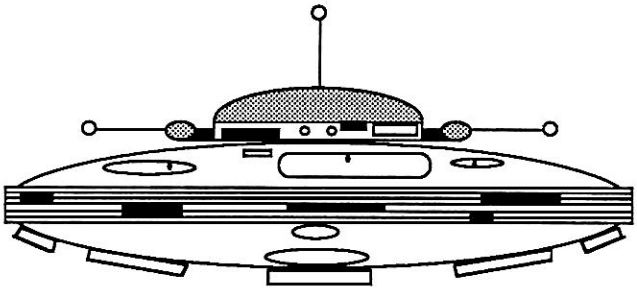


Front View



59. MUSICIAN ROBOT
631xA-08-NL213-GF72 Cr200,400 130kg
Fuel=54 Duration=15 TL=15
30/75 (mesh)
8 V lt arms
2 Eyes, 2 ears (+2 extra sen), voder
Acoustical speaker, music synthesizer
Performer-4, Musical-4
Emotion Simulation

A concert by a few of these performers was once billed as "the music of the spheres". This robot can produce a complete range of timbres with its built-in synthesizer. With its music-quality voder and acoustical speaker, it can fill a concert hall with the sound of a full orchestra or provide soft chamber music in a noble's home.



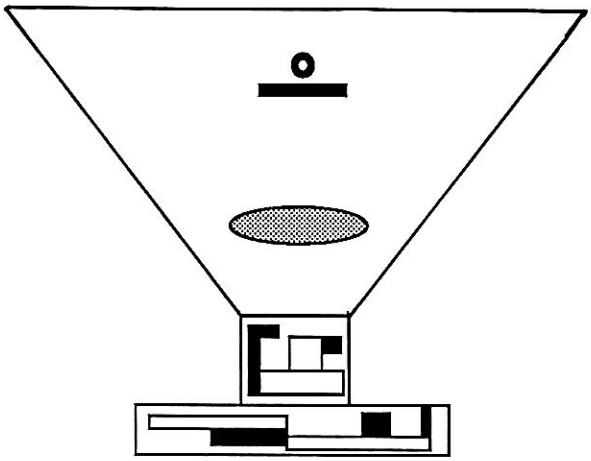
60. WEATHER CONTROL ROBOT
D46xE-F0-MP102-TF55 Cr379,400 1,300kg
Fuel=3,916 Duration=101.3 TL=14 Thrust=4000kg
1035/2588 (mesh)
Head (15%)
2 Eyes (+2 pass IR), 2 environment sensor pkgs
8 Power interfaces, master unit, slave unit
Radio (continental range), electronic circuit protection
Meteorology-4, Grav Vehicle-2

Many societies achieve some degree of weather control at tech level 8; at tech level 14 the Chion V automates the process. A team of these robots can insure that a world's temperature, precipitation, atmospheric pressure, and windspeed are optimal for the world's population.

Several devices on this robot are custom-designed for weather control applications. The robot has a volume of 3000 liters, making it one of the largest robots currently used in any application. This size allows the robot to carry large quantities of chemical catalysts for dispersion into a world's atmosphere.

The enormous size also provides room for three hydrogen fuel cells, producing a total power supply of 405 kw. With this amount of power and the custom power interfaces, the Chion V can actually start or stop lightning storms, as desired. The electronic circuit protection in this robot protects it from the effects of operating in such storms.

The master/slave interface and the radio enable a team of Chion V robots to work together. Weather control is such a delicate process that adequate results are difficult to achieve unless several robots cooperate over a wide area.

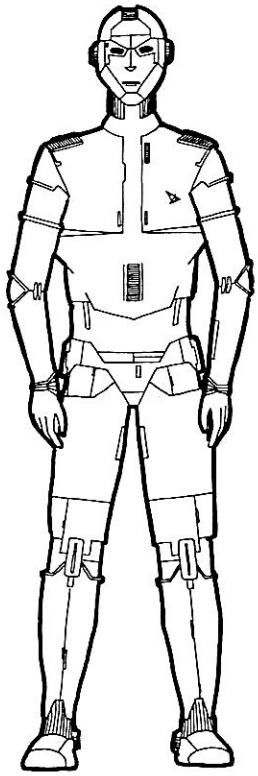


61. PROFESSOR DESKBOT
610x0-00-PR322-899A(L) Cr602,300 60kg
Fuel=67.7 Duration=28.2 TL=15
30/75 (mesh)
1 Eye, 1 ear, voder
Power interface
program interface
Holodisplay (TL15)
Instruction-4
Emotion Simulation

The profbot has all but eliminated classroom learning on some worlds. It comes with interchangeable modules for different subjects and different levels of ability. Slave extensionals supply laboratory equipment and sports skills for instructing the student. The robot can be interfaced with a library for updating.

Families which must travel a great deal often provide for their children's education with a profbot. Anyone seeking to learn a new skill on a starliner can rent the services of this teaching computer from the ship's library.

62. RASHUSH MODEL 1
65x32-F2-MR32A-JD9B Cr2,226,100 380kg
Fuel=(batteries) Duration=(unlimited) TL=15
35/86 (mesh)
2 Lt arms
Head (15%)
Basic sensor pkg
(eyes: +2 tele, +2 lt inten;
ears: +2 extra sen;
olfactory: +1 extra sen),
voder,
touch sensors (+extra sen),
taste sensor
Power interface
Radio (distant range)
TL15 holo recorder (3D)
Electronic circuit protection
Valet-4
Steward-3
Instruction-3
Medical-2
Extra Language-2
Fire Fighting/Rescue-2
General Vehicle-1
Close Combat-1
Security-1
Emotion Simulation



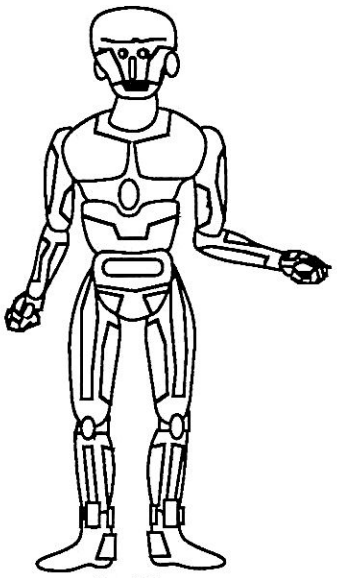
The Rashush Model 1 is Naasirka's top-of-the-line model Rashush. The Model 1's programming qualifies it as an expert valet. Associated abilities such as steward, instruction, fire-fighting/rescue, and medical skill round out the Rashush Model 1 and add to its utility. The robot's intelligence of 9 enables it to adapt to situations not explicitly covered by its programmed skill set.

The Model 1 is quite popular in households throughout the Imperium, despite its price tag of over 2 million credits. Many wealthy households have at least one Rashush Model 1, and a surprising number of not-so-wealthy households also own a Model 1.

Naasirka bills the Rashush Model 1 as "the safest household robot in existence" because of its battery power supply. While the batteries do remove all hazard of any fuel cell explosion (although with any high-tech fuel cell this hazard is minimal), they account for fully one-half of the 2 million credit price for the robot.

The batteries limit the robot to an operating duration of only about 12 hours, but in an urban setting this is rarely a problem —the robot has a power interface and plugs itself into an energy outlet at regular intervals to maintain its energy level. A full recharge takes about 3 hours.

Naasirka's marketing strategy obviously works, because the Rashush Model 1 is encountered frequently in the Imper ium.



Front View

63. TRANSLATOR ROBOT (Hiver)
554x2-L2-QQ325-FDB9 Cr444,700 270kg
Fuel=57.7 Duration=8.0 TL=15
24/60 (mesh)
2 Lt arms
Head (20%)
2 Eyes, 2 ears, voder, 1 olfactory sensor,
touch sensors (+extra sen)
Extra Language-4, General Language-4, Communications-4,
Instruction-4
Emotion Simulation

The Hiver race excels at communication, and this robot is the technological culmination of that ability. The "Demosthenes" model is used especially for interspecies communication, in particular between Hivers and humans.

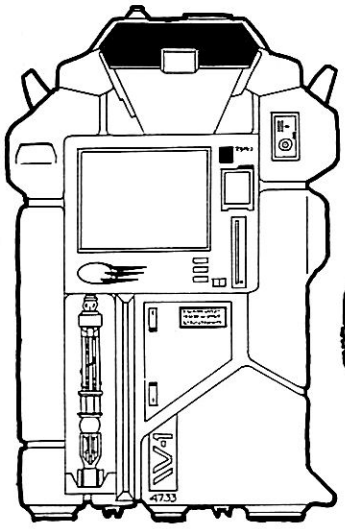
The robot is in fact contoured in human form rather than Hiver, in order to put sensitive humans more at ease.

Hiver robot brains are more advanced (tech level 16) than those of any other extant race. The phenomenal intelligence of this robot is a great help in translating the nuances of human and Hiver language. Not only can the robot translate (and learn) languages with facility, but it can also perform all of the functions of a communications officer.

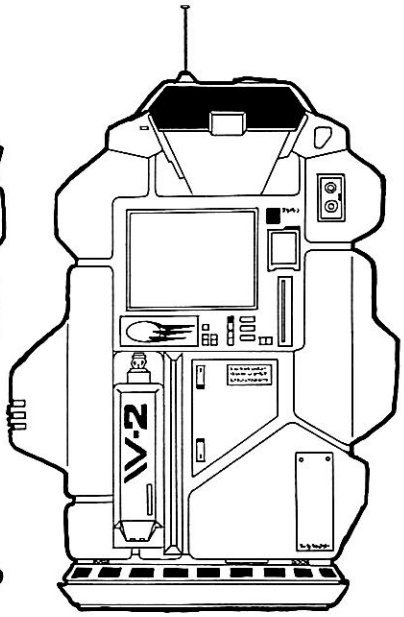
The Demosthenes' instruction skill can be used in regular speech to produce better explanations of alien concepts; it also has the side benefit of making its output more interesting than it might otherwise be.

The only consideration preventing more widespread use of this robot is its price. This high cost results from its contoured chassis configuration, but the Hivers are unwilling to give this up. The Hivers do not construct pseudobiological robots, because they believe them to be economically unviable, but despite the added cost of contoured robots, the Hivers think they are worth it because of their "familiar" look. With the addition of emotion simulation software, this robot can seem very "human" indeed, despite its lack of expensive detail.

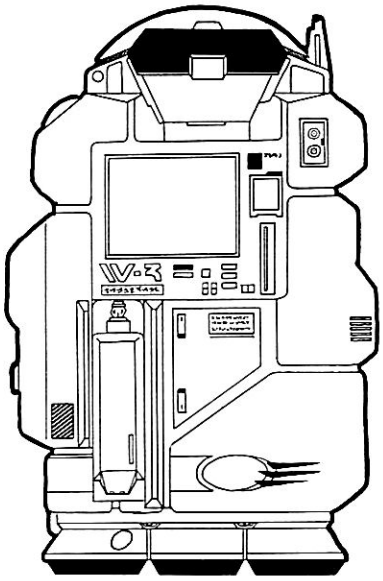
The Demosthenes is used most often by Hiver emissaries and traders.



W-1 Trader



W-2 Trader



W-3 Trader

64. TUKERA TRADER W-1 ROBOT
41xx0-00-NP313-4985 Cr331,200 30kg
Fuel=(external power) Duration=(unlimited) TL=15
16/40 (mesh)
Basic sensor pkg, voder
Brain interface, power interface
Video display (2D)
Legal-4, Trader-4
Emotion Simulation

Tukera Trader is the name given to a line of robots developed by Tukera Lines to provide expert assistance for commercial applications. A comparison of three of these robots is instructive in several robot design considerations.

The Tukera Trader helps keep the books in the black by giving expert advice on the relative values of commodities on different worlds. The original model, the W-1, was manufactured by Miino Robotics, a wholly-owned subsidiary of Tukera Lines. Cost of the robot was kept down by designing it as an immobile unit without a power supply. The W-1 was actually installed in a number of Tukera starship cargo holds at one time.

Trader-4 skill gives this robot a way to predict the value of a cargo once it is transported to another world. Legal-4 ability insures that all transportation and tariff regulations are fulfilled. Emotion simulation enables the W-1 to haggle with sentients. It all sounds great, but the robot was an unqualified disaster. For the reasons why, look at the the Tukera Trader W-2 robot.

65. TUKERA TRADER W-2 ROBOT
410xF-00-PP314-4F85 Cr363,200 40kg
Fuel=14.2 Duration=5.9 TL=15 Thrust=100kg
16/40 (mesh)
Basic sensor pkg, voder
Brain interface
Video display (2D)
Legal-4, Trader-4, Grav Vehicle-1
Emotion Simulation

This robot, the Tukera Trader W-2, replaced the W-1 in all applications. If one studies the URP information for these two experts, the difference between the two is immediately apparent. The W-2 is self-powered and self-propelled, using a simple light duty grav module for locomotion. The software and brains of the two machines are identical, except for the grav vehicle application program in the W-2.

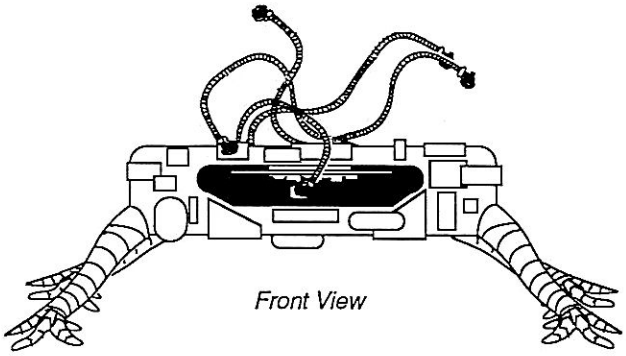
Tukera Lines found that the W-1 could not function efficiently from inside a starship. Without the opportunity to directly view warehouses and to talk with sentients "on location", many learning opportunities were missed, and it was impossible for the W-1 to make full use of its trader-4 skill.

The W-2 was an immediate success, and can still be seen at most starports serviced by Tukera Lines. Today, in fact, W-2 units often specialize, so that a large, busy starport may have several of the units, one dealing only in agricultural goods, one handling the trade in industrial goods, another dealing in raw materials, and so on.

66. TUKERA TRADER W-3 ROBOT
410xF-00-PP314-4F85(8) Cr437,400 40kg
Fuel=15.4 Duration=6.4 TL=15 Thrust=100kg
16/40 (mesh)
Basic sensor pkg, voder
Brain interface
Video display (2D)
Legal-4, Trader-4, Grav Vehicle-1
Emotion Simulation

The W-3 is the latest in the Tukera Trader line. This robot is identical to the W-2, but for Cr75,000 additional it has the ability to learn over its expected useful life of 80 years. Starting with an education of 5 (almost 6), its synaptic storage gradually organizes itself to provide additional "insights", ultimately increasing the education to 8 (almost 9). This is not a rapid process; on the average, each point increase takes a little over five years.

Tukera Lines no longer manufactures the W-2, and all of these are being replaced by the newer models as local budgets allow.



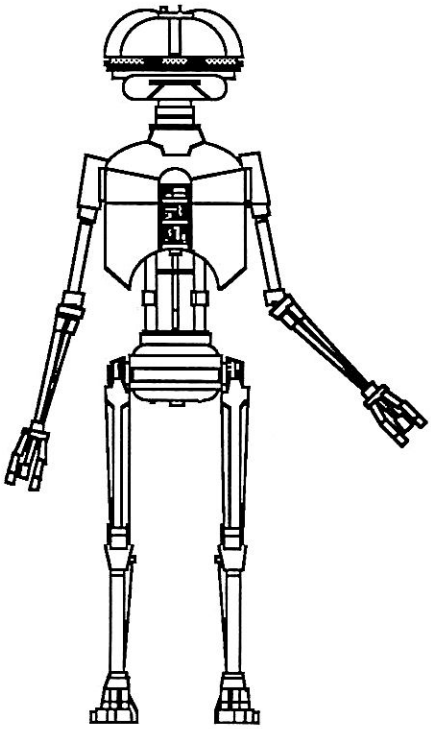
Front View

67. ARTISAN ROBOT (Hiver)
512x4-55-LM222-5F83 Cr204,700 300kg
Fuel=26.3 Duration=5.5 TL=16
21/53 (mesh)
5 V lt tentacles
Head (5%)
Basic sensor pkg (eyes: +2 tele), touch sensors (+extra sen)
Spotlight (visual spectrum)
Program interface
TL15 holo recorder (3D)
Lt laser welder
Mechanical, metalwork tool pkgs
Forgery-4, Mechanical-1

At over Cr200,000, the artisan robot is not designed by the Hivers for private use, but rather for professional art production facilities. The robot can be thought of as being in the same class as any other expert mechanical robot.

The artisan first uses its telescopic eyes to examine an item; the eyes are tied into the holographic recorder, so a complete three-dimensional description of an object can be placed in the robot's brain storage. The artisan can then use its dexterous tentacles and specialized tool packages to reproduce the item. The robot's expert skill supplements these appendages to make an exact duplication possible.

Besides their legitimate uses, these devices are popular with an entirely different class of citizen. Artisan robots are sometimes used by criminals for forgery purposes. The robot's attention to detail, coupled with its assured confidentiality, makes it the perfect "mob" employee.



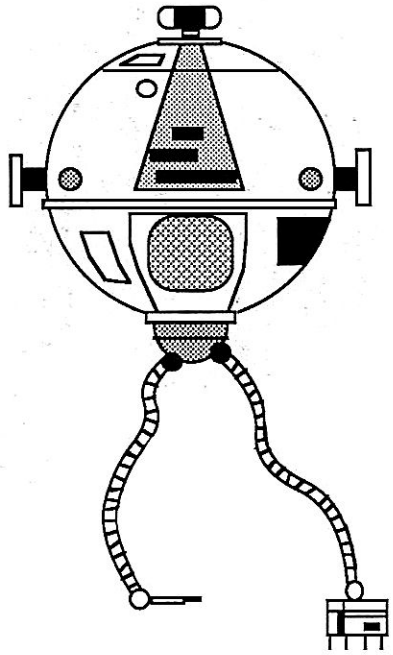
Front View

68. SHUTTLE PILOT ROBOT
501x2-L2-RS327-NCDD(Q) Cr5,620,300 190kg
Fuel=29.72 Duration=8.3 TL=16
25/63 (no armor)
2 Med arms
Head (25%)
Basic sensor pkg (eyes: +2 tele; ears: +2 extra sen), voder, taste sensor
Radio (continental range)
TL15 holo recorder (3D)
Grav Vehicle-4, Ships Boat-4, Engineering-4, Gravitics-4, Communications-4, Ship Tactics-4
Emotion Simulation

A special project by the scientists of the University of Regina, the SURD T-23x robot is not likely to be on the market for some time. This robot is at the cutting edge in Imperial robotics today. Having shown itself to be a flexible yet reliable shuttle pilot under most ordinary circumstances, it is now undergoing testing to see how it adapts to more critical situations. One of the main concerns is that the high amount of synaptics (68 out of 113 units) not tip over into a robotic neurosis when under pressure.

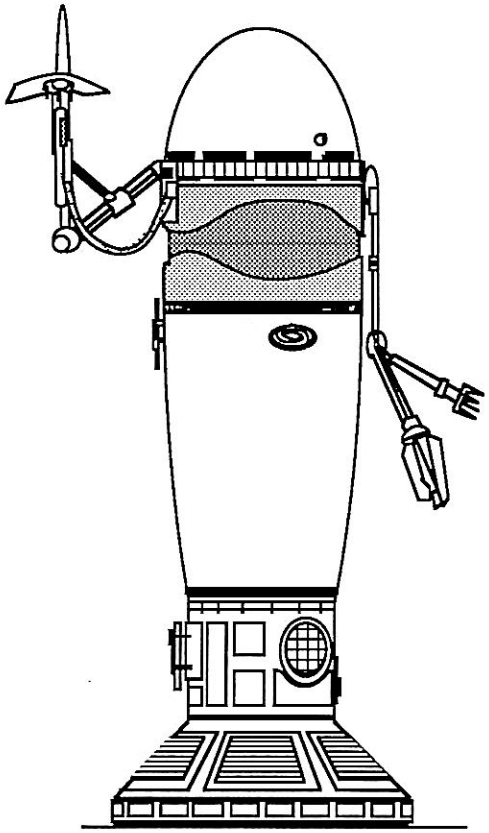
Law Enforcement and Security Robots

Law enforcement and security robots are reliable, expendable guardians. They can be found both in public and private use, ensuring that valuables are safe from plunder. Legal experts also fall under this category.



69. INTERROGATION ROBOT
533xF-02-LM113-BF23 Cr156,900 140kg
Fuel=22.3 Duration=3.7 TL=12 Thrust=200kg
20/50 (mesh)
2 Lt tentacles
Basic sensor pkg, voder
Spotlight (visual spectrum)
2 Power interfaces
Radio (distant range)
Video recorder (2D)
Medical instrument pkg
Obscuration device
Odor emitter
Video display (2D)
Acoustical speaker
Body/Snub pistol
Interrogation-4, Grav Vehicle-1
Emotion Simulation

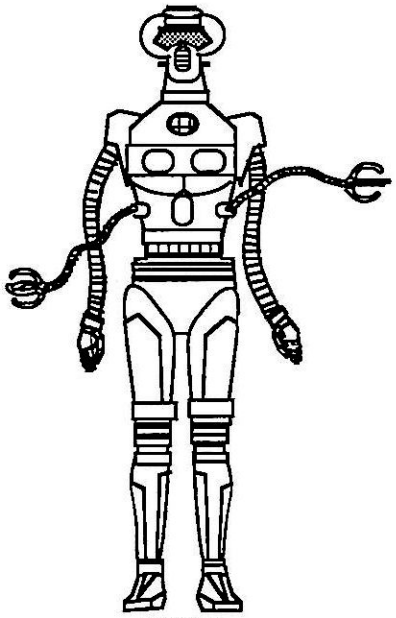
The Intect GXLT-452 interrogation robot is very patient, very persistant, and untiring in its pursuit of answers from subjects. The robot is capable of administering truth drugs or of using more forceful persuasion, although it usually doesn't need to get physical to get results. Judicious use of lights, noise, or smells is frequently sufficient to do the job. But if the subject insists on being uncooperative, then the robot is capable of getting very nasty.



Front View

70. SECURITY ROBOT
726xA-02-LM213-L833 Cr298,000 530kg
Fuel=17.7 Duration=1.8 TL=12
60/150 (cloth, reflec)
2 Lt arms
Basic sensor pkg (eyes: +2 lt inten, +2 act IR;
ears: +2 extra sen)
Radio (distant range)
Laser carbine
Electronic circuit protection
Security-3, Laser Carbine-2, Infantry Ground Combat-1

The ICAM Technology AN-427 maximum security robot is programmed to patrol all areas of a sensitive installation, seek out unauthorized intruders, and destroy them. The robot is intelligent enough to recognize authorized personnel, and not to harm them. The AN-427 can also operate in concert with other robots (via its built in radio) and can instantaneously share information with them—thus avoiding costly tactical errors while pursuing an intruder.



Front View

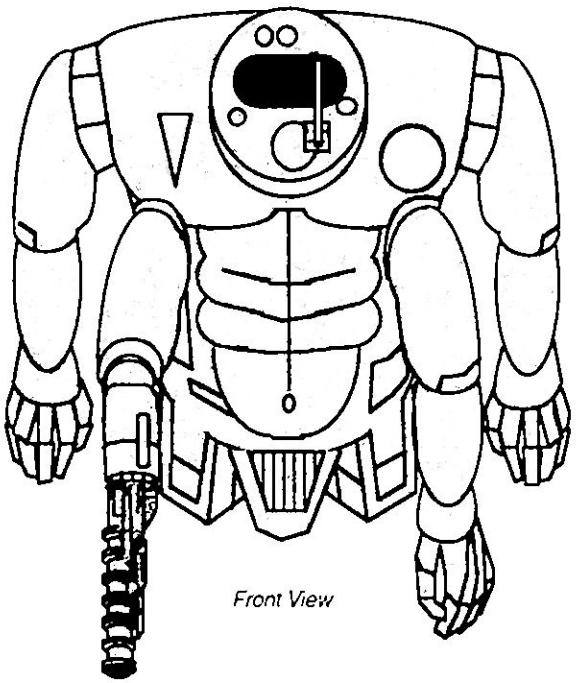
71. LAW ENFORCER ROBOT
756x2-54-PR225-LF5A Cr232,800 440kg
Fuel=70.1 Duration=7.3 TL=12
63/158 (cloth, reflec)
2 V lt tentacles, 2 med tentacles
Head (5%)
Basic sensor pkg (eyes: +2 tele, +2 pass IR;
ears: +2 extra sen), voder
2 Spotlights (visual spectrum)
Program interface
Radio (distant range)
Electronic circuit protection
Weapon Handling-4, Security-3, Tactics-2, Interrogation-1
Emotion Simulation

This patrolman is one that won't get so bored on the beat. In fact, it can keep patrolling for a week at a time before it needs a break for maintenance and fuel.

This law enforcer is not good for extremely subtle detective work, but is just great for routine surveillance and patrols. It is also good for more dangerous arrests, frequently saving the lives of sentient officers.

Because of the importance of this role, this robot is less integrated and more modular than many. If the robot gets shot and a particular module is damaged, it can frequently be kept going via its radio and program interface. Then, when its mission is complete, only the specific modules affected will have to be replaced.

An imposing 2.5 meters tall, this robot does not mount any specific weapon, but instead has weapon-4 skill, which is programmed among any combination of weapons carried by the robot, according to the wishes of the law enforcement agency deploying the robot.



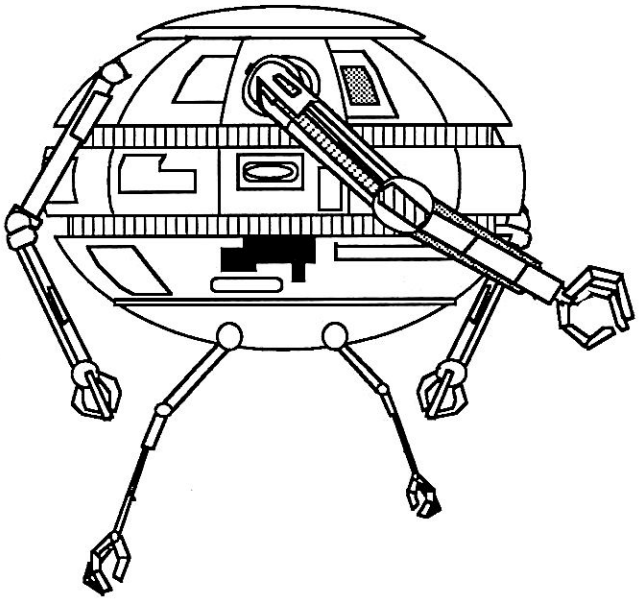
Front View

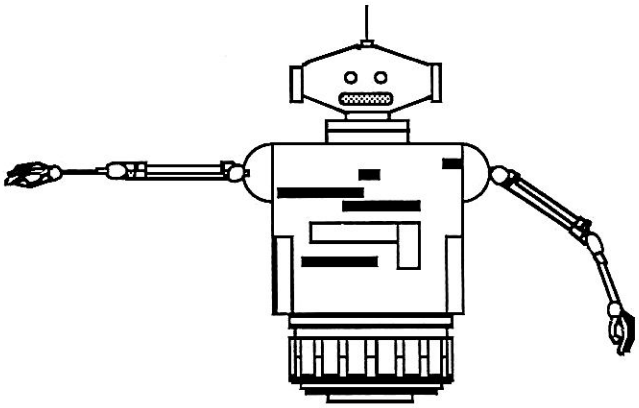
72. SUPER GUARD ROBOT
856xE-04-PQ226-VF59 Cr389,100 770kg
Fuel=147.6 Duration=15.4 TL=12 Thrust=800kg
105/263 (cloth, reflec)
4 Hvy arms
Basic sensor pkg (eyes: +2 tele, +2 lt inten, +2 pass IR;
ears: +2 extra sen; olfactory: +1 extra sen), voder
Radio (v distant range)
Counter ECM
Gauss rifle
Electronic circuit protection
Tactics-3, Close Combat-3, Gauss Rifle-3, Security-3,
Grav Vehicle-1, Fire Fighting/Rescue-1

The Dover-Gabe Model 9 "Super Guard" is a popular security/guard robot in the Imperial Core. The Super Guard's large, imposing, grav-propelled headless torso is very effective in making would-be thieves think twice before breaking in. Dover-Gabe designed the Super Guard specifically to be "unfriendly and unbecoming: in other words, a potent deterent".

The robot's Gauss rifle mounted on one arm (operated at a skill level of 3) puts some teeth into the robot's deterrent abilities. The other three heavy arms can easily subdue any trespasser.

The Super Guard, well armored against a deliberate attack by a knowledgeable opponent, is often the robot of choice for protecting an establishment's more important facilities.





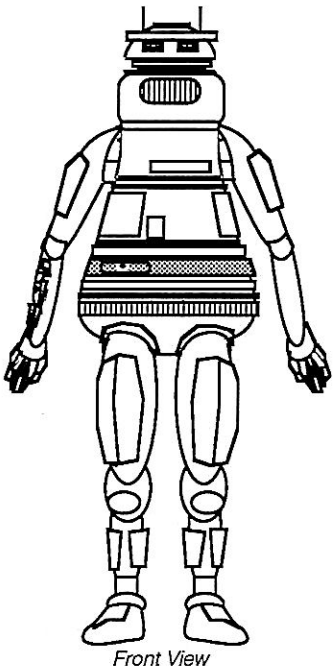
73. COURTROOM GUARD ROBOT (Solomani)
633xF-05-NN325-RF84 Cr432,900 200kg
Fuel=56.1 Duration=9.4 TL=14 Thrust=240kg
20/50 (mesh)
1 V lt arm, 1 lt arm, 2 med arms, 1 hvy arm
Basic sensor pkg (olfactory: +1 extra sen)
NAS sensor
TL14 holo recorder (3D)
Holodisplay (TL14)
Interrogation-2, Security-2, Legal-2, Weapon Handling-1
Emotion Simulation

The courtroom guard and lie detector robot is found only on a few Solomani worlds, where use of the robots has sparked bitter controversy. If the robot served only as a bailiff, there would be little opposition, but when the robot uses its neural activity and metabolic sensors to judge whether a witness is telling the truth or not, many people object.

In one celebrated trial, the judge was giving his final instructions to the jury when the robot declared that the judge was lying. The judge held the robot in contempt and had it jailed for a week. Use of the robot is optional in a given case.

74. TRAFFIC SLAVE ROBOT
622xE-52-00000-JF00 Cr19,000 80kg
Fuel=97.5 Duration=20.3 TL=15 Thrust=400kg
32/79 (mesh)
2 Lt arms
Head (5%)
Basic sensor pkg, voder
Brain interface
Slave unit
Radio (distant range)
Video recorder (2D)
Automatic pistol

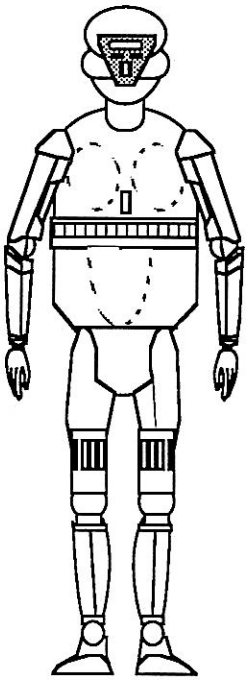
The traffic slavebot is not in itself a true robot, but in combination with the central traffic control computer, it makes an excellent traffic controller. On some high tech worlds, this combination has done more to prevent accidents and keep traffic moving smoothly than any other method to date.



Front View

75. HIGH SECURITY GUARD ROBOT
654x2-A2-PR329-NBBB(L) Cr2,017,100 710kg
Fuel=95.8 Duration=13.3 TL=15
50/124 (combat armor)
2 Med arms
Head (10%)
Basic sensor pkg (eyes: +1 tele, +1 lt inten, +1 extra sen; ears: +1 extra sen), voder, touch sensors (+extra sen)
Radio (distant range)
Extensive counter ECM
TL15 holo recorder (3D)
Obscuration device
Laser carbine
FGMP-15
Electronic circuit protection
Infantry Ground Combat-5, Security-3, Hunting-3, Extra Language-2, Interrogation-2, Close Combat-2, Laser Carbine-2, FGMP-2
Emotion Simulation

If you are seriously thinking about trying to steal Imperial secrets from one of the high level archives or intelligence centers, start thinking even more seriously about not trying it. Sensitive information and machinery vital to the security of the Imperium is usually guarded by a formidable mix of Imperial marines and high security robots like this one. With its sophisticated array of sensors, software, and weapons, this is a robot that you don't want to meet other than socially. If you do manage to evade it initially, it will seek you out. Like the fabled RCMP of early Terran history, this robot always "finds its man" or whatever sentient might have committed the crime.

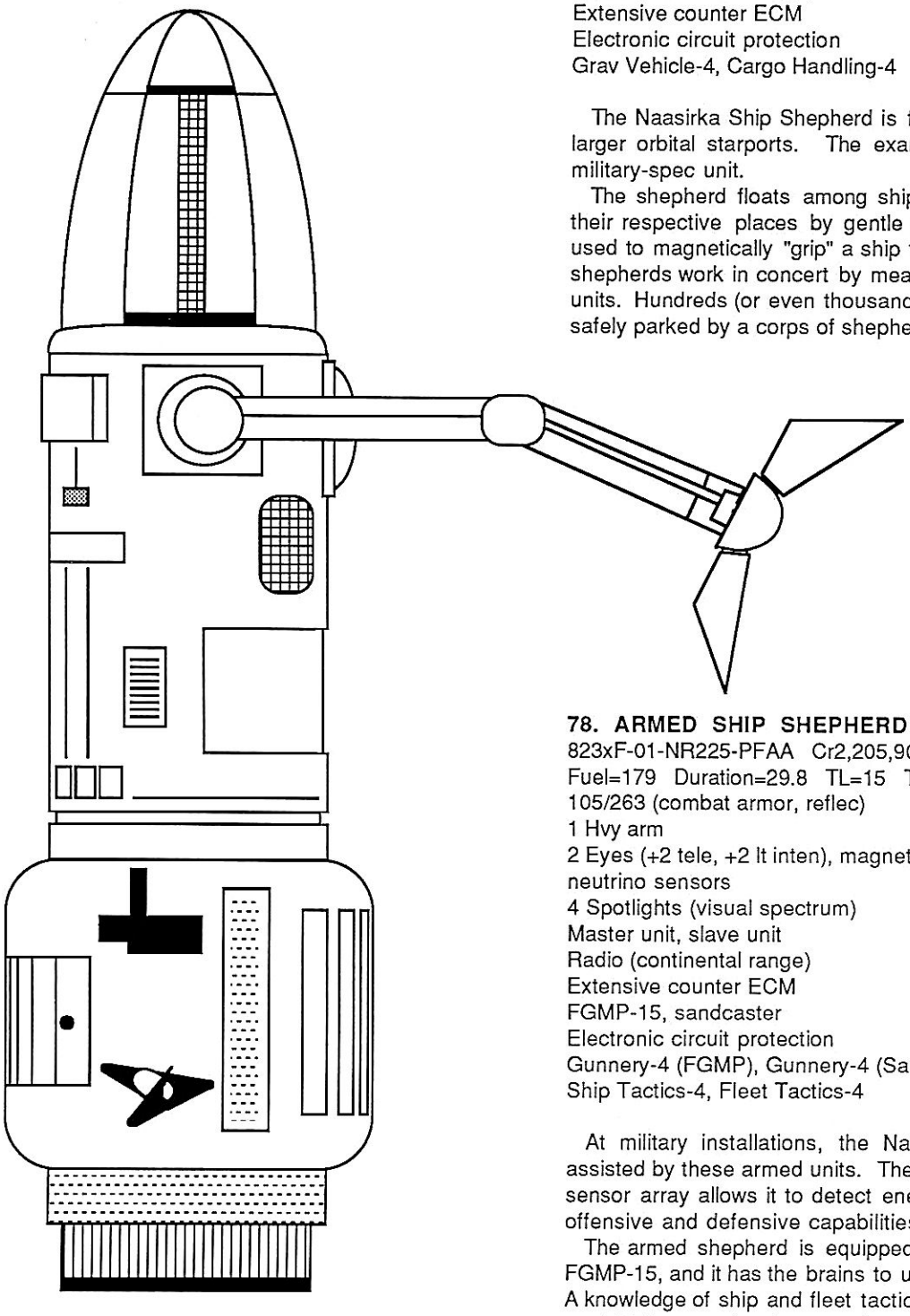


Front View

76. LEGAL EAGLE ROBOT
553x2-02-NQ324-FDB8 Cr411,500 220kg
Fuel=46.5 Duration=7.75 TL=15
22/55 (mesh)
2 Lt arms
Head (10%)
2 Eyes, 2 ears, voder, touch sensors
Program interface
Administration-4, Interrogation-2, Bribery-1
Emotion Simulation

"If you have to argue against the Makhidkarun X1DF-A attorney, you will have to refute its premises, not its logic. After all, with a computer for a brain, its logic is usually impeccable. Another thing to keep in mind is that you can't wear it out. The best thing to do is to keep your legal precedents straight and challenge it on its premises." (excerpt from *Vland Legal Encyclopedia*, 8th Edition.)

Side View



77. SHIP SHEPHERD ROBOT
822xF-01-NR222-PFAA Cr1,530,600 760kg
Fuel=189 Duration=39.5 TL=15 Thrust=2000kg
105/263 (combat armor, reflec)
1 Hvy arm
1 Eye
4 Spotlights (visual spectrum)
Master unit, slave unit
Radio (continental range)
Extensive counter ECM
Electronic circuit protection
Grav Vehicle-4, Cargo Handling-4

The Naasirka Ship Shepherd is found in military depots and larger orbital starports. The example described here is the military-spec unit.

The shepherd floats among ships in orbit, keeping them in their respective places by gentle nudges. The heavy arm is used to magnetically "grip" a ship that needs adjustment. The shepherds work in concert by means of their master and slave units. Hundreds (or even thousands) of ships at a time can be safely parked by a corps of shepherds.

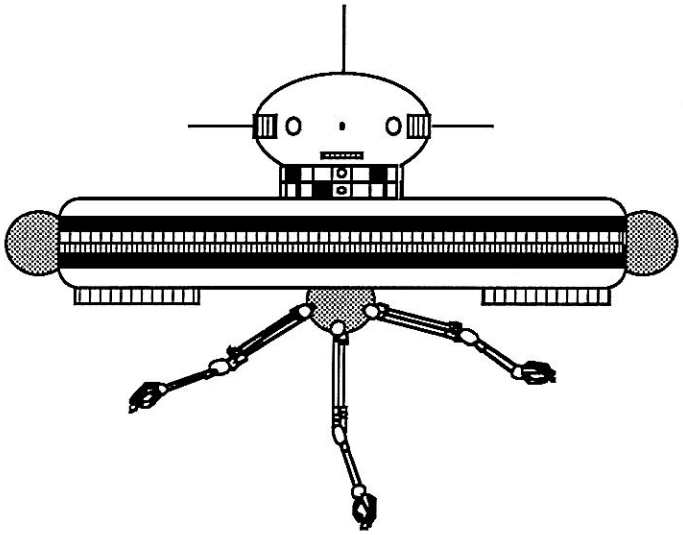
78. ARMED SHIP SHEPHERD ROBOT
823xF-01-NR225-PFAA Cr2,205,900 780kg
Fuel=179 Duration=29.8 TL=15 Thrust=2000kg
105/263 (combat armor, reflec)
1 Hvy arm
2 Eyes (+2 tele, +2 lt inten), magnetic, radiation, neutrino sensors
4 Spotlights (visual spectrum)
Master unit, slave unit
Radio (continental range)
Extensive counter ECM
FGMP-15, sandcaster
Electronic circuit protection
Gunnery-4 (FGMP), Gunnery-4 (Sandcaster), Grav Vehicle-4, Ship Tactics-4, Fleet Tactics-4

At military installations, the Naasirka Ship Shepherds are assisted by these armed units. The armed shepherd's powerful sensor array allows it to detect enemy ships in time to use its offensive and defensive capabilities effectively.

The armed shepherd is equipped with a sandcaster and an FGMP-15, and it has the brains to use both at a skill level of 4. A knowledge of ship and fleet tactics is also standard with this model. The armed and unarmed versions look identical from any distance.

Warbots

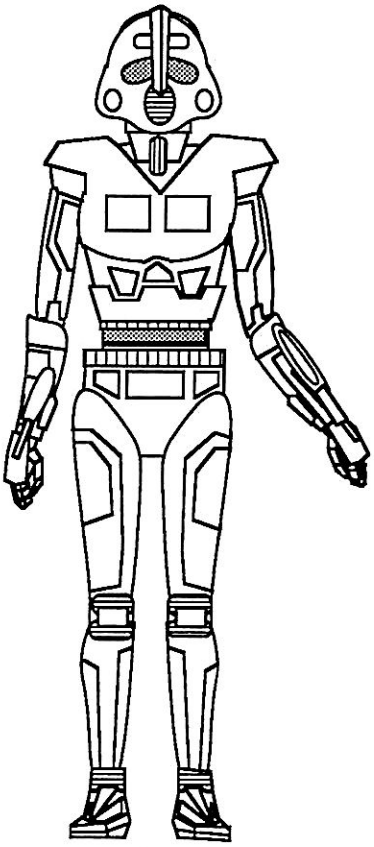
Warbots have changed the face of modern warfare forever. Many of these robots are expert systems, capable of subtle tactical planning. Others are cheap dumbots or drones, useful only as long as they last in a pitched battle.



79. MILITARY RECON ROBOT
746xE-A3-LQ115-DF29 Cr250,700 480kg
Fuel=29.1 Duration=3.0 TL=12 Thrust=800kg
66/165 (cloth)
3 V lt arms
Head (10%)
Basic sensor pkg (eyes: +2 tele, +2 lt inten, +2 pass IR, +2 act IR; ears: +2 extra sen), voder, magnetic, radiation, mass, neutrino sensors
Program interface
2 radios (continental range)
Extensive counter ECM
Video recorder (2D)
2 Obscuration devices
Laser pistol
Electronic circuit protection
Forward Obs-4, Recon-4, Tactics-1, Laser Pistol-1, Grav Veh-1

For the military commander who has everything that he wants except up-to-date field intelligence, Makhidkarun makes the TK91 Reconbot. This robot is equipped with everything needed for this type of mission.

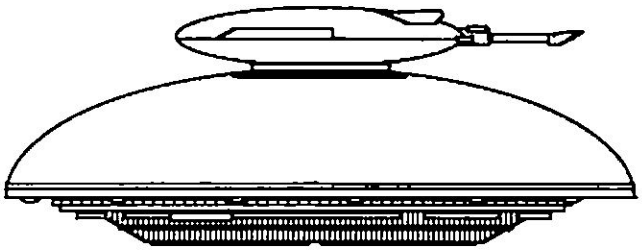
The TK91 has an extensive sensory package with supporting software, ranging from telescopic vision and light intensification, to neutrino sensors for locating and analyzing high energy sources in the area. In addition to this hefty sensory package comes an ability to fight its way out of tough situations if necessary, using its tactical and weapon handling skills. All in all, it is a very impressive package.



Front View

80. EXPERIMENTAL INFANTRY ROBOT
553x2-A2-PP323-N975 Cr524,900 480kg
Fuel=29.5 Duration=4.9 TL=13
33/83 (combat armor)
2 Med arms
Head (10%)
Basic sensor pkg (eyes: +1 lt inten)
Radio (continental range)
Counter ECM
Obscuration device
Automatic pistol
Laser carbine
Electronic circuit protection
Tactics-3, Close Combat-3, Infantry Ground Combat-3

This tech level 13 warbot (infantry) was an experimental robot in the early Third Imperium. This robot did see some limited battlefield action at one time, but many felt it was too unreliable and too costly for the job that it did. Despite the best efforts of scientists of that day, many Imperial military analysts maintain that an army built around warbots is a liability rather than an asset on the battlefield. A human or other sentient can do its job more efficiently and less expensively.



Side View

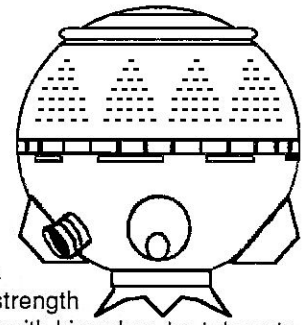
81. HEAVY WARBOT (Zhodani)
745xE-F2-EP006-RF25 Cr338,000 690kg
Fuel=62.2 Duration=7.4 TL=14 Thrust=1200kg
69/173 (combat armor, reflec)
2 Hvy arms (retractable)
Head (15%)
Basic sensor pkg (eyes: +1 tele, +1 lt inten, +1 pass IR, +1 act IR; ears: +1 extra sen), voder
Program interface, radio (regional range)
Extensive counter ECM, 2 obscuration devices
FGMP-14
Electronic circuit protection
FGMP-2, Grav Vehicle-1, Forward Obs-1, Tactics-1, Close Combat-1, Infantry Ground Combat-1

The Chiadle 7500 heavy warbot is designed to hold its own in a full frontal assault involving armored troops with fusion and plasma weapons. Even though the 7500 is expensive, it stands up well in the most demanding battlefield situations.

Besides the obvious offensive uses of the 7500, it works well as a defensive warbot or a forward scout, with its excellent sensors and its two obscuration devices.

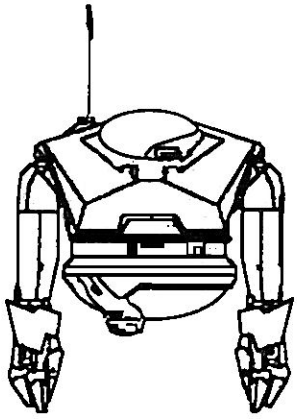
The 7500 is surprisingly small in spite of all its capabilities. The oblong half-dome chassis body presents a small frontal profile, thus minimizing the available target area to the enemy. The small rotating head contains the targeting and firing apparatus for the fusion weapon, allowing the main chassis body of the 7500 to remain under cover while firing.

82. LIGHT WARBOT (Zhodani)
22x2F-00-7B002-1F21 Cr48,200 10kg
Fuel=(batteries) Duration=40 min TL=14 Thrust=100kg
2/5 (mesh)
1 Eye, 1 ear
Radio (distant range)
Acoustical speaker
Body/Snub pistol
Grav Vehicle-1
Body/Snub Pistol-1



The IAD M-2 is light enough to be carried as equipment by a Zhodani commando: in fact, a strength level 9 psionic can carry an M-2 with him when he teleports. The M-2 is specifically designed by IAD to be a cheap, expendable robot, useful for disrupting enemy troops behind their own lines. The M-2 is useless in frontal assaults against armored troops.

A favorite tactic of Zhodani commandos is to teleport deep into enemy territory, leave several M-2s, and then teleport back to safety while the M-2s raise havoc in an unsuspecting enemy encampment. The M-2s, having performed their task of demoralizing the enemy, are written off as destroyed.

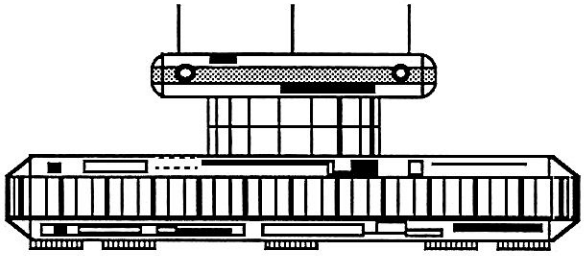


83. MEDIUM WARBOT (Zhodani)
623xE-02-CK004-NF31 Cr158,600 280kg
Fuel=78.6 Duration=21.7 TL=14
45/113 (cloth)
2 Med arms
Basic sensor pkg, voder
Radio (50 km range), extensive counter ECM
Laser rifle, electronic circuit protection
Grav Vehicle-1, Tactics-1, Laser Rifle-1, Inf Ground Combat-1

The Tliazhashal PP04 series is a popular warbot model, and customized versions of the PP04 are in use throughout the Zhodani Consulate. The PP04 series is solid and reliable, with a good intelligence (as far as Zhodani robots go).

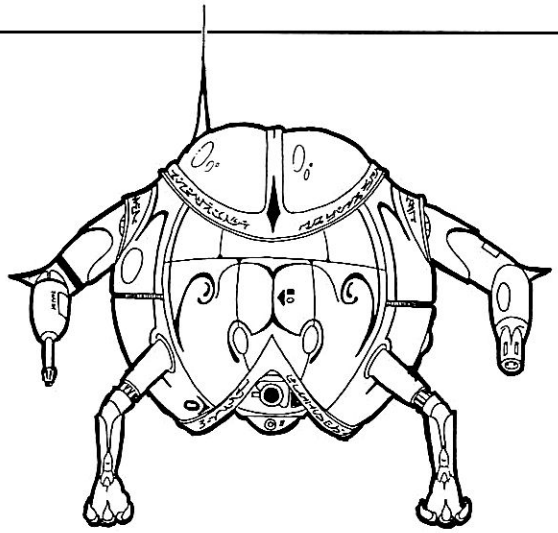
The warbot shown here is a basic PP04 with only a few extra options: tactics skill and a laser rifle. The Tliazhashal megacorporation provides many other variations, depending on the operating environment or type of mission the warbot will be called upon to perform. For details on how PP04 series warbots are used on the battlefield, see *Alien Module 4, Zhodani.*

The base design shown here has 7 kilowatts of power left; other sensors, devices, or weapons may be installed.



84. BATTLE EXPERT ROBOT
511xF-L0-PR328-5FAA Cr990,100 270kg
Fuel=5.4 Duration=1.5 TL=15 Thrust=800kg
38/98 (combat armor)
Head (25%)
Program interface
Master unit, slave unit
Radio (continental range)
Extensive counter ECM
Holodisplay (TL15)
Electronic circuit protection
Tactics-4, Security-4, Infantry Ground Combat-4, Armor Ground Combat-4, Grav Vehicle-1, Forward Obs-1, Demolition-1, Recon-1

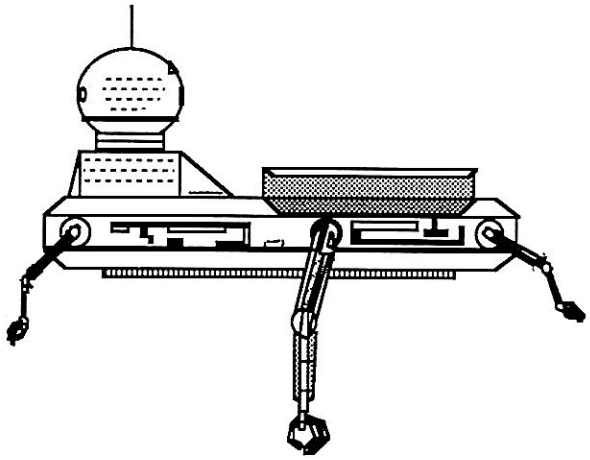
The Makhidkarun 5F2PR Commando is mainly used by the Imperial Marines as a recon and demolition robot, but because of its ability to sort out tactical situations and communications, it has been recently been finding an increasing role as an NCO in gravbelt combat drops.



85. DRONE WARBOT (Aslan)
837xD-04-00000-TF00 Cr485,600 1,300kg
Fuel=60 Duration=3.3 TL=14 Thrust=2000kg
70/175 (combat armor)
2 Med arms, 2 hvy arms
Basic sensor pkg (eyes: +1 light inten)
Slave unit
Extensive counter ECM
SMG
Laser carbine
FGMP-14
Auto grenade launcher

Because this Aslan warbot is a drone, controlled by a live Aslan from a remote console, there is considerable disagreement among roboticists as to whether this drone is truly a robot.

The machine has no CPU or software, only a very sophisticated remote control system. On the other hand, the fact that these devices have shown very favorable results in confrontations with Zhodani warbots has impressed many to the point of ignoring the technical arguments of the roboticists. "If it is successfully used as a warbot, it is a warbot."



86. BATTLE MEDIBOT
716xD-M6-LM224-SF73 Cr341,500 710kg
Fuel=133.5 Duration=11.8 TL=15 Thrust=1000kg
78/195 (cloth)
4 Lt arms, 2 hvy arms
Head (30%)
1 Eye (+1 lt inten, +1 pass IR), 1 ear, voder, radiation sensor
Radio (regional range)
Counter ECM
Medical instrument pkg
Obscuration device
Electronic circuit protection
Medical-2, Grav Vehicle-1, Recon-1, Fire Fighting/Rescue-1

The battle medibot is medic and medevac in one unit. The grav-supported stretcher has an armored cover for its patient, for while some planets abide by rules of war prohibiting attack on medical vehicles, many others do not.

Some battle medibots are equipped to shoot back, with a laser rifle installation. The medibot carries artificial blood and a limited range of medications. It can bandage or suture wounds, but most surgery and body repair must wait until the patient is brought to the surgical hospital.

87. BRUISER ROBOT (Hiver)
D48xD-NL-PY52L-VFCQ Cr5,067,200 9,100kg
Fuel=1527.6 Duration=63.7 TL=15 Thrust=15000kg
1260/3150 (combat armor, reflec)
6 V lt tentacles, 6 lt tentacles, 6 med tentacles,
6 hvy tentacles (all retractable)
Head (40%)
6 Eyes (+6 tele, +6 lt inten, +6 pass IR, +6 act IR)
3 Ears (+3 extra sen), voder, 1 olfactory sensor (+1 extra sen),
touch sensors (+extra sen), 2 magnetic, 2 radiation, 2 mass,
2 neutrino sensors
6 Spotlights (visual spectrum)
2 Power interfaces, 2 brain interfaces, 2 program interfaces
Master unit, slave unit
2 Radios (continental range)
Extensive counter ECM
4 TL15 holo recorders (3D)
2 Lt laser welders, 2 laser welders
3 Medical instrument, 3 mechanical, 3 electronic tool pkgs
3 Metalwork, 3 carpentry tool pkgs
Obscuration device
2 Odor emitters
4 Holodisplays (TL15)
6 Laser rifles, 2 FGMP-15s, 6 RAM auto grenade launchers,
6 Gauss rifles
Electronic circuit protection
Pilot-4, Navigator-4, Medical-4, Grav Vehicle-4, Gunnery-4,
Electronic-4, Mechanical-4, Engineering-4, Forward Obs-4,
Demolition-4, Extra Language-4, Tactics-4, Recon-4,
Interrogation-4, General Language-4, Laser Rifle-4,
FGMP-4, Grenade Launcher-4, Gauss Rifle-4, Security-4,
Survey-4, Fire Fighting/Rescue-4, Gravitics-4,
Communications-4, Ship Tactics-4, Fleet Tactics-4
Emotion Simulation

Fact 1: The Hiver race disdains personal violence.
Fact 2: The Hiver race is skilled in building robots.
Result: Hiver warbots are constructed in such a way as to be able to work independently in any military action. The "Bruiser" is an excellent example.

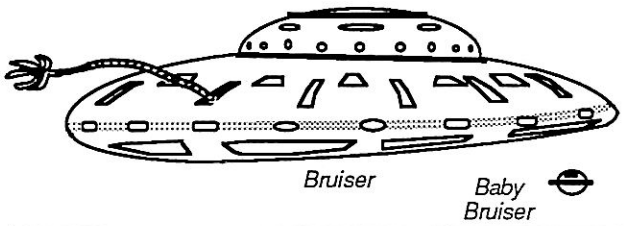
If you paid more than Cr5,000,000 for a robot, you would expect it to be fully equipped, and if you purchased a Hiver Bruiser, you would not be disappointed. The robot described here is a complete model, with all peripherals and programs listed. Most Bruisers have only a partial configuration, depending upon their expected use.

All by itself, a Bruiser is a formidable opponent. Its sensory array is extensive, including most of the sensors typically found on a smaller IISS survey vessel. Its weapons can include laser rifles, FGMP-15s, RAM auto grenade launchers, and Gauss rifles, and its software gives it skill level 4 in each weapon. Its grav modules give it a cruising speed of 450 kph. Combat armor polished to reflec and extensive counter ECM provide for its defense. Even if a hit is taken, most components have backup systems.

The Bruiser's brain is astonishing, with an intelligence of 12 and an education far beyond human or Hiver norms. With its knowledge and its specialized appendages, it can repair almost anything. When it captures prisoners, it can interrogate them. And its fusion reactor and power interfaces are designed to enable it to provide energy for a small city after its capture.

Two other items are of particular interest concerning the Bruisers. Odor emitters are installed in Hiver warbots mostly for show. Although there are no present hostilities with the K'kree race, they know that Hiver warbots have odor emitters, and their potential for use annoys them.

The other note about the Bruisers is of interest to Imperial citizens. All Hiver warbots (particularly the Bruiser) are illegal in Imperial space. Importing a Bruiser is a high justice crime.



88. BABY BRUISER ROBOT (Hiver)
330xF-02-9B002-CF31 Cr63,200 50kg
Fuel=14.7 Duration=6.1 TL=15 Thrust=100kg
10/25 (mesh)
2 Lt arms (retractable)
Basic sensor pkg, voder
Spotlight (visual spectrum)
Slave unit
Radio (regional range)
Counter ECM
Odor emitter
Gauss rifle
Gauss Rifle-2, Grav Vehicle-1

As formidable as the Bruiser is, it can't do everything, and its massive size does make it an appealing target to enemy forces. Both of these problems can be solved by taking advantage of this size in an unusual way.

The "Baby Bruiser" is a small warbot capable of burst speeds up to 1200 kph. Outfitted with a Gauss rifle, it is an adequate shot, and its size and speed make it a difficult target to hit. It is otherwise typical of many small warbots, with a minimal brain for locomotion and weaponry software.

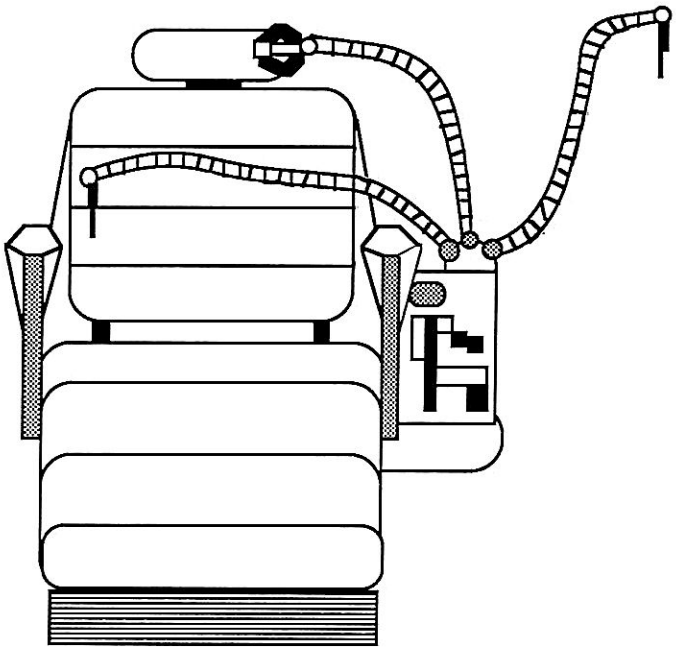
But in action, the Baby Bruiser is as intelligent as any robot opponent, and often as intelligent as its sentient opponents, thanks to a little help from above. A Bruiser (typically in orbit) uses its master unit to communicate via radio to the Baby Bruiser's slave unit.

The Baby Bruisers can draw fire from the larger unit, and can also be used to investigate smaller locations where a full-sized Bruiser could not travel.

What's more, the Baby Bruisers can be deployed on a jump ship along with the Bruisers and not require any more space. Nowadays, Bruisers are designed so that up to six Baby Bruisers fit up inside the Bruiser's chassis. In this configuration, the Bruiser does not have as much fuel space, but operating duration is still nearly two standard months.

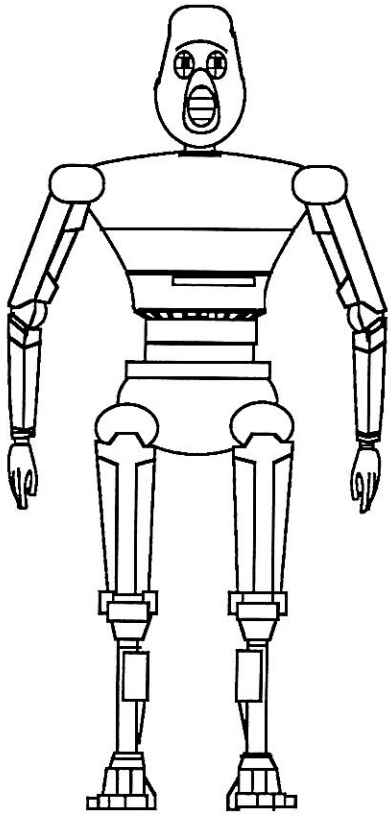
Medical

Medical robots provide a consistently high quality of care at a low cost. The best of these robots are expert systems in their respective fields. Others perform support functions to take care of patients and assist doctors.



89. DENTIST ROBOT
31xx0-03-MM211-CF53 Cr221,200 70kg
Fuel=(external power) Duration=(unlimited) TL=13
10/25 (mesh)
3 Lt tentacles
1 Eye (+1 extra sen), 1 ear
3 Microspotlights (in tentacles)
Power interface
Medical instrument pkg
2 Surgical lasers (in tentacles)
Medical-4

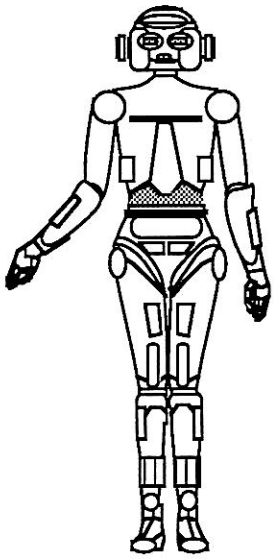
The dentist bot is affixed to the arm of a dentist's chair and has most of the tools it needs as appendages. It has not been a particularly popular innovation even though it is usually cheaper than a human dentist; the main problem is patients' emotional discomfort rather than any failure of local anaesthetic. The line was discontinued in 1102.



Front View

90. NURSING ASSISTANT ROBOT
653x2-A2-EE112-N831 Cr747,800 10kg
Fuel=118.7 Duration=19.8 TL=13
33/83 (mesh)
2 Med arms
Head (10%)
Basic sensor pkg, voder, touch sensors
Medical-1, Janitorial-1

Many hospitals have found that this LSP orderly robot can handle the routine care of patients not critically ill as well as or better than human aides can. Their olfactory sensors help them to detect incipient infections or any lack of cleanliness. They are programmed to report all facts about a patient's condition to the nurse on duty, or chart them as needed. One great advantage is that a robot attendant never injures its back when lifting a heavy patient. Many former aides admit they are glad to be in other jobs now, with more pleasant working conditions, while the robots never complain at all.



Front View

91. HOME CARE ORDERLY ROBOT
553x2-L2-LM324-NA73 Cr312,200 200kg
Fuel=61.4 Duration=10.2 TL=14
24/60 (mesh)
2 Med arms
Head (20%)
2 Eyes, 2 ears, voder, 1 olfactory sensor, touch sensors
Power interface, program interface
Steward-1, Medical-1, Valet-1
Emotion Simulation

Quality Care Automation's YIV-77-DR model of home care orderly robots not only takes care of your medical and personal hygienic needs, it can do your shopping, prepare your meals, help you dress, take care of your minor household business, and keep the house clean for you. In addition to everything else, it has a program interface so that it can become a table-game partner, tell you stories, bring you the news, and otherwise keep you entertained. A real bargain at only Cr312,200, it can also be rented by convalescents for only Cr30 per day.

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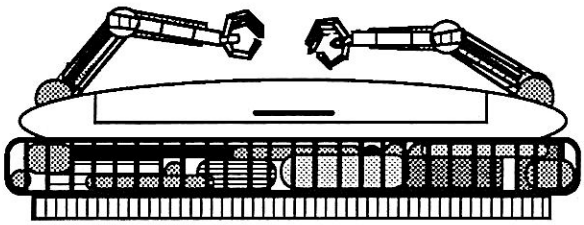
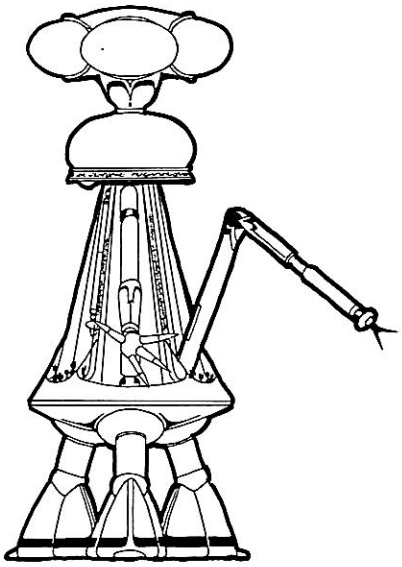
92. AMBULANCE ATTENDANT ROBOT
902xE-04-MM223-PF73 Cr210,600 150kg
Fuel=406.7 Duration=84.7 TL=14 Thrust=400kg
100/250 (no armor)
2 Med arms, 2 lt tentacles
1 Eye (+1 lt inten, +1 pass IR), 1 ear, voder
Spotlight (visual spectrum)
Radio (distant range)
Medical instrument pkg
Medical-3, Fire Fighting/Rescue-2, Grav Vehicle-1

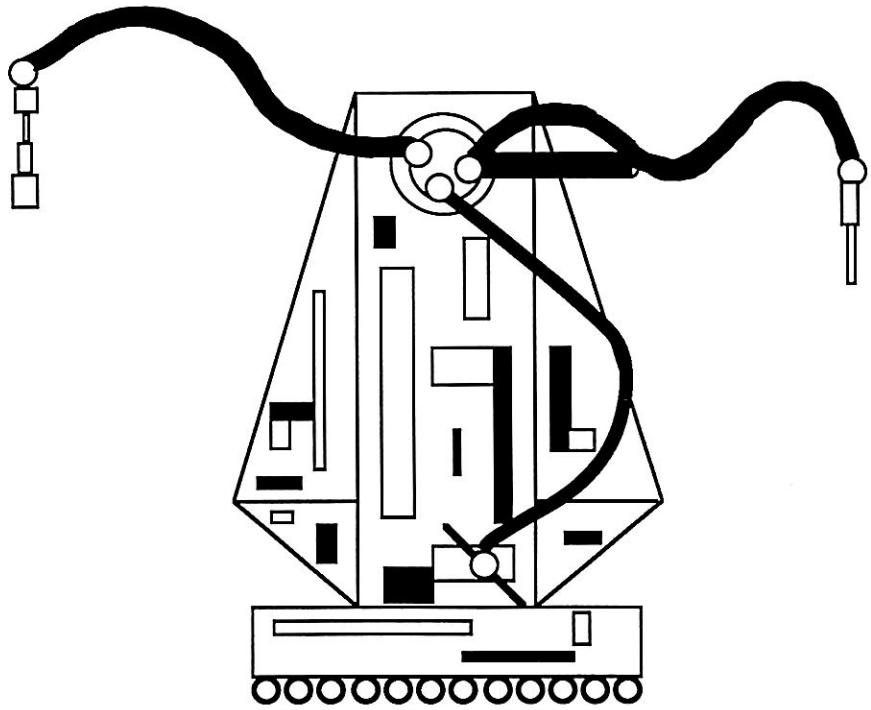
The ambulance medibot, while of the same type as the battle medic, has a much wider programming for diagnosis and treatment. In addition to traumatic wounds, it might be called upon to revive and support a heart attack victim, or assist at a birth, or treat any other emergency medical needs. The ambulance carries a much wider range of medicines and equipment than the "battle stretcher" alone can manage.





93. MEDICAL EXPERT ROBOT (Aslan)
522x3-A6-NM322-MF83 Cr331,600 130kg
Fuel=22.3 Duration=4.7 TL=14
22/55 (mesh)
6 Lt arms
Head (10%)
Basic sensor pkg (ears: +2 extra sen), voder
Medical instrument pkg
Medical-4
Emotion Simulation

The KT-21 is the closest Aslan equivalent to the LSP Robodoc 400, although the KT-21 is not as modern nor as sophisticated. Its six arms can wield a variety of medical instruments at once.



94. LSP MEDROBOT
613xA-06-NM322-LF93 Cr373,300 260kg
Fuel=14.1 Duration=2.4 TL=15
30/75 (mesh)
6 Lt tentacles
3 Eyes (+3 tele, +3 lt inten), 1 ear, voder,
1 olfactory sensor (+1 extra sen), touch sensors (+extra sen)
3 Spotlights (visual spectrum)
Video recorder (2D)
4 Medical instrument pkgs
Medical-4
Emotion Simulation

The Robodoc 400 is a top-of-the-line medical practitioner, manufactured by Ling Standard Products and marketed throughout the Imperium on tech level 15 worlds. The Robodoc's abilities in medicine are impressive, to say the least.

The Robodoc has three eyes, complete with high-powered magnification, light intensifiers, and spotlights. Using its six light tentacles and its medical instrumentation packages, it has the hardware to perform most major operations without assistance.

Its brain and programming give it the computing power to use this hardware to its full effectiveness. The Robodoc's medical skill is equivalent to that of an M.D. with post-graduate work in a field of specialization. (In most Robodocs, this specialization is in surgical techniques, but some Robodocs specialize in alien biology, psychiatry, gerontology, or other fields.)

With its emotion simulation software, the Robodoc is advertised in trade journals as having an "excellent bedside manner", but the Robodoc's boxy appearance detracts from this feature.

95. "LSP" MEDROBOT (Vargr)
614xA-06-00000-LF00 Cr8,900 230kg
Fuel=52 Duration=7.2 TL=15
30/75 (mesh)
6 Lt tentacles
3 Eyes
3 Spotlights (visual spectrum)

At just under Cr375,000, the LSP Robodoc is an expensive appliance, and hospital administrators engage in a variety of practices to cut this cost to a minimum. One way to do this is to form a hospital consortium over an entire world, so that large volume discounts can be had.

Occasionally, though, a budget-weary administrator will try to save money in other ways. Vargr pirates have been known to approach hospitals with "bargain" Robodocs, giving the impression that these LSP-manufactured devices can be had at a special rate because of their origins. (The Vargrs are known to steal them.)

More than one administrator, though, has rued the day that he dealt with these pirates, for pirates they are. As often as not, the robots purchased from them are not stolen Robodocs, but counterfeit Robodocs, barely worth their freight charges. The URP given here is for one of these counterfeits. From the outside, the robot looks identical to the real LSP appliance, but there the similarity ends.

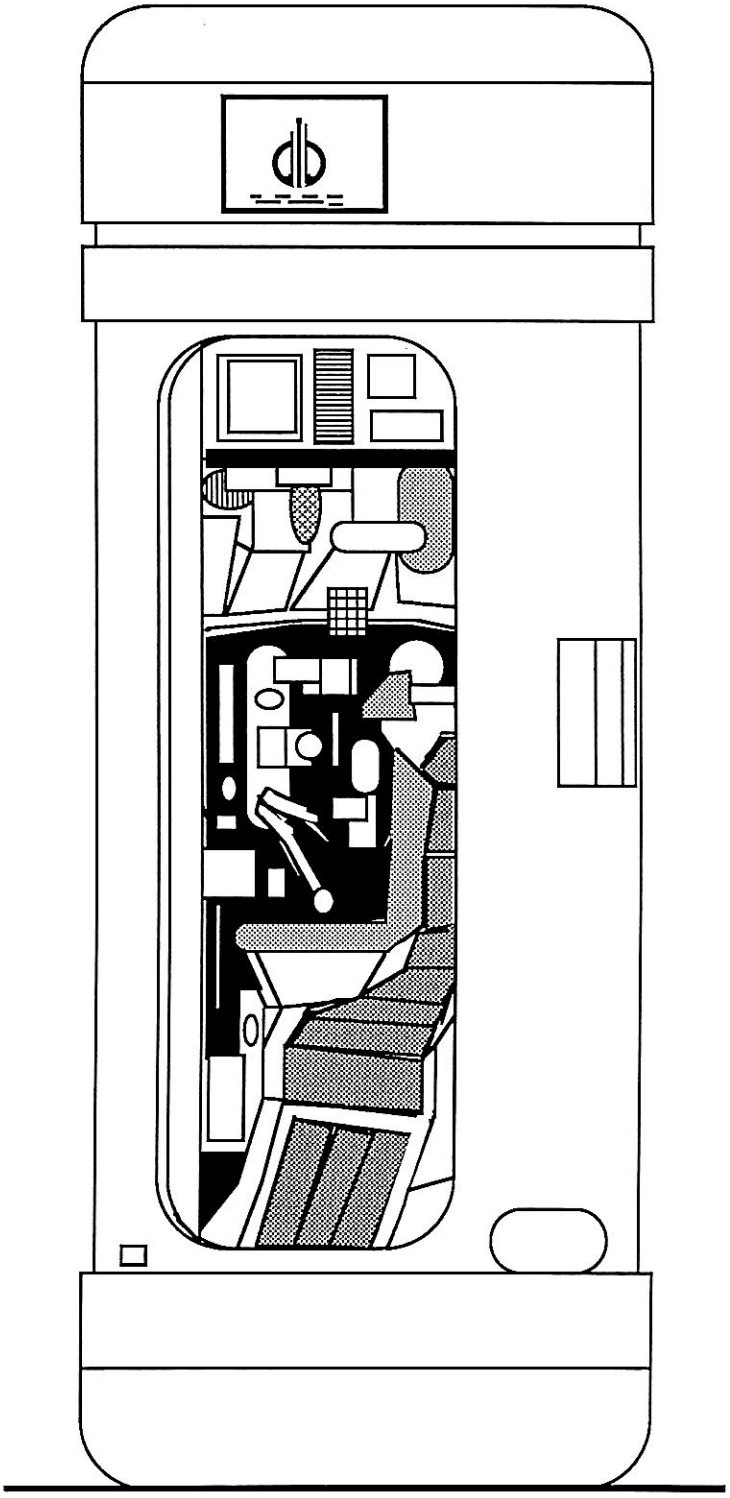
How can purchasing agents be so gullible as to fall for such a trick? First, the Vargr usually do have one genuine Robodoc to demonstrate. Second, administrators are less likely to go to the authorities and admit that they were cheated when they were trying to buy stolen robots.

96. AUTOMATIC MEDICAL BOOTH ROBOT
C22x0-03-MR321-MFAB Cr535,200 380kg
Fuel=403.2 Duration=84 TL=15
400/1000 (mesh)
2 Lt arms (retractable)
1 V lt tentacles(retractable)
3 Eyes (+1 extra sen), voder, touch sensors
Surgical laser, 4 spotlights, 2 microspotlights, financial pkg
Medical instrument pkg
Medical-4

Throughout the Coreward sectors of the Imperium, the LSP Medibooth can be found in almost any major city. Vland Medical Specialties purchased these bots and continues to service them with enormous financial success.

The booths can give complete physical examinations, diagnose any illness found in textbooks, conduct tests and refer patients to specialists if needed. Office hours are twenty-four hours a day, (or however long a particular planet's day lasts). A visit usually costs Cr15-20, and the booth can handle most injuries not requiring surgery. It will also dispense medications, nutritional supplements, and advice while keeping confidential records of its patients' ills.

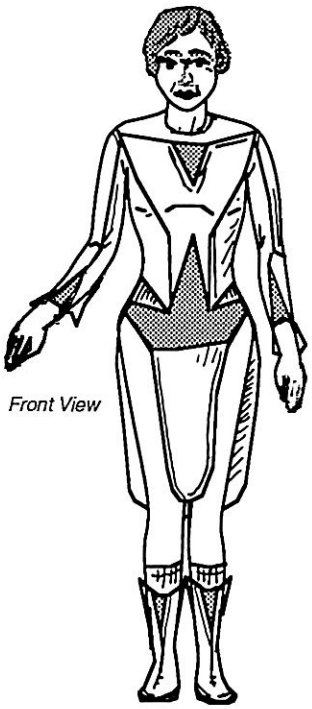
It has been noted that persons injured in fights they shouldn't have been in often prefer medibooth treatment because of its impersonality, but the most commonly voiced complaint is the booth's rotten bedside manner. No one has ever won a malpractice suit against a booth, but Vland Medical Specialties carries plenty of insurance just in case.



Front View

Pseudobiological Robots

Pseudobiological robots are still expensive and rare, but they hold a fascination for most sentient races. The creation of "living", thinking beings is a goal that man particularly has sought since his earliest days, as evidenced by Terran, Vilani, and Zhodani myths thousands of years old.



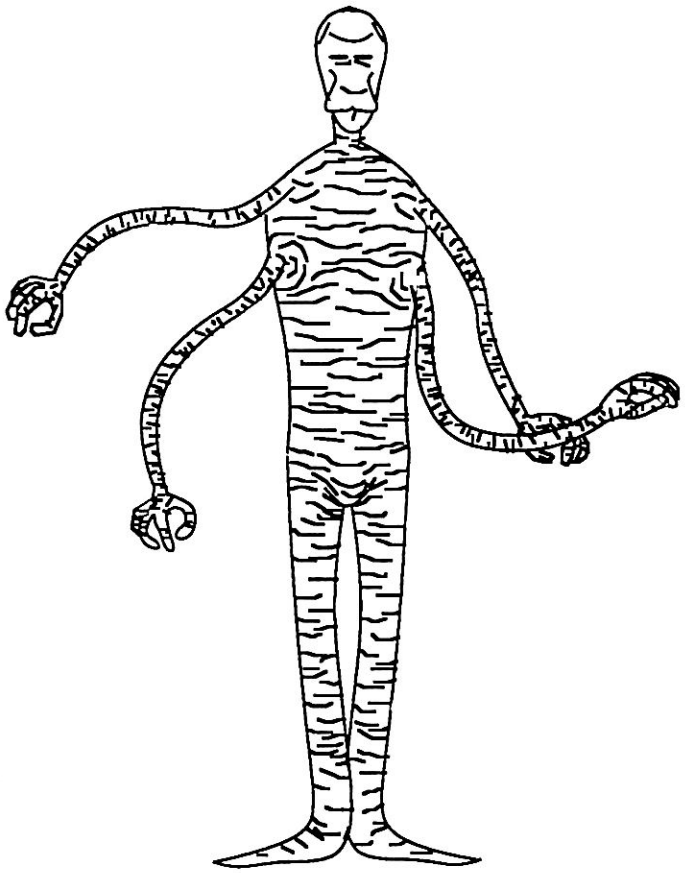
97. ADMINISTRATOR ROBOT (Aslan)
562x2-A2-NP323-NA85 Cr2,579,600 230kg
Fuel=36.5 Duration=7.6 TL=14
20/50 (jack)
2 Med arms
Head (10%)
2 Eyes (+2 extra sen), voder, 2 ears (+1 extra sen), touch sensors
Administration-4, Legal-3
Emotion Simulation

The most recent effort in Aslan robot manufacture is this experimental pseudo-biological administrator. She is not quite good enough to fool the Aslan she deals with, but they feel much more comfortable taking orders from her than from the fixed adminbot most widely used. Areas that still need the most work are the appearance of the eyes and their movement, muscle contours, and skin and fur texture. Emotion simulation programming remains a little stilted, but this is less of a give-away for the businesslike females than for impulsive Aslan males.

98. GOVERNESS ROBOT
561x2-A2-MP324-FD95 Cr2,523,200 190kg
Fuel=64.7 Duration=18.0 TL=15
22/55 (jack)
2 Lt arms
Head (10%)
2 Eyes, 2 ears, voder, 1 olfactory sensor, touch sensors
Medical-1, Instruction-1, Entertainment-1
Emotion Simulation

The governess robot is designed to raise children up to the age of 7 or 8. Its knowledge of the world is broad rather than deep in order to satisfy a child's questions. Once the child can use a library computer, the governess will direct him to look up answers for himself whenever possible. The pseudobiological softness of a governess answers the child's need for cuddling, but the robotic programming allows for absolutely consistent discipline.

This robot can handle children's games, minor first aid, and some cooking, all with equal ease.



99. SABMIQYS ROBOT
664x2-A4-PQ522-MFE7(P) Cr38,356,000 840kg
Fuel=155.225 Duration=21.56 TL=17
50/122 (mesh)
4 Med tentacles
Head (10%)
2 Eyes (+2 pass IR), 2 ears, voder, 2 olfactory sensors, touch sensors (+extra sen), taste sensor
2 Power interfaces, brain interface
TL17 holo recorder (3D)
Electronic circuit protection
Admin-4
Emotion Simulation

These pseudo-biological robots call themselves the "Egya Ks", and refer to their long dead creators as the "Gya Ks". The exact meaning is uncertain, but it is believed the robots name for themselves translates roughly as "the sons of Gya Ks." The disaster on Sabmiqys occurred around -8000, roughly 1000 years after the Vilani discovered jump drive.

The Gya Ks had sent out only one sub-light ship to a nearby star system 1 parsec distant, so their space travel technology was far behind their computer/robotics technology.

Imperial Scout researchers have been able to piece together the tragic events that caused the total demise of all the inhabitants on Sabmiqys. It appears that the sublight ship returned on robot auto pilot, all its passengers dead from an unknown cause. Once the Gya Ks were able to determine the cause for the mysterious deaths, it was too late, for they too were infected with the deadly virus harbored on that ship.

The toxic effect of the virus was nearly symptomless until the very end. Medical scientists frantically looked for a cure—global panic struck overnight as millions that were fine one day were dead the next for no apparent reason. The very fabric of Gya Ks society unravelled overnight—bedlam and anarchy prevented the coordination of effort that might otherwise have led to a cure.

The study of the mysterious ship had lasted for 6 months—the incubation period of the virus. Once the deaths started, from beginning to end, it was all over in less than 10 days.

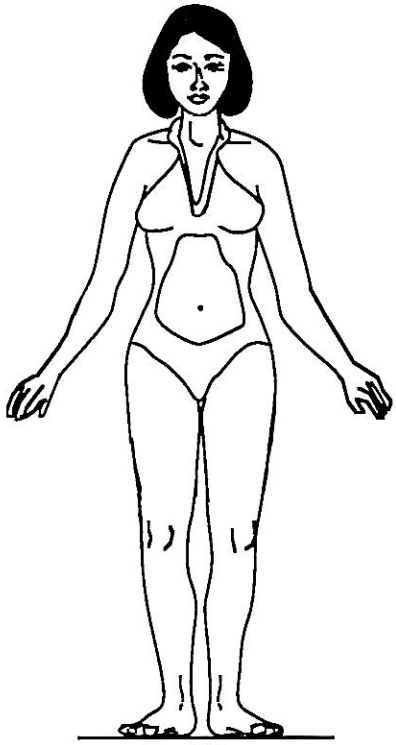
The million or so robots left on the world concluded that space travel is of little or no value, and thus have never put any effort into pursuing interstellar exploration.

The parent race, the Gya Ks, are descended from omnivore/gatherer stock, and were tall, about 2.5m in height, and massed about 100kg. Thin and lithe, with a bumpy, thick, spongy grey hide and no body hair, they had two legs, four tentacle arms with four finger manipulators, and a head with two eyes, four nostril slits, and a wide mouth with over 100 teeth.

The robots that populate the world vary from the highly intelligent pseudo-bios shown here to dumbot servants. The bulk of the intelligent robots are of contoured configuration, resembling the Gya Ks.

The Imperium is divided over the question of whether or not the Sabmiqys robots should even be considered "sentient." Prevailing opinion is that the Sabmiqys robots are not sentient—they simply are not biological beings, but artificial imitations, even if they are fairly intelligent.

The Scouts have interdicted Sabmiqys (Antares 2117).



Front View

TELKU

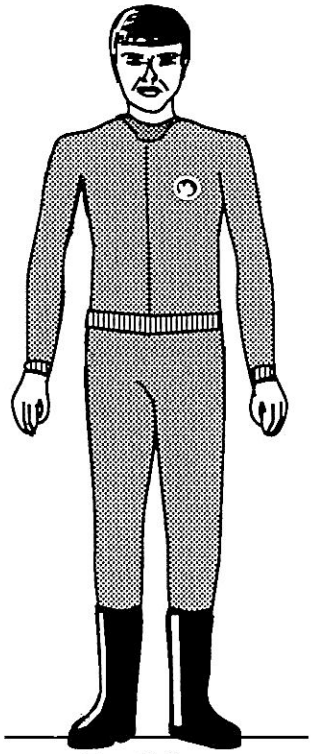
Telku 460x2-L2-MM222-ED73 Cr1,555,440 130kg
Fuel=49.1 Duration=20.5 TL=15
16/40 (Jack)
Head(10%)
2 Lt arms
2 Eyes, 2 ears, voder, touch sensors
Gambling-2
Emotion Simulation

The Shinku University Research Directorate received the Shudusham Conference Medal of Merit for its work on Telku, the first convincing "human" pseudo-biological robot. Telku astonished the robotics community with her small size (the robot is only 1.53 meters in height) and her grace—in almost all her motions she appears entirely human. She spent the year of the conference primarily engaged in two activities: dancing and playing cards. (And for this she was awarded a medal?)

In fact, that these two functions could be performed at all was testimony to several astonishing breakthroughs by the SURD team. Dancing demonstrated the full range of Telku's pseudo-biological nature, illustrating her dexterity range of "human" movement in a way that no other activity could.

Long lines of distinguished roboticists formed to play cards with Telku. With her gambling skill, emotion simulation software, and full range of facial expression, she was an enjoyable albeit formidable opponent. Scientists were delighted whether they won or lost.

Despite the success of Telku and subsequent pseudo-biological robots, such robots are rarely marketed commercially today. Research models are constructed by a number of firms and university consortia.



Front View

AB-101

AB-101,valet 561x2-A2-PM327-FDC3(J) Cr11,970,600 319kg
Fuel=78.1 Duration=21.7 TL=15
20/50 (Jack)
Head(10%)
2 Lt arms
2 Eyes (+1 light intensify), 2 ears, voder, touch sensors
Power interface, brain interface, TL15 holo recorder
Lt laser welder
Medical—1
Linguistics—1
Vehicle—1
Valet—1
Laser welder—1
Rescue—1
Emotion Simulation

AB-101 is an experimental pseudobiological robotconstructed in 1090 by the well-known roboticist Dr. Theodor Krenstein of the Rhylanor Institute of Technology in the Spinward Marches. Dr. Krenstein calls "Aybee" his "grand experiment in robotic learning".

Dr. Krenstein and Aybee attended the Shudusham Robotics Conference in 1104, where Aybee made quite a stir. While Aybee was not the first convincing pseudobiological robot to attend the Conference (the robot Telku holds that distinction), Aybee exhibited some impressive innovations in robot brain design using heavy synaptic processing.

101 Robots

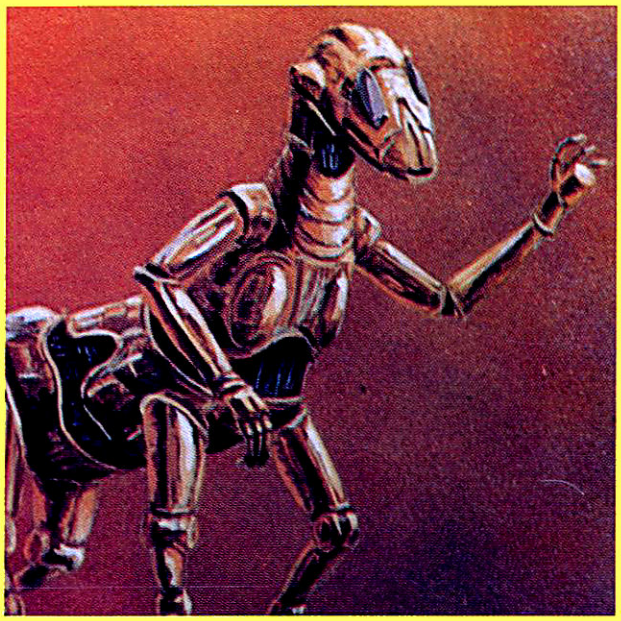
Now . . . from the authors of *Book 8: Robots*

Here under one cover are 101 different robots for use in Traveller games. Every single robot comes with a complete description, an official Universal Robot Profile, and an illustration. You will know what each robot can (and can't) do, what the robot looks like, and what the robot costs.

If you're just starting to design your own robots, this book has more than a hundred examples. If you already have several designs of your own, here are 101 more to add to your campaign.

Whether you're a Traveller player or a referee, *101 Robots* gives you all the robots you need to know what life is like at higher tech levels. Robots include—

- **Imperial Robots:** Designs both common and uncommon that characters can encounter within the Imperium.
- **Alien Robots:** Robots from all the major races that construct them: Aslan, Zhodani, Vargr, K'Kree, Solomani, and Hiver.
- **Warbots:** Battlefield robots of all races, designed to search out and destroy the opposition.
- **Dumbots:** The most common robot encountered, good at only one thing, but good enough at that.
- **Pseudobiological Robots:** At higher tech levels, robots that are "just like the real things".
- **Expert Robots:** Machines that know as much as sentients, able to perform tasks that take "real intelligence".
- **Design System Examples:** Robots that show just how to use the robot design system in *Book 8: Robots.*



- **Encounter Robots:** Robots corresponding to all of the robots from the encounter tables in *Book 8,* for easy-to-play robot encounters.
- **Robot Devices, Sensors, and Weapons:** Brand new custom devices for use with robots, including complete information on their installation.
- **Robot Skills:** Additional skills for robot programming, complete with CPU space and cost per level.
- **Index:** A complete index to all 101 robots.

For Use With *Traveller*

This module is intended for use with ***Traveller.*** It requires that you have a copy of the ***Traveller*** rules, paper, and pencil.

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