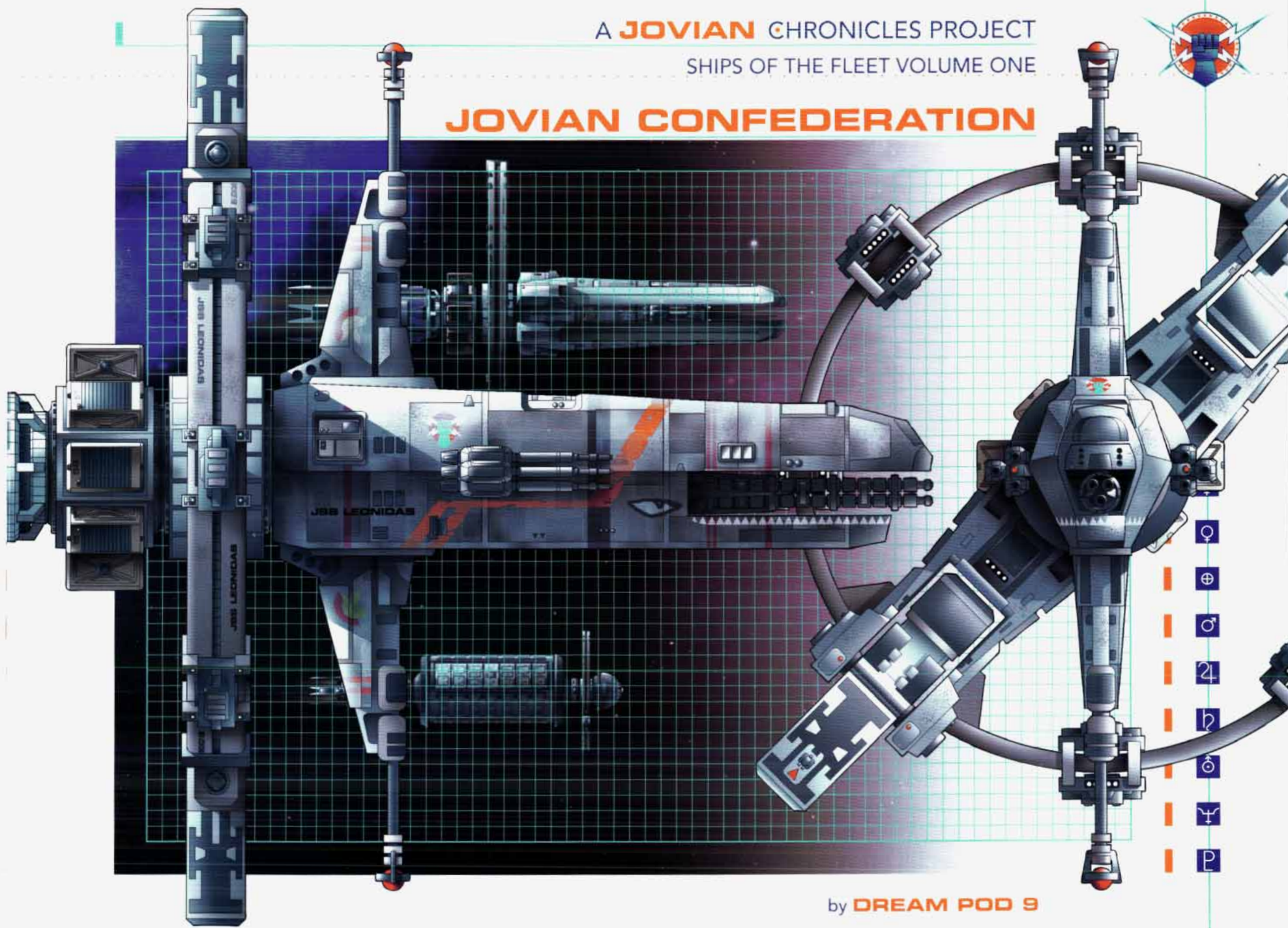


A **JOVIAN** CHRONICLES PROJECT

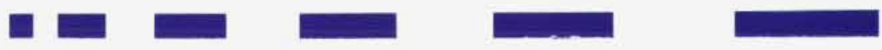
SHIPS OF THE FLEET VOLUME ONE



JOVIAN CONFEDERATION



by **DREAM POD 9**





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SHIPS OF THE FLEET VOLUME ONE

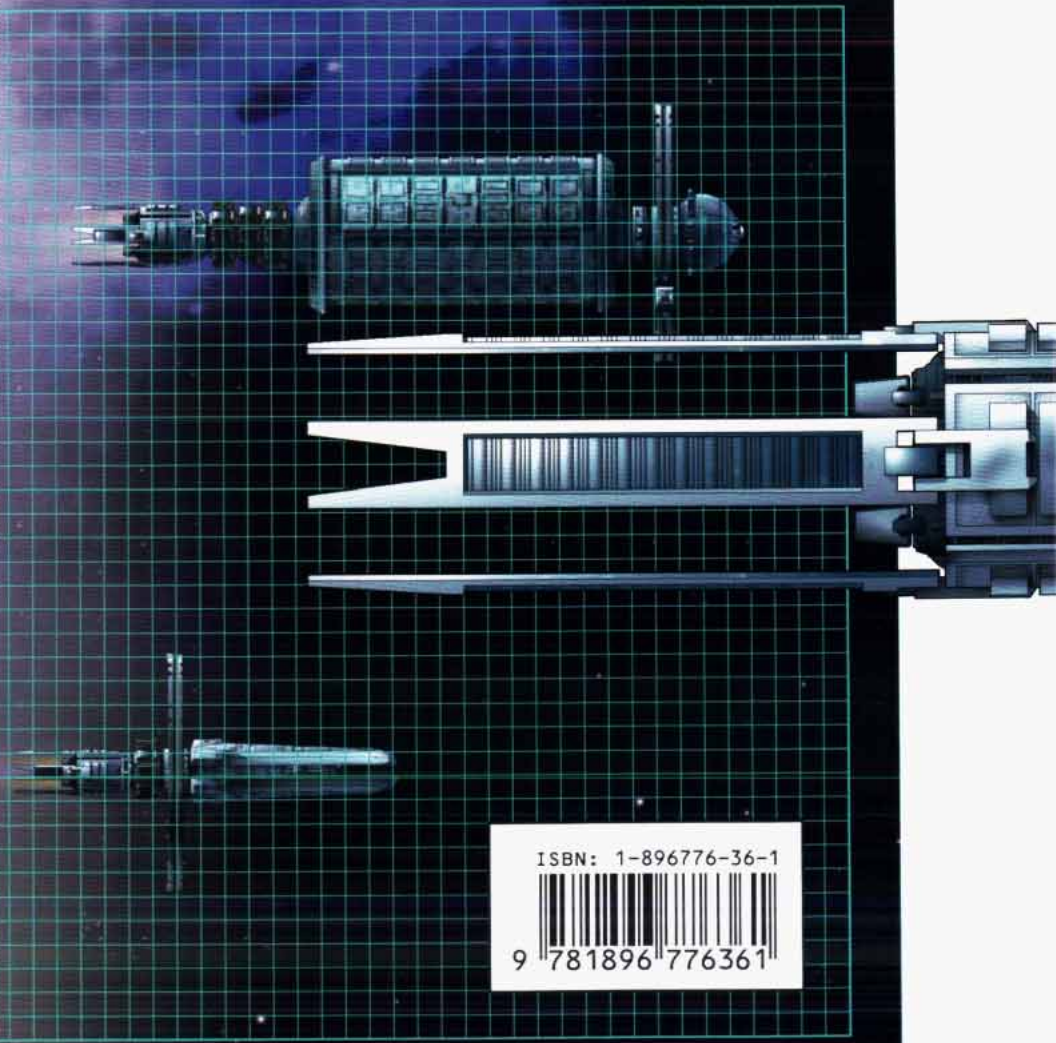
JOVIAN CONFEDERATION

Ships of the Jovian Confederation™ is a **Silhouette™** sourcebook for Dream Pod 9's exciting **Jovian Chronicles™** science fiction game. This manual covers three common warships of the Jovian Armed Forces (a destroyer, a patrol carrier and a supply tender) with precise and detailed texts, backed by extensive illustrations and schematics.

Each ship is thoroughly detailed with full deck plans and layout diagrams. All main locations, such as the bridge, habitation modules, hangars, cargo bays and engineering room are described from both a roleplaying and technical standpoint. In-character texts and comprehensive listing show the crew and its daily tasks, taking the reader onboard the vessels as they defend the territory of the Confederation.

Within these covers you will find:

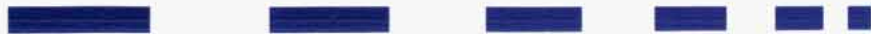
- Extensive information and game statistics for the Jovian Alexander-class destroyer, Forge-class patrol carrier and Gagarin-class fleet tender;
- Complete ship schematics, including deck plans and internal layout;
- Maintenance schedules, repair times and emergency procedures for all important systems;
- Tactical combat tips, including Jovian ship tactics.



Printed in Canada

by **DREAM POD 9** www.dp9.com

DP9-306



★ **JOVIAN**
CHRONICLES

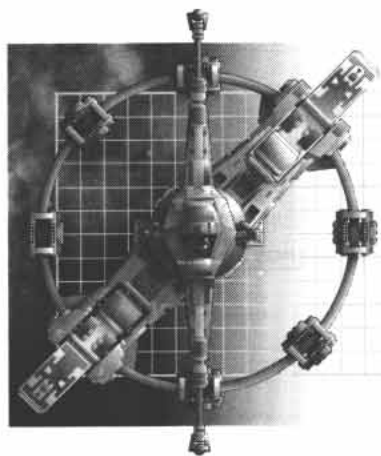




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INTRODUCTION



► 1.1 SHIPS OF THE JOVIAN CONFEDERATION

The Jovian Confederation, being a space-based nation, relies extensively on its fleets to enforce its sovereignty and to protect its people. With the numerous battles and incidents that have littered the late 2200s and the early 2210s, the fleet has been given additional importance by the Jovian government, with a corresponding increase in ship building and refitting.

This manual intends to cover the main operating procedures employed by the Jovian Confederation's space navy, both in the field and within its own structure. The book will also take a look at some of the ships that make it all possible. The following pages contain extended information for three significant Jovian Armed Forces vessels. Individually, they are smaller than the Godfire-class battleships and less awe-inspiring than the Valiant-class strike carrier, but they are constantly in use, in war and in peace, backing up the Jovian might projected by the larger vessels.

The three ships described here are the Alexander-class destroyer, Forge-class patrol carrier and Yuri-Gagarin class fleet tender. Each chapter includes partial floor plans, details of the specialized systems, interviews with crew members and a brief history of the vessels that make up that class.

Following the individual ship descriptions, the Operations chapter details the common engineering systems, traditions and procedures used by the Jovian Armed Forces. For tactical gamers, there are descriptions of the standard Jovian fleet tactics. Game play information, such as character archetypes, additional rules and new equipment, will be useful regardless of which vessel(s) may be featured in a campaign.



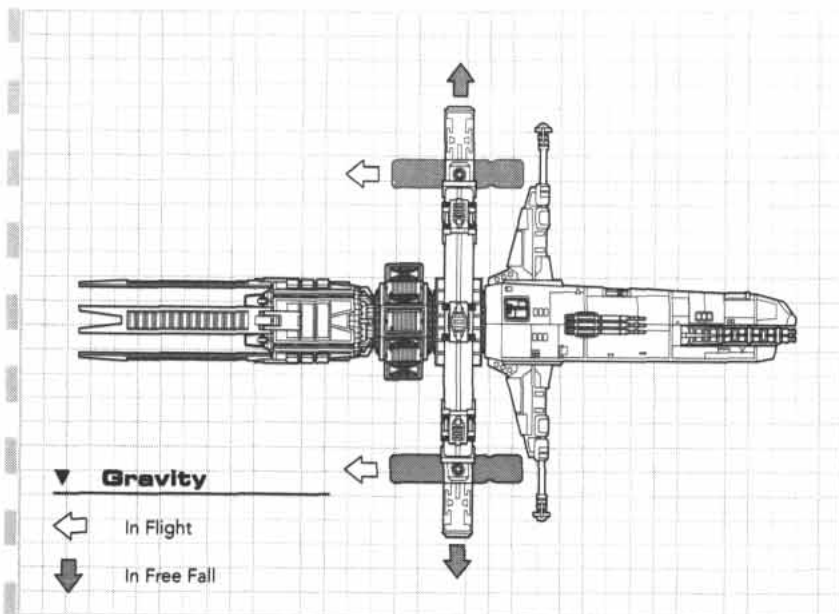
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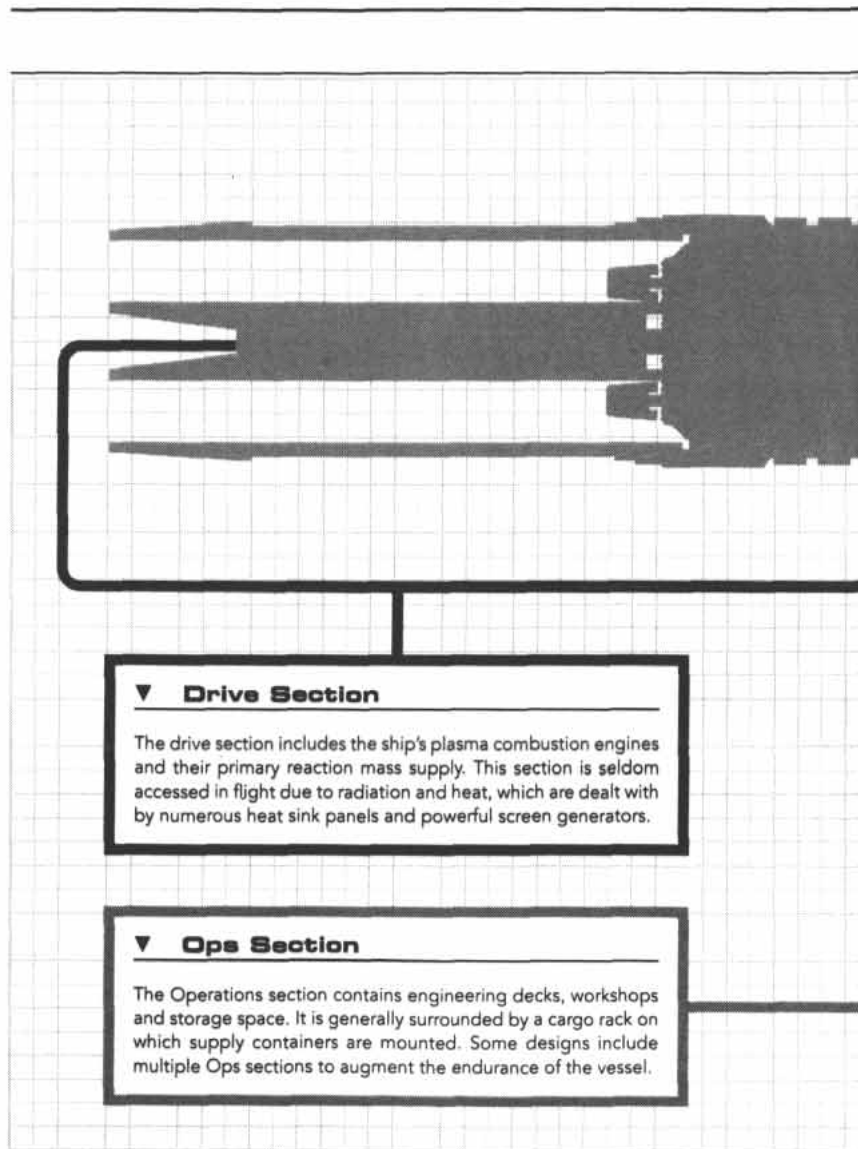
INTRODUCTION



► 1.2 ANATOMY OF A SPACE SHIP

A space ship is much more than just a means to get from one point to another in the solar system. It is also an independent, self-sustaining environment where human beings can live protected from the harsh conditions of space. Much of the internal space of the vessels is in fact dedicated to the above, with very little — relative to the overall size of the hull — space left over for crew quarters. For all their gigantic size, modern space ships are, in fact, quite light.

Space ship designs are based around a set of modules (commonly referred to as "sections") that have a self-contained life support environment. Each section fulfills a specific task, be it propulsion, combat, housing, etc. Most designs include explosive bolts in the structure to separate sections that pose a threat to the rest of the vessel.



▼ Drive Section

The drive section includes the ship's plasma combustion engines and their primary reaction mass supply. This section is seldom accessed in flight due to radiation and heat, which are dealt with by numerous heat sink panels and powerful screen generators.

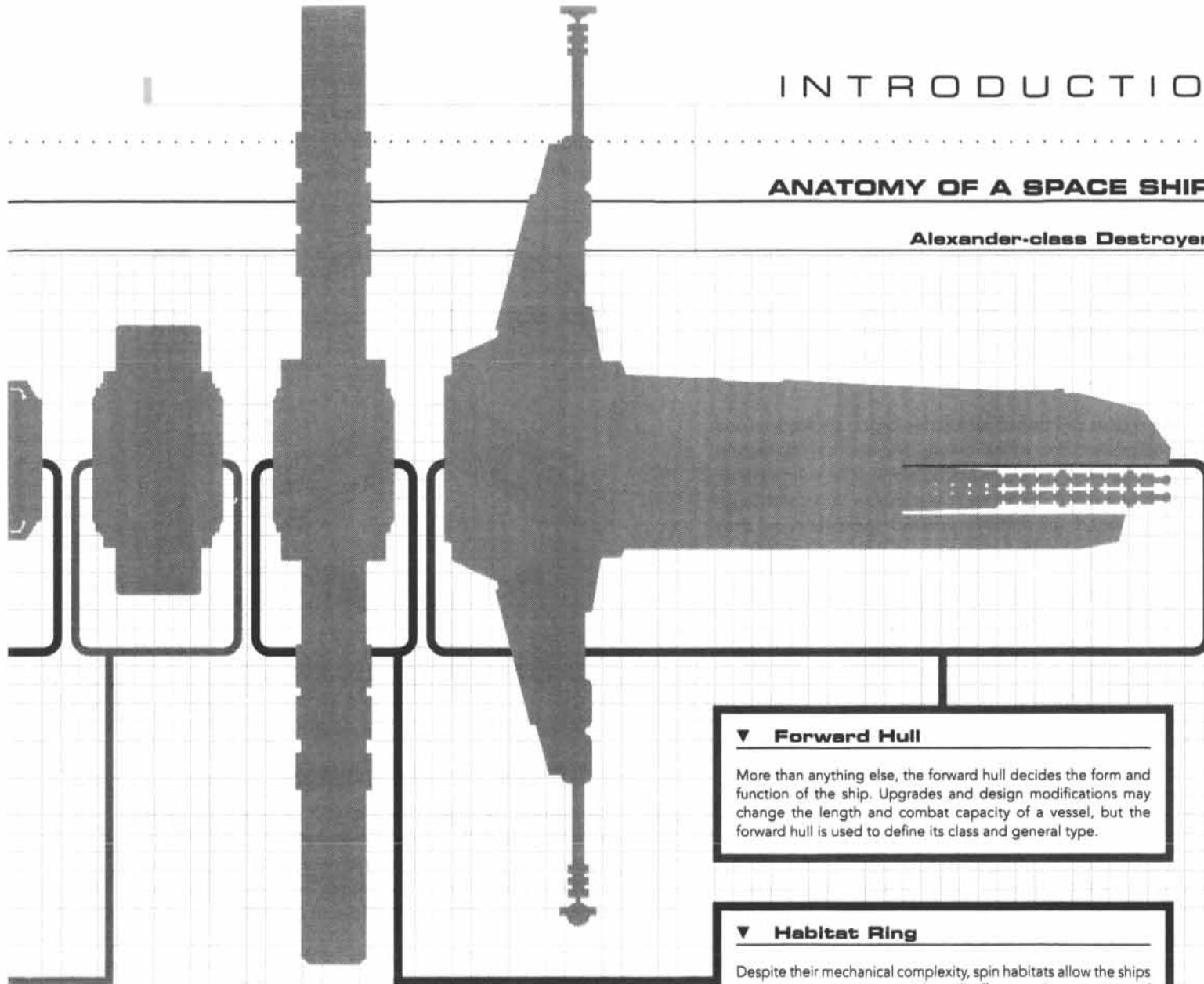
▼ Ops Section

The Operations section contains engineering decks, workshops and storage space. It is generally surrounded by a cargo rack on which supply containers are mounted. Some designs include multiple Ops sections to augment the endurance of the vessel.

INTRODUCTION

ANATOMY OF A SPACE SHIP ◀

Alexander-class Destroyer ①



▼ Forward Hull

More than anything else, the forward hull decides the form and function of the ship. Upgrades and design modifications may change the length and combat capacity of a vessel, but the forward hull is used to define its class and general type.

▼ Habitat Ring

Despite their mechanical complexity, spin habitats allow the ships to remain in space longer without ill-effects on the crew. Most of the current habitat designs also incorporate a structural ring that is used to carry additional cargos such as auxiliary fuel tanks.

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INTRODUCTION



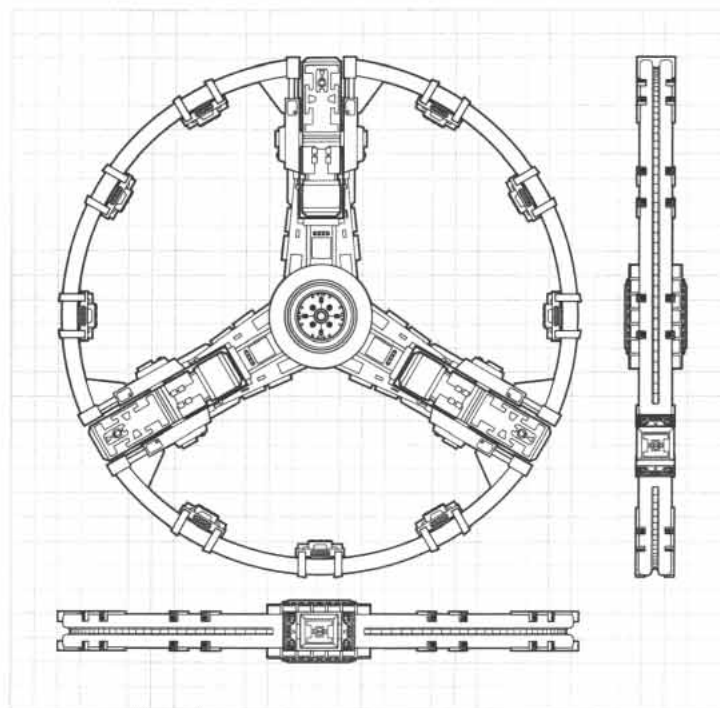
► 1.2 SHIP MODULES

A ship needs many systems in order to function. In order to save both time and money, and to facilitate emergency repairs in deep space, Jovian engineers have always tended to use standardized systems on as many ships as possible. These modules, though not entirely self-contained, could then be readily adapted to fit a wide number of ship classes and types, making design, repairs and maintenance much easier.

Almost all modules can trace their technological ancestry to one or more design elements of the twenty-first and twenty-second centuries spacecraft that were used to colonize the solar system. Some relatively low-tech parts, such as pressure tanks and cargo racks, have changed very little in outward appearance — they have merely become lighter and thinner, but no less strong.

At the end of the twenty-second century, a JAF General called Byron MacLeod presented an innovative proposal to the Jovian high command: a fleet of vessels based on standardized, mass-produced modules that could be readily replaced for repairs and upgrades. Current ship hulls could even be retrofitted to use the new modules. Despite some resistance from older officers who felt that each ship was an individual, MacLeod's successors (he had retired in the interim) received the go-ahead to start an ambitious program of modernization of the Jovian fleet that is still going on today. In fact, the repairs that follow the battle of Mars in the Summer of 2213 will likely accelerate the process.

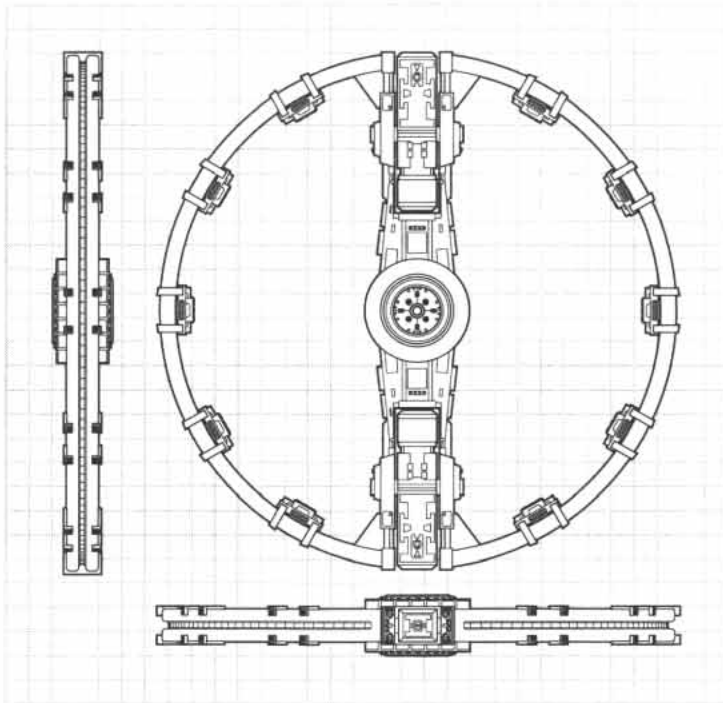
The following texts detail some of the most common modules currently in use with the ships presented in this book. All were designed for the multi-role ship design program of the JAF — also known as the MacLeod Modular Ship System. Since they are more or less self-contained, both in terms of hardware and game stats, they can be easily used to upgrade or modify designs by fitting them to existing ship hulls and recalculating performances. The game statistics for each part is given in the respective ship's sheet, as noted in the description of the following pages.



▼ 1.2.1 Tender-type Centrifuges

Tenders tend to have a large crew, and so a larger centrifuge is required to house them all. Jovian engineers started with a design that was already in use on the carrier and reinforced it to accept a third habitat module. All three are entirely enclosed within the diameter of the structural ring for additional protection.

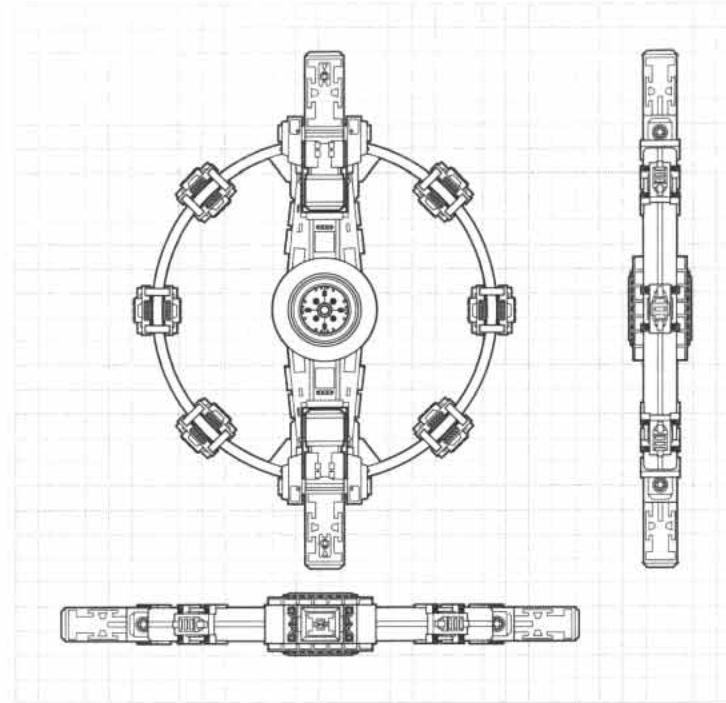
Due to space constraints, the number of ring hardpoints was dropped to nine. Since the ring was reinforced to take the three habitats into account, however, each hardpoint can hold slightly more mass than before. The narrow passageway is still present in the ring to access the carried cargo, though it's even more crowded than before. Stats for this item are found on page 86.



▼ 1.2.2 Carrier-type Centrifuges

This type of centrifuge has a larger structural ring that carries its modular hardpoints on the inside for additional protection. Because the ring extends further out, the two habitat modules are entirely enclosed within its diameter and are thus less susceptible to physical damage, such as collisions.

The ring has a series of ten hardpoints, each capable of holding nearly one-tenth the weight of the total structure. The hardpoints can accept a large variety of payload pallets, anything from a standardized cargo pod to an exo-armor. A narrow passageway runs through the ring and may be crawled through to access this payload in flight. Stats for this item are found on page 62.



▼ 1.2.3 Destroyer-type Centrifuge

The centrifuge mounted on Alexander-class destroyers and a few other ships in the Jovian fleet is a sturdy design that has continuously evolved over the past ten years. The current configuration is made up of four main structures: the spine module, the structural ring and the two habitats.

The spine module is so called because of its central position on the ship's axis. In addition to the load-bearing structure and power feeds required by its position, it houses the gyroscopic assembly that balances the rotation of the habitats. Transport tubes and accessways span its entire length, connecting the ship as a whole. Stats for this item are found on page 38.





INTRODUCTION



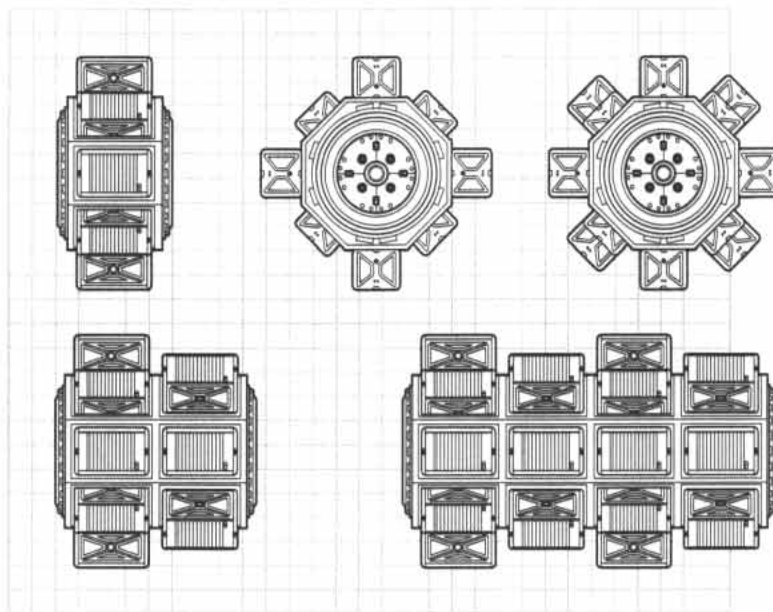
▶ 1.3 CARGO RACK

All spaceships require extensive stores if they are to venture far from their home base. This includes — but is not limited to — water, food, spare parts, extra reaction mass, and many more miscellaneous items. It would be somewhat wasteful to store all of this cargo within the body of the ship itself, since this would increase its size, which in turn would increase the hull surface that needs to be protected, and so on. Rather, a large part of the ship's reserves are carried within cargo pods that are attached to hull hardpoints. These hardpoints are grouped into cargo racks which are part of the ship's main load-bearing structure.

The payload is usually stored in standardized modular blocks that are easily attached to the hardpoints. Modules are available in a variety of lengths, widths and heights, though multiples of five or ten meters are preferred for easier accounting. Some are equipped with radiation screens and complete life support systems, while others are just empty thin sheet metal boxes that have no purpose other than holding the transported goods together while protecting them from micrometeors.

As a rule, cargo modules are equipped with a standard personnel airlock and power feeds that fit the ones placed on the ship itself. This allows quartermasters to enter the module while in flight to either evaluate its contents, remove some needed cargo or re-balance the load. Obviously, "shell" modules and tanker modules (cluster of tanks for gas or liquids) do not require airlocks and are not equipped with them, though they include walkways and handholds to permit inspection by a suited crew.

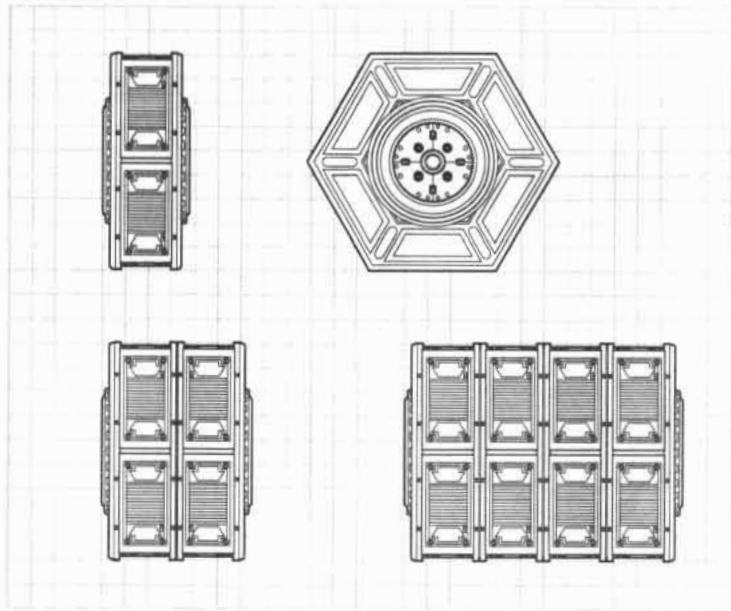
Game-wise, cargo containers are designed as separate sections, each composed of a fairly large cargo bay and other assorted systems. The game stats of the standardized JAF cargo container are found on page 38. A number of civilian cargo pods, which are sometimes used on military vessels, can be found on page 201 of the JC Rulebook or on 112 and 118 of the Mechanical Catalog.



▼ 1.3.1 JAF2212 Cargo Rack

The most recent type of cargo rack developed for the Jovian navy, the Model 2212 has been designed to be fitted singly or in number around the Ops section of the MacLeod-system space ships. Each rack is composed of eight rectangular sockets equipped with a small airlock and a pair of power feeds. A removable panel on one side of the airlock will accept any fluid transfer hose but has been built around the standard 20-cm and 25-cm F20 series hose which is found aboard all JAF vessels.

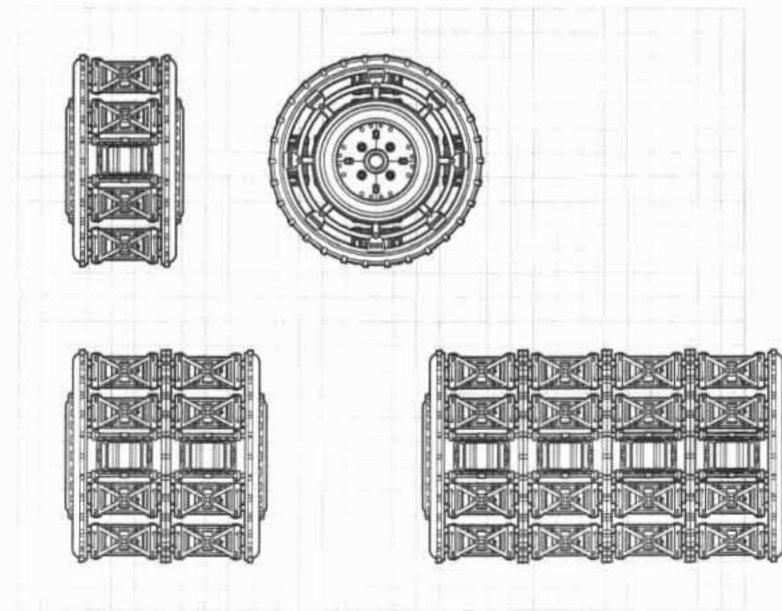
The 2212 was developed in reaction to the shortcomings of the previous Model 2207 rack. The 2212 can accept not only the newly standardized JAF supply containers but any civilian module that fits its sockets. A special adaptor — manufactured by Darwood Industries, a prime Jovian ship subcontractor — allows larger containers to be hooked up to the rack, enhancing its versatility.



▼ 1.3.2 JAF2207 Cargo Rack

The Model 2207 rack is a bit older but is still found on many ships, especially second-line transports. Most quartermasters dislike it because of the trapezoidal shape of its cargo modules. Though they have slightly more internal volume than the cargo pods usually in service with the JAF, their shape makes it awkward to fit large items inside. Moreover, the interlocking design allows only six modules per level (though multiple levels can be stacked), reducing the flexibility of the rack.

The 2207 standard cargo container comes in two types, one with a pressurized cargo hold and the other with an open framework holding pressure tanks. Nataru Machinery Co. originally shipped them with interlocking armor plates that would fit both containers. The plates were too heavy, however, and they interfered with the handling operations, so most were removed by technicians.



▼ 1.3.3 JAF2197 Cargo Rack

The oldest type of cargo rack still in service is the Model 2197, which was in wide use during the early years of the twenty-third century. The rack's inherent simplicity — it is little more than an open frame onto which the cargo containers are hung — has ensured its longevity. Simple does not mean unsophisticated, however, and the Model 2197 is equipped with the same power feeds and data ports as the more recent racks in service thanks to regular upgrades.

Due to its construction, the 2197 rack has no provision for direct airlock connections. If need be, an inflatable tunnel can be set up between the emergency airlock and the one on a container, but there is rarely a reason for this to be done.



INTRODUCTION



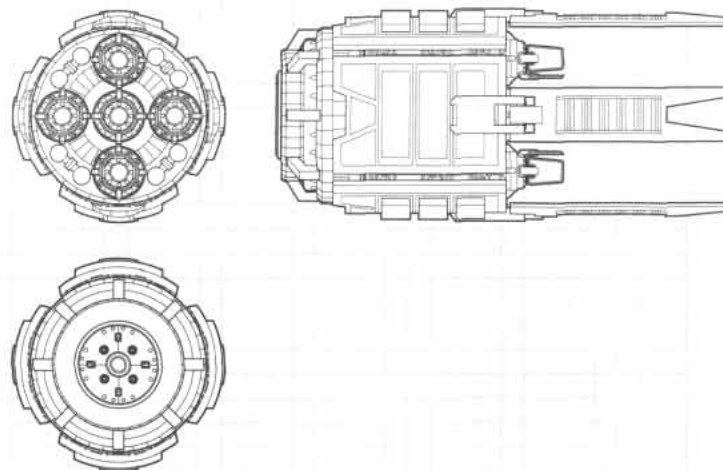
▶ 1.4 DRIVE SECTION

All plasma-driven ships share a similar architecture on their aft hull: form simply follows function. The drive section is made up of one or more drive sections, which contain the primary reaction mass tank, main fusion core, exhaust coils and exhaust collimator plates. Most of the designs in service add an electromagnetic feedback generator around the exhaust, drawing on the electrically-charged plasma to produce abundant amounts of energy.

All the drive sections are held together in a cluster by an engine mount. Though properly part of a ship's main hull, the engine mount has been designed as a mostly self-contained module for security and safety reasons. It contains the primary drive screen generator, the emergency flush tanks and the main reaction mass reserves for the plasma combustion chamber drives. All drive sections are attached to it by explosive bolts and can be forcibly jettisoned in case of danger.

Though drives have traditionally been armored separately, a new trend in Jovian ship design now adds armor panels around the main drive cluster. There are light plates of foamed composites clad in resilient alloy, designed to bear the brunt of an enemy attack before the destructive energy can reach the engines themselves. The armor panels can be attached to any military engine mount.

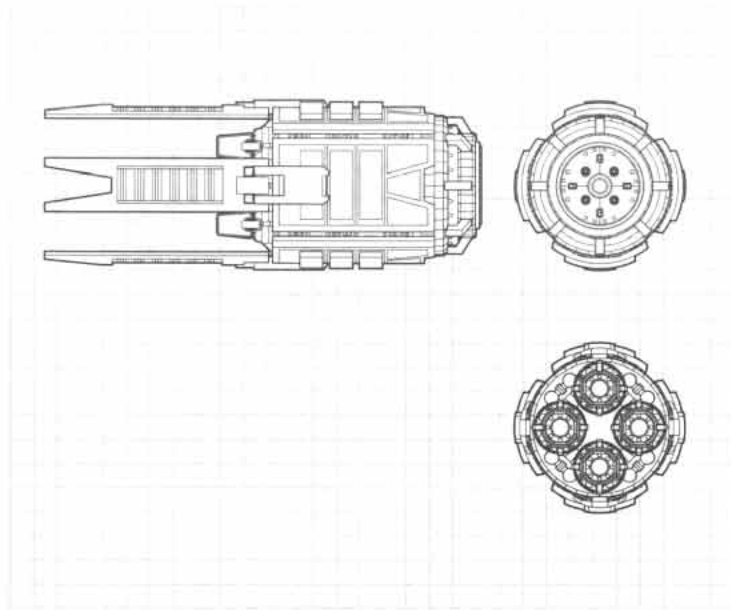
Each armor panel bears a large drive fin which serves as a very efficient heat sink when deployed. Moveable slats, similar in design to the ones used to cool down the foundations of the Venusian arcologies, are aligned over the top section of the fin. In recent years, these large "drive fins" have become more and more common, replacing the usual built-in radiator panels. The fins are, paradoxically, both more and less vulnerable than the ribbed structure of late twenty-second century plasma drive systems. Indeed, they are more exposed, but can also be more easily replaced.



▼ 1.4.1 Tender Engine Cluster

The "tender style" is actually a misnomer for the larger of the two engine mounts developed for the MacLeod program. Functionally similar to the smaller military quad-mount, this five-socket engine mount, mostly used by tender-class ships, carries additional reaction mass within an extended core housing. Though it has five sockets, the engine mount can be and has been used on ship designs with only one or three engine sections.

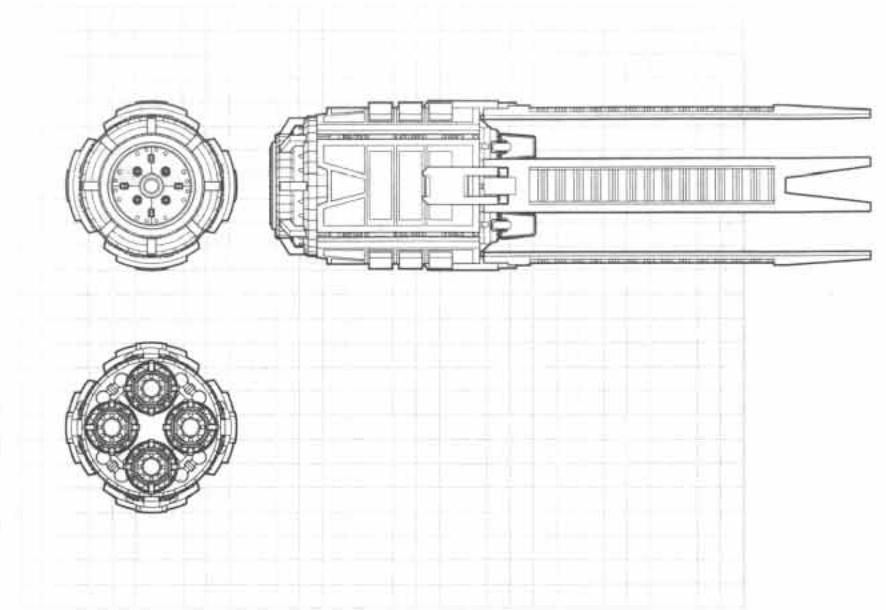
The large diameter of the engine mount precludes the use of the standard armor plates, and they are thus either omitted completely or replaced by larger versions designed especially for it. The latter accept any of the standard drive fins, but these can also be mounted directly on the cluster with a special adapter. The five-engine drive mount is manufactured exclusively by InSys Shipyards near Olympus and Nova Systems Inc. in Newhome.



▼ 1.4.2 Quadruple Military Engine Cluster

This type of engine cluster is found on many current vessels, most of them belonging to the Alexander or Forge classes. Like the five-engine mount shown at left, this quad-mount has been developed by the MacLeod program to fit a series of ships, either new hulls or refurbished ones. In addition to the drives themselves, which can number either two or four, the cluster contains its own drive screen generator and primary reaction mass reserves. Though the main mount is solidly bolted onto the hull, the drives themselves can be jettisoned in emergency situations.

The cluster shown above is equipped with a shorter version of the standard drive fins manufactured by Lockwell, a well-established Jovian ship subcontractor. In addition to the drive fins, Lockwell is responsible for many of the drive's internal systems, notably the exhaust collimators.



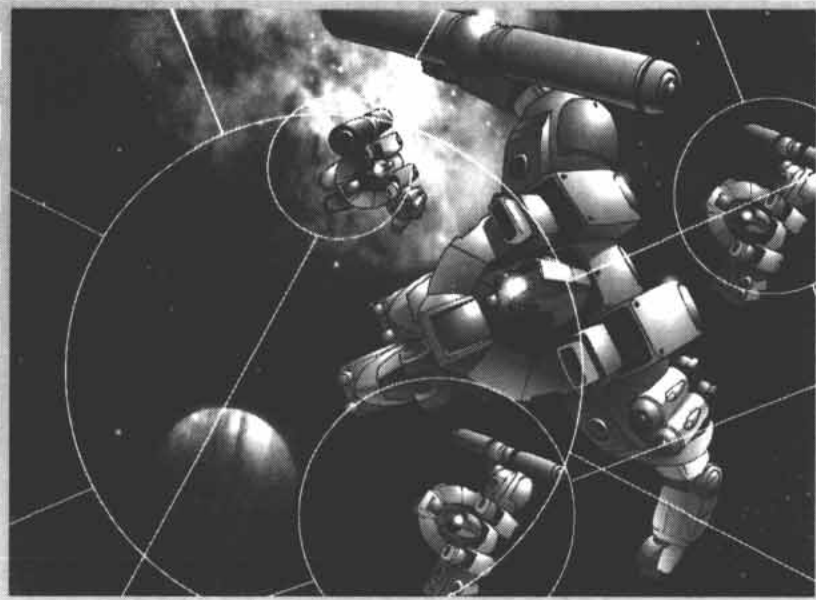
▼ 1.4.3 Quadruple Military Engine Cluster

The quad-engine cluster shown above is basically the same model as the one introduced previously, with only a few differences. The most visible one, of course, is the length of the drive fins, which are Lockwell's D-9 models rather than the D-7 shown at left. Though the extra surfaces have slightly more mass, they allow the ship to get rid of more heat per second and thus have a slightly higher performance level.

In general, the fusion core used is a sturdy Nakasu Industries 20-960M model, coupled with a Nakasu Supernova-960 plasma combustion drive. Nakasu Industries is the prime supplier of drive systems for the Jovian Confederation, though they license their designs to other companies to avoid enormous shipping costs to distant shipyards.



INTRODUCTION



► ACROSS THE VOID

Two brightly lit arrows moved across the main display of the Jovian Confederation destroyer *JSS Brock*. Captain Henry Zou stared intensely at them, as if trying to determine their identity and purpose by willpower alone. His intuition was very clear on the subject: these bogeys did not wish his ship well.

"Navigator, aim our bow at the target. Remain on trajectory." Zou was concerned, but his face betrayed only calm resolve. He didn't want to needlessly alarm the bridge crew.

"Thrusting now," replied Warrant Officer Julianne Dean from her station a few meters away. The young navigator tried to keep her voice calm. This was her first tour since her six months post-graduate cruise on the tender *JSS Sally Ride*. Destroyers were much more exciting. "Forward weapons now in arc."

"The radar bogey has split!" That was Girth, at the sensor station. "Looks like a launch. I now count eight units on high burn toward us. The mothercraft are decelerating — partial sensor profile matches Tengu-class vessels, but I can't confirm at this distance."

"Hail them," Zou ordered. "This is a sanctioned relief mission flying under the Jovian Confederation flag." He was following procedures, but he didn't think the transmission would do much good. These were either terrorists or an overzealous CEGA patrol, neither of which were likely to respond.

"Incoming craft," began Rollins, at the comm station, "this is the *JSS Brock* escorting a convoy of relief supplies for station 118. Be advised that you are approaching our defensive perimeter. Turn back now. I say again... Blast it!" He reached for his comm headset as a short blast of static rammed itself painfully into his eardrum. "One of them is trying to jam us, Captain."

"Sound general quarters," Zou ordered, turning to face the defense gunner. "Alert status to red. Navigation, plot for a lightning strike on the carriers. Tactical, ready area defense lasers."

The alert klaxon drowned out Julianne's mumbled reply. Tension knotted her shoulders and forearms as she quickly punched in commands on her console. Yes, she thought, life on a destroyer is certainly more interesting.

* * *

The next few minutes were a flurry of activity aboard the *Brock*. The klaxons didn't discriminate: they roused the forty plus men and women sleeping between shifts and interrupted the others relaxing during down time. They all bundled themselves into space suits and made for their assigned combat posts. Bodies still creaking and minds still clearing from sleep, they rode down the rotor arms from the spun gravity accommodations to the destroyer's main hull. In the hangars, marines boarded exo-suits; towering generators started feeding power to the ship's triple particle can-

nons; silently, both of the *Brock's* area defense turrets extended from their housings and swiveled to test their motions. Only once everyone was in place did the orchestrated chaos give way to tense impatience. All pairs of ears aboard were trained, waiting the order that would set them to action.

"Incoming bogies identified as four Syreen exos and four Wyverns. EM emissions tag one Syreen as command type," exclaimed Girth as data streamed across his console. On the main display, blank sensor markers morphed into properly tagged miniature silhouettes, burning a bright red. "All on heavy burn."

"It's a lightning pass on us and then onto the convoy," Julianne cut in while she quickly checked the closure rate. "They are coming in too fast to match our velocity. I have an intercept plotted to go through them and then onto their carriers."

The incoming hostile exo-armors would only get one pass at the *Brock*, but their missiles could still do significant damage. More importantly, the destroyer would only get one chance to stop them before they closed with the convoy.

"Fitzgerald signals ready for the close-in defense of convoy," said Rollins. "Wishes you good hunting, sir."

* * *

The Wyverns cut loose a barrage of missiles, hoping to overload the defenders through sheer numbers. This suited Zou just fine — he had his priorities set on eliminating the threat to the convoy, which was moving behind the *Brock's* defense grid. Forcing the attackers to use up their missiles early would help. Twisting through the blazes of pulsing laser fire, two missiles got through. The first exploded near the bow, but most of the energy glanced off the heavy sloping armor. Its mate struck farther aft, damaging a communication antenna. A hail of laser fire from the Syreens poured over the *Brock's* hull, though the beams, weakened by distance, left only minor scarring and scorch marks.

Julianne remained focused on her navigation display, but couldn't help seeing the tactical data on the main HUD dome screen around the bridge. If that was the best the attackers could do, the *Brock* was going to be just fine.

Her confidence soared further when the *Brock* returned fire. The upper laser sent a lance of energy onto one of the Wyverns. The extra missile pods identified it as a bomber, and thus the most deadly threat to the convoy. As the Wyvern swerved to and fro, the laser pulses staggered around, the fire control computers doing their best to keep the deadly focus on the target. Metal and ceramics exploded in rapid heat swells, until a secondary explosion tore the exo's primary thruster assembly clean off.

The gunners of the lower laser systems directed them at the passing Syreens instead, the turret erupting with short bursts of intense coherent light. Within a few seconds, both the commander and his wingman had been reduced to swirls of expanding debris. Missile barrages blossomed through sliding hatches to claw at the remaining Syreens, forcing them to break off. A few brilliant flashes in the distance signaled the end of that threat.

"Damn." Zou signaled to the convoy. "Fitzgerald, be advised that three Wyverns and a Wyvern Bomber are inbound. Confirmed hostile. I repeat, hostile bomber inbound."

The bridge's speakers crackled to life. "Fitzgerald here. We copy. Our boys stand ready to receive. Sally Ride is joining us for second line of defense. Go get those carriers, Captain."

"The Ride?!" Julianne's surprise was plain to see. "But she's just a tender! What can she do?"

"Eyes on your station, navigator." Zou swiveled to face her. "Better the JAF receives our guests than the medical convoy."

Julianne swallowed audibly. Professionalism or not, she was still worried about Davis and the others aboard her old vessel.

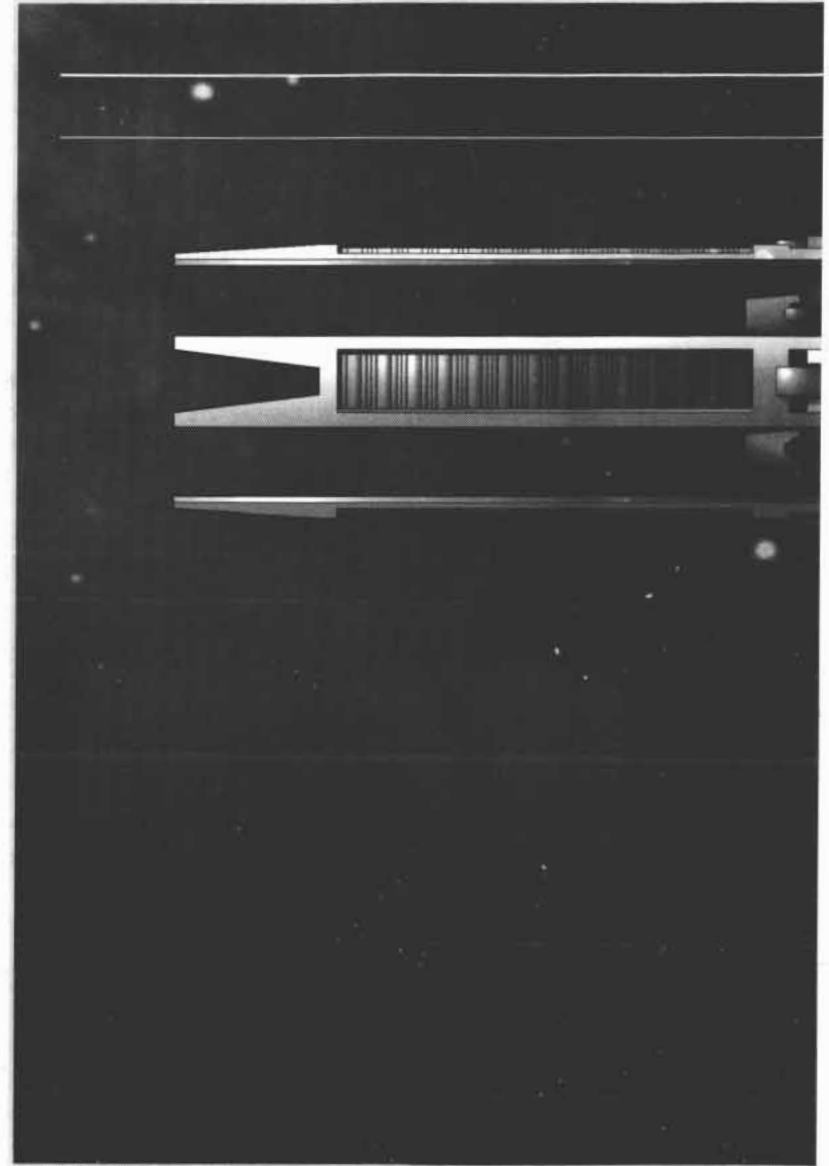


ALEXANDER-CLASS DESTROYER



Destroyer, Alexander Class

Name	Launched	Current Status
JSS Alexander	November 7, 2198	Alpha
JSS Sun Tzu	July 6, 2199	Beta
JSS Guderian	September 14, 2199	Gamma
JSS Wellington	March 25, 2200	Alpha, TRA
JSS Ghengis Khan	September 7, 2200	Gamma
JSS Saladin	December 23, 2200	Alpha
JSS Mao Zedong	March 16, 2201	Beta
JSS Napoleon	May 2, 2201	Detached Duty
JSS MacArthur	May 12, 2201	Alpha
JSS Washington	October 31, 2201	Gamma
JSS Sitting Bull	April 16, 2202	Alpha
JSS Clauzewitz	July 29, 2202	Gamma
JSS Richard	January 15, 2203	Detached Duty
JSS Brock	May 6, 2203	Gamma
JSS DeGaulle	November 14, 2203	Alpha
JSS Nelson	March 9, 2204	Beta
JSS Rommel	June 3, 2204	Gamma
JSS Lee	October 13, 2204	Gamma
JSS Hadrian	April 19, 2205	Alpha
JSS Cromwell	September 5, 2205	Beta
JSS Julius Ceasar	February 17, 2206	Alpha
JSS Brettwelda	August 3, 2206	Beta
JSS Takeda	January 26, 2207	Gamma
JSS Patton	August 2, 2207	Beta
JSS Cherusci	July 11, 2208	Gamma
JSS Scipio	November 11, 2208	Alpha
JSS Leonidas	May 3, 2209	Beta
JSS Henry	October 29, 2209	Detached Duty
JSS Hannibal	July 22, 2210	Beta
JSS Hugh d'Paynes	N/A	Building
JSS Wolfe	N/A	Building
JSS Kagetora	N/A	Building



ALEXANDER-CLASS DESTROYER

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ALEXANDER-CLASS DESTROYER

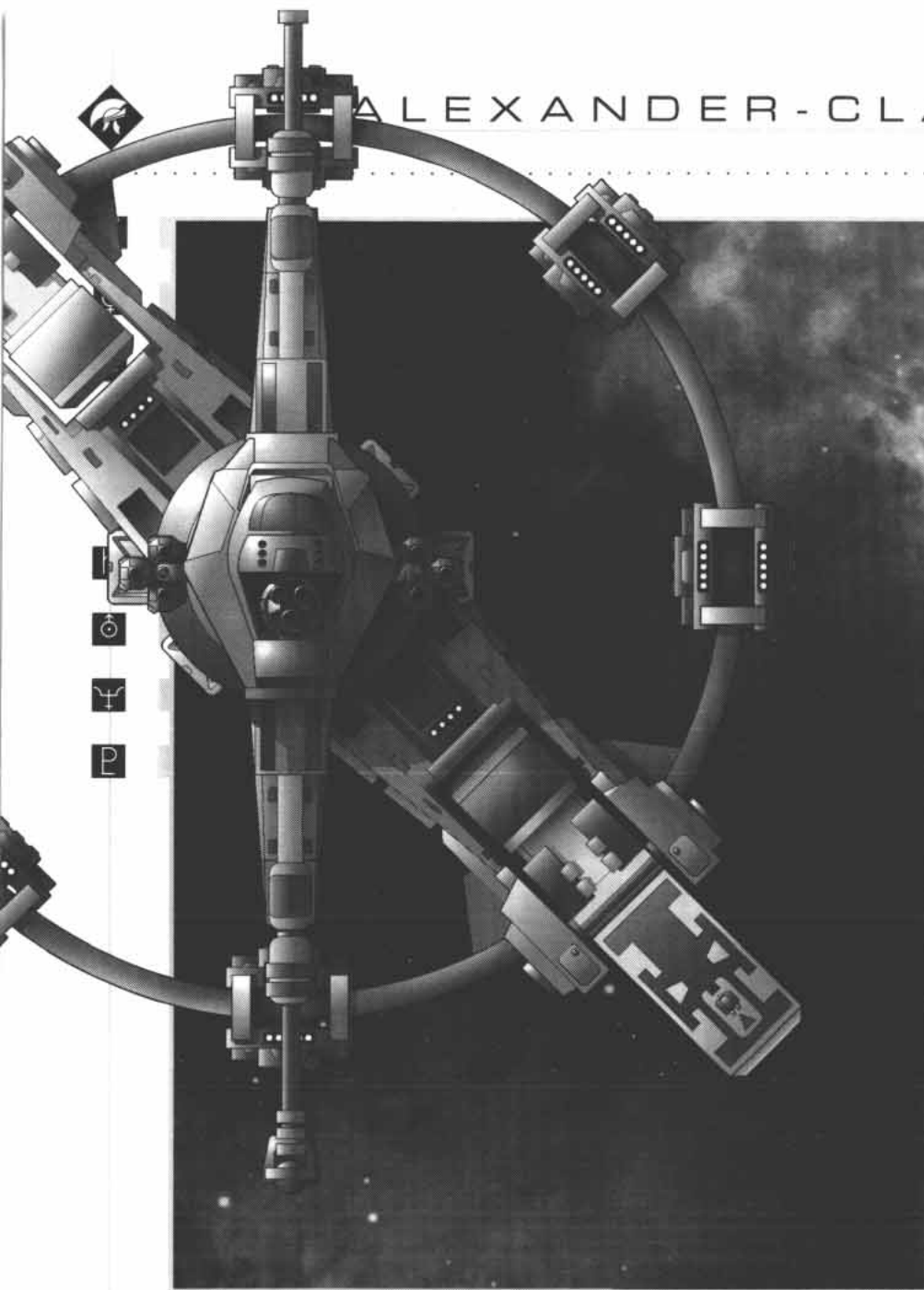
JSS BROCK (2213 CONFIGURATION)



Every fleet needs vessels capable of more than just fighting. While the battleships are meant for heavy combat, the destroyers are sent on a wide variety of missions through Jovian space. The Alexander-class destroyer is one of the recently developed workhorses of the JAF, supporting the older Thunderbolt-class vessels. This sleek destroyer is one of the rare vessels designed to both maintain the peace of the spacelanes and fight deep space battles.

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ALEXANDER-CLASS DESTROYER



► 2.1 OVERVIEW

Thinly spread between the two Trojan States and around Jupiter proper, the Jovian Armed Forces must ensure the safety of the Confederation across great distances. The continuous interest of some of the Earth's governments in reclaiming the now independent colonies remains the main threat to the Confederation's production facilities. As a further complication, the facilities themselves are dispersed across dozens of colony cylinders throughout Jovian space, making their defense difficult.

In 2197, General Byron MacLeod (now retired) developed a creative solution to the problem of ship replacements. He began his presentation to the President with studies showing that over seventy percent of mid-range vessel requirements are identical. The best way to improve productivity, therefore, is to use the resources of the available ship building facilities to produce standardized ship sections that would then be attached to role-specific forward hulls.

It took many months before the idea came to fruition. Engines, habitation modules, storage pods and standardized operation sections are now produced in large numbers by several factories across Jovian space. The sections are then shipped to the major shipyards where they are mated to one of the forward hulls. Vessel classes produced by this method at first included only the Alexander-class destroyer, Forge-class patrol carrier and the Yuri Gagarin-class fleet tender, but the modules have been incorporated in many of the newer Jovian ship designs.

▼ 2.1.1 Capabilities

Viewed head-on, the Alexander looks like a collection of barrels under heavy armor. The vessel has been designed so that all its weapons can be fired at targets in the forward arc. In addition, once extended, the wing-mounted area defense lasers can proactively engage hostile missiles and exo-armors within the entire sphere of engagement of the ship. When operating in an

ALEXANDER-CLASS DESTROYER

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offensive role, the ship normally selects a primary target, turns bow-on and fires all guns. The lasers, however, protect the flanks and rear arcs of both the ship and any friendly exo-armors operating in the vicinity instead of targeting the defender. Pilots and captains alike have come to greatly appreciate the benefits of this friendly "laser umbrella;" if several destroyers are present at a battle, one will normally be held back specifically for the defense of high value ships or facilities.

The vessel's most distinctive features are practically all linked to its combat role. The most noticeable are the radiator wings on which the area defense laser emitters are mounted. A small missile bay and two side-mounted kinetic kill cannon turrets, similar to those of the earlier Thunderbolt-class destroyers and many other Jovian ships, are also visible on the hull.

Last, but not least, is the ship's main armament. The earlier Thunderbolt destroyers have always been plagued by the vulnerability of their swivel mounted particle accelerator, a weakness that was solved on the Alexander-class by placing the weapon within the main hull. The mass saved has been reinvested in two more accelerators, creating a triangular configuration. Tactical studies have shown that proper maneuvering can compensate for the limited arc caused by securing the gun under heavy armor. From head-on, the Alexander-class is a deadly threat to even a Poseidon-class battleship or a small orbital facility.

To help maintain order on the space lanes, the destroyer carries a full platoon of exo-suited marines. A typical platoon consists of fifteen Falconers (*Mechanical Catalog*, page 96) and fifteen Pouncer versions of the Decker design (*The Chaos Principle*, page 100). This arrangement allows a squad of each to be available to each of the ship's three watches.

A research lab is located in the lower deck, complete with forensics gear and access to up-to-date Jovian police and intelligence files. The lab allows detectives to catch even the most evasive smugglers or find the cause of almost any accident.

A small hangar bay allows the destroyer to house an auxiliary craft appropriate to the current mission. Shuttles or work pods are commonly carried during customs patrols to support boarding and inspection operations.

On search missions, a Lancer interceptor (*Mechanical Catalog*, page 70) or even a Pathfinder exo-armor (*JC Rulebook*, page 189) can be carried (or towed) to conduct preliminary scans. Otherwise, an Hector exo-armor (*The Chaos Principle*, page 96) or an Atlas OTV (*Mechanical Catalog*, page 123) may be present to assist in the handling of the ship's storage pods and other delicate tasks.

▼ 2.1.2 Operational Role

Alexander-class destroyers function much like their wet navy ancestors. Assignment to one of these vessels will send a spacehand into a wide variety of operations. Depending on the political climate, the ships are protective shepherds, while at other times they become the hunting wolves.

When protecting other ships, be they military or civilian, the destroyer's job can be reduced to this: getting in the way of danger. If an unknown and therefore possibly hostile vessel is detected, the destroyer will maneuver ahead of the convoy into a blocking position, taking into account as many interception vectors as possible — threats to the JAF are very different from the ones that were faced by the first wet-navy destroyers.

There are currently thirty-two hulls assigned to the Alexander class, though not all have been completed. Alpha Division has nine, Beta eight and Gamma nine as well. Three other ships are on independent or detached duties that take them far from regular fleet operations. The independent operatives include those on continuous convoy escort duty. Lastly, three vessels are still in construction within Jovian drydocks.

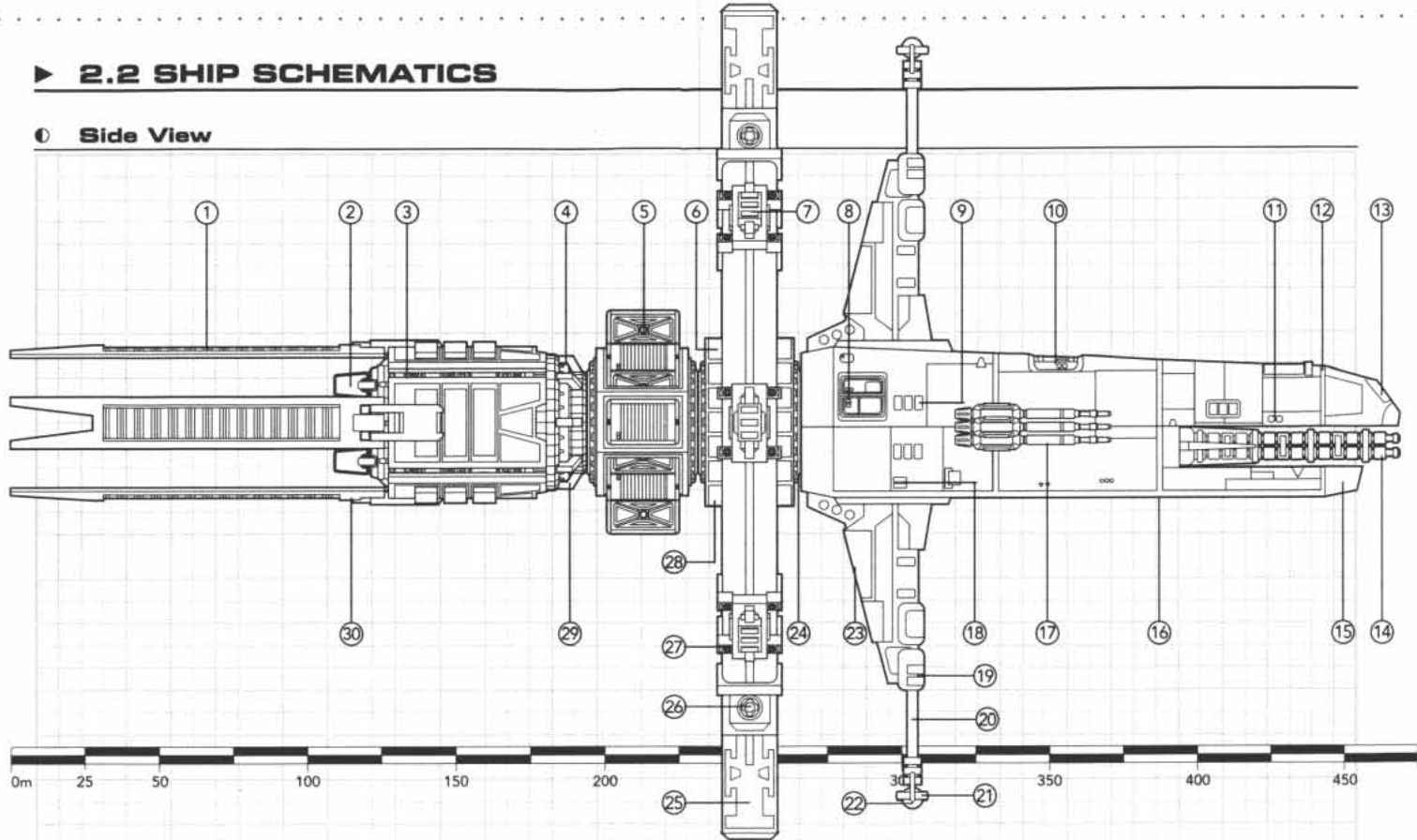




ALEXANDER-CLASS DESTROYER

► 2.2 SHIP SCHEMATICS

① Side View



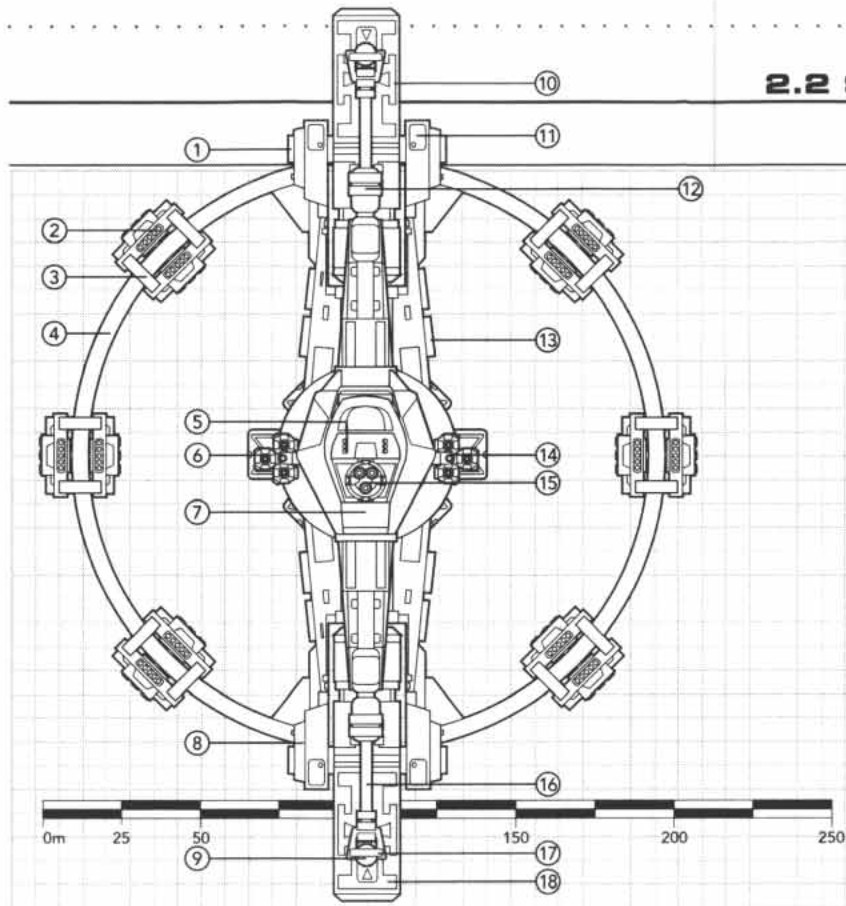
▼ Legend

1	Heat Sink	11	Nose Maneuver Jet Cluster	21	Mid-range Directional Sensor
2	Exhaust Collimators	12	Forward PDS Emitter Panel	22	Area Defense Laser Emitter
3	Aft Maneuver Jet Cluster	13	Missile Launch Tubes	23	Laser Systems Heat Sink
4	Engine Mount/RAM Hardpoint	14	Particle Accelerator	24	Rotor Collar Assembly
5	Standard Cargo Module	15	Forward Sensor Cluster	25	Habitat Heat Sink
6	Main Rotor Block/Gyro Housing	16	Lateral PDS Emitter Panel	26	Habitat Rotation Assembly
7	Modular Hardpoint	17	Starboard KKC Turret	27	System Cluster
8	Shuttle Bay	18	Escape Pod Covers	28	Rotor Heat Sink
9	Escape Lifeboat Covers	19	Auxiliary Sensor Cluster	29	Rear Shield Generators
10	Service Loading Door	20	Area Defense Laser Mast	30	Drive Fin

ALEXANDER-CLASS DESTROYER

2.2 SHIP SCHEMATICS (CONT.)

Front View

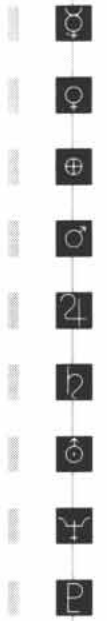


Legend

1	Habitat Rotation Assembly	11	Access Panel
2	Modular Hardpoint	12	Auxiliary Sensor Cluster
3	Short Range Sensors	13	Main Rotor Arm
4	Structural Ring	14	Main Turret Targeting Sensor
5	Missile Launch Tubes	15	Particle Accelerator
6	Starboard KKC Turret	16	Area Defense Laser Mast
7	Optical Shield	17	Mid-range Directional Sensor
8	Habitat Transfer Block	18	Habitat (Flight Position)
9	Area Defense Laser Emitter		
10	Habitat Heat Sink		

Specifications

Name:	Alexander
Origin:	Jovian Confederation
Manufacturer:	Various Shipyards
Type:	Destroyer
Control System:	Bridge w/astronomical display
Length (total):	480 m
Width (total):	205 m
Empty Weight:	42,800 Tons
Loaded Weight:	60,000 Tons
Main Drive:	4 x 20 MW
Secondary Powerplant:	3 x 4000 KW
Main Thrusters:	4 x 21,000,000 kg
Apogee Motors:	40
Acceleration:	0.8 g
Onboard Sensors:	Fire Control Radar, Infrared/ Ultraviolet, Lidar, Magnetometer, Microwaves, Motion Detectors, Radcounter, Search Radar, Telescope
Fixed Armament:	PDS, 3 x Particle Accelerator, 6 x Kinetic Kill Cannon, 2 x Area Defense Laser Cannon, 1 x Missile Bay
Additional Armament:	n/a
Defensive Systems:	Mag Screen
Equipment:	Escape Pods, Laboratories

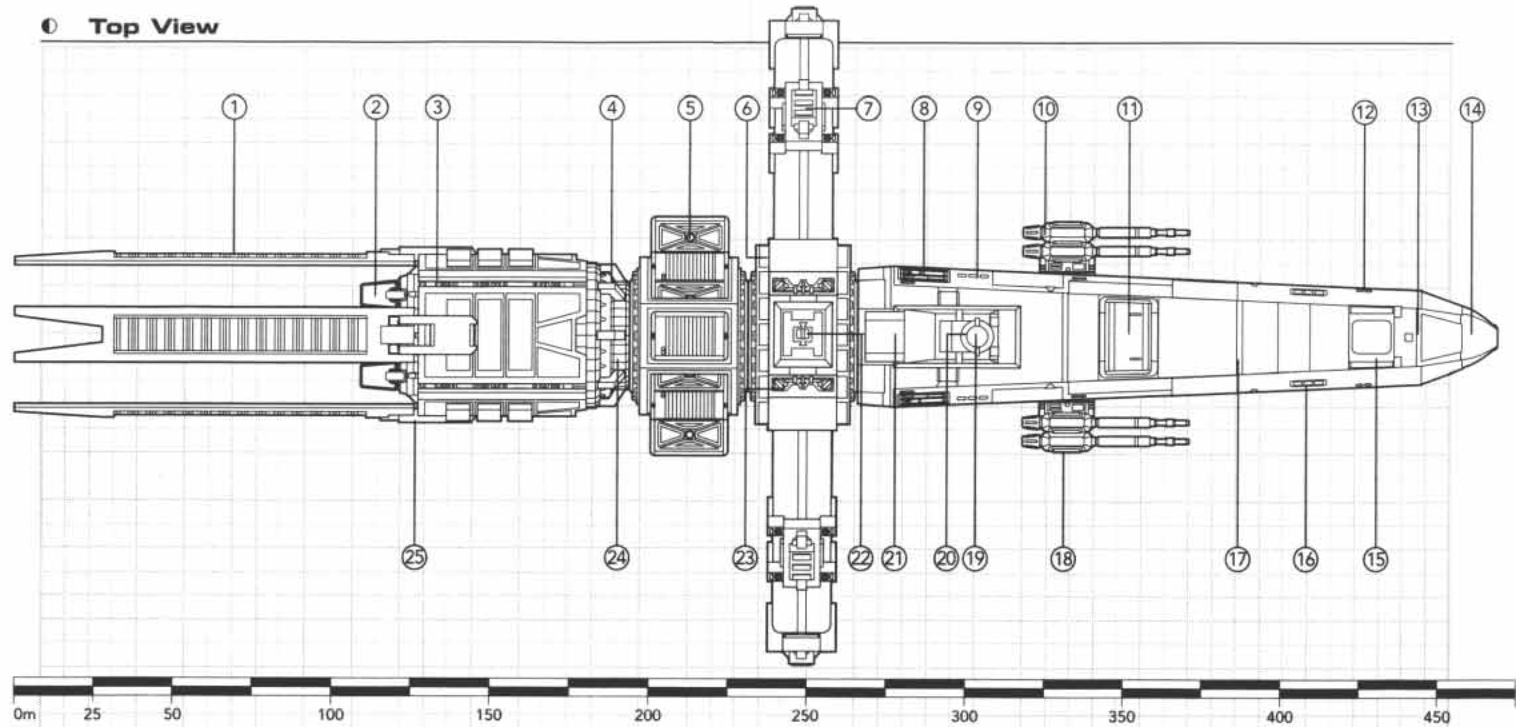




ALEXANDER-CLASS DESTROYER

► 2.2 SHIP SCHEMATICS (CONT.)

① Top View



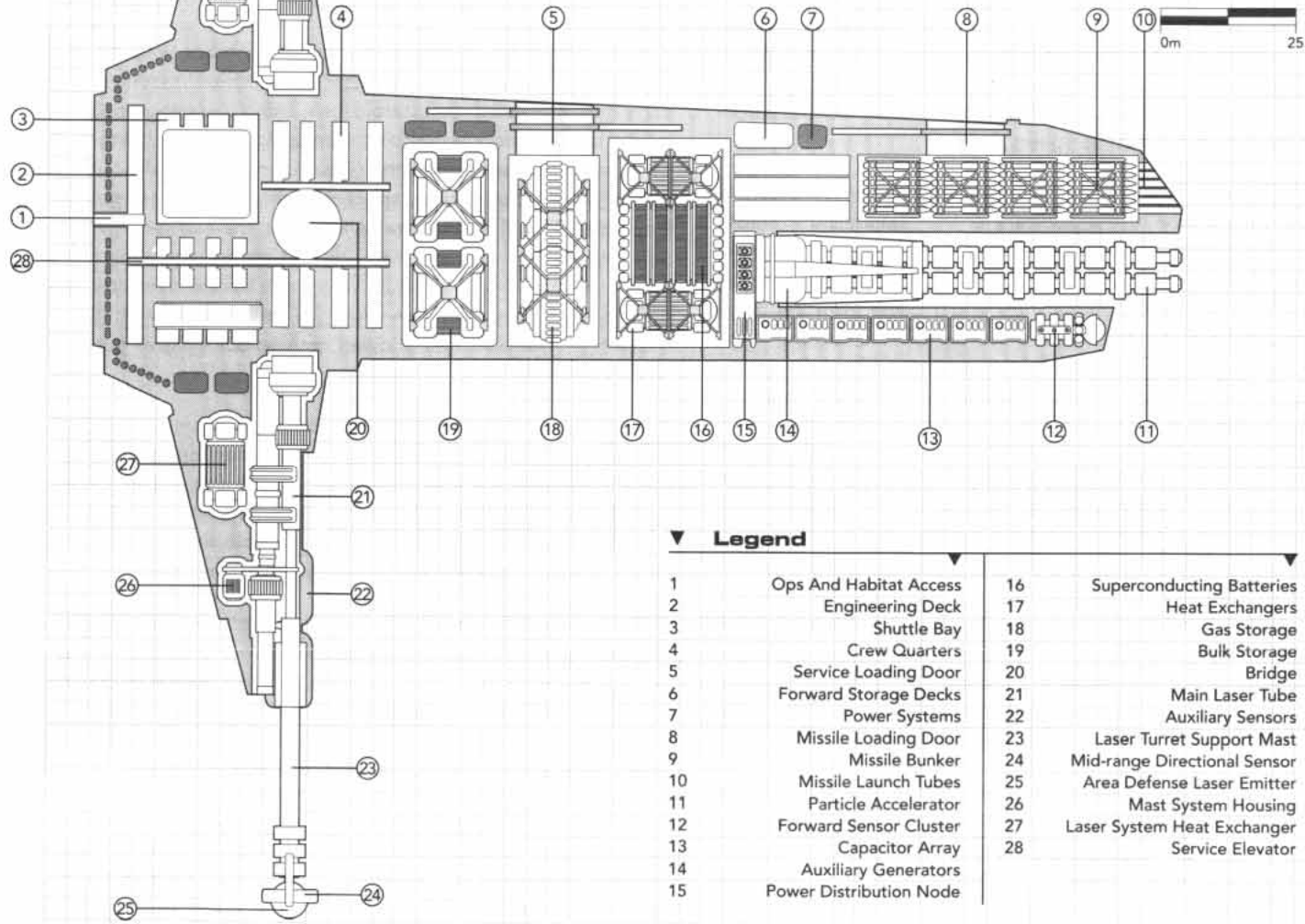
▼ Legend

1	Heat Sink	11	Service Loading Door	21	Mast Support
2	Exhaust Collimators	12	Nose Maneuver Jet Cluster	22	Habitat Module
3	Aft Maneuver Jet Cluster	13	Forward PDS Emitter Panel	23	Rotor System Cluster
4	Engine Mount/RAM Hardpoint	14	Missile Launch Tubes	24	Rear Shield Generators
5	Standard Cargo Module	15	Forward Loading Door	25	Drive Fin
6	Main Rotor Block/Gyro Housing	16	Escape Pod Covers		
7	Modular Hardpoint	17	Top PDS Emitter Panel		
8	Shuttle Bay	18	Starboard KKC Turret		
9	Escape Lifeboat Covers	19	Area Defense Laser Emitter		
10	Port KKC Turret	20	Mid-range Directional Sensor		

ALEXANDER-CLASS DESTROYER

2.2 SHIP SCHEMATICS (CONT.)

Cutaway View (Forward Hull)





ALEXANDER-CLASS DESTROYER



► 2.3 HISTORY

By the closing years of the twenty-second century, the Thunderbolt-class destroyer was beginning to show its age. The JAF discretely asked for tentative replacement proposals from its internal think tanks in 2196, leading to General MacLeod's modular ship proposal. This unconventional approach to military spacecraft design, first presented in 2197, had many obstacles to overcome, some of them from the political establishment, others from conservative space ship designers.

When the parameters for the Thunderbolt's replacement were finally decided upon, the supporters for the "standardized ships" won their bid. There was just no way to ignore the savings incurred by using standard components, both in costs and development times. Even more savings would come from using the newly developed systems in other ship designs, namely the Forge and Yuri Gagarin vessels. By the time MacLeod's concept was accepted, however, he had already retired. It fell to the next generation of officers to fulfill his dreams.

The first of the vessels built was named the *Alexander*, after Alexander the Great, the warrior who united the Greeks in the 3rd century BC, and conquered most of the known world. Final assembly of the ship sections took place at Geiersburg in Vanguard Mountain, though some of the critical but low mass systems were manufactured elsewhere. The JSS *Alexander* was launched on November 7, 2198 and immediately began her trial and qualification runs. Several refinements to the design were made during this shakedown cruise, which were subsequently included in all other ships of the class.

By April 4, 2199, the first six months of exhaustive testing were completed, the *Alexander* received its official commission and the class was approved for mass production. A major incident was narrowly averted on April 1, 2199, when a technician reported a major problem with the ship's maneuvering thrusters as it was coming in to dock at Elysée for presentation to the heads of state.

The captain refused to approach the station while the thrusters were being checked, delaying the proceedings by two hours before the whole mess was cleared up. Despite this embarrassment, the efficiency of the vessel, its quick production time and reduced costs proved the validity of the concept.

The first Alexander-class vessel to see combat was the JSS *Guderian*. A pirate force had attacked a Jovian merchant ship carrying supplies to the asteroid belt, using navigation data acquired from an informant within the shipping company. Using most of its reaction mass supply, the *Guderian* moved at full acceleration to rendezvous in deep space with the next likely target. On December 23, 2199, the pirates attacked, their long-range sensors registering only the KKC turrets on the outside of the *Guderian's* hull. One of the surviving pirate bridge crew later told how shocked they had been when the Jovian ship came into visual range. The bow view showed nothing but massive gun barrels and armor!

Caught mid-way through the boarding operation, the pirates' velocity profile forced a prolonged engagement around the merchant vessel. Realizing they were outgunned, the pirates tried to flee. Captain Goering ordered the *Guderian's* main guns to fire into the pirate vessel's drive section; unable to maneuver, the rogues were soon boarded by the destroyer's marines.

After lengthy interrogation in the ship's onboard facilities, the *Guderian* was able to determine the location of the pirates' base. Taking the pirate ship's reaction mass to top up its own tanks, the *Guderian* conducted a surprise raid on the pirates' base, a hijacked merchant ship attached to an asteroid. The ship's marines again led the assault, and rescued the merchant's crew.

Since then, the Alexander-class destroyer has proven itself to be an aggressive defender. The combination of heavy ship weaponry and a full marine platoon has made it one of the most successful designs in the JAF. The descriptions and short histories of some of the more noteworthy ships of this class follow.

ALEXANDER-CLASS DESTROYER

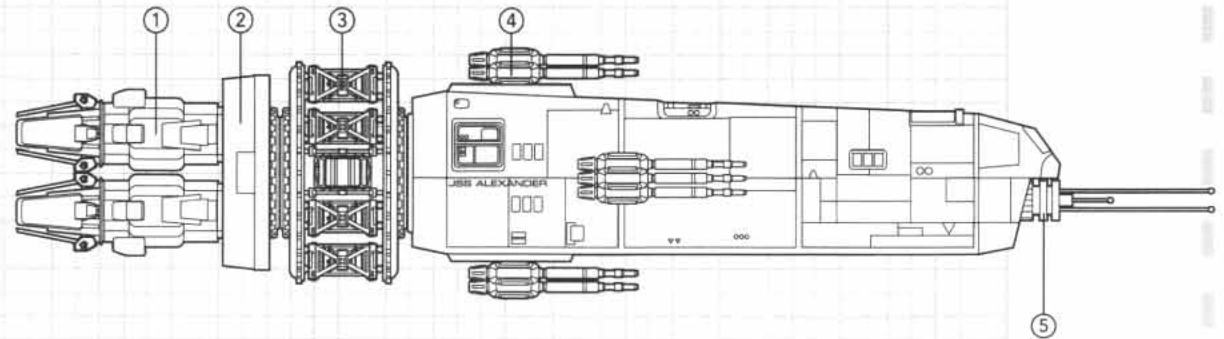
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JSS ALEXANDER ◀

Alexander-class Vessels, 2198-2201 ○

▼ Legend

- 1 Thunderbolt-style GH-64 Drive
- 2 Original Drive Mount
- 3 JAF2197 Cargo Rack
- 4 Top-mounted KKC Turret
- 5 Sigma-12 Sensor Assembly

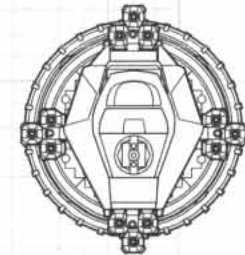


The very first design of the Alexander did not carry the twin laser wings, and as such had a very different visual profile. The illustration above shows the *Alexander* as it appeared right after its launch in 2198.

JSS Alexander: the class ship and first of the ships produced using General Byron MacLeod's standardization concepts. It went into evaluation trials on November 7, 2198, and was accepted and commissioned into the JAF on April 4, 2199.

JSS Sun Tzu: launched July 6, 2199, it was the second vessel produced in class. It was the first ship to use mass-produced versions of the standard parts. The *Sun Tzu* operates as a defensive escort for Beta Division's flagship.

JSS Guderian: launched September 14, 2199. The first ship in the class to see combat, the *Guderian* defeated a pirate force through a combination of ship and boarding combat on December 23, 2199. Some of the success of that operation was attributed to the element of surprise generated by the ship's new style.



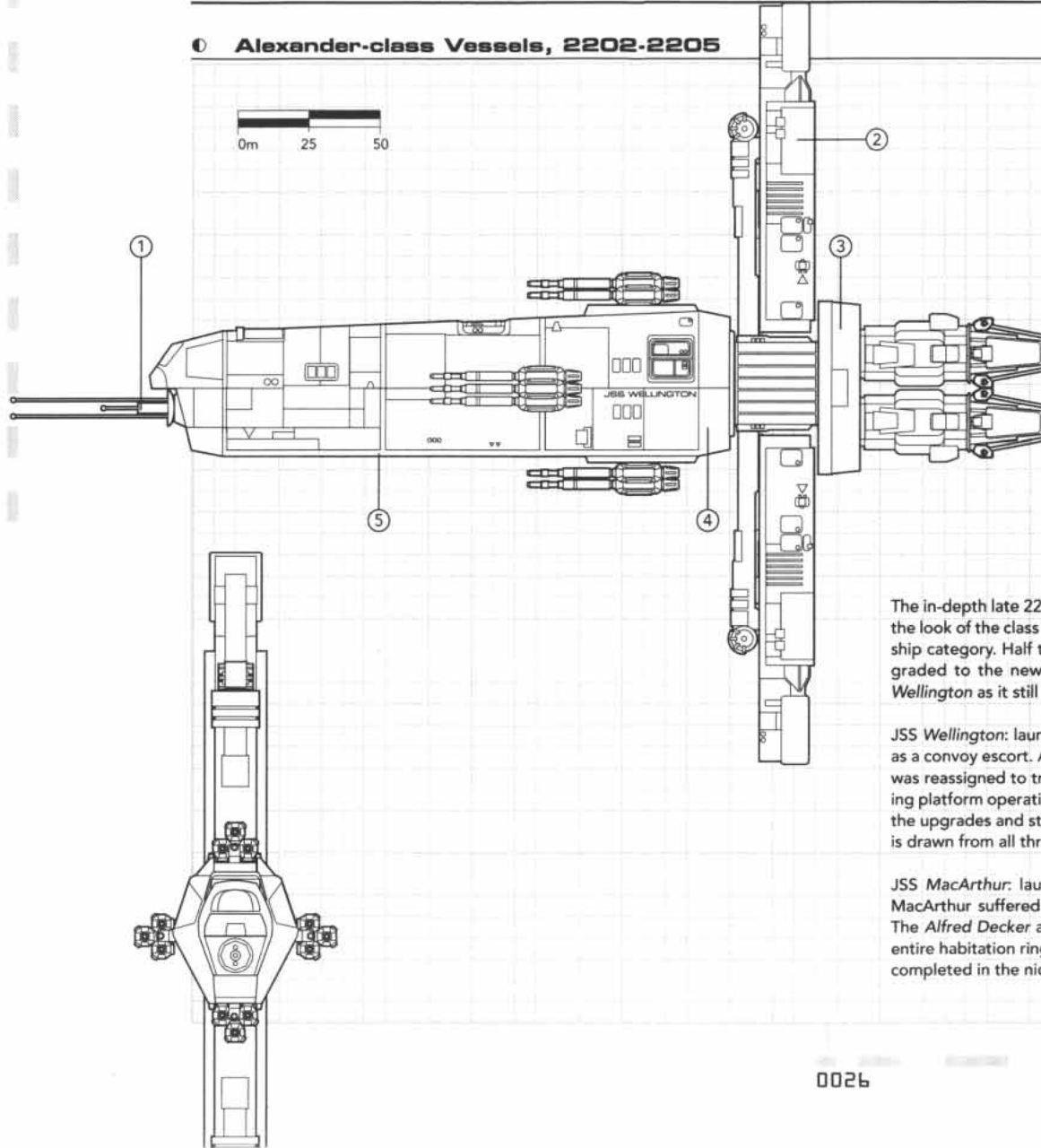


ALEXANDER-CLASS DESTROYER



► JSS WELLINGTON

① Alexander-class Vessels, 2202-2205



▼ Legend

- 1 Omicron-8 Sensor Cluster
- 2 Habitat Module
- 3 Reconfigured Engine Mount
- 4 Modified Lower Deck
- 5 2201 PDS Field Upgrade

The in-depth late 2201 redesign of the Alexander completely changed the look of the class and very nearly bumped the vessel into the capital ship category. Half the Alexander-class destroyers in service were upgraded to the new configuration. The illustration above shows the *Wellington* as it still appears today.

JSS Wellington: launched March 25, 2200. *Wellington* began her duty as a convoy escort. After only five years of service in that role, the ship was reassigned to training duty. She now operates as a gunnery training platform operating out of Geiersburg. The ship has not received all the upgrades and still looks much the same as it did in 2205. The crew is drawn from all three JAF divisions and is rotated frequently.

JSS MacArthur: launched May 12, 2201. While in deep space, the *MacArthur* suffered a major breakdown while on a dangerous orbit. The *Alfred Decker* arrived to conduct repairs in transit, removing the entire habitation ring to allow direct access to the gyros. Repairs were completed in the nick of time.

ALEXANDER-CLASS DESTROYER

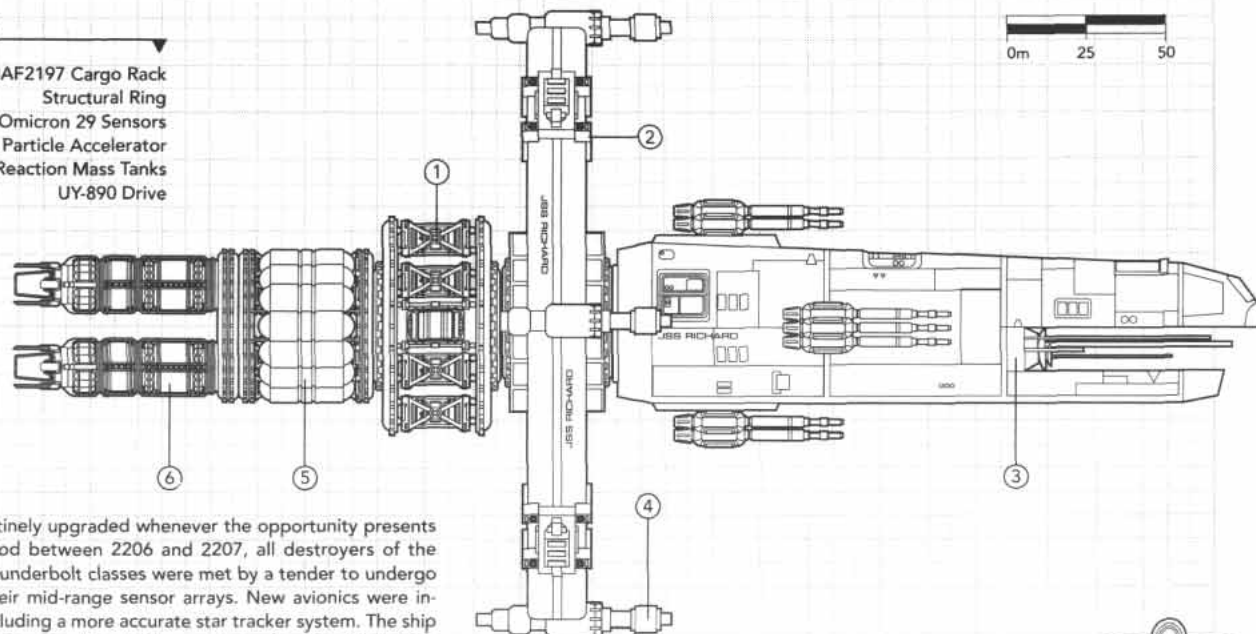
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JSS RICHARD ◀

Alexander-class Vessels, 2206-2207 ◉

▼ Legend

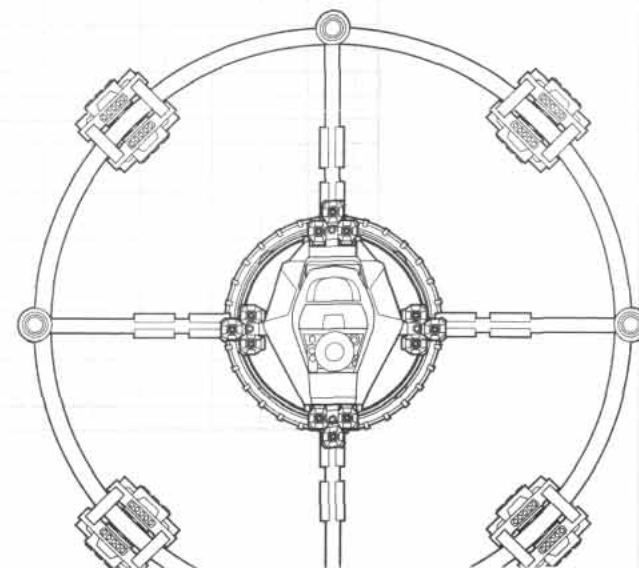
- 1 JAF2197 Cargo Rack
- 2 Structural Ring
- 3 Enhanced Omicron 29 Sensors
- 4 TH-6788 Particle Accelerator
- 5 Reaction Mass Tanks
- 6 UY-890 Drive



The ships are routinely upgraded whenever the opportunity presents itself. In the period between 2206 and 2207, all destroyers of the Alexander and Thunderbolt classes were met by a tender to undergo an upgrade of their mid-range sensor arrays. New avionics were installed as well, including a more accurate star tracker system. The ship without a centrifuge were fitted with a weapon ring. The illustration above show the *Richard* as it appeared in April 2207.

JSS Richard: launched January 15, 2203. Also called 'Lion Heart', the *Richard* is a dedicated pirate hunter. The ship travels the solar system on a mission to identify and eliminate threats to Jovian shipping. When news of the Battle of Elysée reached the vessel, she immediately conducted a lightning strike on a CEGA arms shipment heading in the general direction of Jupiter.

JSS Rommel: completed June 3, 2204. Rather than being built in a standard drydock facility, this ship underwent final assembly outside Joshua's Station in the *JSS Sharon McAuliffe*, beginning with the insertion of the particle guns into the main hull's armor shell. After thorough inspections, the *Rommel* was given a clean bill of health.



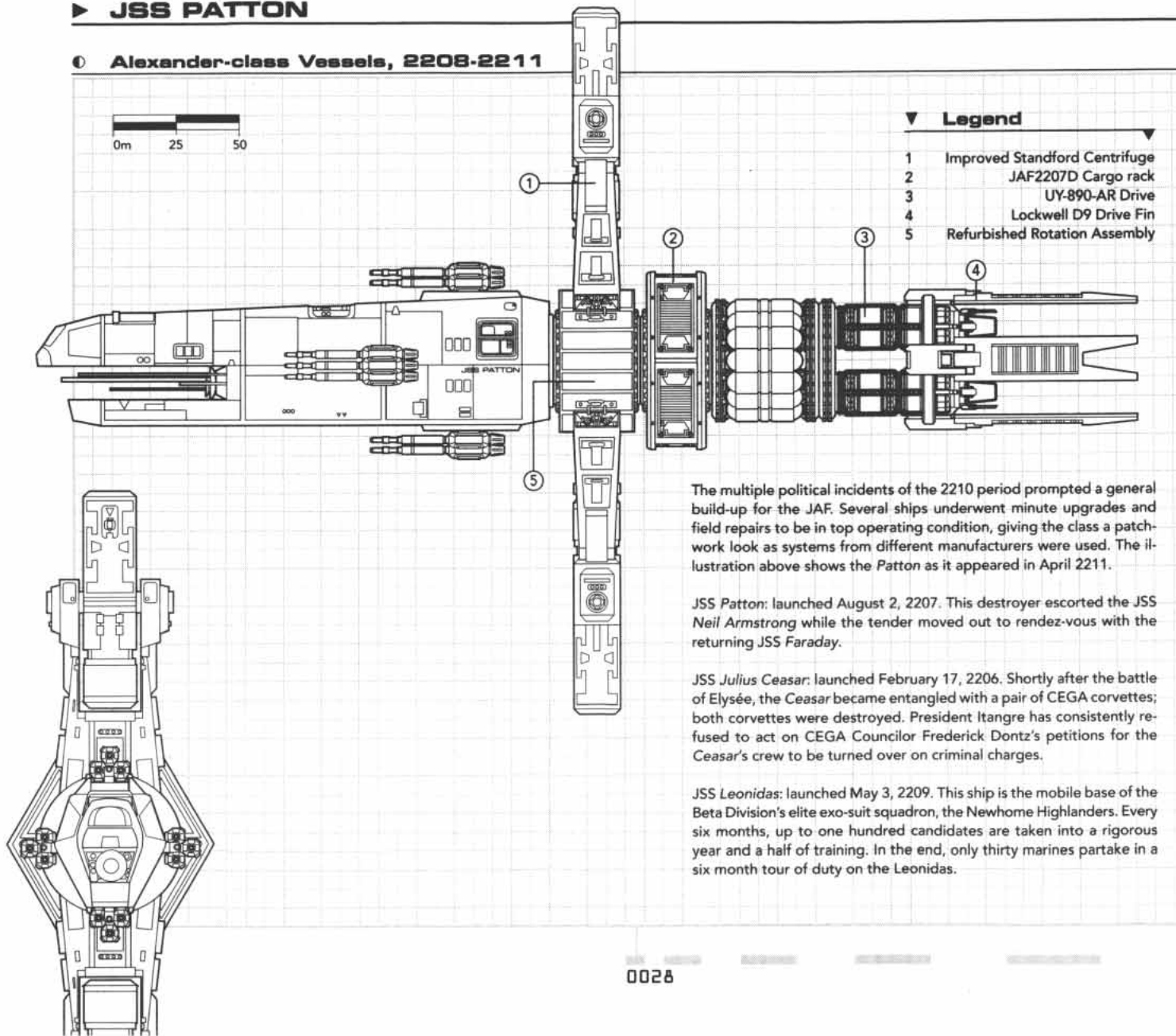


ALEXANDER-CLASS DESTROYER



► JSS PATTON

① Alexander-class Vessels, 2208-2211



▼ Legend ▼

- 1 Improved Stanford Centrifuge
- 2 JAF2207D Cargo rack
- 3 UY-890-AR Drive
- 4 Lockwell D9 Drive Fin
- 5 Refurbished Rotation Assembly

The multiple political incidents of the 2210 period prompted a general build-up for the JAF. Several ships underwent minute upgrades and field repairs to be in top operating condition, giving the class a patchwork look as systems from different manufacturers were used. The illustration above shows the *Patton* as it appeared in April 2211.

JSS Patton: launched August 2, 2207. This destroyer escorted the *JSS Neil Armstrong* while the tender moved out to rendez-vous with the returning *JSS Faraday*.

JSS Julius Ceasar: launched February 17, 2206. Shortly after the battle of Elysée, the *Ceasar* became entangled with a pair of CEGA corvettes; both corvettes were destroyed. President Itangre has consistently refused to act on CEGA Councilor Frederick Dontz's petitions for the *Ceasar's* crew to be turned over on criminal charges.

JSS Leonidas: launched May 3, 2209. This ship is the mobile base of the Beta Division's elite exo-suit squadron, the Newhome Highlanders. Every six months, up to one hundred candidates are taken into a rigorous year and a half of training. In the end, only thirty marines partake in a six month tour of duty on the *Leonidas*.

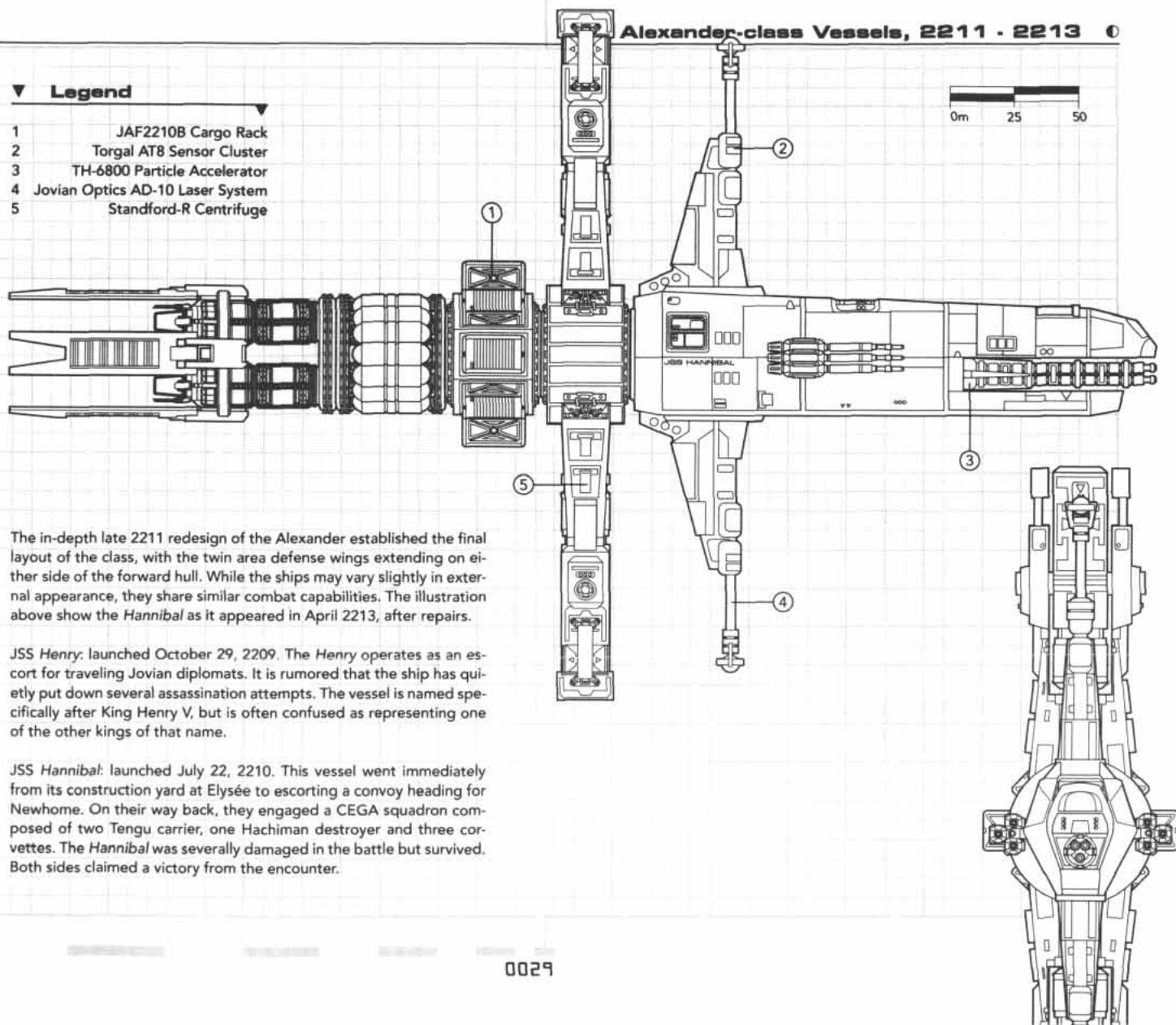
ALEXANDER-CLASS DESTROYER

JSS HANNIBAL ◀

Alexander-class Vessels, 2211 - 2213 ◀

▼ Legend

- 1 JAF2210B Cargo Rack
- 2 Torgal AT8 Sensor Cluster
- 3 TH-6800 Particle Accelerator
- 4 Jovian Optics AD-10 Laser System
- 5 Stanford-R Centrifuge



The in-depth late 2211 redesign of the Alexander established the final layout of the class, with the twin area defense wings extending on either side of the forward hull. While the ships may vary slightly in external appearance, they share similar combat capabilities. The illustration above show the *Hannibal* as it appeared in April 2213, after repairs.

JSS Henry: launched October 29, 2209. The *Henry* operates as an escort for traveling Jovian diplomats. It is rumored that the ship has quietly put down several assassination attempts. The vessel is named specifically after King Henry V, but is often confused as representing one of the other kings of that name.

JSS Hannibal: launched July 22, 2210. This vessel went immediately from its construction yard at Elysée to escorting a convoy heading for Newhome. On their way back, they engaged a CEGA squadron composed of two Tengu carrier, one Hachiman destroyer and three corvettes. The *Hannibal* was severely damaged in the battle but survived. Both sides claimed a victory from the encounter.



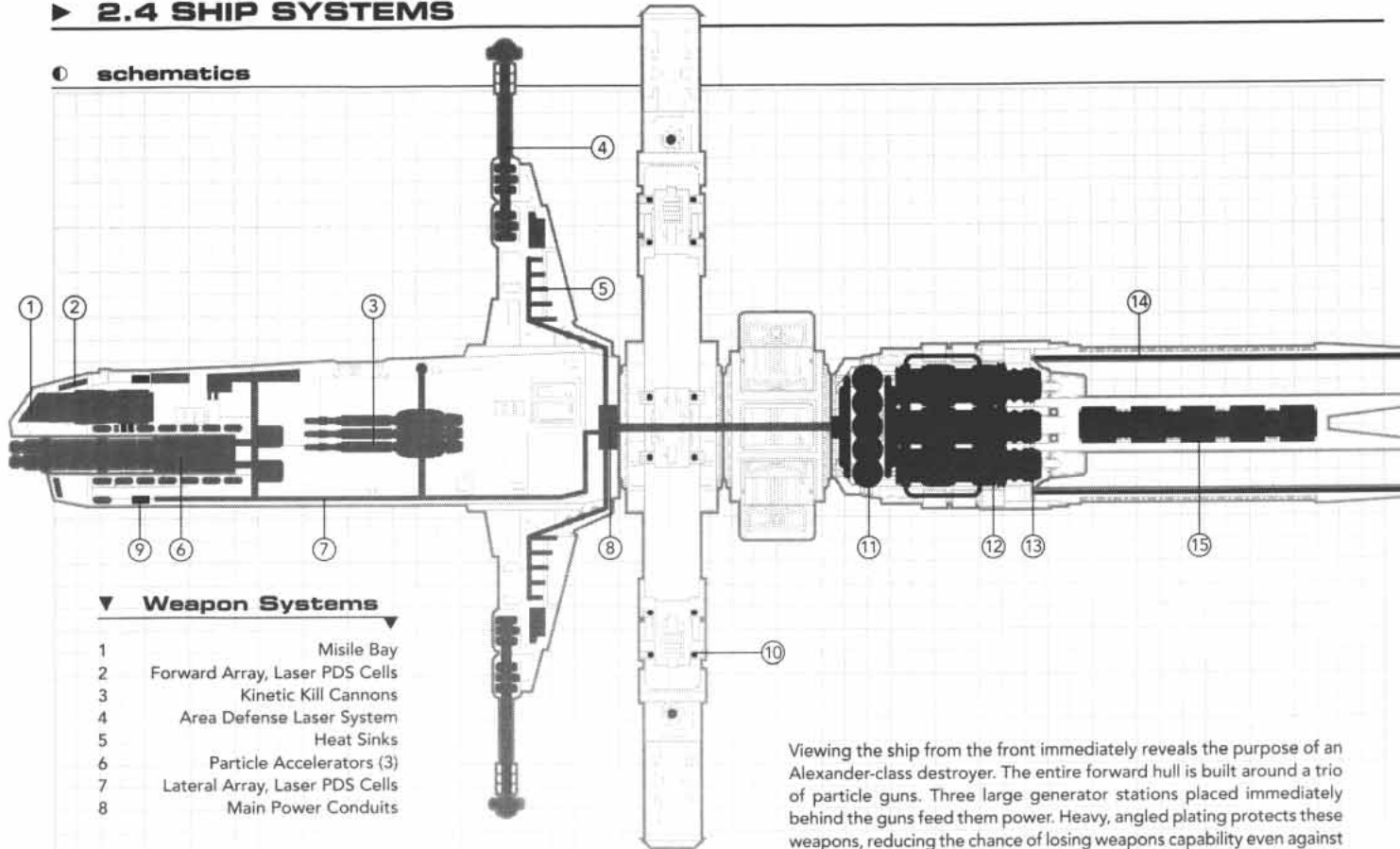


ALEXANDER-CLASS DESTROYER



▶ 2.4 SHIP SYSTEMS

① schematics



▼ Weapon Systems

- 1 Missile Bay
- 2 Forward Array, Laser PDS Cells
- 3 Kinetic Kill Cannons
- 4 Area Defense Laser System
- 5 Heat Sinks
- 6 Particle Accelerators (3)
- 7 Lateral Array, Laser PDS Cells
- 8 Main Power Conduits

▼ Propulsion Syst.

- 9 Plasma Arc RCS Cluster
- 10 Hypergolic RCS Thrusters
- 11 Reaction Mass Tanks
- 12 Plasma Combustion Chamber
- 13 Exhaust Collimator Coils
- 14 EM Power Generation System
- 15 Heat Sink

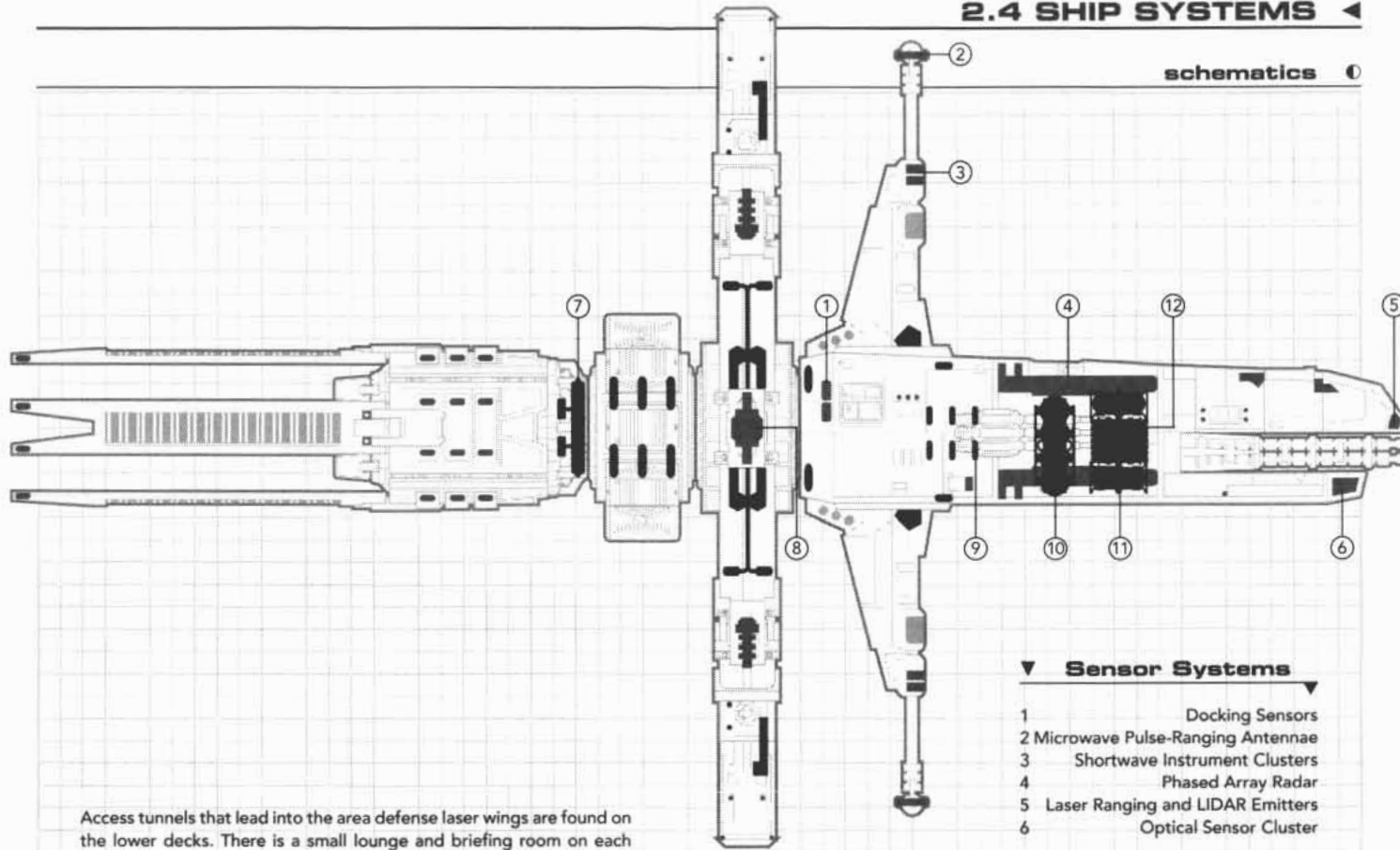
Viewing the ship from the front immediately reveals the purpose of an Alexander-class destroyer. The entire forward hull is built around a trio of particle guns. Three large generator stations placed immediately behind the guns feed them power. Heavy, angled plating protects these weapons, reducing the chance of losing weapons capability even against much larger opponents. From the front, all that is visible is thick armor plate and three massive gun barrels.

Continuing to move aft, the next few decks contain the bridge and the access port to the ship's secondary weapon mounts. A standard missile launcher is installed here, set for both anti-ship and anti-exo situations. Two standard KKC turrets that can lay down a hail of armor-piercing slugs occupy part of the mid-hull deck, along with their power feeds and ammunition bunkers.

ALEXANDER-CLASS DESTROYER

2.4 SHIP SYSTEMS ◀

schematics ①



Access tunnels that lead into the area defense laser wings are found on the lower decks. There is a small lounge and briefing room on each level, allowing crews to briefly rest without being too far from their duty stations. The lowermost deck in the forward hull contains a wide host of secondary systems, such as the electronic warfare gear used to scramble enemy communications. The ship's hanger bay is also in this section, housing the marine exo-suits and any additional carried craft.

The rear section of the spacecraft is built around the standard components called upon by the MacLeod program, in this case a centrifuge, operation section and a cluster of drive modules.

▼ Sensor Systems ▼

- 1 Docking Sensors
- 2 Microwave Pulse-Ranging Antennae
- 3 Shortwave Instrument Clusters
- 4 Phased Array Radar
- 5 Laser Ranging and LIDAR Emitters
- 6 Optical Sensor Cluster

▼ Life Support Syst. ▼

- 7 Shield Generators
- 8 Rotor Bearing Assembly
- 9 Secondary LS Nodes
- 10 Gas Storage
- 11 Superconducting Batteries
- 12 Heat Exchangers





ALEXANDER-CLASS DESTROYER



▼ 2.4.1 Particle Gun Rooms

Sheathed in heavy armor, the gun rooms are the focus of the ship's military might. Equipment backups are widely spread apart to prevent hull punctures from disabling all of the weapons. The cannons themselves are sheer monsters, clawing upwards of forty meters to where their muzzles clear the outer hull armor.

The only way into each gun room is through a heavy blast door, which connects to the central access chamber. This is both to protect the gun from internal explosions and to contain any possibility of the spread of deadly radioactive gases. Fortunately for the gunners, escape pods can still be directly accessed from within the gunroom.

During battle, a single person mans the local control station. Power transfer is handled from the generator rooms themselves. Manning this station in battle takes a great deal of nerves: there is no one to turn to when the hull buckles, and you must trust others to be your eyes.

▼ 2.4.2 Generator Rooms

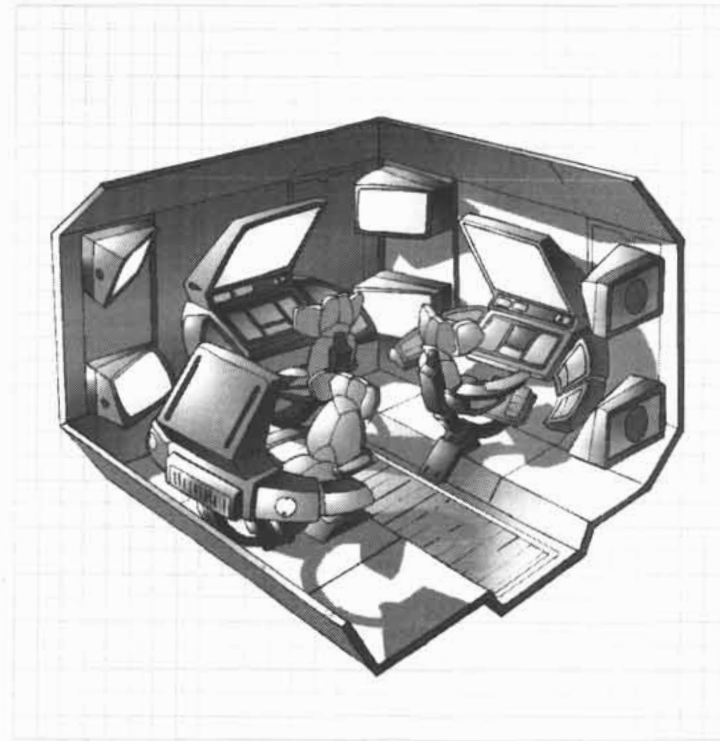
Shrouded in the same internal armor as the particle guns above, these rooms are ominous and bleak. Each chamber is smaller than the average apartment on a cylinder colony and is tight and claustrophobic. Unless being tested, generators normally sit in a quiet stand-by mode. During yellow and red alerts they are brought up to full operating conditions, creating a deafening noise that fades to a deep vibration as the air is drained out.

During alert status, there are at least two personnel per generator, operating on the buddy system. One crewmember operates the control station while the other moves around the generator to correct any surges. Personnel wear their flight suit helmets and communicate through the internal link. Although escape pods are present, an exploding generator is likely to incinerate both the pod and the generator room staff instantly.

▼ 2.4.3 Electronic Warfare Room

Flurries of information streams swirl on the screens placed all around this room. This effect disorients those not previously exposed to it, but veteran operators learn to focus their attention on one screen at a time. Numerous specialized coprocessing, computers churn the information into controls for the jammers, filters and scanners of the electronic warfare suites.

Operating in this room gives one the sense of being in a high-tech spy center. Every fluctuation in the data is examined for its consequences and its probable causes. Security sensitive items contain small self-destruct mechanisms to prevent capture.



▼ 2.4.4 Investigations Center

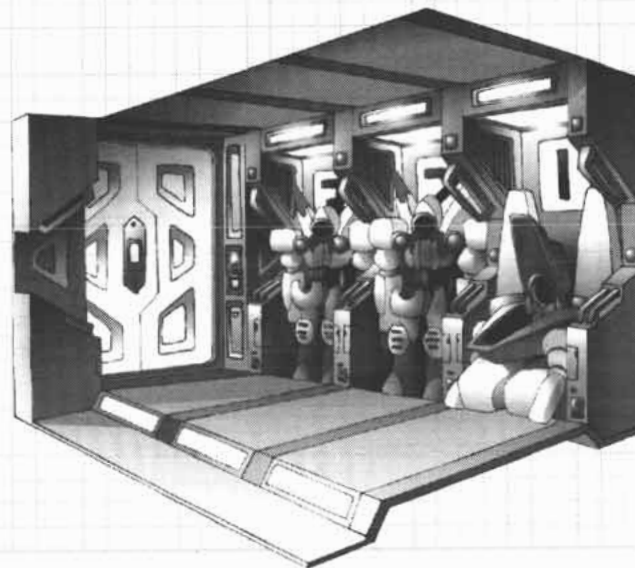
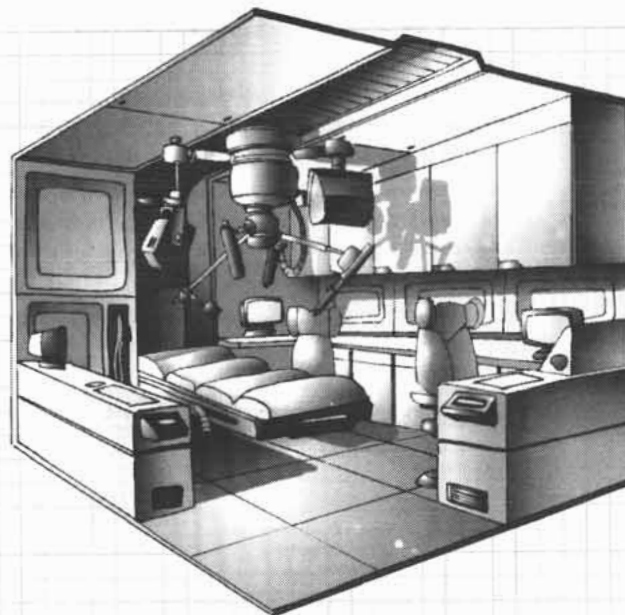
This is the other half of the Alexander's information gathering system. Instead of dealing with electronic data, the investigation center supports hands-on and person-to-person information gathering methods. There is even a room for private interviews or interrogations. The three offices in the center allow each investigation specialist to pursue separate topics. Frequently, they will be pursuing different aspects of the same case. Security on this deck is very tight to protect the offices. Often one or more marines, in armored space suits, will be on duty.

There are two forensics labs, to intensify resources against smuggling and improve the quality of ship searches. These two labs may be used to verify each other's work. Portable equipment may also be taken to another ship for on-location studies. This facility may seem oddly placed in a warship until one considers that over 95% of a ship's time is spent out of combat. In fact, a destroyer spends much of her life patrolling the space lanes. During these times, international legal issues can often be cleared up through good police work. In these cases, it is what is not said that can make all the difference.

▼ 2.4.5 Marine Exo-Suit Bay

Besides having a personal exo-suit, each marine is also specifically assigned to one of the exo bays. Marines are expected to help care for their own gear, from basic cleanliness to large repairs. The racks themselves are color coded by squadron. The hanger bay itself may be depressurized in emergencies, so each marine is issued an extra space suit. This suit is normally stored near the entrances to the hangar. This allows them to suit up and enter the depressurized hangar to board their exo-suits.

Ammunition and tool racks are lined up beside the bays. These contain all the necessary materials to keep the exo-suits running. Quartermasters regularly distribute items to the squad leader who then distribute them to his force.





ALEXANDER-CLASS DESTROYER



▶ 2.5 SHIP PERSONNEL

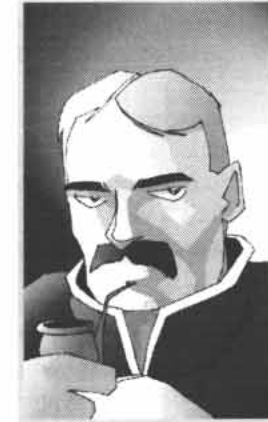
The vessel has four internal departments. Operations, commanded by the ship's Executive Officer, handles the daily activities of the ship and any roles not assigned to the other three departments. Gunnery, led by the ship's Chief Gunner, is in charge of weapon firing and maintenance. Engineering, headed by the Chief Engineer, handles both the ship's engines and the large generator systems tied into the ship's power grid. Finally, there is the Marine detachment led by a Marine Commander, often of Lieutenant or Chief Warrant Officer rank.

▣ Crew Organization Chart

Captain	
Executive Officer	
Sensor Operator	3
Comm Operator	3
Helmsman	3
Navigator	3
Quartermaster	3
Medic	3
Steward	6
Investigation Specialist	3
Computer Specialist	3
EVA Specialist	3
Chief Gunner	
PDS Specialist	3
Missile Specialist	3
KKC Gunner	6
Laser Gunner	6
Radiator Specialist	6
Particle Accelerator Gunner	3
Chief Engineer	
Bosun	6
Engineer	12
Generator Specialist	3
Marine Commander	
Squad Leader	5
Marine	24

▼ 2.5.1 Interview with a Captain

Name:	Charles Allister
Rank:	Captain
Current Assignment:	JSS MacArthur



"Right out of the dock, you, this ship and everything on it, belong to me. I say whether your job is done right, whether you are needed to do something outside your usual duties, or when you can take an extra break. A captain is master of his vessel, second only to God — and that old adage is still as true today as it was for the wet navy of the past.

"Every Captain has their own way of doing things. The first thing you do on a new ship is to get a copy of the ship's standing orders, a semi-official document that is prepared by the captain whenever he gets assigned to a new vessel. You will find what your captain expects of you in it — laying down the ground rules, so to speak.

"Now, some of us are what you will call 'hard-cases,' others are 'easy Steves.' It comes down to an individual's attitude and how he perceives his crew. All of us know that when the brass checks the ship's performance, the one held responsible is the captain. Good or bad, a captain's career is one with the ship, so you can understand my position.

"Fortunately, I have a good Executive Officer. That lady runs the daily operations of the ship, checks supplies, supervises the crew and takes command long enough for me to get some sleep. The Exec also acts as a liaison between the captain and crew, allowing me to retain the distance required for efficient authority."

ALEXANDER-CLASS DESTROYER

2

▼ 2.5.2 Interview with a Gunner



Name:	Eddie Minnick
Rank:	Sergeant
Current Assignment:	JSS Henry

"Besides firing the ship's ordnance, my job is also to maintain it and keep it at peak operating effectiveness. On the weeks of patrol we live, breathe and think nothing but our guns. Good thing, too, otherwise we'd go out of our minds from doing nothing. Like the exo pilots, we suffer long stretches of boredom filled with brief moments of sheer terror.

"There are several types of gunners on board a ship, each one specializing in one of the onboard weapon systems. Personally, I look after the kinetic kill cannons. My buddy Mick is a point defense specialist; he keeps those laser panels ready for use against missiles or M'n'Ms — that's gunner slang for micro-meteorites. That keeps him busier than the rest of us, since the PDS have to work round the clock during flight. Tony is one of the missile specialists, always checking that his 'fishes' are ready to fly.

"On an Alexander, we also have gunner stations on the laser wings. The folks who look after the radiators and heat exchangers are always kept busy at their station. It takes both crewmen to operate those laser emitters at peak efficiency.

"The best way to get promoted to Chief Gunner is to rotate around the guns to learn as much as you can. I'm hoping to work in the laser wings on the next cruise. From there, my options will open to allow me to become a Chief Gunner, either here or on another Alexander, or maybe even an Athena."

▼ 2.5.3 Interview with a Marine

Name:	Theresa Donovan
Rank:	Master Sergeant
Current Assignment:	JSS Rommel

"Up close and personal, that's my motto. During what the politicians call 'peacetime,' I'm still busting heads and getting shot at. Unless someone actually gets on board another ship, you really can't be all that sure of what they have inside. That's what the marines do in the JAF — climb inside and check out the other guy's underpants.



"When we go in, we have several 'shells' to choose from. My favorite is a Decker of the Pouncer variety; it lets me get in most places and still pack a wallop. Hercules armored suits are the minimum when going on somebody else's ship. On our own boat, I mostly go 'soft,' unless I have guard duty at the brig.

"Getting into a Falconer is a whole different ball game. After Elysée, the brass wanted a way to pick up ejected pilots. Guess who got the job? That's right. If a fly-boy gets a golden BB, it's a marine that gets to save his hide. Even if the fight is still going on outside. Marvelous, ain't it?

"During a ship search, the Falconer gets a different job. You see, a destroyer will send one squad of Deckers inside and have a squad of Falconers checking the outside. If for some reason you start shooting at either group, the other team will rip your ship apart. One smuggler tried to make a run for it, but the Falconers torched the engines and shut the drives down. Meanwhile, the Deckers ripped the interior walls open on two decks."





ALEXANDER-CLASS DESTROYER



▶ HAMMER AND TONGS



The drive flares of the escaping ships burned brightly against the starscape. The initial defense had gone well, though the Jovians knew by now that their destination, Station 118, lay partially in ruins. The *Brock* was close enough to detect brief communication bursts between it and the enemy.

"ETA to engagement range with the Tengu?" Zou asked, his eyes fixed on the ever-changing sequences of vectors and numbers on his display.

"32 seconds — mark. They went to full burn but we are still gaining. Sir, what about the *Sally Ride*?" Julianne asked.

"I'll check," interjected Girth.

"Belay that," growled Zou, his heavy brow furrowed with concentration. "Mind your own ship, sailors. Girth, were they signaling?"

"Looks like something hiding in the debris of Station 118," the young comm officer answered.

"Now hear this," Zou announced over the intercom. "We are pursuing two Tengu that have launched their exos. Expect heavy missile fire as we close. Gunners, hammer Tengu One until destroyed. Target engines only on Tengu Two. Repeat, target engines only on the second Tengu. Marines, prepare for boarding action against Tengu Two. Apprehend and interrogate the crippled ship's crew. Captain out."

"We've got incoming long range missile fire!" Girth shouted, his voice shrill, his body leaning forward and straining against the combat restraints.

Zou watched the domed hemispherical display over the bridge light up with new tactical information. One carrier had panicked, firing its missile swarms far too early. At this range, the defense lasers would have little problems tracking the incoming missiles. The other Tengu seemed to be heavily confused by the *Brock*'s jamming and was unable — or unwilling — to support its mate.

"Particle cannon stations may fire when ready," Zou ordered.

* * *

The Captain's commands created more activity across the destroyer. In the shuttle bay, Sergeant Raymond MacGreggor thumped to a launch position in his two-and-a-half meter Decker exo-suit. Clayton, the squad's weapons man, was wielding a large armor piercing gun that would — if need be — punch through the Tengu's hull. MacGreggor and the rest of the squad had smaller 10 mm assault rifle. They sacrificed raw firepower for added precision and mobility, essential qualities in the close quarters of a boarding action.

When his team was in place he signaled a thumbs up to Master Sergeant Emma Heart, the leader of the squad of Falconer exosuits that would be accompanying the Deckers. Designed for space flight, the Falconers would provide cover as the marines boarded.

Mac was ready. Now they just needed to get to the Tengu.

* * *

Strapped into an armored space suit with extra radiation shielding, Gunner Tim Leary grinned at the order to fire. All he could see were the flashing lights of his battle display, and deep down here in his armored pit only the hum of the readied particle gun kept him company. But now something was finally happening!

"Bye bye, Blippy." Tim mocked the radar signal at the center of his targeting reticule as he pressed the firing stud. A sound like crackling lightning snapped inside the casing of the particle gun,

capacitor power levels dropping to nothing. The target ship rocked under the combined fire from Tim and his two fellow particle gunners, each in their own isolated cannon chambers. The Tengu suffered for a moment as energy crackled over its ruined hull. There was a second of calm, and then the vessel exploded.

"Bet that hurt. C'mon generators, juice me up!" The power gauges surged toward the top again. Tim smiled. Watching the gauges closely, the young gunner's eyes locked onto the 'ready' light...

Then, an enemy missile got through.

The explosion tore open the side of the armored pit like a paper bag. A second missile widened the gash, sending shrapnel tearing around the room. Pieces striking the armored walls bounced away until they found something softer to imbed themselves in — something like a human body. Tim gasped for air as blood and atmosphere alike gushed out of his shredded space suit.

Grabbing the handholds, the gunner clumsily scrambled for the nearest escape pod. Barely conscious from lack of oxygen, he missed a step and tumbled into the pod. Weakly, he tapped the button to close the hatch. As it snapped shut, the interior of the small craft filled with precious air. Launch systems lit up into ready mode, the control panel blinking green, waiting for permission to jettison the pod into the void.

Tim murmured into the radio, "wounded, cannon room B. Suit torn bad. In a pod... number six. Holding off ejection."

"Sit tight. A damage control team is coming for you."

Tim looked down at his suit and saw far too much blood. Suddenly, he felt very cold and everything went black.

• * *

MacGreggor's Decker arced around the vectors of the next missile barrage from the remaining Tengu — easy task since they

were aimed at the *Brock*, not the tiny exo-suits headed for the ship itself. The laser batteries were doing better now, and the carrier was still troubled by the jamming. The sergeant kicked his suit into a slow roll to track the missiles, looking back only to see a new puncture wound on the *Brock's* bow.

"Eyes front, Mac," called Emma over the comm from her *Falconer*. "Let us take the missile sections. You Deckers get to play with the crew."

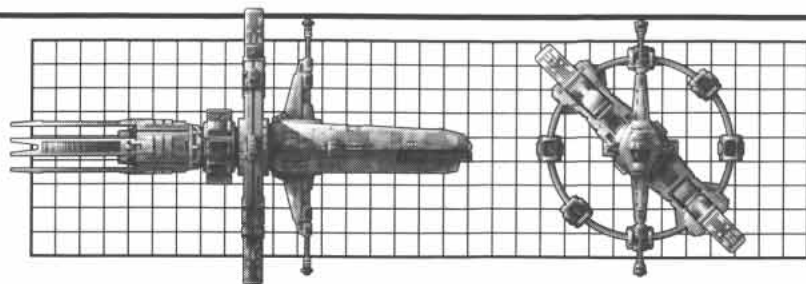
Looking forward, MacGreggor could see that the Tengu was in bad shape. One engine was gone and the mounting frame of the other was twisted out of alignment. The Decker's HUD showed the target's thrust to be a mere trickle. Why was it even bothering? Shards of ceramic and strangely deformed chunks of metal tumbled past him as he maneuvered nearer to the wounded ship.

Clayton's big gun blew an outer access door off its hinges, and MacGreggor made a text-book entry. Nevertheless, the Tengu's first engineer still got a pistol shot off at him — an act of utter desperation given the Decker's heavy armor. Instinctively, MacGreggor swung his assault rifle around and opened up, shredding the crewman despite his heavy space suit. Pushing aside a bent hull plate, he could see why the man was so desperate to protect himself.

Three corpses floated in the beam of his headlight. Blood was caked around their ears, eyes, nose and mouths. They had no space suits, just handcuffs on their wrists. They had died in agony as their blood boiled when a shot from the *Brock's* particle cannons blew the atmosphere out of the Tengu.

MacGreggor had seen bodies like these before, but he still felt a queasiness in his guts as he tapped the closest corpse with his rifle. The body rolled over like a sack of potatoes, revealing a company badge: "Station 118."





► Alexander-class Destroyer

▼ Overall Data:

TV:	171,600	Off. TV:	-	Def. TV:	-	Misc. TV:	-	Cost:	171 M	Indy lemon dice:	3
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▼ Movement Data:

Mode:	Space	Combat:	4 (0.4g)	Top:	8 (0.8g)	Maneuver:	-3	Range:	3,000 hrs	ReMass:	2,000 BP
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▼ Sections:

1 x	Main Hull	2 x	Laser Defense Wing	2 x	KKC Turret
1 x	Habitation Ring	1 x	Ops Section	8 x	Cargo Container
4 x	Drive				

▼ Off & Def Systems

1 x	Point Defense System (main hull)	3 x	Particle Cannon (main hull)	1 x	Missile Bay (main hull)
2 x	Area Defense Laser (wings)	6 x	Kinetic Kill Cannon (turrets)		

Section: Main Hull

▼ Main Data:

TV:	47,000	Off. TV:	30,000	Def. TV:	2200	Misc. TV:	110,000	Cost:	47 M	Indy lemon dice:	3
Crew:	54	Actions:	6	Sensors:	0/4 km	Comm.:	0/15 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	72	Default Size:	36	Base Armor:	75	Light:	75	Heavy:	150	Overkill:	225

▼ Movement Data:

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ Perks & Flaws:

Name	Rating	Game Effect	Name	Rating	Game Effect
Autopilot	-	Lvl 1 pilot	Reinf. Crew Comp.	2	Absorbs first two "Crew" hits
Backup Sys	3	Comm, Fire Con, Life Sup, Sensor	Satellite Uplink	-	x1000 Comm range
Computer	4	CRE 0, KNO 0, PP 4	Cargo Bay x 2	-	1,900 m ³ each
Ejection System	-	160 places	Reinforced Armor	25	Front
HEP: All	-		Sick Bay	4	Zero-Gravity Medbay
HEP: Radiation	4	Screen	Weapon Link	-	All particle cannons
Life Support	-	Full			
Passenger Accom	-	20,000 m ²			

▼ Offensive and Defensive Systems:

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC
1	PDS (ranged)	T	x10	1	+1	6	inf	AM, Heat	15	7400	n/a
	PDS (shield)	FF	x20	M	+1	0	inf	Def., E-shield, Heat	3	75	n/a
3	Particle Cannon	FF	x30	7	-2	0	inf	AD1, Haywire, HEAT	13	4700	n/a
1	Missile Bay	T	x30	5	-2	5	30	Mis. G, Concealed	14	6000	18

► Section: Area Defense Laser Wing

▼ Main Data:

TV:	13,000	Off. TV:	33,000	Def. TV:	1000	Misc. TV:	4400	Cost:	13 M	Indy lemon dice:	3
Crew:	6	Actions:	4	Sensors:	0/4 km	Comm.:	-3/10 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	48	Default Size:	23	Base Armor:	50	Light:	50	Heavy:	100	Overkill:	150

▼ Movement Data:

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ Perks & Flaws:

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup FireCon	-	Absorbs first "FireCon" hit			
HEP: Radiation	4	Screen			
HEP: Vacuum	-	Sealed			
Life Support	-	Full			
Reinf. Crew Comp.	2	Absorbs first two "Crew" hits			

▼ Offensive and Defensive Systems:

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC
1	AD Laser	T	x15	3	+1	4	inf	AD2, AM, Heat	10	18,700	n/a

► Section: KKC Turret

▼ Main Data:

TV:	8000	Off. TV:	23,000	Def. TV:	250	Misc. TV:	800	Cost:	8 M	Indy lemon dice:	3
Crew:	3	Actions:	3	Sensors:	-3/2 km	Comm.:	-3/10 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	19	Default Size:	20	Base Armor:	25	Light:	25	Heavy:	50	Overkill:	75

▼ Movement Data:

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	1,000 hrs	Re. Mass:	-
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▼ Perks & Flaws:

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup FireCon	-	Absorbs first "FireCon" hit			
HEP: Radiation	4	Screen			
HEP: Vacuum	-	Sealed			
Life Support	-	Full			
Reinf. Crew Comp.	1	Absorbs first "Crew" hits			
Weapon Link	-	All kinetic kill cannons			

▼ Offensive and Defensive Systems:

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC
3	KK Cannon	L/R	x30	7	-2	3	300ea	AP	12	3800	12

► **Section: Habitat Ring**

▼ **Main Data:**

TV:	50,000	Off. TV:	0	Def. TV:	1000	Misc. TV:	150,000	Cost:	50 M	Indiv. lemon dice:	3
Crew:	3	Actions:	3	Sensors:	-3/2 km	Comm.:	-3/10 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	60	Default Size:	37	Base Armor:	50	Light:	50	Heavy:	100	Overkill:	150

▼ **Movement Data:**

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup Life Sup	-	Alternate systems	Reinf. Crew Comp.	3	Absorbs first two "Crew" hits
Cargo Bay	-	40 m ³	Sick Bay	4	Medbay
Ejection System	-	256 places	Tool Arm x 6	30	Hardpoints; cannot punch
HEP: All	-	Sealed			
HEP: Radiation	6	Screen			
Laboratories	-	Cooking 1, Electronics 1, Mechanics 1			
Life Support	-	Full			
Passenger Accom	-	28,000 m ³			

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC

► **Section: Ops Section**

▼ **Main Data:**

TV:	7000	Off. TV:	0	Def. TV:	2200	Misc. TV:	19,000	Cost:	7 M	Indiv. lemon dice:	3
Crew:	3	Actions:	2	Sensors:	-3/2 km	Comm.:	-3/10 km	Fire Control:	-5	Type:	Early Prod.
Hull Size:	72	Default Size:	19	Base Armor:	75	Light:	75	Heavy:	150	Overkill:	225

▼ **Movement Data:**

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup Life Sup	-	Alternate systems	Sick Bay	4	Zero-Gravity Medbay
Cargo Bay	-	1,900 m ³			
Ejection System	-	60 places			
HEP: All	-	Sealed			
HEP: Radiation	4	Screen			
Laboratories	-	Electronics 1, Mechanics 1, Investigation 1			
Life Support	-	Full			
Reinf. Crew Comp.	2	Absorbs first two "Crew" hits			

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC

► **Section: Cargo Container**

▼ **Main Data:**

TV:	1400	Off. TV:	0	Def. TV:	160	Misc. TV:	3900	Cost:	700,000	Indiv. lemon dice:	3
Crew:	0	Actions:	0	Sensors:	-	Comm.:	-	Fire Control:	0	Type:	Mass Prod.
Hull Size:	10	Default Size:	10	Base Armor:	20	Light:	20	Heavy:	40	Overkill:	60

▼ **Movement Data:**

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Mass:	-
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
Cargo Bay	-	2500 m ³ each			
HEP: Radiation	4	Screen			
HEP: Vacuum	-	Sealed			
Life Support	-	Limited			
No Comm	4	Can't communicate			
No Sensors	-	Can't Scan			

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC

► **Section: Drive Module**

▼ **Main Data:**

TV:	3600	Off. TV:	0	Def. TV:	1800	Misc. TV:	9000	Cost:	3.6 M	Indiv. lemon dice:	3
Crew:	6	Actions:	4	Sensors:	-3/2 km	Comm.:	-3/10 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	46	Default Size:	20	Base Armor:	50	Light:	50	Heavy:	100	Overkill:	150

▼ **Movement Data:**

Mode:	Space	Combat:	23 (2.3g)	Top:	46 (4.6g)	Maneuver:	-3	Range:	3,000 hrs	Mass:	9000 BP
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup Sys	3	Comm, Fire Con, Life Sup, Sensor			
Ejection System	-	12 places			
HEP: Vacuum	-	Sealed			
HEP: Radiation	4	Screen			
Life Support	-	Full			
Reinf. Crew Comp.	2	Absorbs first two "Crew" hits			

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC



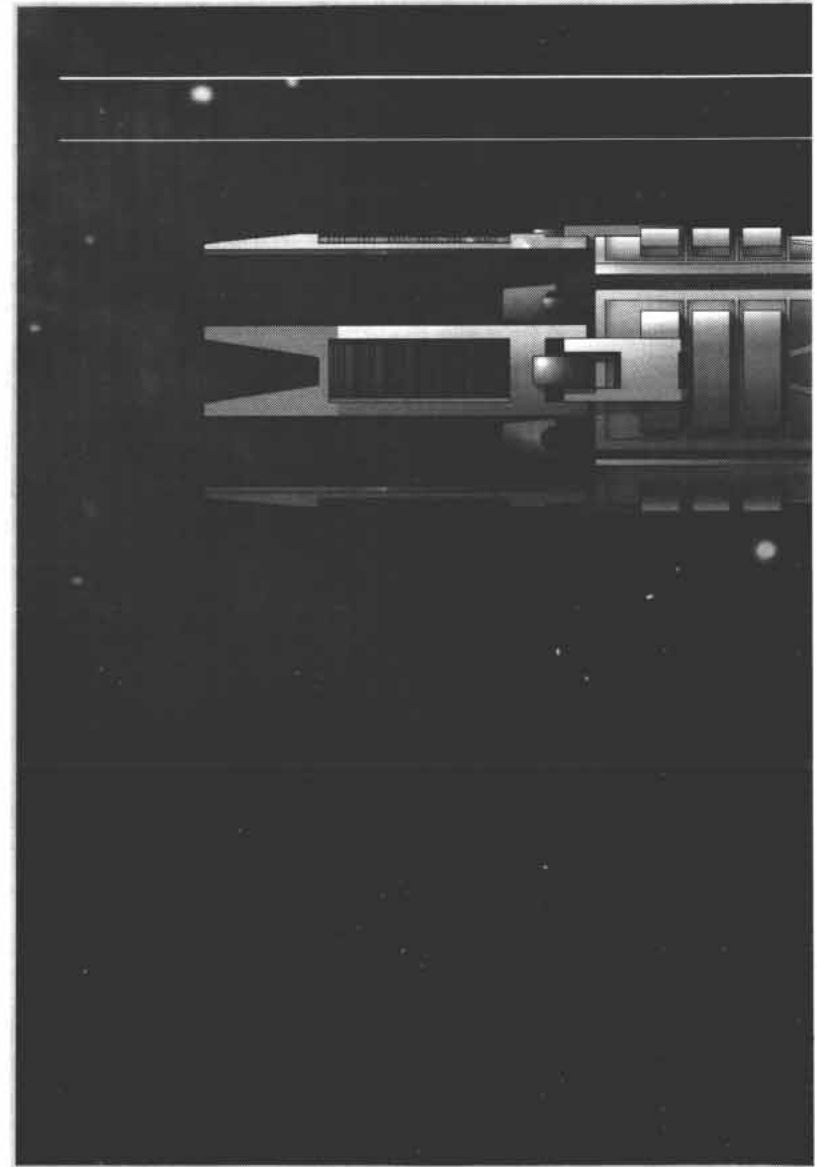


FORGE-CLASS PATROL CARRIER



Patrol Carrier, Forge Class

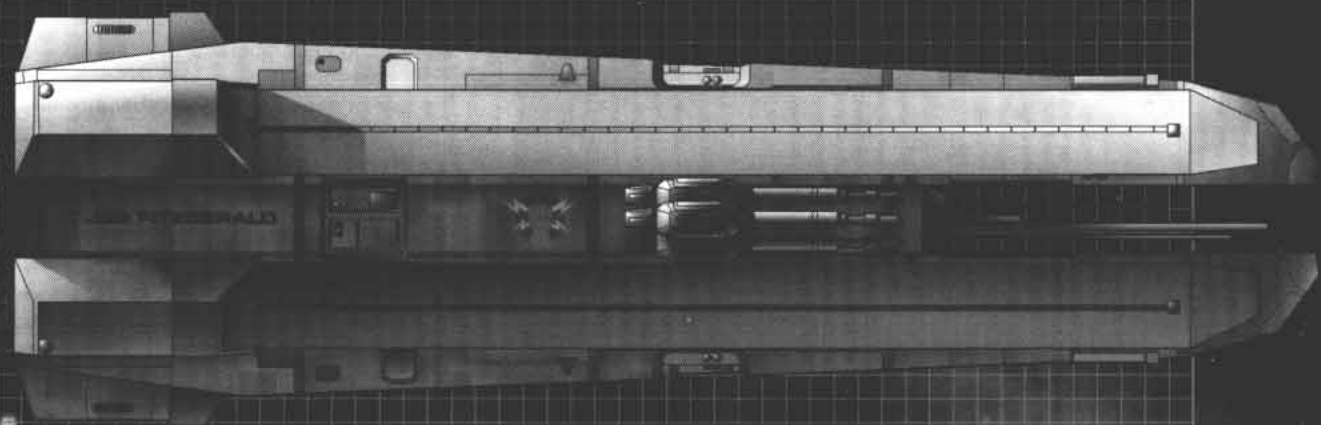
Name	Launched	Current Status
JSS Forge	February 7, 2200	Gamma
JSS Frenzy	July 4, 2201	Beta
JSS Flame	October 4, 2201	Gamma
JSS Fitzgerald	January 10, 2202	Beta
JSS Flanders	May 12, 2202	Beta
JSS Fortuity	December 19, 2202	Gamma
JSS Faulkner	August 9, 2203	Beta
JSS Fencer	December 24, 2203	Detached Duty
JSS Flail	January 18, 2204	Detached Duty
JSS Fyke	June 3, 2204	Gamma
JSS Fierce	November 8, 2204	Lost May/2206
JSS Fontanne	January 6, 2205	Detached Duty
JSS Faraday	August 16, 2205	Beta
JSS Feral	November 26, 2205	Alpha
JSS Fabulous	March 14, 2206	Alpha
JSS Fafnir	July 14, 2206	Alpha
JSS Firkin	December 14, 2206	Beta
JSS Fascine	March 10, 2207	Gamma
JSS Feline	October 19, 2207	Gamma
JSS Fulmar	April 22, 2208	Alpha
JSS Felicity	August 24, 2208	Alpha
JSS Flinders	September 30, 2208	Alpha
JSS Falchion	March 27, 2209	Gamma
JSS Furious	October 13, 2209	Beta
JSS Fierce II	June 5, 2211	Alpha
JSS Fenian	N/A	Building
JSS Facilitator	N/A	Building



FORGE-CLASS PATROL CARRIER

FORGE-CLASS PATROL CARRIER

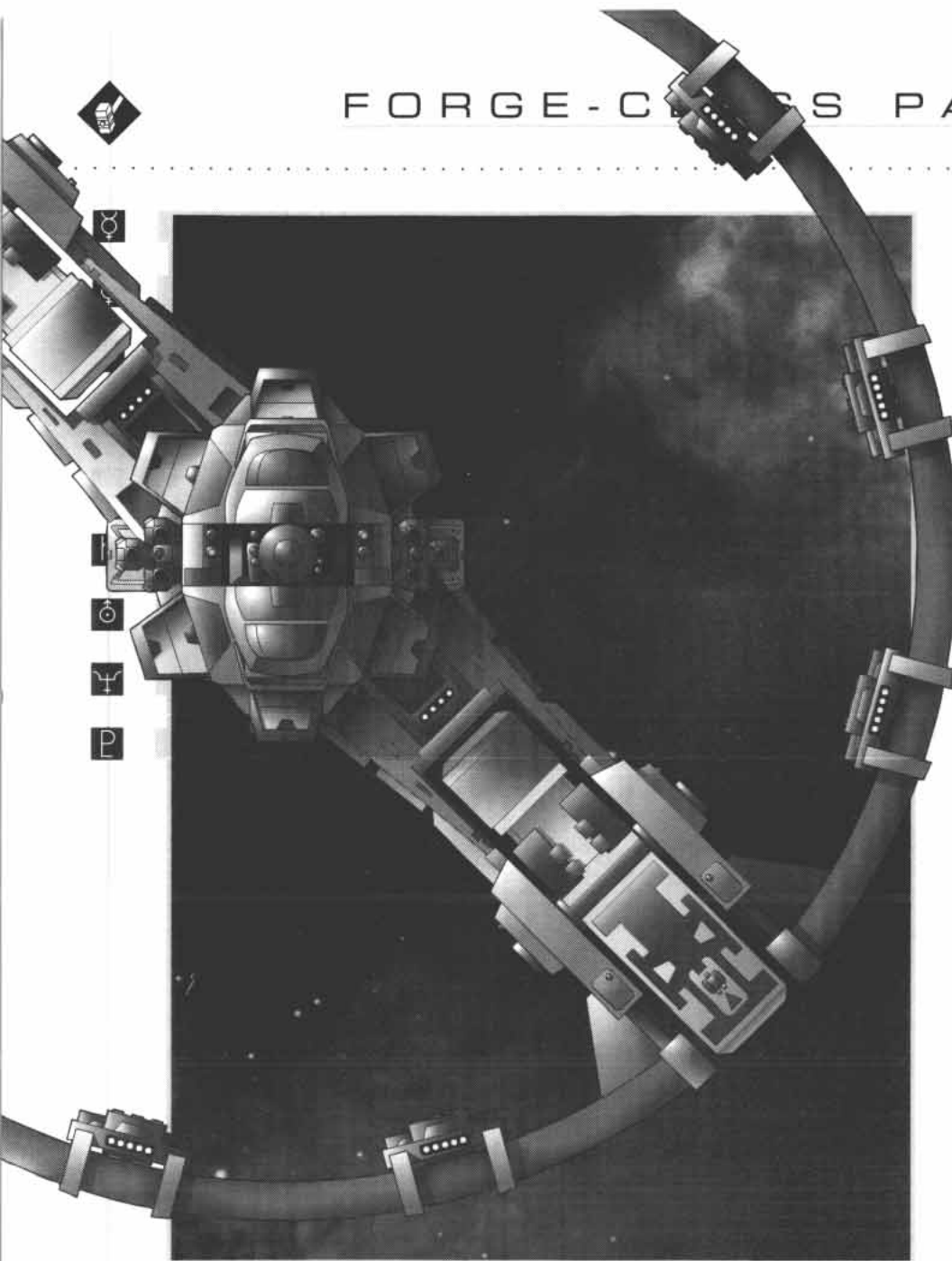
JSS Fitzgerald (2213 Configuration)



Carriers, despite their onboard weaponry, are little more than glorified transports. Paradoxically, they are also a major power in modern space warfare. Their true power lies not in the ship itself, but rather in the smaller craft carried aboard. This way, the strengths of both types of units — range and speed of the vessel, offensive firepower and maneuverability for carried vessels — are merged into a powerful military unit that is more than the sum of its parts.

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FORGE-CLASS PATROL CARRIER



► 3.1 OVERVIEW

The Forge-class patrol carrier is the second vessel type that is most frequently produced from standardized components. Also commonly referred to as an escort carrier, the Forge's main capability is to operate as a mobile base for exo-armors in both detached and fleet operations.

The role of exo-armors and other auxiliary spacecraft has steadily increased over the years, much like the role of planes in the navies of the twentieth century. Originally, planes were used only as scouts for the main fighting ships; during the Second World War, they became the decisive element in naval battles. The direct use of advanced fighter craft is now a key principle to JAF battle tactics. Since exo-armors are a primary force in all types of engagements, it is obviously advantageous to have at least some deployed nearby at all times.

The Forge-class is therefore specifically designed to allow near-continuous launch and recovery operations. The patrol units can fulfill such duties as forward scout, combat space patrol and close inspection of approaching ships.

While the habitation, operations and engine sections are similar to the ones used on the Alexander-class destroyer, the forward hull of the Forge is quite distinctive. Nearly half of its interior volume is taken up by a large, two-deck hangar bay. A single missile launcher and two individual KKC turrets allow the carrier to operate independently when needed.

▼ 3.1.1 Capabilities

Typically, a standard patrol is composed of one or two Pathfinders, often the Recon variant (though one Retaliator may be added if combat is expected). Each patrol conducts its mission for four hours, plus the time needed to deploy and return. This works on a slightly different schedule from the three-watch rotation used by everyone else on the ship (see Chapter 5, page 88).

FORGE-CLASS PATROL CARRIER

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Two spare vehicles stored in hangars provide a means to continue operations when breakdowns or combat losses occur. Normally one is a Pathfinder Command, which is manned by the squadron leader when the entire force is deployed en masse. The other is usually a back up for the combat force, typically a Retaliator Alpha. In times of war, operating procedures call for the combat spare to be upgraded to a heavier combat exo-armor, such as a Vindicator Alpha.

The large prow mounts no less than six catapult launch systems, similar to the ones used on the more recent Valiant-class ships. The catapults are rail guns with the magnets geared for high-mass, low-velocity operations. They accelerate a simple launch cradle, which an exo-armor can clamp onto with its feet and hands (not having those, interceptors have special hardpoints for catapult operations).

A smaller electromagnet series runs parallel to and just inside of the catapult housing. These share close to 80% of the same equipment as the catapults, including power leads, capacitors and coolant loops. They are geared for low-mass, high-velocity firings, however, making them part of one of the longest railgun designs currently mounted on a ship. The "Prins Cannon," so named after the designer who first proposed the concept, gives the carrier the ability to punch through even heavy armor.

Since the carrier may be sent out on lone assignments, a host of M-pods, M-bots and fifteen exo-suits are also present. The exo-suit force is comprised of three squads of five, making it one half of a regular marine platoon. One squad always consists exclusively of Pouncer versions of the Decker suits (*The Chaos Principle*, page 100), which are used for boarding actions, contraband searches and carrier internal defense. Another squad is made up of Falconers (*Mechanical Catalog*, page 96), which may be called upon to rescue the escape pods of downed pilots. The third squad is constituted at the captain's discretion; standard Deckers are generally preferred.

▼ 3.1.2 Operational Role

With a normal staffing of twelve pilots, including squadron leaders, each pilot is expected to conduct only one mission a day. This allows sufficient rest time to avoid fatigue when operations continue over days, weeks or even months. It also means that each pilot does not have his or her own designated exo-armor. The exo-armors each fulfill two patrols.

With an hour to deploy and return for each mission, the daily activity breaks down to ten hours in flight and fourteen hours of maintenance. Sufficient flight crew permit the Forge's basic standard complement (six exo-armors or interceptors, though there is space for twelve) to operate in a cycle of three patrols of two exo-armors each, according to this schedule. This cycle keeps one pair of exos constantly "in the air."

A communications center is used to co-ordinate efforts with the patrols. When accompanying a convoy, the Forge acts as the convoy master, with the comm center allowing interaction on channels for individual ships or groups. Formation-keeping messages are also coordinated through here.

There are twenty-four Forge-class vessels in operation overall. Alpha, Beta and Gamma Divisions each have seven carriers, and three patrol carriers act as independent. Most of the latter are teamed up with an Alexander-class destroyer and a Yuri Gagarin-class fleet tender to form free roaming three-ship groups (see Chapter 5 for more information). The remaining ships perform various duties; for example, the JSS *Fencer* is the home base of the JAF's Solar Flares exo-armor acrobatic team.



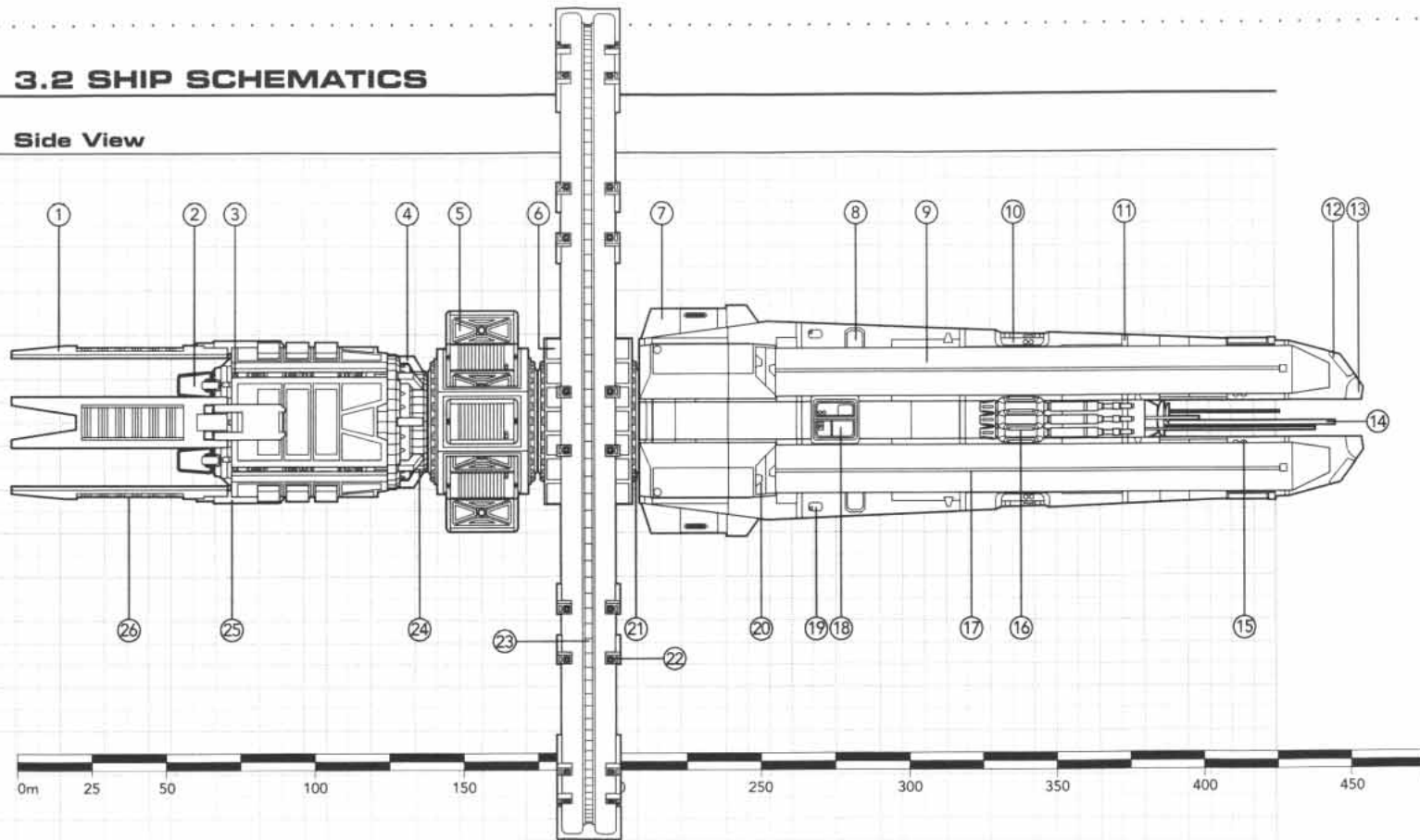


FORGE-CLASS PATROL CARRIER



▶ 3.2 SHIP SCHEMATICS

① Side View



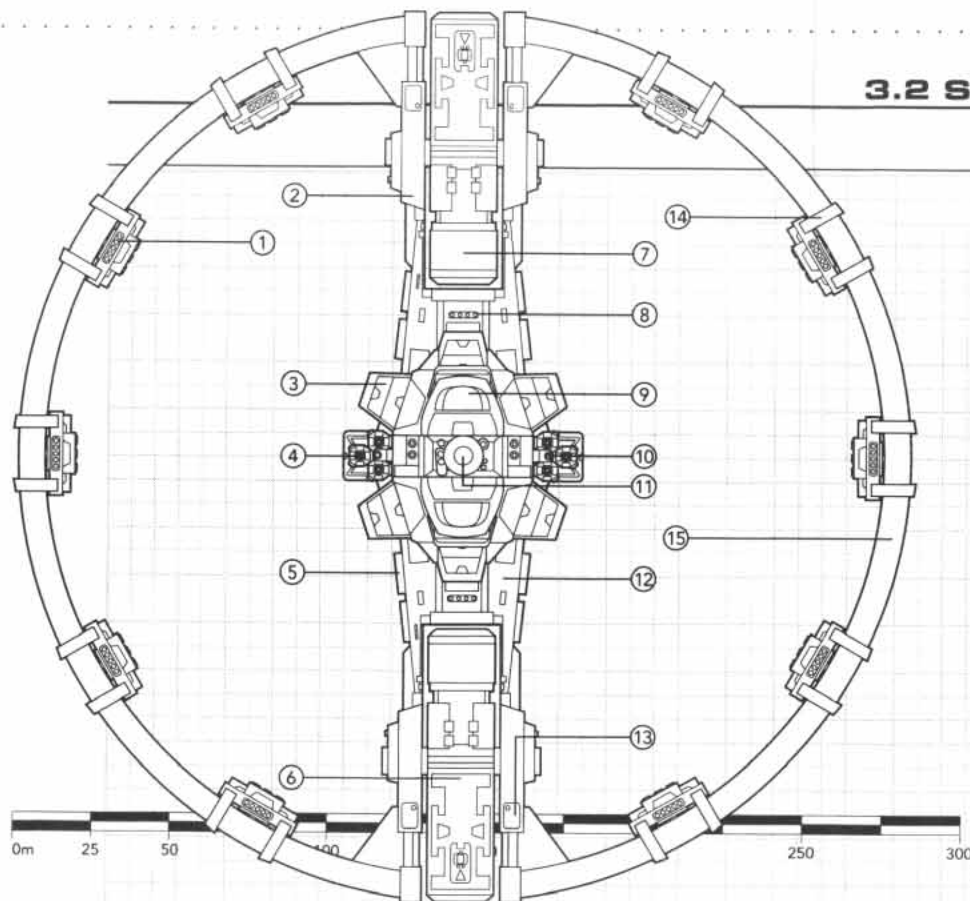
▼ Legend

1	Drive Fin	11	Top PDS Emitter Panel	21	Rotor Support Collar
2	Exhaust Collimators	12	Missile Launch Tubes	22	Short Range Sensors
3	Aft Maneuver Jet Cluster	13	Forward PDS Emitter Panel	23	Structural Ring Heat Sink
4	Engine Mount/RAM Hardpoint	14	Forward Sensor Cluster (retracted)	24	Rear Shield Generators
5	Cargo Racks	15	Nose Maneuver Jet Cluster	25	Drive Fin Mount
6	Rotor Assembly Heat Sinks	16	Starboard KKC Turret	26	Heat Sink
7	Launch Bay #1	17	Catapult System #5		
8	Deck Service Block (retracted)	18	Shuttle Bay Door		
9	Runway #6	19	Short Range Sensors		
10	Upper Service Door	20	Launch Door #5		

FORGE-CLASS PATROL CARRIER

3.2 SHIP SCHEMATICS (CONT.)

Front View



Legend

1	Short Range Sensor Cluster	11	Forward Sensor Cluster
2	Habitat Rotation Assembly	12	Rotor Arm
3	Launch Bay #6	13	Access Panel
4	Starboard KKC Turret	14	Modular Hardpoint
5	Rotor Arm Heat Sink	15	Structural Ring
6	Habitat Heat Sink		
7	Habitat #1 (Flight Position)		
8	Auxiliary Sensor Cluster		
9	Missile Launch Tubes		
10	Port Turret Targeting Sensor		

Specifications

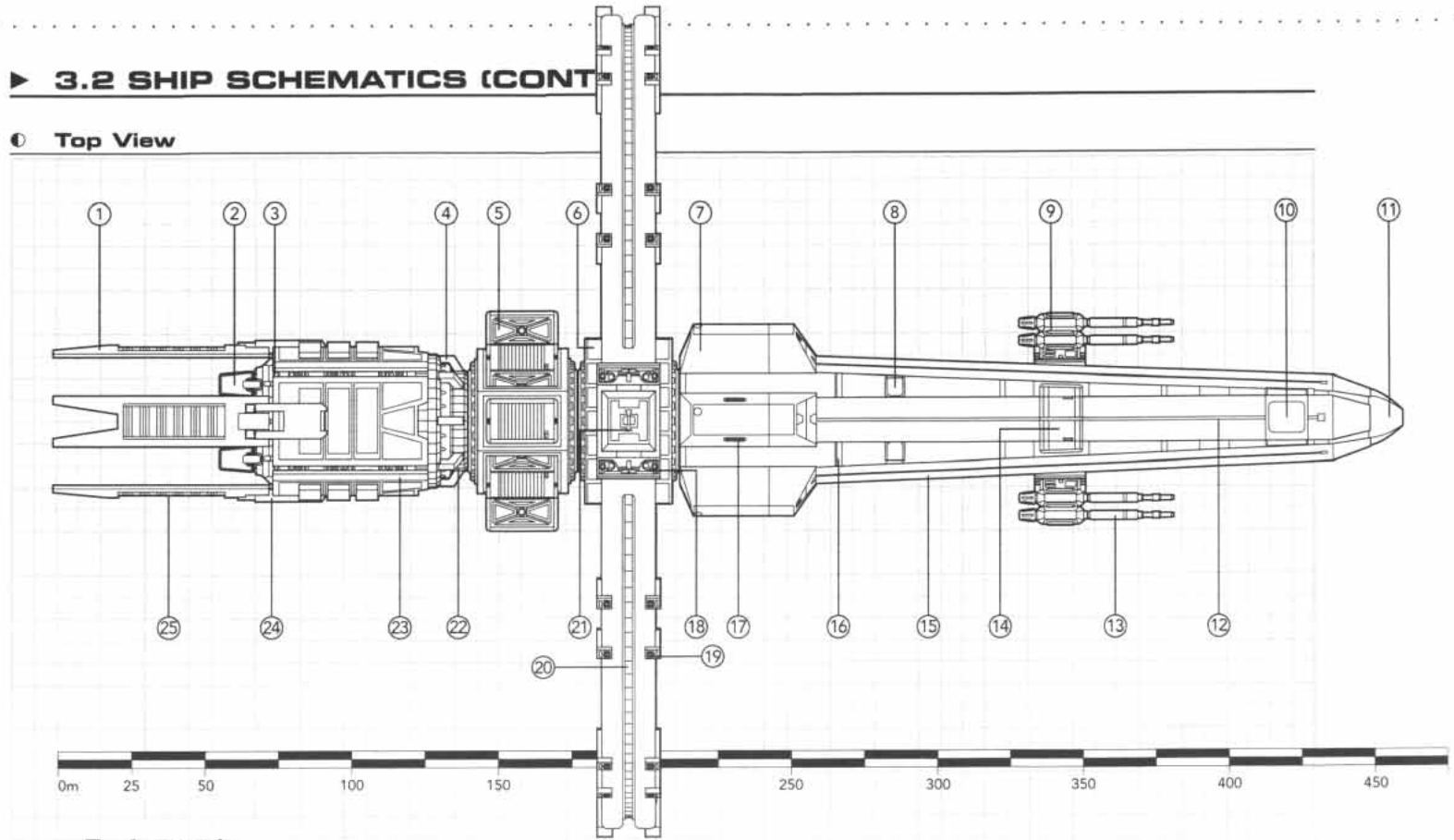
Name:	Forge
Origin:	Jovian Confederation
Manufacturer:	Various Shipyards
Type:	Patrol Carrier
Control System:	Bridge w/astronomical display
Length (total):	460 m
Width (total):	285 m
Empty Weight:	39,000 Tons
Loaded Weight:	55,000 Tons
Main Drive:	4 x 20MW
Secondary Powerplant:	2 x 2000 KW
Main Thrusters:	4 x 21,000,000 kg (nominal)
Apogee Motors:	38
Acceleration:	0.8 g
Onboard Sensors:	Fire Control Radar, Infrared/ Ultraviolet, Lidar, Magnetometer, Microwaves, Motion Detectors, Radcounter, Search Radar, Telescope
Fixed Armament:	PDS, 6 x Kinetic Kill Cannons, 1 x Missile Bay, 1 x Railgun
Additional Armament:	Auxiliary Craft
Defensive Systems:	Mag Screen
Equipment:	Escape Pods



FORGE-CLASS PATROL CARRIER

▶ 3.2 SHIP SCHEMATICS (CONT)

① Top View



▼ Legend

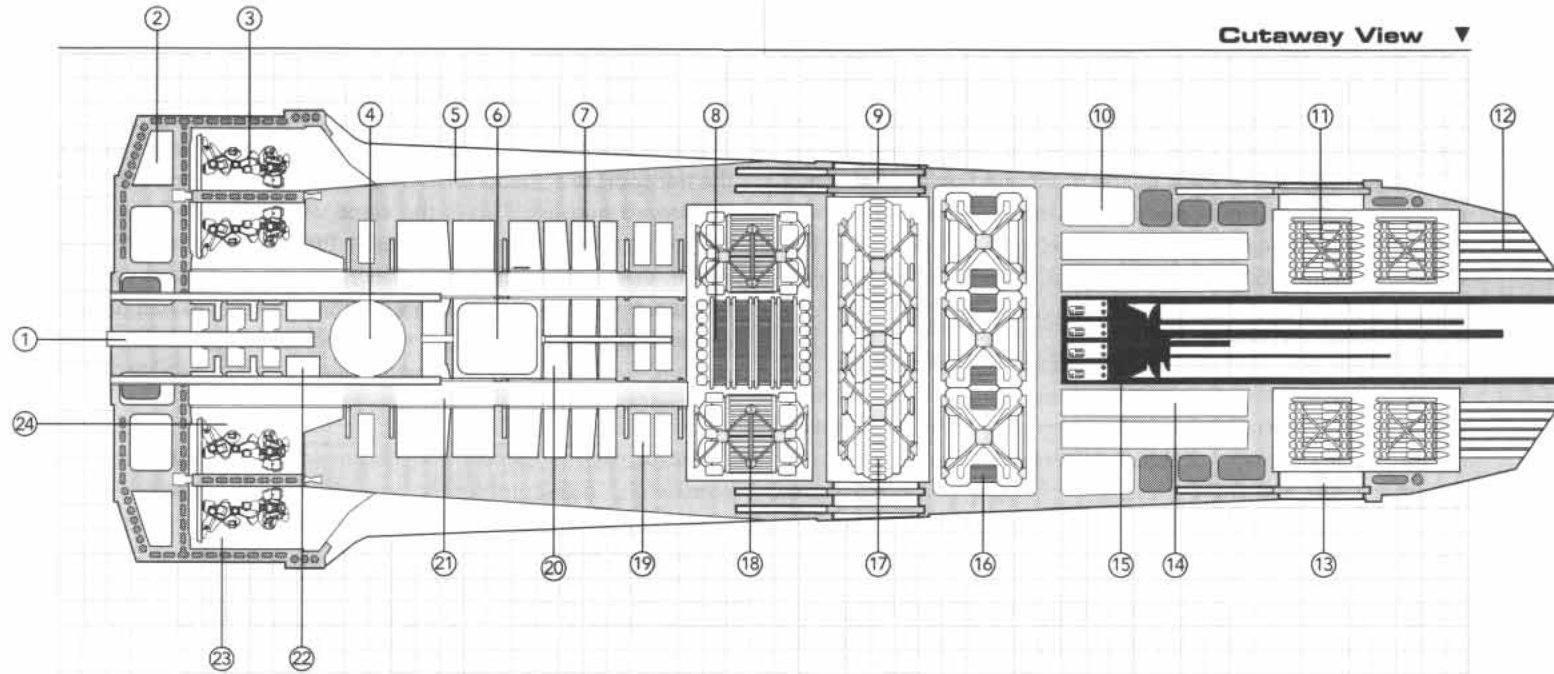
1	Drive Fin	11	Missile Launch Tubes	21	Habitat (Flight Position)
2	Exhaust Collimators	12	Catapult System #1	22	Rear Shield Generators
3	Aft Maneuver Jet Cluster	13	Starboard KKC Turret	23	Drive Mount Shield
4	Engine Mount/RAM Hardpoint	14	Upper Service Door	24	Drive Fin Mount
5	Cargo Racks	15	Runway #6	25	Heat Sink
6	Rotor Assembly Heat Sinks	16	Top PDS Emitter Panel		
7	Launch Bay #2	17	Heat Exchanger		
8	Deck Service Block (retracted)	18	Centrifuge System Cluster		
9	Port KKC Turret	19	Short Range Sensors		
10	Forward Loading Door	20	Structural Ring Heat Sink		



FORGE-CLASS PATROL CARRIER

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3.2 SHIP SCHEMATICS (CONT.)



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Legend

1	Engineering/Habitat Access	11	Missile Bunker #1	21	Service Elevator
2	Aft Storage Bay	12	Launch Tubes	22	Observation Deck
3	"Ready-5" Exo-Armor	13	Forward Loading Door	23	Launch Bay
4	Bridge	14	Forward Engineering Deck	24	Servicing Area
5	Runway #1	15	Sensor Cluster (Retracted)		
6	Shuttle Bay	16	Bulk Storage		
7	Crew Quarters	17	Gas Storage		
8	Superconducting Batteries	18	Heat Exchangers		
9	Service Loading Door	19	Upper Service Decks		
10	Forward Storage	20	Flight Crew Quarters		

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FORGE-CLASS PATROL CARRIER



► 3.3 HISTORY

Carriers have taken on additional importance over the last few decades, the exo-armors and interceptors favored by modern warfare requiring them for long distance mobility. Since their introduction at the turn of the century, the Forge-class carriers have become a major asset in the Jovian fleet. Interestingly, however, the names of exo squadrons will be mentioned quite often when reviewing public historical records, but there will rarely be a mention of their home carrier (with some exceptions, however — see below). Military records have a greater respect for these ships' important role.

Carriers like the *JSS Forge*, *JSS Faraday*, *JSS Fierce II* and *JSS Fontanne* have developed individual reputations. Exo squadron commanders often request assignment to one of these "blessed" carriers, so the captains of these ships tend to have their choice of better pilots and flight crew. This, of course, only makes the vessel better, perpetuating the legend and creating a self-reinforcing cycle.

In times, some vessels may well attain a quasi-legendary status, simply by virtue of one amazingly successful operation. Reporters will often buzz around the crew to learn what important role the carrier is to play on its next mission; the JAF high command encourage this "Top Gun" attitude to help in its recruitment drives, and the crew is usually happy to oblige.

With carrier command being a prerequisite to an active fleet command, it is no surprise that many of the JAF's staff generals have had a tour of duty aboard a *Forge*. Their appreciation of the design helps to ensure the Forge-class history is far from over. General MacLeod's opponents have long since had to give in to the success of this vessel.

Ships produced early in the series may be getting old, but they are neither outdated nor rusty: a technological upgrade is effectively received every time the assigned exo-armors are rotated.

For example, most carriers have their hangar equipment changed once a year. The mission capabilities of the ship are also easily adapted by simply modifying the carried craft complement. The general design of the class is also constantly upgraded, with the improvements being used in every subsequent hull built.

One important role of the patrol carrier is virtually always ignored: the transport of a squadron to a new post, such as a space station or forward outpost. This is the same vital, unnoticed duty performed by American escort carriers in the Pacific theater of World War II. Upon completion of delivery, the carrier departs, leaving the exo-armors to earn history's attention. Since this role has the carrier returning without craft to defend it, it was considered important that they have their own inherent fighting ability, hence the weapon array mounted on the hull.

Dedicated space carriers had traditionally been considered as somewhat "non-combatant" vessels. This perception slowly changed as more and more spacecraft showed up in battle with auxiliary vehicles stuffed in their holds or strapped across their hull. This change in perception is one of the factors that led to the interesting development of the *Forge*'s railgun system.

A carrier's electromagnetic catapults normally provide only a means to safely launch a craft along a known vector. On the *Forge*, an experiment was attempted by placing the catapult power systems in close proximity instead of on opposite sides of the hull to accommodate the inexpensive "Prins" railgun system. Ever since then, the carrier has had at least the option of providing long range fire support to their squadron. This additional threat can encourage a damaged opponent to leave the area, allowing the carrier to rescue ejected pilots.

FORGE-CLASS PATROL CARRIER

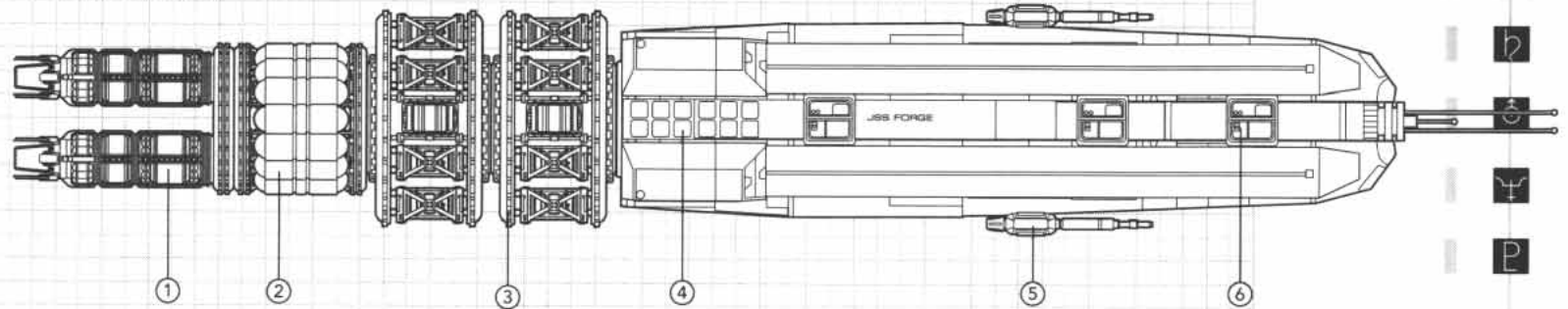
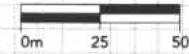
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JSS FORGE ◀

Forge-class Vessels, 2200-2201 ⓘ

Legend ▼

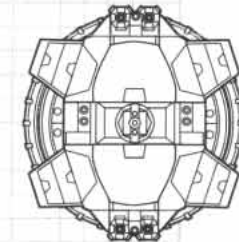
- 1 UY-890 Drive
- 2 Reaction Mass Tanks
- 3 JAF2197 Cargo Racks
- 4 Phased Sensor Array
- 5 Twin KKC Turret
- 6 Forward Shuttle Bay



The Forge-class patrol carrier was fairly large for its time, but most of its volume was taken up by reaction mass tanks and numerous auxiliary craft bay. The illustration above show the *Forge* as it appeared in April 2200, two months after its launch.

JSS Forge: launched February 7, 2200. First of the vessels produced, the *JSS Forge* has been very active. It has been in combat itself seven times, not counting exo-only engagements. Over the years it has seen the installation of two habitation modules and both of the engines, proving the reliability of the vessel.

JSS Frenzy: launched July 4, 2201. This carrier is currently in use as an escort for the Beta Division's flagship. The *Frenzy* is always close by and her exo-armors maintain a constant patrol.





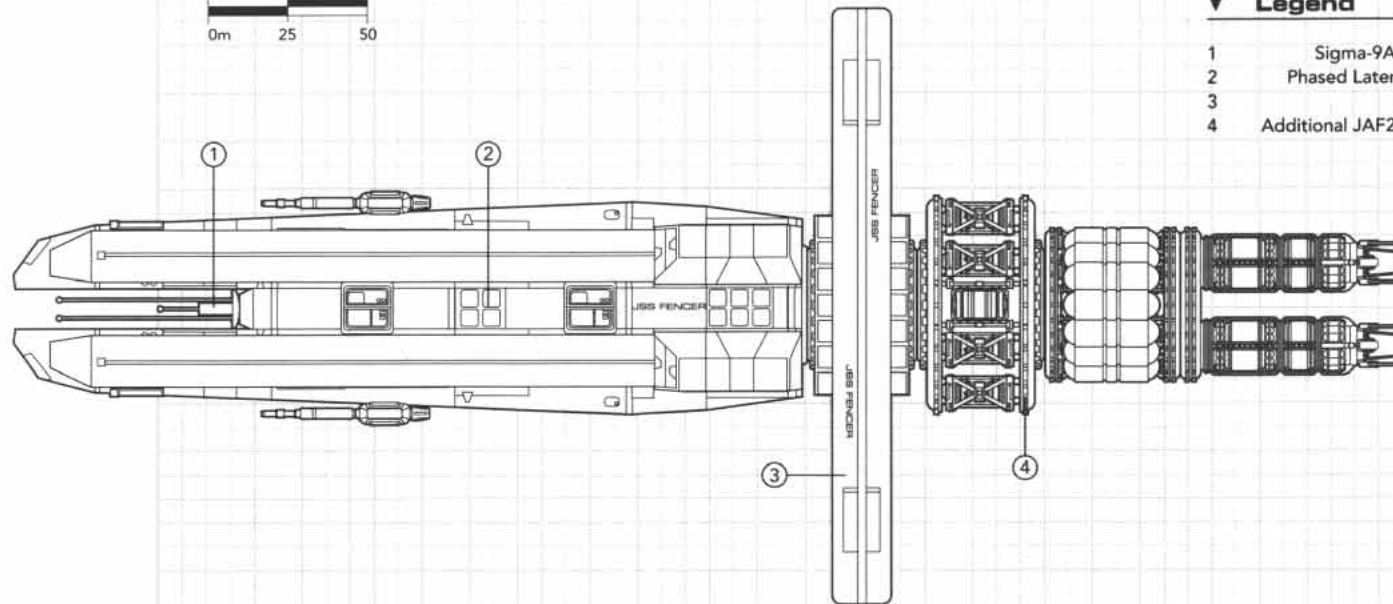
FORGE-CLASS PATROL CARRIER



► JSS FENCER

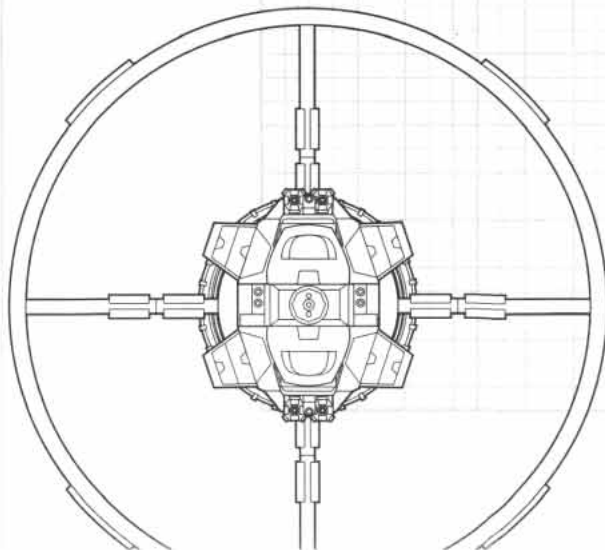


① Forge-class Vessels, 2202-2203



▼ Legend

- 1 Sigma-9A Sensor Cluster
- 2 Phased Lateral Sensor Array
- 3 Structural Ring
- 4 Additional JAF2197 Cargo Rack



The design of the *JSS Forge* reflected the initial design of the class, but it was the launch of the *Flanders* which established what would become the familiar silhouette of the class. The illustration above shows the *Fencer* as it appeared in April 2208, just before its refit.

JSS Flanders: launched May 12, 2202. The *Flanders* currently holds the record for "most days on patrol in a year." This is something the crew takes great pride in.

JSS Fencer: launched December 24, 2203. The famous Solar Flares demonstrator team operates from this vessel. The carrier itself transports them around the Jovian colonies for local space shows. Occasionally, interplanetary shows come up and the Solar Flares and the *Fencer* are sent as the Confederation's representatives.

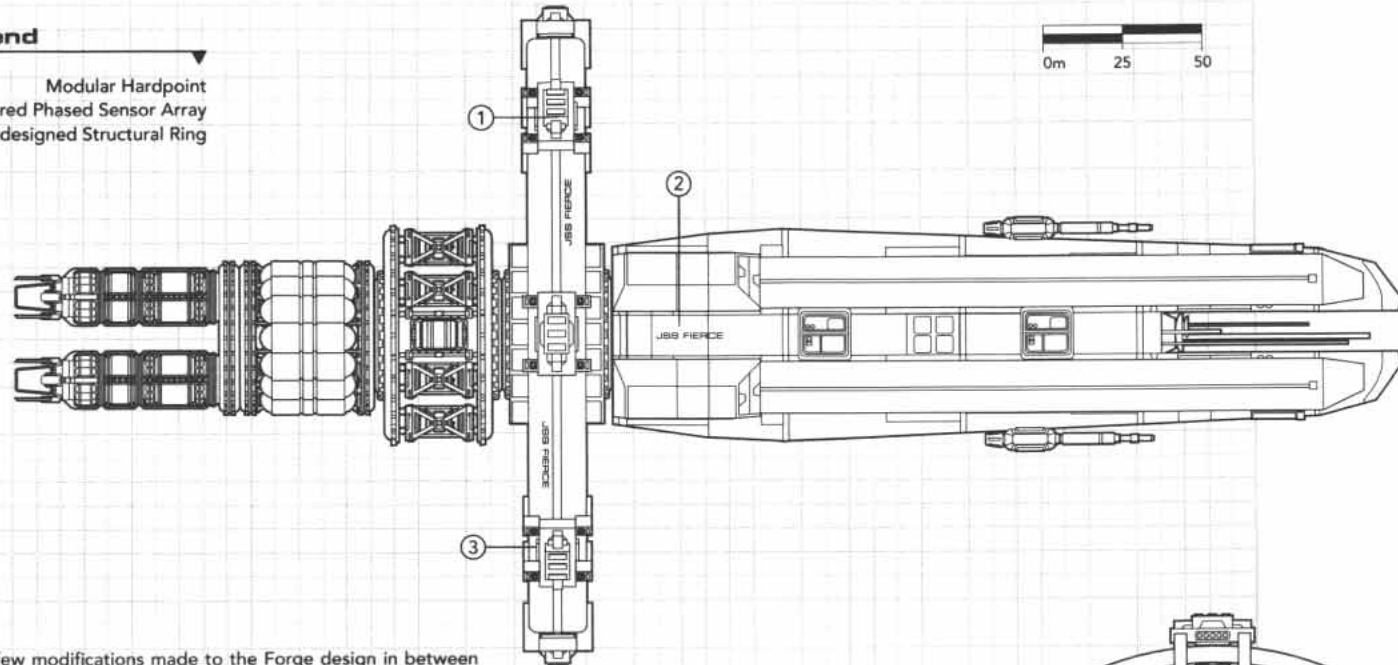
FORGE-CLASS PATROL CARRIER

JSS FIERCE ◀

Forge-class Vessels, 2203-2204

Legend

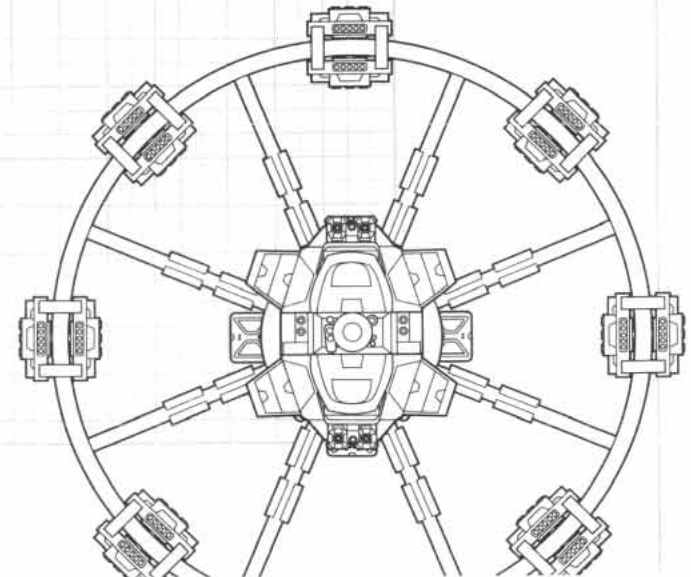
- 1 Modular Hardpoint
- 2 Armored Phased Sensor Array
- 3 Redesigned Structural Ring



There were few modifications made to the Forge design in between 2203 and 2204. The structural ring was enlarged and equipped with modular hardpoints capable of carrying exos, missiles or supplies, albeit without armor protection. The illustration above shows the *Fierce* at the time of her disappearance in May 2206.

JSS Flail: launched January 18, 2204. The *JSS Flail* is used for long-range patrols beyond the orbit of Jupiter. After each mission almost all of the crew are transferred to regular assignments.

JSS Fierce: launched November 8, 2204. In May 2206, the *Fierce* entered the asteroid belt in search of a pirate base. Her wreckage was found drifting in October 2209, with no survivors. There was evidence of a battle, but although CEGA involvement was suspected, there is insufficient proof for legal action.



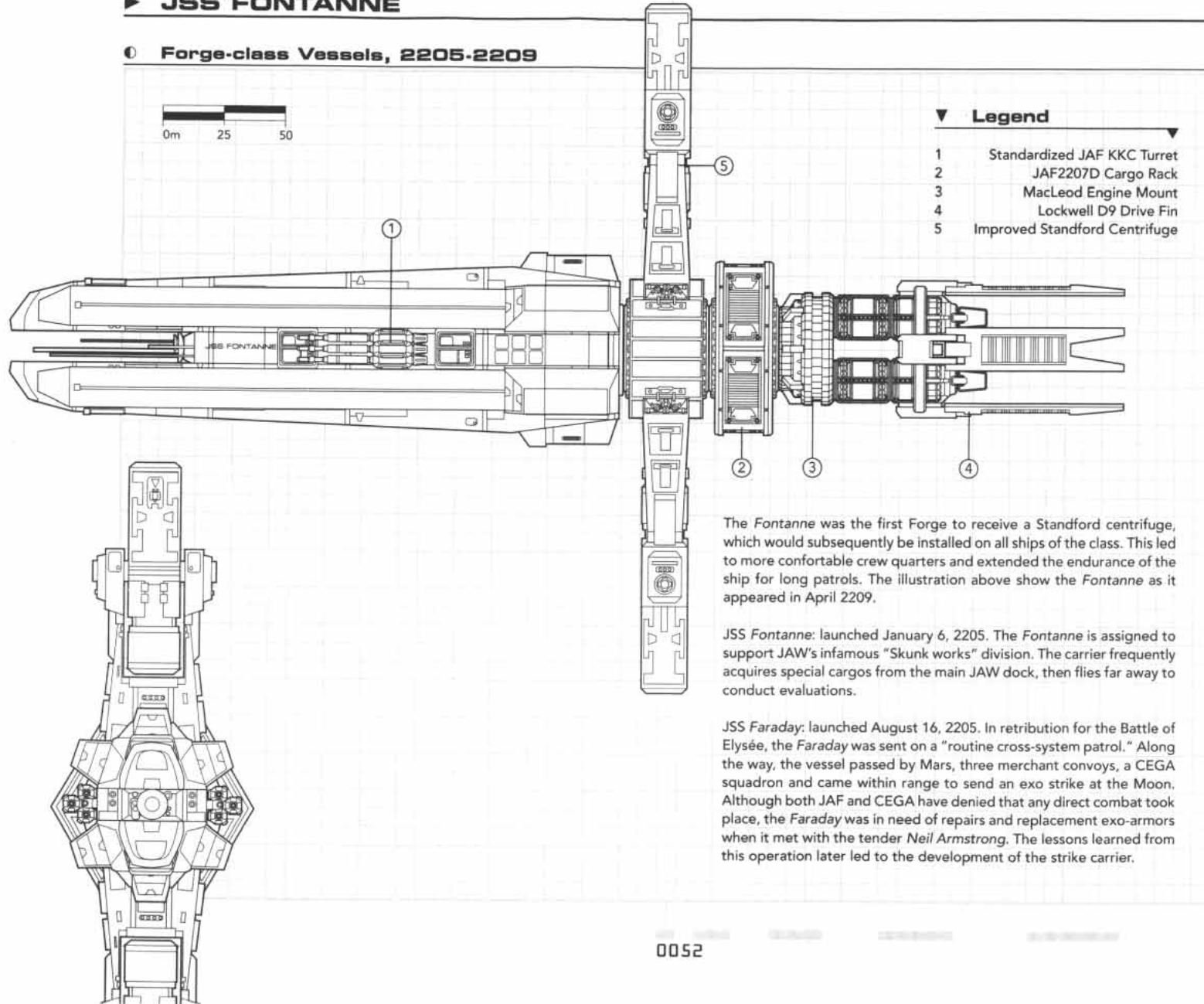
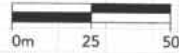


FORGE-CLASS PATROL CARRIER



► JSS FONTANNE

① Forge-class Vessels, 2205-2209



▼ Legend

- 1 Standardized JAF KKC Turret
- 2 JAF2207D Cargo Rack
- 3 MacLeod Engine Mount
- 4 Lockwell D9 Drive Fin
- 5 Improved Stanford Centrifuge

The *Fontanne* was the first Forge to receive a Stanford centrifuge, which would subsequently be installed on all ships of the class. This led to more comfortable crew quarters and extended the endurance of the ship for long patrols. The illustration above show the *Fontanne* as it appeared in April 2209.

JSS Fontanne: launched January 6, 2205. The *Fontanne* is assigned to support JAW's infamous "Skunk works" division. The carrier frequently acquires special cargos from the main JAW dock, then flies far away to conduct evaluations.

JSS Faraday: launched August 16, 2205. In retribution for the Battle of Elysée, the *Faraday* was sent on a "routine cross-system patrol." Along the way, the vessel passed by Mars, three merchant convoys, a CEGA squadron and came within range to send an exo strike at the Moon. Although both JAF and CEGA have denied that any direct combat took place, the *Faraday* was in need of repairs and replacement exo-armors when it met with the tender *Neil Armstrong*. The lessons learned from this operation later led to the development of the strike carrier.

FORGE-CLASS PATROL CARRIER

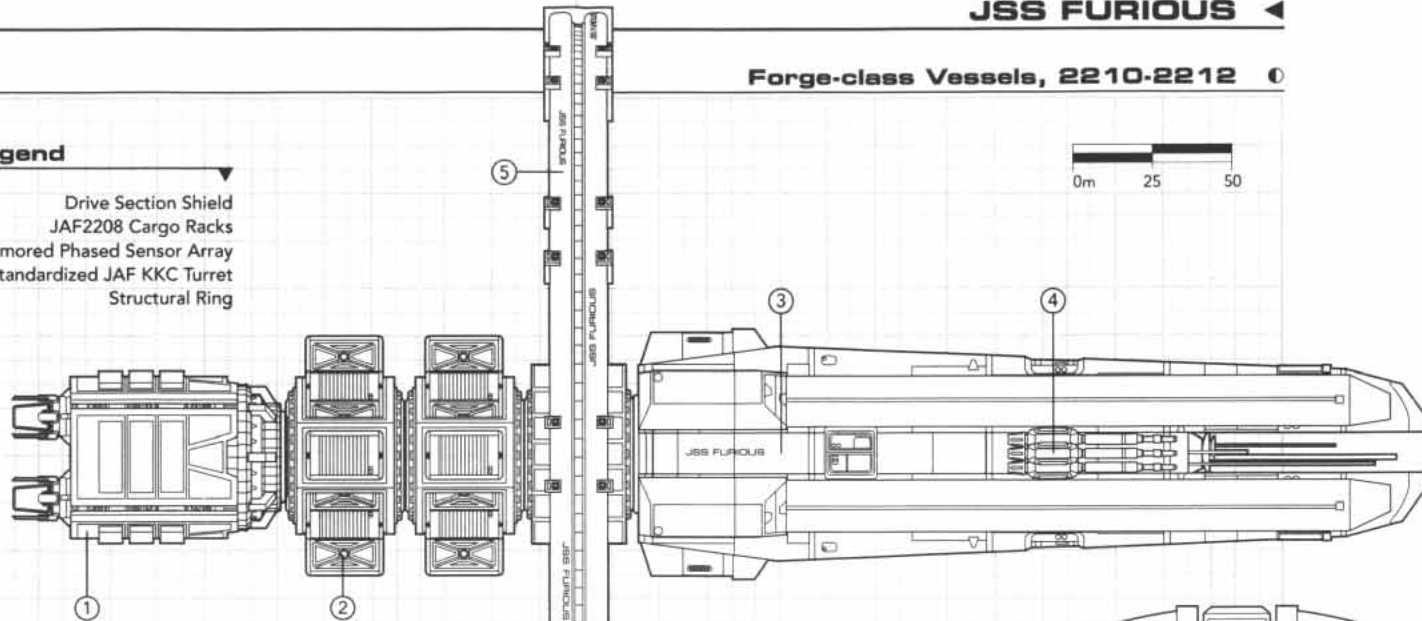
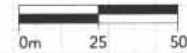
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JSS FURIOUS ◀

Forge-class Vessels, 2210-2212 ◉

Legend ▼

- 1 Drive Section Shield
- 2 JAF2208 Cargo Racks
- 3 Armored Phased Sensor Array
- 4 Standardized JAF KKC Turret
- 5 Structural Ring

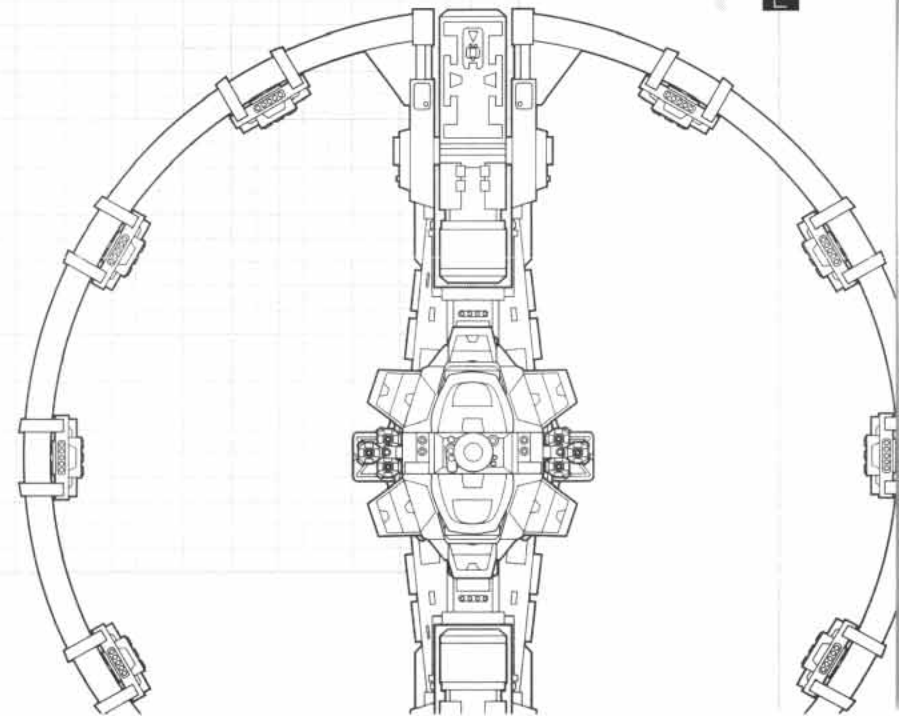


The structural ring that was deleted from the Forge design specs after the destruction of the *Fierce* made a comeback in 2210, being refitted to many of the Forge-class vessels. The illustration above shows the *Furious* as it appeared in April 2212.

JSS Falchion: launched March 27, 2209. Ever since the Battle of Elysée, the *Falchion* has been performing “watchdog” duty around Jupiter. Any large group of incoming vessels will get a fly-by from her exo-armors well before reaching Jupiter orbit.

JSS Furious: launched October 13, 2209. This is carrier that served alongside the *JSS Hannibal* in the latter’s combative first patrol. During the fight, the *Furious* sent her exo-armors up ahead while it stayed back to protect the tender.

JSS Fierce II: launched June 5, 2211. Its crew seems particularly interested in avenging the destruction of the first vessel.



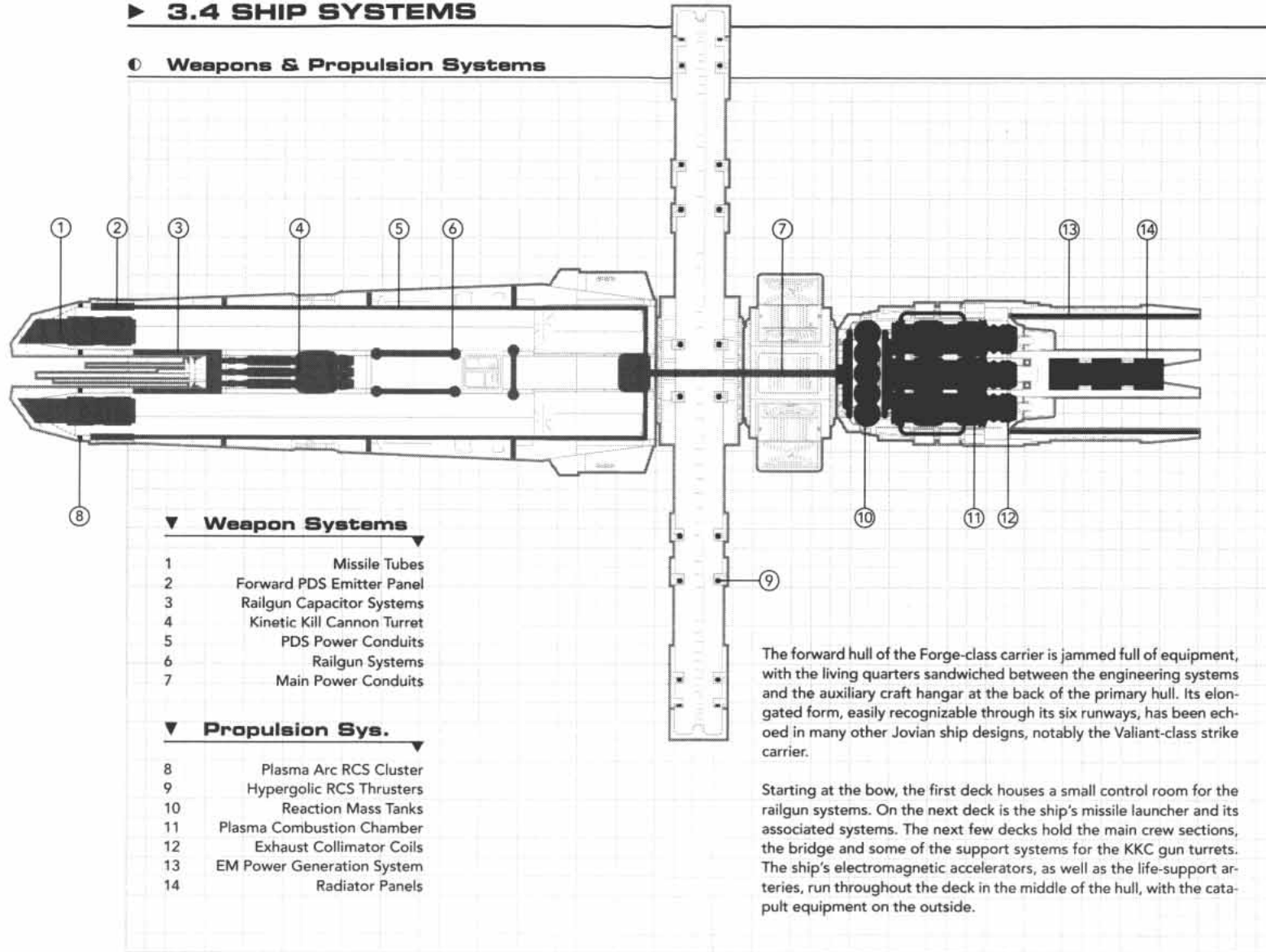


FORGE-CLASS PATROL CARRIER



▶ 3.4 SHIP SYSTEMS

① Weapons & Propulsion Systems



▼ Weapon Systems

- 1 Missile Tubes
- 2 Forward PDS Emitter Panel
- 3 Railgun Capacitor Systems
- 4 Kinetic Kill Cannon Turret
- 5 PDS Power Conduits
- 6 Railgun Systems
- 7 Main Power Conduits

▼ Propulsion Sys.

- 8 Plasma Arc RCS Cluster
- 9 Hypergolic RCS Thrusters
- 10 Reaction Mass Tanks
- 11 Plasma Combustion Chamber
- 12 Exhaust Collimator Coils
- 13 EM Power Generation System
- 14 Radiator Panels

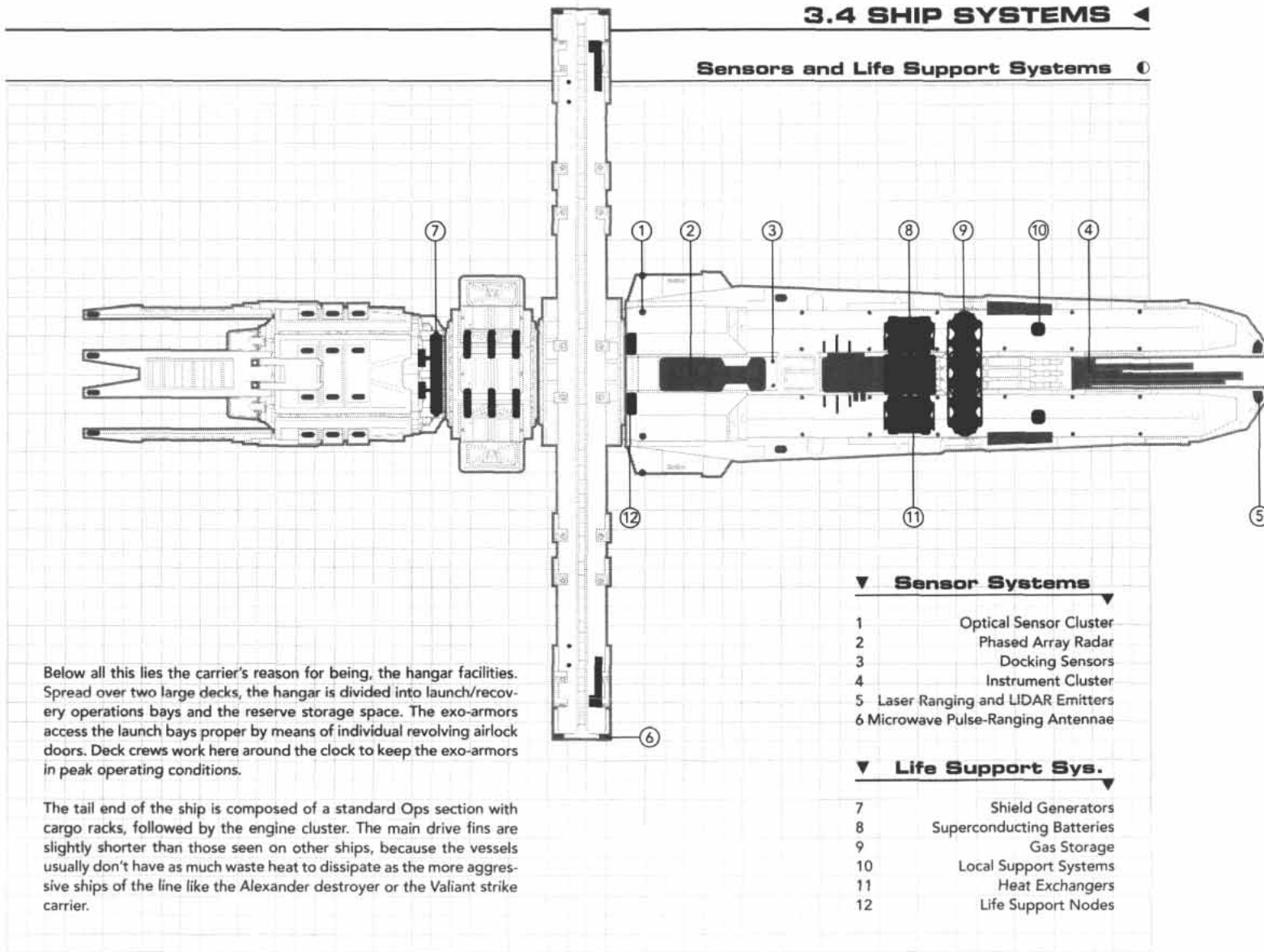
The forward hull of the Forge-class carrier is jammed full of equipment, with the living quarters sandwiched between the engineering systems and the auxiliary craft hangar at the back of the primary hull. Its elongated form, easily recognizable through its six runways, has been echoed in many other Jovian ship designs, notably the Valiant-class strike carrier.

Starting at the bow, the first deck houses a small control room for the railgun systems. On the next deck is the ship's missile launcher and its associated systems. The next few decks hold the main crew sections, the bridge and some of the support systems for the KKC gun turrets. The ship's electromagnetic accelerators, as well as the life-support arteries, run throughout the deck in the middle of the hull, with the catapult equipment on the outside.

FORGE-CLASS PATROL CARRIER

3.4 SHIP SYSTEMS ◀

Sensors and Life Support Systems 0



Below all this lies the carrier's reason for being, the hangar facilities. Spread over two large decks, the hangar is divided into launch/recovery operations bays and the reserve storage space. The exo-armors access the launch bays proper by means of individual revolving airlock doors. Deck crews work here around the clock to keep the exo-armors in peak operating conditions.

The tail end of the ship is composed of a standard Ops section with cargo racks, followed by the engine cluster. The main drive fins are slightly shorter than those seen on other ships, because the vessels usually don't have as much waste heat to dissipate as the more aggressive ships of the line like the Alexander destroyer or the Valiant strike carrier.

▼ Sensor Systems ▼

- 1 Optical Sensor Cluster
- 2 Phased Array Radar
- 3 Docking Sensors
- 4 Instrument Cluster
- 5 Laser Ranging and LIDAR Emitters
- 6 Microwave Pulse-Ranging Antennae

▼ Life Support Sys. ▼

- 7 Shield Generators
- 8 Superconducting Batteries
- 9 Gas Storage
- 10 Local Support Systems
- 11 Heat Exchangers
- 12 Life Support Nodes



FORGE-CLASS PATROL CARRIER



▼ 3.4.1 Communications Center

Coordination is the key to combined arms tactics. The larger the force, however, the more difficult this becomes. Each Forge is thus equipped with a dedicated communication center that links all the units together. The sole purpose of this room is to keep all of a squadron, fleet or convoy following the same battle plan.

Several communications operators can work at the same time. A large display showing what channels are in use dwarfs one side of the room. In the center of this display is a plot of all ships in the formation. Each ship is displayed with its current position and the path it must follow to get to the correct position.

This room is full of chatter, coming from the crew manning the center, communications from the captain, orders from the convoy leader and all the replies from the other vessels. Emergency frequencies are also monitored.

In the event of a battle, the communications center has three roles. Defensively, its crewmen continue the same formation coordination as during regular convoying. Offensively, they may attempt to intercept and decode enemy transmissions. Their other role is that of "guardian angel," whereby they notify ejected escape pods that they have been spotted and their trajectories logged with the recovery element.

As if this all weren't enough, the communications center is frequently used to support the exo-armor operations. When performing this function, they switch from monitoring the capital ship forces over to the fighter forces. This can significantly improve the success rate of the exo-armor operation. Pilots have even been saved by the frantic warning shout from a communications specialist about a threat approaching from behind.

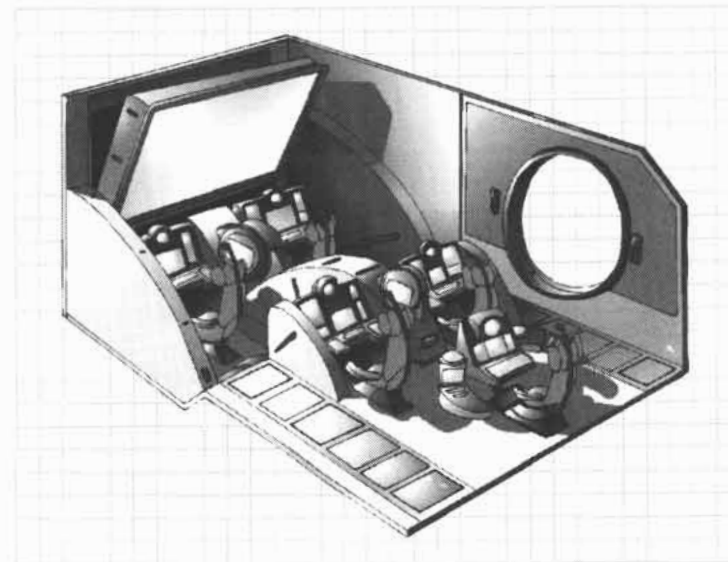


▼ 3.4.2 Launch Deck

Although not as busy as the hangar deck, this area is nonetheless very important. The "Ready-5" exo-armors lie on the catapults, waiting for a quick launch. The pilots may be inside the cockpit, working with their deck hands to complete some minor work, or just resting nearby.

At the sound of an alert the ready exos will take to the skies. Soon afterward, one or more pairs of fighters may rise up the elevators. In extreme conditions, alternative methods of launching include being "thrown" by the hangar manipulator arms or just "walking the plank." Although this creates some confusion for flight controllers, reaction time is critical if the carrier is directly threatened.

Exo-suits for the marines can also be stored on this deck. In some cases, however, the need for exo-armor storage may prevent this. In such a situation, the exo-suit bays are relocated into the cargo bay aft of the rotator mechanisms.



▼ 3.4.3 Hangar

A ring composed of six maintenance bays and two large elevator platforms lines the outside of the hangar. Numerous escape pods sit behind them. Most of the open deck space is stacked with cargo containers.

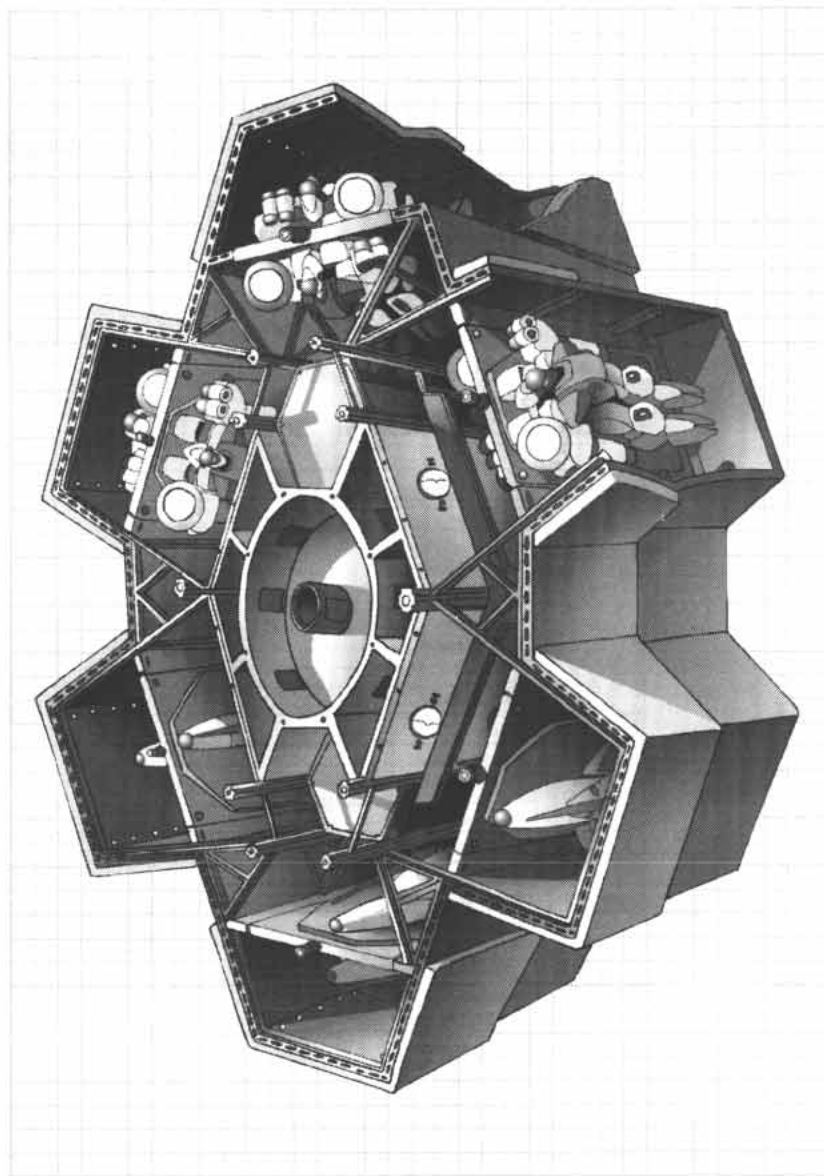
Two large manipulator arms move along an overhead track to wherever they are needed. Each one is capable of placing a damaged space craft into its work bay, and can even launch a legless exo-armor back into the fight. Each elevator also contains two shafts that can be used to move weaponry and ammunition to the launch deck and back.

Depending on the carrier's activity, the hangar may be a mess of activity or a ghostly shell. When round-the-clock patrols are required, the former is the case. With limited work time, deck hands tolerate no interference from spectators. Although they may call for assistance time and again, most often they run through the work like a racing pit-stop crew. When the exos aren't operating, in transit for example, the hangar is disturbingly silent.

When the fighters return from a battle the hangar becomes a very dramatic place. One pilot may return with a heroic battle tale, while another's cockpit may be filled with floating droplets of blood. If the battle requires another sortie, everyone works at an frantic pace, creating what seems to be a chaotic atmosphere.

▼ 3.4.4 Prins Cannon Control Room

The capacitor banks, catapult rails and Prins cannon rails run all the way back to the launch deck. Used for fire control operations in combat, this room does double-duty as the maintenance support center for the launch catapults. Due to the close proximity of the room to the capacitor banks and the main power coils, the sounds of catapult launches and cannon firings echo for several seconds as deep vibrations in the hull structure.





FORGE-CLASS PATROL CARRIER



▶ 3.5 SHIP PERSONNEL

The Forge-class carrier divides the crew into six departments. As usual, the Executive Officer leads the operations department. The Chief Gunner and Chief Engineer also have their own departments. The commander of the ship's half platoon of marines is typically a Master Sergeant or Warrant Officer. The ship's fighters are under assignment of the Squadron Commander when conducting operations. The Deck Commander, in charge of the Flight Deck, often has the same rank as the Executive Officer and has three subordinate Deck Officers, who look after the fighters when they are aboard.

□ Crew Organization Chart

Captain	
Executive Officer	
Sensor Operator	3
Comm Operator	3
Communication Specialist	3
Helmsmen	3
Navigator	3
Quartermaster	3
Medic	3
Steward	6
EVA Specialist	3
Chief Gunner	
PDS Specialist	3
Missile Specialist	3
KKC Gunner	3
Rail Specialist	6
Chief Engineer	
Bosun	6
Engineer	12
Deck Commander	
Deck Officer	3
Deck Hand	15
Ordnance Specialist	3
Actuator Specialist	3
Squadron Commander	
Flight Leader	3
Pilot	8
Marine Commander	
Squad Leader	2
Marine	12

▼ 3.5.1 Interview with a Pilot

Name:	Alex "Shakti" Brenshaw
Rank:	Lieutenant
Current Assignment:	JSS Fencer



"You must know that we pilots are the true fighting arm of the JAF. Any fight without an exo is just a skirmish, if you ask me. It's when the exo-armors take to the sky that a real fight starts. There have been only a few big battles, but the situation with CEGA is getting worse. Expect more opportunities to prove yourself in combat.

"As a pilot you will log a lot of flight hours on patrol. We normally patrol in pairs on a Forge, but when the fighting starts every exo we got launches and gets into the fray. On average, I spend four hours on station each day, plus some time getting there and back.

"Later that day, another four-hour shift is often spent on 'ready-5'. That means being on the flight deck already wearing a flight suit and being ready to launch within five minutes. I may help the deck hands move the exo-armors around.

"When we get the call I have to race from where I am into the 'ready-5' exo-armor. It generally means the group on patrol just got into a fight and needs help.

"On other ships, they only get a pilot if they have some sort of secondary craft, like a shuttle or a beaten-up Orbital Transfer Vehicle. That duty means you rarely fly. A pilot there typically performs non-combat tasks like loading cargo, unloading it, working on repairs or swapping storage pods. It's the carriers that give a pilot real action."

FORGE-CLASS PATROL CARRIER

3

▼ 3.5.2 Interview with a Deck Hand



Name:	Neil Conway
Rank:	Corporal
Current Assignment:	JSS Frenzy

"The pilots may talk big, but everyone aboard the exo-armors belong to the deck crew. Any new pilot who thinks otherwise gets himself straightened out real fast. The veteran pilots are the first to point out that the exo is hundreds of thousands of parts that all have to work. One broken bolt and your main engines might tear off.

"If a pilot thinks something is wrong with his vehicle, he will call for the deck officer immediately (or at least he's supposed to — it's his life after all). When the cry of "Deck Officer, Deck Officer!" goes out, you'll see the deck hands gathering their tools. We fix, refuel, maintain and calibrate the sensors of the squadron's flying units between each patrol.

"With exos being used both for patrols and 'ready-5' duty, we have only a few hours a day to work on each one. The scheduled work simply has to get done in that time, and we usually manage to do it. After a while, you start developing team habits that cut down on time — it's all a question of practice, really. Battle damage, though, that always throws the whole schedule off, so the captain sends over some bosuns and engineers to help out.

"Our deck commander, the person in charge of the flight deck, meets with the captain and the squadron commander at least once a day. During those times, they match upcoming flight plans with the maintenance schedule. That helps keep the whole force in motion."

▼ 3.5.3 Interview with a Bosun

Name:	Brinna Isner
Rank:	Sergeant
Current Assignment:	JSS Fierce II



"Five centuries ago in the wet navies of Earth, a bosun was a sailor that looked after the wooden hull and the huge lengths of ropes used to operate the sails. In the space age, a bosun's role is still the upkeep of the hull, but we've added life support maintenance (and anything not looked after by someone else) to the task list.

"We may be part of the engineering department, but we rarely get inside the engine deck. Smaller ships will absorb the bosun's functions into the engineering crew. That's pretty common with merchant or prospecting vessels.

"Fortunately, most mid-size ships — like the Forge or Alexander — are large enough to have specialized engineering staff, so you will have me looking after the temperature of your shower and the squeaky hinges of your closet. The tenders generally have extra bosuns to help repair other ships.

"During battle, we bosuns form into damage control teams. If the ship gets hit, we patch the holes and douse the fires — provided, of course, that there is still a ship left. With all the backups built into a ship, we usually just stop the damage from spreading and save repairs until after the fight. During this time, we always 'shell up' into an armored suit for protection, just in case we encounter shrapnel or jagged edges. Both of these can crack open a space suit, and vacuum exposure has got to be one of the most unpleasant ways to die."





FORGE-CLASS PATROL CARRIER



COUNTING CROWS



"Hey, those Wyverns are matching vectors to match the convoy." Warrant Officer Mandy Jimenez looked up at the situation display that occupied a wall of the *Fitzgerald's* communication room. On it, the arrows were moving.

"Damn." Colonel Rezneck pushed himself off the floor. In the zero gravity of station-keeping mode, his compact, muscular body floated up beside Mandy's console. "You're right. Keep on top of exo vectors, and signal our guys. Time for them to get to work."

"Black Crows, this is the *Fitzgerald*," Mandy sent out on the waiting exos' channel. "Hostiles decelerating for extended engagement with convoy."

"Raven here," answered the squadron leader. "Copy that, Fitz. We're ready to go up here, just give the word."

Mandy frowned. "Hold... they're changing course to avoid us and the *Sally Ride*." It was a small blessing — a Gagarin-class fleet tender, the *Ride* couldn't take an assault from the CEGA exos. "Sir, Raven is requesting permission to launch and engage."

Colonel Rezneck linked his comm unit into Mandy's station. "Convoy Command to Raven. Crows are free to fly. Weapons free. Navigation free."

Lieutenant Charlotte "Raven" Marx cracked a broad but serious smile. A veteran of the Battle of Kurtzenheim, she was ready and willing to see action again. "Time to soar. All Black Crows, you heard the boss."

The Black Crows were already in place on the catapults, their exo-armors solidly locked into the launch cradles. The outer hangar doors slid away to reveal the runways. There was a dull vibration as the security clamps were released, followed by a quick acceleration away from the ship.

Raven felt herself pushed further into the padding gel of her linear frame. Time to soar, indeed.

The exo-armors launched, Rezneck quickly switched channels. "Convoy Command to convoy. Ten point thrust on bearing 97, mark 16. Keep yourselves behind us. *Thomas*, you're falling out of formation — regroup."

"*Thomas* here. Just where the heck do you want us? I keep burning re-mass. Heck, I don't even see anything on my scanner."

The ponderous civilian freighter began to readjust its trajectory. It would be back in formation soon.

* * *

The three Wyverns flew into an arrowhead formation, their maneuver verniers flaring briefly as reaction mass was exchanged for momentum. The wounded bomber, looking for vengeance, was inside their wedge. The pilots were fully engaged now — the loss of their home carrier meant they had to win in order to gain salvage just to survive and await pick-up. The Jovians were proving to be a tough nut to crack; what they needed was a softer, less defended target.

The *Thomas* was just the sort of stray they were looking for.

* * *

Raven swung her Pathfinder Command into the lead of the Black Crows' formation. Rik "Peregrine" Michael's Vindicator then moved up ahead of her. Three Pathfinder Recons flew on her right, matched on the left wing by three Retaliators.

"Recons to vulture mode. Hang around and catch any that break off. As for the rest of you, it's time to kick ass and take names."

Raven's order had barely left her lips when the engagement began. Peregrine's laser snapped a shot at long range. It might not hit home, but it did force the enemy exos to break off from their assault. They answered with a handful of missiles, but they were all easily defeated by Peregrine's own anti-missile lasers.

The exos closed range and, after a silent pause, opened up with other weapons. The Wyverns used their massive hypergolic bazooka to send deadly shells toward the Crows, who responded with their own massdrivers. Projectiles raced silently through space as the agile humanoid fighters maneuvered for position.

"Keep at it, Crows." Raven was very happy with her pilots; all the vets were performing up to her rigorous standards. "Hell," she muttered to herself, "even the rookies in the Pathfinders are —"

Enzo Sabashi's Pathfinder caught a bazooka shell. The detonation blew apart the hip assembly, starting a chain reaction. It was all over in a second. From Raven's perspective, it looked like Sabashi had turned into a brilliant star and then vanished.

"Enzo's gone." Her business-like tone barely masked her anger. A rookie was probably dead on her watch. "Pin those Wyverns' down. Now."

Peregrine finally got a good position opening up against a Wyvern with his massdriver. Everywhere his target veered was filled with slugs, and the massive exo-armor tumbled lifeless.

The Crows' elation was short-lived, because the Bomber then broke for the *Thomas*.

"Dammit, it's going for the convoy! Pathfinders, with me." Raven dove toward the enemy exo, the two remaining rookie pilots forming on her position just like they had been trained to. "Peregrine, take out those Wyverns."

The CEGA exos launched a barrage of bazooka shells toward the Retaliators in an effort to shake their enemies. One Jovian exo lost a leg, another had its sensor cover torn away. The third used the confusion to slip behind a Wyvern, slashing its plasma lance half way through its torso. Smoke and flames flashed out of the mangled cockpit. The last Wyvern fired a final shot, but caused only minor damage. An instant later the trio of Retaliators caught it in a cross-fire and reduced it to a flash-fried husk.

Raven was gaining on the surviving Wyvern Bomber. One more instant and she would have it down.

"No!" Raven watched as the Bomber's vents opened. Dozens of missile raced toward the *Thomas*, darting into it from the bow to the plasma drive. The damage was bad, but the structure held.

"That, my friend" Rave said aloud as she placed her aiming reticule over the Wyvern Bomber, "is the last thing you see."

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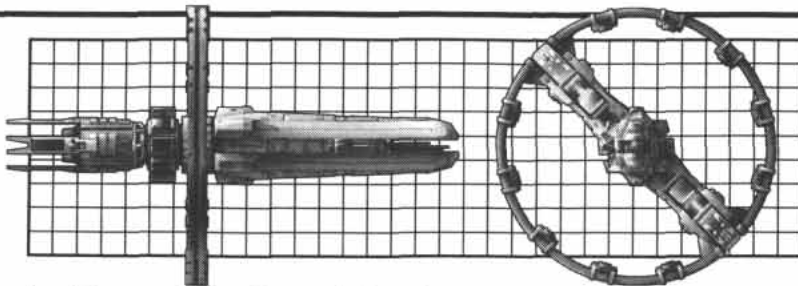
"Raven, we show no more bogeys. Good job." Mandy's voice was slightly garbled over the comm; maybe a stray shot had damaged Raven's comm dish. "We have registered an escape pod from Pathfinder 3 — looks intact. Falconer team has launched for recovery. Convoy Command wants a scout team to check out Station 118."

"Raven here. Roger, guardian angel. What's with the recon mission? Something wrong?"

"Report from Brock. Hostages onboard the rogue carrier where found wearing Station 118 outfits."

"Roger." Raven switched channels. "Okay team. Pathfinders with me, we're going to check out that station. Peregrine, you stay with the *Thomas*."





► Forge-class Patrol Carrier

▼ Overall Data:

TV:	154,000	Off. TV:	-	Def. TV:	-	Misc. TV:	-	Cost:	154 M	Indv lemon dice:	3
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▼ Movement Data:

Mode:	Space	Combat:	4 (0.4g)	Top:	8 (0.8g)	Maneuver:	-3	Range:	3,000 hrs	Re. Mass:	2,000BP
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▼ Sections:

1 x	Main Hull	2 x	KKC Turret	1 x	Habitat Ring
1 x	Ops Section	8 x	Cargo Container	4 x	Drive

▼ Off & Def Systems

1 x	Point Defense System (main hull)	2 x	Missile Bay (main hull)	6 x	Kinetic Kill Cannon (turrets)
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► Section: Main Hull

▼ Main Data:

TV:	81,000	Off. TV:	20,000	Def. TV:	2200	Misc. TV:	220,000	Cost:	81 M	Indv lemon dice:	3
Crew:	54	Actions:	6	Sensors:	0/4 km	Comm.:	0/15 km	Fire Control:	0	Type:	Early Prodc.
Hull Size:	74	Default Size:	43	Base Armor:	75	Light:	75	Heavy:	150	Overkill:	225

▼ Movement Data:

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ Perks & Flaws:

Name	Rating	Game Effect	Name	Rating	Game Effect
Autopilot	-	Lvl 1 pilot	HEP: Radiation	4	Screen
Backup Sys	3	Comm, Fire Con, Life Sup, Sensor	Laboratories	-	Electronics 2, Mechanics 2
Cargo Bay	-	Hangar, 15,000 m ³	Life Support	-	Full
Cargo Bay x 2	-	1,900 m ³ each	Passenger Accom	-	20,000 m ³
Catapult x 6	-	(450/mass) m/s ²	Reinf. Crew Comp.	2	Absorbs first two "Crew" hits
Computer	4	CRE 0, KNO 0, PP 4	Satellite Uplink	-	x1000 Comm range
Ejection System	-	60 places	Sick Bay	4	Zero-Gravity Medbay
HEP: All	-	Sealed	Tool Arm x 2	16	Hangar cranes; cannot punch

▼ Offensive and Defensive Systems:

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC
1	PDS (ranged)	T	x10	1	+1	6	inf	AM, Heat	15	7400	n/a
	PDS (shield)	FF	x20	M	+1	0	inf	Def., E-shield, Heat	3	75	n/a
2	Missile Bay	T	x30	S	-2	S	30	Ms, G, Concealed	14	6000	18

► Section: KKC Turret

▼ Main Data:

TV:	8000	Off. TV:	23,000	Def. TV:	250	Misc. TV:	800	Cost:	8 M	Indv lemon dice:	3
Crew:	3	Actions:	3	Sensors:	-3/2 km	Comm.:	-3/10 km	Fire Control:	0	Type:	Early Prodc.
Hull Size:	19	Default Size:	20	Base Armor:	25	Light:	25	Heavy:	50	Overkill:	75

▼ Movement Data:

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	1,000 hrs	Re. Mass:	-
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▼ Perks & Flaws:

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup FireCon	-	Absorbs first "FireCon" hit			
HEP: Radiation	4	Screen			
HEP: Vacuum	-	Sealed			
Life Support	-	Full			
Reinf. Crew Comp.	1	Absorbs first "Crew" hits			
Weapon Link	-	All kinetic kill cannons			

▼ Offensive and Defensive Systems:

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC
3	KK Cannon	L/R	x30	7	-2	3	300ea	AP	12	3800	12

► Section: Habitat Ring

▼ Main Data:

TV:	50,000	Off. TV:	0	Def. TV:	1000	Misc. TV:	150,000	Cost:	50 M	Indv lemon dice:	3
Crew:	3	Actions:	3	Sensors:	-3/2 km	Comm.:	-3/10 km	Fire Control:	0	Type:	Early Prodc.
Hull Size:	60	Default Size:	37	Base Armor:	50	Light:	50	Heavy:	100	Overkill:	150

▼ Movement Data:

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ Perks & Flaws:

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup Life Sup	-	Alternate systems	Reinf. Crew Comp.	3	Absorbs first two "Crew" hits
Cargo Bay	-	40 m ³	Sick Bay	4	Medbay
Ejection System	-	256 places	Tool Arm x 10	28	Hardpoints; cannot punch
HEP: All	-	Sealed			
HEP: Radiation	6	Screen			
Laboratories	-	Cooking 1, Electronics 1, Mechanics 1			
Life Support	-	Full			
Passenger Accom	-	2 x 14,000 m ³			

▼ Offensive and Defensive Systems:

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC

► **Section: Ops Section**

▼ **Main Data:**

TV:	7000	Off. TV:	0	Def. TV:	2200	Misc. TV:	19,000	Cost:	7 M	Indy lemon dice:	3
Crew:	3	Actions:	2	Sensors:	-3/2 km	Comm.:	-3/10 km	Fire Control:	-5	Type:	Early Prod.
Hull Size:	72	Default Size:	19	Base Armor:	75	Light:	75	Heavy:	150	Overkill:	225

▼ **Movement Data:**

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup Life Sup	-	Alternate systems	Sick Bay	4	Zero-Gravity Medbay
Cargo Bay	-	1,900 m ³			
Ejection System	-	60 places			
HEP: All	-	Sealed			
HEP: Radiation	4	Screen			
Laboratories	-	Electronics 1, Mechanics 1, Comm 1			
Life Support	-	Full			
Reinf. Crew Comp.	2	Absorbs first two "Crew" hits			

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC

► **Section: Cargo Container**

▼ **Main Data:**

TV:	1400	Off. TV:	0	Def. TV:	160	Misc. TV:	3900	Cost:	700,000	Indy lemon dice:	3
Crew:	0	Actions:	0	Sensors:	0/2 km	Comm.:	0/10 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	10	Default Size:	10	Base Armor:	20	Light:	20	Heavy:	40	Overkill:	60

▼ **Movement Data:**

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
Cargo Bay	-	2500 m ³ each			
HEP: Radiation	4	Screen			
HEP: Vacuum	-	Sealed			
Life Support	-	Limited			
No Comm	4	Can't communicate			
No Sensors	-	Can't Scan			

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC

► **Section: Drive Module**

▼ **Main Data:**

TV:	3600	Off. TV:	0	Def. TV:	1800	Misc. TV:	9000	Cost:	3.6 M	Indy lemon dice:	3
Crew:	6	Actions:	4	Sensors:	-3/2 km	Comm.:	-3/10 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	46	Default Size:	20	Base Armor:	50	Light:	50	Heavy:	100	Overkill:	150

▼ **Movement Data:**

Mode:	Space	Combat:	23 (2.3g)	Top:	46 (4.6g)	Maneuver:	-3	Range:	3,000 hrs	Re. Mass:	9000 BP
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup Sys.	3	Comm, Fire Con, Life Sup, Sensor			
Ejection System	-	12 places			
HEP: Vacuum	-	Sealed			
HEP: Radiation	4	Screen			
Life Support	-	Full			
Reinf. Crew Comp.	2	Absorbs first two "Crew" hits			

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC

► **Section:**

▼ **Main Data:**

TV:	-	Off. TV:	-	Def. TV:	-	Misc. TV:	-	Cost:	-	Indy lemon dice:	-
Crew:	-	Actions:	0	Sensors:	-	Comm.:	-	Fire Control:	-	Type:	-
Hull Size:	-	Default Size:	-	Base Armor:	-	Light:	-	Heavy:	-	Overkill:	-

▼ **Movement Data:**

Mode:	-	Combat:	-	Top:	-	Maneuver:	-	Range:	-	Re. Mass:	-
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
-					
-					
-					
-					
-					
-					
-					

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC
-											
-											
-											
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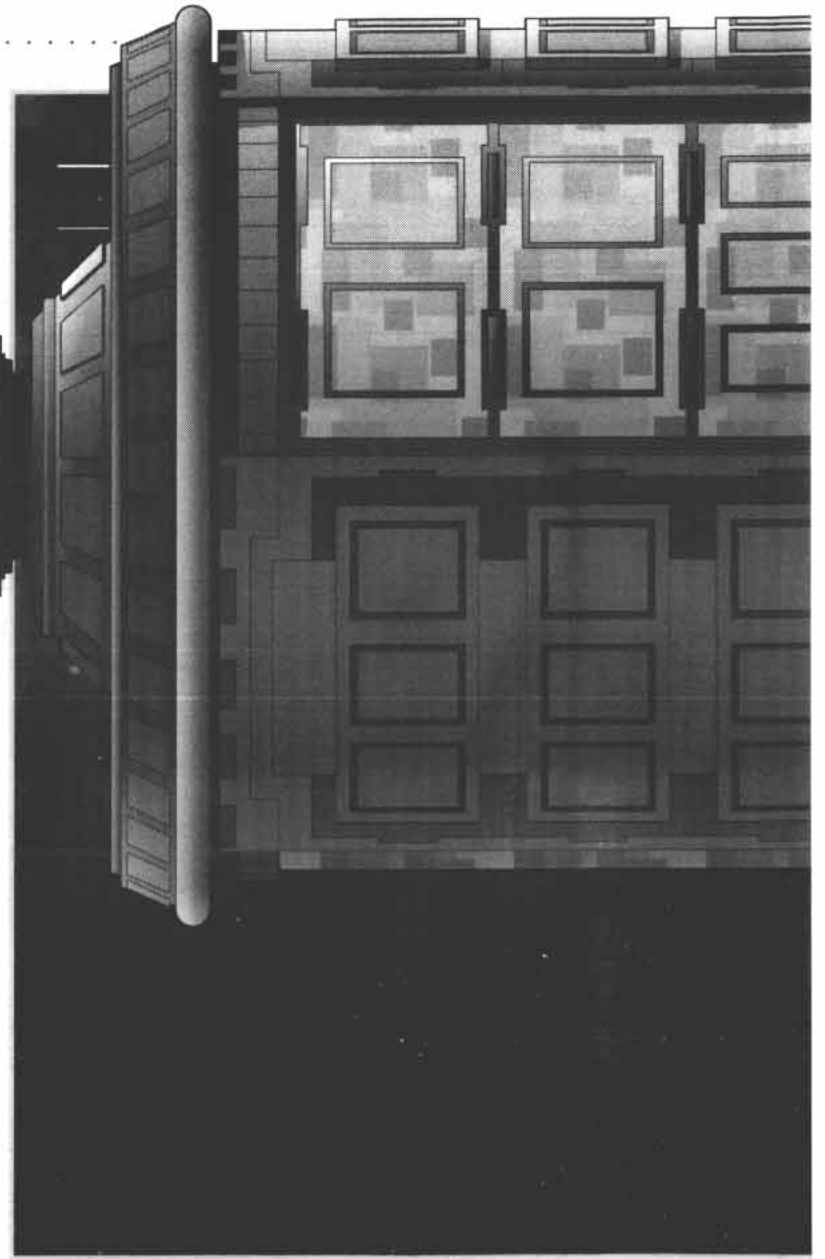
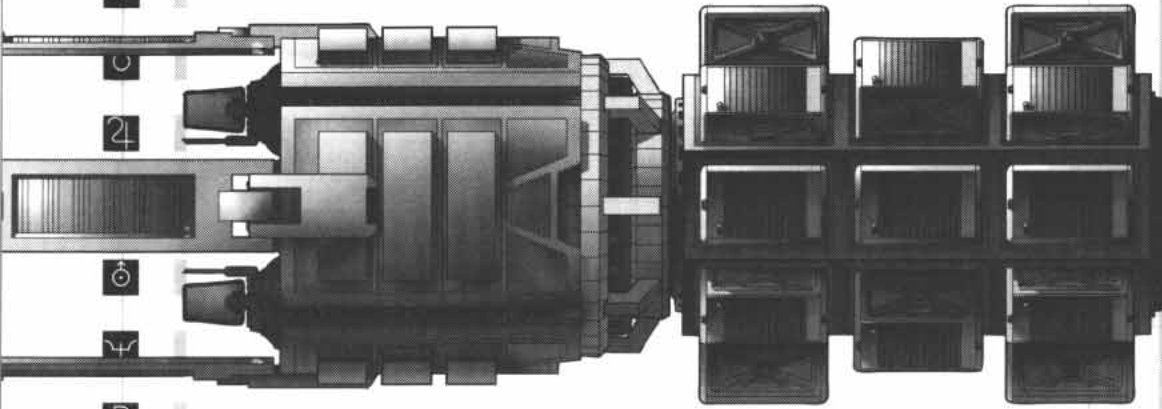


GAGARIN-CLASS FLEET TENDER



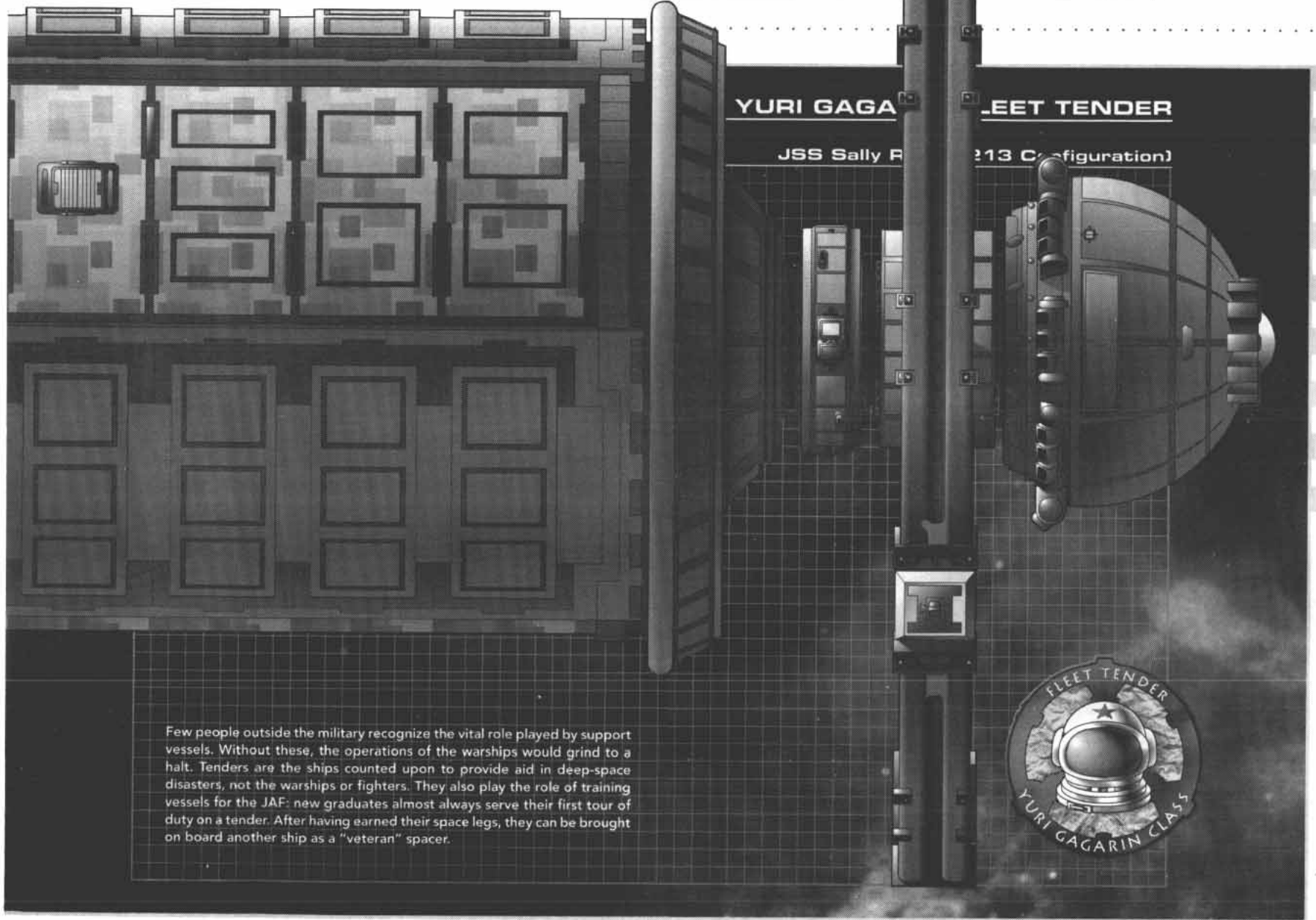
Fleet Tender, Yuri Gagarin Class

Name	Launched	Current Status
JSS Yuri Gagarin	October 6, 2202	Gamma
JSS Alan Sheppard	April 8, 2203	Detached Duty



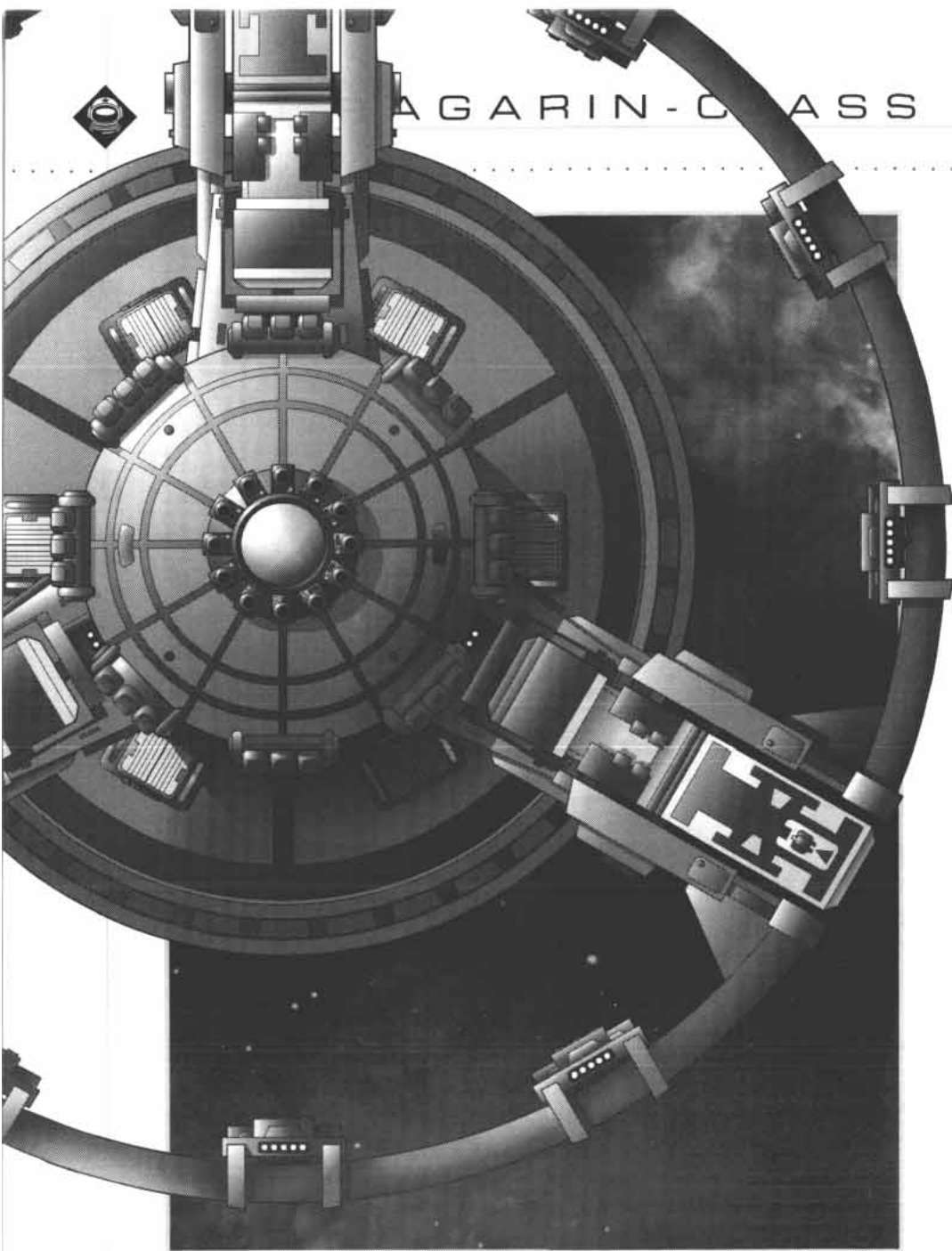
Name	Launched	Current Status
JSS Sharon McAuliffe	August 3, 2203	Gamma
JSS Sally Ride	January 12, 2204	Alpha
JSS Neil Armstrong	May 10, 2204	Beta
JSS Vladimir Komarov	November 30, 2204	Gamma
JSS Gherman Titov	May 18, 2205	Alpha
JSS Alfred Decker	December 17, 2205	Alpha
JSS Story Musgrave	April 30, 2206	Gamma
JSS Virgil Grissom	November 14, 2206	Beta
JSS Marie Cousteau	August 10, 2207	Gamma
JSS Edward Marks	February 29, 2208	Alpha
JSS John Glenn	June 14, 2208	Beta
JSS Valentina Tereshkova	February 9, 2209	Detached Duty
JSS Alexei Leonov	May 4, 2209	Beta
JSS Bruce McCandless	N/A	Building
JSS Gordon Cooper	N/A	Building

GAGARIN-CLASS FLEET TENDER



Few people outside the military recognize the vital role played by support vessels. Without these, the operations of the warships would grind to a halt. Tenders are the ships counted upon to provide aid in deep-space disasters, not the warships or fighters. They also play the role of training vessels for the JAF: new graduates almost always serve their first tour of duty on a tender. After having earned their space legs, they can be brought on board another ship as a "veteran" spacer.

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GAGARIN-CLASS FLEET TENDER

► 4.1 OVERVIEW

The forces of CEGA enjoy the advantage of having supply lines which cross relatively short distances (in astronomical terms). The JAF is not so lucky: an interplanetary supply line is needed to support naval operations across the large Jovian territory. In order to allow squadrons to operate farther from home with no reduction in performance, the procurement office adapted MacLeod's modular ship system to create the Yuri Gagarin-class deep space fleet tender.

The Gagarin-class tenders use many of the components developed for the Alexander and Forge projects. The rest come mostly from other Jovian vessel designs. For example, the main computer is a continuation of the contracts for the Javelin's own data management system, and most of the bridge components come from the Valiant-class strike carriers, with some minor rearrangements of the control consoles. Interior subcomponents frequently come from the continued production runs from earlier vessels.

Originally, each ship was to be propelled by two of the engines developed for the Javelin-class missile cruiser. Upon the release of the JH-756 "high output" engine pods for the Valiant Improved strike carriers, all three "MacLeod" ships received a similar upgrade. From the summer of 2211, new hulls were built with the improved performance engines already in place; those already in service were all successfully updated, many in the field through the use of the tenders themselves.

▼ 4.1.1 Capabilities

The Yuri Gagarin's forward main hull is quite distinctive. On the outside it appears to be a small colony cylinder, with a forward command module and a set of twenty four storage pods on a very long prow. This cylinder is really a gigantic workshop, with huge door sections that rotate open to allow access. Once the vehicle or item is inside and the bay repressurized, space hands may work with all the benefits found in a shipyard's drydocks.

Numerous two-man airlocks along the inner surface of the bay allow workers to alternate between working and resting with minimal movement. Several articulated crane arms move along inner rails to where they are needed. An oversized articulated arm is also available; in the hands of a skilled operator, it can be used to handle entire fusion engines.

A "resource area" for the workers is repeated three times along the length of the internal bay. These include docking ports for M-Pods, M-Bots and Decker suits, and contain lockers for a wide host of tools and attachments. Hand tools, electric welding and cutting torches, measuring equipment and other devices lie in rows of tool chests built into the walls. Dozens of worker robots called "pixies" are always buzzing around the inside of the workbay. Although sometimes annoying, they keep all the tools organized and provide help and mobility to workers. If a dropped tool floats away, a pixie will automatically return it to its owner.

▼ 4.1.2 Operational Role

Yuri Gagarin-class tenders also serve another important purpose for the JAF. In the rear "tailpipe" operations section, the utility deck is configured as a customizable seminar room. The ship is, literally, a flying classroom.

Here, spacehands are trained and evaluated before assignment to other vessels. A good record from a tender service tour has a good effect on later assignments. The main advantage of using standardized ship components is the familiarity that is soon acquired by the crews, and skills learned on one ship class are directly applicable to another.

Ships with wounded personnel will often trade them for fresh staff from the accompanying tenders. Tenders therefore often leave port with extra personnel onboard, some of them trainees fresh out of the academy. To avoid crippling a tender by the removal of key personnel, the captains of tenders have discretionary authority to refuse the transfer of specific individuals.

▼ 4.1.3 Pixie Retrieval Bot

Wrenches, hammers, oscilloscopes, cutting torches and every other tool available in the work bay are fitted with a tiny short range coded transmitter device. When a tech accesses a tool chest, the tool's code is automatically scanned and entered into the worker's homing beacon. The beacon then relays this information to the ship's computer. If any of the tools should drift too far away from the beacon, a patrolling pixie will be directed to grab it and return it to its owner, allowing him to concentrate on his work. Bored workers have been known to deliberately toss a tool away to play fetch with a passing pixie.

Fetching distances vary from tool to tool, and may be temporarily changed or disabled by a simple control on the homing beacon. Unmarked miscellaneous items like bolts, screws and broken fragments get scooped into a small compartment built into the robot's "chest." Pixies periodically return to their berths for refueling and dumping of their storage compartment. The unmarked items are then sent to the ship's recycling system. Objects larger than tools are normally ignored, but the Pixies may be instructed to move them. If an unforeseen situation comes up, the toolmaster on duty will be alerted to give further directions.

Basic Stats: Size 0.3, Armor 1, Movement: Space 1/2, Ground (retractable spider legs) 1/2, Maneuver -1, Sensors -1/1 km, Comm -3/1 km, Deployment Range 90 km, Reaction Mass 50 BP.

Perks: Autopilot, Cargo Compartment (0.001 m³), Computer (AI, PP1, CRE -2, KNO -2), HEP: Space, Improved Towing Capacity, 2 x Tool Arm (Grasper) Rating 0.3.

Flaws: Annoyance (flashes lights when an object is retrieved), Decreased Maneuver (Ground, Rating 2), Exposed Auxiliary Systems, Exposed Movement Systems, Vulnerable to Haywire.

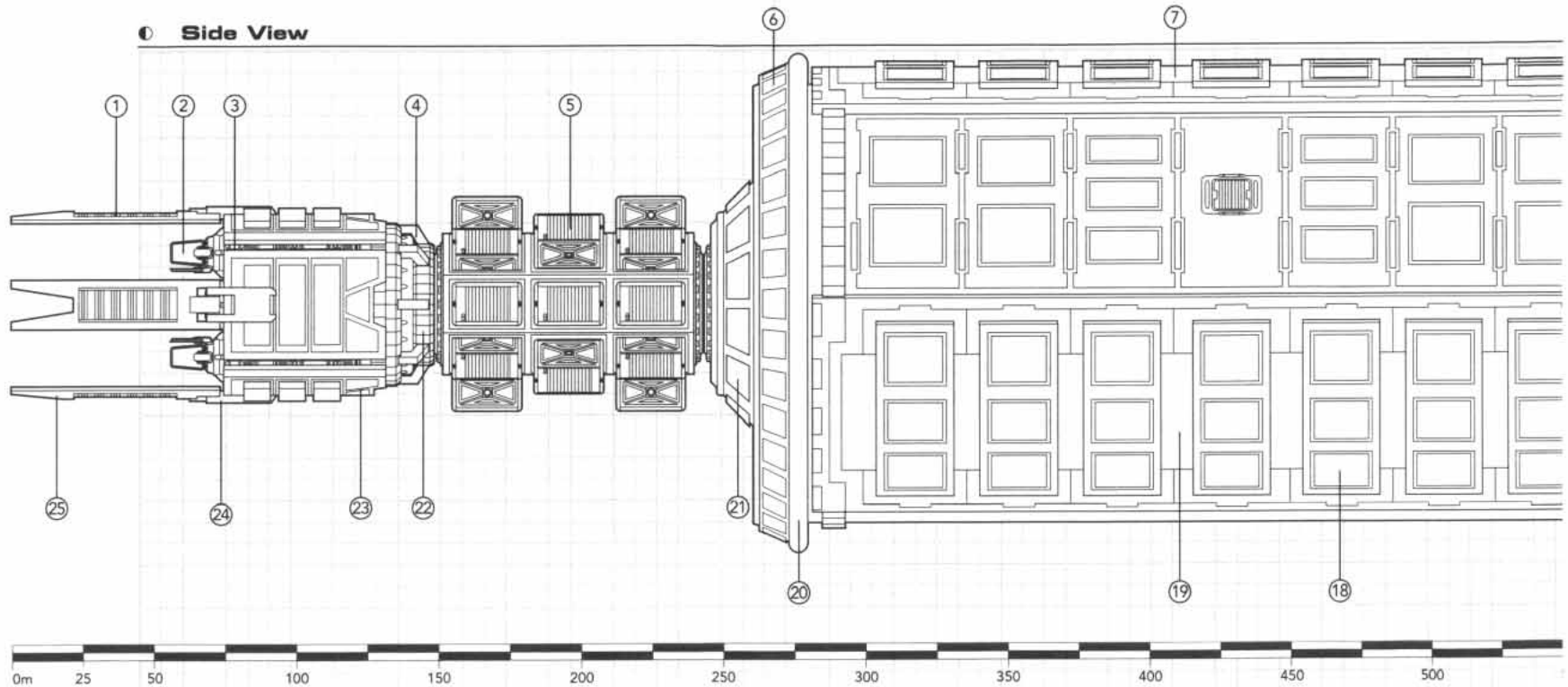




GAGARIN-CLASS FLEET TENDER

▶ 4.2 SHIP SCHEMATICS

① Side View

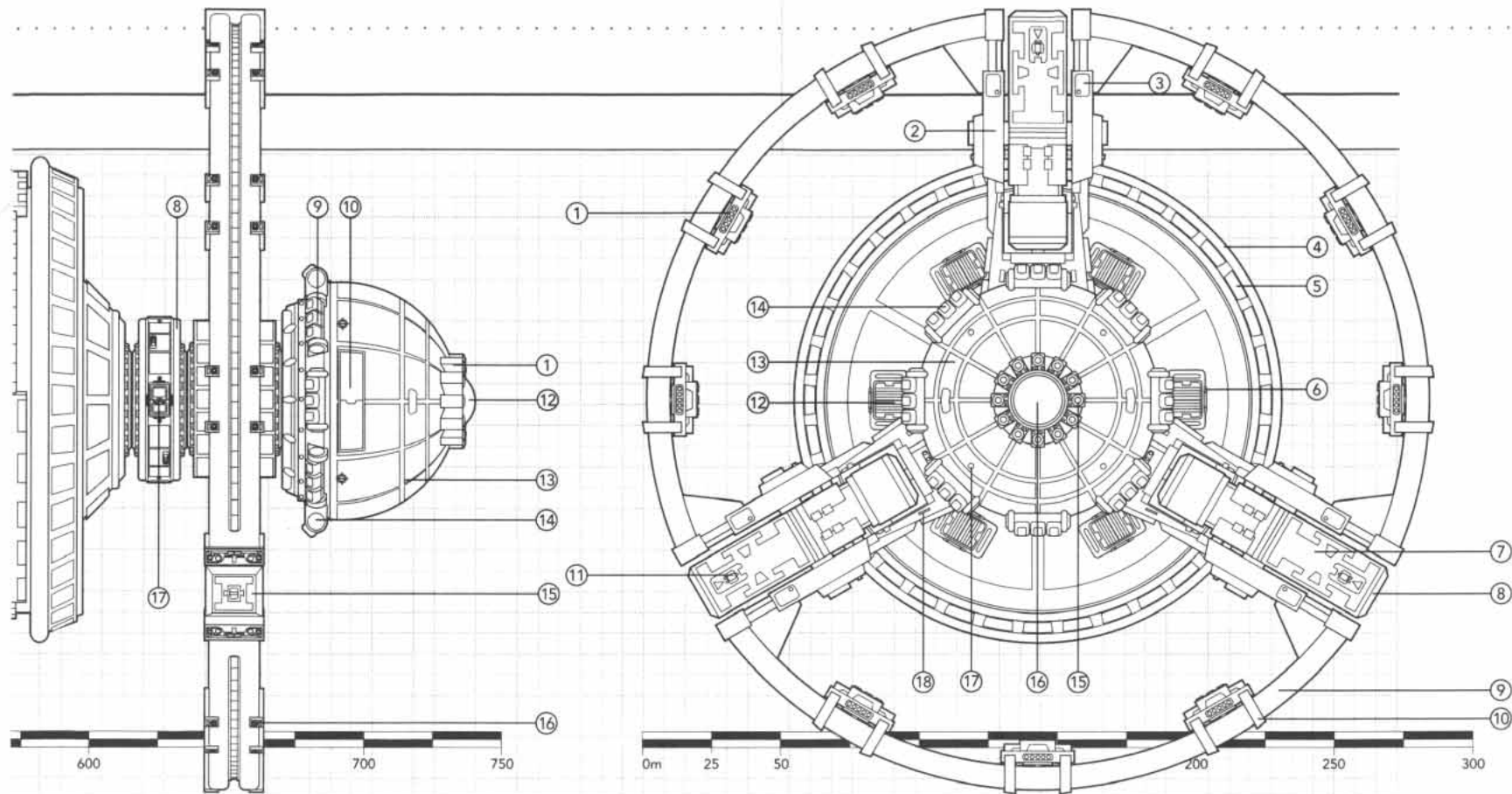


▼ Legend

1	Heat Sink	11	Missile Launch Tubes	21	Aft Deck Heat Sink Array
2	Exhaust Collimators	12	Forward Sensor Cluster	22	Rear Shield Generators
3	Aft Maneuver Jet Cluster	13	Forward PDS Emitter Panel	23	Engine Block Shield
4	Engine Mount/RAM Hardpoint	14	Plasma Arc Thruster Mount	24	Drive Fin Mount
5	Cargo Module	15	Habitat Module #3	25	Drive Fin
6	Aft Workbay Heat Sink Array	16	Structural Ring System Cluster		
7	Bay Door #1	17	Shuttle Bay		
8	Mid-ship Connector Module	18	Workbay Heat Sink Panel		
9	Nose Maneuver Jet Cluster	19	Bay Door #3		
10	Shuttle Bay	20	Aft PDS Emitter Ring		

GAGARIN-CLASS FLEET TENDER

4



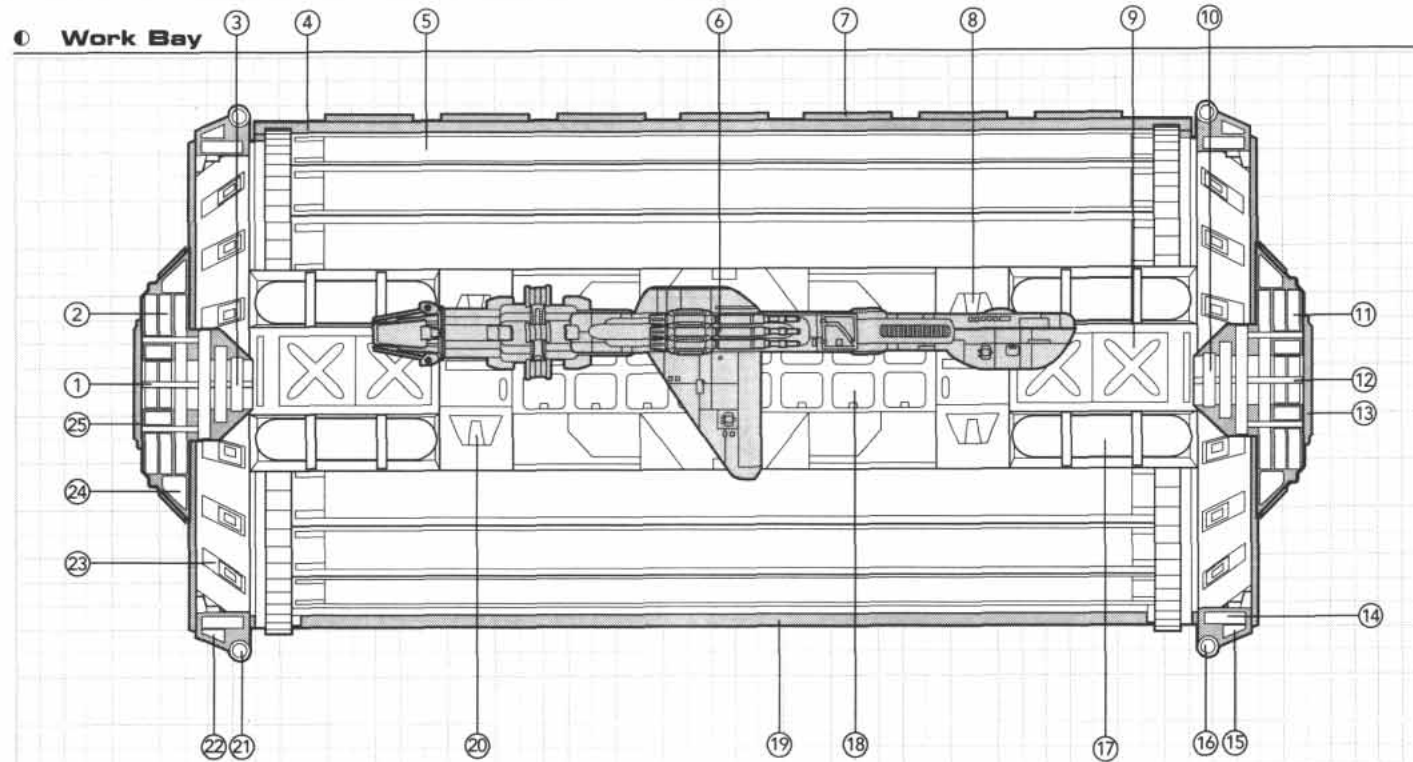
Legend

1	Short Range Sensor Cluster	9	Structural Ring	17	Docking Sensors
2	Habitat Rotation System	10	Modular Hardpoint	18	Access Corridor Window
3	Access Panel	11	Habitat #3 Personnel Hatch		
4	Forward PDS Emitter Ring	12	Workpod Emergency Hatch		
5	Forward Workbay Heat Sink Array	13	Command Module		
6	Work Bay Pressure Hull	14	Nose Maneuver Jet Cluster		
7	Habitat Heat Sink	15	Missile Launch Tubes		
8	Habitat Module #2	16	Forward Sensor Cluster		



GAGARIN-CLASS FLEET TENDER

► 4.2 SHIP SCHEMATICS (CONT.)



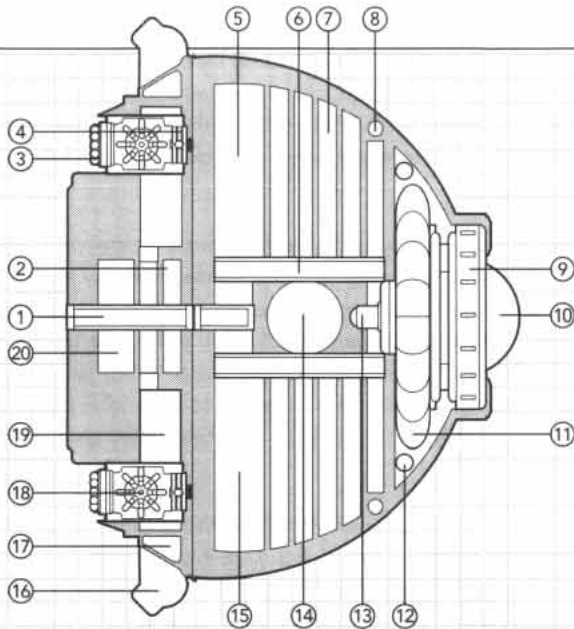
▼ Legend

1	Ops Section Access	11	Workbay Crew Decks	21	Aft PDS Emitter Ring
2	Aft Workshop Decks	12	Command Module Access	22	Aft Workbay Heat Sink
3	Aft White Room	13	Forward Bulkhead	23	Workbay Life Support Units
4	Bay Door #1	14	Forward Ring Engineering Deck	24	Aft Maintenance Deck
5	Bay Door Hinge Assembly	15	Forward Workbay Heat Sink	25	Aft Bulkhead
6	Javelin Cruiser in Drydock	16	Forward PDS Emitter Ring		
7	Work Bay Heat Sink Panel	17	Gas Storage Tank G1-D		
8	Forward Workpod Docking Port	18	Pressurized Work Room R1-14		
9	Part Storage P1-D	19	Work Bay Door #2		
10	Forward White Room	20	Aft Workpod Docking Port		



4.2 SHIP SCHEMATICS (CONT.) ◀

Command Module Cutaway View ①



▼ Legend

1	Work Bay Access	11	Gas Buffer Housing
2	Security Deck	12	Heat Transfer System
3	Emergency Flush Tanks	13	Computer Core Housing
4	Auxiliary Shield Generator	14	Command Bridge
5	Main Hangar Deck	15	Shuttle Bay
6	Elevator Shaft	16	Maneuver Jet Cluster
7	Crew Decks	17	Maneuver Jet Heat Sinks
8	PDS Power Conduit	18	Auxiliary Generator #3
9	Missile Launch Tubes Housing	19	Generator Engineering
10	Forward Sensor Cluster	20	Storage Deck



▼ Specifications

Name:	Gagarin
Origin:	Jovian Confederation
Manufacturer:	Various Shipyards
Type:	Fleet Tender
Control System:	Bridge w/astronomical display
Length (total):	740 m
Width (total):	285 m
Empty Weight:	92,850 Tons
Loaded Weight:	130,000 Tons
Main Drive:	4 x 20 MW
Secondary Powerplant:	6 x 2000 KW
Main Thrusters:	4 x 21,000,000 kg (nominal)
Apogee Motors:	58
Acceleration:	0.1 g
Onboard Sensors:	Fire Control Radar, Infrared/ Ultraviolet, Lidar, Magnetometer, Microwaves, Motion Detectors, Radcounter, Search Radar, Telescope
Fixed Armament:	PDS, 1 x Missile Bay
Additional Armament:	Auxiliary Craft
Defensive Systems:	Mag Screen
Equipment:	Escape Pods, Work Bay



GAGARIN-CLASS FLEET TENDER



► 4.3 HISTORY

Upon completion of the basic design work in 2202, the Yuri Gagarin-class fleet tender was the last of General MacLeod's standardized vessels to be produced in the first decade of the twenty-third century (other designs would be developed or refitted in the 2210s). The needs of the Jovian fleet at the time called for immediate increases in tactical combat resources. The tender's function, however, was to multiply the long term strategic resources of the fleet.

Just as the Forge-class carrier is an excellent stepping stone for officers, so the Yuri Gagarin is the career advancement platform for the enlisted personnel. Everyone with more than a few years of space duty is guaranteed to have been on board a tender at some point. The addition of the classroom has been instrumental in developing the staff resources of the JAF to form the highly trained combat force that it is today.

The supporting nature of the tenders' operational role means that they rarely spend time in the spotlight. There are multiple instances, however, where a tender helped to save the day, such as the Stockwell Industry tragedy in October 2207, or the timely intervention of the *Alfred Decker* when the destroyer *MacArthur* found itself badly damaged. Many of these situations were deep space emergencies, where the ship's well-stocked cargo bays and highly trained crew saved many lives.

With its well-stocked workshops, a large complement of dedicated maintenance personnel and her massive pressurized work bay, a tender can perform quick repairs to virtually any type of space construct. Smaller craft can be taken inside the bay itself, but larger vessels must be taken apart and repaired module by module. Even a large space platform or colony cylinder can be worked upon: large sheets of tough, polymerized material can be strung between the two hulls to create a large inflated hangar. The *Sheppard* once did just this to plug a large hole in the outer skin of the Mira-8 station in 2208.

It is the tender that repeatedly manages to accomplish tasks worthy of Hercules. These have included dismounting one of their own engines to aid another ship (like the *Leonov* did in 2211), rescuing civilians from certain doom by converting the work bay into a giant field hospital, or even operating as a construction platform to build another warship. Although the tenders rarely get the public's attention, when they do it is always because of something big.

In large fleet operations, a battle group's cargo carriers spend much of their time resupplying the tender with raw materials and small parts for the routine maintenance of the task force's other vehicles. With a proper supply of spare parts, the tender is able to assemble even the most complex space ship sections. Completed systems can then be transferred to a friendly vessel in need. In many ways, the tender acts as a mobile repair garage and factory, all in one.

The giant work bay would also allow the ship to act as a "super carrier," though there are no recorded instances of a Yuri Gagarin-class vessel being used in such a fashion. An academy rumor tells that the *Gagarin* itself once held one hundred exo-armor "mock ups," but most people dismiss it as a cadet's tale. Once loaded, the ship would be far too sluggish and slow, and would require an enormous amount of reaction mass.

The most significant accomplishments in the history of tenders are not found in their own operational records, but rather in the exploits of the ships they service. How great would the *Faraday's* cross-solar journey have been, if not for the ship that repaired its ability to journey home? Who maintains the integrity of a large squadron far from civilization? It is said that amateurs study fleet tactics, while professionals study logistics. The history of the tender is only truly appreciated by the latter.

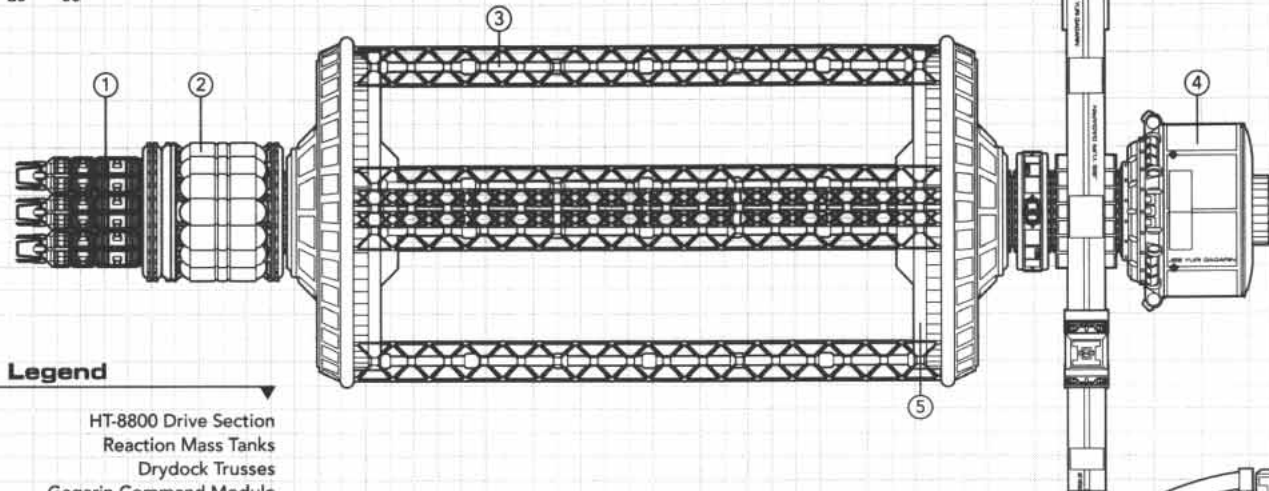
GAGARIN-CLASS FLEET TENDER

4

JSS YURI GAGARIN ◀

Gagarin-class Vessels, 2202-2203 ⓘ

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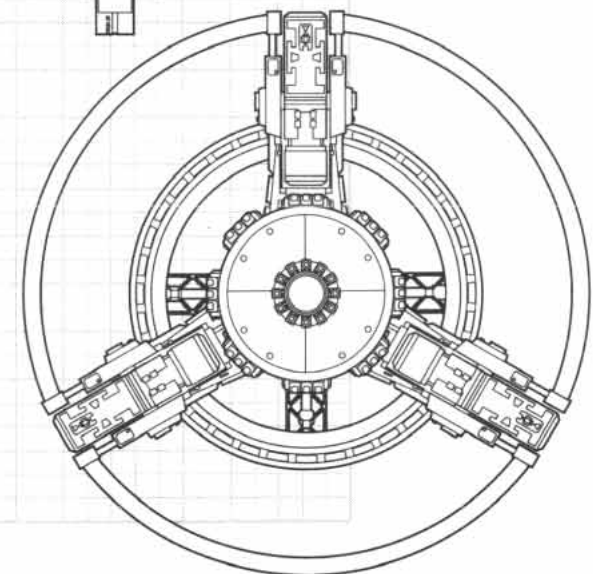
▼ Legend

- 1 HT-8800 Drive Section
- 2 Reaction Mass Tanks
- 3 Drydock Trusses
- 4 Gagarin Command Module
- 5 Storage Bays

The first design of the *Yuri Gagarin* established the look of the class: the large work bay module, the command section, the rear rack. The ship was not equipped with a centrifuge at first. It was expected that the entire ship would spin on its axis, creating gravity in the outer hull of the work bay. This caused major problems for daily operations, so the idea was scrapped and the centrifuge installed in early 2203.

JSS Yuri Gagarin: launched October 6, 2202. This first vessel of the class remains a major workhorse of the JAF. The ship itself has already received five major overhauls and upgrades since its launch. Two of these were conducted in drydocks, but the other three were done using the tender's own internal resources. The vessel is shown above in its late 2203 configuration, after the installation of the centrifuge.

JSS Alan Sheppard: launched April 8, 2203. Since October 2211, the *Sheppard* has been seen repeatedly loading her work bay with dozens of unidentified elliptical objects; after each cruise, the now empty bay is refilled. The JAF has not revealed whether these are sensor pickets, navigational buoys or space mines. The *JSS Ghengis Khan* has been the tender's constant escort.



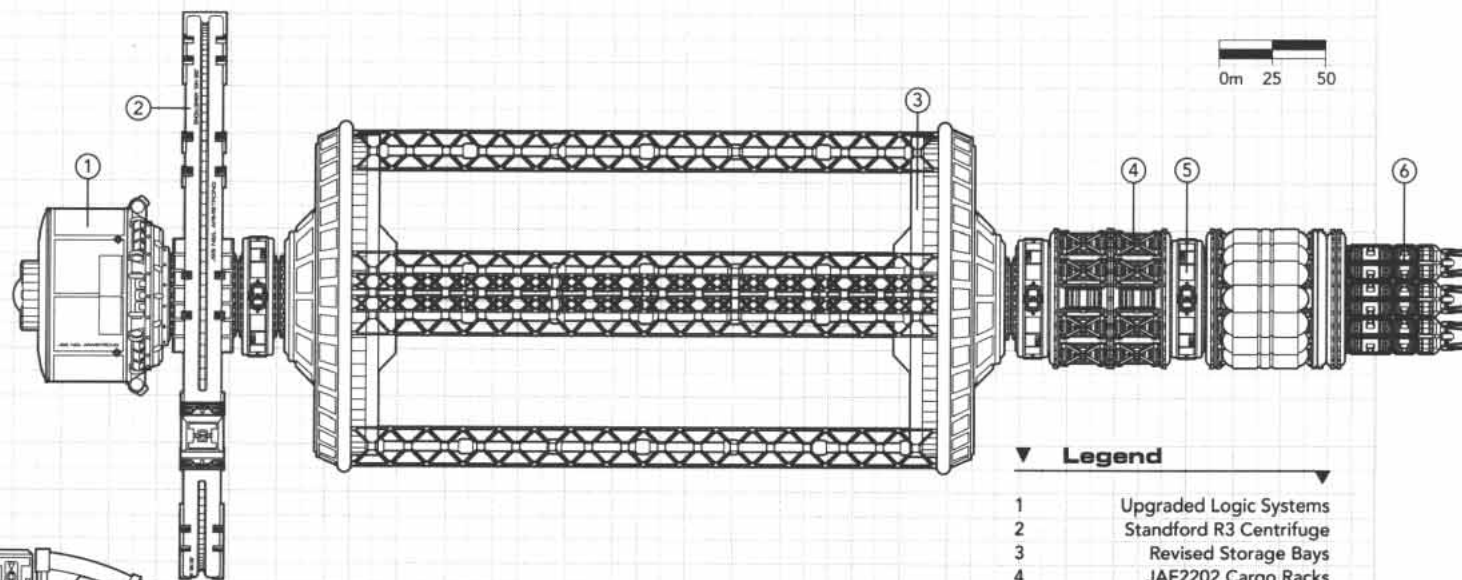


GAGARIN-CLASS FLEET TENDER



► JSS NEIL ARMSTRONG

① Gagarin-class Vessels, 2203-2205



▼ Legend ▼

- 1 Upgraded Logic Systems
- 2 Stanford R3 Centrifuge
- 3 Revised Storage Bays
- 4 JAF2202 Cargo Racks
- 5 Mid-ship Connector Module
- 6 HT-8800 Drive Section

The series produced in the period between 2203 and 2205 was markedly different from their predecessors. The habitat ring was now included in the basic design, and some of the outer hull panels were modified to facilitate manufacture. The illustration above shows the *Neil Armstrong* as it appeared in September 2205.

JSS Sharon McAuliffe: launched August 3, 2203. In June 2204, the *Sharon McAuliffe* was used to test the possibility of assembling standardized vessels without the benefits of full spacedock facilities. The experiment was a success, and produced the Alexander-class destroyer *JSS Rommel*. The effort was more difficult and time consuming than using regular docks, so the procurement office is likely to repeat the experiment only in times of extended conflict.

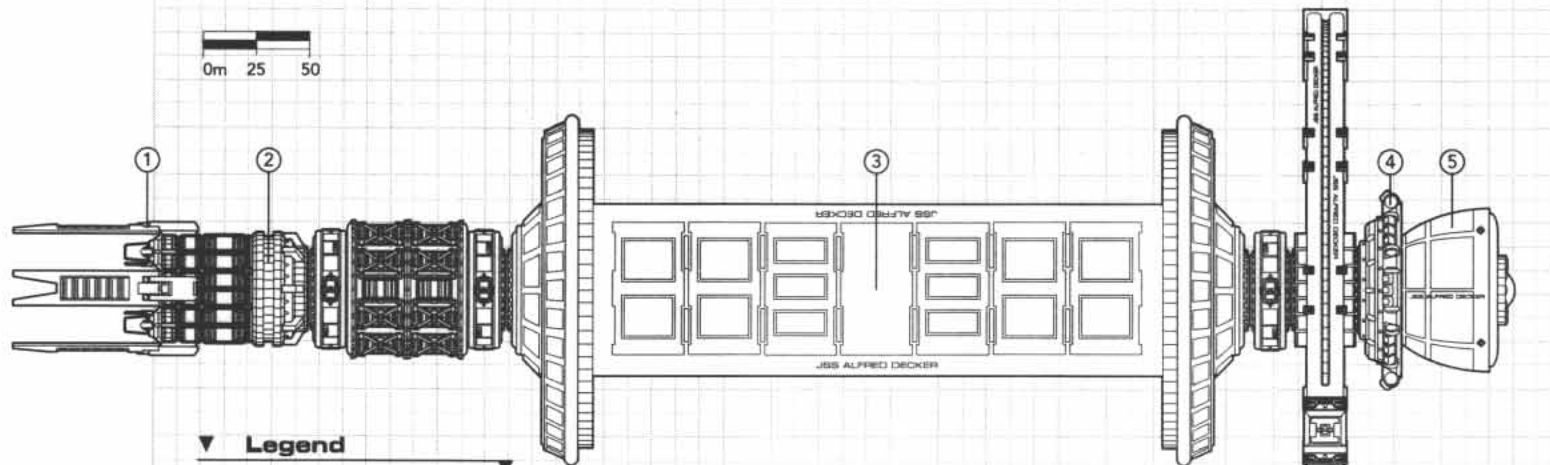
JSS Neil Armstrong: launched May 10, 2204. This tender was the one to refuel, repair and rearm the *JSS Faraday* after her cross system journey. Observers have revealed that when the *Neil Armstrong* returned, it offloaded two damaged Pathfinders, a damaged Retaliator and twenty three wounded. The cause of the damage is still shrouded in secrecy.

GAGARIN-CLASS FLEET TENDER

4

JSS ALFRED DECKER ◀

Gagarin-class Vessels, 2206-2208 ○



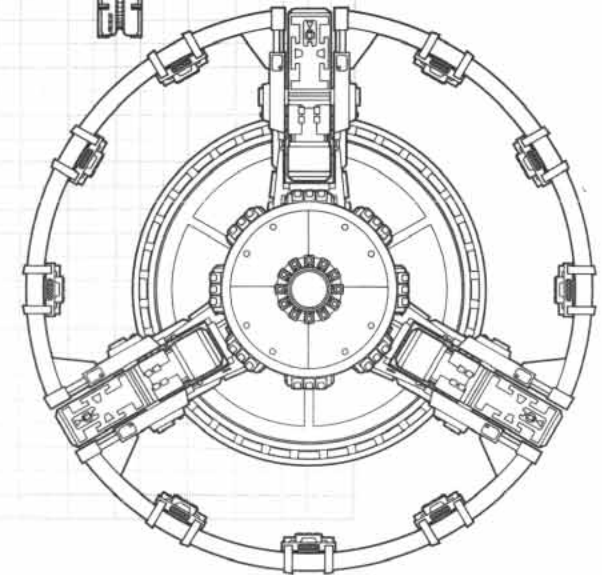
Legend

- 1 Lockwell D7 Drive Fin
- 2 Macleod Engine Mount
- 3 Revised Work Bay Design
- 4 Nakasu 899 Maneuver Jets
- 5 Decker Command Module

The existing Gagarins underwent a series of design modifications in the summer of 2206 to improve the efficiency of their internal recycler systems. The new pumps were faster and more efficient than the old ones, which facilitated the dock's operations. The illustration above show the *Alfred Decker* as it appeared in June 2207.

JSS Alfred Decker: launched December 17, 2205. The tender was sent to help the *JSS MacArthur* after the latter suffered a major failure in its new rotor assembly. The success of the operation greatly increased funding for more of the Yuri Gagarin-class tenders, enabling the JAF to perform all manners of repairs without having to return to Jovian space.

JSS Virgil Grissom: launched November 14, 2206. As another experiment in the possible uses of the Yuri Gagarin-class tenders, the *Grissom* assisted in the construction of a scientific research station in the summer of 2208. After that time, it returned to its regular fleet duty.





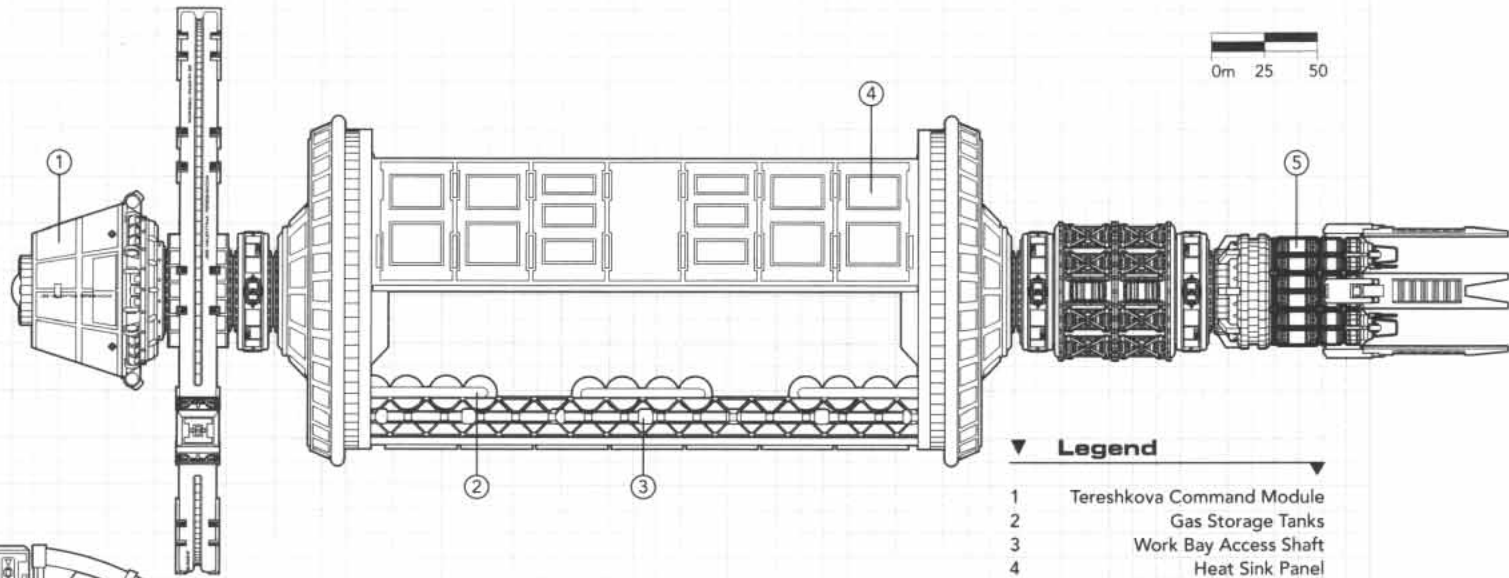
GAGARIN-CLASS FLEET TENDER



► JSS VALENTINA TERESHKOVA

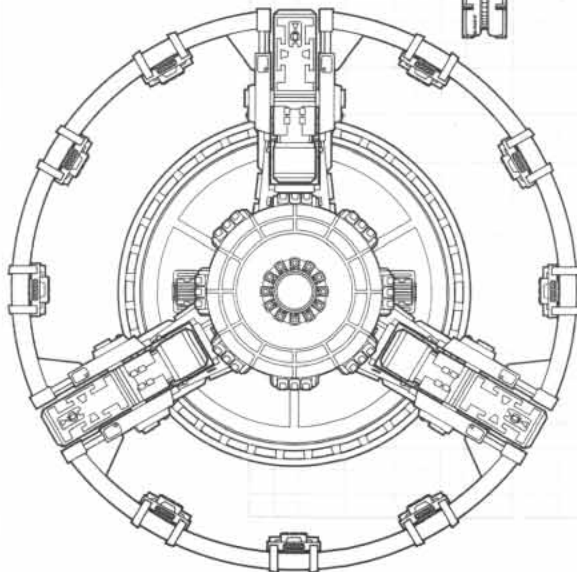


📍 Gagarin-class Vessels, 2209-2212



▼ Legend

- 1 Tereshkova Command Module
- 2 Gas Storage Tanks
- 3 Work Bay Access Shaft
- 4 Heat Sink Panel
- 5 HT-8800 Drive Module



The period between 2209 and 2212 was one of frantic activity, dotted with multiple interplanetary incidents and several major skirmishes. The Gagarin crews had their hands full maintaining a fleet that constantly increased in both size and alertness. The illustration above shows the *Valentina Tereshkova* as it appeared in April 2212.

JSS John Glenn: launched June 14, 2208. In April 2209 the Tachoma Mining company suffered a major fire on a remote mining asteroid. The *Glenn* led the rescue efforts and saved 153 lives.

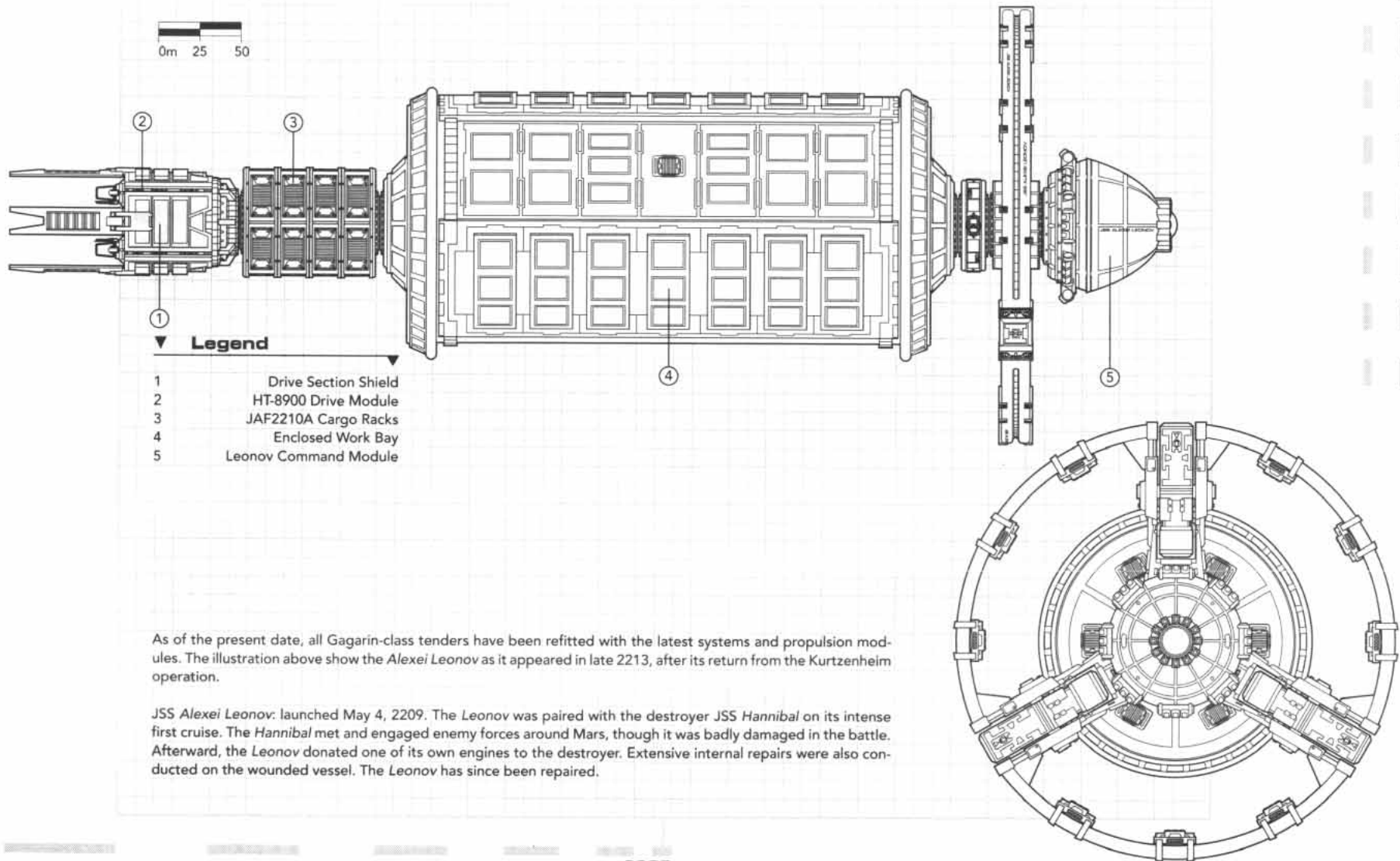
JSS Valentina Tereshkova: launched February 9, 2209. Unlike other tenders, this vessel is used to support public sector efforts. Its current function is the deployment of atmospheric probes into Jupiter's atmosphere. The IGS is currently studying a joint venture with the JAF to use the vessel for a detailed exploration of the other gas giants in the system.

GAGARIN-CLASS FLEET TENDER

4

JSS ALEXEI LEONOV ◀

Gagarin-class Vessels, 2213 ◉



As of the present date, all Gagarin-class tenders have been refitted with the latest systems and propulsion modules. The illustration above show the *Alexei Leonov* as it appeared in late 2213, after its return from the Kurtzenheim operation.

JSS Alexei Leonov: launched May 4, 2209. The *Leonov* was paired with the destroyer *JSS Hannibal* on its intense first cruise. The *Hannibal* met and engaged enemy forces around Mars, though it was badly damaged in the battle. Afterward, the *Leonov* donated one of its own engines to the destroyer. Extensive internal repairs were also conducted on the wounded vessel. The *Leonov* has since been repaired.



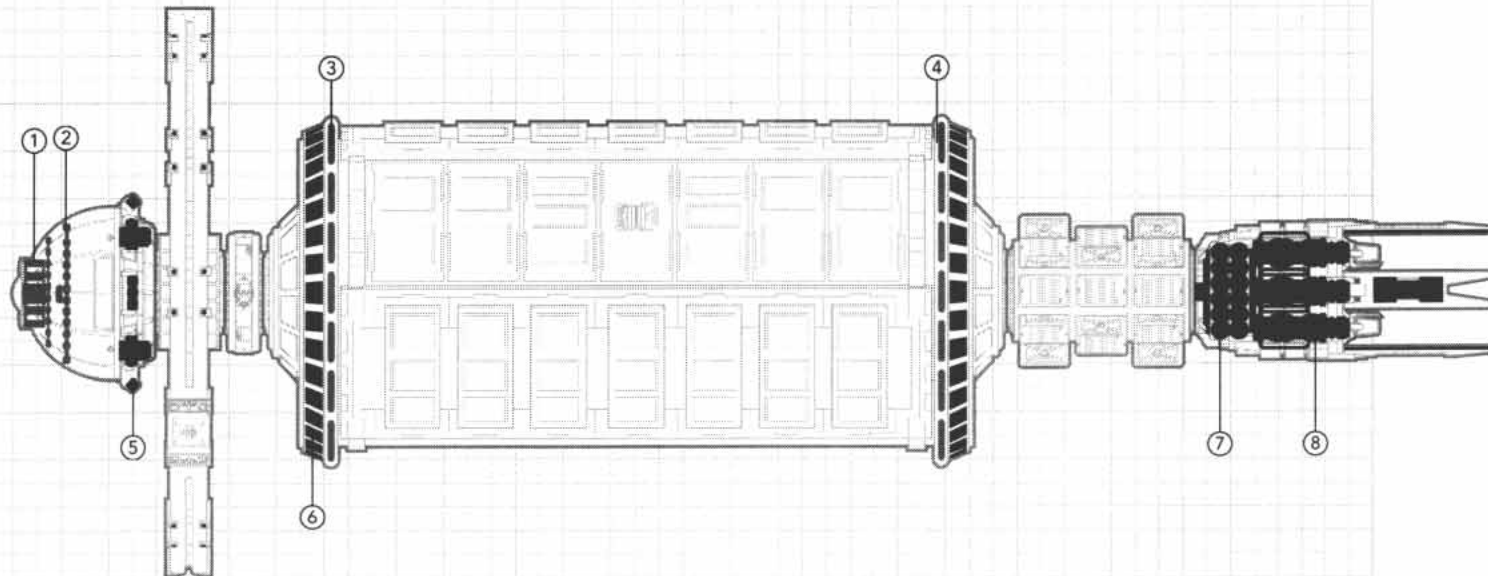


GAGARIN-CLASS FLEET TENDER



▶ 4.4 SHIP SYSTEMS

① Propulsion and Weapons



The main hull of a Yuri Gagarin-class fleet tender is very distinct. The central section of the ship is shaped somewhat like a giant barrel. A series of three doors, all independently operated, are equally spaced around the circumference. The gigantic main work bay may thus be subdivided into smaller pressurized compartments by attaching internal partitions to simplify work or accommodate special mission requirements.

The ship's command module is placed just in front of the main work bay section. This is the only portion of the forward hull that resembles a conventional ship. The bridge, defensive missile bay and most of the vessel's electronic defense systems are found there. A standard habitat ring is sandwiched between the command module and the work bay to house the crew and supply a gravity environment when the ship is in station keeping mode.

▼ Weapon Systems

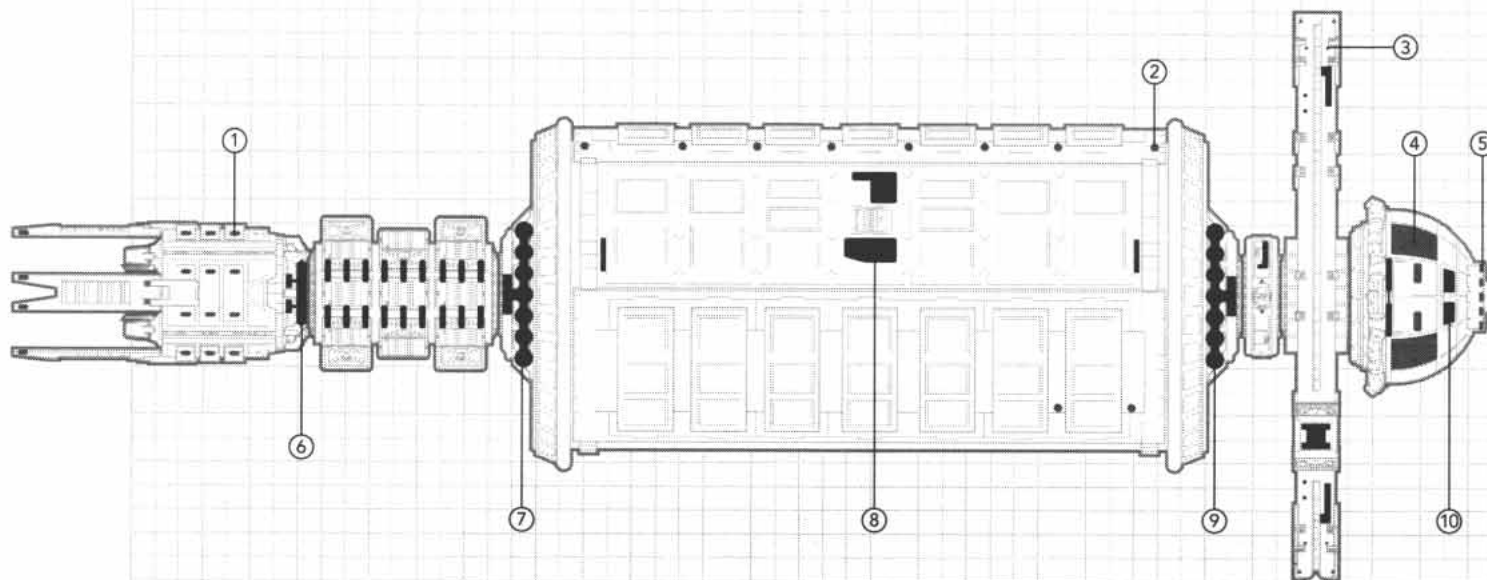
- 1 Missile Launch Tubes
- 2 PDS Emitters
- 3 Forward PDS Emitter Ring
- 4 Aft PDS Emitter Ring

▼ Propulsion Syst.

- 5 Plasma Arc RCS Cluster
- 6 Radiator Panels
- 7 Reaction Mass Tanks
- 8 Plasma Combustion Chamber

4.4 SHIP SYSTEMS (CONT.) ◀

Sensors and Life Support ◉



▼ Sensor Systems

- 1 Short-wave instrument clusters
- 2 Docking Sensors
- 3 Microwave Pulse-ranging Antennae
- 4 Phased Array Radar
- 5 Laser Ranging and LIDAR Emitters

▼ Life Support Syst.

- 6 Shield Generators
- 7 Aft Gas Storage
- 8 Work Bay Heat Exchanger
- 9 Forward Gas Storage
- 10 Life Support Nodes

The rear section of the ship is composed of a cluster of standard drive modules placed after the Operation section. The Ops section contains the training room, some basic workshops, some small, shielded cargo holds and many engineering systems. The Gagarin-class vessels have an extended Ops section composed of three modules instead of the usual single one; the two aft ones have additional storage space. Due to their proximity to the main drives, they are rarely visited.

The Ops section is surrounded by a series of modular cargo racks. The racks have their own type of cargo modules, but they can be quickly modified to accept practically any cargo pod currently in use. Each socket comes with its own power and life support feed, though this is mostly for the convenience of visiting crew and is not intended for long term use (cargo pods can be manufactured with built-in life support systems).





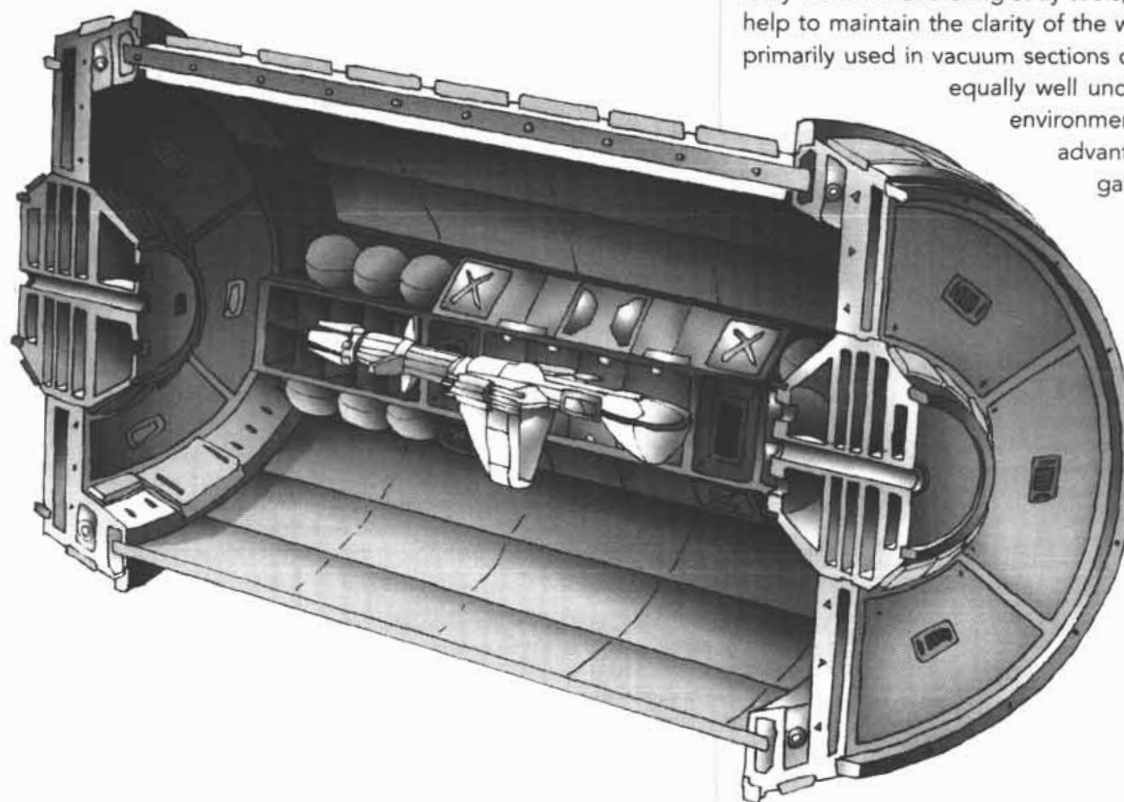
GAGARIN-CLASS FLEET TENDER



▼ 4.4.1 Work Bay

Some people see tender ships as glorified cargo vessels. Cargo ships, however, only carry parts; with its work bay, a fleet tender can repair, assemble, remove or replace vital components for any ship currently in service in the fleet. A tender is more expensive than a cargo freighter, since they can do so much more.

The massive work bay of the tender holds the current record for the largest single interior chamber on a long range space ship. All along the interior and sides are tether hardpoints, power connection nodes and airlocks.



The bay is divided into large "sectors" that are dedicated to the repair of one vehicle. Usually, one of the 20-meter long sectors is converted into a parking area for the storage of work vehicles. Deckers, work bees, Atlas OTVs or M-Pods form the bulk of the support vehicles.

Each of the sectors has an associated workshop deck to reduce wasted traveling time for workers. A Tender can manufacture almost every subassembly in use by the JAF, having both a wealth of spare parts and a large variety of equipment and tools.

"Pixies" maintenance robots can be seen circulating amid the busy workers. Gathering stray tools, bolts and lost objects, they help to maintain the clarity of the work bay air space. They are primarily used in vacuum sections of the ship, but can operate equally well under gravity or in pressurized environments. Inhabited areas have the advantage of the air circulation to gather stray objects on the filter screens, so there is little need for the robots there.

When a Yuri Gagarin is supporting a larger convoy, both military and civilian components are worked on together. The tender works hard to make its contribution by seeing that all ships arrive safely together. It is the workbay that makes this possible.

▼ 4.4.2 Cargo Pod Access Deck

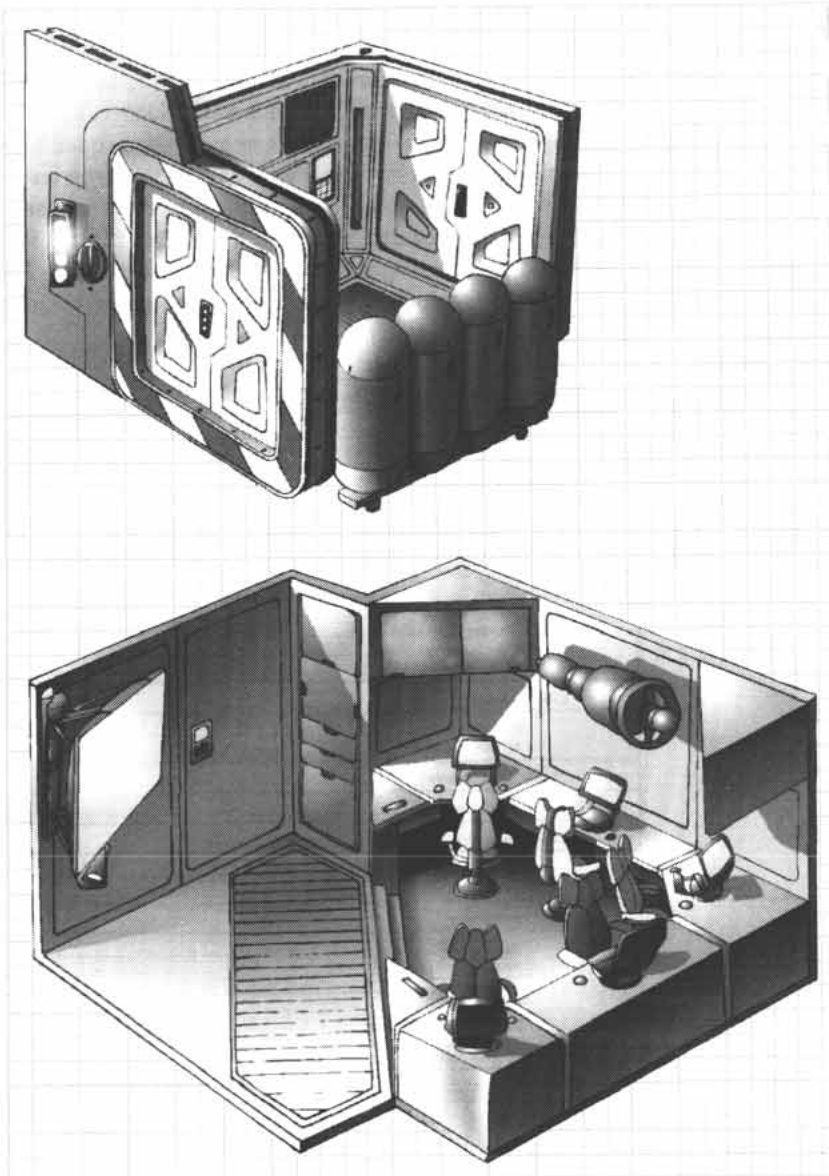
These decks allow access to the storage pod racks on the Ops section of the tender. This gives another few thousand cubic meters of storage capacity, depending on the type of cargo pod installed, giving enough supplies for an entire squadron or fleet for extended operations.

Access to this deck and the storage pods is highly regulated. During green alerts, only an officer or quartermaster can open the elevators. At higher alert levels, this restriction is dropped to allow passage to damage control parties.

▼ 4.4.3 Training Center

A further addition to the capabilities of the tender is the training center. This center has added a considerable advantage to the JAF manpower resources. Each training center includes desks and work tools like those used in the workbay. Studies here include a mix of video, lectures, tests and hands-on-exercises. Occasionally, actual work being done in the work bay is brought in for exercise. Instructors have been trained to be cordial with their students, striving to encourage each of them to better themselves.

Some of the Gagarin's crew members specialize in training. Passing on information effectively is totally separate from knowing the skill itself. These instructors show green crews how to do their jobs better. They also perform various exercises, where the only way to succeed is to work together. The training room can also be set up for crewmen to take almost any of the JAF exams to upgrade their classification, increase their chances for promotion and get assigned to their choice of vessel for the next tour. It is not uncommon for a comm operator to hit the books for a three month cruise, pass his exam and then get assigned as a communications specialist onboard a larger ship. Tenders may transfer off crew to help man a ship with casualties. Those that show promise in the training scores are the ones transferred mid-cruise.





GAGARIN-CLASS FLEET TENDER



► 4.5 SHIP PERSONNEL

There are six crew departments on the Yuri Gagarin-class. There are the normal Operations, Engineering and Gunnery departments for a ship of this size, and the ship's single marine squad look to a Corporal or Sergeant for leadership. Due to the large volume of materials constantly going on and off ship, there is a separate Supply and Resource department, led by a Chief Quartermaster. Like the Forge-class Flight Deck team, the tender's Work Bay department has a senior officer commanding three juniors, each responsible for one watch rotation.

▣ Crew Organization Chart

Captain	
Executive Officer	
Sensor Operator	3
Comm Operator	3
Helmsman	3
Navigator	3
Medic	3
Steward	6
Training Specialist	3
Computer Specialist	3
EVA Specialist	6
Chief Gunner	
PDS Specialist	3
Missile Specialist	3
Chief Quartermaster	
Quartermaster	6
Chief Engineer	
Bosun	6
Engineer	12
Bay Commander	
Bay Officer	3
Bosun	9
Engineer	3
Toolmaster	3
Bay Specialist	6
Marine Commander	
Marine	4

▼ 4.5.1 Interview with a Quartermaster

Name: Marie Vettese
Rank: Warrant Officer
Current Assignment: JSS Sharon McAuliffe



"Whatever it is you're looking for, I've got it. All of my duty time — and sometimes, some of my off-duty time, if the right favor is exchanged — is devoted to tracking all the parts, conduit segments, uniforms, shoes, toilet paper or rations aboard the ship. If you want to take it out of the cargo hold, you have to sign off with me. That way, I also know what we need to get more of when the ship gets resupplied — and the log is necessary anyway to keep track of the total mass repartition, to keep the ship properly balanced for thrusting.

"There are a lot more of us quartermasters on a fleet tender than on any other ship class, but that's because there's a lot more work to be done. We're the ones handling the resupplying of the rest of the ships, and we need to know what goes out the door. The tender also has a variant of our job which is called a 'toolmaster,' who keep track of all the tools used for repairs in the ship's main engineering bay.

"Each vessel has a small amount of space kept aside for 'discretionary cargo.' That's where I can put the zero-g balls, specially flavored drink mixes or T-shirts. Items like liquors are more regulated and not allowed in the 'D-cargo' (that's how we call it) area. We have special lockers for those items — the ones with the security systems built into the door."

▼ 4.5.2 Interview with a Steward



Name: Owen Pierce
 Rank: Private
 Current Assignment: JSS Alan Sheppard

"With the average crewman's day filled with various military duties, it's up to me to look after their daily living needs. This includes cooking meals, doing laundry and cleaning the common areas of the ship. Sure, it's a dirty job, but someone's got to do it — the maintenance 'bots are way too stupid to do it entirely by themselves. And, they can't lend a helpful ear to the crew to help them eliminate the little frictions that arise from too

many people cooped up in too little a space for too long. Yeah, it's a cliché. I know.

"A good cook is always admired by the crew. A great cook is viewed as a savior, nothing less, rescuing the hapless crewmen from the bland algae spread that comes out of the recycler. I can spice up the spread by mixing it with small amounts of fresh food from the reserve — remind me to have you taste my casserole, one of these days. Being pretty much like tofu, the algae spread picks up the taste of whatever it's cooked with, as long as you know what you're doing.

"On the smaller ships, the steward also serves as an emergency medic. As a result, most of us have at least some basic first aid training, just in case — on most ships, there is at least one medical specialist with full paramedic training. During combat, I'm part of a damage control team for the habitation module. If something goes bad elsewhere, they will call on me."

▼ 4.5.3 Interview with a Navigator

Name: Kirstin Gaumond
 Rank: Warrant Officer
 Current Assignment: JSS Alfred Decker



"Although my eyes are always on the stars, I don't seem to enjoy the view the way I used to back in my first few days at the academy. Maybe it's because I'm just too used to seeing the stars as reference points nowadays. Navigation is a precise mathematical science involving orbital trajectories, rotating gravitational vectors and propulsion-related calculus. The instructor once said that 'it ain't like dusting crops,' whatever that means. I've heard of people who were capable of flying the ship "by the seat of the pants," but they are quite rare.

"Merchant vessels normally have only one navigator who calculates one plotted trajectory for the whole trip (the objective being to find the fastest and most economical course). In contrast, the JAF likes to have us always plotting possible courses of interest, even once the ship is underway. If the sensors pick up an unidentified bogey, I'm supposed to have an intercept vector prepared practically before the Captain asks for it. If we are moving with a convoy, I also have to create station keeping information that gets handed out by the communications team.

"Working on the bridge is nice. It's one of the few places where you can get an overall idea of what is going on, instead of responding to alarms. There is usually only one navigator station, so in combat the extra staff join in with damage control, or anywhere else they are needed."





GAGARIN-CLASS FLEET TENDER



► EVIDENCE



"Sorry, dear, but you've looked better. Much better."

Technician Adam Davis floated just off the curved wall of the *Sally Ride's* titanic work bay, a huge cylinder that formed the bulk of the Gagarin-class tender. Damaged vessels basically docked inside the *Ride* to be repaired — or their components did, in the case of larger vessels. Davis was looking at the dismantled drive section from the *Thomas*. Burn scars and inwardly bent tear holes showed the evidences of missile damage.

"You talking to me, sailor?" Nikita Ganov, Toolmaster for the duration of this operation, was bringing over a welding torch and its equipment. Her

voice was full of semi-serious seduction. "Once you get me out of this suit, I'm sure you'll be happy with what you see."

"Um... yeah..." Adam was convinced he would never get used to Nikita's playful sexuality. He'd never tire of it, either. Unable to face her, he pushed over to the engine, coding his tool kit to match his homing beacon as he did so.

Nikita caught up with Davis and motioned for him to come closer. She held firmly onto his shoulders — sending a little jolt of electricity up his spine — and touched her faceplate to his.

Oh great, he thought as he turned off his comm link. Vibrations would carry through the helmets and allow them to speak without being monitored. He wasn't quite sure he wanted to hear what she had to say.

"I heard the terrorists made a second run on 118," she said in a voice muffled by the helmet — conduction talking worked much better in fiction than in real life. "The *Brock* recovered some hostages, some dead but most alive."

"Ah man," moaned Davis. He was very aware of how close her body was to his and how everyday her comment had just been. He was vaguely disappointed. "That means they busted up the station. The *Sally Ride* is going to be here for months fixing it."

"Hey trooper," Nikita replied, "we're a bit handier than that. At least, I'm pretty good with my hands. How 'bout you?"

Inside his helmet, Davis was turning a lovely shade of red.

* * *

Technician William Jennings was not happy. This was supposed to be a milk-run out to Station 118. The *Sally Ride* was just supposed to dock there briefly; he'd get some leave and deliver the package to Tonya. He'd done it before. No problem.

Now these wackos had screwed it all up. For all he knew, Tonya was dead. At least he was on the first detail of technicians to go aboard the station. He had told the crew chief he knew someone aboard and wanted to find out if she was okay. It was true, mostly.

He played with the sealed package in the one-third gravity of his stateroom in the *Ride's* spinning habitation module. He had delivered three previous packages and never taken a sample — not a good idea to dip into the product. But now, he didn't know if he could ever deliver it.

Curiosity got the better of him. Why not? Using a knife, he made a small incision in the package and pulled out the blade. A tiny amount of yellow dust laced the tip and he carefully licked it up.

"Damn!" He swore and spat simultaneously, ejecting the powder that was burning his tongue. "The hell with that. I want my cash."

After slipping the package into a tool pouch on his flight suit, William turned to make his way to the section of the work bay holding the shuttles.

* * *

"Hi Will," Adam Davis said as he slid into the shuttle seat, fastening the zero-gee belt to hold himself into place.

Jennings quickly pushed the packet into one of the pouches of his space suit. He would need to have access to it later, but sure didn't want Davis to see.

"So, they pulling you in on this job?" William asked to distract his friend, who was still struggling with a stubborn buckle.

"Ever since I aced my last evaluation, I keep getting moved around a lot. Nobody really seems to know what to do with me."

"Except maybe Nikita, right?"

"Yeah." Davis didn't even try to suppress the smile.

"Actually, I hear the *Brock* took a hit," Jennings added. "Maybe you can get that transfer you wanted. Julianne awaits, y'know. You'd have to choose between her and Nikita, though."

"At least they wouldn't be on the same ship this time."

* * *

"Welcome to Station 118." MacGreggor, still in his Decker exosuit, met the work crews from the *Sally Ride* in the outer airlocks. "What's left of her."

Jennings and Davis followed Sergeant MacGreggor into another airlock and onto a less damaged area. Much of the station was cracked open like a shell, exposing vital areas — including habitation — to the vacuum of space.

Davis looked up. "This explosion came from inside the station."

"Do you know if anyone survived?" Jennings asked. No payoff this trip, he thought.

"Yeah," MacGreggor answered back, "we found some hostages still alive on the *Tengu* we boarded. They're in sickbay on the *Brock*. The worst cases will swapped over to your ship."

"Oh." Jennings tried to phrase his next question carefully. He didn't want to say anything suspicious. "Err, is Tonya Reeds okay?"

"What's up, Will?" Davis interjected. "You know someone here?"

"Um, not really. I kinda met this woman the last time I was out here. Just wanted to know if she was okay. Y'know."

"Well you're in luck," MacGreggor said. "Reeds is just fine."

"Great. I'll have to see when I can hook up with her."

"That might be difficult. Y'see, she's in the brig right now, under interrogation." MacGreggor raised his rifle. "We found out she was smuggling for STRIKE. Chemicals for explosives. You know anything about that?"

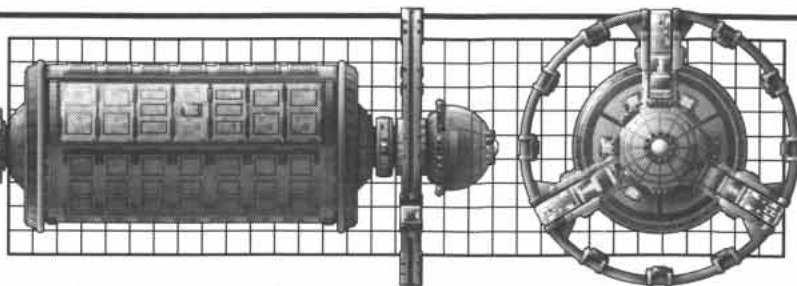
"Me...? No. Look, marine..." Jennings tried to dismiss the issue with a wave of his hands.

"I think we'll let the forensics boys decide that." MacGreggor pointed his rifle right at Jennings' chest.

"What the hell do you mean? No way —" Jennings then looked down at the weapon, which was pointing right at a thin streak of yellow powder across his own chest. Left by the incision he had made, it pointed straight at his hidden stash.

He shut up then.





► Gagarin-class Fleet Tender

▼ Overall Data:

TV:	364,600	Off. TV:	-	Def. TV:	-	Misc. TV:	-	Cost:	364 M	Indv lemon dice:	3
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▼ Movement Data:

Mode:	Space	Combat:	1 (0.1g)	Top:	2 (0.2g)	Maneuver:	-3	Range:	3,000 hrs	Re. Mass:	2,000 BP
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▼ Sections:

1 x	Command Module	1 x	Habitation Ring	1 x	Work Bay
3 x	Ops Section	24 x	Cargo Container	5 x	Drive

▼ Off & Def Systems

1 x	Point Defense System (command)	1 x	Missile Bay (command)	1 x	Point Defense System (work bay)
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► Section: Command Module

▼ Main Data:

TV:	95,000	Off. TV:	14,000	Def. TV:	2200	Misc. TV:	270,000	Cost:	95 M	Indv lemon dice:	3
Crew:	54	Actions:	6	Sensors:	0/4 km	Comm.:	0/15 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	72	Default Size:	37	Base Armor:	75	Light:	75	Heavy:	150	Overkill:	225

▼ Movement Data:

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ Perks & Flaws:

Name	Rating	Game Effect	Name	Rating	Game Effect
Autopilot	-	Lvl 1 pilot	Reinf. Crew Comp.	2	Absorbs first two "Crew" hits
Backup Sys	3	Comm, Fire Con, Life Sup, Sensor	Satellite Uplink	-	x1000 Comm range
Computer	4	CRE 0, KNO 0, PP 4	Cargo Bay x 2	-	7,500 m ³ each
Ejection System	-	60 places	Reinforced Armor	25	Front
HEP: All	-	Sealed	Sick Bay	4	Zero-Gravity Medbay
HEP: Radiation	4	Screen			
Life Support	-	Full			
Passenger Accom	-	10,000 m ³			

▼ Offensive and Defensive Systems:

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC
1	PDS (ranged)	T	x10	1	+1	6	inf	AM, Heat	15	7400	n/a
	PDS (shield)	FF	x20	M	+1	0	inf	Def., E-shield, Heat	3	75	n/a
1	Missile Bay	T	x30	5	-2	5	30	Mis, G, Concealed	14	6000	18

► Section: Habitat Ring

▼ Main Data:

TV:	77,000	Off. TV:	0	Def. TV:	1000	Misc. TV:	230,000	Cost:	77 M	Indv lemon dice:	3
Crew:	3	Actions:	3	Sensors:	-3/2 km	Comm.:	-3/10 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	67	Default Size:	42	Base Armor:	50	Light:	50	Heavy:	100	Overkill:	150

▼ Movement Data:

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ Perks & Flaws:

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup Life Sup	-	Alternate systems	Reinf. Crew Comp.	3	Absorbs first two "Crew" hits
Cargo Bay	-	60 m ³	Sick Bay	4	Medbay
Ejection System	-	384 places	Tool Arm x 9	28	Hardpoints: cannot punch
HEP: All	-	Sealed			
HEP: Radiation	6	Screen			
Laboratories	-	Cooking 1, Electronics 1, Mechanics 1			
Life Support	-	Full			
Passenger Accom	-	42,000 m ³			

▼ Offensive and Defensive Systems:

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC

► Section: Work Bay

▼ Main Data:

TV:	120,000	Off. TV:	7500	Def. TV:	4000	Misc. TV:	350,000	Cost:	120.5 M	Indv lemon dice:	3
Crew:	54	Actions:	6	Sensors:	0/4 km	Comm.:	0/15 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	109	Default Size:	53	Base Armor:	100	Light:	100	Heavy:	200	Overkill:	300

▼ Movement Data:

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ Perks & Flaws:

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup Life Sup	-	Alternate systems	Manip. Arm x 2	25	Hangar cranes: cannot punch
Cargo Bay	-	5,000,000 m ³	Passenger Accom	-	2 x 5,000 m ³
Ejection System	-	300 places			
HEP: All	-	Sealed			
HEP: Radiation	6	Screen			
Laboratories	-	Electronics 2, Mechanics 2			
Life Support	-	Full			
Tool Arm x 6	30	Hangar cranes: cannot punch			

▼ Offensive and Defensive Systems:

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC
1	PDS (ranged)	T	x10	1	+1	6	inf	AM, Heat	15	7400	n/a
	PDS (shield)	FF	x20	M	+1	0	inf	Def., E-shield, Heat	3	75	n/a

► **Section: Ops Section**

▼ **Main Data:**

TV:	7000	Off. TV:	0	Def. TV:	2200	Misc. TV:	19,000	Cost:	7 M	Indy lemon dice:	3
Crew:	3	Actions:	2	Sensors:	-3/2 km	Comm.:	-3/10 km	Fire Control:	-5	Type:	Early Prod.
Hull Size:	72	Default Size:	19	Base Armor:	75	Light:	75	Heavy:	150	Overkill:	225

▼ **Movement Data:**

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup Life Sup	-	Alternate systems	Sick Bay	4	Zero-Gravity Medbay
Cargo Bay	-	1,900 m ³			
Ejection System	-	60 places			
HEP: All	-	Sealed			
HEP: Radiation	4	Screen			
Laboratories	-	Electronics 1, Mechanics 1, Teaching 1			
Life Support	-	Full			
Reinf. Crew Comp.	2	Absorbs first two "Crew" hits			

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC

► **Section: Cargo Container**

▼ **Main Data:**

TV:	1400	Off. TV:	0	Def. TV:	160	Misc. TV:	3900	Cost:	700,000 M	Indy lemon dice:	3
Crew:	0	Actions:	0	Sensors:	0/2 km	Comm.:	0/10 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	10	Default Size:	10	Base Armor:	20	Light:	20	Heavy:	40	Overkill:	60

▼ **Movement Data:**

Mode:	Towed	Combat:	-	Top:	-	Maneuver:	-	Range:	3,000 hrs	Re. Mass:	-
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
Cargo Bay	-	2500 m ³ each			
HEP: Radiation	4	Screen			
HEP: Vacuum	-	Sealed			
Life Support	-	Limited			
No Comm	4	Can't communicate			
No Sensors	-	Can't Scan			

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC

► **Section: Drive Module**

▼ **Main Data:**

TV:	3600	Off. TV:	0	Def. TV:	1800	Misc. TV:	9000	Cost:	3.6 M	Indy lemon dice:	3
Crew:	6	Actions:	4	Sensors:	-3/2 km	Comm.:	-3/10 km	Fire Control:	0	Type:	Early Prod.
Hull Size:	46	Default Size:	20	Base Armor:	50	Light:	50	Heavy:	100	Overkill:	150

▼ **Movement Data:**

Mode:	Space	Combat:	23 (2.3g)	Top:	46 (4.6g)	Maneuver:	-3	Range:	3,000 hrs	Re. Mass:	9000 BP
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
Backup Sys.	3	Comm, Fire Con, Life Sup, Sensor			
Ejection System	-	10 places			
HEP: Vacuum	-	Sealed			
HEP: Radiation	4	Screen			
Life Support	-	Full			
Reinf. Crew Comp.	2	Absorbs first two "Crew" hits			

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC

► **Section:**

▼ **Main Data:**

TV:	-	Off. TV:	-	Def. TV:	-	Misc. TV:	-	Cost:	-	Indy lemon dice:	-
Crew:	-	Actions:	-	Sensors:	-	Comm.:	-	Fire Control:	-	Type:	-
Hull Size:	-	Default Size:	-	Base Armor:	-	Light:	-	Heavy:	-	Overkill:	-

▼ **Movement Data:**

Mode:	-	Combat:	-	Top:	-	Maneuver:	-	Range:	-	Re. Mass:	-
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▼ **Perks & Flaws:**

Name	Rating	Game Effect	Name	Rating	Game Effect
-					
-					
-					
-					
-					
-					
-					
-					

▼ **Offensive and Defensive Systems:**

Qty	Name	Arc	DM	BR	ACC	ROF	Ammo	Special	MS	WC	AC
-											
-											
-											
-											
-											
-											





► 5.1 SHIP AREAS

Despite the fact that humankind has lived in space for more than two centuries, it remains one of the most hostile environments possible. Complex equipment is required to maintain a viable living atmosphere within a space construct, with no margin for error. On a space ship, the crew can count only on itself and on the quality of the equipment that keeps them alive.

The systems described in this section provide spacefarers with their own miniature habitats. For simplicity, they have been divided in two: the habitation sections and the areas used in the daily operations of the vessel. Most ship designs share them in one form or another. The following descriptions are generalized, but they cover the most common designs currently in use.

▼ 5.1.1 Habitation Modules

While some ships still have only internal crew quarters, more and more Jovian designs feature additional habitation modules that are mounted on long rotor arms and spun to create a simulated gravity field. Although it provides only roughly one-third of Earth's gravity, this allows the crew to remain in space for longer periods of time without the ill effects associated with prolonged zero-g exposure. Given the size of the Jovian territory, long patrols are now almost mandatory.

The first deck entered upon leaving the rotor arm is normally filled with support equipment. It also grants easy access to the habitation's cargo bay and workshops, if any are present. Usually, the larger workshops are equipped for electronics-related work and maintenance, and the smaller ones for mechanical repairs. On some ships, particularly civilian research vessels, workshops have been reconfigured for scientific studies.

The officers' quarters generally come next. Each of the modules contains rooms for half the ship's officers and one senior officer (presumably, two will be used). The senior officer's quarters are

used by the convoy leader, ship's captain, executive officer or exo-squadron leader. Each officer has a small desk with a computer interface for administrative tasks. Three offices for holding one-on-one meetings or doing more complicated studies are on the same deck. They are equipped with collapsible furniture and can be reconfigured to serve a variety of purposes.

An advanced sick bay is built into all crew habitats and includes surgery equipment suitable for both gravity and zero gravity operation. Except for burn cases, most medical procedures are performed under simulated gravity. This deck also normally houses a briefing room, the officer's mess and the module's maneuvering thrusters. These thrusters allow the habitation module to function as an independent lifeboat if necessary.

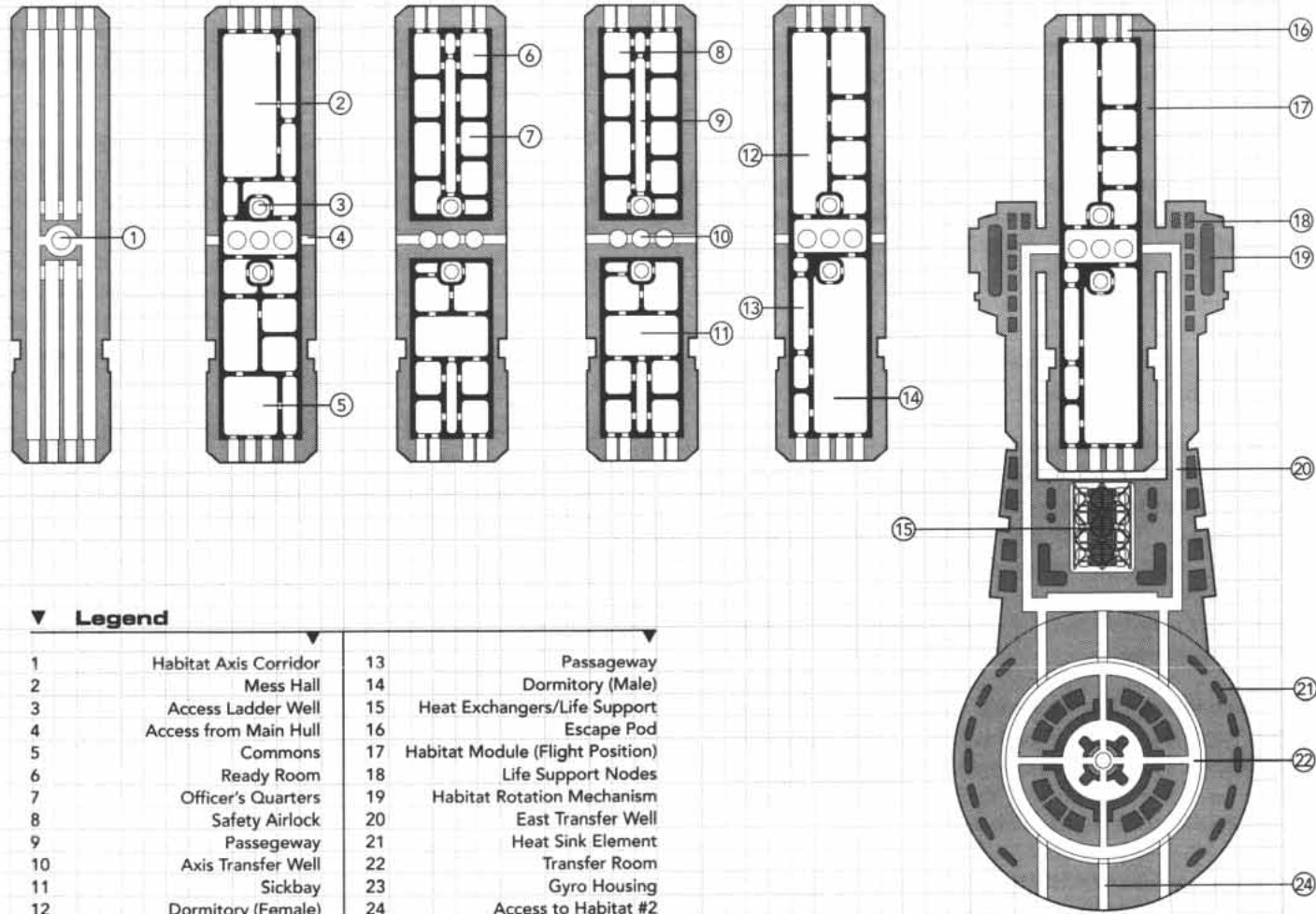
One deck is often dedicated entirely to staterooms. Each room is used by one crewmember as private accommodations. A second bunk can be added to each room as an emergency, using a modular furniture system common aboard spacecraft. Most designs include a plentiful supply of showers, toilets and even extra storage lockers for the crew, whenever possible. All quarters can be sealed off to prevent atmospheric loss or the spread of fires.

Although lacking the storage volume and computer interfaces of the senior staff quarters, the crew quarters share many of the same general features. All beds have straps that can be used as restraints in zero-g. Numerous storage lockers can be found under the bed and along the wall. Some of them are marked and are expected to hold a regulation supply of items, mostly safety equipment; others are free for personal storage. An emergency space suit is stored in a pull-out drawer on the side of each bed.

The final deck in the habitation section is set aside for communal activities. This includes a large exercise gym with wash facilities, lockers and a storage space. As with other areas of the ship, facilities are unisex, with privacy available by closing lockable doors. Aside from the exercise area, the communal deck contains the laundry facilities, lounge, main galley and the mess hall.

HABITATION MODULE ◀

Floor Plans ◉



Legend

1	Habitat Axis Corridor	13	Passageway
2	Mess Hall	14	Dormitory (Male)
3	Access Ladder Well	15	Heat Exchangers/Life Support
4	Access from Main Hull	16	Escape Pod
5	Commons	17	Habitat Module (Flight Position)
6	Ready Room	18	Life Support Nodes
7	Officer's Quarters	19	Habitat Rotation Mechanism
8	Safety Airlock	20	East Transfer Well
9	Passageway	21	Heat Sink Element
10	Axis Transfer Well	22	Transfer Room
11	Sickbay	23	Gyro Housing
12	Dormitory (Female)	24	Access to Habitat #2





▼ 5.1.2 Operations Section

All ships have an operations section that complements the habitation modules and provides the additional facilities needed for the daily operation of a spaceship. Generally mounted in a long cylinder, the operations section serves as a connection between the forward hull and the engineering and drive sections. The operations section is often surrounded by additional systems such as cargo bays or modular latches in order to maximize the use of the available space.

Most operations sections are designed along similar lines. If the ship is equipped with a centrifuge wheel, the mechanisms required to drive it will be found on the first few decks of the section. An outer bank of rollers is matched against an internal gyro to balance the overall momentum of the system. Exchanging angular motion between these and the main hull can make small changes in the ship's flight angles, but this is rarely used as it places stress on the overall structure.

The ring-like transfer deck is next, providing access to the rotor arms. Since the arms are spinning, Velcro shoes, magnetic boots or rungs can be used to transfer between two circular moving "sidewalks." These sidewalks increase a crew member's momentum to permit them to use the rotor arm's access hatch. Since cargo items are often larger than the average crew member, the sidewalks may be deactivated or merged to rotate together to facilitate transfer.

Passing through the rotor area, the next deck is generally one of two "systems" decks. These hold life support equipment, reserve atmosphere tanks and auxiliary power generators. A control console helps to manage all of these resources. The system decks are often claustrophobic and dark.

After this sits an area referred to as the activity deck. The actual activity provided for varies between the types of ship and usually matches the mission profile. Typical uses include an investigation

laboratory (Alexander-class destroyer), communications room (Forge-class carrier) or a teaching facility (Gagarin-class tender). Many other uses can be accommodated by simply reconfiguring the internal arrangements of the deck and changing the internal equipment. An auxiliary room, the second of the system decks, is sometimes placed behind the activity deck. This is used as a backup in case of failure on the first deck, but most crews use it to store additional goods.

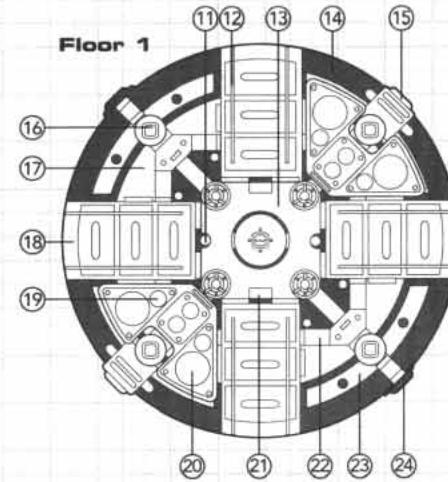
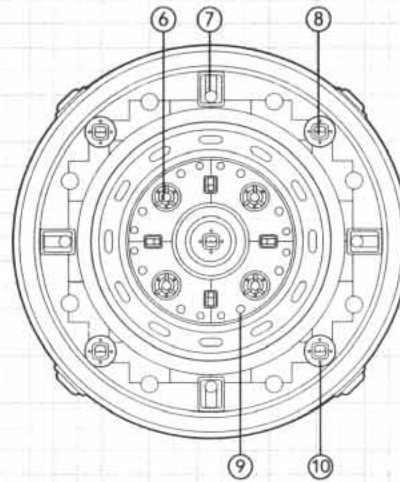
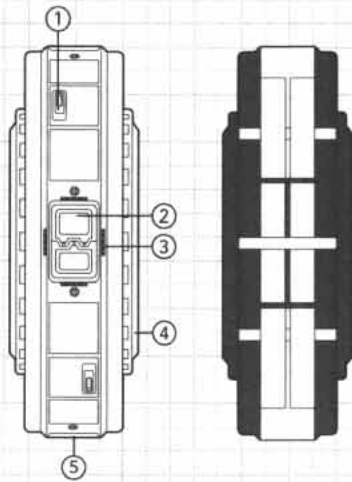
The next deck connects to the storage pods, if any are carried. A series of airlocks lead into each of the pods, provided they can be entered (not all pods are pressurized and some are little more than tanks for holding liquids). Directly aft of this is a small storage bay. This layout allows for an easy route for cargo transfers directly to the storage pods or vice-versa. Small auxiliary pumps can be hooked up to pods carrying liquid or gaseous material, either for transfer to other systems or to stir them to prevent dangerous temperature hotspots.

Lastly comes a deck that has been received as a blessing by ship engineers. Two fully equipped workshops, one for mechanical and the other for electronic work, greatly improve the engineers' ability to maintain the entire vessel. In addition to basic workbenches, they contain a small autolathe that holds production templates for most parts used aboard.

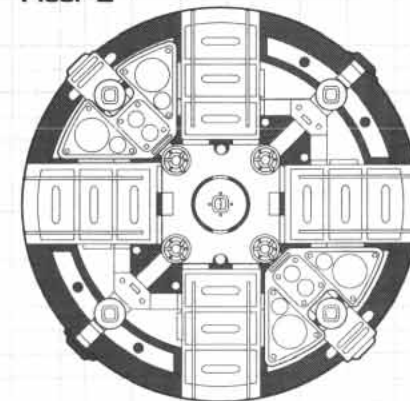
An airlock with power and fuel connections to each drive section is also located on the engineering deck; it can only be accessed by a person equipped with a suitable protective suit. This proximity to the engines is the primary reason for locating these workshops at the end of the operations section.

CONNECTOR ◀

Floor Plans ◯



Floor 1



Floor 2

Legend

1	Maneuver Engine	13	Main Pressurized Bay
2	Shuttle Bay Door	14	Armored Housing
3	Docking Sensors/Floodlights	15	Maneuver Engine Nozzle
4	Hull Connector Ring	16	Passageway
5	Bay Door Manual Override	17	Emergency Supplies Storage
6	Load-Bearing Truss	18	Shuttle Bay (Both Floors)
7	Secondary Load-Bearing Truss	19	Emergency Coolant Tank
8	Passageway w/Pressure Door	20	Hypergolic Fuel Reserves
9	Power Transfer Conduits	21	Airlock
10	Life Support System Conduits	22	Access Corridor
11	Ladder Well	23	Power Systems Bay
12	Guide Rails	24	Lower Deck Maneuver Engine





► 5.2 BASIC OPERATIONS

Crew operations follow a daily cycle of activity called the watch system. A space ship is in operation twenty-four hours a day, seven days a week. When out in space, the crew must always be ready to fulfill the demands placed upon it. While civilian ships may seem somewhat lax in comparison, a military vessel is ruled by the ongoing need for readiness. The JAF's living conditions and traditions have developed from this necessity.

▼ 5.2.1 Watch Cycle

Ships of the Jovian Armed Forces continue to use the three-watch rotation system that has been in use by military groups for over several hundred years. Under this cycle, a person has eight hours of ship duties followed by two watches off duty. Nominally, these will give each crewmember eight hours of rest and eight for relaxation and general maintenance (food, hygiene, etc.).

In order to cycle personnel faster and keep the overall fatigue level at the absolute minimum, the watch system is broken into two halves, with half the crew being assigned to each. The watch schedules overlap by four hours, meaning that a station with two crewmen will have one relieved every four hours. This system, though somewhat complex in the day-to-day application, ensures that at least one crewmember will be at peak attention at any given moment, given that fatigue levels rise sharply during the second half of a duty shift.

□ Watches

0000-0400	Middle Watch
0400-0800	Morning Watch
0800-1200	Forenoon Watch
1200-1600	Afternoon Watch
1600-2000	Dog Watch
2000-2400	First Watch

▼ 5.2.2 Alert Status

Like most vessels in the solar system, the JAF has three distinct alert levels, green, yellow and red (a fourth level, blue, is used when the ship is docked). These trace their origins back hundreds of years. This system also integrates well with the three watch rotations on board the ship.

Normal operation is the "Green" status. During this time, the watch cycle is followed normally. Only one watch is on-duty at any given time, while the other two-thirds of the crew are off. In this manner, crew fatigue is kept at a minimum level: too much time spent on alert status will eventually increase both the risk of accidents and the inability to perform a necessary function, due to high levels of exhaustion and stress.

In times of possible danger or extra manpower need, the alert status is upgraded to "Yellow." When this alert is sounded, the watch that would be on-duty next is prematurely activated to join those already at their stations. The third watch should be available for possible duty, but do not need to man their posts.

Since a yellow alert signals that more danger may be coming, additional precautions are taken. "Ready-5" units are placed on launch catapults and the pilots wait inside their cockpits for immediate launch, a state called "Ready-0." Furthermore, the regular on-duty watch put on their spacesuits. Weapon systems must be checked and be brought into standby mode.

If yellow alert is maintained for a lengthy period of time, each crewmember will end up having 16 hours of duty in a day, with only an eight hour rest period. This can only be maintained for a few days before crew fatigue becomes excessive.

A yellow alert may be called for many reasons. Standard operating procedure calls for it when an unknown object is detected on an intercept course during peacetime. Yellow alert may also be used after a battle to provide manpower to conduct repairs.

The final status level is the famous "Red Alert." It is only called in times of immediate danger, and all crewmember must be at their posts. Space suits are worn by all personnel. All possible work areas should be cleared for action. Live ammunition is loaded, marines suited up and moved to critical positions. All auxiliary craft are to be launched.

Red alerts are frequent in times of war as precautionary measures. In wartime, for instance, an unknown object on an intercept course is always grounds for a red alert at least five minutes before the actual intercept time. Captains may also hold sudden red alerts as a way of testing and training the crew. Some drills include simulated battle damage for survival tests.

▼ 5.2.3 General Living Conditions

Having lived in space for generations, the Jovians have designed spaceborne accommodations beyond all others in the system. Personnel stationed on the standardized vessels enjoy a particularly high standard of living. Unlike their CEGA counterparts, the newer Jovian vessels all have simulated gravity through rotation to allow for longer patrols.

Spinning at two RPMs (Rotation Per Minute) on 80-meter long rotator arms, the standard habitation module has a simulated gravity of 0.35 Earth normal. This is more than sufficient to stimulate muscle and bone growth through the mild strains of daily living, such as walking. Psychologically, even accomplished spacers like the Jovians benefit from having an identifiable "up" and "down." Eating, exercising, medical operations and even conventional showers are possible in this environment.

The permanently occupied colony cylinders tend to maintain a rate of one RPM, which grants a gravity of approximately 0.65 to full Earth normal. The low gravity of the ships makes it hard to live on them for very long periods of time, and the JAF ensures that personnel are rotated off the ships constantly. No crew member stays shipside for longer than a year, and the JAF employs many

more crew members than are necessary, in order to provide replacements for everyone in good time. Many cylinder-born crew members find the ship's gravity unusual and amusing, especially when their showers begin to run sideways.

Each habitation module is fitted with a quality mess hall. Fresh food may be prepared here as an alternative to regular space rations. In addition to the main mess, crew quarters have a lounge fitted with a small galley for snacks. Without such facilities, the crew would find recycler paste to be very, very bland.

Entertainment available for the crew includes movies, holographic games and reception of news and entertainment broadcasts from home. All terminals may be patched into the ship's Micro-PAN net. Each habitation module also has three offices and a briefing room, to allow private meetings or lectures to be conducted.

Enlisted quarters on the standardized vessels are sufficiently numerous to allow many crewmembers their own room. The bunk is close to the ceiling, fitted with optional zero-gravity restraints. A fold down desk and several different storage lockers are found directly underneath. Additional lockers run along two of the remaining walls. Two of these lockers cover the full length from floor to ceiling to allow storage of personal space suits. A collapsible chair may be attached at various points around the room.

Officer cabins provide additional space and features above those of the enlisted quarters. These include additional storage lockers, a second collapsible chair and a swivel chair. The chair sits behind a desk with a built-in computer terminal. Pilots of auxiliary craft, such as exo-armors or shuttles, typically receive officer grade quarters even if they are of lower rank.

The two largest staterooms are used for the senior officers, captain and exec. Storage locker space is again increased. A tiny private lounge, complete with a table-screen, allows for confidential meetings. VIPs may force a change in room assignment, typically "bumping" crew down the room assignment chain.





OPERATIONS AND ENGINEERING



▼ 5.2.4 Pilot Patrol Cycle

Pilots operating on a carrier conducting continuous patrols must live on a separate schedule. This stems from the need to maintain the fighting craft complements, as well as have craft on a distant station and others available as reinforcements. The 'dog watches' are restored to a conventional watch. Bear in mind that if patrols are inactive, fighter and exo pilots will only need to be on duty for their "ready-5" watch.

On a Forge-class, pilots work in six pairs of wingmen for their patrol. The two pilots assigned to each other will always have the same watch activity cycle. In a typical 24-hour day, a pilot is allotted 30 minutes to fly to his station, four hours on that station, 30 minutes to return to the carrier, on break for three hours, another four hours on "ready-5" alert and the remainder off duty. Pilots will therefore have twelve hours to themselves between entering their craft for patrol.

Since a normal patrol force consists of six exo-armors or interceptors, the vehicles undergo an even more rigorous schedule. Each exo-armor only has time for six hours of maintenance in one day, broken over two 3-hour slots. For this reason, the deck hands are always very busy.

Additional maintenance time can be gained by performing work while the space craft are spending their eight hours a day on "ready-5" status. Obviously, only minor maintenance and check-up activities can be conducted at this time, to keep the vehicles within the five minute launch criteria. Though supposed to be a buffer, the "ready-5 downtime" is almost always used.

The table on the right summarizes both the pilot and exo-armor schedule. Pilot pairs are numbered 1 through 6. Exo-armor pairs use the letters A, B and C. Flight deck work crews are identified by the roman numerals I, II and III. "Hangar" time for an exo-armor is assumed to be maintenance time. Personnel that are off duty are not listed in the chart to save space.

▣ Normal Flight Schedule

Time	On-Duty	In Transit	Ready-5	Hangar
0000	1, A	6, C	5, B	III
0030	1, A	6 Break	5, B	C, III
0330	1, A	2, B	6, C	III
0400	2, B	1, A	6, C	III
0430	2, B	1 Break	6, C	A, III
0730	2, B	3, C	1, A	III
0800	3, C	2, B	1, A	I
0830	3, C	2 Break	1, A	B, I
1130	3, C	4, A	2, B	I
1200	4, A	3, C	2, B	I
1230	4, A	3 Break	2, B	C, I
1530	4, A	5, B	3, C	I
1600	5, B	4, A	3, C	II
1630	5, B	4 Break	3, C	A, II
1930	5, B	6, C	4, A	II
2000	6, C	5, B	4, A	II
2030	6, C	5 Break	4, A	B, II
2330	6, C	1, A	5, B	II

In summary, when exo-armors return from patrol, they then immediately receive three hours of maintenance. After this, the craft spend four hours on ready-5, giving the flight deck time to conduct additional minor activities. When the time comes to begin the next patrol, the ready-5 exo-armors are the ones to go.

The flight deck teams are each dedicated to the care of two pairs of exo armors. The deck team organizes their six hours of work time during a thirty-minute preparation time. Afterwards, they have thirty minutes for clean up before the next deck team starts preparing. The capability of continuous fighter craft operations distinguishes a proper carrier from a casual transport.

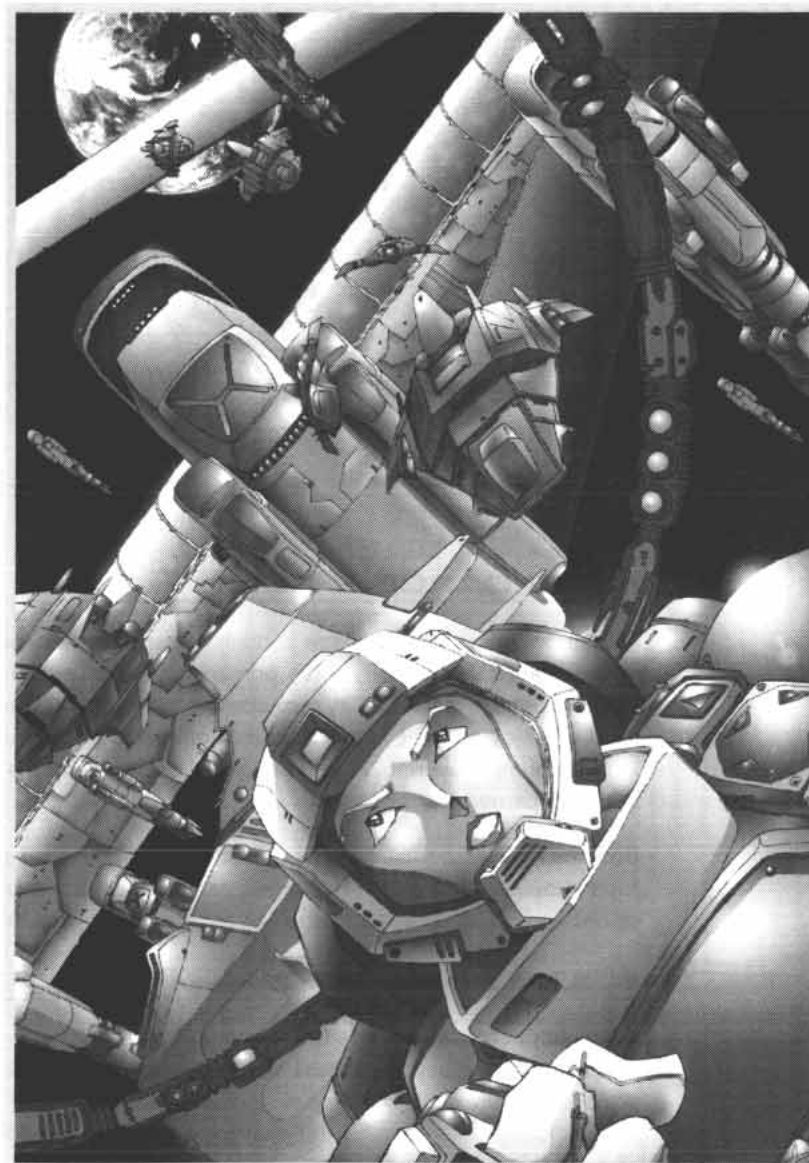
▼ 5.2.5 Culture and Traditions

As space has been settled by descendants from every sector of old Earth, equally varied traditions have emerged. The Jovian Armed Forces have developed quite a few of their own, sometimes by design and sometimes by accident. Though none of them interferes with the good functioning of the ship, they are officially frowned upon. They are tolerated because they form an “unofficial” naval culture that helps bind the crews together.

Most traditions are linked to a momentaneous or rare events that needs to be commemorated. For example, crew of a ship that circumnavigates the sun under its own power traditionally get a tattoo showing the sun in a circle, with their ship’s name written on the outer edge. Few vessels have been sent to the outer reaches of the system beyond the farthest limit of Pluto’s orbit, but when one does, tradition calls for one crewmember (generally the youngest) to be shaved bald; the origin of this “Iceball Shave” has been lost.

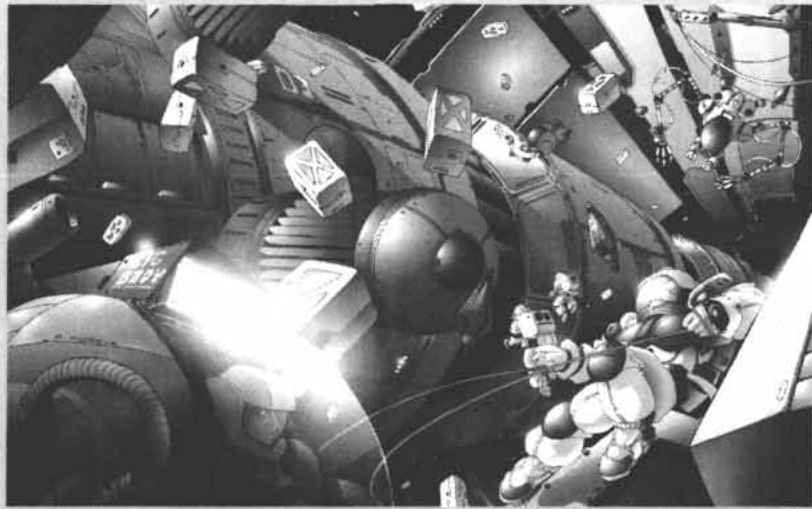
Exo-armor pilots, with their usual bold self-righteousness, are at the center of many traditions themselves. New pilots permanently assigned to a vessel are open game for practical jokes during their first day on board. Even officers have been known to join in the tradition: the captain and chief engineer of the JSS *Furious* placed slow-develop dye packs in the pilots’ showerheads, and filmed the victims turning purple over the course of the next day.

Not all JAF traditions are linked to extraordinary happenings, however. A series of comics, often animated, follow the adventures of the ships of Delta Division, a fictitious squadron led by Commodore Quimby on the JSS *Forgotten*, a Godfire-class battleship. Other vessels include JSS *Doolittle*, an Alexander-class, JSS *Fantasy*, a Forge-class, JSS *Baron Munchausen*, a Yuri Gagarin-class, and the JSS *Thunderstruck*, a Thunderbolt-class destroyer. Most of the episodes show the bungling crews surviving many near disasters. The series is published in most ships’ newsletters and on the fleet’s internal news network.





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► 5.3 CARGO & FUEL

Aside from passenger baggage and mission specific materials, a vessel's cargo spaces carry three primary cargoes. Carried craft supplement the vessel's utility resources or, in the case of carriers, form a major combat resource. Additional fuel increases the amount of maneuvering, accelerating and decelerating the vessel, or its carried craft, can do.

Both the main vessel itself and its carried craft require spare parts, food supplies, life support recharges, replacement atmospheric scrubbers and other items referred to as "deployment gear."

▼ 5.3.1 Carried Craft Storage

Cargo bays can also provide the resources for carried craft. Bear in mind that the bay itself must also be of appropriate dimensions to hold the craft. The smaller shuttle bay found on the Forge and Alexander-class vessels, for example, is not tall enough for an assembled exo-armor.

The standard JAF rule is that a height of 20 m is needed for carried craft. This allows most exo-armors to walk around inside the bay. Non-walking vehicles, such as shuttles, can easily operate inside a zero gee cargo bay of similar dimensions.

The table below lists the main Jovian vehicles and their storage space. Crate storage involves the exo-armor being disassembled into various sized crates. Limited facilities may not always have the right components available (-1 to technical rolls) and only a few reloads of munitions (four reloads per vehicle). Standard bays give technicians proper resources for work (no modifier to rolls) while housing sufficient reloads for regular operations (sixteen reloads). Extensive bays organize the parts more efficiently (+1 to tech rolls) and carry large supply stores (sixty-four reloads).

▣ Carried Craft Storage (in cubic meters)

Vehicle	Size	Crate	Limited	Standard	Extensive
Pathfinder	11	275	1373	2746	5492
Retaliator	12	343	1715	3430	6860
Vindicator	14	512	2560	5120	10240
Lancer	10	213	1080	2160	4320
Atlas OTV	12	343	1715	3430	6860
Shuttle	12	343	1715	3430	6860
Hector	10	213	1080	2160	4320

▼ 5.3.2 Fuel Storage

Although numerous types of fuel are used for space propulsion, hydrogen is one of the most quite common. It is plentiful in the form of water and in the form of atmospheric gases in the Jovian atmosphere. Hydrogen has its advantages: the ease with which the light gas can be transformed into plasma streams, or its ability to be deeply cooled into a liquid form, allowing for efficient, non-explosive, storage. Its main drawback, however, is its low density. For this reason, water is just as commonly used.

The fusion engines heat gaseous hydrogen under immense pressure. Under these conditions, the gas separates into charged ions to form a plasma stream. Immense propulsive forces are created by venting it into space.

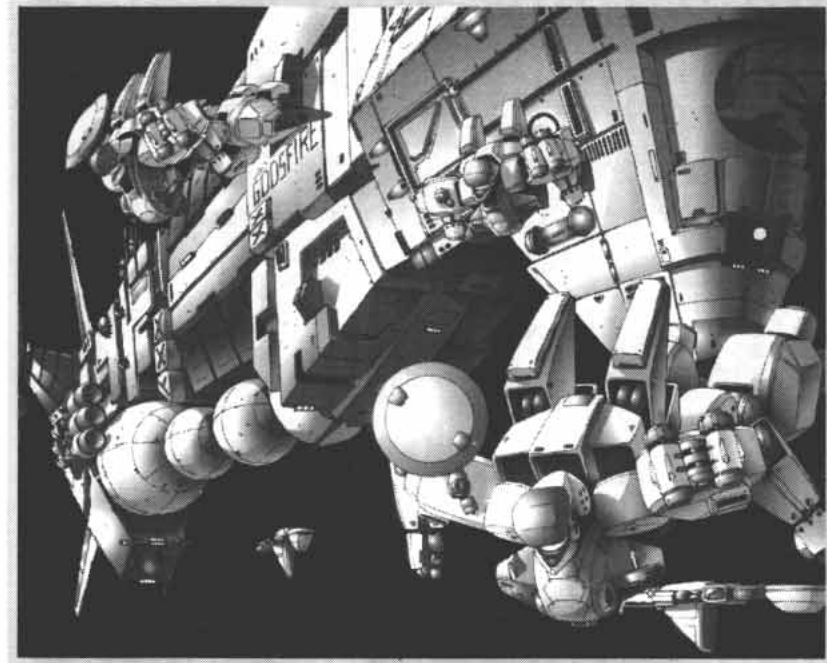
The following table lists the volume and mass for liquid hydrogen fuel for different vehicles. Capital ships show the volume of fuel stored in one full fuel load for all their drive sections added together. This chart shows only internal fuel tanks and does not account for conversion of storage areas. Note that the maximum mass for the vessel's Size category is used for consistency.

▣ Liquid Hydrogen Fuel Statistics

Vehicle (name)	Veh. Mass (tons)	Fuel (BP/tons)	Fuel Mass (tons)	Fuel Volume (m ³)
Pathfinder	40	2x10 ⁴	0.2	2.9
Retaliator	52	2x10 ⁴	0.2	2.9
Vindicator	81	6.1x10 ⁴	0.6	8.7
Lancer	30	6x10 ³	0.06	0.9
Hector	30	1.8x10 ⁴	0.18	2.6
Shuttle	52	5.2x10 ⁴	0.52	7.4
Atlas OTV	52	1x10 ⁴	0.1	1.4
Alexander	1666	3.45x10 ⁶	34.5	492.9
Forge	1362	3.45x10 ⁶	34.5	492.9
Yuri Gagarin	1982	3.45x10 ⁶	34.5	492.9

▼ 5.3.3 Deployment Gear

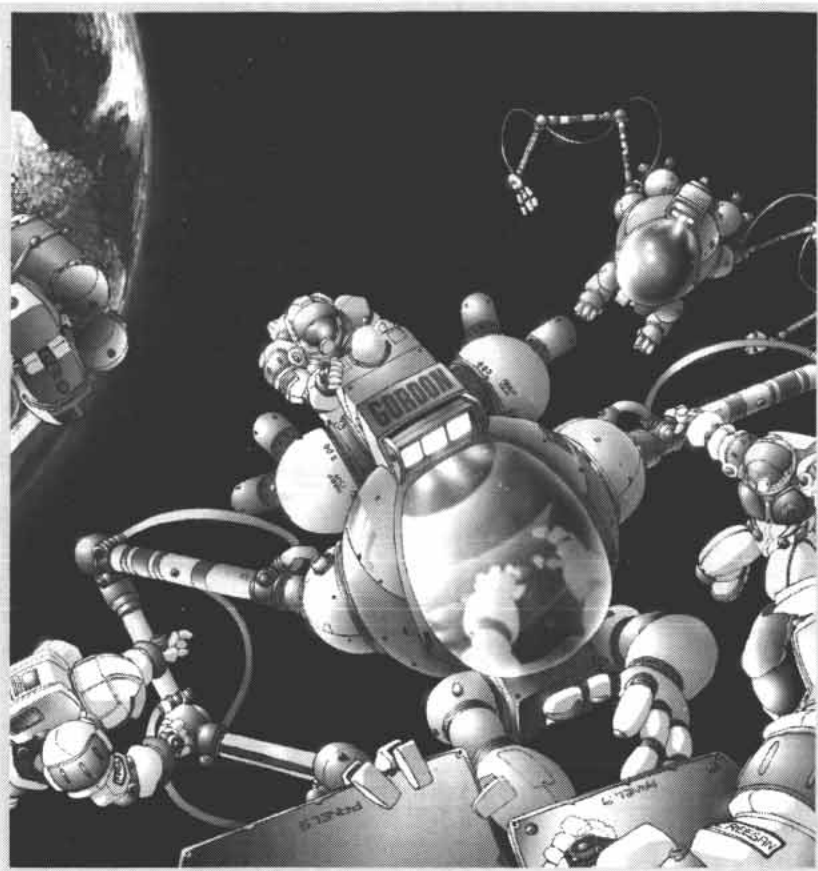
The items needed for a vehicle to function depend on its nature. Specific missions or environments may influence the exact nature of this "deployment gear," but it includes spares for used-up parts, such as filters, chemicals for recharging life support systems, new data cartridges and many more. The following table shows the standard volume and mass of materials needed to recharge a vessel to its full potential.



▣ Deployment Statistics

Vehicle	Time (hrs)	Volume (m ³)	Mass (tons)
Pathfinder	700	56.5	11.3
Retaliator	450	43.2	8.6
Vindicator	700	91.5	18.3
Lancer	100	6.7	1.3
Hector	700	46.7	9.3
Shuttle	1500	144	28.8
Atlas OTV	300	28.8	5.7
Alexander	3000	6552	1310
Forge	3000	5336	1067
Yuri Gagarin	3000	9936	1987





► 5.4 MAINTENANCE

All vehicles require work to be performed on a weekly basis to keep them running. Military grade vehicles run the risk of breaking down in combat without this maintenance. Sensor calibration, targeting alignment verification, lubrication flushing, filter replacement, stress tests, painting and checking mazes of hoses are all parts of this work.

The two tables below show the necessary hours of maintenance per week for the carried craft and ship sections discussed in this book. The Flight Deck department on a carrier can keep six exo-armors going continuously unless heavy combat occurs that week (a x2 multiplier on needed man-hours). Carried craft weapons normally receive all their care from the ordnance specialists. Persons maintaining ship hull sections include engineers, bosuns and stewards. Gunners tend to the weapons they operate. KKC turrets and laser wings have their "hull time" filled out by the gunners as well. Many ships carry more than one of certain modules, with a consequent increase in maintenance time.

▣ Craft Maintenance (man-hours/week)

Vehicle	Size	Hull	Weapons
Pathfinder	11	110	21
Retaliator	12	120	28
Vindicator	14	140	67
Lancer	10	50	11
Atlas OTV	12	60	0
Hector	10	50	14
Shuttle	12	60	0

▣ Ship Maintenance (man-hours/week)

Section	Size	Hull	Weapons
Forge (Main Hull)	26	260	28
Alexander (Main Hull)	28	280	82
Yuri Gagarin (Main Hull)	24	240	9
Alexander KKC Turret	13	130	38
Alexander Laser Wing	9	90	6
Habitation Module	14	70	-
Storage Module	10	50	-
Drive Section	20	100	-

► 5.5 EMERGENCIES

Emergencies in space are always more pressing and more deadly than those in any other environment. The hostile surroundings give no second chance to anyone, and emergency procedures must be drilled in to the point of being purely instinctive. When a pressure loss alarm sounds, no thought should be given to what needs to be done.

The JAF requires advanced survival and damage control courses for all its trainees; a thorough understanding of the safety and survival procedures is mandatory for anyone who will be working on a space ship. By following these techniques, a crewmember can increase both his own chance of survival and those of his shipmates as well.

▼ 5.5.1 First Reactions

The first issue in any emergency is immediate personal survival. This is not only to protect the person himself, but to prevent other crewmembers from being distracted by the need to rescue one of their shipmates. Crewmembers faced with ambush or accident will need to act fast, but fortunately there is often some warning of upcoming dangers.

The cardinal rule is simply: "always, always put on a spacesuit." The dangers of space combat are such that even a heavily armored area of the ship may suddenly be exposed to vacuum. Furthermore, the spacesuit provides communications gear and (usually) some method of personal propulsion.

If the immediate environment is compromised, the second famous rule applies: "get out!" This means moving out of the room to another area of the ship, or climbing into an escape pod and evacuating completely. There is often no need to immediately jettison the escape pod, but it will provide an independent life support environment. Commodore Quimby comics frequently include the combined saying "Suit up or get out!" for comic effect.



Compromised sections of the ship cause problems all of their own. Unless desperately needed on the other side, a crewmember should never deliberately enter a failing section of the ship. Sections are generally sealed off to prevent the spreading of damage. Escape pods are well placed, and there is generally little reason to risk oneself and any rescue teams by entering a failing area. In the case of unlinked habitation modules, crew can actually survive for quite a long time once separated from the main ship. It is always possible to join the others after the emergency, either through interior transit or by a short EVA walk. Cut-off crews can also sit in an escape pod while waiting to see whether ejection will actually be necessary.





▼ 5.5.2 Damage Control

Military vessels invest a great deal of time in preparing for the damage that they will inevitably suffer. Good damage control operations allow a ship to survive what might cripple an unprepared vessel. Although crews of civilian ships also practice regular damage control, they rarely go through the high intensity drills common to the JAF.

The extra time bought by the damage control parties is vital to the completion of a military ship's mission. Thanks to them, a warship has often been able to continue fighting after receiving an otherwise disabling blow. It is the function of damage control to keep the ship in one piece until proper repairs can begin.

Since different areas of a ship may be damaged at the same time, priorities need to be set. Highest priority goes to damage that currently, or could imminently, threatens the destruction of the ship's main hull. The next priority is damage that is dangerous to secondary sections of the ship. The different forms of hull-threatening damage are each handled in a different way.

If the section is uninhabited, or personnel are all in space suits, then open fires can be defeated by depressurizing the room. This is not always a suitable option, however. Automatic fire suppressants can be augmented by crew operated devices. Flooding the room with carbon dioxide from the life support system can also be a solution: carbon dioxide poisoning is considered an acceptable risk to save crew who would otherwise be maimed or killed by the fire.

Damaged power conduits can generate very high voltages into equipment, floors, or personnel, and circuit breakers should be tripped immediately (either automatically or manually). If the local circuit breakers have fused, the next operating breaker further along should be located and tripped. Electrical damage to crew causes both stunning and unusual burning. A medic should inspect even moderate electrical injuries as soon as possible.

An out of control fusion reaction is rare, but has happened in the past. The engine module should be immediately jettisoned from the ship. The upcoming explosion will still be dangerous, so the vessel should use all remaining means of propulsion to move away.

Munitions has separate protocols for dealing with damage. Capacitors used for railguns, massdrivers and lasers may either explode when damaged, or vent their powerful electrical charge into nearby areas. As a precaution, missile storage and launch areas are always placed in vacuum at the beginning of a battle to remove the likelihood of fire spreading.

Hull penetrators and shrapnel are initially lethal to systems and crew. Suit patches should be immediately applied to injured crew regardless of wounds, as the room will now likely be exposed to vacuum. After the initial damage is done, the shrapnel becomes floating debris. Although annoying, clean up of debris is a very low priority.

Heavily bleeding wounds require tourniquets, spray flesh or compress bandages immediately. Badly wounded personnel should be moved to a pressurized room, typically the medbay, or to an escape pod where the suit can be removed and the wounds properly treated.

Vessels with rotating habitation modules may require the ejection of those sections from the hull. Rotator arms rarely snap suddenly; rather, damage weakens the arm so that the rotational forces begin to twist it off. If arm failure cannot be aborted by braking, then the module should be prematurely ejected. This allows it to be released under controlled conditions and along a known vector. Ejected modules stand a very good chance of being reattached after the arm is repaired, reinforced or halted.

On military ships, someone should be left on board who can scuttle the module and destroy any classified documents that may be in the staterooms.

▼ 5.5.3 Escape Techniques

When the vessel (or section of) where a crewman is located has been destroyed, he must not only escape but escape in such a way as to be rescued. The four main methods are free floater, escape pod, lifeboat and auxiliary craft. Each method has its own advantages and disadvantages.

"Free floater" is the term used for someone who has escaped with only his personal space suit. Assuming that the suit was donned prior to the beginning of the battle, this is the fastest way of getting off the ship. Life-support and propulsion, however, are extremely limited. This technique is to be used only when destruction is imminent, since life expectancy for a free floater is a few hours at most. Sudden decompression of sections may suck out crew or passengers, making them involuntary free floaters — one should always don a spacesuit when the ship is in battle.

Escape pods are by far the most common method of escape. Each has self-contained life support, first aid equipment, propulsion and communication systems. The automatic transponders relay the position of the pod and the name of its mother vessel to all ships in the area. The life support gear includes scrubbers, water recycling and food supplies, all combining their efforts to maintain a living environment for a few days. Medical supplies include paramedic grade gear. Two and four-man pods are the most common; lifeboats are larger and can house more. An increased fuel supply allows the lifeboat some ability to avoid hazards while awaiting rescue. Depending on the design of the lifeboat, eight to thirty people may expect to survive several weeks. All lifeboats also have the ability to extend a universal docking coupler that may be used to link to other lifeboats.

Ejected habitation modules can be considered as a special type of lifeboat. All necessary resources are present for the module to await recovery. Obviously, wounded personnel receive the best treatment in an ejected habitation module. The airlocks may be used to recover escape pods and lifeboats.

The last method of escaping a destroyed vessel is the use of auxiliary craft. This includes exo-suits, exo-armors, interceptors, M-pods or shuttlecraft. Life expectancy obviously will vary according to the craft used. In any case, it is considered an improvement over being a free floater. Independent movement abilities provide the opportunity of being able to land or dock with rescue vessels or lifeboats.

▼ 5.5.4 Rescue Operations

Exo-suits, even unarmed versions, have proven themselves to be the best option for conducting rescue operations. During escape pod recovery operations, exo-armors conduct patrols both for defense and to locate pods suffering transponder failure. M-pods, M-bots and hardsuits can also be helpful. Falconer exo-suits are the standard JAF space rescue unit.

Recovered pods and boats are normally loaded through the cargo doors. Survivors without space suits will need to either board through airlocks or have their escape vessel moved into a pressurized area. Temporary airlocks, of the flexible tube on hoops variety, can be erected to assist in egress procedures. Medical personnel are needed to deal with the injured. Hot food, water and blankets are given to survivors as they are moved farther into the rescue ship.

As mentioned, patrols of the area should be made for escape pods with failed transponders. Furthermore, any and all wreckage in the area is to be inspected. It is possible for survivors to have locked themselves in a blown out area of the ship that still has life-support. Smaller wreckage may also be someone floating unconscious in a space suit. For instance, during the Tachoma incident, the JSS *John Glenn* recovered a four month old baby that had been placed in a space suit and thrown out an airlock when the family was being overcome by the spreading fire.





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► 5.6 COMBAT OPERATIONS

Space combat is a hard and dangerous job that requires well-trained crews and sturdy ships. The peculiarities of the environment have forced the military to develop new types of tactics designed to take into account the new conditions under which battles are conducted. These consider not only the needs and goals of the situation, but also the various capabilities of the ships involved. Both advantages and shortcomings must be examined; there is little room for error.

A common example given for this military philosophy is the battle plan formed around the Alexander, Forge and Yuri Gagarin-class ships. Produced roughly during the same period and complimenting each other, these vessels frequently operate together; one of the most common JAF independent battle formations is a three-ship squadron containing one of each of the above type, with the role of each vessel well defined.

The Alexander-class destroyer generally follows one of two tactics. If an offensive maneuver is being conducted, the destroyer will close in and attack. Otherwise, it will place itself in such a way as to protect the other ships with its laser defense systems. During convoy operation, the destroyer moves at the front edge of the group's direction of travel.

A Forge carrier must choose both how to deploy itself and how to deploy its auxiliary craft. If an attack is underway, then the exo-armors or interceptors will join with the destroyer for a combined offensive. During general patrols, a pair of exos will conduct a visual inspection prior to the destroyer's marines boarding. The carrier itself normally acts as a watchdog for the tender, but may be sent forward to provide additional fire support.

The Yuri-Gagarin tender's one rule is to stay out of combat. This is particularly important, since the tender can repair the damage on any of the other ships in the formation. Its supply of munitions may be used to resupply the other fighting vehicles.

▼ 5.6.1 JAF Fleet Definitions

In a full scale JAF fleet, operation vessels are grouped into several functional groups, each assigned to a distinct operational task. These include ships of the line, flankers, escorts and other functions. The functions and the ships used for the role are described below. Exo-armors in a fleet are dispatched for several distinct roles.

◇ Ships of the Line

The heavy batteries of the fleet are concentrated in this group. These ships move to bring their guns to bear on the most important assets of the enemy. While carriers contribute their exos and fighters, the ships of the line are the ones to go toe-to-toe with the enemy fleet.

Ships of the line are those that carry heavy firepower, such as the Godfire, Athena and Valiant-class vessels. An Alexander-class vessel also carries sufficient firepower, but they are typically needed for other roles. According to standard Jovian tactical doctrine, a Javelin-class missile cruiser retires from the line after delivering its missile payload.

◇ Flankers

Flankers have the dangerous task of operating on the flanks of the line. Defensively, they prevent ships from moving around to attack the fleet's rear. Conversely, a flanking force may have the opportunity to do the same to the enemy.

Ships operating on the flank are typically second class fighters, as primary units are used as ships of the line. Thunderbolts or Alexanders fill the bulk of any flank force. Often a Forge, which can use its exos for sudden strikes on the enemy flank, supports the destroyers. This also allows the carrier to operate as an alternate landing platform for the exos from the main force.

◇ Escorts

Escort duty is as old as navies themselves. Vessels assigned here serve to protect other, more important, space ships. This could place a small destroyer as a roadblock facing down an enemy battleship; such are the fortunes of battle. Escorts are found among the ships of the line and fleet rear. If an enemy threat does get in close, an escort may launch a marine boarding action as a last ditch measure.

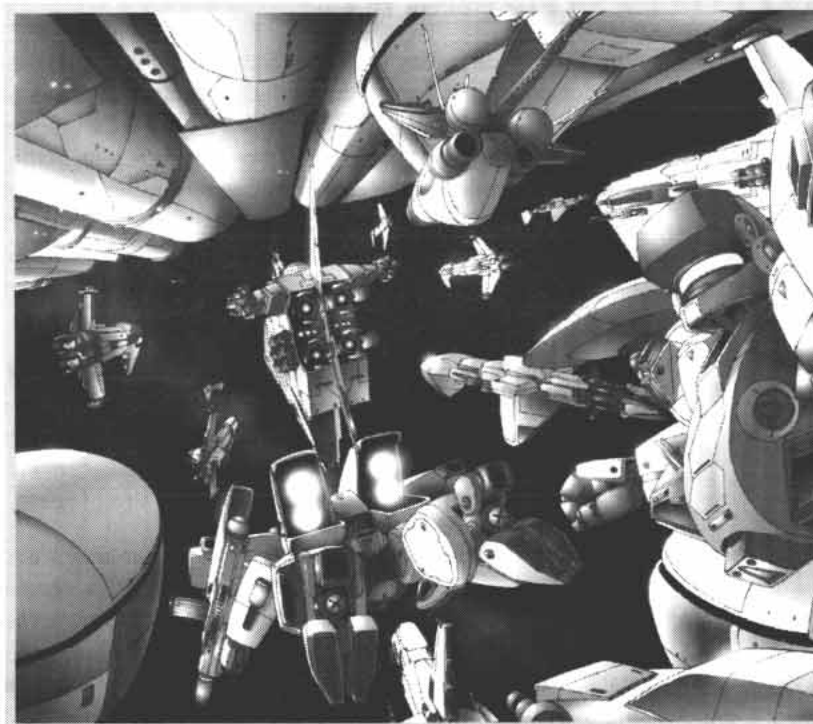
Thunderbolts and ships too old to join in the line operate as escorts. High value vessels, such as flagships, may have a dedicated escort group that moves with them whenever the ship travels to a new area. The area defense lasers of the Alexander-class are used by placing the destroyers in among the escort force. If the Alexander-class is protecting a ship of the line, it can add its own particle cannons to the line.

◇ Carriers

In large fleet actions, it is the craft on board the carriers that are by far their most important asset. Most carriers will form in the fleet rear, with only a few joining the flankers on either wing. The ships on the flanks serve to provide alternative landing points for fighters that need to flee the battle.

The fighters — a term used here to cover both exo-armors and interceptors — may take position anywhere within the fleet. The JAF in particular believes in using fighters to aggressively scout, soften or destroy enemy forces and has designed several tactics around them.

Although the Godfire-class carries exo-armors, the ship itself appears among the ships of the line. Valiant-class carriers normally operate on independent strike missions, but if they are included in a fleet they will then be fielded in the main battle line to use their awesome firepower. It is the Forge-class carrier that makes up the bulk of the Jovian regular carriers.



◇ Fleet Rear

In the rear are the tankers, cargo ships, troop transports and tenders. Although they have few direct combat abilities, the fleet relies on them for completion of the mission. Without supplies, fuel or repair ships the fleet would be forced to disband after only a brief time in the theater.

The fleet itself may simply be the protection for the main operation. JAF strategists know that in order to support Mars, or to attack Earth orbit, a large number of marines with a large supply force is needed. Ships that have heavy damage may also retire into the fleet rear.





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▼ 5.6.2 Battle Plans

This section describes the major military deployments used by the Jovian Armed Forces during field operations. These tactics have been developed based on the few aerospace engagements of the mid-twenty-first century and those, more recent, of the early years of the twenty-third. This basic repertory is well-known by both Jovian officers and their opponents, and as such the battle plans are often modified "on the go" to parry unexpected enemy movements or actions. The JAF encourages innovative tactical thinking if it can save a ship.

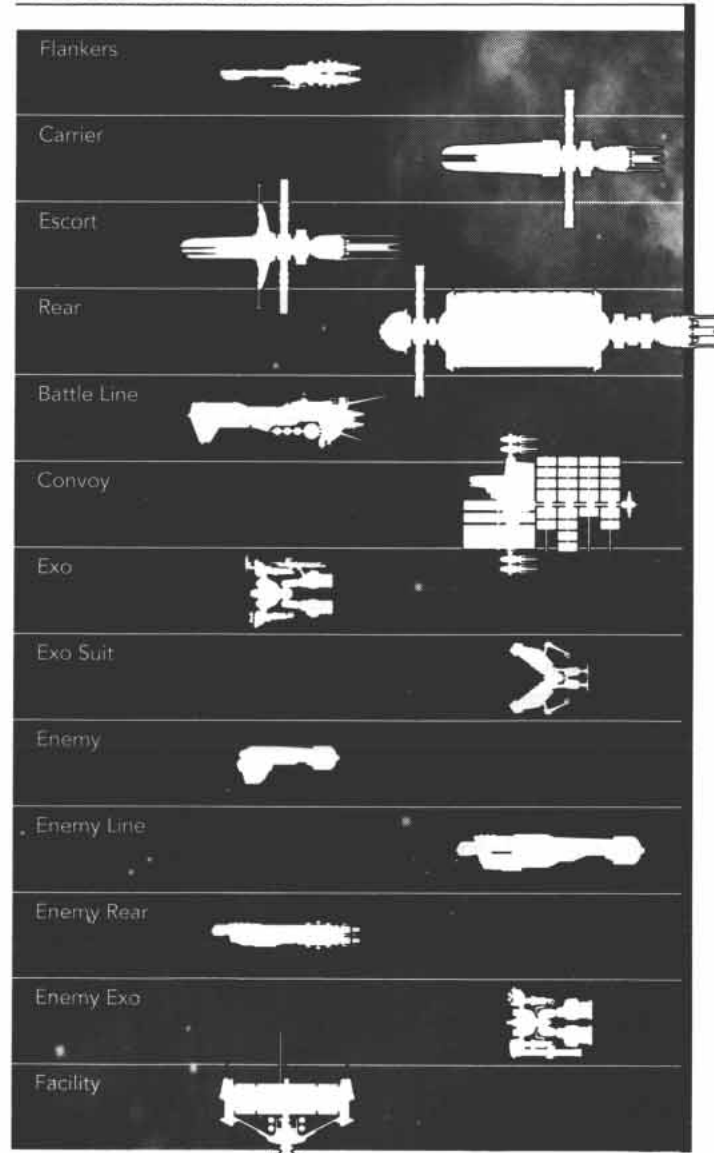
Battle plans have been developed to cover a large variety of situations that range from small squadron engagements to full sized fleet actions, both in matched velocity battles or lightning strikes. Some tactical deployments cover certain types of enemy forces, while others can be used against virtually any size of fleet.

Many of these tactics include procedures for the attack and defense of immobile facilities. An "immobile" facility is considered to be any object not capable of changing its trajectory to maneuver away from a closing force. Colony cylinders, for instance, have station keeping thrusters, but these are insufficient to maneuver them away from an attacking fleet (as evidenced by the 2210 attack on Elysée Station).

These battle plans are suitable for both extended engagements and lightning strikes, placing ships so as to maximize damage to the enemy and minimize the friendly losses. The terms used in the descriptions have been explained and detailed in the previous pages, and thus need not be repeated here.

The icons shown in the chart at right will be used in the various diagrams to represent a tactical role, not the ships themselves. None of the icons or distances are properly scaled; only the various force movements and the placement of both friendly and enemy units are represented.

▣ Identification Chart



◇ Standard Three-Ship

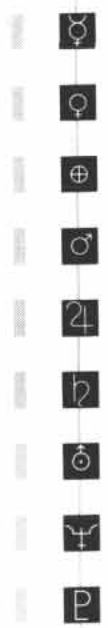
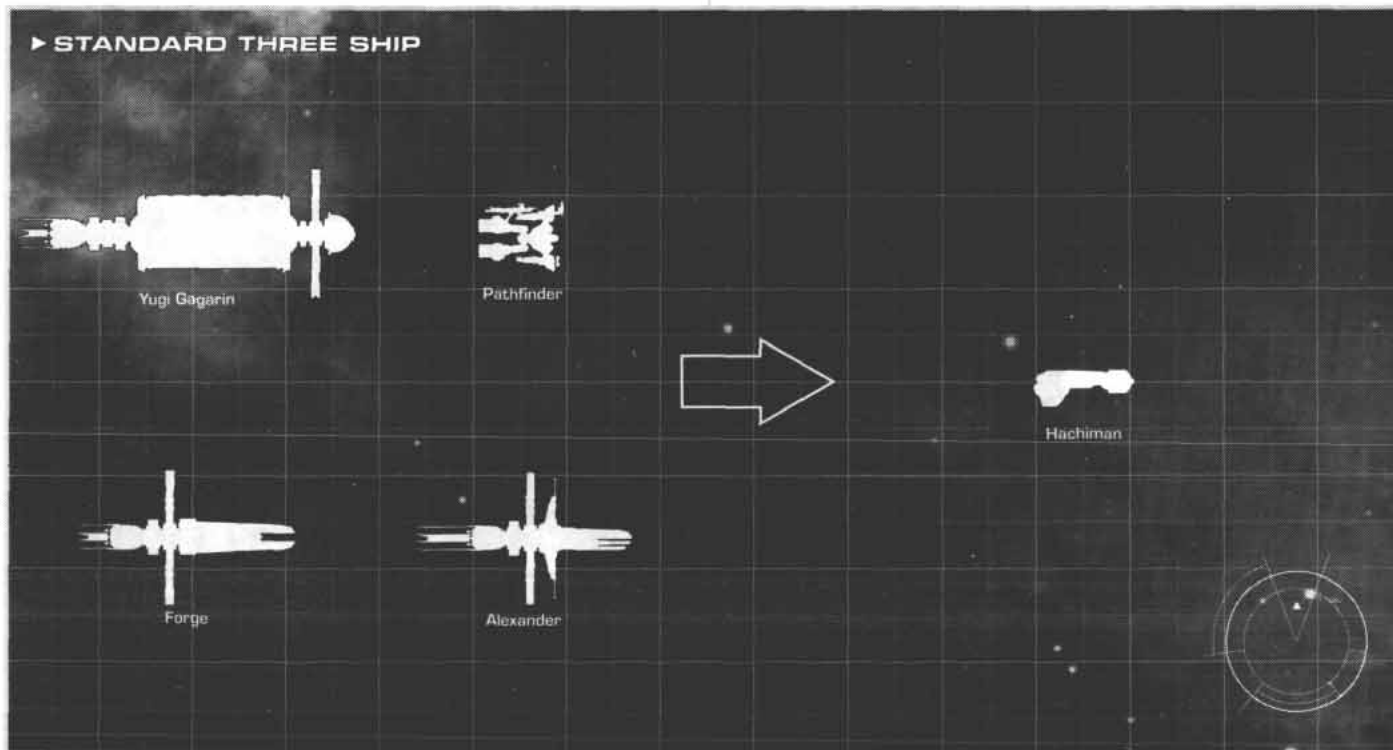
Like the other "three-ship" formation, this tactic is applied when an Alexander, Forge and Yuri-Gagarin class are working together. Each Jovian fleet operates these three-ship teams, and there are those who operate independent of the fleets. The standard plan is relatively simple: dedicated combat assets close with the enemy while the support units stay away. "Dedicated combat assets" refers to both the Alexander-class destroyer and the Forge's exo-armors. Therefore, the rear consists of the Forge carrier and Yuri Gagarin tender.

With their high fuel capacity, the units at the rear frequently elect to not even approach within firing range of the enemy. In a lightning strike situation, they can choose to pass on a parallel course some distance away. Multiple enemies, or enemies with their own exo-armors, however, could break off a group to intercept them. If this seems possible, the rear assets should take a trailing position behind the combat units.

This formation is also useful during encounters with unknown objects. Being up front allows the exo-armors to conduct close range scans of the objects. Visual scans of the outside are desirable to check for damage, identify sources of damage and to ascertain if any threats are waiting on the outside of the hull.

Once this is done, the Alexander can deploy a marine security team to investigate the object for internal threats. This team consists of one squad of five Falconers and one squad of five Deckers. Their function is to determine whether ambush forces or booby traps have been deployed. Then a technical team made up of forensic specialists and engineering staff may land for detailed investigations. Additional marine protection is recommended.

At this time, the carrier and tender will arrive. Regular exo-armor patrols will commence. The additional exos may return to the carrier for maintenance and refueling. Tender staff can supplement or replace the destroyer's small technical team. Large scale repairs, possibly using the tender's workbay, begin at this time.





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◇ Aggressive Three-Ship

This variation on three-ship tactics involves attacking the enemy with maximum force. Positioning the carrier in the line with the combat assets changes the battle plan in several ways. Firstly, the carrier may add its own weapon systems into the engagement. Secondly, enemy fire effects will be reduced for each ship should the enemy spread his fire out over the two ships.

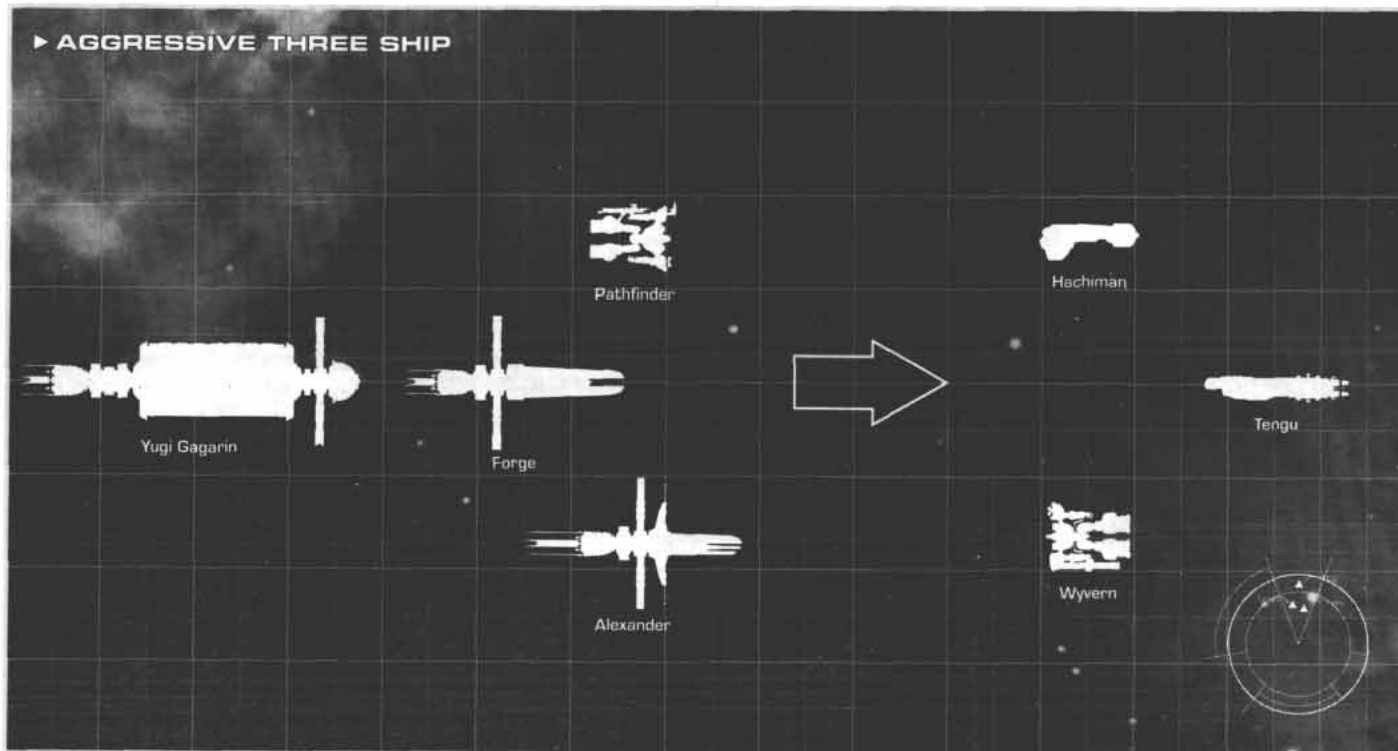
On-site interactions with the exo force are the greatest change to this battle plan. The carrier can quickly recover damaged exos. In longer battles, there may be sufficient time to rearm one or more exos. Lastly, the carrier could withhold launching some, or all, exos until the range to the enemy had been closed. This can be particularly useful for surprise attacks or against effective long-range, anti-exo fire.

While the battle is going on, the tender has nominal defenses. To avoid enemy counter attacks, the tender should place itself well 'off the map'. This can easily be

accomplished, considering that the tender will be carrying both its own and the squadron's reserve fuel. Although possessing higher burn rates, enemy exos will never be able to match the tender's burn capacity.

Being placed so far away means that the tender will need half an hour to rejoin the other ships. This time will be cut in half if the other squadron vessels assist the travel with thruster burns of their own. Immediate post battle time is used for damage control, such as placing temporary hull patches or putting out fires. Therefore this period of uninvolvedness does not interfere with the tender's role in permanent repairs. By staying out of the battle, the tender actually preserves its ability to repair the squadron.

Disengaging exo armors may choose to rendezvous with the tender rather than the carrier. This is advisable if the exo is badly damaged and the carrier itself is still under fire. Committing to this option will remove the exo from the battle as it covers the distance to the tender's location.



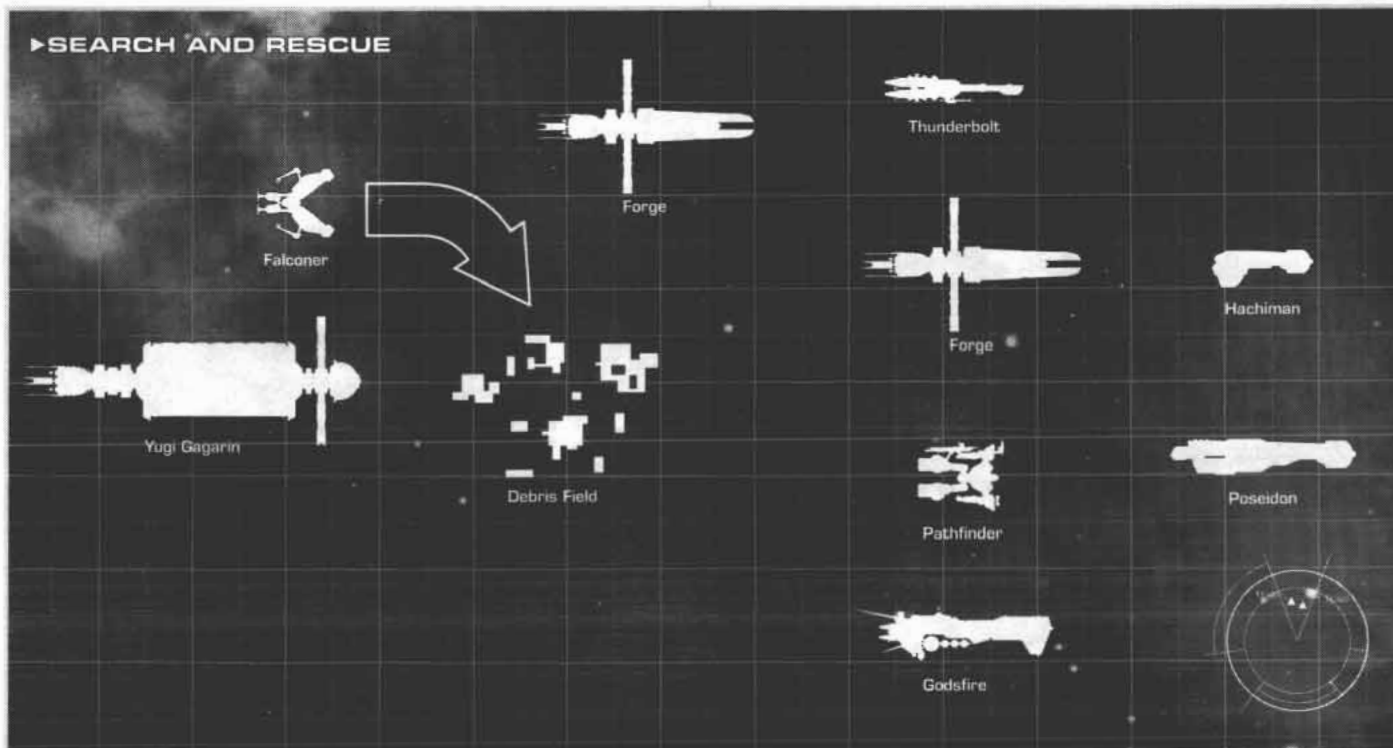
◇ Search and Rescue

Search and rescue operations take place both during and after conflicts. They are preferably conducted once the enemy has been driven from the area, though this is not always possible. If the force is being pushed back, then search and rescue may need to be conducted while the ships are still in the vicinity of the battle. Non-combatative rescue units may be identified by removing all weaponry and marking with highly visible red cross insignia. To further avoid confusion, rescue units are often painted bright orange to increase visibility.

The enemy may be trying to conduct rescue operations as well to remove valuable prisoners from among those to be rescued. They may also be recovering friendly pilots and crew. It is commonplace in large battles for a second battle to begin over escape pods. It is against interplanetary law to deliberately fire on an escape pod, life-boat or surrendered free floater. There is some ambiguity in the law, especially in regard to indirectly causing the death of the escapee.

It is illegal to threaten to fire on escapees as to actually do so. By law, rescue units may board an enemy's ship to offload escapees and are to be permitted to launch so as to continue rescue operations. The rescue unit is required, however, to prove its status if challenged. If a designated rescue, presumably in the process of recovering escapees, comes across weaponry it must offload these at the first available opportunity or dump the weapons into space. Refusal to do so voids the rescue unit of its special status, making it a viable target.

In the face of hostile forces, the main force should seek to act as a buffer between the enemy and the rescue area. Rescue units can then be sent in. Both the Forge and Alexander-class vessels have been successfully used in rescue operations. The fuel capacity, availability and the presence of manipulator arms make Falconer exo-suits the JAF's preferred rescue vehicle. Exo-suits also have the radio gear necessary to triangulate and decode emergency signals; this is especially important in a debris-filled battle zone.





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◇ **Exo Raid**

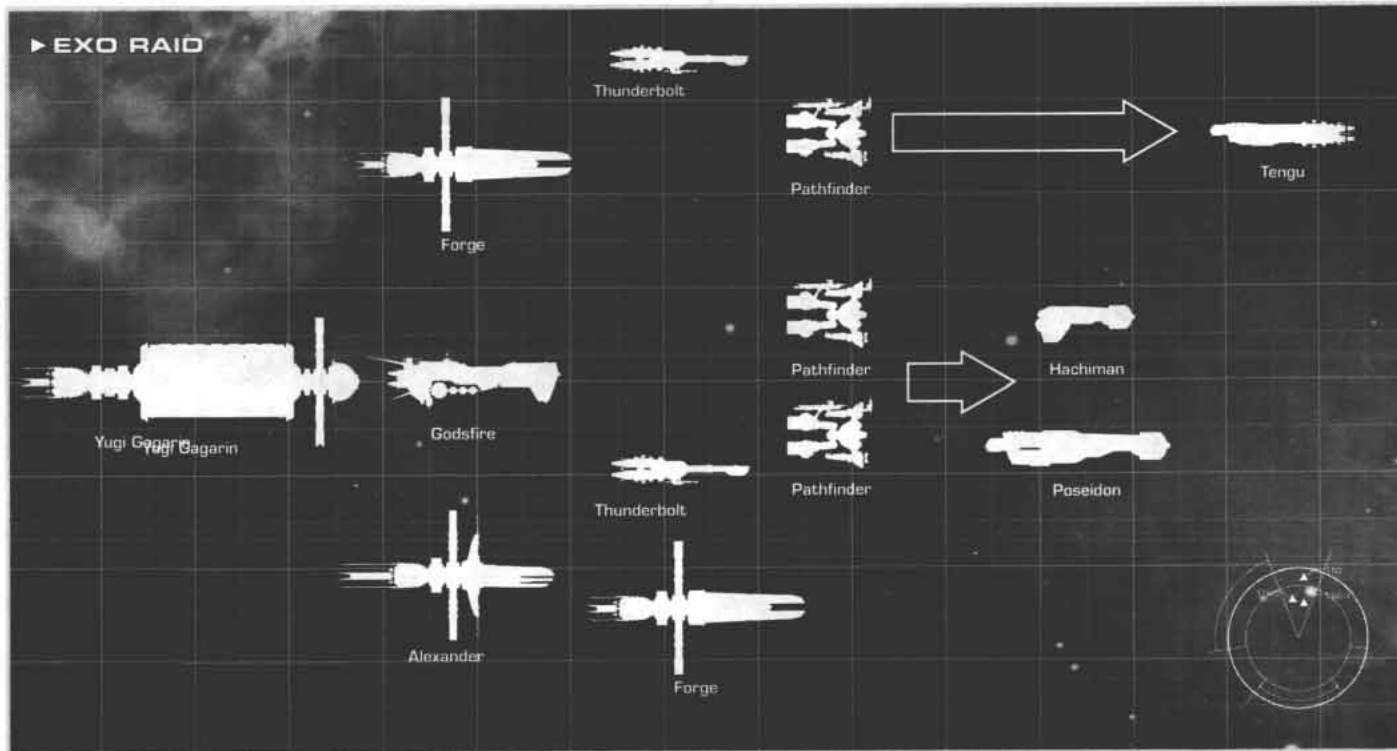
Exo-armors comprise the primary assault element of the JAF. An exo-armor can inflict massive damage on enemy resources, with excellent maneuverability and a high burn rate as their key defenses. To maximize the combat use of exo-armors, fleet planners drew up a battle plan called "exo raid." Much like a twentieth century air raid, exo-armors strike at the enemy independent of other fleet resources. These raids can attack in an extended or a lightning strike approach. The high burn rate of the exo-armor will frequently give it an advantage in choosing the type of battle fought. Furthermore, exo-armors can outmaneuver enemy ships to attack the enemy's rear lines.

A lightning or wave strike is preferred against heavy resistance. This takes advantage of the exos' smart missiles. Exos can use their gun systems to damage enemy ships while closing with them. Once inside an enemy's point defense envelope, smart missiles can be launched with impunity.

Extended battles allow the exos repeated opportunities to engage with gun and lance. Weakened opponents can be wiped out easily by exo-armors. If a critical target is present, the exo armors may wish to risk to extended battle against heavy defenses to ensure its destruction.

After a raid, the force rendezvous with carriers and/or tenders. A carrier should be placed on one or more flanks when possible, to allow an alternative landing position. Exos can now be repaired, refueled and rearmed. Evaluation of surviving enemy resources will give indications of how the fleet should proceed. Exo raids may be repeated until the enemy force is destroyed or the fleet decides to commit other assets.

A lightning strike makes for an excellent appraisal pass by a recon team. Moving at high speed, the recon team can pass relatively close to the enemy. At this range, the recon sensors provide accurate and timely intelligence on the enemy. This could also be carried out by a recon drone or by a flanking JAF vessel.



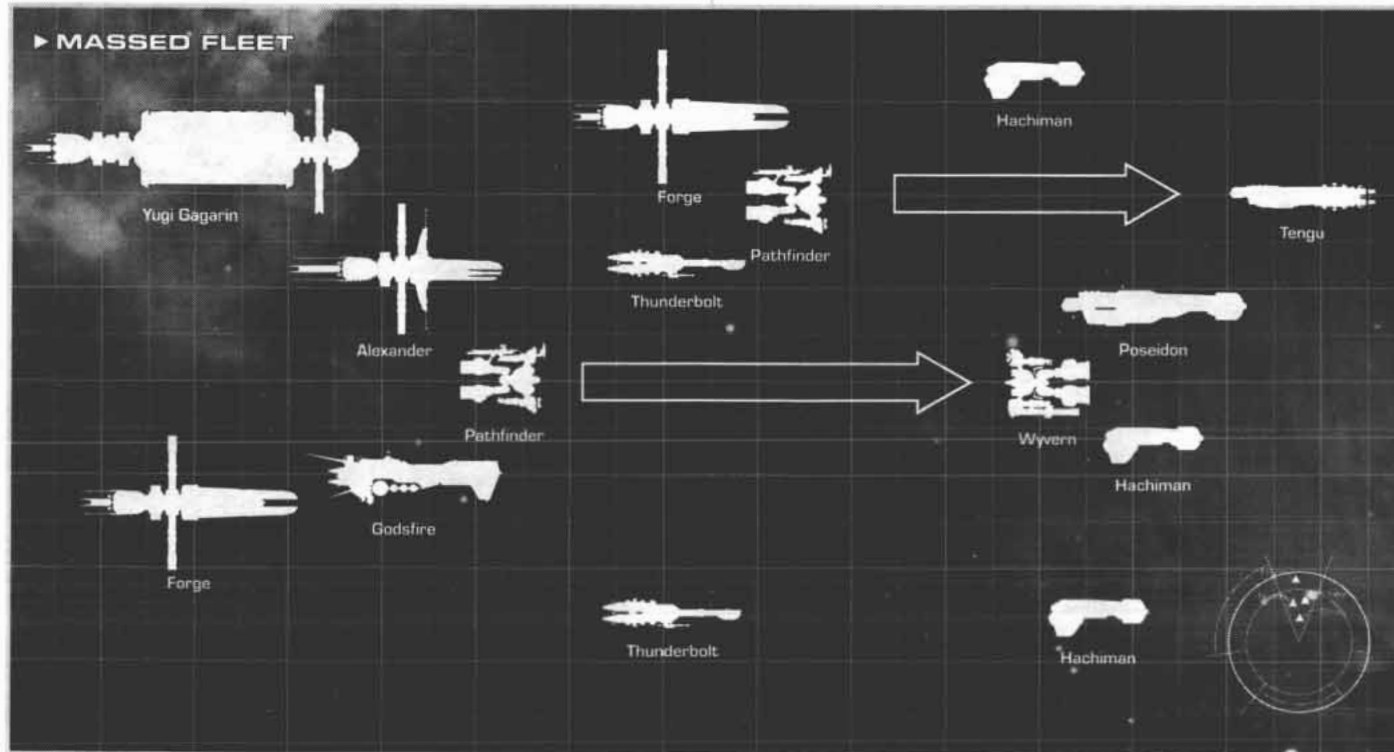
◇ Massed Fleet

A massed fleet strike commits all available JAF combat assets to the engagement. This option is valid when a critical enemy resource is vulnerable or when accurate intelligence shows a significant advantage. Recent reconnaissance reports, such as those gained from an exo raid, can confirm the presence of the critical resource and/or the fleet's believed advantage.

A massed fleet lightning or wave strike is possible, but seldom used. The two opposing lines of battle engage at the center, with the bulk of the exo forces also fighting there. This force will give, and receive, the greatest amount of damage. Destroyers can provide protection for the line against enemy missile barrages and from enemy exo raids. Flankers are placed to protect the line of battle, threaten the enemy rear and/or maneuver to support the main battle line. A carrier placed here can operate as an alternative landing location for exos. It could potentially be used for search and rescue activities during the battle.

A small number of exos on the flanks may be able to conduct their own exo raid on the enemy rear. Their effectiveness is greatly enhanced if accompanied by other flanking resources. The threat of this maneuver could force the enemy to increase its rear defense, in turn reducing forces at the main battle line. A counter to this maneuver is for the enemy to replace his main line with the rear. This means that the JAF battle line will be able to engage the enemy rear at the same time as the forward battle line.

Even if an enemy critical resource escapes, the destruction of the enemy's local fleet is highly desirable. An escaping resource is an excellent candidate for an exo raid. If possible, the exos should remain engaged in the main battle and conduct the raid after the main battle. Given the lengthy time needed for space travel, a successful fleet action will give the victor space superiority in that area for days, or even weeks. When available, at least one carrier should be withheld from battle so that it may support the exos in any post battle engagements.





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◆ Facility Seizure

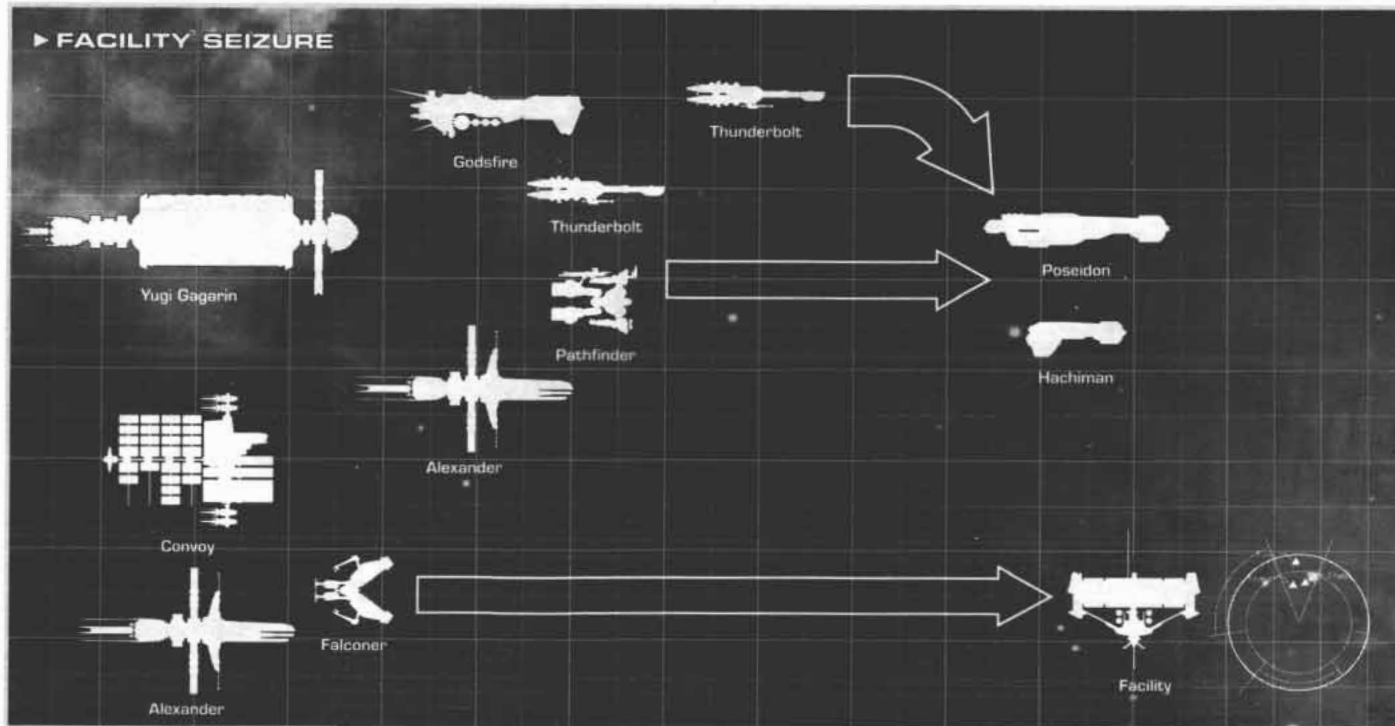
Seizing a facility is another battle plan that requires a large force to be effective. It is much simpler to destroy a facility than to seize it in a usable state. If the facility is worth capturing, then the enemy will consider it worth defending; one must contend with both the facility's own defenses and any enemy ships in the vicinity. Once the facility is taken, the enemy may attempt to regain control before battle damage can be repaired. Therefore, space superiority must be achieved.

The first part of the plan appears similar to a massed fleet operation. The two battle lines engage with the objective of scattering, crippling or destroying all enemy combat assets. Flankers and exo-armors may be used in techniques like those described in the massed fleet battle plan. At some point, a boarding force needs to gain entry to the facility. If a sufficient space superiority advantage is obtained, the facility may surrender. Otherwise massed marine deployments come into operation. If the facility is heavily armed it may be a factor in the main battle, which the marines can

eliminate by boarding during the fleet engagement. If the facility itself does not pose a significant threat to space vessels, boarding can be delayed until after enemy vessels have been driven away.

Intelligence agents, saboteurs or marines smuggled into the facility can greatly aid the entry phase of the battle. Careful weapon fire may create breaches suitable for marine boarding. Exo-suited marines are adept at creating their own entry points by opening airlocks, careful weapons fire or the use of demolition tactics.

The interior battle may last minutes, hours, days or weeks depending on the size of the facility. Exo-suits can inflict a great deal of damage in a short period of time. Extended battles, however, require maintenance refueling and rearming of the exo-suits. A method for landing conventional infantry in large facilities must be arranged; airlocks, hangar bays or shuttles landing near or in breaches provide entry points. Conventional troops act as a police force to enable the use of the seized facility.



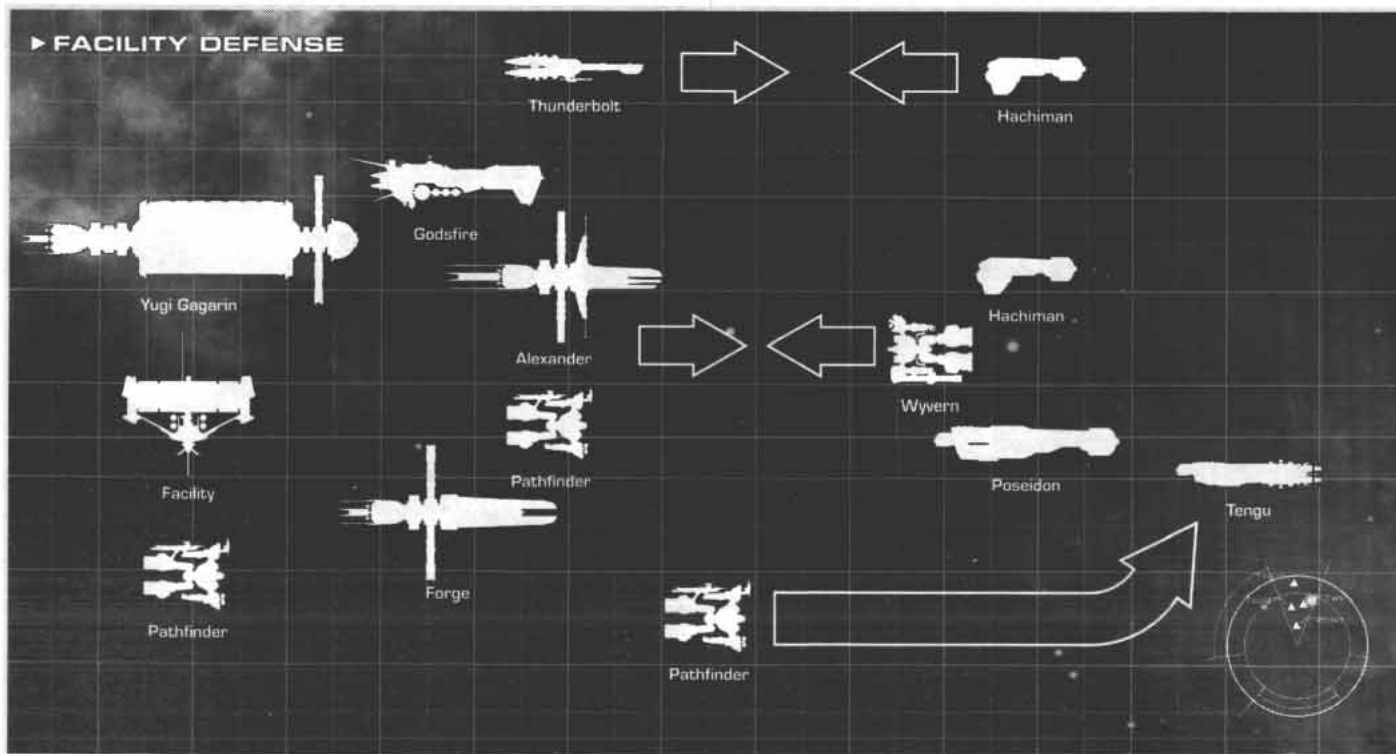
◆ Facility Defense

Facility defense methods are quite simple, once seizure methods are understood. Most Jovian facilities field a supplementary exo force, though this may not be true of civilian or allied positions. It is vital to understand whether the enemy's intentions are to capture or destroy the facility. A facility targeted for destruction could be eliminated by a single weapon of mass destruction, whereas an enemy intent upon capture will need to be much more careful in battle. Capturing the facility requires the enemy to follow a plan similar to the previously described facility seizure plan. Methods for countering that plan include defeating the enemy line of battle, conducting an exo raid on the marine transports, eliminating enemy exo-suits with exo-armors or using area defense lasers against transiting enemy exo-suits.

Defending the inside of the facility requires the JAF's marine commanders to understand the infantry tactics to be found here. Plans for the internal defense are handed over to the highest ranking marine present in the fleet. Exo suit resources are as-

signed to the facility, while keeping sufficient numbers for internal ship defense and rescue operations. Trustworthy members of the facility population may be recruited and armed as a militia force. Militia sub-units should be under the command of JAF marines. A core fighting force comprised solely of JAF exo-suited marines is required. This "elite" must blunt the efforts of massed enemy exo-suits.

Facilities with large interiors, such as colony cylinders, could have exo armors added to the internal defense. Expect that the enemy will seek to bring his own exo-armors inside such a facility. Even a single one can devastate a force of exo-suits. This advantage works for the enemy as well. Traps, sudden decompressions and sealed sections all add to the dangers the attacker faces. Intense battles occur over control of the facility's life support systems. As part of the damage control mechanisms, all facilities have localized controls for sub-sections; thus, each sub-section will likely become a separate battleground. A massed group of attackers can be eliminated by bombardment from ships outside the station.





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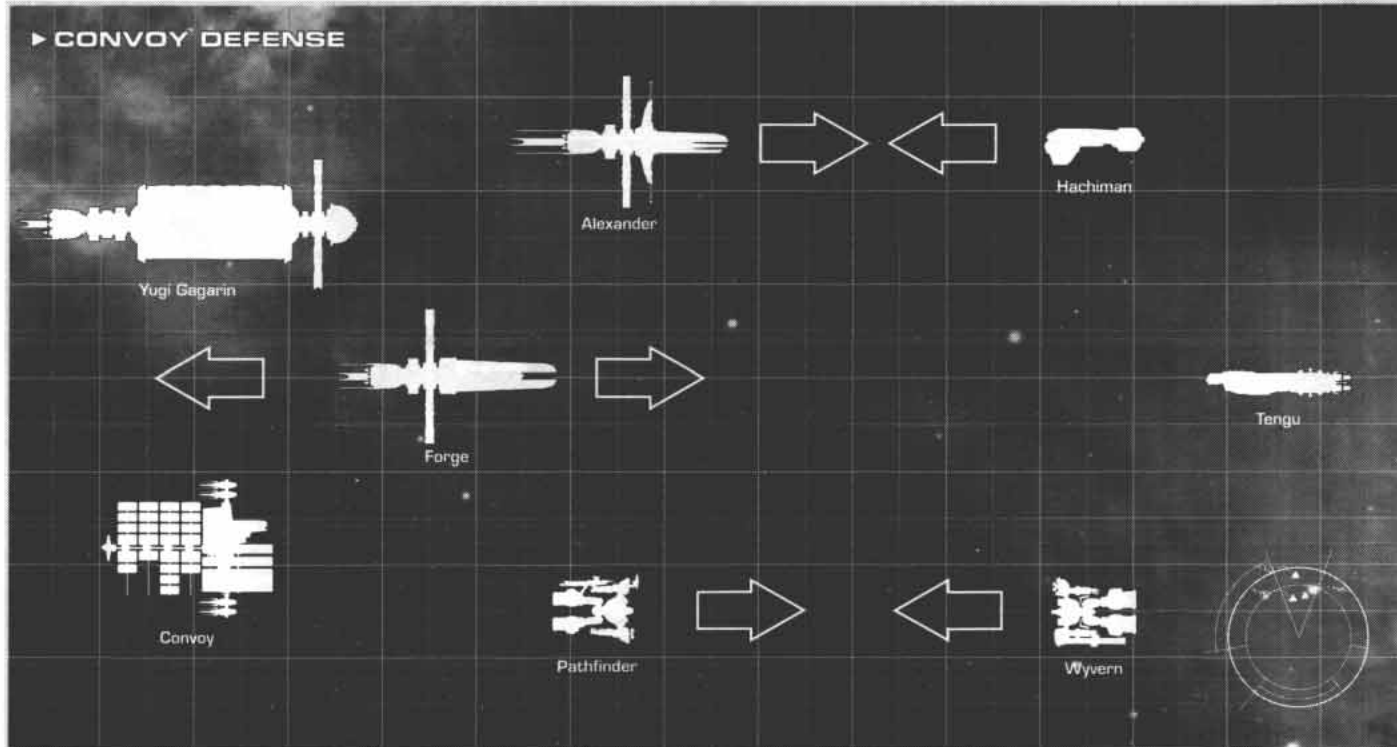
◇ Convoy Defense

Unless involved in a facility raid, a convoy engagement is not likely to involve line units from either side. Therefore, the battle becomes one of exos and destroyers. "Lone wolf" cruisers on merchant raids can be engaged with simple massed force concentrations. Much of a convoy defense depends on the early detection of the enemy force, usually by a recon team of exos or interceptors placed far in advance of the convoy. The battle plan being discussed here assumes that the enemy is able to engage the convoy.

The general principle of convoy defense is "like against like." Exo-armors and interceptors can easily out-thrust a ship, so other vehicles of the same type are required to intercept them. Once the enemy fighter force has been removed, JAF exos are free to engage the enemy ships. If the enemy threat is only exos, then the destroyer escorts withdraw into close support positions around the convoy. The area defense lasers of an Alexander-class are particularly effective at defeating a fighter attack.

A carrier accompanying the convoy can choose either to fight alongside the escort vessels or withdraw into the convoy. This depends on the action of the enemy forces and the defensive capabilities of the transport and convoy ships, and is thus left to the individual captain's decisions. The effects of this have been discussed in the "standard three-ship" and "aggressive three-ship" battle plans, and need not be repeated here.

When it has been determined for sure that the enemy has detected the convoy (generally by receiving active sensor signals or seeing the hostile ships turn on intercept vectors), a full power active sensor scan should be done of the entire area. There may be powered-down, drifting attackers, hidden units, mines or other threats in the area, and one should not assume that the enemy has revealed all its forces. Doing this type of sweep before it is confirmed that the enemy has detected the convoy is normally prohibited, as it will certainly reveal its presence.



◆ Orbital Operations

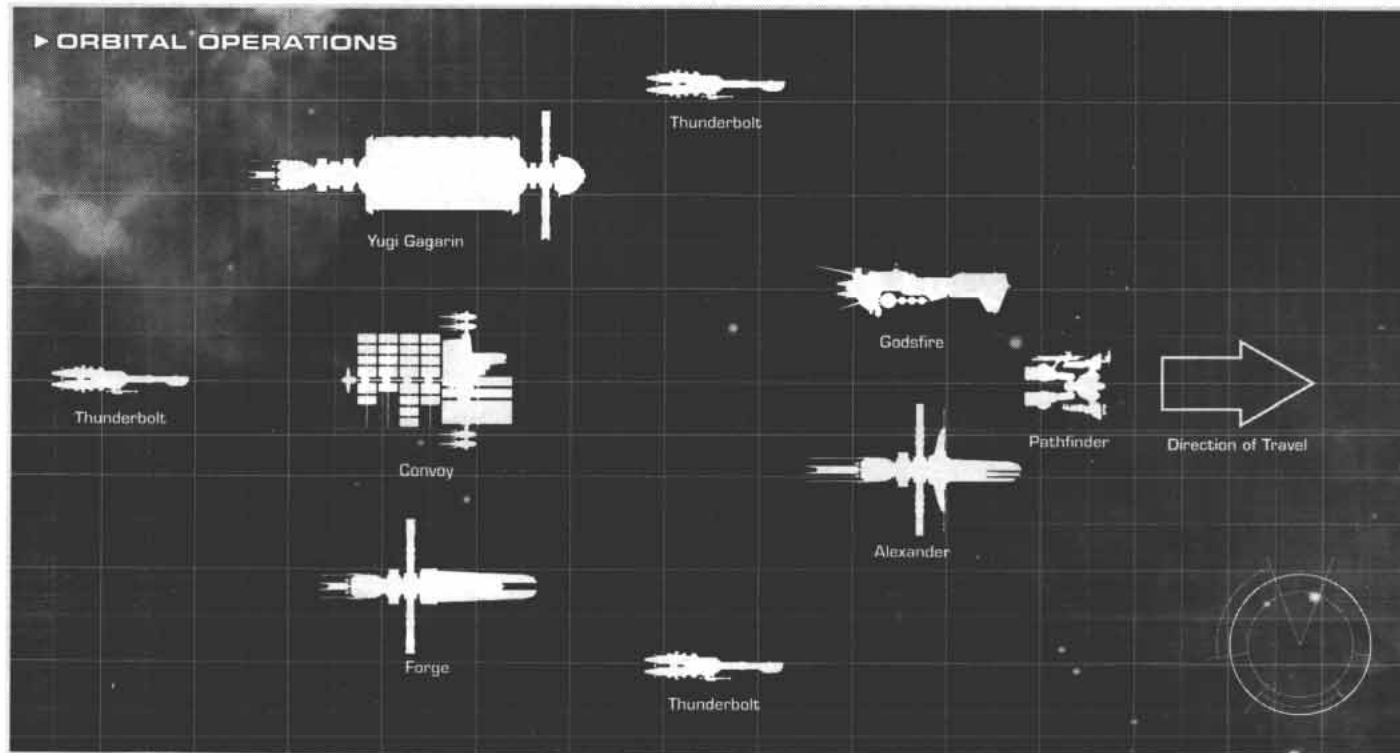
Maneuvers within a gravitational field differ from those in deep space. All objects, friendly and enemy, are constrained by elliptical orbits, planetary rotation shifting ground targets and atmospheric "bounces." Primary candidates for orbital operations include Mars, Venus and Luna. These battle plans refer to actions involving long periods of time in the gravity well, and 'sling shot' style actions equating to lightning and wave strike battles.

Within orbital space, altitude becomes significant. Accelerations and decelerations have a corresponding change in a ship's elliptical orbit. Vessels can shift their altitude within a short time span, but must re-burn to correct their trajectory. Another aspect of orbital operations is the concept of "facing." Since formations must travel in an orbital swath, the formation has its 'front' and 'sides' defined more precisely than in deep space maneuvers. Due to the necessity of motion, encounters will be predominately on the front of orbital formations.

The diagram at right depicts how the fleet should be arranged. At the center are the convoy cargo ships, tenders and carriers. On the front are the ships of the line, their escorts and the airborne exo armors. Flankers need to cover each side. A flanking force on the rear is optional depending on the enemy's possible orbital movements.

In general, the JAF should avoid orbital engagements. Exo armor maneuvers are greatly restricted. They cannot simply reverse burn to rendezvous with their carriers. Instead, they must make one or more orbits until landing can occur. It is preferable to gain space superiority prior to entry into orbital space.

One final consideration for orbital combat is that of orbital periods. After a battle, the objects involved continue on their orbital paths. Unless trajectory changes are done, both sides will encounter each other again in a few hours. This can create a battle cycle of repetitive waves. Both sides will have the opportunity to repair and rearm between engagements.





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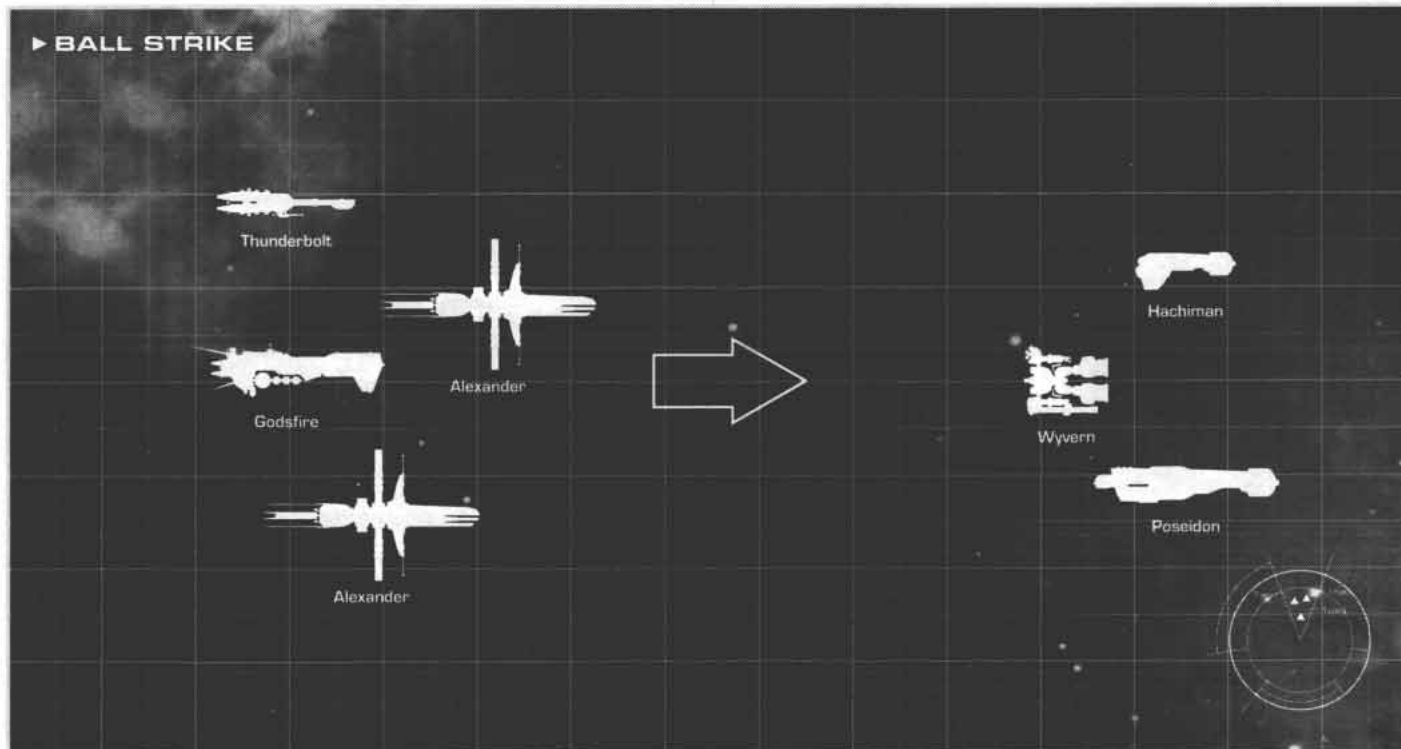
◇ "Ball" Strike

The term "Ball" strike refers to the most basic of lightning strike maneuvers: all of one side's combat assets cluster into close proximity and match velocities to present a solid concentration of firepower. From there, they rush the enemy, always remaining in tight formation. If there is a critical resource in the midst of the enemy force, all ships in the ball will aim for it and attempt to take it out with massed firepower as they pass by.

This is a very simple yet effective maneuver. To counter, the enemy may disperse his assets into distant groups, forcing the ball to strike at only one group on each pass. If multiple passes are made, however, then the enemy force can be defeated piecemeal. The other defensive option is to pile all of the defensive combat assets into another ball. Both sides will suffer heavy casualties, but the biggest ball will generally win through sheer numbers.

A "ball" defense can also be used to protect one or more critical resources. Again, the enemy forms up into a ball to attack. An attempt to outflank the formation is possible. Counter thrusts and ship rotations easily accommodate such flanking maneuvers. Some ships, notably the Alexander-class, will have their survivability greatly reduced if they have enemies attacking from more than one direction, since their main weapon array is fixed.

In general, "ball" defenses are only useful when communication or control difficulties prevent another formation from being selected. Ships on the outer edge of the formation will take the greatest amount of damage.



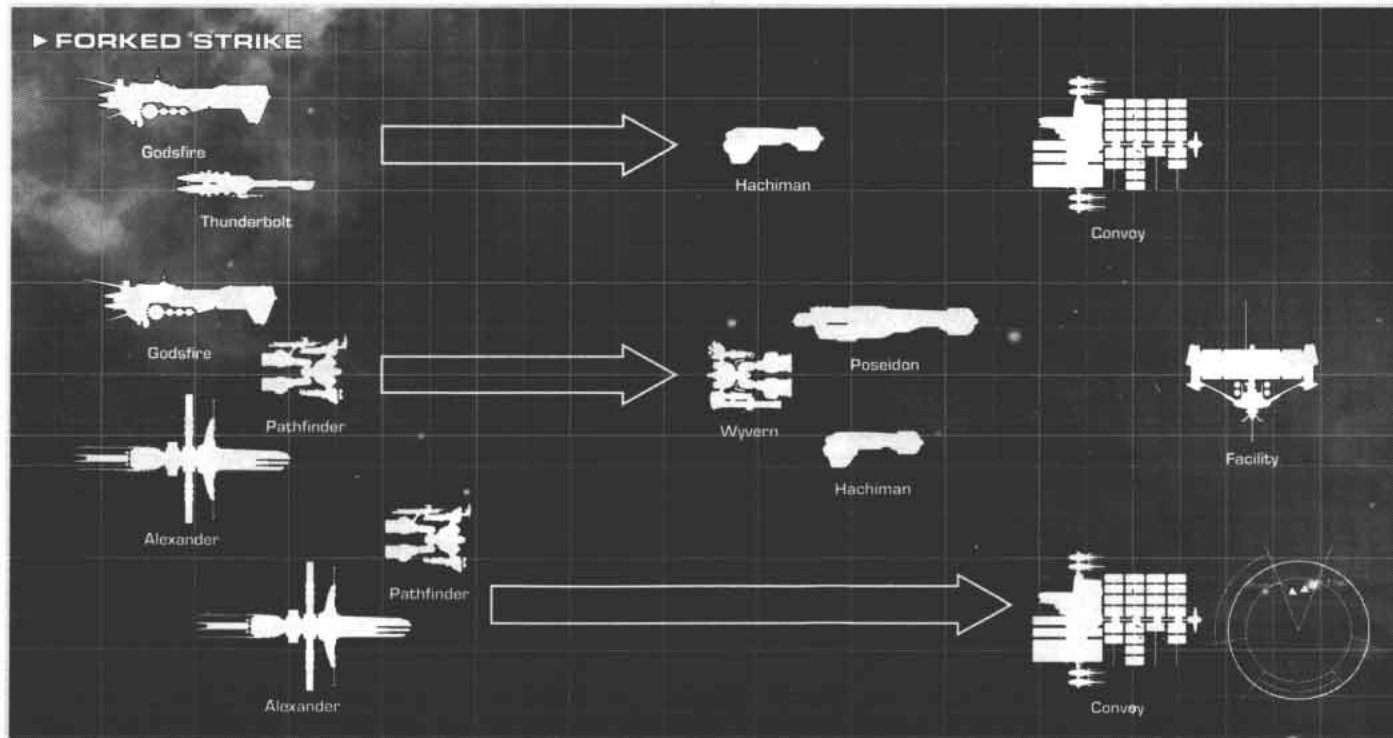
◇ "Forked" Strike

One of the JAF's preferred lightning strike deployment technique is referred to as the "forked strike" battle plan. In this maneuver, The ships and auxiliary vehicles align themselves into several lines of attack; each formation generally has ships of the line and exo-armor support. The lines then thrust directly toward the enemy and attempt to punch directly through the enemy defenses. Enemy forces then have to contend with several well-armed groups coming straight at them, forcing them to spread their resources across a wide front.

If the initial punch is successful, each line will also have the opportunity to engage enemy rear assets, which can be highly desirable. This will force the enemy to move assets around, expending both reaction mass and ammunition. Since exo-armors and interceptors can be refueled for additional raids, it is often more desirable to eliminate the enemy's means of defense rapidly. Of course, a critical resource, if present, is always a primary target for the first raid.

The disadvantage to this tactic is that the overall assault can be broken down, isolated and then defeated section by section. It is possible for one section to break through while another is destroyed. For this reason, each fork should be organized so as to achieve local firepower superiority, if possible, and should not depend on the success of other "teeth" of the fork.

Since the forked strike is primarily a lightning strike technique, both sides are forced to part with their disabled and drifting. In general, careful navigation will place the force on a vector that makes rescue and repair operations possible. If an extended engagement is being planned, the "massed fleet" battle plan is more appropriate to use than the forked strike.





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◇ "Phalanx" Defense

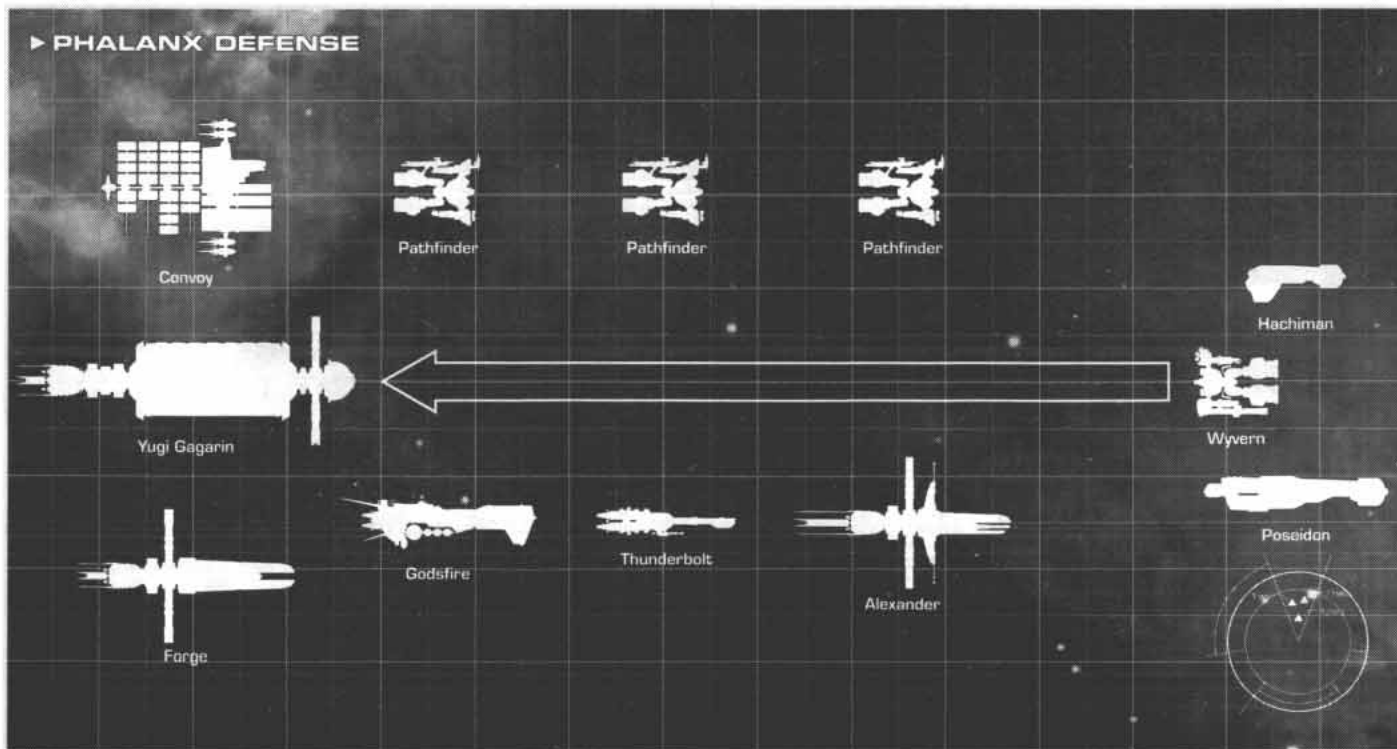
In ancient times, Greek hoplite warriors would form into a fighting formations with long spears. Each line of warriors would have their spears overlapping those in front of them. An enemy trying to break the formation was forced to deal with all the spears at once. Adapting this technique to space combat, the JAF has prepared the "phalanx" defense plan against a wave strike. It could potentially be adapted to an extended engagement where it is vital for the enemy to eliminate an asset placed in the rear.

The first line is composed of capable combat units. Units placed there should possess decent long-range fire power. They can then use their weapons to damage the enemy before he can close with the bulk of the formation. Front line units can also hold their fire until the enemy closes to push through the formation. This latter role is better suited to exo armors, which have the maneuverability to avoid damage from medium or long range fire.

The second line consists of medium to low quality units. These units will force the enemy to waste firepower on them, rather than on the more effective units behind. Should the enemy not eliminate this line early on, the second line will be able to engage the enemy at close range as he tries to push through to the rear.

The third line is where the ships of the line wait. If the enemy has engaged the first two lines, his forces will be weakened. If he has waited to fire, then he would have been damaged by fire from the first two lines. In either case, the role of the third line is to stop any remaining forces capable of damaging the rear area assets.

In the rear of this formation sit the cargo ships, carriers, tenders and marine transports. These will likely be the enemy's objectives. To reach them, he must pass through all other sections of the fleet. Since the phalanx defense works on the basis of depth, the formation's width should be as narrow as possible. In comparison to the ball formation, the phalanx is a long pointed spear. An attacking enemy must impale itself on the spear to get through.



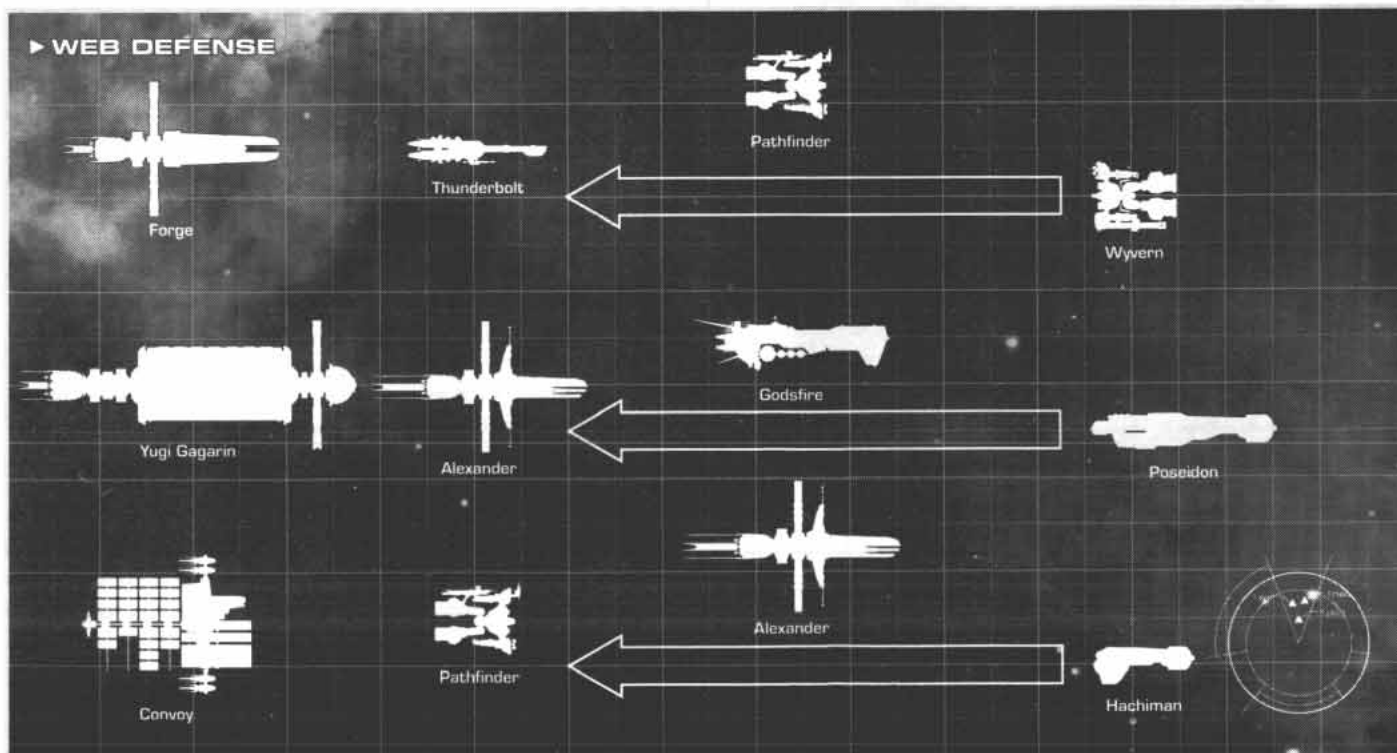
◊ "Web" Defense

A web defense is suitable when the enemy is much stronger or when duplicate resources are present, such as in a convoy fleet. Under this battle plan, the formation spreads out in wide battle lines to create a virtual grid of ships. Normally, a minimum of three lines of ships are made. At the back are the resource ships, such as the carriers, tenders and cargo ships. At the front are the ships of the line, strong escort ships, and any available attack fighters such as exo-armors or interceptors. The line(s) in between will be filled with the remainder of the fleet.

In order to attack this formation effectively, the enemy must spread his ships over the different lines of approach, unless he is willing to spend a lot of reaction mass to attempt a flanking maneuver. This formation is also effective at pushing a convoy through an enemy blockade, since the first few offensive lines will literally "dig" a hole in the enemy battle line.

Vessels in lines not being directly challenged are free to engage in long range support fire. Ships will usually turn to keep the enemy within sight of their guns as it attempts to pass through the web. Side-mounted weapons can also be used against any hostile passing units. This deadly criss-crossing fire gives the formation its name: it's effectively a giant trap designed to lure opponents in and then trap them with firepower coming from all sides.

Such a tight engagement will no doubt incur some losses to concentrated enemy attacks (or perhaps even to friendly fire). The ships and vehicles placed on the first line of the web will take the brunt of the assault, softening up the passing units for other vessels further down the web formation. It is possible that some of the resource ships will be reached and damaged (or even destroyed), but the enemy will probably not be able to break through in all the lanes of the web. Rescue units can be deployed in unattacked lanes, if any are available. This action will likely boost the morale of those who take the brunt of the enemy attack.





OPERATIONS AND ENGINEERING



▼ 5.6.3 Boarding Actions

One procedure that rarely receives a lot of tactical consideration is the use of marines. There are two types of boarding actions. The first is referred to as a conventional assault, and occurs when the forces involved are wearing at most armored space suits. When exo-suits (Minotaurs, Falconers, Deckers or others) come into play, the action is referred to as a powered boarding action.

◇ Conventional Boarding Actions

Due to the availability of exo-suited marines, Jovian ships are unlikely to initiate a conventional boarding operation. JAF forces have sometimes had to defend against them, however. It is also helpful to understand how a pirate may have captured a ship that is now in need of rescue.

A pirate force bent on capturing a ship is likely to have hidden operatives on board the target vessel. This is simpler and less risky than finding and matching velocity with the target ship to board it. These operatives work to prevent the establishment of the roadblocks, open previously sealed routes or take pre-selected hostages.

Conversely, a boarding action by a professional force may not need to take over the entire ship. They may be seeking to plant devices to destroy the vessel from the inside, arrest suspects or simply kill all personnel in a given section. In military campaigns, a small boarding team can cripple a ship, leaving it vulnerable to follow-up attacks.

Since they lack heavy weaponry, a boarding force's efforts are focused on one of three possible objectives: capturing a key individual, taking control of a command section (such as the bridge or main engineering room), or disrupting the operations of a specific ship system (such as a weapon turret). As soon as the target can be identified, the defenders should block the routes that the attackers must take to get to their objective.

Roadblocks can be created through various means. Bulkheads may be sealed, forcing the attackers to spend time going around or cutting through them. Improvised gun posts made from piles of materials could wipe out large numbers of hostiles, forcing the invaders to move through bottlenecks such as elevator shafts. Another defensive option is to rapidly vent an area into space, possibly sucking part of the boarding force off the ship.

◇ Powered Boarding Actions

Military boarding actions are almost always the follow-up to a crippling hit on an hostile vessel. It is vital to take control of disabled ships still in the battle zone to ensure that their crew does not repair them and send them back into the fray. Since the battle may well still be going on outside, current JAF procedures require marine squads to wear exo-suits for all boarding attempts.

Marine suits generally cross over under their own power, but they can also use small ferry vehicles if the ships are too far apart or if speed is of the essence. The larger exo-suits, such as Falconers and their variants, attack the ship from the outside, neutralizing defenses and disabling drive systems by wrecking crucial external equipment such as heat sinks. The smaller suits typically blow open an access port or a segment of hull using either shaped charges or a powerful hand weapon, depending on the situation.

Once past the first line of defense, a group of armed exo-suits can inflict immense damage on the interior of a vessel. Even plentiful small arms fire tends to have little effect on exo-suits. "Sheer terror" has been used to describe the emotion felt by a pirate crew when a hulking Decker kicked open the door to their bridge.

The best way to defend against exo-suits is to send in some of your own. This is why every JAF vessel carries at least one squad. When a boarding action is planned, there is almost always at least one squad of exo-suited marines going along as heavy enforcers.

Conducting a boarding action is still very dangerous. The two vessels must come close to each other, then the marines must transit to the target. Even civilian-grade point defense systems have enough power to kill an exo-suit, making this phase extremely dangerous. Once on board, however, it is almost impossible to halt the carnage even a single exo-suit can inflict without having either another exo-suit to counter it or be willing to inflict severe damage to the ship's interior.

◇ Occupation Action

Although such an operation is unlikely to occur very often, the JAF maintains the capacity to conduct seize and hold maneuvers against a "terrain" or "facility" objective. Prime targets are cylinders or stations possessing manufacturing centers that could be turned over to support the occupying force. Another possibility is orbital insertion of forces to support or initiate a planet-side conflict (much like the Kurtzenheim operation earlier in 2213).

A great number of vessels needs to be mobilized for an operation of this scale. The simplest way to organize this is to commit one of the three divisions to the operation, leaving the other two to defend Jovian space. Merchant ships and personnel transports get called in for service as well to establish supply lines.

En route to the objective, the escorts and ships of the line must actively remove any hostile warships along the fleet's path. A few carriers can be used to support them, but the bulk of the exo-armors and marines must be preserved until arrival at the objective. Once there, control of the immediate space sector is the primary goal. Now the exo-armors can be openly deployed to counter the objective's own defenses. Even if the entire sector cannot be suppressed, the operation may proceed.

The ships of the line close in to bombard the defenders. With this bombardment underway, the first waves of exo-armors and troop transports move in to further eliminate any hostile exos and knock out defending weapon emplacements. The first marine detachments are amid the second wave and continue the same work from the inside. When the outer defenses are breached, the bulk of the occupation forces will land and overwhelm what's left of the defender.





► CAREER DECISIONS



Adam Davis couldn't believe it. Not Will. He knew his friend has gotten into trouble over money in the past, but he had no idea it was that bad.

The forensic department had confirmed that the fine yellow powder on Will's hands was indeed one of the compounds used in the explosives. Once caught, he spilled the whole thing. Yes, he had acted as a courier between Station 118 and other colonies. No, he didn't know that Tonya Reeds was from Earth. He thought he was smuggling narcotics to a bored research station crewmember.

Adam mulled over all of this as he continued to seal a hull breach on Station 118's broken surface.

"Hey there, stranger," a familiar voice called over the radio.

Adam's heart rate jumped a bit. He latched the electric torch onto one of his space suit's harness clips before answering, if only to buy some time to regain his composure.

"Julianne, is that you?" He managed to keep the tremors from his voice — mostly.

"You didn't think I could leave you behind, did you?" she replied. "I've just been resetting the station's thrusters. Take a look to your right... and up about thirty degrees."

Davis looked towards Station 118's docking control tower. Julianne began waving through a window. He was about to speak, when she beat him to it.

"When do you get off shift?"

* * *

Adam was waiting in line for a shower. The tech crew from the *Sally Ride* had brought the least damaged section of the station back on-line first, giving themselves quarters for the long haul. There were ample facilities for the crew here, but even this brief wait was too much for him.

Julianne Dean.

Adam had fallen for her hard on his first tour on the *Ride*. A nav trainee then, she had caught his eye in the commons about two weeks out. She was gorgeous, in that crisp and clean way that seemed inherent to those raised on Elysée. Her smile was so wide that it reeled him in like a gravity well.

Him and every other guy on Second Shift.

They had become friends, though, even as she dated that moron Hastings for a week or two. Now that was a case: an exo-jockey wannabe who thought muscles were the key to success in the Jovian Armed Forces.

Adam remembered how happy he was when she had finally dumped that loser. He had been working in the *Sally Ride*'s repair bay when Will had passed on the news. Adam had promptly turned off his comm, and executed a zero-gee quadruple somersault while screaming his joy.

Then she swore off shipboard relationships — too much trouble, she said. Adam had become the good friend, the "buddy," all the while holding the mother of all torches for her.

Sure, when Nikita was transferred to his shift, they had started flirting, but that was all. It was a joke, and she came on so strong, he doubted she was serious. Anyway, it distracted him from his otherwise miserable love life.

Finally, three weeks before the end of the tour, Julianne had dropped the “just friends” pretense. That had been great. They had become inseparable — well, as inseparable as two JAF crewmembers on a working ship could be.

But — and there had to be a but — she had already passed her performance evaluation with flying colors. She was going to be transferred to a destroyer for her next tour. He had applied for a transfer too, but he was too good a technician to leave the *Sally Ride*. And that was that.

Except, that wasn't that. Now he had a second chance. He was meeting her at the lounge in half an hour. If these idiots would ever get out of the shower.

* * *

Adam walked back to the table with two drinks. Julianne took a sip from hers as she patted the seat next to her, motioning him to sit down.

“I've volunteered to lead the JAF contingent staying behind for the clean-up,” she explained. “It'll be my first real command.”

“That's great,” answered Adam. “I heard from a pilot that the *Fitzgerald* is transferring her Pathfinders here.”

“Not to mention the *Brock* leaving behind three squads of marines for internal security,” Julianne added.

MacGreggor's gruff voice cut in as he grabbed a seat at the table. “That's right, gang. Yours truly gets to be their leader. Consider this to be me reporting in, sir.” The marine raised his drink bulb in mock salute.

Julianne returned MacGreggor's salute with an exaggerated one of her own. “Very good. I understand that you have thoroughly checked the station for additional bombs. Tell me, have you checked that drink in your hands yet?”

“How careless of me,” grinned MacGreggor. He took a long gulp. “How about that — it appears to be clean.”

“I thought you guys were happy with Captain Zou,” Adam asked, returning to the topic at hand. He wasn't crazy about the friendship Julianne had with the big marine. Shades of Hastings.

“I was... and am,” replied MacGreggor, “but like Julianne here, getting an independent command, even a short one, is a great career boost. You haven't been in the JAF very long — crew transfer in mid-cruise is a pretty routine procedure. Back at Elysée, someone is keeping track of each of us, but out here in space you go where you're needed.”

“Speaking of which,” Julianne cut in. “Those exos are going to need deck hands, and the *Fitzgerald* is very protective of her own. Ever thought of working on exos?”

Adam looked at her for a full beat or three before answering. She was asking him to stay. Here. With her. Oh, boy.

“Gee... I joined up to get started into a shipyard career. My plan was to put in a few tours, then leave the JAF, maybe get some construction or design work at Elysée. Hadn't thought that I could get to work on Pathfinders.”

“I can certainly get you assigned here,” Julianne stated with a smile. She put her hand across Adam's. “So, are you in?”

“Yeah.” He couldn't suppress a smile. He squeezed her hand back. Julianne Dean. This was going to be great.

Just then, his M-link beeped and spoke. “Reminder: thirty minutes until date with Nikita.”

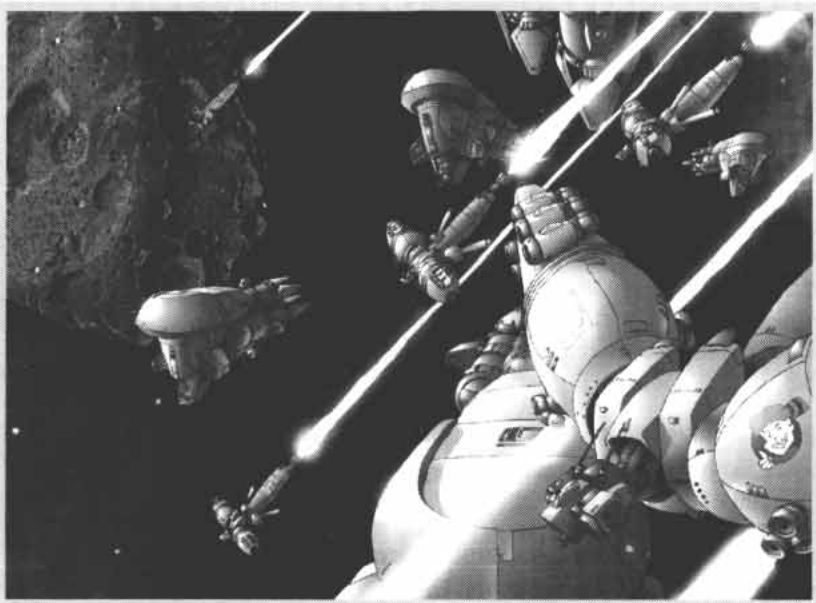
In an instant, Julianne's hand was gone and MacGreggor was tactfully looking elsewhere.

“Uh... Let me explain...”





RULES AND GAME PLAY



► 6.1 WAVE STRIKE RULES

Under the normal rules for lightning strike combat (page 143 of the JC Rulebook), the two forces are effectively clustered into one formation, a simple mechanic suitable for small engagements or one where the sides all consist of similar craft. With these optional wave strike rules, the tactical possibilities of a lightning strike are expanded to include some deployment tactics.

A wave strike is an advanced form of lightning strike where the two formations dispose their forces to optimize their attack or defense by using successive “waves” of vehicles — hence the name. Wave strikes are resolved using several steps that are referred to as “phases” to avoid confusing them with regular combat turns. A wave strike is still a lightning strike, and unless specifically mentioned, all standard lightning strike rules apply. Each unit still only gets one chance to act for the entire battle.

The high relative velocities inherent to the battle affect it in other ways. Units may still apply thrust to modify their defensive die rolls, but that will cause no change in how the unit moves on the map. Once a unit is deployed for the wave strike, or launches from its carrier, it may not change the direction it faces.

▼ 6.1.1 Pre-engagement Phase

As they hurtle towards or across each other, both factions will try to change their vectors in such a way that they will be at an advantageous distance when they pass by each other. An opposed Space Navigation Skill test is required; the side with the highest Thrust adds +1 to the die roll. The winner of the Navigation roll determines which side will be the “receiving” force. The other side is considered to be the “advancing” force. Ties should be rerolled.

Certain scenarios may force one side to be the receiving or advancing force. A good example of this is a wave strike against a group parked amid asteroids or a wave strike on a colony cylinder. Like in regular lightning strikes, the faction that wins the first advantage can choose to avoid conflict altogether. Otherwise, combat will proceed as follow.

The commanders of the two sides both make Tactics Skill rolls. These determine the number of Command Points available for the engagement, if CPs are being used. Command Points spent for a defensive bonus apply only versus a single attack, and not for the entire phase or strike.

▼ 6.1.2 Deployment Phase

The Wave Strike rules use an hex map to facilitate the resolution of combat (though it is certainly possible to just use a pad of paper, an hex map makes the whole process easier). A large map should be used if there are lots of units in the battle. Obstacles, if any, are placed on the map. These include, but are not limited to, asteroids, comets, debris fields, orbital facilities, etc.

To start deployment, the advancing force declares which map edge they will enter on and which direction they will move in, following a row of hexes. Again, certain scenarios or the obstacles present may limit the available choices.

The receiving force then places its units on the hex map. Units may be placed anywhere beyond the advancing force's longest medium range, plus eleven hexes from the advancing force's selected map edge. For most battles, this distance will be twenty five hexes, which may be used as a general rule of thumb.

The receiving force may only place its units in the general area available to the advancing force. It is not permitted to "hide" units in unreachable hexes, such as map corners. Map terrain items, such as asteroids, are not considered to hide units — they only limit the possible movement "lanes." A cluttered map might require the players to place more than one ship per hex.

The advancing force then places its units on the map. They may be placed anywhere within ten hexes of their selected map edge, as long as they do not infringe on the separation distance mentioned two paragraphs above.

It is assumed that a carrier may launch a number of craft equal to one or its number of catapults, whichever is greater, with a single action. Launching can only be done once per catapult for the entire wave strike. A ship without a catapult can only launch a single vessel during the wave strike.

▼ 6.1.3 Declaration Phase

Each unit must record their total use of movement points for the duration of the strike. These will be used for attack and defense modifiers and will not change the facing of the units or their position on the map. Compared to the great speed at which they meet, the vector changes won't take effect until a few seconds after the exchange, though they will affect the vehicle's position enough to throw off the enemy targeting.

▼ 6.1.4 Battle Phase

The combat portion of the wave strike now begins. The advancing force moves all units forward one hex in, and only in, the direction selected in the pre-engagement phase. They may not hold back or advance more, regardless of thrust expenditure.

Either side may then perform actions. A unit does not have to spend an action now; it can wait until it finds itself in a more advantageous position. All actions within a single battle phase are considered to be simultaneous. Effects, such as electronic warfare Thresholds or system damage, do not take effect until all units have completed their actions for this phase.

Damage may be determined as attacks are declared, but it does not take effect until the end of the phase, regardless of the damage inflicted.

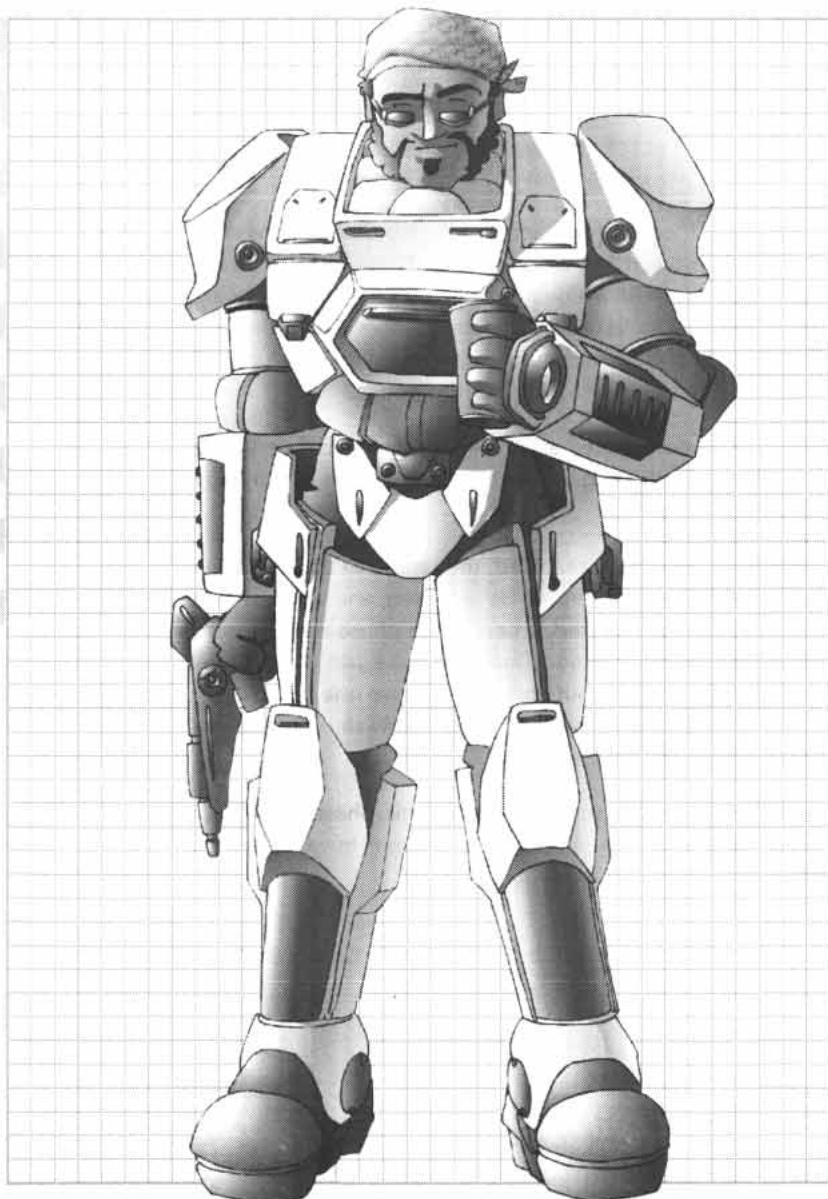
After all actions have been resolved, the effects of the exchange are now applied. Damage should be recorded, and will now take effect. Once this is completed, a new battle phase begins. Units that have spent all their actions may not act again (unless they receive Command Points), but continue to move one hex in every phase, like all other units on their side. Likewise, damaged or destroyed vessels will do the same.

A wave strike continues cycling through battle phases until both sides have used all their actions or until all units have exited the playing area.





RULES AND GAME PLAY



▼ 6.2.1 EVA Specialist

Skilled masters of zero-g operations, these people also supervise others during EVA excursions. Their activities include both personal space suit 'walks' and work pod operations. They are also expected to train and evaluate other members of the ship's crew in these activities. Due to their unusual desire to be in a vacuum, people tend to view them as either foolhardy or heroic.

▣ Attributes

AGI	+1	APP	0	BLD	0	CRE	0
FIT	+1	INF	0	KNO	0	PER	0
PSY	0	WIL	0	STR	0	HEA	0
STA	25	UD	4	AD	3		

▣ Skills

Communications	1	Mechanics	1	Teaching	1
Electronics	1	Nav: Space	1	Zero-g Combat	2
First Aid	1	Space Pilot	2	Zero-g Mvmt.	2
Hand-to-Hand	1				

▣ Equipment

Hercules armored space suit, dual spray canisters, M-Link, extra maneuver rods, Durox remote release tethers, Steele grapple gun, suit patch kit

▣ Similar Archetypes

Cargo bay loader, construction worker, salvager

▼ 6.2.2 Navigator

Navigators fulfill the need for specialized personnel. They have studied space navigational techniques extensively. Their skills make them a valuable asset in the private sector, which constantly lures navigators away from the military by offering significantly higher wages. Regular tasks on a warship include course verifications, verification of other vessels, intercept plotting, avoidance generation and operating as the ship's pilot. Warships frequently change their vector to defend a convoy, requiring the navigator to correct their overall heading.

▣ Attributes

AGI	0	APP	0	BLD	0	CRE	+1
FIT	0	INF	0	KNO	+1	PER	+1
PSY	0	WIL	0	STR	0	HEA	0
STA	25	UD	3	AD	3		

▣ Skills

Communications	1	Electronic War.	1	Space Pilot	2
Computer	1	Nav: Space	2	Survival	1
Electronics	1	Security	1	Zero-g Mvmt.	2

▣ Equipment

ILLegra-70, M-Link, flight suit, navigational charts, holographic recording

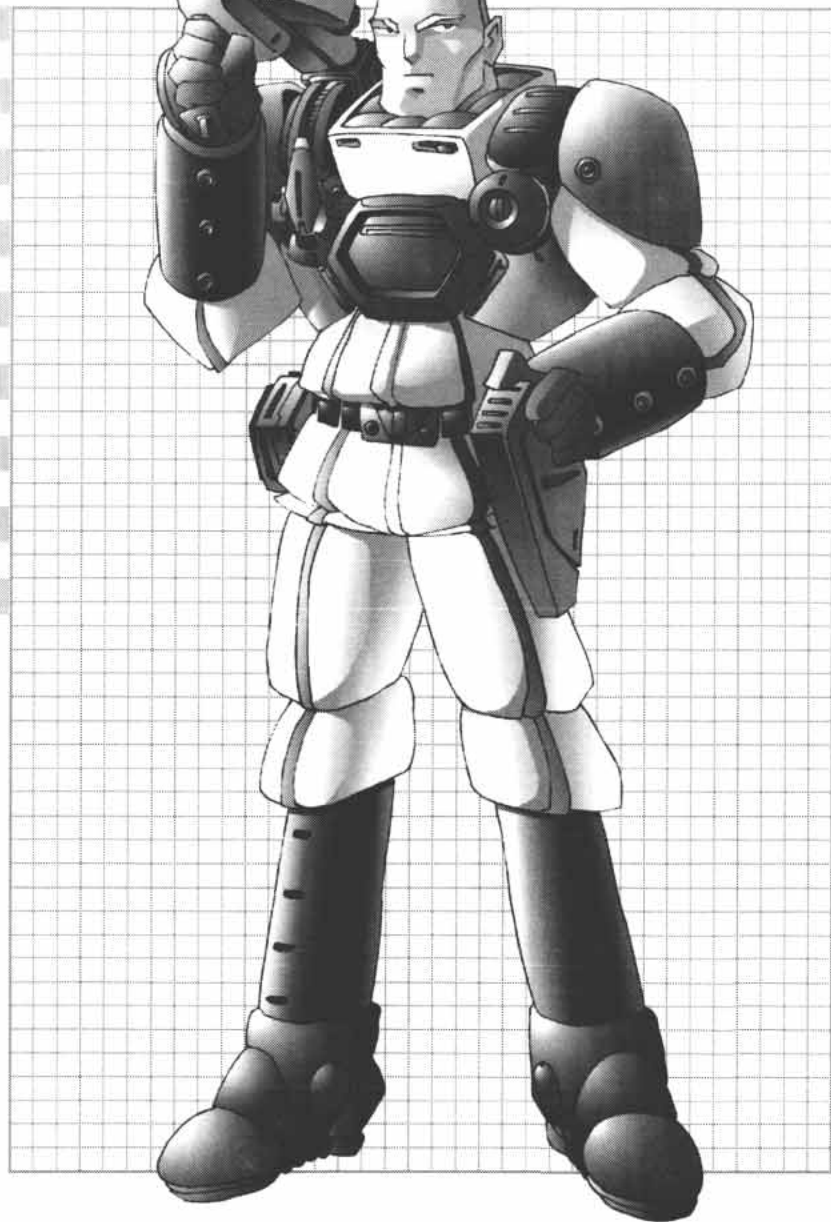
▣ Similar Archetypes

Communication Specialist, Communications Operator, Sensor Operator, Electronic Warfare Specialist





RULES AND GAME PLAY



▼ 6.2.3 Exo Marine

In order to qualify for exo-suit operations, a marine must first pass an advanced operations course. This course teaches all aspects of exo-suit operation, and gives a limited exposure to larger linear frames. Exo-trained marines are also called on to provide the bulk of the regular maintenance for their suit. Suits are assigned on a one-to-one basis, allowing customization and limited amounts of decoration.

▣ Attributes

AGI	+1	APP	0	BLD	+1	CRE	0
FIT	+1	INF	0	KNO	0	PER	+1
PSY	0	WIL	0	STR	+1	HEA	0
STA	30	UD	6	AD	6		

▣ Skills

Athletics	1	Exo Pilot	2	Notice	1
Combat Sense	2	Gunnery: Exo	2	Tactics	1
Communications	1	Hand-to-Hand	1	Survival	1
Dodge	2	Heavy Weapons	1	Small Arms	2
Electronics	1	Mechanics	1	Zero-G Combat	2
Electronic War.	1	Melee	1	Zero-G Mvmt.	2

▣ Equipment

Exo-suit, flight suit, Hercules armored space suit, anti-armor gun or 50 mm rocket launcher, gauss rifle or shotgun, gyro pistol

▣ Similar Archetypes

Regular marine, ESWAT pilot, Martian Exo-Pilot

▼ 6.2.4 Naval Architect

Tied in with the operation of a naval space fleet are those who actually design the vessels. Competition for designs is very fierce. A single contract brings in tens of billions of credits for design, production, parts and upgrades. Active and retired military personnel are sometimes called to work as consultants with civilian trained architects: it often takes good presentation skills to win a contract from the JAF high command.

▣ Attributes

AGI	0	APP	+1	BLD	0	CRE	+1
FIT	0	INF	+1	KNO	+2	PER	0
PSY	0	WIL	0	STR	0	HEA	0
STA	25	UD	3	AD	3		

▣ Skills

Computer	2	Etiquette	1	Physic. Sciences	1
Electric. Dsign	2	Mechanics	2	Zero-G Mvmt.	1
Electronics	2	Mech. Design	2		

▣ Equipment

ILLegra-70 computer, spare mem cards, various computer modules, desktop computer (PP2 or higher), printer, projection device, fine suit.

▣ Similar Archetypes

Engineer, Computer Architect, Weapon Designer, Exo Designer





RULES AND GAME PLAY



► 6.3 CAREER PATHS

Service in the Jovian Armed Forces carries crews far across the solar system. One month may be spent testing a newly built ship, and the next on convoy duty to the Trojan states. There, the crew member may be put in charge of a small department on a station. Afterwards, they could come back in a senior position on another spaceship, only to be given temporary command of a captured smuggling vessel.

The breadth of possible service options in the JAF is further compounded by health limitations. Every member of the JAF takes regular physical exams during voyages. These track concerns such as bone density, muscle strength and blood chemicals. With so much time spent in zero gravity, eventually every crew member needs to be rotated to a "gravity post." Gravity posts consist of postings to places where standard gravity, real or artificial, is available on a continual basis, such as a station or colony cylinder.

Unlike other naval forces such as CEGA, the JAF maintains many spun gravity vessels. This improves crew quality by reducing the amount of necessary crew rotation. It is estimated that CEGA requires twice again as many personnel per ship board position.

In theory, the JAF has twice the manpower needed to operate her vessels. The extra staff form base personnel, local security, harbor pilots, dock staff and trainers. The JAF offsets some of this cost by running courses for the public on various topics, most relating to space. Such courses include first aid, piloting, zero gravity movement and electronics. Companies look favorably on employees who have earned JAF public certificates.

High scoring students receive personal visits from recruiting officers. This helps to maintain the manpower of the JAF. Conversely, private companies continually lure skilled naval personnel away to work for them. This trading between the military and public sectors is a major factor in the JAF's high interest in increasing the general education level of Jovian citizens.

In some cases, personnel are rotated off-ship when there is a lack of similar work or transport to a suitable location. Under these circumstances, crew members may be placed on 'shore pay'. Their accommodations and regular meals will be still be paid for by the JAF, while their 'lucrative' pay is reduced to one half. They are free, however, to obtain public sector work. If a crew member joins a JAF approved course, their pay will be increased up to their full pay proportional to the course's instruction and suggested at home study time. Similarly, if sufficient interest is present, crew can run, or assist in running, one of these courses.

The JAF is required to give one week's notice for the switch back to active duty. Since they can count on this notice, many personnel take the opportunity to explore the local sites. Failure to report before the one week is completed is the equivalent of being away without leave (AWOL).

A competent clerical staff maintains master records of each person in the JAF. They track crew involvement at all JAF posts, monitor crew medical test results and attempt to help employees manage their careers. Career management ranges from advising ship officers on suitable alternative assignments for various people, improving crewmembers' leadership and group work abilities, monitoring their likely discipline problems and communicating with personnel about future openings. This staff will also attempt to connect transferring crew with local companies while on "shore pay" and upon completion of military service.

The JAF personnel department has prepared a list of sample career profiles. These show a sample history for several careers. Each includes a chronological event arranged to give examples of various career paths. It may also be used to determine methods of achieving stepping stones along a career, such as serving as a navigator before becoming a captain.

▼ 6.3.1 Captain

We are, in this case, referring to the commanding officer onboard a full sized space ship as the captain. On smaller ships, the commander will be of an appropriate rank. Efficiency while directing a smaller vessel will help command-track officers to achieve command of a larger ship. As a general rule, a Warrant Officer commands ships with a staff of ten or less. Vessels with crews of ten to twenty are commanded by a Chief Warrant Officer. Lieutenants command ships in the twenty to thirty men range. Captains command all larger vessels. On certain ships, such as flagships, the force commander may also be on board but operations of his specific ship are still coordinated by the captain.

◇ Aptitudes

In order to direct the efforts of a ship, a captain must have at least a competent understanding of all aspects of the ship. He does not necessarily need to be a specialist in each area, as he has a crew to perform the actual duties. As a captain, his ability to lead, relate to the crew and ensure the crew's efficiency is what matters. Abilities in such areas as gunnery, tactics, exo operations or repair work will direct his career to certain types of vessels. For example, a candidate skilled in energy weapons is likely to be given command of an Alexander-class destroyer or Athena-class destroyer.

◇ Primary Duties

A captain is responsible for the ship's conduct and efficiency. Any and all issues relating to the ship's operation are brought to him for answers. Good efficiency can only come by properly delegating to the staff assigned to him. Flexibility in decision making will vary depending on the ship's assignment. An escort vessel is tied to the operational schedule of the ship(s) it protects. Carriers must conduct themselves so that the exo armors may be properly utilized. Ships on deep space duty offer both the greatest freedom for decision making and the greatest responsibility.

□ Sample Career Chronology

Year 1:	Selected for officer career. Completion of basic training.
Year 2:	Completion of OTS. Promoted to Warrant Officer. Assigned to supervise dock-to-ship resupply.
Year 3:	Completed Damage Control Advanced. Placed in command of dock yard repair team or assigned to a tender.
Year 5:	Completed Navigator School. Five month tour on a JAF Ebiiru-class cargo as navigator.
Year 6:	Transferred to a remote station staff as Executive Officer. Promoted to Chief Warrant officer.
Year 8:	Placed on shore pay. Registered into and completed ship piloting courses. Eight month tour on a destroyer as navigator.
Year 9:	Graduated from Gunnery School. Returned to previous vessel as gunnery officer.
Year 10:	Served as an aide to a Commander for four months. Six month tour as a carrier deck officer.
Year 11:	Completed advanced courses on ship weapons. Retained as an instructor. Promoted to Lieutenant.
Year 12:	Seven month tour on Alexander-class destroyer as gunnery officer. Ran gunnery courses.
Year 13:	Served as Executive Officer of an Alexander.
Year 14:	Completed advanced courses on tactics. Commanded harbor patrol ships and vessels.
Year 15:	Served as chief gunnery officer on a colony.
Year 16:	Promoted to Captain. Given command of an Alexander-class destroyer.





RULES AND GAME PLAY



▼ 6.3.2 Marine

Marines serve the traditional purposes of ship-transported infantry: security, boarding actions and assault. In the case of the JAF, the term marine is synonymous with those trained in the use of exo-suits. Although fully capable of operating in and out of exo-suits, the JAF supplies all regular shipboard marines with their own suits. There is a distinct JAF infantry service, which deals with operations inside facilities and cylinders.

◇ Aptitudes

Marines must be capable of rigorous physical activity and exo suit operations. Fortunately, so many of the Jovian population are familiar with linear frames that there is no shortage of suitable candidates. Good to excellent hand-eye coordination and motor reflexes make a candidate suitable for combat duties.

The marines also have dedicated support staff at each major facility. Ship board marines rely on the ship's complement to perform these duties. It is possible to serve with the marines in any number of ways, such as logistics, repair staff and communication specialists at a base or colony cylinder.

◇ Primary Duties

Exo-suit marines become involved in all manner of direct interactions. These range from suit to suit battles, boarding actions against enemy vessels, suit to man actions, man to man actions, security operations, guard duty, supporting custom officials and establishing landing zones for regular infantry.

All marines are trained in the operations of small arms. There are no exceptions to this rule. Marines train in all aspects of exo-suits; from navigation to gunnery to maintenance. For the most part marines have only themselves to maintain their fighting equipment in space. If a suit suffers serious battle damage, engineering or deck staff may be of assistance.

▣ Sample Career Chronology

Year 1:	Completed basic training.
Year 2:	Completed small unit tactics, heavy weapons, basic mechanics/electronics and exo gunnery courses.
Year 3:	Basic exo-suit operation and maintenance. Six month posting at a facility.
Year 4:	Basic navigation. Exo-suit space operations. Promoted to Corporal. Six month tour on a non-combatant vessel.
Year 5:	Advanced combat courses. Assigned to a destroyer for six month tour.
Year 6:	Assisted in running basic training course. Completed advanced rescue procedures. Assigned to a carrier for six months. Promoted to Sergeant.
Year 7:	Transferred to command a squad guarding a remote facility. Five month tour on a Javelin cruiser.
Year 8:	Completed advanced unit tactics. Promoted to Master Sergeant. Commanded marines on board a Forge-class carrier.
Year 9:	Ran exo operation courses. Served six month tour on cylinder harbor patrol.
Year 10:	Ran basic training.
Year 11:	Entered in and completed Officer Training School. Promoted to Warrant officer.
Year 12:	Commanded facility defense force. Six month duty on destroyer assigned to customs inspections.
Year 13:	Transferred to guard captured pirate vessel. Promoted to Chief Warrant Officer. Placed in command of marine force on a ship.

▼ 6.3.3 Naval Architect

Creation, improvement and evaluation of fleet resources is a continuous process. Those adept at understanding the concepts have a special relation to the JAF. The JAF maintains its own architectural staff in addition to the work done by private contractors.

◇ Aptitudes

Excellent analytical Skills are a must. An interest in precise details is necessary to ensure the accuracy of equipment. An architect may choose to specialize in one or more areas: computer design, electronic warfare systems, sensor systems, signal processing, propulsions, power generation, life support, missile weapons, projectile weapons, energy weapons, actuators, console controls or hull dynamics. Anyone of these necessitates involvement with ongoing education programs. A good education foundation prior to enrollment is desirable, but not mandatory. Additional education will be provided for an extension of active service time.

◇ Primary Duties

The function of a naval architect in the JAF is to determine the future needs of the fleet, evaluate current and new designs and help build or operate new equipment. Occasional onboard studies allow opportunities to travel with the fleet. Due to their extensive training, architects have an officer's rank. It is understood that this is in recognition of in-depth technical studies rather than a regular command rank; architects are not expected to command vessels, except for those involved in research studies.

Architects are required to maintain technical competency with current and upcoming technologies. Throughout their service time, they are expected to be enrolled in supplementary educational programs. Correspondence, part-time day, evening or weekend classes form the bulk of this training. Each course's expected study period times will be deducted from their work schedule to allow them time to complete the course.

□ Sample Career Chronology

Year 1:	Completed basic training. Selected for Architect Candidacy School.
Year 2:	Completed primary science courses. Courses where candidates have already proved proficient may be bypassed.
Year 3:	Completed supplementary courses.
Year 4:	Primary training in area(s) of interest. Specialty selected.
Year 5:	Completed specialty training.
Year 6:	Attended reduced Officer Training School. Promoted to Warrant Officer. Assigned as an aid to a flag officer.
Year 7:	Continued service as an aid. Transferred to a space ship to oversee equipment tests.
Year 8:	Transferred to a facility to oversee Equipment Age and Resilience tests. Completed design methodology and proposal courses. Promoted to Chief Warrant Officer.
Year 9:	Assigned to enhancement programs as assistant.
Year 11:	Assigned to vessel construction program.
Year 12:	Promoted to Lieutenant. Assigned to vessel construction program.
Year 13:	Assigned to enhancement programs as designer.
Year 15:	Ran area of interest and specialty training programs.
Year 16:	Ran area of interest and specialty training programs.
Year 17:	Promoted to Captain. Assigned as supervisor.





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▼ 6.3.4 Medic

Medical personnel serve on both facilities and suitably sized spaceships. The role of medic in the JAF is comparable to that of a public sector paramedic. Joining the armed forces may open access to education that may otherwise be unavailable. This is the most common reason for enlistment amid JAF medics, but it is not the only one.

◇ Aptitudes

Clear thinking under hazardous situations is just one necessary aptitude for a medic to possess. Acquiring the necessary medical Skills requires manual dexterity, dedication and good learning abilities. Prior knowledge, such as first aid, is considered when candidates apply for medical school.

◇ Primary Duties

Medics are the JAF emergency medical and trauma personnel. They may deal with battle injuries, accidents and/or situation involving civilians. There may be danger to their person beyond those faced by civilian paramedics, such as having to operate while under enemy fire.

The medics must be capable of performing medical procedures both in and out of gravity. Search and rescue, extraction and triage classification may be called for in large scale incidents, such as when dealing with the effects of ship-to-ship combat.

Regular duties consist of administering the crew's medical examinations. These examinations monitor the health of all JAF personnel, including the medics themselves, so as to avoid detrimental affects from frequent zero gravity exposure. Disease identification and treatment also come under their responsibilities. A Skilled medic is also called upon to conduct immediate dental care. They must also complete regular re-certification courses that ensure the JAF's high standard of medical care.

▣ Sample Career Chronology

Year 1:	Completed basic training. Selected for Medical Training School. (As with other schools, it is possible for other personnel to enter MTS after starting in another career path).
Year 2:	Completed primary science courses. (Courses where they have proved proficient may be bypassed).
Year 3:	Paramedic training.
Year 4:	Assigned to facility as junior member of a paramedic team. Promoted to Sergeant.
Year 5:	Space medic training such as courses in zero gravity, rescue and ship-borne diseases.
Year 6:	Assigned to destroyer as ship's medic. Transferred to a facility as station medic.
Year 7:	Assigned to a Forge-class carrier. Ran first aid courses. Promoted to Warrant Officer.

Past the seventh year of their career, medics may be considered suitable as a JAF's advanced medical practitioners. These provide surgeons, medical rehabilitation, limb and organ regeneration attendants, nursing staff, dentists and other advanced medical attendants. If they complete the advanced course, the medic is immediately promoted to the grade of lieutenant.

▼ 6.3.5 Pilot

Pilots form a vital part of the Jovian Armed Forces. While combat activities receive the most amount of attention during training, there are numerous other tasks to be performed, such as search and rescue, patrol, marine support and repair assistance. Pilots have both the greatest glamour and the greatest responsibilities. Unlike other JAF personnel, they must be capable of extended independent operations, engagement in unsupported combat and spending long periods of time in their cockpits. They also have to be able to work as a team with both their fellow pilots and the deck crews that maintain the exo-armor or fighter.

◇ Aptitudes

Although there are several specific pilot roles, all of them require initiative, excellent motor skills and above average sensory perception. Additional aptitudes may be necessary for those with interest in command, sniper duties, recon duties or electronic warfare. Due to the widespread use of linear control frames in Jovian society, prior experience is common. If an applicant possesses exceptional scores, they will be enrolled even without this experience. Applicants stand a greater chance of approval if they have previous linear frame experience. Alternatively, they may be assigned to the piloting of interceptors.

◇ Primary Duties

As the name implies, a pilot is the operator of a small craft. Almost all of these craft have only a single controller. Therefore the pilot is responsible for all of that craft's activities. This includes navigation, fuel management, gunnery, communications, electronic warfare and tactics in addition to directing the craft's movements. Exo-armors and interceptors are too large for a single person to maintain. Therefore pilots are only called on to assist the deck hands and/or engineering staff in keeping their craft in operable condition. Experienced pilots realize the importance of their crew and strive to establish good relations with them.

▣ Sample Career Chronology

Year 1:	Completed basic training. Selected for Pilot Training School.
Year 2:	Exo-pilot training school. Exo-gunnery school.
Year 3:	Advanced exo operations. Optional specialty courses such as electronic warfare. First posting to a colony cylinder.
Year 4:	Assigned to a Forge-class carrier. Transferred to facility exo-armor force.
Year 5:	Promoted to Warrant Officer. Assigned to Forge-class carrier. Assigned to home defense forces.
Year 6:	Enrolled in additional exo courses. Assigned to cylinder defense force.
Year 7:	Promoted to Lieutenant. Formation leader courses. Section leader of cylinder exo trio.
Year 8:	Assigned to Forge-class carrier. Assisted in running pilot training courses.
Year 9:	Selected for Officer Training School. Entered and completed courses. Promoted to Warrant Officer.





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▼ 6.3.6 Engineer

The JAF engineering staff see that the fleet resources function appropriately. Ships, facilities and satellites are only some of the objects that an engineer works on. Depending on the size of the ship, the engineering staff may be responsible for the whole ship or just the hull and drives. Exo-armors come under the 'deck hand' section of engineering. Deck hands receive specialized training in exo-armors. Thereafter, they are involved with maintaining these units. A successful engineer stands an excellent chance of joining the deck hands. It is also possible to use engineering as a stepping stone into other career areas. Both command and architect careers benefit from first hand engineering experience.

◇ Aptitudes

Engineers require aptitudes in understanding both mechanical and electronic systems. Manual dexterity and intelligence are important assets. As usual, prior experience is favorable, but not a necessity.

◇ Primary Duties

In general, engineers are capable of working on every item in JAF service. Most ships and facilities delegate certain responsibilities into other positions. For instance, a comm operator is also capable of maintaining the ship's communication gear. One common specialty is that of a bosun. A bosun is the member of the engineering staff specifically assigned to look after the hull, life support and secondary systems. This allows the remaining engineering personnel to focus on the ship's propulsion systems.

In addition to regular maintenance, an engineer's duties include testing, building and replacing ship components. These may be small sub systems, or entire drive sections. Their duties may include damage control duties as well. In addition to working on JAF equipment, certain situations may call for their expertise to be applied to unfamiliar systems.

▣ Sample Career Chronology

Year 1:	Completed basic training. Selected for Engineer Training School.
Year 2:	Completed Engineer Training School.
Year 3:	Assigned to tender as a bosun. Assigned to a facility as a bosun.
Year 4:	Completed propulsion system courses. Promoted to Sergeant. Assigned to carrier as engineer.
Year 5:	On shore pay. Completed courses on power systems. Assigned to a destroyer as engineer.
Year 6:	Transferred to a facility as engineer. Assigned to an Alexander-class destroyer as a generator specialist.
Year 7:	Promoted to Warrant Officer. Assigned to oversee facility generator staff.

▼ 6.3.7 Gunner

Shipboard weaponry and defensive systems are manned by gunners, crewmembers that have been trained to direct the fire control programs and maintain the ship's armament in peak working condition. Gunnery personnel are usually trained in one of the following specialties: point defense systems, missile systems, projectile weapons or energy weapons, but cross-training is highly encouraged.

◇ Aptitudes

A quick reaction time and excellent sensory perception outweigh all other desired requirements. Mechanical and electronic aptitudes also prove beneficial for the candidate, but are not mandatory. Since it is unlikely that applicants would have previous experience with ship-class weapon systems, most gunnery candidates are considered on an equal footing.

◇ Primary Duties

Gunners are assigned to one or more of the ship's weapon systems. Depending on the vessel class, they may have one weapon entirely to themselves, or be part of a gun team. Gunners are normally assigned to ships in groups of three to accommodate the watch system.

Although they can look to the engineering staff for assistance in repairing damaged weapons, gunners are expected to conduct the regular daily maintenance on their own. Because of this "hands-on" position, gunnery personnel tend to develop a high sense of pride in their guns and are generally loathe to allow others to work on them.

▣ Sample Career Chronology

Year 1:	Graduated from basic training. Selected for Gunnery Training School.
Year 2:	Completed Basic gunnery and maintenance.
Year 3:	Assigned to a facility as point defense gunnery. Took additional courses on missile weapons.
Year 4:	Assigned to a Tender for missile gunnery. Promoted to Corporal.
Year 5:	Completed courses on energy weapons while on shore pay.
Year 6:	Assigned to an Alexander-class destroyer as radiator specialist.
Year 7:	Transferred to facility as laser gunner. Promoted to Sergeant. Returned to previous vessel as a laser gunner.
Year 8:	Ran gunnery courses. Returned to previous vessel as a laser gunner.
Year 9:	Assigned to an Athena-class warship as a laser gunner. Completed projectile weaponry courses.
Year 10:	Selected for and completed Officer Training School. Promoted to Warrant Officer.
Year 11:	Assigned to Alexander-class destroyer to head laser gunnery staff.
Year 12:	Assigned to Alexander-class destroyer as Chief Gunnery Officer. Served as gunnery section head on a colony cylinder. Promoted to Chief Warrant Officer.





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► 6.4 ONBOARD EQUIPMENT

Every ship carries means for space survival. The items listed below are beyond the usual tools, like a hammer or wrench, that were listed in the main rulebook. Each device is useful and practical when used on its own; when used in conjunction with all the other space survival gear, they create the spacer's way of life. The following items are found specifically aboard ships and space craft of the Jovian fleet, but they are fairly representative of the types of tools and survival equipment found aboard all warships.

General survival and safety devices, such as an emergency space suit or cans of dual-purpose foam, are normally found in clearly identified lockers throughout the vessels. Their small size and low mass allow them to be carried in great quantities, and there will normally be enough to accommodate twice the number of crewmen aboard.

Work devices, such as mobile computer terminals or M-links, are issued to crew as they are assigned to the vessel. In particular, M-links are to be worn at all times when on duty. These are not readily available on the marketplace, though functionally similar equivalents do exist.

Weapons are restricted to marines and authorized personnel during standard cruise operations. The rest will be locked up in the ship's armory, where they can be released only on the order of the captain or his executive officer. During red alert situations, sidearms (generally gyrocs or laser pistols) will be issued to section leaders for protection against enemy boarding action.

Prices are provided as a comparative measure only; obviously, items are supplied free of charge by the fleet's supply division, and need not be paid for by crewmembers. If one has the proper contacts, the exact same items can be bought. If need be, all items should be considered to be of very high quality (Threshold of 2 if using the suggested quality system in Chapter 5, page 90 of the JC Rulebook).

▼ 6.4.1 PN-9K Emergency Space Suit

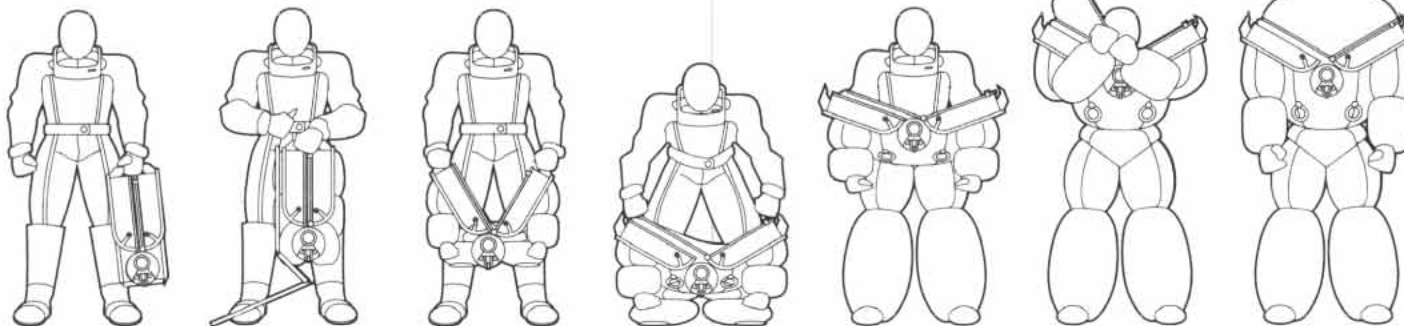
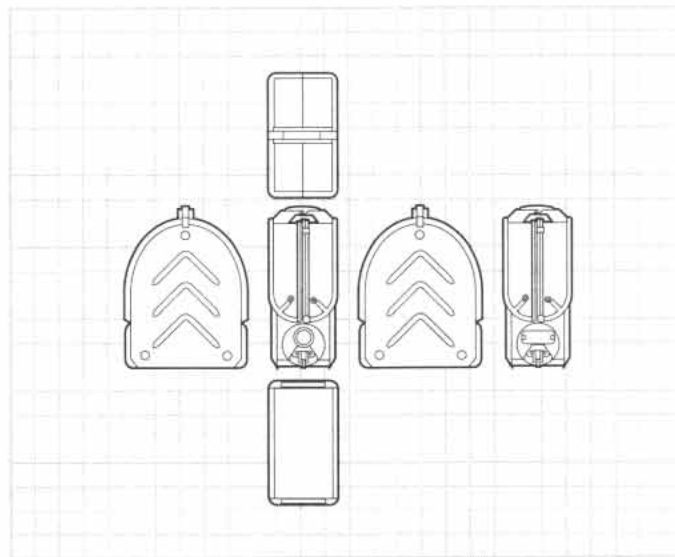
Emergency space suits come packed down into a small polymer suitcase which is part of the suit itself. Interwoven, tear-resistant polymer threads form a tough outer layer. A second polymer layer lines the interior and forms the actual pressure vessel. The helmet is a bag with the forward half made of clear plastic. Special bladders and bellows allow the major joints to bend when the suit is inflated, though mobility is limited.

A pressurized cylinder contains enough air for 30 minutes for an average adult. The suit's internal temperature is regulated by bleeding off used atmosphere. Both systems have been designed with only average activity in mind. In order to fit as many different body types as possible, the suit is simply a central body bag with tubes for the limbs. The arms end in mittens to avoid problems with hand sizes. Velcro strips are attached to what would be the heel of the leg tubes. An emergency patch, a can of dual spray and a tether line complete the package.

This design allows the shortest possible suit-up time. Due to the limitations of the suit, military and ship crew prefer to use conventional suits. Emergency suits can be found in pull out drawers in beds, escape pods, elevators, tables and along hallways.

Mass:	1.5 kg	Price:	1500 Cr
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The number of 6-second combat rounds to get into a survival suit equals 5 minus the result of a Survival: Space Skill test. A minimum of one round is always required. A Fumble wastes an additional 1d6 turns. Due to the rough articulations, any physical action is at -2 while wearing the suit.





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▼ 6.4.2 Wayland Industries Dual Spray

Shrapnel in space creates two threats to life. The first is the loss of suit atmosphere, the other comes from continual bleeding. A combination of polymer bonding agents and synthe-flesh provides immediate protection from both.

The polymer agents have been designed to make secure links with plastic. Conversely, the synthe-flesh bonds with most skin and flesh very well, but not with the plastics which make up the outer parts of a spacesuit.

Sprayed directly into a puncture wound, the spray quickly plugs up to a fist sized hole. Bleeding will stop or be dramatically reduced. The flexibility of the spray patch is limited, so a proper patch must be quickly applied.

Mass:	0.2 kg	Price:	25 Cr
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Dual spray takes one action to apply. It also allows the user to make a first aid roll to stabilize a patient (see *JC Rulebook*, page 117) without removing their spacesuit. It also acts as a temporary space suit patch for the treated puncture. A Threshold 4 -Psyche roll is required for any complicated body movements, such as combat, or the suit will leak again.

▼ 6.4.3 ILLegra-70 Mobile Computer

Almost every member of the Jovian population carries computerized equipment. Datapads, such as the Masuo, include day planners and million-person contact lists. A proper terminal or a mobile computer must be used for more complicated operations. Every crewmember onboard a JAF vessel is issued a mobile computer such as the ILLegra-70.

Mobile computers have dense CPU and support circuits. Skilled users are able to hold the 12 cm x 15 cm x 2 cm ILLegra-70 in one hand while typing with the other. Although it is possible to pro-

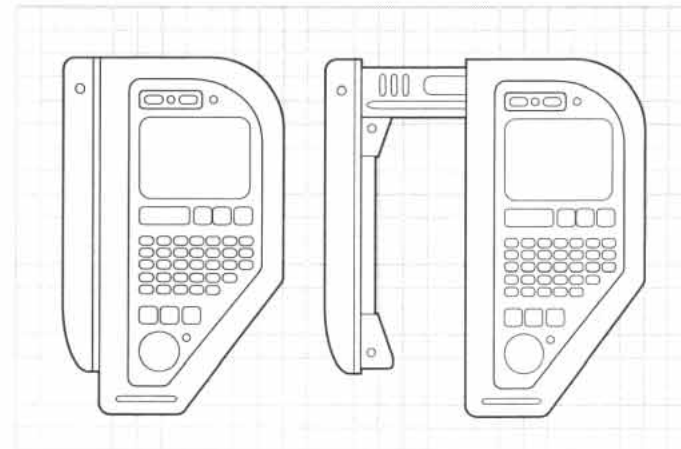
duce a smaller assembly, the keyboard would be too difficult to use efficiently. The top half of the 12 cm height is taken up by the view screen. Datagloves and stylus interfaces may also be used.

Standard accessories include two mem-card interfaces, one of which normally holds the operating programs. There is also a short cable lodged in a side compartment for connecting to standard interfaces. Military models include internal security features which are capable of wiping both mem-cards if the wrong password is entered. Passwords are checked when new programs or datafiles are opened, or when the user wishes to release the physical security lock on a mem-card.

CRE:	0	KNO:	0	PP:	1
Mass:	0.4 kg	Price:	1,500 Cr		

Features: 2 x Mem-Card slots, Keyboard (standard), PAN network protocol interface

Military security features add 250 Cr to the price and require a Threshold 5 Computer Skill test to bypass.



▼ 6.4.4 Salvation-9 Escape Pod

The Salvation-9 is the standard mid-size escape pod carried by the ships of the Jovian navy. It is a compact four-person design that is mounted throughout the ship, ensuring easy access at all times. Though designed with four people in mind, another four could conceivably be squeezed in if need be. The top mounted hatch leads to the main compartment through a small airlock. Emergency egress hatches are located between the seats; once opened, however, they cannot be closed again.

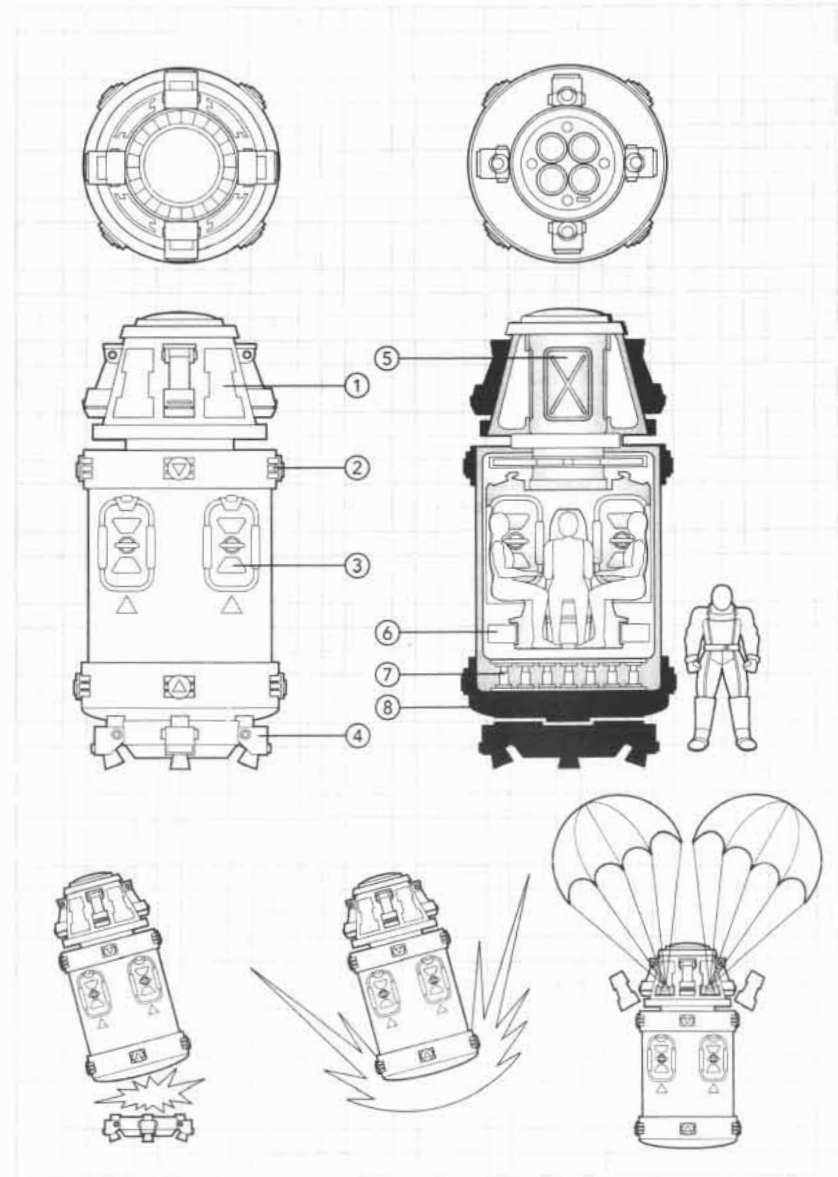
The escape pod is jettisoned by a compressed gas charge. Once away from the ship, it ignites small motors to pull it further away. A second engine cluster can be used for braking and deorbiting maneuvers. The lower section of the vehicle is an ablative heat shield that can be used for aerobreaking or reentry (four parachutes are housed in the upper section of the pod).

Atmospheric scrubbers clean the air carried inside pressurized tanks, giving the pod twenty-four man-days of breathable air. Food bars and a very limited water supply can keep the occupants alive on minimum rations for the same amount of time. Plastic bags with germicide pellets address the issue of waste disposal.

The pod contains four PN-9K Emergency Space Suits (see page 129), three packs of Sinclair glow stickers (JC Rulebook, page 87) and a Sythneskin first aid kit (JC Rulebook, page 83). Signaling devices include a one-way transmitter pulsing every ten minutes (basic Range 10 km) and a conventional radio (Rating -5, basic Range 2 km); both are subject to all normal comm systems rules. For last ditch efforts, up to four radio flares may be ejected, emitting both a bright light and an emergency radio signal.

▼ Legend

1	Parachute Housing Cover	5	Access Tube/Airlock
2	Maneuver Jet Cluster	6	Emergency Supplies
3	Emergency Egress Hatch	7	Cabin Shock Absorbers
4	Maneuver Engines	8	Heat Shield





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▼ 6.4.5 Darox Remote Release Tether

Darox found great success when they added a 'remote release' onto their durable tether lines. Since that time, many others have used the idea. Still, Darox has a significant market lead with little sign of losing ground. Tethers, cables and hooks come in wide range of strengths.

A recent design update has added a button and a small sliding knob. When, and only when, the button is depressed, the knob can be slid towards the wearer. This causes the hook on the other end to open. With a few tugs and twists, the line comes free, to be anchored to a fresh location. Due to the nature of the tether's design, it is not possible to use the remote release if the line is under tension.

▼ 6.4.6 Tool Harness

Looking very much like an infantryman's web belt, a tool harness is worn outside of the space suit and provides buckles, clips and ties as carry aids for personal equipment. Pouches, pockets or boxes may be attached onto the harness; furthermore, tools may be secured to the harness by cords. Most space tools have a small loop, which may be retractable, that can hold the other end of the cord. This greatly reduces the annoyance of having necessary items drifting away during repairs. All tool harnesses are compatible with standard MMU designs.

Since a tool harness is worn as an external garment, it can be taken off separately from the space suit. This allows pre-loaded harnesses to be kept. These are labeled to identify the outfit being carried. All loadouts include at least one pouch for discretionary personal cargo.

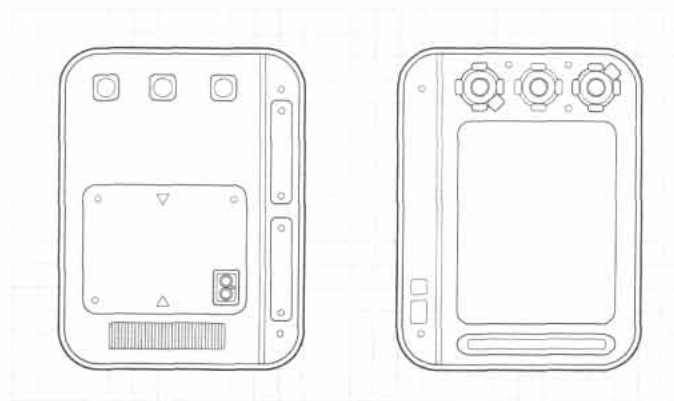
Marine infantry have also adopted the use of the tool harness. It is particularly useful for troops using Hercules-type armored space suits. The presence of weapons on a tool harness quickly distinguish mechanics from marines.

▼ 6.4.7 Ozonetech Environmental Detector

Ozonetech sells their ED-17 both to the JAF and to the public. The tiny device is very useful for those involved with damage control, construction or exploration. Sensors measure atmospheric pressure, temperature, oxygen, carbon dioxide and carbon monoxide levels, small particulates concentration and radiation exposure. A back lit, touch-sensitive plasma screen can show data (in alphanumeric or graphic format) from any of the sensors.

Three summary lights are found along the top. If the green light is on, it signifies that the environment is safe for long term human habitation. A yellow light indicates that a human being can only survive there in the short-term. The red light will light up when any of the sensors detects fatal conditions in the environment. One of these lights will be on whenever the unit is activated. Their results reflect all sensor modes, not just the one currently being examined on the screen.

The ED-17 is useful for determining whether pressurized suits, respirators and/or radiation protection are needed in a location. For game purposes, someone using an Environmental Detector will receive a +1 to all Survival roles involving hazardous conditions and environments.

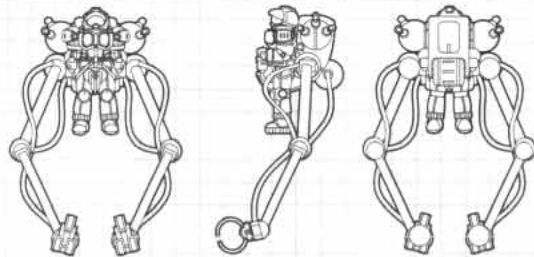


▼ 6.4.8 Bedford Workman's MMU

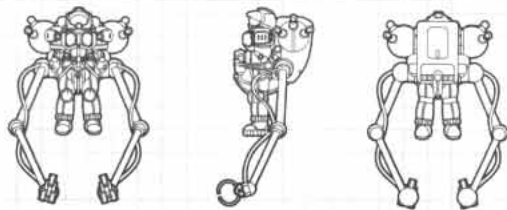
This backpack MMU introduces an intermediary step between a suited worker and a Workbee. The Bedford WMMU can produce a top thrust of 0.4 g (4 BP) with a decent fuel capacity (80 BP). Aside from being smaller than the Workbee, the Bedford can greatly assist in tight space zero-g repairs. This increased fuel capacity assists in towing objects to and from work sites (treat the WMMU and its operator as a Size 2 vehicle for towing purposes).

This ability comes primarily from the presence of two grasper arms (Rating 2), one on each of the WMMU's sides. These have a maximum forward reach of two meters. Instead of using manipulator arms like a Workbee, the operator is expected to do fine manipulations with his own hands. Containers (20 cm x 30 cm x 20 cm), which are useful for holding parts, may be attached to each of the Bedford's lower sides.

▼ Type 203 WMMU



▼ Type 201 WMMU



▼ 6.4.9 Masuo Comm Link

Worn as a combination of ear plug and neck unit, this item is another JAF standard issue. Personnel have come to refer to their constant companions as an M-Link. As the M-Link is both water and vacuum proof, some people have been known to practically never take them off.

Several features are integrated into the device. One of the most useful is a small digital radio with basic encryption protection. This radio sends a locator signal roughly every five minutes to the ship's intercom, allowing the ship to triangulate the wearer's approximate position.

The M-Link can exchange messages with the ship's intercom. Callers can dial the personal ID code of the wearer (or just say their name) and the M-Link will handle the call. An M-Link is, effectively, an extension of the ship's intercom system.

An M-Link may also operate as a conventional watch by pressing a button to hear an audio report of the time. Multiple alarm times may be programmed. Short audio messages may be recorded to play with each alarm, and/or one of four beeping patterns may be added. Wearers find this very useful in keeping themselves on the ship's rotating watch schedule.

The M-Link can be "burned" to send out an emergency pulse. When set to activate, the capacitors will charge up for 30 seconds and then expel all of the remaining power in one blast. The signal's range on the emergency channel is ten times normal.

Mass:	0.1 kg	Price:	100 Cr
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The radio's basic range is 2 km, before modifiers. Communication rating is -4. During an emergency pulse, the range becomes 20 km before modifiers, and the communications rating goes up to 0. It only sends out a short emergency signal, however, and the entire device is out of power afterwards.





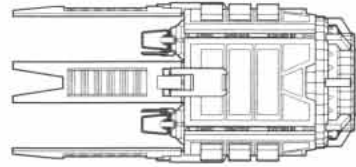
APPENDIX



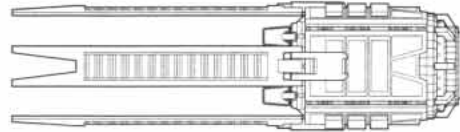
▶ SPACE SHIP MODULES

▼ Drive Sections

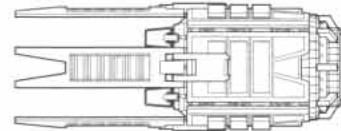
Tender Engine Cluster



Quadruple Military Engine Cluster with Long Fins



Quadruple Military Engine Cluster with Short Fins



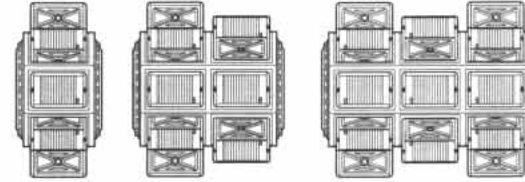
Customizing Space Ships

The above diagrams show all the modules that were used to build the ship classes found in this book. You can photocopy and cut out these sections to create your own space ship design, or just customize an existing hull.

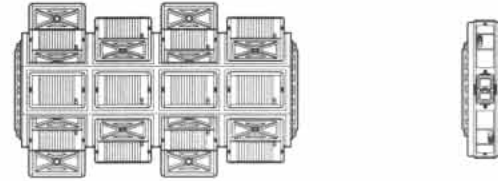
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▼ Cargo Rack/Ops Sections

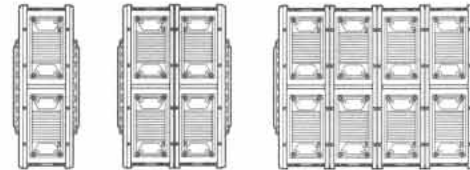
JAF2212 Cargo Rack



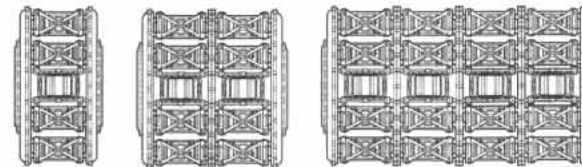
Connector Module



JAF2207 Cargo Rack



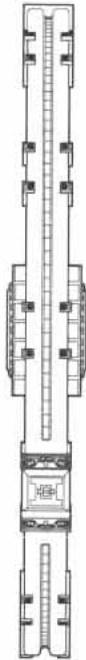
JAF2197 Cargo Rack



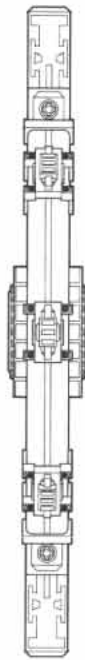
SPACE SHIP MODULES ◀

▼ Habitat Ring Sections

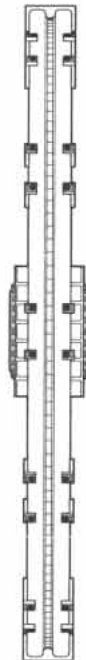
Tender-type



Destroyer-type

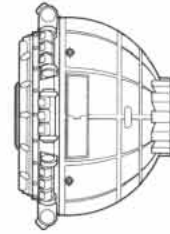


Carrier-type

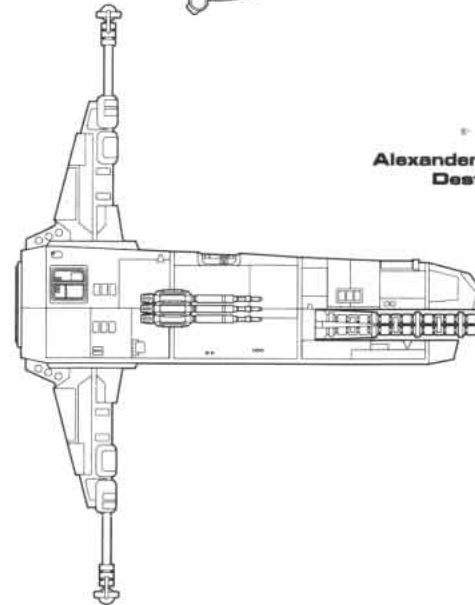


▼ Forward Hull Sections

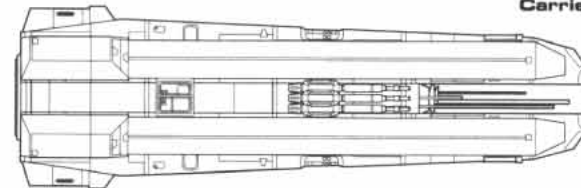
Gagarin-class
Tender



Alexander-class
Destroyer



Forge-class
Carrier





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