



THE HUMBER PROJECT

(The Atlantis Project for the British Isles)



An unofficial supplement to the Morrow Project
By K Leask

Foreward:

This book is an acumulation of information designed to support "The Morrow Project" role playing game. In order to play you will need that game.

Note that following requests I have withdrawn the bulk of the Character Generation system after it was pointed out to me that it was copyrighted.

I hope that it is of interest to those who have contemplated playing elsewhere other than the United States/Canada.

A follow up book, "A guide to the British Isles" will follow, detailing how the country has changed in the 150 years following the disastrous events at the end of the 20th century.

I have no doubt that there are those who will not agree with the way I have put this together or some of the arguments used or weapons selected. I have tried to keep the weapons short, and to what was available in the eighties, with a few exceptions. Other technology is more advanced so take it or leave it as your own campaign dictates

Above all, I have tried to give this a different flavour from the normal background. Player Characters will fit into a predetermined chain of command and know to whom they are answerable. How they will react and who they will now obey will be crucial to good playing with the Humber Project.

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Atlantis Project, Humber Project Why have two?

The Atlantis Project

A likely estimate by military strategists in the event of a nuclear war is that about 200 megatons of nuclear weapons would be detonated over the UK. The effect would be heavy damage over 5% of the UK land mass, moderate damage over 15% and the remainder would suffer light damage. The strike would cause about 20 million initial deaths with about 36 million survivors although many of these would die within days or months. However if a strike came "out of the blue" with no warning or time to make preparations the number of survivors would be halved. It is our belief & policy that an effective home defence organisation to prepare & warn the general public could save millions of lives and would be of invaluable help to survivors during the recovery phase.

Conservative Party Policy Centre. London 1976

The original Morrow Project called for a two-stage plan of implementation. The primary objective of the Morrow Project was to help restore Continental North America in the wake of, what was presumed to be a nuclear war? There has been serious debate as to what assistance this would actually entail; though certainly there has never been any indication of the Morrow Project assuming a political stance.

However, the Morrow Project was not to be limited to North America alone. Wider in scope, if not perhaps in materiel, the Atlantis Project was also conceived at the same time. From what little information was known, the Atlantis Project was to extend worldwide and provide much the same functions as the Morrow Project. It was postulated that they would be activated after North America had recovered and was able to assist rebuilding abroad – one source likened it to a Marshall Plan on a shoestring.

In reality it would have fostered re-growth and trade partners – friendly ones – as well as providing a world wide intelligence service with secure communications.

There is some doubt as to whether a full Atlantis Project was ever truly initialised. Later personnel at Prime Base would find the Atlantis Project Liaison section unequipped – a rather good indication that it may never have been. This section explains the Atlantis Project from the British perspective – faulty as it may well have been.

In the 1970's survey personnel from Morrow Industries commenced siting plans for placement in the British Isles. Despite good cover stories, none of the building work could be kept secret. It was a time of worry for Britain. Despite the USA being a good ally, certain elements in the US were actively supporting the IRA and other nationalist movements. Plaid Cymry in Wales were burning houses belonging to the English and the Scottish Nationalist Party were advocating an armed struggle. Onto this stage came Morrow Industries and the Atlantis Project. Despite seeming otherwise, it is truly rare to be in a truly isolated part of the British Isles and the siting policy of the Project meant that they couldn't put a team there – in the event of war they'd never be able to get to their target areas.

Investigations of sites, and above all the equipping of those sites, spelt the end for the Atlantis Project. Caches of arms and equipment seemed like nothing other than either planting

terrorist cells or setting up a network of paramilitary agents, contrary to various UKUSA intelligence and military agreements. Above all was the interrogation of some of the chosen sleepers. The idea of recovery being directed from abroad, with no input from the government of the time was intolerable.

However, the warning message given by the discovery was not ignored. Delicate contacts revealed that the US government was, so far, unaware of the Morrow Project. Tentative, and very low key, contact was established with Morrow himself who presided at a presentation in front of various top officials of the time. But no politicians. These officials were not the top, politically appointed, servants of the crown, but rather the deputies and career officers. Morrow sold them on the idea of preparedness and the forthcoming holocaust.

British technicians would learn how to maintain and operate MI equipment and would oversee the emplacement of facilities themselves, preserving British security interests. Indeed British scientists helped with several technological breakthroughs involved in the project.

What Morrow did not tell them was that there were still some facilities he did not believe the British had uncovered. Whether these were maintained or taken over remains a mystery to this day.

Overseas

Other Atlantis Project operations were definitely started and verified by British Intelligence. Similar operations were stopped and taken over in countries considered, at the time, to be British sphere of interests. Notable examples included all commonwealth countries but especially Australia and New Zealand. Due to a perceived entrenchment in Canada, it was much harder for British Intelligence to neutralise the Morrow Project. In time, they, alongside the Canadian Government, established a smaller version, designed to seek out and investigate the Morrow Project. Unfortunately, the British did not have full knowledge of the MP and so their facilities were designed primarily to activate on receipt of Project Atlantis codes if not awakened by central command later. In essence the British had established a commonwealth wide operation. It was a pity that there would be no one to take advantage of it.

The Humber Project

A new organisation was therefore born. It would be a counter to a perceived anti-war movement that would cripple Britain in time of war.

Britain's civil defence had been scrapped by this time. Even later requirements to provide civil defence was vastly inadequate to the purpose. A typical example was emergency feeding equipment allocated to Essex county council. It comprised 600 Soya Boilers, 260 field kitchens, 950 milk churns, 36500 blue plastic feeding bowls & 38300 plastic spoons for a population in excess of 1 ½ million and on the fringes of London.

The local government central nuclear civil defence HQ for Sheffield in 1984 was a broom cupboard

Defence plans were full of what had to be done, but with no infrastructure in place, no idea of how to do what had to be done and with a voluntary network of local authority officers only to provide the necessary cover in the event of war. It was intolerable. Civil defence had to be brought up to speed and the Government began introducing measures to do this.

The Humber Project formed a key component of this. It would be the backup to the Civil Defence of the entire

country. Unlike existing and future plans though, it would be under central government control (avoiding conflicts at local level such as in the Nuclear Free Zones)

Setting up a separate department of an existing ministry allowed the easy channeling of funds and equipment during the early period of the projects existence.

This department swapped ministries several times before coming to rest under the auspices of the Department of the Environment, travel and the Regions (DETR). The British named it the Humber Project. What few leaks came out about spending seemed to be resolved under a cover for economic regrowth, building motorways, the Humber Bridge (there are two bolt holes nearby), revitalising port facilities and so forth. Wherever the project went, it built the infrastructure it deemed necessary for future survival. Large depots were built near cities. Smaller ones and boltholes were covered under public works being carried out all through the late seventies and eighties.

Where local breaches of security occurred (not many), the Project was hidden under the auspices of such as RCHQ's. Where possible, the Project utilised older bunker's, modifying them where required, and using the top levels abandoned for intrepid spelunkers to uncover and find deserted.

Recruitment for the project was carefully monitored. It usually consisted of personnel who had a deep-seated sense of loyalty to the Crown and government. This was deemed to be essential to continuity of governmental functions after a major disaster. The Humber Project was therefore to be at least semi-political. Because of this, it was supposed to be operated from a central command centre.

The HP was housed in an office block in the town of Selby, in the Vale of York. From here, Project commanders could receive instructions from any of the emergency bunkers throughout the UK and activate teams as necessary. It gave it ready access to facilities for rebuilding outside of major strike zones. Local Mines, ports and agriculture would provide a good base for restructuring the UK's recovery.

The Project would be split into a number of regions. Indeed, during the Home Defence reorganisation of the early eighties, the civil defence planners used the same divisions, so that it would be easier to co-ordinate between central planning and the Project. (see map for areas).

Each Zone would have a command section for local administration. Resources would be allocated to the Zone as a whole and directed by local command. In fact, the zone with the least amount of resources allocated to it was Zone 5 – Greater London. The perceived threat was so great that few teams would be placed here – their ability to function effectively would be too diminished in the event of any major catastrophe hitting London.

Zone 12 was kept carefully quiet – it was Eire. There was no compromise in defence at this level. Eire was in whether it wanted to be or not. Strangely the Irish agreed, despite the continuing troubles in Northern Ireland (Eire would later reap the benefits of both having the project and keeping a local command in place).

Planned Deployment

There was no doubt that the British deployment of their project was to counter the effects of either war or major catastrophe.

With direct control from central government the project was to act as disaster relief, provide materials to that end and above

all, to provide a pool of skilled and experienced personnel to replace losses and provide training.

To this end the Humber Project would have both an active and inactive component.

The first would comprise headquarters staff and a small pool of personnel who could operate the initial phase of recovery.

In event of Nuclear War

Active teams would begin activation of the refugee depots. These would help stem the flow of refugees by providing shelter, water and power and help to re-establish medical facilities. Their initial assessments, together with input from the Home Defence system in place at the time would allow the activation of sleeper teams to deal with other tasks. These could range from policing (LIONS) to decontamination.

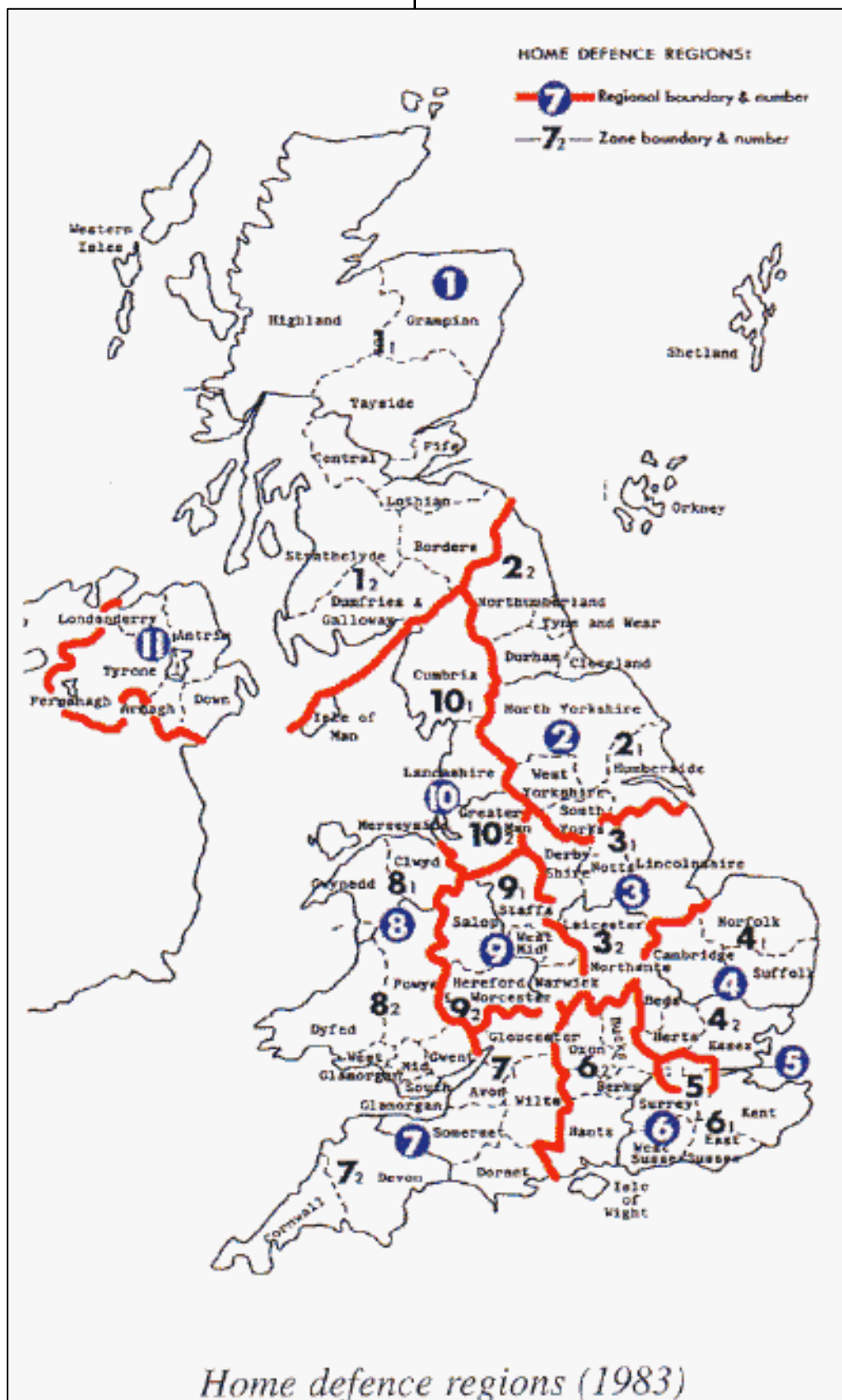
Other sleeper teams would remain asleep. These would be the base teams. Education and redevelopment were long term projects and these teams would be needed in the future – not squandered in the immediate aftermath where law and order would be up for grabs.

The entire project relied on a 24 hour manned system and so the Humber Project continued long after other Home and civil Defence measures were downgraded.

Money to the project was cut back as well. Secondary headquarters would no longer be manned – just the central post at Selby. The only other would be Zone 12's in Eire.

Unlike the American Project, it seems that provision was made for some family participation. Full details were never released but a number of families did go 'missing' in house fires, boating accidents to name but a few at the time.





It should always be remember that British Teams expected to be under direct control by the government.

The British have accepted as reality that the Project can make a major impact in recovery and

What went wrong?

The War began on 01st January 2000. Both the E U and the US had poured millions of pounds into Russia following the break up of the Soviet Union to avoid the millenium bug affecting their systems. Unfortunately not all the bugs had been worked out of the US system. The UK was taken totally by surprise. With nearly everyone at home for the winter break and the millenium celebrations, most of the government was decapitated in the initial strikes.

During the decade from 1991, civil defence had been relegated and most of the bunkers and facilities established had been closed down and sold off. Only a handful remained. One of these was the Humber Project who, for the first week following the strike, began operations and activated several teams to recover key public officials, including the remaining member of the Royal Family – Prince Harry.

Unfortunately, two strikes against the Humber estuary formed a massive wall of earth that blocked that river's outlet to the sea. With nowhere to go, massive flooding commenced. Millions fled from the North – some going south, others towards the coast. These floods overwhelmed Selby and the projects command were forced to evacuate, moving North towards a regional supply base already established at Carlisle.



Within days massive coastal flooding, torrential rain, hurricane winds and tsunami ravaged the British Isles. The command staff made it to a secondary bunker complex in the Pennines where they came into conflict with a paramilitary organisation fronted by local MP's. In a short, brutal, firefight, the project lost almost all of its key command personnel and, above all, the key commands needed to activate the project.

The ensuing civil war fought between the King and Parliament denied any chance of bringing the project back on line. Now only the emergency protocols were available.

Primary Awakening Protocols:

- Priority Command Sequence activation
- Regional sub-command activation
- Group sub-command activation
- Cyro Tube failure
- Fuel depletion activation

Security Awakening Protocols:

- Facility Proximity activation
- Facility Breach activation
- Incorrect remote activation
- Unstable Facility activation

Tertiary Awakening Protocols:

- Receipt of Morrow Project Activation protocol

- Receipt of Project Atlantis Activation protocol
- Receipt of US Special forces Activation protocol
- Receipt of Canadian Special forces Activation protocol

In some cases, several facilities were awakened under either Priority or Security protocols but the remaining facilities slumbered on. Some 150 years after the war, a US satellite began sending random sequences due to an error. As individual facilities detected these, Tertiary protocols came into force.

Training

Training of the UK project members is very similar to that used in the US. There are some differences.

The first is an intensive course in religious practices and culture designed to cover every culture encountered in the Islands from Islam to witchcraft & paganism.

The second is that all members attend a disaster relief course for a minimum of six months. In that course they accompany other teams helping with disasters in other countries from floods to earthquakes and the necessary rebuilding required afterwards. It is designed to give them the necessary experience of walking cold into areas and coping from the ground up with limited resources.

Teaching of historical abilities involved a three month course of basics including areas as diverse as farrier skills, basic agriculture, construction, hygiene, sewing, skinning, hunting, soap making and various other skills such as basket making that would help them fit in and survive. (This was taught at degree level - 40%).

It still comes as a surprise to me that even senior members of the US project did not realise how we were going to update members training when we updated their equipment. Quite simply we utilise technology not available when the original teams were 'planted'. The Cyro tubes are opened and an encephalographic headset is placed on each team member. These sets feed information and skills directly to the frozen members. In this way we can update each member on new equipment, advances in their specialty fields and even information on other subjects.

On test subjects it has been discovered that this process works well but in areas outside of a persons expertise, still only imparts a basic level of knowledge until that person has to use that skill. At that point association takes over and advances in these skills can be rapid if the subject actively tries to use the skill in question.

We have also been able to expand the skill packages in this way to include medical practices, but we have deliberately held this to lower levels of expertise due to the need for more in-depth training. However, non-medical staff have been given expanded training in identifying diseases, poisons & toxins.

Team Types

Project Arm Badge:



LION - Law and Intelligence OperationNs – equivalent to the MP MARS teams, LIONS were the designated liaison section between the Humber Project and civilian and military units, providing both armed support and intelligence operations. They are more police than military.

CATS - Covert Activity Tracking Section. CATS are a subsection of LION and are the scouts of the Humber Project, trained in counter-insurgency, and infiltration techniques. Loners, they are usually assigned as required.

DART - Disaster, Assessment & Rescue Team. These units are the recon teams of the Humber Project, designed to go in and assess local situations from evacuation, flood relief and, afterwards, securing vital industries and equipment.

BEAST - Base, Education, Assistance & Science Team. The administrative arm of the Project, these units man the supply bases used by the Project as well as providing long term assistance in other areas such as restoring educational establishments.

RISC - Recovery, Investigation and Science Cadre. A follow up team to the DARTs, these teams include such as forensic teams for law enforcement to heavy recovery vehicles, viral research units, mass decontamination projects. They operate out of the fixed depots where they can call on the necessary equipment to fulfill their particular task. Very multi skilled, they usually act as a cadre, building a task force of other units around them.

SATT – Specialist Advanced Technical Teams – unlike the multispecialists of the RISCs or BEASTS, SATTs were established to carry out a number of pre-determined projects, regardless of other considerations. They are the only teams who had specific destinations and order prior to sleeping.

Rules of Engagement:

Project members were emplaced to act as a connecting body able to provide emergency services when other public bodies already had their hands full. To this end, their chain of command was made clear. Their orders had to come from their Group, County, Region or Head office. If not under other orders, they could be commandeered by any other Group or Region requiring their assistance.

All project teams are required to co-ordinate with the UK's government. The Project defined this as:
Justice's of the Peace

Chief Constables
Lords Lieutenants
The Government (as defined by the UK Constitution at the date of sleeping)
Privy Council
The Monarchy
Military unit commanders of Regimental or higher status following orders issued by one of the above unless in a state of Martial Law.

It should be noted that Local Councils, Individual Members of Parliament's, Civil Servants & other Law Enforcers were not included in the above list. The project made it clear that help could be rendered but that teams were not to accept commands from them.

Law & Order: Punishment should be a matter of communal opinion. The most serious crime is murder. If faced with a serious case of murder the community leadership should try to contact a higher authority. If this is not possible it is a matter for the entire community to decide. Any extreme action by the leader will be upheld if: "There was no likelihood of contacting a higher authority. The action taken was imperative and the decision was made in consultation with others. The leader acted in the best interests of the community, he acted responsibly and in good faith and that no lesser action would suffice."

Wiltshire Emergency Planning. Guidance for community leaders in the event of a nuclear war 1981

"You should always remember that, no matter what your position within the project, you are responsible for maintaining law and order. You have the legal powers to do this – we have given you the tools to enforce it."

Lecture to the combined Zone Directors by the Director General, MI5, 1979.

Law & Order: Control of violence is vital. You have the right to act under common law. A peacekeeping force is illegal in peacetime. If the police arrive you must place yourself at their disposal. Avoid harsh & ruthless action. When dealing with violence, weapons should be restricted to a strong staff of similar device. Use of firearms is to be avoided.

Wiltshire Emergency Planning. Guidance for community leaders in the event of a nuclear war 1981.

"Because of this illegality, we deemed that Project membership had to be empowered both as a reserve arm of the armed forces and as one of the emergency services. This has already been enacted (by act of Parliament). In this way they'll be able to operate legally no matter what the circumstances. No matter what those damn idiots think in City Hall!"

- interview with Humber director Carl Morris, just prior to retiring.

Numbers Involved

type of team	total people	total teams
DARTS	1600	200
RISCS	80	10
RISCS (base)	1201	12
LIONS	450	51
CATS - Psyops	25	5
Engineering	1745	218
Agriculture	1801	225
Power (Generation)	320	20
Command	120	16
Supply (base)	140	14
Transportation	600	75
Communication	42	-
Medical	150	50
Medical (Base)	250	6
Ambulance	78	12
NBC Decon	49	24
Frozen Watch	1300	N/a
Naval	347	25
Educational	110	22
Other*	5700	N/a

*Note: Others include family members.

The above figures were obtained at 31 December 1989 and showed the totals (though it was not stated whether these were the numbers 'planted' or those due to be 'planted') of Cyro tubes ordered/built and their allocation.

Equipment Notes

When the original projects were set up in the US/Canada, there was a wide variety of disparate arms available to the MP. UK officials wanted to simplify both stores and training. To this end they maintained a very simple list of arms officially issued. (As part of a police style force, forensics mean that you don't want 'unofficial' arms floating around as part of an operation).

This brings the weapons down to a much simpler list. Due to the lack of ready ammunition for military arms in the UK, more ammo would have to be included in caches & vehicles.

Weapons Available	Wt	Normal Load	Ammo Type
HP-35 Automatic Pistol	3 kg	10x13	9mm P
L2A3 Sterling SMG	7.8 kg	12x30	9mm P
L1A1 Battle Rifle	13 kg	12x30	7.62 N
L42 Sniper Rifle	10.5 kg	20x10	7.62 N
L7A2 GPMG	21 kg	6x50	7.62 N
Defender X	16.01kg	8x100	2mm Gauss

Gauss Rifle

Typical Weapon Loads:

1. HP35 w 10 mags 3
L1A1 w 12 mags 13
Grenades (8 various) 3.5
2. H&K CAWs w 12 m 16
HP35 w 5 mags 2
12 gauge loose 30 rnds 2
3. L42 Sniper w 20 mags 10.5
HP35 w 12 mags 3
Plastic Explosive 3
Engng Demonlition kit 4
4. Defender X w 8 mags 12.5
HP35 w 12 mags 3
Grenades (8 various) 3.5

PD Note: The Project was designed for activation within the first two years following war or major disaster. The weapon loads for missiles and other specialist ammunition were stored with this in mind and would have been fully capable of functioning.

However, after 150+ years, these systems are no longer as reliable as they could be, despite the best of storage methods. To reflect this every 1 in 2 missiles will be a dud. This will be discovered only on close examination.

Issue depends on the team composition.

DARTS team of 8 will normally have 2 land rovers, 1 Saracen and 1 motorcycle. Teams designated for inner city areas will have the land rovers replaced by more Saracens or Pigs.

LIONS team of 12 will normally have 1 Saladin, 2 Saracen and 2 Pigs

CATS – these members operate alone or in small teams and usually have a Landrover (unmarked) or a motorcycle.

RISCS – teams of 8 usually equipped with Landrover, Stalwarts or other trucks

Vehicle Allocation

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- ❖ LWB Defender Landrover.
- ❖ HAPC with 30mm cannon (MARS issue vehicle only).
- ❖ Saracen APC
- ❖ Saladin AC
- ❖ Humber One-ton (Pig) equipped with Riot cannon.

New vehicles include

- ❖ BV-206 for rough & swampy terrain
- ❖ Zbur Heavy Hovercraft for Logistic teams (& MARS units)
- ❖ Osprey multi-lift tilt rotor
- ❖ Combat Engineer Tractor

Standard Issue for Humber Project Personnel (sleeper unit)

Normal Wear:

- ❖ Fatigues, resistweave(1 pr)
- ❖ Combat Jacket, reversible (woodland/white) (1)
- ❖ Boots, Combat, Black, w/ armored soles (pr)
- ❖ Trousers, Combat (1) w braces
- ❖ Undershirt, Khaki(1)
- ❖ Underwear, (1 pr)
- ❖ Wool Socks, Grey (1 Pr)
- ❖ Glengarry Forage Cap, Black (1)
- ❖ Sweater, Olive Drab (1)

Webbing, Woodland w/

- 4 x Defender/Rifle Ammunition Pouches
- 2 x Grenade Pouches
- Equipment Belt, Khaki
- Bayonet and Sheath
- Monocular w protective casings
- Radio, personal w protective case
- Ambidextrous Holster, Khaki
- Leather E-Tool Carrier, Khaki, w/ Collapsible Entrenching Tool
- ❖ Plastic Canteen w/ Drinking Cap
- ❖ Protective Mask
- ❖ Individual Decontamination Kit

- ❖ 2 Quart Plastic Canteen and Cover, Olive Drab

Field Pack, Large, with Internal Frame, Woodland (20 kg) with the Following:

- ❖ Boots, Combat, Black, w/ armored soles (1 pr)
- ❖ Undershirt, Khaki(3)
- ❖ Underwear, (3 pr)
- ❖ Wool Socks, Grey (5 Pr)
- ❖ Poncho, Olive Drab
- ❖ Belt, Nylon, Green (red for team leaders)(1)
- ❖ Gloves, Combat, Inner & Outer (2 pr)
- ❖ Shelter Half, Woodland (1)
- ❖ Sleeping Bag, w/ Outer, Inner, Hood & Liner,(1)
- ❖ Bivouac, Sleeping Bag Cover, Woodland
- ❖ Bedroll, folding, insulated
- ❖ Toilet Kit, Basic (1)
- ❖ Sun/ Wind/ Dust Goggles, OD Frame w/ Clear and Smoked Lenses (1)
- ❖ Compass w/ Compass Carrier (1)
- ❖ Protractor (1)
- ❖ Field Message Pad (3) w/ Cover
- ❖ Map Case, (1)
- ❖ Pens, permanent (10)
- ❖ Geiger Tab (1)
- ❖ CBR kit (1)
- ❖ I.D., Humber Project (1)
- ❖ Lighter, electrical, rechargeable (2)
- ❖ Flashlight, Crookneck, (1)
- ❖ Box, Matches, Wind & Rain Proof (3)
- ❖ Rope, 50 m, Nylon, (1)
- ❖ String, 100 m, Cotton, (1)
- ❖ Carabineer, Locking "D", Black (4)
- ❖ Satchel, Personal Effects (1)
- ❖ Cleaning Kit, Weapons, Universal (1)

HUMBER PROJECT CHARACTER CREATION *Kendal Leask*

Forward:

The following items are designed to be used with the present version three rules. You will need to be familiar with those rules before you can use these:

I have attempted to avoid copyright issues here – if there are any please email me on kendalleask1@yahoo.co.uk so I can take those out.

These additions are to produce a slightly different character to those used in the US (rightly so after all)

PSI Abilities:

Depending on the level of your PSI attribute there is a possibility that your character will possess some form of ESP.

See Appendix C to determine if your character does in fact have some ESP powers. Note that the PD may decide not to allow these powers to be used by Player Characters.

Starting skills:

Rifle and Shotgun count as one skill type. Note that this is designed to be used with the familiarity rule.

Bayonet/Knife also count as one skill type.

Drive MPV – this counts as drive-10%.

Equestrian at a skill of 20%. This is the skill of riding, taking care of and harnessing horses only.

Weapon Issue:

No person may take a weapons package for which they do not have a minimum 40% skill level for the main weapon.

Only LIONS will be issued with heavy weapons (other than vehicle mounted).

Team Selection:

Team	<u>Veteran</u>	<u>Combat Experience</u>
	% Chance	% Chance
DART	50%	25%
LIONS/CATS	75%	50%
RISC/SATT	20%	10%

British teams tend to be mixed so up to two personnel in each team may be from another team type.

Languages

Europe and Britain has a very high level of different languages being used in small geographic regions. I have therefore increased the chances of characters being able to speak these – where not originally taken outside the project, they were taught as part of the induction training for the project.

Everybody starts out with their primary language at 60%. Everybody gets a second language at 20% to represent the extra language learned in School *

Roll 1d6:

1-4

- For each BA/BS degree you get one language at 20% or add 20% to an existing language
- For each MA/MS degree you get one language at 30% or add 30% to an existing language
- For each PH.D you get one language at 40% or add 40% to an existing language

5 In addition to above:

- Gain an additional 'Cultural' language at –10% of your primary language. A Cultural language would be Welsh, Gaelic, or English if the main language is i.e. Punjabi.

6 In addition to 5 above:

- add another language (non-cultural) at –20% of your primary language.

* *If your primary language is not English then you must choose English as this language to represent taking the "English as a second language" course in Primary/Middle School.*

A note on "English". Until the last two centuries in the UK, it would take a while for someone from Cornwall to understand someone from Yorkshire or, god forbid, Inverness. To represent the use of dialects in the game, whenever dealing with a dialect language, you should use the familiarity rule with a –10% penalty.

Handedness:

5% of persons who are left-handed may utilise their right hands with a 5% penalty if they have had training in the skill being affected. This represents the fact that a lot of equipment is designed for right-handed people. This is dispensed if the character fulfills the **familiarity** rule.

Familiarity Rule

This rule is designed to show the effect of using equipment that a member is not familiar with. In the game the character with unerring accuracy picks up the enemy soldiers AKM and scores 100%, every time a hit! What baloney! MP is not a superhero game. Such a weapon will have different ranges, balance, stock length – you name it – to the weapon a character is used to. The same goes for equipment such as radios, cars etc.

Therefore the following applies;

Similar in function, but different make – a VW instead of a Ford etc –20%

Same equipment but older or newer in technology -10% per two decades different to a max of –50%

Attempting to use a skill in a different manner – using equestrian to harness horses & plough a field or doing the same with a tractor when you've only driven a car before – 30%

How long does it last?

The penalty lasts until the character is familiar with it – a number of hours equal to the average of their intelligence and wisdom. This may require several different sessions though. In the example above, the person would have to work out how to hitch the plough before they could begin ploughing. Also realise that during the familiarity time, the work done is likely to have been wasted and either ruined or need doing over!

Appendix C

Mindstar – Psionics in the United Kingdom

1. Modified Psionics Table:

A character may have psionic abilities. This was one aspect of the project that was actively encouraged – the motivations for that were not clear at the time.

If your character has a psi score of 15 or above, then roll on the following table to determine if they have psi powers:

PSI	% Chance of PSI Ability
15	5%
16-17	10%
18-19	15%
20	20%

Using Psionics

The characters' PSI score powers all Psionic abilities. Each use of PSI ability must make its % chance of success and costs the user 1-4 PSI points. PSI points can be reclaimed at a rate of 1/hour of sleep. A character cannot replace PSI points while awake. If a character uses all of their PSI points without replenishment they fall into a coma for a number of hours equal to their PSI score and roll on mishap table.

Mishap Table:

If a character misses the target range for their ability one of the following will happen roll 1D100:

01-59	Ability fails to function. No PSI power can be used for 1 hour.
60-98	Opposite Or non-function of effect takes place. Double number of psi-points used. Endurance reduced by 1 for number of days equal to amount of psi points used.
99	Re-roll on PSI Table for new ability. Requires 1-3 Months to determine new ability begins at Level 1.
100	Increase to next higher power level.

2. Roll for the power level first: 1d6/2 (maximum level 3 at start)

3. Psionic Powers are as follows: Roll 1D100

1-10	Healing
11-15	Telekinesis
16-25	Emphatic ability
25-30	Intuitive/Emphatic
31-40	Pyrokinesis
41-55	Diviner
56-60	Precognition
61-65	Clairaudience/Clairvoyance
66-68	Psychometry
69-79	Forecaster
80-83	Telepathy
84-86	Micronkinesis
87	Temporal Viewer
88-90	Photokinesis
91-95	Enhanced physical ability
96-97	Domination/control
98	Suppressant
99	Magnifier
100	Bad luck/Good luck

Descriptions

Healing:

Level 1. Repair, or curing of wounds, disease, etc. 5% control/activation Level 1 healing, slow minor bleeding by 50% and arrest sickness.

Level 2. Healing: Repair, or curing of wounds, disease, etc. 25% control/activation Level 2 healing, slow minor bleeding by 75% and arrest sickness.

Level 3. Healing: Repair, or curing of wounds, disease, etc. 50% control/activation Level 3 healing, slow all bleeding by 75% , arrest sickness, and speed natural healing by 50%.

Level 4. Healing: Repair, or curing of wounds, disease, etc. 75% control/activation Level 4 healing, slow all bleeding by 75% , arrest sickness, and speed natural healing by 50%.

Level 5. Healing: Repair, or curing of wounds, disease, etc. 95% control/activation Level 5 healing, stop all bleeding by arrest and cure sickness, and speed natural healing by 75%.

Telekinesis:

Level 1. Movement of objects through mental command. 10% control/activation Level 1 control of 1-20 grams within 1-20 m.

Level 2. Telekinesis: Movement of objects through mental command. 30% control/activation Level 2 control of 1-100 grams within 1-20 m.

Level 3. Telekinesis: Movement of objects through mental command. 50% control/activation Level 3 control of 50-500 grams within 1-50 m.

Level 4. Telekinesis: Movement of objects through mental command. 75% control/activation Level 4 control of 1-6 kg within 1-100 m.

Level 5. Telekinesis: Movement of objects through mental command. 95% control/activation Level 5 control of 2-24 kg within line of sight.

Empathy

Level 1. Empathy: Read/influence mood and or emotional state. 10% control/activation Level 1 reception only 1 person, within line of sight.

Level 2. Empathy: Read/influence mood and or emotional state. 30% control/activation Level 2 reception only 1-5 persons, within line of sight.

Level 3. Empathy: Read/influence mood and or emotional state. 50% control/activation Level 3 full reception and partial transmission only 3-10 persons, within line of sight.

Level 4. Empathy: Read/influence mood and or emotional state. 75% control/activation Level 4 full reception and transmission only 5-30 persons, within line of sight.

Level 5. Empathy: Read/influence mood and or emotional state. 95% control/activation Level 5 full reception and transmission only 10-50 persons, within line of sight.

Intuitive/Emphatic: Similar to the above but also includes 'hunches' in regard to non-sentient and general conditions (tell a storm front is coming in, something 'bad' happened here, etc). Allows direct influence & monitoring of body condition. Knows the right thing to do and say. Costs 1 endurance point per turn of activation.

Level 1: 10% control/activation. 1 person/area/ object/hunch per attempt within 10 feet.

Level 2: 30% control/activation. 1-5 persons/objects within line of sight. Able to correctly deduce previous actions at 20%.

Level 3: 50% control/activation. 3-10 persons/ objects within line of sight. 1-5 persons/objects via communication. Able to deduce previous events at 40%

Level 4: 75% control/activation. 5-30 persons/ objects within line of sight. 3-10 persons/ objects via communication. 1-5 persons/ objects unseen (being told about/described about). Able to deduce previous events at 65%.

Level 5: 95% control/activation. Any number within line of sight. 5-30 persons/events via communication. . 3-10 persons/objects unseen (being told about/described about). Able to deduced previous events at 85%.

Pyrokinesis: The ability to increase temperature and creation of heat and fire via mental command. A roll of 90-100 on d100 also allows decrease of temperature and extinguishing of flames.

Level 1: 10% control/activation. Temperature increase of 1-100 degrees within 1-6 m.

Level 2: 30% control/activation. Temperature increase of 50-200 degrees within 1-10 m.

Level 3: 50% control/activation. Temperature increase of 100-400 degrees within 10-40 m.

Level 4: 75% control/activation. Temperature increase of 100-600 degrees within 10-40 m.

Level 5: 95% control/activation. Temperature increase of 100-1000 degrees within line of sight.

Diviner: The ability to find lost objects or work out where water or other minerals are located. This ability usually requires a prop of some variety to work. In the case of missing objects, the diviner will need something similar or that has been in contact with the missing object. Divining can only be done on the spot but can be used to feel the right direction until you come to the right spot even at a distance. In this case divining can be done at 10% of the locating distance.

Level 1: 10% control/activation. Able to locate/divine within about 10 feet radius

Level 2: 30% control/activation. Able to locate/divine within 1 mile radius

Level 3: 50% control/activation. Able to locate/divine within 10 mile radius, able to determine a general area within 50 miles (i.e. its in New York City)

Level 4: 75% control/activation. Able to locate/divine within 50 mile radius able to determine a general area within 150 miles (i.e. its in New Jersey)

Level 5: 95% control/activation. Able to locate/divine within 250 mile radius able to determine a general area within 750 miles (i.e. its in Ohio)

Pre-cognition: The least controllable psi ability and yet the most common. Most latent psi users have this ability as deja-vu. In a psi rated character, precognition will kick in automatically and 'warn' the character of something that is about to happen. This is a very hard ability to play correctly

and PD's are warned to give it serious thought before allowing it to be used. (ack to Magicians & Magic). A good example is of a pre-cog fighting a swordsman who is, to all intents and purposes, invisible. The pre-cog, under stress, is able to see the sword coming at him and parry it. Each warning takes a single point of psi and the ability ends when the pre-cog gets over confident – he is overcoming the opponent. No longer being under stress or imminent danger will stop the precog.

Level 1: 10% activation under stress or in danger. 3 second warning (a lightswitch setting of a gas explosion etc)

Level 2: 30% activation under stress or in danger. 10 second warning (gun being fired at you)

Level 3: 50% activation under stress or in danger. 20 second warning

Level 4: 75% activation under stress or in danger. 30 second warning

Level 5: 95% activation under stress or in danger. 1 minute warning

Clairaudience/Clairvoyance: Clairaudience is 'hearing' voices. Clairvoyance is 'seeing' things. This is not fortune telling but what is going on at the moment. There is an even chance of having either and a small chance of having both (46-55 on 1d100). In order to use these powers, you need to select a 'key' word or be looking at a place you know or a person you know (or have had described). 10% of operators can project the image or sound.

Level 1: 10% control/activation. Next room, 1 minute duration

Level 2: 30% control/activation. ½ Mile radius, 5 minutes duration

Level 3: 50% control/activation. 5 mile radius, 15 minutes duration

Level 4: 75% control/activation. 15 mile radius, 30 minutes duration

Level 5: 95% control/activation. 100 mile radius, 1 hour duration

Psychometry: The ability to read past events and history's surrounding an object. It can tell what happened in a room (violent death, love etc) or even the personality of a person who owned an object (such as a gun) – you might see their face or just get a general impression.

Level 1: 10% control/activation. Very general feeling. 10% accurate description covering a 10 year period.

Level 2: 30% control/activation. Good feeling. 30% accurate description covering a 30 year period

Level 3: 50% control/activation. Very Good feeling. 50% accurate description with a 30% chance of picking up any secondary feelings (prime feeling may be the gun wielder – a secondary impression may tell the character that it wasn't the owner of the gun). Covers a 100-year period.

Level 4: 75% control/activation. Excellent feeling. 75% accurate description with a 50% chance of picking up a secondary and a 30% chance of picking up any additional feelings. Covers a 200-year period.

Level 5: 95% control/activation. Superb feeling. 95% accurate description with a 75% chance of picking up a

secondary and a 50% chance of pickup up any additional feelings. Covers any period (watch this – you might pick up a human sacrifice made over a 1000 years before – don't hand this out on a platter)

Forecaster: The ability to forecast future events. Rather like precognitician but longer ranging. When rolled for, an area of specialty must be rolled for: **1-5** Natural, **6** -Individual's, **7** - Groups, **8-9** - disasters only, **10** - multiple. Natural includes the ability to weather sense, earthquakes, sea changes, drought, etc. Individual means that a forecaster can tell an individuals fortune. Group means that the forecaster can tell what will happen to a common group of people (or possibly animals). It may include a town or a pop group (but not the pop groups followers!) Disasters means that the forecaster can tell that there will be devastation and is a mix of natural and group forecasting. It will allow a forecaster to predict an outbreak of plague (how specific depends on the level). Multiple allows a forecaster to have multiple types of this skill but each must have a level rolled for separately.

PD Note: It is up to you to determine if future events from forecasting are changeable. I personally prefer the method by which the events described will come true, although perhaps not in the way that it was thought it would happen. An example: Babylon 5 – the destruction of the station was foretold on a number of occasions. They were all correct. The station was blown up when it became obsolete thereby justifying the forecasts. Everybody thought the station would be destroyed by 'enemy fire'.

Level 1: 10% control/activation. 1 days forecast, vague directions

Level 2: 30% control/activation. 1 weeks forecast. General instructions

Level 3: 50% control/activation. 1 months forecast. Good idea what will happen.

Level 4: 75% control/activation. 1 years forecast. Fairly exact idea what will cause incidents but with some details missing.

Level 5: 95% control/activation. 10 years forecast that is fairly exact and 100 years very general coverage (you will do well but your grandchildren will be destitute)

Telepathy: The direct transmission and reception of thoughts from one person to another.

Level 1: 10% control/activation. Transmission/reception of thoughts. reception only. Line of sight.

Level 2: 30% control/activation. Transmission/reception of thoughts. reception only. Line of sight.

Level 3: 50% control/activation. Transmission/reception of thoughts. full reception and 50% transmission. Line of sight.

Level 4: 75% control/activation. Transmission/reception of thoughts. full reception and transmission. Line of sight.

Level 5: 95% control/activation. Transmission/reception of thoughts. full reception and transmission. Line of sight.

Micro-Kinesis: Telekinesis on a cellular or lower level. This power allows the gradual use of 'magical' seeming powers. It allows the user to do such stunts as 'fuse' two objects together by interlocking the cells joining them or transforming different materials into other materials (lead into gold is the one most people might think about). The mass of

material capable of being worked upon is determined by the users current endurance which is reduced by the same amount (different weights apply to different levels). Any change made is permanent!

Level 1: 10% control/activation. Able to work in grams and change similar materials (rock to sand/mud)

Level 2: 30% control/activation. Able to work in 100's of grams and change different material by one degree (metal to stone, wood to plastic)

Level 3: 50% control/activation. Able to work in kilograms and change most material by one degree.

Level 4: 75% control/activation. Able to work in tens of kilograms and change all materials by one degree.

Level 5: 95% control/activation. Able to work in 100's of kilograms and change any material by any degree (sand into bread (utilises molecular changes from the sand and air around it).

Temporal Viewer: by concentrating this person can look back in time and see what has happened. How far back is determined by the level involved. In all cases the length of the viewing session is determined (in minutes) by the viewers endurance and every two minutes of viewing will temporarily drain 1 endurance point for 1 hour afterwards.

Level 1: 10% control/activation. 5 minutes, restricted to the one area in which the viewer is in.

Level 2: 30% control/activation. 5 days. Viewer may latch onto another person and follow them around. Restricted to an area equivalent to no more than 200 m radius

Level 3: 50% control/activation. 1 month. Viewer may latch onto another person and follow them around. Restricted to an area equivalent to no more than 500 m radius

Level 4: 75% control/activation. 1 year. Viewer has free rein over what they see anywhere within the target radius. Restricted to an area equivalent to no more than 5 km radius

Level 5: 95% control/activation. Multiple years determined by five times viewers endurance. Viewer has free rein over what they see anywhere within the target radius. Restricted to an area equivalent to no more than 5 km radius.

Photokinesis: The ability to control and manipulate light. At its basic, this is just a thunderflash of light. As ability grows, a skilled manipulator can do such work as imprint an image on photographs or even bend light around them to achieve a kind of invisibility. Range of the thunderflash or continual light depends on level – Level 1 = 20 meters, 2 = 40 meters, 3 = 60 meters, 4 = 80 meters, 5 = 100 meters.

Level 1: 10% control/activation. A single flash of 10000 cpw – capable of blinding and stunning for up to 10 minutes. If control is achieved, then cpw can be reduced and maintained for as long as control is maintained. If it is lost, then a single flash burns out the user for 1d6 hours.

Level 2: 30% control/activation. Able to control light normally without the light flash. Able to use a single light flash without burning out that can blind and stun for up to an hour. Duration of control = half endurance.

Level 3: 50% control/activation. Able to control light normally without the light flash. Able to use a single light flash without burning out that can blind and stun for up to 2 hours.

Duration of control = endurance. Can place an image onto photographic paper.

Level 4: 75% control/activation. Able to control light normally without the light flash. Able to use a single light flash without burning out that can blind permanently and stun for up to a day. Duration of control = 2 x endurance. Can place an image onto any material. Able to reduce light & heat by half i.e. lasers, as long as there is a clear channel available to the user. I.e. standing in a fire does not work.

Level 5: 95% control/activation. Able to control light normally without the light flash. Able to use a single light flash without burning out that can blind permanently and stun for up to a week. Duration of control = 4 x endurance. Can place an image onto any material. Able to reduce light & heat by half i.e. lasers, as long as there is a clear channel available to the user. I.e. standing in a fire does not work. Able to bend light as a chameleon – takes 20-psi ability to change to new background.

Enhanced Physical Ability: The ability to increase **Strength, Constitution, Dexterity** or **Charisma**, perhaps beyond normal levels. When this Psi ability is gained, ONE physical ability has to be chosen initially. At level 3, the user can choose another ability at level 1. At Level 4, the second ability goes to level 2 and the user chooses another ability at level 1 and so on up to Level 5.

Level 1: 10% control/activation. Increase ability by 1 point, duration = ¼ endurance in minutes.

Level 2: 30% control/activation. Increase ability by 2 points, duration = ½ endurance in minutes.

Level 3: 50% control/activation. Increase ability by 3 points duration = ¾ endurance in minutes.

Level 4: 75% control/activation. Increase ability by 5 points duration = endurance in minutes.

Level 5: 95% control/activation. Increase ability by 7 points, duration = 1¼ endurance in minutes.

PD's Note – where an ability is increased above 20, the PD has to determine special effects. For instance an increase to 22 may allow such feats as ripping off heavy doors etc and an increase to 27 to picking up the car and throwing it!

Domination/Control: Able to control and manipulate others. Roll 1d6: 1-4 = Domination, 5 = Control, 6 = Both. Domination means the controlling of others through personality. It allows control over a large number of people. Control is the control of one or a few subjects, even against their better judgement i.e. throwing themselves off a cliff. Both allows a user to dominate many and, without losing that domination, also control individuals. This is a dangerous power and should be restricted to very experienced players before their character gets lynched!

Level 1: 10% control/activation. Able to dominate no of people determined by perception up to no of hours based on constitution. Able to control one person for psi minutes.

Level 2: 30% control/activation. Able to dominate no of people determined by 2 x perception up to no of hours based on constitution. Able to control one person for psi minutes.

Level 3: 50% control/activation. Able to dominate no of people determined by 6 x perception up to no of hours based on constitution. Able to control one person for 2 x psi minutes.

Level 4: 75% control/activation. Able to dominate no of people determined by 12 x perception up to no of hours based on 2 x constitution. Able to control one person for 2 x psi minutes.

Level 5: 95% control/activation. Able to dominate no of people determined by 24 x perception up to no of hours based on 3 x constitution. Able to control one person for psi hours.

Note: A subject can always try to resist domination or control. Roll 1d6 plus Psi for each person. If their roll is higher than the users roll, then they cannot be brought under domination/control. If the resistor is a psi-user themselves, then they cannot be brought under control by that particular user unless that user goes up a level.

Bad luck/Good luck: 1-3= Bad Luck, 4-5 = Good Luck, 6 = both. Otherwise known as probability manipulation.

Level 1: 10% control/activation. Reduce/increase skill of other user by 10%, ability by 1 point, chance of minor occurrence – tool rolls under bench, find a dime on the street.

Level 2: 30% control/activation. Reduce/increase skill of other user by 20%, ability by 2 point, chance of minor occurrence – tool drops on foot, ferry on this side of river.

Level 3: 50% control/activation. Reduce/increase skill of other user by 30%, ability by 3 point, chance of occurrence – tool causes injury, find missing boy lost in woods for a week after 1 day of searching.

Level 4: 75% control/activation. Reduce/increase skill of other user by 40%, ability by 4 point, chance of major occurrence – shed collapses in slight wind, find missing boy lost in woods for a week after 1 hour of searching.

Level 5: 95% control/activation. Reduce/increase skill of other user by 50%, ability by 5 point, chance of major occurrence – shed disappears in a sinkhole, find a missing boy lost in woods for a week whilst on your way to join a search party!

These events allow people to put good/bad luck charms on others – it never works for themselves or for people they are in constant contact with. Such a charm will work for a period of time equal to the persons Level x psi skill in no of days. Each person affected will reduce the time accordingly. I.e. a 10 day bad luck charm on a village of 100 people will cause bad luck for each and every one in that location for 2.4 hours. The severity of the curse is not affected by the number of people involved.

Suppressant/magnifier: Able to suppress and magnify other psi powers. 1-3= suppressant, 4-5 = magnifier, 6 = both. Note that this cannot change the nature of the psi use being suppressed or magnified – just the power of it or its user. It cannot be used on oneself.

Level 1: 10% control/activation. Reduce/increase psi skill of other user by 1d3 points.

Level 2: 30% control/activation. Reduce/increase psi skill of other user by 1d4 points, OR change level of psi use by 1.

Level 3: 50% control/activation. Reduce/increase psi skill of other user by 1d6 points OR change level of psi use by 2.

Level 4: 75% control/activation. Reduce/increase psi skill of other user by 1d3 points AND change level of psi use by 2.

Level 5: 95% control/activation. Reduce/increase psi skill of other user by 1d6 points AND change level of psi use by 3.

Appendix D

Quick Explosion Survivability Table

	None	Light	Medium	Heavy	
Open Ground	½	1	2	4	Refers not to ground cover but to ground type
Natural Cover	N/A	2	4	8	Refers to ground cover
Water	1	2	6	12	Compression & debris damage - cover refers to objects between you & explosion
Prepared Ground	N/A	4	8	12	i.e. trenches, balustrades etc
Vehicle	1	2	4	8	From unarmored to tanks
Inside	1/2	1	4	12	i.e. in a building or corridor

I wanted a quick device to determine if someone survives an explosive attack. Unless you are literally sitting on top of a grenade, this table might give a better idea of surviving things from a grenade to a large artillery shell. If you think this is unreasonable, well it is a game, and even in real life there are escapes that, by using purely scientific methods, should have been kills.

1. Multiply your luck by the factor in the table to get the % chance of being injured/killed if the blast radius of the device impacts the target.
2. In order to determine if the member is killed use the same table using constitution instead of luck.
3. If not killed then they are injured only - you will have to come up with a method of determining the extent of injury (try using two d100 dice & dividing by the factor in the table - apply randomly)

The good thing about this is that you can use it for NPC's and large parties as well.

Notes on table:

Open Ground - used when you have no expectation of attack or are unable to take precautions. None is no cover whatsoever on normal ground. Light is such as terrain shelter - a small ditch or in a bog. Moderate is a bank or deep stream etc or a very rocky area. Heavy is a river or soft sand/ground, which will absorb most of the explosion.

Natural Cover - used when you do expect an attack and you have been able to take precautions. None - not applicable - use open ground. Light -, banks, small areas of trees, some shelter. Moderate is waist high rocks or walls, large groves of trees. Heavy is cliffs, sunken roads, exceptionally heavy trees (large oaks, redwoods, mangoes etc) or high banks etc.

Water - used when you are in water at least up to upper abdomen. Damage is caused through compression and debris damage. None - you're on top of it. Light - small objects between you and explosion i.e. a small vehicle or individual rocks. Moderate - large items between you and explosion - a large vehicle, a sandbank etc. Heavy - behind a substantial shelter (wall or wreck or large sandbar or bank)

Prepared Ground - emplacements prepared for combat or buildings. Light may be a concrete garage or wooden house or sandbag emplacement. Moderate - brick built houses etc, office block frontage or open concrete emplacements. Heavy - factory, older office blocks (usually built before 1930's), enclosed bunkers.

Vehicles - None - unarmored vehicles. Light - most armored cars, some APC's. Moderate - APC's & all other wheeled AFV's. Heavy - armored vehicles over 20 tons. Note that if hit by a dedicated weapon system such as MILAN then move the column to the next worse i.e. if Heavy hit by a Milan then roll on the Moderate column.

Inside - applies to an internal explosion contained in a building. The blastforce coming down the corridor or heating duct. None - in a straight corridor with you. Light - behind light partitions etc. Moderate - around the corner with a normal wall between. Heavy - behind security or fire doors or other substantial structure. Note - part of this means you have to know the structure type that you are in.

Hopefully using this table will allow you to quickly determine hits on both characters and NPC's. It should help determine how many of the bandits survived when you blew up their house etc. For large group's work out an average luck & roll for appropriately sized groups - if 100 NPC's split into ten groups & roll for each - it should average out.

United Kingdom Project Issued Firearms

Pistols

1. [FN High Power](#)

Sub Machine Guns

1. [Stirling](#)
2. [Silenced Carbine](#)

Rifles

1. [L1A1](#)
2. [Parker Hale model 85](#)
3. [Lee-Enfield Mark X Battle Rifle](#)

Machine Guns

1. [FN MAG](#)
2. [M2HB](#)

Heavy Weapons

1. [M79 Grenade Launcher](#)
2. [L16 81mm Mortar](#)
3. [L14A1 Carl Gustav](#)
4. [LAW](#)
5. [MILAN](#)

Pistols

[FN High Power](#)

Name	FN High Power
Calibre	9 mm
E-Factor	8
Wt (Empty)	0.882
Eff Rng	45 m
Max Rng	2012 m
Type of Fire	
Rate of Fire	40 rpm
Feed Device	14 round magazine
Feed Device Wt	0.168
Basic Load	3 magazines
Load Wt	0.504
Total Wt	1.386
	
Additional Comments	Standard side arm of both the British army and the Project

Submachine guns

[Stirling](#)

Name	L2A3 Stirling
Calibre	9 mm
E-Factor	9
Wt (Empty)	2.85
Eff Rng	200
Max Rng	2000

Type of Fire	Selective fire
Rate of Fire	550 rpm
Feed Device	34 rnd magazine
Feed Device Wt	0.62
Basic Load	12 magazines
Load Wt	7.44
Total Wt	10.29
	
Additional Comments	An excellent and robust weapon, still being produced by the monarchy

Rifles

[L1A1](#)

[Parker Hale model 85](#)

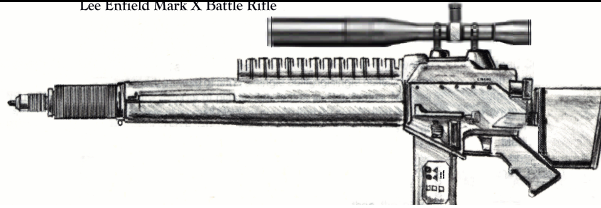
[Lee-Enfield Mark X Battle Rifle](#)

Name	L1A1
Calibre	7.62 mm
E-Factor	17
Wt (Empty)	4.32
Eff Rng	800 m
Max Rng	2500 m
Type of Fire	Single shot
Rate of Fire	40 rpm
Feed Device	20 rnd magazine
Feed Device Wt	0.68 kg
Basic Load	12 magazines
Load Wt	5.46
Total Wt	9.78
	
Additional Comments	Production of enough spares and barrels have allowed continued production of this rifle

Name	Parker Hale model 85
Calibre	7.62 mm
E-Factor	17
Wt (Empty)	4.8 kg
Eff Rng	1000 m
Max Rng	3725 m
Type of Fire	Bolt action
Rate of Fire	N/a
Feed Device	10 round box
Feed Device Wt	N/a
Basic Load	200 rounds in clips
Load Wt	2.80
Total Wt	8.6 kg
	
Additional Comments	Used as a sniper weapon until supplanted by more modern weapons, it is a good weapon, deemed more appropriate for the project.

Name	Lee-Enfield Mark X Battle Rifle
Calibre	2 x 12 mm Flechette
E-Factor	19
Wt (Empty)	4.01 kg
Eff Rng	1600 m
Max Rng	3200
Type of Fire	Semi-automatic
Rate of Fire	800 rpm
Feed Device	100 rnd cylinder
Feed Device Wt	1.5 kg
Basic Load	8 cylinders (800 rnds)
Load Wt	12 kg
Total Wt	16.01 kg

Lee Enfield Mark X Battle Rifle



A fifth generation pre-production model being manufactured for the British Army. The weapon is surrounded by an artificial polymer resistant to extremes of heat, cold and pressure. Utilising magnetic rings to eject the projectiles down the barrel at great speed, the manufacturers finally cracked the balance between muzzle velocity and recoil.

One of the problems with the weapon is the need for power to propel the rounds. Each magazine has enough power to fire only 20 rounds. However, once the first shot is fired, the recoil operates a highly effective kinetic 'pump', which then powers an internal battery in the weapon for the next shot. Power loss is negligible for about 4 hours, but after that the charge rapidly diminishes (this is not the same power source as the magazine).

In order to recharge magazines, the gun (and the magazines) outer polymer shell acts a photovoltaic recharger and can recharge a full magazine in about 9 hours of ordinary sunshine. Recharging a single round normally takes about a half hour.

Each magazine carries 100 rounds of a flechette type dart that only does kinetic damage. A small number of explosive rounds can be carried as well which cause an extra 3 E-Factor damage to the target.

A later variant (non-project version) included a 'starter-handle' which allowed a soldier to recharge the magazines by inserting a crank – about fifteen minutes of strenuous action allows enough power to charge one shot. However, it comes into its own when keeping a charge active – 30 seconds of action every 10 minutes will keep a charge already in the weapon from dissipating. However, the whirr of this action can easily give away its position on a quiet night.

Machine guns

[FN MAG](#)
[M2HB](#)

Name	FN MAG
Calibre	7.62 mm
E-Factor	17
Wt (Empty)	10.85 kg
Eff Rng	1200 m
Max Rng	3100 m
Type of Fire	Full automatic
Rate of Fire	250 rpm
Feed Device	100 rd belt
Feed Device Wt	2.94 kg

Basic Load	3 belts (300 rnds)
Load Wt	8.82 kg
Total Wt	19.67 kg



Additional Comments	The standard GMPG of the Army
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Name	M2HB
Calibre	12.7 mm
E-Factor	30
Wt (Empty)	38.1 kg
Eff Rng	1300 m
Max Rng	6660 m
Type of Fire	Selective fire
Rate of Fire	150 rpm
Feed Device	105 rd belt
Feed Device Wt	3 belts
Basic Load	315 rounds
Load Wt	39.05 kg
Total Wt	77.15 kg



Additional Comments	A fixed position mg, not in general use for mobile teams.
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Heavy Weapons

[M79 Grenade Launcher](#)
[L16 81mm Mortar](#)
[L14A1 Carl Gustav](#)
[LAW](#)
[MILAN](#)

Name	M79 Grenade Launcher
Calibre	40 mm
E-Factor	**
Wt (Empty)	2.72
Eff Rng	350
Max Rng	400
Type of Fire	Single shot
Rate of Fire	15 rpm
Feed Device	Break open manual opening
Feed Device Wt	0.27
Basic Load	36 rounds
Load Wt	9.72
Total Wt	12.44



Additional Comments	A shotgun type gl firing various 40mm shells. It can also fire a rocket propelled grapnel hook to a height of 150 m. large numbers of stock were acquired for the project.
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Name	L16 81mm Mortar
Calibre	81mm
E-Factor	**
Wt (Empty)	40
Eff Rng	4595
Max Rng	4595
Type of Fire	Single shot
Rate of Fire	6 rpm
Feed Device	Single shell
Feed Device Wt	4.23 kg
Basic Load	6 rounds
Load Wt	25.38
Total Wt	65.86



Additional Comments

Name	L14A1 Carl Gustav
Calibre	84mm
E-Factor	375
Wt (Empty)	8 kg
Eff Rng	400-500
Max Rng	700
Type of Fire	Single shot
Rate of Fire	6 rpm
Feed Device	N/a
Feed Device Wt	3 kg rocket
Basic Load	5 rockets
Load Wt	15 kg
Total Wt	23 kg



Additional Comments

Name	LAW
Calibre	66mm
E-Factor	375
Wt (Empty)	10
Eff Rng	500
Max Rng	750
Type of Fire	Single shot disposable



Additional Comments Capable of penetrating 300mm of steel

Name	MILAN
Calibre	
E-Factor	4000 dpw
Wt (Empty)	15.5
Eff Rng	3500
Max Rng	3500
Type of Fire	Single shot missile
Rate of Fire	N/a
Feed Device	container
Feed Device Wt	11.5
Basic Load	N/a
Load Wt	27
Total Wt	27



Additional Comments	Capable of penetrating 352 mm of armour
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Commando Mortar

Name	Commando Mortar
Calibre	60mm
E-Factor	
Wt (Empty)	6.6 kg
Eff Rng	800
Max Rng	1200
Type of Fire	Single shot missile
Rate of Fire	N/a
Feed Device	Muzzle loading
Feed Device Wt	N/a
Basic Load	
Load Wt	
Total Wt	



Additional Comments	The Commando Mortar is a very lightweight and basic mortar, designed for use as a section- or platoon-level weapon. It has a much shorter range than a normal 60mm mortar, but is only supposed to fill the range gap between the effective range of a 40mm grenade launcher and the minimum safety distance of a regular 81mm mortar or artillery. The M4 Mk1 model is the more sophisticated model, with the better sight. The M4 L3 model relies on a strap to get the correct elevation, and a simple line down the barrel for direction. This results in a shorter range
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PROJECT VEHICLES LISTING

1. [Saracen APC](#)
2. [Saladin Armoured Car](#)
3. [Landrover One-Tonne](#)
4. [Landrover Defender](#)
5. [Humber Pig](#)
6. [Hover APC](#)

Note

The standard vehicle of the Humber Project evolves around an updated model of the Saracen APC. However, it is vastly outnumbered by the Landrover Defenders in use by the project. Many of these vehicles saw use under its cover facility as a disaster relief project. Over 60% of the project uses these vehicles.

Heavier armour comes with the Saladin AC and the Hover APC – both offensive orientated. Logistics is provided with normal 8 and 10 tonne trucks as well as the Stalwart. Air support is provided by Ospreys tilt rotor aircraft – a number of

7. [CET \(Combat Engineering Tractor\)](#)
8. [M2 Bridging Unit](#)
9. [Stalwart Amphibious Load Hauler](#)
10. [Zubr Hovercraft](#)
11. [Osprey Tilt Rotor Aircraft](#)

helicopters and other aircraft are also available but not on general issue.

The project navy consists of a number of small boats, 2 tugs, 12 trawlers and Zubr Hovercraft. None of these were ostensibly armed before freezing and crews will have to spend the best part of a week, installing and testing equipment before their boats are ready for the sea. The storage facilities for these craft were built in the highlands of Scotland.

Standard Vehicle Loads:

- 1 pr Binoculars
- 1 laser rangefinder
- 1 portable radio
- 1 radio direction finder
- 1 shovel
- 1 ax
- 1 sledgehammer
- 1 machette
- 1 Chainsaw
- 20m tow chain
- 50m 12mm Nylon rope
- 3 fire extinguishers
- Tool Kit
- Tripod
- 4 Ration Packs
- 1 Trade Pack
- 1 Contact pack
- 1 case 7.62mm

- 1 case 9mm
- 1 demonlition kit
- 1 scene of crime kit
- 1 pump action shotgun
- 1 case 12ga
- 1 case M26A1 grenades
- 1 case M7A3 CS grenades
- 4 gas mask/respirators
- 1 tent or awning
- 4 blankets

All vehicles are equipped with:

- Radio
- RDF
- GPS
- Water boiler
- 5 ton winch
- HP navigation facility

Name:	Alvis Saracen FV620
	
Crew:	2+10
Armament:	1 turret w twin 0.50 MG's
Ammo:	6000 x 0.50
Armour:	175
Length:	(Hull) 5.233m
Width:	2.539m
Height:	3m (hull top), 3.463 m (turret)
Wt. Unloaded:	8640 kg
Wt. Loaded:	10170 kg

Ground Clearance:	0.432m
Turning Radius:	5.55m
Max. Road Speed:	90 kph
Max. water speed:	7 kph
Ground Clearance:	0.432 m
Fording Depth:	2m
Gradient:	55%
Vertical Obstacle:	0.64m
Trench:	1.52m

The FV620 is the British equivalent of the V-150. Astute observers will notice that it is not a regular Saracen but instead resembles the FV610 command post vehicle. The reasons for this are primarily space. This variant has a tent that attaches to the side and rear of the vehicle (much like a caravan awning) plus exterior stowage bins.

Additional features include amphibious capacity, a remote turret with twin 0.50 MG's and improved armour and power plant systems.

Unlike most project vehicles, the Saracen does not work directly off the fusion plant installed. Instead, during its redesign, the vehicle was fitted with upgraded high-density batteries that are fed off the trickle feed of the fusion plant fitted.

This variant included the most up to date composite armour available at the time of planting.

Name:	Alvis Saladin FV601D
	
Crew:	3
Armament:	76mm Gun, 7.62 mm Co-axial
	7.62mm AA,
	2 x 6 smoke dischargers
Ammo:	42 x 76 mm rnds,
	2750 x 7.62 mm
Armour:	300

Length:	4.93 (gun forward – 5.284)
Width:	2.54
Height:	2.19
Wt. Unloaded:	10500
Wt. Loaded:	11590
Ground Clearance:	0.426
Turning Radius:	
Max. Road Speed:	85
Max. water speed:	8
Ground Clearance:	0.426
Fording Depth:	1.07
Gradient:	42
Vertical Obstacle:	0.46
Trench:	1.52

An obsolescent vehicle, it shares many components with the Saracen and was deemed to be worth producing for the project. One of the reasons was its 6x6 wheel base which gave it superior cross country performance over the 90 mm armed Valkyr. As with the Saracen the Saladin is powered by a fusion fed battery arrangement and has had NBC protection added.

Name:	1-Tonne Land Rover
Crew:	1 + 8
Armament:	None
Ammo:	None
Armour:	Kelvar – small arms & shrapnel protection
Length:	4.127
Width:	1.842
Height:	2.138
Wt. Unloaded:	Unknown
Wt. Loaded:	3120
Ground Clearance:	0.254

Turning Radius:	
Max. Road Speed:	120
Max. water speed:	N/a
Ground Clearance:	
Fording Depth:	N/a
Gradient:	60%
Vertical Obstacle:	0.254
Trench:	N/a

This is the typical British LWB Landrover used for such things as pulling the 105-mm light howitzer. Project versions are all soft-top, canvas models. A pintle mount can be erected for a 7.62 mm machine gun. The 1-tonne is powered directly by fusion power.

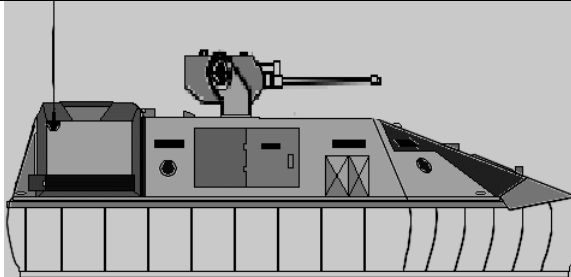
Name:	Landrover 110 (Defender)
	
Crew:	2+8
Armament:	None
Ammo:	None
Armour:	Kelvar – small arms

	& shrapnel protection
Length:	4.669
Width:	1.79
Height:	2.035
Wt. Unloaded:	Unknown
Wt. Loaded:	3050
Ground Clearance:	0.216
Turning Radius:	
Max. Road Speed:	110 kph
Max. water speed:	N/a
Ground Clearance:	0.216
Fording Depth:	0.5
Gradient:	60%
Vertical Obstacle:	0.320
Trench:	N/a

The Landrover Defender is the hard top Landrover in use by the Project. Unlike the 1-tonne, it cannot be fitted with a pintle mount, but instead includes winches, spotlights and bull bars.

Name:	Humber Pig
	
Crew:	2+8
Armament:	1 x 7.62 mm
Ammo:	1500 rounds

Armour:	125
Length:	4.926
Width:	2.044
Height:	2.12
Wt. Unloaded:	4770
Wt. Loaded:	5790
Ground Clearance:	0.21
Turning Radius:	
Max. Road Speed:	75
Max. water speed:	N/a
Ground Clearance:	0.21
Fording Depth:	0.64
Gradient:	50%
Vertical Obstacle:	0.3
Trench:	N/a
The Humber one ton or 'pig' is an armoured land rover capable of dealing with small arms and machine gun fire. A single 7.62 mm MAG is fitted to the top and it has four firing ports in the side. Project versions are fitted with spotlights and winches and the cymbeline sniper detection system	

Name:	Thornycroft Hover APC
	
Crew:	2+10
Armament:	1 x 30mm Rarden Cannon, 2x Milan Launcher, 1x 7.62 mm coax, 1 x 76mm AA
Ammo:	125 x 30mm, 8 Milan, 2750 x 7.62 mm

Armour:	425
Length:	8.25
Width:	6.15
Height:	8
Wt. Unloaded:	10500
Wt. Loaded:	15200
Ground Clearance:	N/a
Turning Radius:	
Max. Road Speed:	135
Max. water speed:	135
Ground Clearance:	N/a
Fording Depth:	N/a
Gradient:	45%
Vertical Obstacle:	2 m
Trench:	4 m
Just entering service the HAPC was developed under Project funding and so the first production models were bought by the project. Fitted with the cymbeline sniper detection system.	

Name:	Royal Ordnance (Leeds) FV180
	Combat Engineering Tractor
Crew:	2
Armament:	1 x 7.62 mm, 6 smoke dischargers
Ammo:	1250 x 7.62 mm
Armour:	250
Length:	7.544
Width:	2.896 over bucket
Height:	2.667
Wt. Unloaded:	Unlisted
Wt. Loaded:	17700

Ground Clearance:	0.457
Turning Radius:	
Max. Road Speed:	56
Max. water speed:	9
Ground Clearance:	0.457
Fording Depth:	1.83, amphibious
Gradient:	60
Vertical Obstacle:	0.61
Trench:	2.06
Used to clear obstacles, digging weapons pits, pathfinding river crossings and recovering disabled vehicles. The CET is fitted with a forward powered Dozer blade, and takes 10 minutes to be rendered amphibious. Also has a 8,000kg winch with 107 meters of cable.	

Name:	M2 Bridging System
	
Crew:	1+3
Armament:	None
Ammo:	N/a
Armour:	Kelvar – small arms & shrapnel protection

Length:	11.35
Width:	3 (5.92 in water)
Height:	3.7
Wt. Unloaded:	22000
Wt. Loaded:	86000
Ground Clearance:	0.25
Turning Radius:	
Max. Road Speed:	70
Max. water speed:	9
Ground Clearance:	0.25
Fording Depth:	Amphibious
Gradient:	40 %
Vertical Obstacle:	0.12
Trench:	N/a
The M2 was used by the Royal engineers. Each rig is equipped with hinged buoyancy tanks which are folded down on each side of the vehicle upon entering the water. A series of M2's can be used as a bridge across a river. Propellers are supplied for sideways and forward propulsion.	

Name:	FV622 Stalwart High Mobility Load Carrier
	
Crew:	1+2
Armament:	None

Ammo:	N/a
Armour:	Kelvar – small arms & shrapnel protection
Length:	6.356
Width:	2.616
Height:	2.312 (To top of cab)
Wt. Unloaded:	N/a
Wt. Loaded:	14,480
Ground Clearance:	0.25
Turning Radius:	
Max. Road Speed:	63
Max. water speed:	9
Ground Clearance:	0.25
Fording Depth:	Amphibious
Gradient:	60%
Vertical Obstacle:	0.31
Trench:	0.75
Once again using many of the same components of the Saladin and Saracen, the Stalwart was the logical load carrier is capable of carrying about 7 tons. This version was rebuilt with bulletproof armour and glass.	

ZUBR CLASS (POMORNIK) AIR CUSHIONED LANDING CRAFT**SPECIFICATION**

Crew	23
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Dimensions	
Length	56.2 meters
Width	22.3 meters
Length on air cushion	57.3 meters
Width on air cushion	25.6 meters
Height on air cushion	21.9 meters
Standard displacement	480 tons
Full load displacement	635 tons
Propulsion	
Motors	Fusion
Propellers	3 four bladed variable pitch propellers
Performance	
Speed	60 knots
Military Lift	three Tanks, or ten Saracen/ Saladin, or 140 assault troops with 155 tons of cargo
Weapons	2 x MLRS 4 x Rapier SAM 2 x 30 mm Seaguard CIWS 80 MLRS missiles 48 Rapier missiles 8500 30 mm rounds

Electronic Systems

General detection radar Navigation radar ECM system Counter-battery radar GPS

OVERVIEW

The Zubr Air Cushion Landing Craft was originally built by the USSR. In the late 1980's construction of a further 8 were constructed at Barrow in Furness for the Project, under license. The mission of the ship is to carry out rapid sealift and beach landing of assault troops and combat materiel on territory held by hostile forces. The ship also provides fire support for the troop operations on shore. It forms the core of the Projects naval forces in the UK.

DESIGN

The square shaped pontoon structure of the hull provides a rugged, stable and seaworthy design. The pontoon's superstructure is divided by two longitudinal bulkheads into three functional sections. The middle section accommodates the compartment for armoured vehicles to be landed with taxi tracks and loading and unloading ramps. The two outer sections house the main and auxiliary power plants, the troop compartments, crew living quarters, and life support and NBC (nuclear, biological, chemical) protection. Ventilation, air-conditioning and heating systems are installed in the amphibious troops compartments and in the crew living quarters. These areas are also fitted with thermal and sound insulation coatings and vibration isolation structures.

The ship is fitted with light armour plating to provide a degree of protection to the crew and the troops against ammunition and blast fragments. The Zubr can carry up to 130 tons of cargo: three medium battle tanks such as the T-80B tank, or eight BMP-2 infantry combat vehicles, or ten BTR-70 armoured personnel carriers, or 360 fully equipped amphibious landing troops. The ship has a bow and a stern ramp for fast landing of troops and combat material.

WEAPON SYSTEMS

The ship is equipped with two stabilised multiple rocket launchers, four rapier air defence missile systems, and two Sea Guard 30 mm automatic gun mounts.

NAVIGATION

The Zubr is equipped with a navigation suite comprising two navigation radar's, gyrocompass, magnetic compass, drift log, satellite navigation receiver, Decca receiver, radio direction finder, master gyroscope and day and night vision drift sight.

PROPULSION

Three upright ring shrouds, housing the air propellers and standing upright at the back of the ship, give the Zubr its distinctive appearance. The four bladed propellers which provide the ship with a top speed of 80 knots. Fusion power plants provide the power to drive the air-cushion blowers and the air propellers. The craft has four blowers model NO-10, fitted with axial operating wheels of 2.5-m diameter, to generate the air cushion. The air thrust for movement is powered by three four-bladed reversible variable pitch air propellers, 5.5 m in diameter. The air propellers are mounted inside ring shrouds. Control of the ship and systems is carried out from a main control station, a central control room and through various remote control panels.

V-28 OSPREY MEDIUM LIFT, MULTI-MISSION TILT-ROTOR AIRCRAFT**Dimensions in spread configuration**

Length	63 feet 4 inches (19.70 meters)
Width	84 feet 7 inches (25.78 meters) – folded = 18 feet 5 inches (5.61 meters)
Height	22 feet 7 inches (6.73 meters)

Weights

Empty weight	33,140 lbs (15,032 kg)
Maximum vertical take-off weight	33,982 kg
Short take-off weight	30,855 kg
Self deployment take-off weight	29,443 kg

Cabin and cargo

Cabin length	290 inches (7.37 meters)
Cabin width	72 inches (1.83 meters)
Cabin height	72 inches (1.83 meters)
Cabin provision	36 troops or 18 litters (stretchers)
Rescue hoist capacity	500 kg
Cargo floor limit	2,465 kg/m ²
Two external cargo hooks	5000 kg each

Performance

Cruise speed at 3,000 feet and 91.5°F	275 KTAS (510 km/hour)
Maximum speed at 15,000 feet and 45°F	350 KTAS (565 km/hour)

The V-28 Osprey is a medium lift, multi-mission tilt-rotor aircraft developed by Boeing and Bell Helicopters. The nacelles rotate 90 degrees forward once airborne, converting the aircraft into a turboprop aircraft. The aircraft can provide VTOL (vertical take-off and landing) with a payload of 36 troops or 9,000 pounds of cargo & was deemed ideal for the projects needs.

DESIGN

The V-28 is fully shipboard compatible with the world's first complete blade fold and wing stowage system. For stowage the wings are rotated to lie above and parallel to the fuselage to create a compact rectangular volume. The automatic wing and rotor folding sequence, which can be completed in 90 seconds, in a 60 knot wind, is as follows: the aircraft lands in helicopter mode, the two outboard blades of each rotor are folded inboard, the nacelles are rotated forward to cruise mode and the wings are rotated by 90 degrees clockwise.

COCKPIT

The flight crews have a Pilot's Night Vision System and a Honeywell integrated helmet display. The cockpit is equipped with six night vision goggle compatible displays. The Standby Altitude Indicator and the Standby Flight Display are supplied by Smiths Industries. The cabin and the cockpit are NBC (nuclear, biological and chemical warfare) protected with a positive pressure filtered air system.

GUN

The aircraft will be equipped with a 12.7 mm turreted gun system, supplied by General Dynamics.

SENSORS

It is equipped with a Raytheon AN/APQ-186 terrain following multi-mode radar. The helicopter night vision system is Raytheon AN/AAQ-16 (V-22) FLIR, which is mounted on the nose. This system contains a 3-5 micron indium antimonide staring focal plane array.

COUNTERMEASURES

The aircraft's electronic warfare suite includes Lockheed Martin's AN/AAR-47 missile warning system which consists of four electro-optic sensors with photomultipliers, a signal processing unit and a cockpit display. The aircraft is also equipped with a radar and infra-red threat warning system and chaff and flare dispensers with 60 rounds of dispensables.

ENGINES

The aircraft is powered by two Rolls Royce T406-AD-800 Fusion turboshaft engines with backup analog electronic control system, and fire protection system from Systron Donner. A transmission interconnect shaft provides single engine operation. The thermal signature of the aircraft is minimised with an AiResearch infrared emission suppression unit, installed on the nacelles near the engine exhaust.

The entire rotor, transmission and engine nacelles tilt through 90 degrees in forward rotation and are directed forwards for forward flight, and through 7 degrees 30' in aft rotation for vertical take-off and landing.

OTHER EQUIPMENT IN USE WITH THE PROJECT

RADIO SYSTEMS

Bowman

Bowman was in the planning stages for introduction across the entirety of the UK's military service but had already been installed during the final equipment update phase in the late 1990's. Training was given via encephala-graphic implantation.

Bowman provides an advanced tactical communications system utilising VHF, HF and UHF radio communications, advanced fibre optic harness systems and integrating directly with existing systems such as trunk networks and satellite communications links.

The completed system encompasses all the radios, vehicle and headquarters harness systems, user data terminals, global positional system (GPS) satellite-based appliques for navigation and for automatic position reporting, cryptographic and communications management systems and integrated logistic information systems in use by both the project and its command structures.

Radio sub-systems

VHF radio: The heart of the Bowman system, used to distribute the majority of secure voice and data traffic around the battlefield. All VHF radios have to support re-broadcast operations and may be operated remotely via a user data terminal (UDT). The radio is based on advanced digital processing techniques to allow for upgrades.

A GPS is integrated with the radio to allow the user immediate position and navigational data. When linked to a UDT the position of the radio will be passed automatically to all command levels for situational awareness.

VHF portable transceiver: This is a portable radio that is to have most of the functionality found in the VHF mounted and manpacked radios, but a smaller lighter package to bring the advantages of the Bowman system down to man portable level.

HF mounted and manpack radio: Because of its greater range capabilities the HF radio will provide communications for more dispersed military deployments, such as amphibious operations, rear link or long-range communication in terrain that is adverse to VHF communications.

Airborne VHF radios: These will be fitted to V-28 Osprey and other airborne vehicles. They will allow integration of air and ground operations, and the increased situational awareness characteristics of the system will reduce the risk of fratricide.

High capacity data radio (HCDR): This provides a high-capacity, low-latency, data-only transmission medium. Operating in the VHF band, the HCDR will relieve VHF and HF radios of a great deal of point-to-point data traffic such as the traffic generated by battlefield information system application. Data will be routed automatically from VHF or HF nets to the HCDR by the Bowman tactical internet service that is embedded within the HF, VHF and HCDR radios. Communications between the HCDR and the HF or VHF radios will be accomplished via the local area subsystem or Bowman vehicle harness.

Personal role radio (PRR): This is intended for short range use by individual soldiers. The PRR will sustain insecure communications for small groups of soldiers, enabling local, low-level command and control while maintaining a low probability of intercept.

Harness system

SATCOM

A satellite uplink system designed to operate with Bowman and to connect with both UK and NATO units around the world (as well as the MP Prime Base in the US).

Headquarters local area subsystem (LAS): The LAS has to provide efficient high bandwidth local area communications within headquarters, without recourse to using precious radio bandwidth. LAS will provide access to Bowman radio nets, wide area communication systems, such as satellite communications, via gateways and intra-headquarters communications. This allows seamless tactical and strategic communications. In addition it provides distribution of data from Bowman radios to LAS users, or will route this information from Bowman to other systems. LAS consists of high-speed digital harness both internal to headquarters vehicles and external within a static headquarters environment, using fibre optic cabling. LAS will be configured, monitored and controlled by an LAS management information system.

Bowman vehicle harness: This offers a simple solution for local distribution of voice and data service within a single platform. It is intended to be a low-cost alternative to the LAS for vehicles not required to establish high-level data communications with non-Bowman communications systems. The harness is to provide ethernet connectivity and give access to the tactical internet service through a single radio and LAS network.

Communications security

Communications management information system (CMIS): The CMIS has to be able to allow the planning, initialisation, management and control of Bowman radio deployments in support of operational objectives. It has to support the transfer of command between headquarters to allow networks to be managed at all times.

Key variable management system (KVMS): This allows the interface between Bowman and Projects general key management system. The KVMS has to provide the means to manage, distribute and audit large volumes of key material at short notice, without slowing operational tempo.

BOWMAN logistic information system (BLIS): This is the integrated logistic management tool for Bowman, based on a central database that will be populated as Bowman is fielded. It will track Bowman equipment during conversion and its whole life cycle. The system has to help maximise operational readiness, reduce the number of spare parts required to maintain operational capability and will minimise the system's operating cost.

BLIS is intended to track Bowman equipment configurations and associated spares, as well as providing a spares re-provisioning facility that will interface with an ordering system and play a critical role in asset management. This automated system will allow local commands to know the capability of the attached systems and allow repair and replacement to be prioritised.

Common operating environment

Tactical Internet: The Bowman tactical internet provides end-to-end information transport for data across different bearer systems using an industry-standard internet protocol (IP). Also, a site of specially developed military combat radio IPs will be used to provide features such as multi-address messaging across networks. The tactical internet will allow battlefield software applications to pass data seamlessly across Bowman and other secure networks.

User data service (UDS): The UDS has to allow data messages to be sent over the Bowman system. It will allow messages to be sent accurately and clearly using less transmission time than equivalent voice messages and will be ideally suited for the passage of standard reports and returns or automatic position reports. It is inter-operable with NATO systems.

User data terminal (UDT): To provide users with data access to the Bowman system and remote control of

Bowman radios. The UDTs are to be fully functional PC-based equipment running on a secure operating system. There are to be two types of terminal; a small, rugged palm-top style for dismounted use and a rugged laptop style for use in vehicles and bases. UDTs will provide the basis for Bowman services of messaging, location functions and software updating.

Automatic position location, navigation and reporting (APLNR): This is a UDS service that, when used with a GPS-equipped radio, can display or transmit positional and navigational information on a predetermined time or distance basis. It gives a commander situational awareness. Additionally, positional information can be appended to messages automatically and can support battle-management software applications, such as the battle group management system.

DETECTOR SYSTEMS

Mine Detector No.4C

Weights 9.15kg in use, 14.4 kg in transit and is mobile, operated by one man detecting mines through 0.51 meters of soil or 0.305 meters of pavement.

P6/2 Sweep Metal Detector

Weights 4.5kg complete, and is a military version of the Plessy P6 pulse induction metal detector. Army service models are issued with four different probes which can fill roles of metal, mine and body search roles.

Wheelbarrow

Weights 195kg in action and is a remotely piloted Robot used to investigate suspect vehicles for bombs and has a range of 100 meters with a 2 hour endurance. It stands at a minimum 0.82m high and is 1.22 meters long.

Portable Explosives Detector

Weights 12.5kg, stand 0.42 meters high with a width of 0.43m. Scans to a depth of 0.195m and scans air for explosive fumes.

MAN/VEHICLE PORTABLE DEFENCE SYSTEMS AND RADARS

Air Defence Alerting Device

The Air Defence Alerting device is a passive air defence alerter designed to work in conjunction with various missile systems. Operating as an infra red search and tracking system in the 8 - 14 micron waveband, the alerter is designed to operate against low and fast moving fixed wing aircraft, as well as the latest generation of attack helicopters. The alerter can be ground mounted to support shoulder launched SAM's or vehicle mounted. Fitted to all armoured vehicles.

Cymbeline

Cymbeline is a mortar locating radar. Cymbeline detects the flight path of the mortar bomb at two points in its trajectory, as it passes through the radar beam. This allows the Grid Reference of the enemy base plate to be identified and engaged with artillery. The Project only uses the towed version.

MSTAR

MSTAR is a Lightweight Pulse Doppler J - Band All Weather used in the detection of helicopters, vehicles and infantry. Powered by a standard army field battery, this radar will also assists in detecting the fall of shot. The electro-luminescent display that shows dead ground relief and target track history also has the ability to superimpose a map grid at 1:50,000 scale, to ease transfer to military maps. MSTAR can be vehicle borne or broken down into three easily transportable loads for manpacking purposes. MSTAR is installed on all project armoured and weighs 30 kg with a range in excess of 20 km. It is directly tied into the Bowman system.

GS No.20 Mark 1 Claribel

Claribel is used to detect incoming sniper fire from hidden positions. The system is comprised of four small aerials and a main control box, aerials can detect incoming fire of all caliber's and speeds from 5.56mm up to 120mm and rockets. Fitted to all armoured project vehicles with the exception of the CET.

No.17 Mark 1 Radar

Army version of the Decca Marine Radar. Targets can be detected out to 20,000 meters for boats about 50 meters long, but the normal range is 24 nautical miles. Swimmers are detectable up to 750 meters away and smaller boats up to 5,000 meters away. Installed only on project water vessels.

Mine Plough

Normally fitted to the front of Engineering tanks and CETs, the plough clears a track 3.787 meters wide, with an uncleared centre lane width of 1 metre. Carries 14 times and weighs 2,300 kilograms with a depth of 0.23 meters.

IMAGE INTENSIFIERS

Name	Mag	Field of view (mils)	Weight (kg)	For:
Pocketscope	x1.15	711	0.9	Hand Held
Individual Weapon Sight L1A2	x3.75	180	2.78	SLR, Carl Gustav etc
Telescope Straight II L1E1 (twiggy)	x5	129	11	Tripod-mounted

Refugee Supply Centres

In the event of war, one the criteria deemed essential was to restore law and order. Above all this could not be done if there were large numbers of refugees wandering the countryside.

The following bases were established to provide materials to repair nearby towns, and provide the required ingredients to kickstart local infrastructures.

These would then provide such things as large amounts of perspex to replace shattered glass, body bags for disposal. And allow the setting up of a refugee camp for displaced persons.

Most bases in Britain were set up near a major road network (but outside any possible target areas) and resembled distribution warehouses used by such as catalogue companies. In many cases, the depot was dug and the upper part of the buildings were rented out to another company. This allowed occasional restocking of the facility.

Base contents:

Vehicular

Airplane, dual engine, spraying (2)
 Ambulance, (10)
 Boats, light (15)
 Boats, heavy, disassembled (10)
 Cartographic Set (10)
 Saracen F (20)
 Fox F (10)
 Saracen Armored Recovery A-Frame Vehicle (2)
 Construction – bulldozer (2)
 Construction – tender (4)
 Construction – grader (2)
 Construction – ditch digger (2)
 Construction – Sawmill (2)
 Fire engine, (5)
 Fire tender, (5)
 JCB's (20)
 M2 ferry units (8)
 CET, (10)
 Multifuel engine conversion kits (500)
 Paint, vehicle, green 2000 gallons
 Trailer, Heavy, Saracen (1 Ton Capacity) W/Hitch (20)
 Trailer, Utility, Landrover (250 Kilo Capacity) W/Hitch (20)
 Trailers – freezer (25)
 Trailers – tank, liquid (25)
 Trailers – bulk supply (25)
 Trailers – heavy duty (25)
 Truck Cab, (40)
 Vehicle Spares (Parts)
 Vehicle Tools
 Landrovers LWB Defender(30)

Medical

Air & biological filters
 Alcohol, industrial
 Baby bottles & sterilisers & maternity packs
 Body bags, hermetically sealable
 Chemicals (various)
 Drug Kits (Pack)
 Fans
 Freezers, large, multifuel
 Medical beds, MP
 Medical Kits
 Medical Supplies and Equipment
 Decontamination (CBR)

Another favourite was to place them in and around service stations. These would allow the processing of the large numbers of transients on the roads at the time of attack. These particular bases would include large underground shelters for that population in the case of continuing attack.

In fact these were the only public shelters built at government expense in the UK. Not that anyone would know – until the end came.

Defences for the sites tended to be passive. However, it was decided to use lasers and electrical discharge devices to ward off intruders with a conductive ground grid under the soil. This could be adapted to help with ground control at a later date.

Following is a list typical of most of the bases contents. It should be noted that there were many more items contained – this just covers some of the typical items. Of interest is the fact that each was designed to help support the Projects missions. These sections were sealed and separate to the normal issues available to base staff (which was designed to incorporate volunteers to help run it).

maternity
 Public Health
 Trauma
 Medkit (Individual)
 Medkits (Large)
 Medkits. Reloads (Large)
 Medkit. Reloads (Regular)
 Scanner, holographic, portable
 Surgical Kits (Pack)
 Mobile Army surgical Hospital (w/trailers) – 56 loads

Construction

Axes
 Batteries, rechargeable
 Battery recharger, multi-source
 Block & Tackle. 25 Sets W/Rope
 Boats, collapsible (12 man)
 Bolts
 Breathing apparatus
 Bridging units, 25 meter lengths (12)
 Cement, ready mixed
 Chainsaw Replacement Blades
 Chainsaws, Mulifuel
 Compressor, air
 Concrete, ready mixed
 Construction heavy power tools (jackhammers etc)
 Construction tools – electrical
 Construction tools – air powered
 Crane, 100 ton, trailer mounted (2)
 Crane, 50 ton, trailer mounted (10)
 Drafting & design equipment
 Drill Rig, Vehicle Powered. 275m Depth. (3) W/trailer (2)
 Drill Casing, 12000m
 Electrical spares (fuses, wire, plugs, switches, relays etd)
 Fasteners: Nuts. Bolts, Screws, Order by Type and Quantity
 Cable, Steel Braided, W/Hardware
 Cement, 1000x500 kg Bags
 Glass. Window. 2000 18"x24" Panes
 Fibreglass moulding kits
 Girders, I
 Girders, T
 Grating, metal, road, trailer mounted
 Grinders
 Hand Tools, Farm, Carpentry, Metalworking, General Specify
 Type

Hardware, General (nails, screws, bolts, rivets, glue, buckets – see submenu)
 Insulation – specify type
 Jacks, folding, manual – pneumatic
 Jack hammers
 Laithes, metal
 Laithes, wood
 Mixers (cement/other)
 Mattocks
 Metals store, various, different grades, approx 5000 kg each type
 Milling machine, metal
 Nets, fishing, hemp
 Oxy-welding kits
 Padlocks
 Plumbing supplies
 Portable machine shop
 Power tools, air powered, various
 Power tools, battery, various
 Pumps – wind
 Pumps – multi-source
 Roof ties & beams – carbon-boron – prefab
 Side Building Frames – carbon-boron - prefab
 Rope
 Scaffold jacks
 Scuba gear
 Sheets, corrugated, roofing
 Solar panels (electrical conversion), 250
 Solar panels (water), 250
 Spades
 Winches, electrical/manual
 Workshop, machine & tool, w/trailer and vehicle PT
 Wood – select type & quantity

Agricultural

Hand Tools, Farm, Carpentry, Metalworking, General - Specify Type
 Barn, disassembled (5)
 Sheds, disassembled (20)
 Workshops, disassembled (5)
 Fertilization equipment
 Fertilizer. 100 kg Sacks
 Fishing Equipment
 Foetus, animal, frozen
 Forks
 Greenhouse (20 x 10), disassembled (100)
 Hay forks
 Hoists
 Hooks and Line, Assorted
 Hose (50 m lengths)
 Loppers etc
 Microwave fences
 Mill, portable (2)
 Nets
 Ova, animal, frozen
 Ploughs, animal drawn (50)
 Ploughs, vehicle (20)
 Drills (plough attached)
 Scourers (animal drawn)
 Scourers (vehicle drawn)
 Muck spreader (20)
 Rakes
 Combine Harvester (2)
 Hay bailer (10)
 Rotor vator, hand (100)
 Sacks, food storage
 Salt supplies
 Scythes
 Seed & fertiliser dispenser, towed, (5)
 Seed, 100 kg Sacks- Specify type
 Silo, grain (disassembled) (12)
 Tarpaulins
 Thresher, vehicle powered (2)
 Tractors (20)
 Trailers (20)

Twine, fishing, 50 m lengths
 Veterinarian supplies & equipment

Scientific

Biochemistry research facility (permanent)
 Catalytic & refining equipment (200 loads)
 Chemical analysis & production facility (permanent)
 Chemical stores
 Civilian CBR Decontamination Kits
 Geiger Counters, Civilian Issue
 Lab Chemical Analysis and Limited Production, W/Trailer and Hitch
 Photographic development lab (1)

Infrastructure

Cabins, prefabricated, disassembled (100)
 Candles
 camera, protective casing.
 Computers, PC's, 100 gb HD, CD/3.5/5.25 disk compatible, modem, up-link, printer, scanner, digital Computers, Cray, disassembled
 Distillery, disassembled (4)
 Dome Geodesic Portable. 10mx4m W/Multi-fuel Heater/Stove
 Forge, Hand, Semi-Portable. -Powered
 Hose, fire-fighting (100 m lengths w connectors)
 Library CD Encyclopedic (40 Sets)
 Machine tools
 Polygraph (lie detector)
 Press, printing. Hand Operated W/1000 Reams of Paper and type
 Pumps, water, electrical
 Pumps, water, hand
 Pumps, water, wind
 Shelters, 50x30, disassembled (500)
 Shower unit, communal, 10 person
 Sewage Treatment Unit, Permanent, W/Pipe (capacity 500 Persons) (10)
 Smelter, (2)
 Teaching Machine and Basic Library
 Water Treatment Unit. Portable. W/Trailer (Capacity 40 gal/Hr) (10)

Personal

Food Stocks, Dehydrated (Ration Packs)
 Individual Packs. Army basic issue
 Individual Clothing Issue
 Coveralls
 Coveralls, cotton, camouflage, reversible, 2 per team member
 Fall/Winter
 Spring/Summer

Military

Wire, Protective, Barbed
 Armour – personal
 Shield - riot
 Suits, Protective, Decontamination
 Demolition Packs, MP Standard Issue
 Gas masks
 Wire, Protective, Concertina (Razor Tape)
 Mine clearance kit
 Steam decontamination trailer
 Ammunition Reloading Equipment (2 Sets- 7.62/5.56/9)
 Press, Manual Production
 Dies Reloading
 Cases Cartridge
 Primers Cartridge
 Bullets Manufactured, By Type and Weight
 Gunpowder, By Type
 Scales and Measuring Equipment
 Magazines Spares
 Molds Casting
 Bullet W/lead (5000 kg)
 Cartridge W/Brass alloy (5000 kg)

Miscellaneous

Paper, multiple grades, type & thickness

Cans, 5 Gallon, Water/Gasoline
Chain Link, various
Kitchen Portable, W/Trailer (10)
Autoclave
Plates (2500)
Cups (2500)
Utensil Sets (2500)
Plastic Sheet, 10 mil 50 48"x500'Rolls
Lanterns, portable
Tables, folding
Chairs, folding
Tents, 12 man
Tents, 4 man
Tents, utility
Heater, portable
Beds, folding
Bags, sleeping
Blankets, wool
Blankets, space
Cloth, various by bolt
Needles & thread
Sewing machines, manual

Communication & Power

Bullhorns (12)
Recharger, Battery, Solar Powered (8)
Generator. Electrical, Multisource (/Solar/Wind)
Panels, Marker. Cerise, 2 Sets
Cable, fibre-optic
Cable, telecommunications
Radio, long range, continental (1)
Radio, 500 km (4)
Radio, 30 km (40)
Wind generator
Lighting, external, portable
Powerplant, large, (disassembled)
Cable, power transmission
Generators, multi-fuel 5-500 kw
Generators, , 50 kw – 3 mw
Radar, large, disassembled
Mobile phones
Mobile phone antenna arrays
Radios, hand cranked

Closed Circuit cameras
Accumulator, electrical
Hydroelectric generator, large, disassembled

Base Conversion Equipment

The base has a number of anchor and foundation points built around it. A series of buildings have been designed to fit around the base based on plans and equipment in storage.

In order to help with this, some bases will activate a number of robotic units which can do a great deal of the initial work themselves as the computer will have up to date measurements of the surrounds.

When finished with, these units will normally retire back into the base, except for two units which can be automated from the base for such items as ploughing or felling trees – maximum range is 10 miles.

Also, under this option the computer will open up a number of storage areas. These areas are empty and can be used for storage of whatever the base occupants desire. A feed to the computer allows documentation and control of whatever is put in these areas (it was designed for storage of salvage for later use).

Other Items of Note

Surrounding the base are a number of depressions. Noting the problem of obtaining suitable materials, the project designers dug large areas and filled them with construction materials, covering them for future use.

These include:

Gravel	aggregate
Limestone	stone blocks
breeze blocks	bricks
sand	wood

Bibliography & Acknowledgements

The Morrow Project RPG
Aftermath RPG
Janes AFV recognition handbook by Christopher F Foss
Damnation Alley by Roger Zelaney
Mindstar Rising by Peter F Hamilton
Too Many Magicians by Randall Garrett
The Crocus List by Gavin Lyle
The Zone Series by M Rouke
Home Defence and the Farmer – HMSO
Protect and Survive – HMSO
Nuclear Weapons – HMSO
Domestic Nuclear Shelters – HMSO

Websites

Subterranea Britannica Research Study Group www.subbrit.org.uk/rsg/sites
The Supply Bunker <http://www.thesupplybunker.net/morrow.htm>
Morrow Project group at www.yahoogroups.com
The Morrow Project group at www.yahoogroups.com
Ministry of Defence websites at www.armedforces.co.uk
www.hackgreen.co.uk
www.world.guns.ru
Flags of the World at <http://flagspot.net/flags/>
<http://www.naval-technology.com/links.html>
http://www.absak.com/alternative_energy/hydro_power.html

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