The JOURNAL of the Travellers' Aid Society

Vol. 6

TRAVELLER

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CREDITS

Authors
Martin Dougherty, Christopher Griffen, William H. Keith Jr, Keith Douglas, Marc Miller, Dave Dyson, J. Andrew Keith, Adrian Tymes, Loren Wiseman

Editor
Matthew Sprange

Graphics & Layout
Sandrine Thirache

Cover Illustration
Shen Fei

Interior Illustrations
Sandrine Thirache, Carlos Nunez, Jon Torres, German Ponce, Anderson Maia, Tomislav Tikulin, Takashi Tan, Biago d'Alessandro, Michael Leonard

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STEPPEHAULER-CLASS MODULAR FREIGHTER

In the Datsatl sector, far from the Third Imperium, the Tijian Khaganate had long desired to claim the riches in forbidden Ognar subsector. Its rival, the Pirian Domain, had placed those worlds off limits, and claimed systems between the Khaganate and Ognar to block these worlds off. Tiji, master of his empire, knew that higher technology could bypass this obstacle, so he launched a crash development project. For a short time his capital world's starports operated at TL16. An unrelated disaster soon struck, crippling his technological base, but not before he had a small fleet of modular 'exploration freighters' capable of ferrying people and equipment to Ognar, equipped with prototype 'hop' drives that could jump 10 parsecs. They proceeded to set up a route right over the Pirians, who maintained their patrols with no inkling they were now obsolete. Even once the Pirians discovered they had been simply bypassed, they were unable to find out how for centuries after.

It would take longer for usable data on the hop drive to spread into the Gakghang sector and further trailing, make its way across the venerable Cheaters' Route, filter rimward sector by sector across the war-riven Vargr Extents, and eventually reach the Spinward Marches.

The Steppehauler hull is a 14 metre diameter cylindrical tube with spherical endcaps, able to land on worlds without a spaceport. From endcap tip to endcap tip, it measures 152 metres. The central 138 metres is a thin, flat spine flanked by two 500-ton hemicylindrical modules, covered by an armoured clamshell during flight, with a retractable strip between the clamshell's halves that grant module access to space. On the ground with the clamshell open, the upper portion opens high to let two pop-up cranes (folded into the hull during flight) mounted fore and aft of the modules to load and unload, while the lower portion rests on the ground to help stabilise the ship. Using two 500-ton modules instead of a single 1,000-ton module was done to dissuade the temptation to use excessively-focused modules; the Khaganate has had a few occasions to regret this choice, but it has been an inconvenience at most.

The front and rear of the ship are divided into four decks: Crane, Control (featuring the bridge and primary reactor), Spine (with the main accessway through the middle of the ship), and Land (part of which folds out to form the landing gear). The crew living spaces and ship supplies are located fore; most engineering areas are aft. The accessway between features three iris valves on either side to reach the modules, and moving walkways to speed access back and forth. Just fore and aft of this accessway are

top-to-bottom lifts (with ladders and iris valves in case of power loss or hull breach), the top deck's worth of which double as the dorsal airlocks and control rooms for the cranes. Primary access to the ship is through ventral airlocks, which contain ramps that can unfold to the ground when the ship is landed.

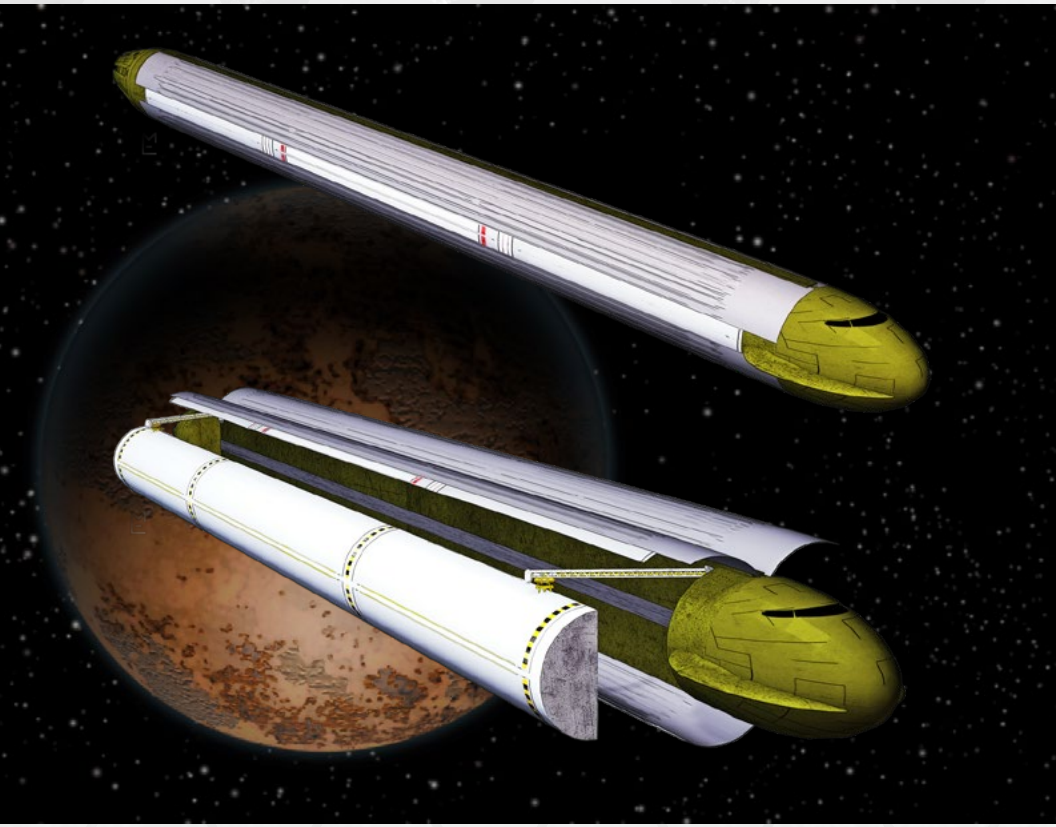
The default modules are unpowered cargo containers (the lack of power does not reduce the cost of the hull, which uses extra bracing to make up for the lack of active system integrity measures), holding raw materials (usually ores hauled back to the Khaganate) or manufactured goods (sometimes entire starships, disassembled for shipping). Alternate modules include:

- **Downport Module**: A complete Class D downport. Almost Class C, lacking only sufficient docking space, which is constructed on site. Also provides basic colony services (intended to migrate to purpose-constructed buildings as the colony grows) and an observatory to further survey its system. A downport module is emplaced flat side down by the Steppehauler when unloaded at the destination, preferably near a source of water. Most of the Khaganate's land-grabbed colonies started with one downport module, one low berth module with colonists, and 1,000 tons split between construction, mining and agricultural vehicles, prefabricated shelters, supplies and agricultural seed stock. Colony expansion modules, for the few things it was not cheaper (or possible) to manufacture locally, were constructed and imported the same way.

- **Low Berth Module**: Space being at a premium, this is the standard way to ship people, growing expanse colonies almost 1,000 people at a time. Medical facilities at each end take up to a month each to freeze and revive colonists on dismounted modules, while the Steppehauler flies freight. It is not designed to be entered or interacted with during flight. The module itself is unpowered just like the default module, with no powered doors, airlocks, internal atmosphere control or other basic systems. The fusion reactor only connects to the low berths.

- **Carrier Module**: Steppehaulers were seen as too valuable to risk in direct combat, but sometimes armed defence is necessary. The original design was to carry one of these modules, using the other for cargo. This module carries eight heavy fighters (see *High Guard*, pages 102-103), double-occupancy staterooms for the crew, and enough support equipment to serve as a fighter base if dismounted near a source of water on a world capable of supplying spare parts (the intent had been to set up modules within pipe distance of a downport, providing additional fuel processing and a pipeline for supplies while keeping ortillery strikes away from the starport). Unlike staterooms in the ship and torpedo module, this module's staterooms are double occupancy, each holding one fighter's crew.

- Torpedo Module: While Steppehaulers are normally unarmed, the module cradles have hardpoints for weapons mounting (seven for each module). Torpedoes became seen as a more practical alternative to fighters, firing from extreme ranges and coupled with planetary sensors to confirm the position of hostile ships. While the module has batteries, standard practice is to divert power from the manoeuvre drive and use Thrust 2 at most while firing the torpedoes, reserving the batteries for modest point defence.



CREW

Captain/Astrogator, Pilot, Engineers x 2, Mechanic, Medic, Marines x 3

RUNNING COSTS

Maintenance Costs: Cr69612/month
Purchase Costs: MCr835.35

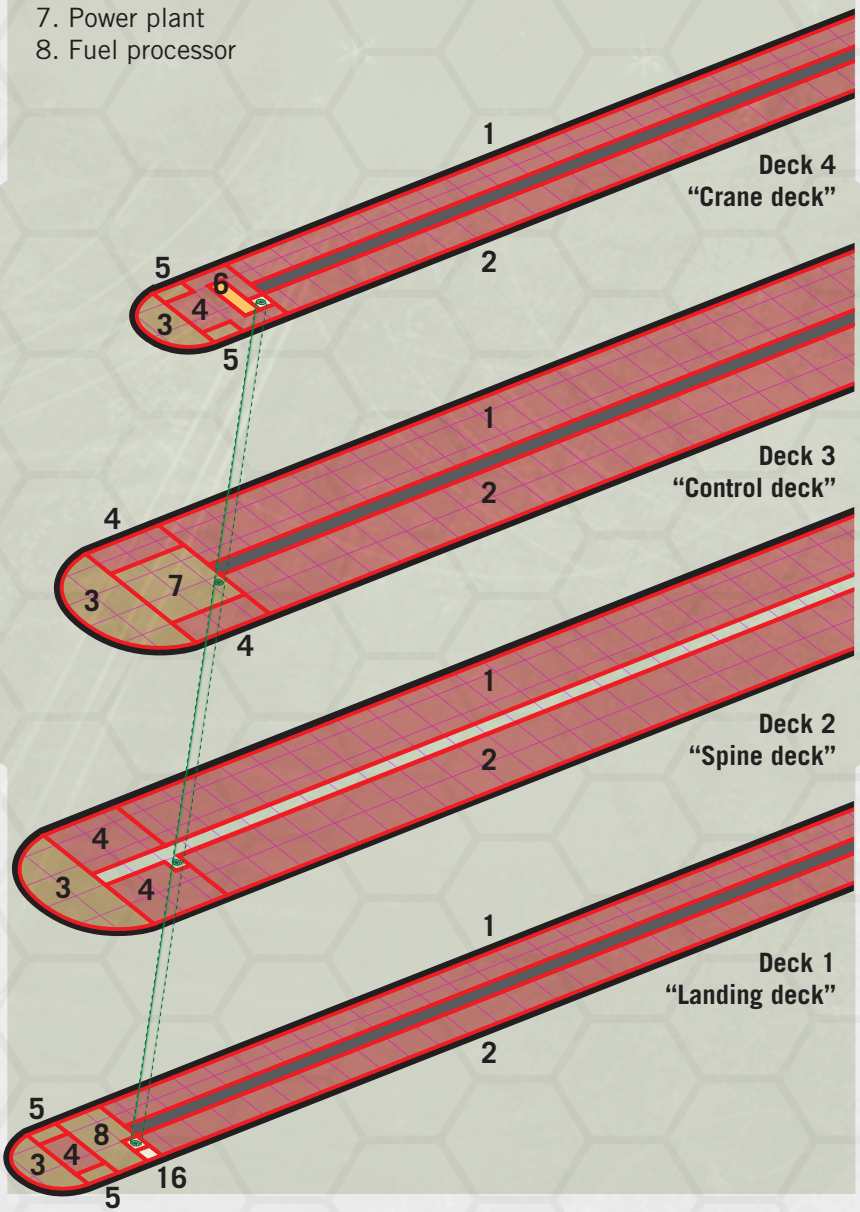
STEPPEHAULER-CLASS MODULAR FREIGHTER

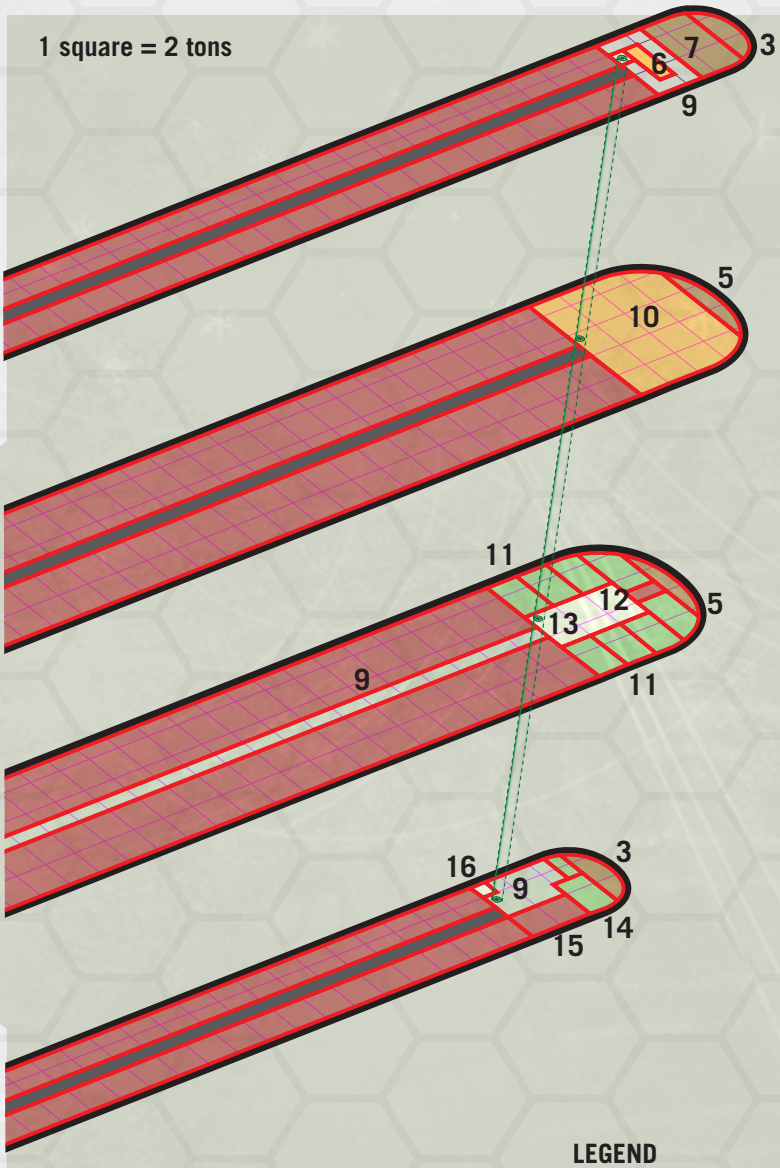
TL 16		TONS	COST (MCR)
Hull	1,400 Tons, Streamlined	-	84
Armour	Molecular Bonded, Armour: 4	28	50.4
M-Drive	Thrust 3 (energy efficient x3)	42	126
H-Drive	Hop 1, (energy inefficient, prototype drive)	40	360
Power Plant	Fusion (TL 15), Power 400	20	40
	High Efficiency Batteries (TL 12), Power 180	3	0.6
Fuel Tanks	H-1 plus four weeks of operation	142	-
Bridge		40	7
Computer	Computer Core/40	-	45
Sensors	Advanced	5	5.3
	Enhanced Signal Processing	2	8
Systems	Fuel Processor (140 tons/day)	7	0.35
	Fuel Scoops	-	-
	Cargo Cranes	4.5	4.5
	Medical Bay	4	2
	Armoury	1	0.25
Staterooms	Standard x8	32	4
	High	6	0.8
Software	Manoeuvre/0	-	-
	Hop Control/1	-	-
	Library	-	-
Common Areas		9.5	0.95
Cargo	Modular (500-ton modules x2)	1000	96
	Ship's Locker	14	-
		Total:	835.35

LEGEND

1. Port module
2. Starboard module
3. Manoeuvre drive
4. Hop drive
5. Sensors
6. Crane
7. Power plant
8. Fuel processor

HULL POINTS
560





POWER REQUIREMENTS

Basic Ship Systems	280
Manoeuvre Drive	105
Hop Drive	182
Sensors	8
Fuel Processor	7
Medical Bay	1

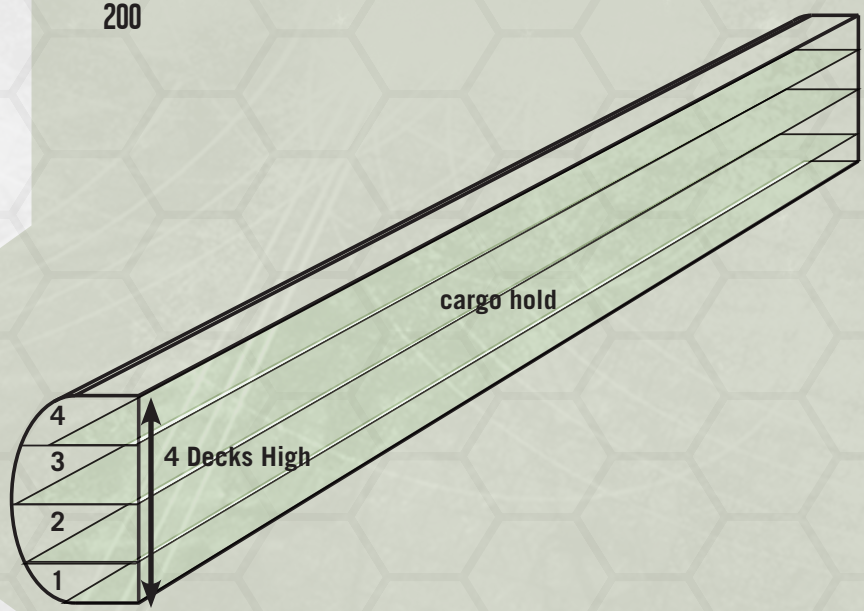
LEGEND

9. Cargo hold
10. Bridge
11. Staterooms
12. Armoury
13. Common area
14. High stateroom
15. Medical bay
16. Air lock

DEFAULT MODULE

TL 7		TONS	COST (MCR)
Hull	500 Tons, Standard, Unpowered	-	25
Cargo		500	-
		Total:	25

HULL POINTS
200



1. **"Landing deck"**
2. **" Spine deck"**
3. **"Control deck"**
4. **"Crane deck"**

CREW

None

RUNNING COSTS

Maintenance Costs: Cr2083/month
Purchase Costs: MCr25

DOWNPORT MODULE

TL 13		TONS	COST (MCR)
Hull	500 Tons, Standard	-	25
Power Plant	Fusion (TL 12), Power 135	9	9
Fuel Tanks	Starport-grade	145	7.25
Bridge	Starport Traffic Control	10	0.5
Computer	Computer/15	-	2
Sensors	Improved, Extended Arrays	9	12.9
	Improved Signal Processing	1	4
Systems	Fuel Refinery (TL 13), 105 tons/day	7	7
	Medical Bay x3	12	6
	Workshop	6	0.9
	Armoury	1	0.25
	Advanced Small Observatory	100	125
	Commercial Zone (colony headquarters)	100	20
Residential Zones	Luxury x5	50	37.5
	High x4	24	6
	Medium x4	16	1.6
	Low x5	10	0.5
Software	Library	-	-
		Total:	265.4

CREW

Captain, Bridge Sensor Operators x3, Medics x3, Scientist (astronomer) x2, Marines (police) x5, Mechanics x2, Steward, Advocate (judge)

RUNNING COSTS

Maintenance Costs: Cr22117/month

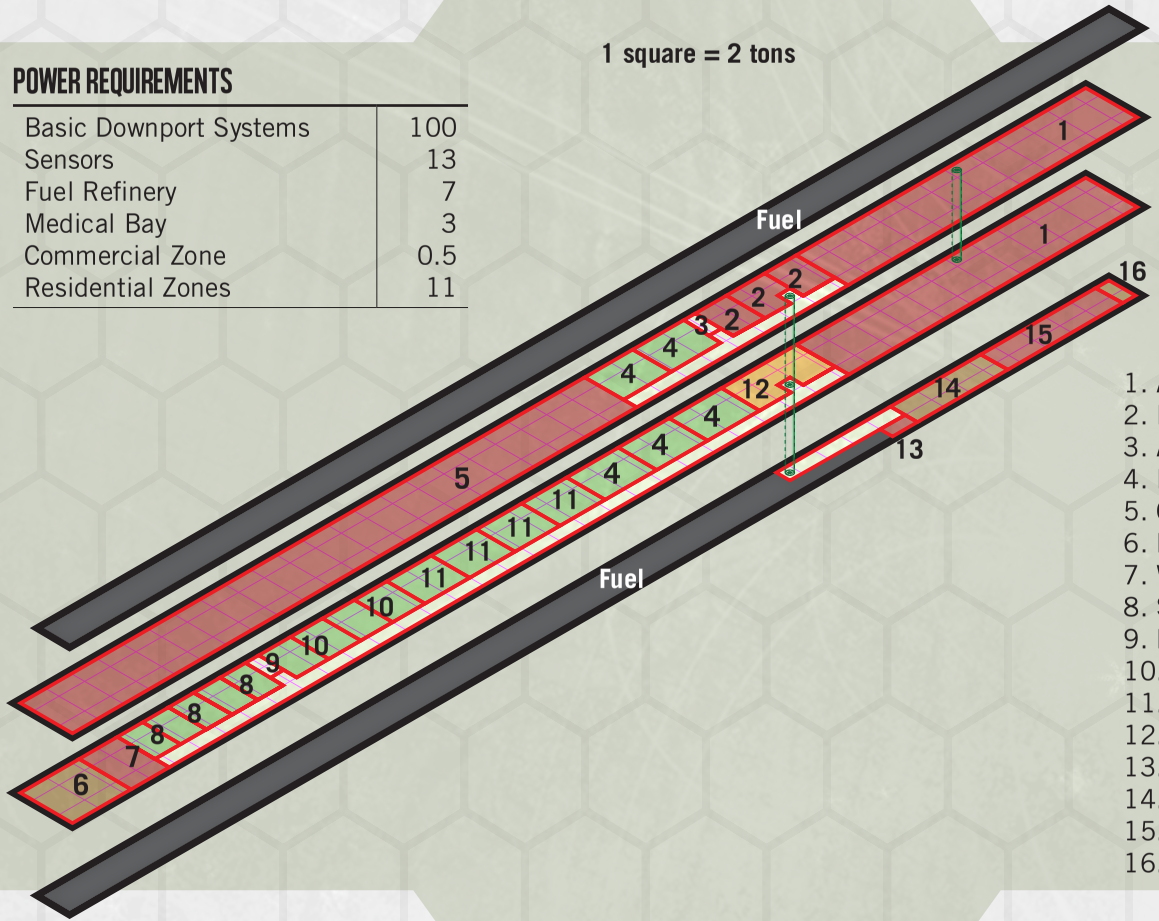
Purchase Costs: MCr265.4

POWER REQUIREMENTS

Basic Downport Systems	100
Sensors	13
Fuel Refinery	7
Medical Bay	3
Commercial Zone	0.5
Residential Zones	11

1 square = 2 tons

HULL POINTS
200

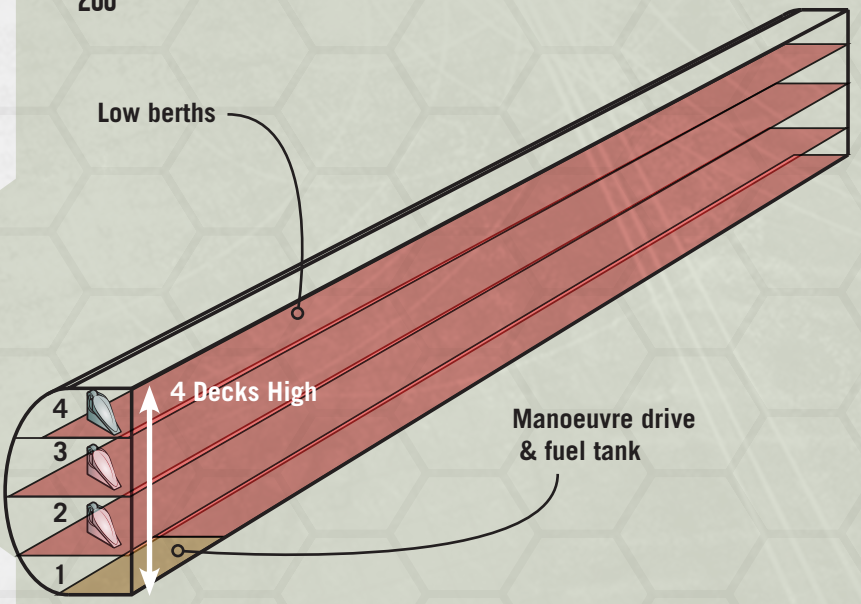


1. Advanced Observatory
2. Medical bay
3. Air lock
4. Luxury stateroom
5. Commercial zone
6. Power plant
7. Workshop
8. Stateroom (low)
9. Fresher
10. Stateroom (medium)
11. Stateroom (high)
12. Bridge
13. Armoury
14. Fuel refinery
15. Extended Arrays
16. Signal Processing

LOW BERTH MODULE

TL 15		TONS	COST (MCR)
Hull	500 Tons, Standard, Unpowered	-	25
Power Plant	Fusion (TL 15), Power 100	5	10
Fuel Tanks	4 weeks of operation	1	-
Staterooms	Low Berth x988	494	49.4
		Total:	84.4

HULL POINTS
200



1. "Landing deck"
2. " Spine deck"
3. "Control deck"
4. "Crane deck"

POWER REQUIREMENTS

Low Berths	99

CREW

None

RUNNING COSTS

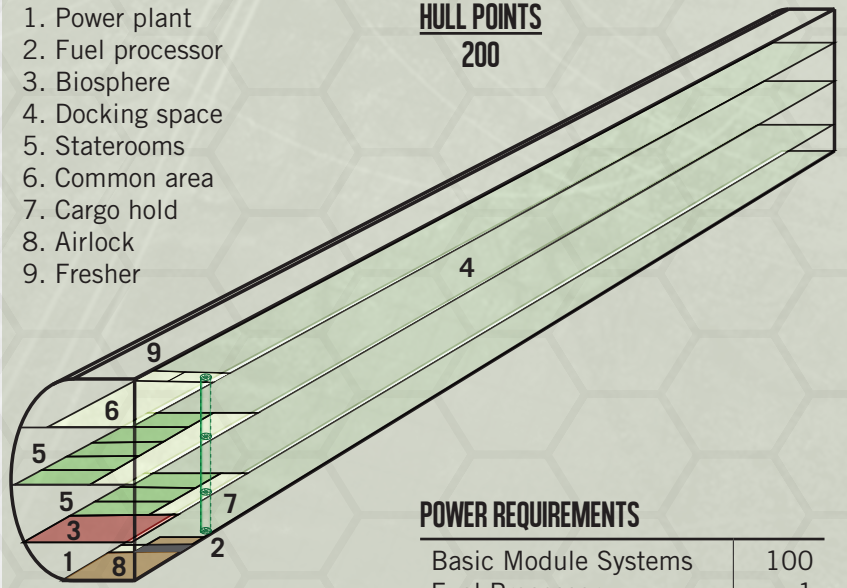
Maintenance Costs: Cr7033/month
Purchase Costs: MCr84.4

CARRIER MODULE

TL 15		TONS	COST (MCR)
Hull	500 Tons, Standard	-	25
Power Plant	Fusion (TL 15), Power 110	5.5	11
Fuel Tanks	4 weeks of operation	1	-
Systems	Fuel Processor (20 tons/day)	1	0.05
	Biosphere (16 people)	8	1.6
	Docking Space (50 tons) x8	440	110
	Heavy Fighters x8	-	427.32
Staterooms	Standard x8	32	4
Common Areas		8	0.8
Cargo		4.5	-
		Total:	579.77

1. Power plant
2. Fuel processor
3. Biosphere
4. Docking space
5. Staterooms
6. Common area
7. Cargo hold
8. Airlock
9. Fresher

HULL POINTS
200



POWER REQUIREMENTS

Basic Module Systems	100
Fuel Processor	1
Biosphere	8

CREW

Pilots x 8, Gunners x 8

RUNNING COSTS

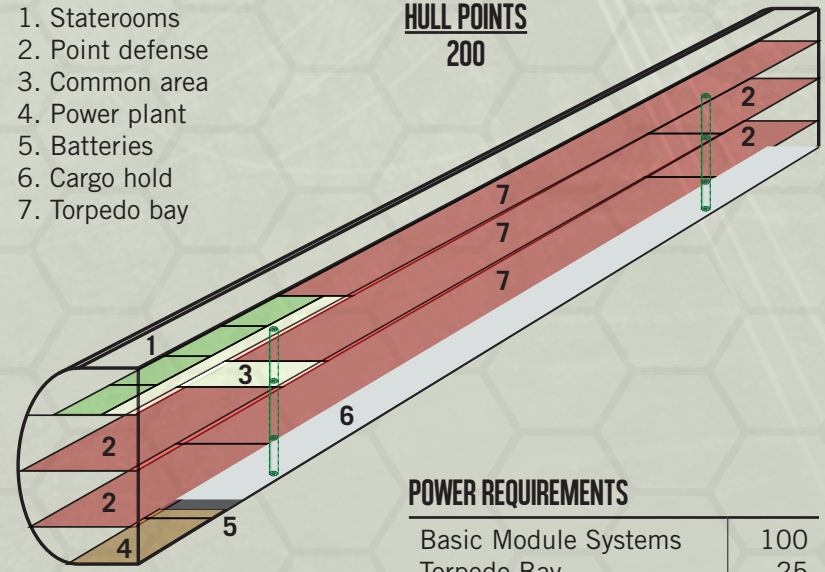
Maintenance Costs: Cr48314/month
Purchase Costs: MCr579.77

TORPEDO MODULE

TL 14		TONS	COST (MCR)
Hull	500 Tons, Standard	-	25
Power Plant	Fusion (TL 12), Power 105	7	7
	Batteries (TL 12), Power 180	3	0.6
Fuel Tanks	Four weeks of operation	1	-
Weapons	Large Torpedo Bay (size reduction x3)	350	45
	Type III Point Defence x2	40	40
Staterooms	Standard x4	16	2
Software	Launch Solution/3	-	16
Common Areas		4	0.4
Cargo		79	-
		Total:	136

1. Staterooms
2. Point defense
3. Common area
4. Power plant
5. Batteries
6. Cargo hold
7. Torpedo bay

HULL POINTS
200



POWER REQUIREMENTS

Basic Module Systems	100
Torpedo Bay	25
Point Defence	60

CREW

Gunners x 4

RUNNING COSTS

Maintenance Costs: Cr11333/month
Purchase Costs: MCr136

HOP DRIVE

Even with advanced technology, the jump drive has its limits. The next step up, commonly called the 'hop' drive, is capable of much further distances.

For most purposes, a hop drive of a certain rating (such as Hop-1) acts exactly like a jump drive of the same rating (such as Jump-1) except:

- The required TL17+ means it is unknown, even in theory, to most of Charted Space until long after 1105, though a few artifact ships have hop drive or similar. It is rumoured that the Annic Nova has or once had a similarly powerful drive, and that Duke Norris of Regina possesses another ship capable of long jumps.
- The minimum safe jumping distance is 1,000 diameters from the nearest gravity source, rather than 100 diameters. This makes powerful manoeuvre drives more important (a fact not realised with Steppehaulers until they were put to use, by which time it was too late to refit their engines).
- Hops cover 10 parsecs for each rating. This is a minimum, so jumping less than 10 parsecs takes the same fuel and time as jumping 10 parsecs, and 11-19 the same as 20. Hop-2 drives are able to jump merely 10 parsecs for the same fuel use and difficulty as a Hop-1, just as Jump-2 drives can imitate Jump-1. While a Jump-1 and a Hop-1 use the same amount of fuel, astrogation difficulty increases as if a full 10 (or if greater, rounding up to the next multiple of 10) parsecs were to be crossed, even for a short hop.

That last point means it is barely possible for talented sophonts to astrogate a Hop-1, let alone higher. The usual response is to let the computer do it, taking advantage of a computer's ability to run simulation after simulation until it narrows to an optimal solution. The computation cannot begin until the starship is actually in the system it wishes to jump from and someone tells the computer where the starship will jump next (which requires knowing the next destination, often the true practical limit unless the ship is making freight runs along routes known in advance). Extra bandwidth to run these simulations in parallel does not help, as failed simulations build upon each other to lead to a successful result.

The need for an astrogator does not completely disappear, as the software must still be monitored, mostly at the start and finish of the process. This is an Easy (4+) Astrogation (1D x 10 hours, EDU) check, with DM-1 for each 10 parsecs or fraction thereof, and the astrogator can do other things during this check (the astrogator's actual time spent is 1D minutes each at the commencement and conclusion). The high variability in time comes from the randomness of simulations: sometimes the computer gets lucky and finds the right solution quickly; sometimes it takes a few days, though a skilled astrogator can shave time off by identifying and

excluding large ranges of possibilities. Once complete, the calculations are good for 148 + 6D hours.

Hop Potential

Rating	1	2	3
Maximum Parsecs	10	20	30
% of Hull	2.5	5	7.5
Hop TL	17	19	20
Software	Hop Control/1	Hop Control/2	Hop Control/3
Software MCr if Bought Separately	1	2	3
Software Bandwidth	40	50	60

Rating	4	5	6
Maximum Parsecs	40	50	60
% of Hull	10	12.5	15
Hop TL	21	22	23
Software	Hop Control/4	Hop Control/5	Hop Control/6
Software MCr if Bought Separately	4	5	6
Software Bandwidth	70	80	90

Hop drives require an extra 5 tons beyond the percentage of hull, have a minimum size of 10 tons, can jump a minimum of 100 tons, cost MCr1.5 per ton (after adding the extra 5 and any other modifications that change size), and need power and fuel equal to 10% of the ship's tonnage multiplied by the hop rating used.

Once Hop-2 is available, some ships are built with both hop and jump drives, the former to cross entire subsectors (always aiming for an outsystem gas giant outside the star's hop shadow), the latter to jump directly to individual worlds within the subsector. The same fuel tank and power plant can be used for either (though not both at once); only the drives must be purchased individually.

Some speak of even more powerful 'skip' drives, that jump 100 parsecs per rating and require even higher technology (and more complex astrogation, not to mention further distance from a gravity well), but otherwise operate much the same as hop drives.

DEV LANDREL

An amateur xenoarcheologist, Landrel has long been fascinated by the Ancients, whose star-spanning culture flourished some 300,000 years before the rise of the Third Imperium. Landrel is the son of a wealthy planetary official and is, himself, independently wealthy.

He spends his time following leads to possible Ancient sites and organising private archaeological excavations under his own leadership.

Landrel is snobbish, vain, and temperamental, given to impatience and fits of explosive rage. This, coupled with his opinionated and stubborn beliefs (even in the face of evidence to the contrary), leaves him poorly suited to the work of archaeology. He is quite incapable of the painstaking and exacting work found in field excavation, and equally unable to master the tact and diplomacy required in dealing with people – either fellow archaeologists or representatives of officialdom.

Landrel's lack of patience is typified by his tendency to rush into jobs without preparation or precaution, often on the spur of the moment and with only the slightest excuse. He tends to feel that he, and he alone, is competent in the field of the Ancients; all others, especially recognised authorities in the field, he considers to be fools and dolts. He will brook no delay in his work; he has been accused of undermining the foundations of a 1,500 year old building – a memorial to the first colonists on Gram – while digging for a rumoured cache of Ancient artifacts that was alleged to exist below. Instead, he discovered the wreckage of an early colonial transport vessel, almost completely intact. The ship was of an age such that it might have been the first colonisation ship to reach Gram, a priceless treasure. He did not bother to properly excavate or study the ship, but merely photographed enough of it to give him the basis for an article in a popular magazine. The site was seriously damaged in his continued search for artifacts, and he is still wanted by the Sword Worlds government for criminal destruction of public historical treasures.

Two basic urges lie at the root of Landrel's activities. First and foremost is the desire to have his theories, which have received considerable criticism, vindicated. Among his more controversial ideas, Landrel refuses to accept the popular consensus that holds the Ancients to be represented in present times by the Droyne. Landrel maintains that the Droyne are merely the remnants of an unimportant servile race, and that the Ancients were, in fact, of a stock similar to Humaniti. He also is convinced that he has clues to the location of the Ancients homeworld – which he claims is now a free or wandering planet somewhere in the Spinward Marches – which,

Dev Landrel

Profession	Scientist/Archeologist
Age	38
Terms	5
Money	Mcr1.5

Skills
Admin 0,
Electronics (computers) 1,
Gun Combat (slug) 1,
Jack-of-all-Trades 2,
Leadership 1,
Science (archaeology) 1,
Streetwise 1

STR: 6
DEX: 8
END: 8
INT: 8
EDU: 8
SOC: 6

if he could discover it, would once and for all assure him the place in the annals of archaeology that he desires above all else.

Landrel is also very much attracted to the material side of archaeological discovery. He is known to have smuggled artifacts off planets where local law would otherwise have limited his access to them; it is rumoured that he has engaged in out-and-out plundering of priceless storehouses of archaeological lore merely to satisfy his own interest in antiquities. His colleagues disdainfully refer to him as 'the Treasure Hunter' when they mention his name at all.

The Travellers might come across Dev Landrel in any of a number of ways. He may recruit them to act as his bodyguards during one of his shadier exploits, such as an attempt to smuggle artifacts off-world. They might be offered a job as escorts for an expedition he is putting together into a wild, dangerous area where he believes Ancients artifacts to exist.

On the other hand, agents from the Sword Worlds or some other defrauded government might approach the Travellers, asking them to locate Landrel and bring him to justice. Personal enemies from the scientific community may desire revenge for some slight or injury, or they might seek to 'plant' the Travellers on one of Landrel's expeditions in order to discredit him in some way.

There is also a chance that Landrel will simply appear as a chance acqaintance, met aboard a starship or in a starport hotel or bar. In this case, he might offer them jobs, or the Travellers might be caught in the middle of trouble when assailants attack Landrel. If the Travellers are offered jobs with Landrel, there is a possibility that he will abandon them, salaries unpaid, when he decides to move on to another excavation.

Lastly, there is a chance that Landrel will have artifacts of the Ancients or art treasures in his possession when the Travellers encounter him; in this case, there is a possibility that the Travellers will want to rob him (in this case, Landrel should have a bodyguard or two to make things interesting). It should be pointed out that the relics Landrel is usually able to find are valuable for their artistic or historical interest rather than being miracle gadgets of high technology. Referees should avoid introducing gratuito us 'magical' items, as these will tend to upset the balance of a campaign.

STARS AND STELLAR OBJECTS

Travellers are often concerned exclusively with the mainworld of a system, jumping from one starport to the next without giving much consideration to the rest of the system. Here we start exploring the many interesting things that can be found beyond the orbit of the mainworld, and how other bodies can affect the system.

The type of star or stars in a system can have a huge impact upon conditions on the mainworld. Some star types make native life or habitable planets impossible, though this does not rule out terraforming or artificial environments. When detailing a star system, the referee should be mindful of the effects its star or stars will have upon the local environment and how worlds in the system will have developed.

EMPTY SYSTEMS

The way that Traveller designs star systems begins with a mainworld, so by definition any system on sector maps includes at least some planets. However, an 'empty' system can certainly exist. One way to explain this is to say that the navigation databases show only systems with planets, since there is no economic or political reason for visiting a lonely star in deep space. A region of space generated using rules that begin with star type can produce empty systems, which can have implications for the wider universe.

The jump drive used in Traveller is extremely fuel-hungry, and an empty system may not have any suitable source of fuel. It would thus be a dead end and deathtrap for vessels without a fuel reserve or tanker support. An empty system in the middle of a main would be as big an obstacle as an empty hex, which has implications for local trade and politics.

An empty system may not be completely barren; a lonely star might have a few comets or dust clouds orbiting it. However, the vast size of a star's neighbourhood means that such bodies are unlikely to be reachable by ships jumping into the vicinity of the star, effectively making the system useless.

Referees may (and perhaps should) assume there are a few empty systems within any mapped area. Most of the time these will have no importance in the grand scheme of things and can be ignored. However, a rogue planet captured by an otherwise lonely star might be an interesting adventure location. Some empty systems were not always so. A white dwarf, neutron star or black hole might have destroyed its system, perhaps leaving a few fragments of planets or distant comets.

Whether or not the referee chooses to place such systems on the map is a matter of personal choice. A 'mainworld-centric' map does not really need them unless they are the subject of an adventure, but an exploration-based game where the Travellers may not be able to detect whether the star has planets might require many stars to be plotted and their system only detailed when explored.

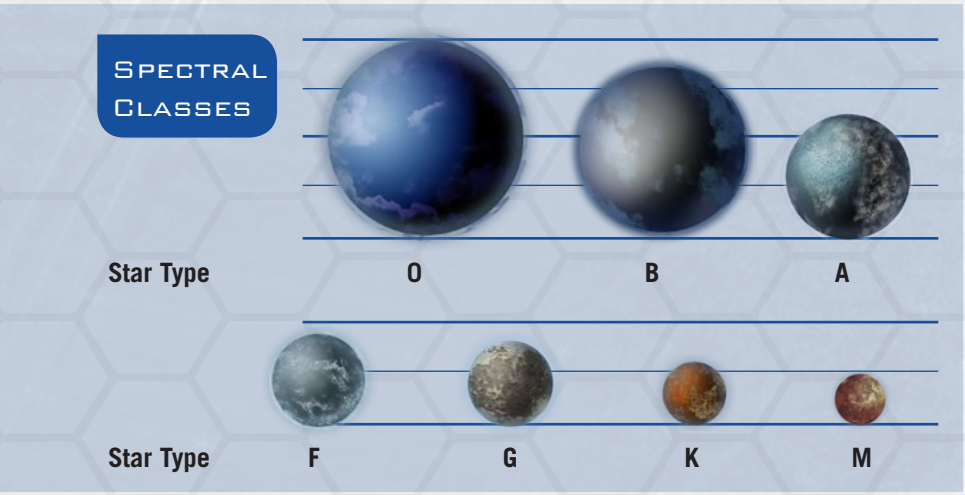
In short: traders, politicians and adventurers need to know about worlds. Explorers need to know about stars.

STAR SYSTEMS AND STELLAR BODIES

The term 'stellar body' is used here a little loosely to refer to anything with mass on a similar scale to a star. Most stellar bodies are stars, but a brown dwarf (properly referred to as a sub-stellar body since it has much lower mass and energy output) can fulfil the same role in some circumstances. Likewise a black hole or similarly massive object could be orbited by a collection of planets and other bodies in the manner of a star system.

A star system will contain one or more stellar bodies, one of which is considered to be the main star of the system and known as the primary. Mainworlds almost always orbit the system's primary, though sometimes are moons of a gas giant. If a system has more than one star, the secondary system(s) will tend to have a much smaller number of planets and other bodies than the primary.

In a single-star system, all major bodies orbit the primary or are moons of a body that does. Matters are far more complex where there are two or more stellar bodies. The presence of additional stars may make it impossible for planets to form in some parts of the system.



STAR CLASSIFICATION

Stars are classified according to their energy output, size, and mass. These factors give rise to two classifications: Spectral class and luminosity. A combination of these two systems allows a star's characteristics to be presented in a form of shorthand.

A high-mass star has a greater gravitational attraction than a low-mass one, and this is balanced against the internal forces created by processes ongoing within the star. One implication of this is the size of stars, and also their eventual fate. Low mass stars simply burn out; higher-mass ones may undergo a violent contraction which can be lethal to life in nearby systems, possibly creating a black hole.

Spectral Class

Stars are given a classification letter (O, B, A, F, G, K and M – Oh Boy, An F Grade Kills Me) with a subtype of 0-9 indicating how far along the scale towards the next classification the star is. Thus an F5 star would be average for its type, while an F9 is close to being a G type.

Average star temperatures are given in Kelvin. 0 Kelvin is -273° Celsius and one Kelvin is equal to one degree Celsius. Mass, Radius and Luminosity are relative to Sol, Earth's sun, which is given a nominal value of 1 for all three. Thus an average A type star, as shown on the Spectral Classes table, is about three times the mass of Earth's sun and vastly brighter. A world orbiting at the same distance from this star as Earth is from Sol would receive a lot more stellar energy and will have quite different surface conditions.

Spectral Classes

Star Type	Colour	Surface Temperature	Average Mass	Average Radius	Average Luminosity
O	Blue	25,000K or more	60	15	1,400,000
B	Blue	11,000 – 25,000K	18	7	20,000
A	Blue	7,500 – 11,000K	3.2	2.5	80
F	Blue to White	6,000 – 7,500K	1.7	1.3	6
G	White to Yellow	5,000 – 6,000K	1.1	1.1	1.2
K	Orange to Red	3,500 – 5,000K	0.8	0.9	0.4
M	Red	Under 3,500K	0.3	0.4	0.04

Yerkes Luminosity Class

The Yerkes Luminosity Class groups stars of the same temperature range into size classes, which gives a general indication of the star's energy output as well as volume of space it occupies.

Stellar Luminosity

Type	Description
Ia	Very Luminous Supergiants
Ib	Less Luminous Supergiants
II	Luminous Giants
III	Giants
IV	Subgiants
V	Main Sequence Stars
VI	Subdwarfs
VII	White Dwarfs

A combination of luminosity class and spectral class is used as a shorthand for a star's general characteristics. A type AII star would be a bright blue giant while a type G2 V would be main-sequence yellow star. The referee can use this data much like the UWP codes for mainworlds, to give a quick indication of conditions within a solar system.

NEAR COMPANION STARS

A near companion star can be said to orbit the primary, though it might be more accurate to say they orbit one another about a common point defined by their relative mass. A planetary system might conceivably include bodies that pass between lose companion stars, but conditions on such a world would be extreme and highly variable – living there would be a real challenge, though temporary camps might be set up to extract minerals during the safer parts of the world's orbit. Companion stars may both be orbited by a planetary system with the pair acting as the collective centre. This can lead to planets having complex orbits and variable amounts of solar radiation depending on the position of the companion star, which in turn can lead to extreme variance of conditions making native life unlikely.

DISTANT COMPANION STARS

A distant companion orbits at a great distance from the primary, often so far out that it contributes relatively little stellar radiation to the main system. Orbits may be perturbed to some degree by the companion's gravity but on the whole a distant companion system can be treated as essentially two separate star systems. The secondary may or may not have planets of its

own; if it does there might be multiple habitable worlds in the same system. It takes sufficiently long to reach worlds orbiting a far companion that jump drives are a better alternative, but the transit is possible in normal space, enabling a distant-companion system to become a self-contained environment where non-jump-capable craft are common.

COMPLEX SYSTEMS

A complex system could have multiple stars all orbiting one another, which would create very intricate orbital mechanics and potentially difficult conditions on worlds in the system. It is possible for a very complex system to have three or more stars orbiting one another, or close companions orbiting the primary and its distant companion(s). A system that contains several stars all with planets would be an exciting find, since it allows the development of a non-jump economy using resources of several star systems. More commonly, a complex system consists of a primary and distant companion plus additional close companion stars and maybe very distant stellar bodies. These may be brown dwarf sub-stellar objects or a rogue star. Such a body might be in the process of being captured or may be passing through the star system without being truly a part of it.

MAIN SEQUENCE STARS

Main sequence stars make up the majority of stellar objects the Travellers encounter. Characteristics can vary in terms of energy output, but the size and mass of these stars fall within a fairly narrow range and conditions in their star systems are ‘normal’. Earth’s primary Sol is a main sequence star.

A main-sequence star system will be laid out in a simple manner compared to other star types. Planets in the inner zone will receive too much stellar energy for liquid water to exist and are thus unlikely to have life of a sort familiar to humans. A zone exists in which the amount of energy is about right, and how far out this 'warm' or 'goldilocks' zone lies from the star depends upon its energy output – a habitable planet orbiting a dim red dwarf will be much closer than one orbiting a hotter star. Beyond the warm zone is a 'cool' zone where a useful amount of energy reaches planets located there, and where exotic life is possible. Beyond this is a much larger 'cold' zone where little stellar energy is received.

By convention, the cold zone is often referred to as the outsystem and the cool, warm and hot zones as the inner system. This is more to do with distances between orbits than temperatures; worlds in the inner system orbit closer together than those in the outsystem. Thus a mining station in the hot zone requires a relatively short transit time to the mainworld compared to one in the far outsystem.

The situation is complicated when there are multiple stars in a system, since worlds will receive stellar energy from more than one source. Dim companion stars or very distant ones will not affect the main system much, but bright or close stars may. Worlds could experience complex metaseasonal changes, for example being a frozen wasteland when orbiting far from the companion star but going though a warmer period hundreds or thousands of years long when closer to the secondary.

There are no special considerations for the referee laying out a main-sequence star system. If the mainworld has a breathable atmosphere, life, and/or liquid water then it needs to be in the warm zone and should be placed first. Additional bodies such as planetoid belts, gas giants and non-mainworlds can be placed wherever the referee prefers, in the inner, cool or cold zones. A mainworld that does not have a breathable atmosphere and/or life can be placed anywhere in the system at the referee's preference.

Main-sequence stars are indicated by the code V after their luminosity class. Thus a G5 V star lies roughly in the middle of the temperature range for type G (white to yellow) stars, and is a main-sequence star of average mass.

SUBGIANT AND GIANT STARS

Giant stars do not start as giants. They expand in the later parts of their life cycle, passing through a subgiant phase and becoming giants before eventually undergoing collapse. This means that a star that has formed a planetary system will destroy at least part of it, swelling up to engulf inner planets. The process takes millions of years, but far longer is required for a world to develop native life. Thus the life-bearing inner planets of a giant star system will be gone, and worlds of the outsystem will be warmer than they had previously been but will not have time to develop life. Any that exists must be imported during the warm phase.

The subgiant and giant phases last so long that in terms of civilisation they might as well be permanent. However, a very old giant star might be beginning to collapse which will make the region unhealthy for anyone living in the system. Radiation flares, mass ejections and even nova events are all possible, making it a place only scientists or prospectors will want to visit.

Subgiant stars are indicated by type IV, and giants by type III. Thus an M5 III star is a red giant – huge but not especially hot – whilst a K5 IV is an orange subgiant; hotter and still undergoing expansion. Such a star might be in the process of destroying its planetary system or, if it is just beginning to expand, conditions on its planets will be changing as the amount of energy received increases.

Bigger and brighter stars – class II and I – are very rare. They are extremely bright and can serve as navigational reference points for ships hundreds of parsecs away. These stars burn through their fuel fast and meet a violent fate as a supernova. The process takes millions of years, but the end can be catastrophic for life in the local region as radiation from the dying star reaches them. Gigantic stars of this sort are unlikely to have useable planets but there is always a chance they might have captured a rogue or possess a few bodies surviving from their far outsystem.

SUBDWARF AND WHITE DWARF STARS

'Cool' subdwarf stars are similar to a main-sequence star of the same class but are smaller and hotter due to their composition. 'Hot' subdwarf stars are sometimes formed as a giant star begins its collapse or as a result of interactions in a multiple star system. Hot subdwarfs are highly unlikely to have habitable planets orbiting them. Both are indicated by stellar type VI.

A white dwarf is the remnant of an old star that expanded through the giant stage then collapsed again. Such a star will not have habitable planets but may retain outsystem bodies. Any planets closer to the star will have been destroyed in the giant phase. White dwarf stars are indicated by stellar type VII.

BROWN DWARF SUB-STELLAR OBJECTS

A brown dwarf is not really a stellar object, being more properly considered a 'failed star'. It is essentially a body possessing far greater mass than a gas giant but not enough to begin stellar fusion and become a star. A brown dwarf gives out sufficient energy to warm any moons it may have, and could serve as the underpowered primary of a planetary system. Brown dwarf bodies are hard to detect due to their lower energy output compared to stars, and may exist as companions to 'proper' stars – possibly in a very distant orbit – or as independent brown dwarf systems in deep space. A brown dwarf system can be used by the referee to place an adventure location wherever desired, without altering existing starmaps.

THE IRKLAN

The Irklan are not an alien race, nor even a distinct human culture. Instead, they a human religious sect from the desert highlands of Menorb in the Spinward Marches (Regina 0203, C-652998-7). This sect is of special interest because of their high stress on personal survival and individual prowess in hand-to-hand combat. The ascetic subculture of the Irklan is a rigorous training ground for body and mind, and members enjoy an awesome reputation throughout the Regina subsector and beyond as masters of stealth, unarmed combat, and rigorous control of their bodies and minds.

The powers at the command of the Irklan are somewhat exaggerated by outsiders (which is encouraged by the sect); certain superstitious natives of Menorb believe them to be sorcerers or mystics, while more the sophisticated claim them to be psionic heretics. For this reason they are often shunned, sometimes attacked without reason, and always feared. In actual fact, the Irklan are not so awesomely powerful as popular superstition makes out, though their philosophy and lifestyle grant them considerable talents.

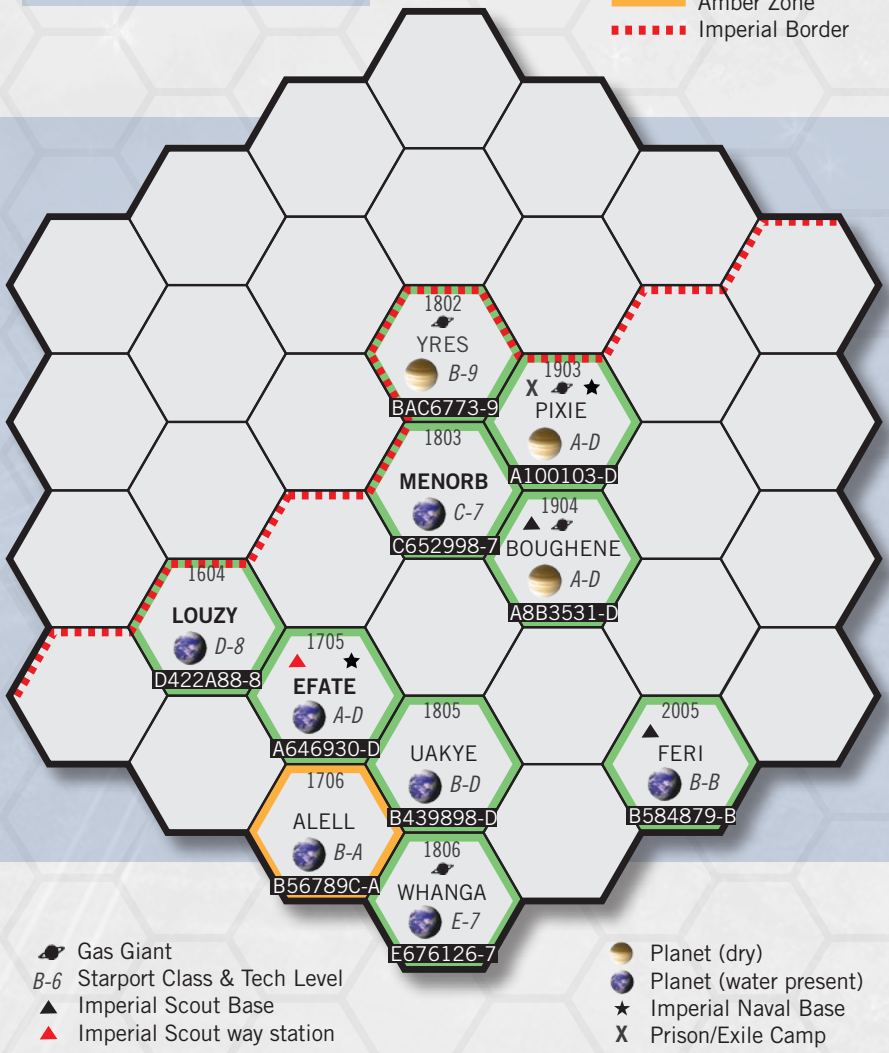
HISTORY

The origins of the Irklan are obscure. It is believed the sect dates back to the earliest days of the colony, several hundred years ago. Menorb, a poor world with little water and harsh conditions, presented a rugged challenge to the first colonists, and a traditional punishment for wrongdoers was expulsion into the upland deserts, a hostile environment similar to the Mojave Desert on Terra.

Few criminals survived expulsion, but some did, and a group seems to have formed the nucleus of the Irklan. The derivation of their name is not certain, but Iraklion means ‘band of brothers’ in one of the early dialects of Rhylanor, from which many settlers of Menorb had their origins. This is the suspected root of the name.

In any event, the Irklan survived. Originally a simple nomadic subculture, members of the Irklan gradually elevated the collected teachings of survival in their harsh environment into a complex religion, one in which personal survival was the highest proof of fitness.

Menorb
Regina subsector



The sect was forced to do so without the benefits of technology, and developed a dislike for such, believing too much use of technology made one soft and incapable. Cut off from advanced weaponry, they learned martial arts disciplines and the manufacture and use of primitive weapons, such as bolos and blowguns. They also learned the techniques of stealth and many aspects of basic survival.

As the settlement on Menorb grew, the Irklan tended to resist reintegration into civilisation, and gradually withdrew into the depths of the harshest highland deserts. This region was formally made a reservation for the Irklan people by the government almost 250 years ago. However, the reserve cannot hold all of their number, and some members of the Irklan leave their desert fastness to venture to other worlds, usually as part of a personal religious quest in search of ever harder tests of personal survival abilities. Those who leave Menorb tend to be the best of their people (in terms of skills) and this has helped preserve the tradition that the Irklan are inhumanly or even supernaturally powerful.

BELIEFS

Irklan religious beliefs dominate their lives. They believe that all of life is a great struggle, a test of worthiness. Those who survive are fit for a better life in the next world, while those who fail lose all chance for the next life, their souls perishing at death along with their bodies. The object of every member of the sect is to live a long and glorious life, filled with triumphs over every possible challenge both environmental and social. In the end, though, they would rather die of natural causes than in combat, for though their deeds through life earn them merit, the idea of failing any test of strength is repellent, implying unsuitability to survive.

There are a number of subsects in the Irklan religion, some holding that even death by natural causes is a failure, and that only a glorious career capped by ritual suicide is the way to reach the afterlife. Other groups are somewhat less rigid in their beliefs. The Irklan religion has nothing of personal morality in its teachings. Because it stresses survival above all else, the religion does not attempt to codify behaviour; anything that helps a person survive is good, while those which shorten life are bad. There are a complex set of taboos and rituals associated with some subsects (some have commented that each individual Irklan is a subsect all of their own), but some general rules can be applied to almost all because of the relation to survival.

Thus, alcohol and narcotics of all kinds are forbidden, because of their deleterious effect on the body. There are also complicated dietary regulations, to assure an individual eats only those items which are best for good health and maximum fitness. Most members of the Irklan are ascetic in the extreme, scorning money, power, technology, and all the other traditional goals of other societies in favour of concentrating on the acquisition of merit by seeking out and overcoming challenges.

In the absence of a code of religious morality, the personal morality of each individual is the only check on antisocial behaviour. Cooperation is seen by some as a pro-survival trait, by others a weakness. Thus, some members of the Irklan lead a lone wolf existence, caring about no one but themselves; others realise that the good of the whole is as important as

the good of an individual. The Irklan are generally distrustful of outsiders, but can be won over by a demonstration of individual prowess or some other feat which indicates a suitability for survival.

IRKLAN TRAVELLERS

The Irklan are a harsh and pitiless society, concerned with their own ways and little more. Wandering Irklansa may occasionally be found, working in risky and challenging occupations. Occasionally, they will undertake an assassination, not so much for the money (although most wandering Irklansa realise they need money to survive in Imperial society), but for the challenge it presents them. Irklansa killers are not the sort who use a sniper rifle from several hundred metres. A challenge requires that their victim be confronted directly, and given a chance to resist in hand-to-hand combat.

This means that when killing for hire, they will not strike from behind or from ambush no matter how much the client wants them to. When on the defensive, however, they will show no such scruples. A hunted Irklansa will use every trick and trap in their extensive arsenal in order to escape death. This characteristic makes them extremely dangerous to police and security forces, and is the reason why the Irklan are careful to conceal their affiliation from government officials.

Irklan tend to dress in dark colours, favouring black or dark shades of green, blue and grey that disappear into the shadows. They will adopt local dress when it suits their purposes, but not compromise their ability to fight or move freely with tight or over-fussy clothing, or needless frippery. They prefer not to be in direct sunlight; as a desert people they have an instinctive caution about the effects of being exposed to harsh sunlight.

Irklan favour personal weapons such as knives and blowguns, often carrying several concealed blades. They have little use for (and openly scorn) technological aids which includes firearms and advanced weaponry. Overall, they tend to be rather grim and may even appear self-destructive, seeking out the hard way to complete a task or refusing to take shelter from bad weather just for the sake of the challenge. For their part, Irklan are openly contemptuous of those who live soft lives coddled by technology, and are unlikely to consider them anything more than a potential liability.

Characteristics

Irklan Travellers have the following modifiers applied to their characteristics: STR+1, DEX+1, END +1, EDU-2, SOC-2

Traits

Irklan Travellers all possess the following traits.

Age Resistance: Irklan are supremely fit and receive DM+1 to all rolls on the Aging table.

Control: This is an unusual trait, equivalent to the psionic talent of Awareness. All Irklan have the equivalent of a PSI characteristic (but only for this purpose) equal to their END, and the Awareness skill at level 0. This trait is not be considered the same as psionic training.

Careers

The only career open to an Irklan is Drifter. Those who remain on their homeworld must be Barbarians; those who interact with interstellar society can choose to be Wanderers instead.

Any award of the Jack-of-all-Trades skill can taken as Awareness instead. Seafarer must be taken as Survival.

SUBSIDISED MERCHANTS

The tramp trader starship is a staple of Traveller lore. A beaten up but reliable old free trader plies the jump-1 mains seeking fortune and adventure, buying low and selling high, taking on passengers and picking up odd jobs along the way. The open-endedness of the tramp trader campaign has broad appeal but there is an intriguing alternative to the free trader that deserves its due: the subsidised merchant. Running a subsidised merchant campaign is similar to the tramp trader trope with some distinct differences and unique flavour.

The 400-ton Type-R subsidised merchant, affectionately known as a 'fat trader' or 'subby', has a cavernous 201-ton hold, consuming just a bit over half of the ship's displacement. The hold is two and a half times that of a Beowulf-class free trader, enough to make a thrifty freelance merchant salivate at the potential profits that could be made. However, bigger ship means bigger expenses, putting the Type-R out of reach for most Travellers. For this reason, subsidised merchants are rarely sold to independent traders. Instead, they are typically purchased by governments or corporations who then hire a qualified crew to operate them and the two parties share the profits.

Subsidised merchants were created to fill the gaps not addressed by megacorporate bulk freighters and independent free traders. Large freight lines tend to travel the main routes and free traders chase the biggest profits wherever they may be. Whilst these practices serve the majority of the population, they leave a significant minority underserved or even completely bereft of interstellar commerce. Subsidised routes fill that void.

The standard subsidised merchant contract includes the following provisions.

- The ship is managed by a subsidy agency and wholly owned by a third party, usually a conglomerate of planetary governments or a corporation. If the ship has a mortgage, it is paid by the owner. The subsidy agency is often a blind trust that operates as an intermediary between the owners and crew.
- The Travellers pay all maintenance, life support, crew expenses and berthing costs incurred by the ship.
- The ship is required to travel a specified route or operate in a designated region 70% of the time. For the remaining 30% of the time, the crew may use the ship as they wish and in the region of their choice. However, they must have the ship back on its subsidised route before their time is up.
- The owner receives 50% of all revenue, payable at any Class A, B, C or D starport.

The crew of a subsidised merchant typically have shares in the enterprise. For example, a ship's captain might have five shares, the pilot three, and the engineer two with nominal or no shares given to other members of the crew. The crew constitutes a board of directors who make decisions regarding the use of the crew's portion of the revenues.

An operating fund is maintained to cover expected costs. Any surpluses that remain after operating expenses are paid may be given as dividends to shareholders or used for other purchases that are approved by the board.

Some crews also maintain a 'shadow fund', which is kept separate from the operating fund and may be used for such things as purchasing cargo space on their own ship for the purpose of transporting speculative cargo. Such cargo falls outside the realm of their contract and therefore presents an opportunity for the crew to generate additional income not shared with the owner. Subsidy agencies often frown upon this practice but auditors rarely get involved unless the crew starts buying up large lots on an ongoing basis.

The worlds visited by subsidised merchant are usually underserved or off the beaten path. Most worlds will be within one parsec of each other to best utilise the ship's jump-1 capability. When necessary, two-parsec

gaps may be crossed by Type-R ships by using collapsible fuel tanks or drop tanks to facilitate two consecutive single-parsec jumps.

Conditions for trade vary greatly. If they were ideal, no subsidy would be required and the desired traffic would already be present. On the other hand, when a conglomerate or corporation is willing to spend capital on an expensive trading ship, the potential to acquire wealth is usually there. It merely has not been properly exploited yet, or so goes the thinking.

Subsidised routes are sometimes purchased by outside parties. For example, should a freight line see potential in a subsidised route, they might attempt to buy the route from the current owners. The more profitable the route, the more likely this is to happen.

The standard arrangement has the crew plying the subsidised route 70% of the time which comes to approximately 37 weeks out of each year. This leaves the crew only 15 weeks of independent operation per year. Crews may optionally build up credit with the subsidy agency by extending their subsidised tour. For example, in a given year, should the crew extend their tour from 37 to 50 weeks, they will build up 13 weeks of credit which they may add to their independent tour. In this scenario, the crew would have 28 weeks to operate the ship independently, giving them ample time to travel to a desired destination or region, engage in trade, and then to return to their subsidised route. Crews have been known to work long years of service to build up equity for a long independent tour. Most subsidy agencies put a cap of 80 weeks on the amount of independent operation time that can be earned, but some have no cap at all.

THE BLOODSHOT CLUSTER

The Trin's Veil subsector of the Spinward Marches is a prime location for subsidised routes. The subsector is completely removed from the Spinward Main, the vast jump-1 route that blankets much of the sector. However, the capital at Trin is the nexus of several small jump-1 clusters. One of these is the Bloodshot Cluster just to spinward of Trin. The cluster is named after the two smouldering red giants at Murchison and Raydrad that hang over the region like a pair of red eyes.

The cluster features 11 worlds all within one parsec of each other. The Viscount of Edenelt enlisted the Lord of Hammermium and the Commandant of Katarulu to invest in a number of subsidised merchant to operate in the region; the trio would very much like to help develop the economies of their less well-to-do neighbours. In return for natural resources, foodstuffs and common goods, they hope to gradually increase the Tech Levels and wealth of other systems in the cluster.

Bloodshot Cluster

Name	Location	Bases	Profile
Conway	2735	S	D894586-7
Edenelt	2733	-	A5638BD-B
Hammermium	2936	-	A5525AB-B
Katarulu	3032	A	B552665-B
Leander	2832	-	E695244-5
Murchison	2935	N	B544433-6
Pepernium	2833	-	D567530-3
Prilissa	3035	-	B9855886
Raydrad	2933	-	E99467A-6
Traltha	2834	-	B590630-6
Zyra	2934	-	B555448-7

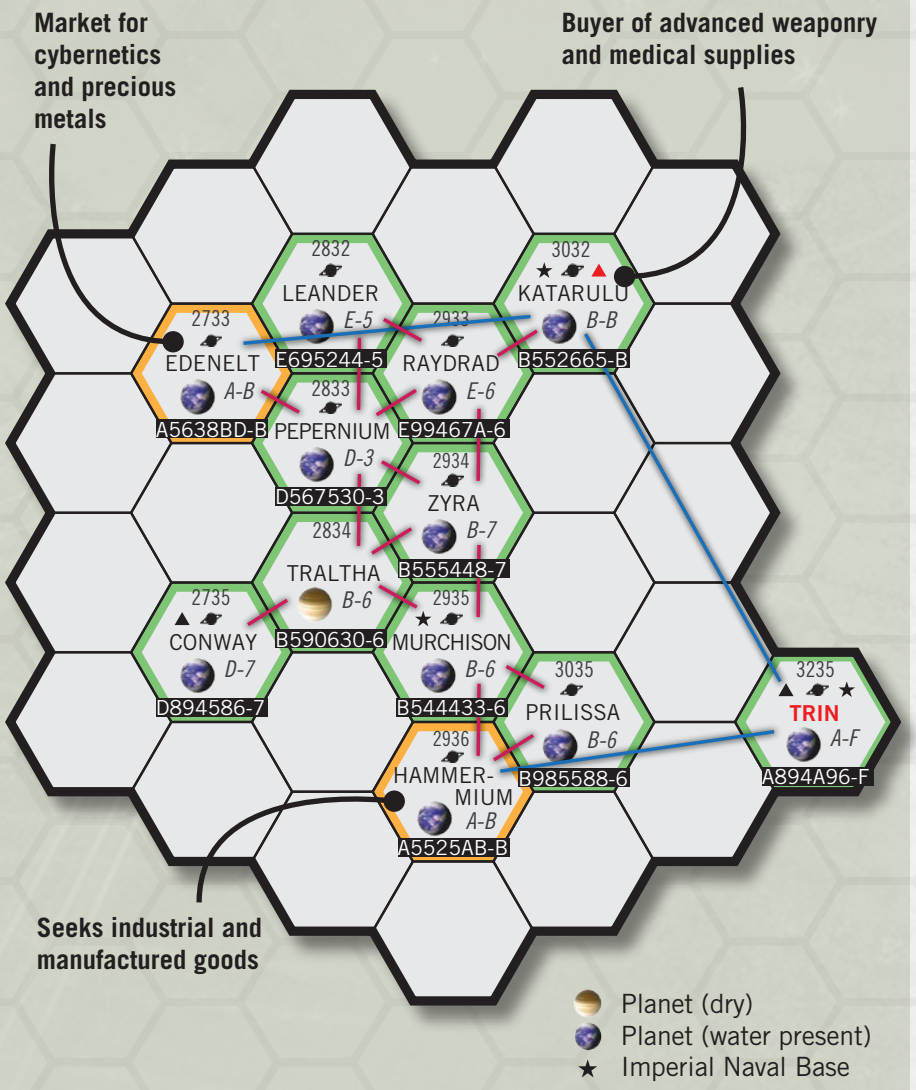
Name	Trade Codes	Travel Code	Gas Giants
Conway	Ag Ni	-	G
Edenelt	Ri	A	G
Hammermium	Ni Po	A	G
Katarulu	Ni Po	-	G
Leander	Lo	-	G
Murchison	Ni	-	G
Pepernium	Ag Ni	-	G
Prilissa	Ag Ni	-	-
Raydrad	Ag Ni	-	G
Traltha	De Ni	-	-
Zyra	Ni	-	G

USING SHIP SHARES

If the conglomerate or corporation that owns the ship permits it, the Travellers can obtain more favourable terms in their contract by trading in Ship Shares. In such cases, Travellers may spend Ship Shares to purchase a higher degree of route and revenue control.

Route Control purchases provide additional weeks with which the Travellers may operate a subsidised merchant independently per year. For example, if the Travellers purchase 10 weeks of Route Control, the owner of the ship has 10 fewer weeks per year during which they dictate which

BLOODSHOT CLUSTER REGION OF THE SPINWARD MARCHES (TRIN'S VEIL)



systems are visited. This gives the Travellers considerably more freedom to travel outside the boundaries specified in the contract.

Revenue Control gives the Travellers additional percentage points of the trade revenue earned by the ship. Revenue Control purchases are on a sliding scale that becomes gradually more lucrative the more Ship Shares the Travellers invest. For example, the standard contract gives the owner 50% of all revenue year-round. If the Travellers spend 10 Ship Shares on Revenue Control, they gain 5% more of the revenue. This means that the owner receives only 45% of the total revenue and the Travellers' share increases to 55%.

Ship Shares

Ship Shares	Route Control	Revenue Control
5	5 weeks	+2%
10	10 weeks	+5%
15	15 weeks	+12%
20	20 weeks	+20%

Ship Share purchases are always negotiated in increments of five and non-refundable so the Travellers must exercise caution. Spending them on route and revenue control should only be done if they intend to make a long-term commitment.

Shrewd Travellers have been known to parlay Ship Shares into great riches over time. Some have even spent those riches to buy their subby from its owner after several years of service.

CREAM OF THE CROP

Obtaining crew positions on a subsidised merchant is highly competitive. Travellers are heavily vetted before they are even considered to crew such a ship. No subsidy agency is going to take a risk on a Traveller with a criminal history of any type. Travellers who have spent any time in the Rogue or Prison careers have no chance to be hired unless clean records have been properly forged and their pasts adequately obfuscated. Furthermore, any Mishaps incurred during Traveller generation that resulted in termination from a career will be investigated by the agency. If a Traveller exited a career due to a Mishap, any Traveller can make an Average (8+) Admin check (INT or SOC, 1D days) to clear the offending Traveller's name so the hiring process can move forward.

In addition, at least one Traveller in a prospective crew must have served in one of the three Merchant careers and achieved a Rank of 3 or higher. Subsidy agencies want experienced and reliable crews led by qualified traders.

SUBSIDISED MERCHANT CAMPAIGNS

Campaigns based on the travels of a subsidised merchant are very much like tramp trader campaigns. The Travellers fly their starship from world to world, conducting trade and attempting to make a tidy profit. However, a free trader is just that – free. The Travellers own all or a portion of the ship and are free to make their own decisions regarding where they go, who they take as passengers and what cargo they speculate upon.

Making a profit is of tantamount importance to the subsidised merchant captain as well but there is another goal that is equally important: to establish relationships. The more a subby crew gets to know its stomping grounds, the more successful they become. Subsidised merchants operate in regions ripe for economic development. Conditions for trade are often less than ideal and the Travellers' choices are narrowed to a specific set of worlds. Making a profit under these conditions can be a challenge but subby captains have a saying: 'It's all about knowing the game.'

On a free trader, you might keep on moving and never look back, trading as you embark upon a grand tour of a sector and beyond. On a subsidised merchant, the Travellers spend the majority of their time making the rounds and getting to know the worlds and people of a region until they become intimately familiar. The denizens of the starport bar on Zyra know the entire crew by name. The scouts at the base on Conway are excited to see the crew again and fill them in on all the rumours going around. When they return to Edenelt, the marquis himself greets the Travellers and wants to know how 'our little project' is going.

The subsidised merchant campaign is very much about treading over familiar ground and being an agent of change in a little corner of the sector. This type of campaign also has a built-in device to mix things up and change the pace: independent tours. After their obligations to the owner are met, the Travellers get to branch out to new regions of their own choice, plying the mains or delving into uncharted territory.

TRAMP TRADER

The tramp trader campaign is one of the lynchpins of Traveller. One of your Travellers receives a free trader while mustering out and the others pitch in their hard-earned Ship Shares gleaned from previous careers. Lo and behold, they have a ship… but one with a six-figure monthly mortgage. Once they factor in crew salaries, life support costs, monthly and annual maintenance, and occasional battle damage, they might start to wonder if ownership was really such a good idea.

Take heart, weary Travellers! Your ship's most important assets are the cavernous space on the lower deck, where all manner of valuable goods may be stored, and the empty staterooms on its upper deck. Both promise to deliver wealth and prosperity beyond your wildest dreams.

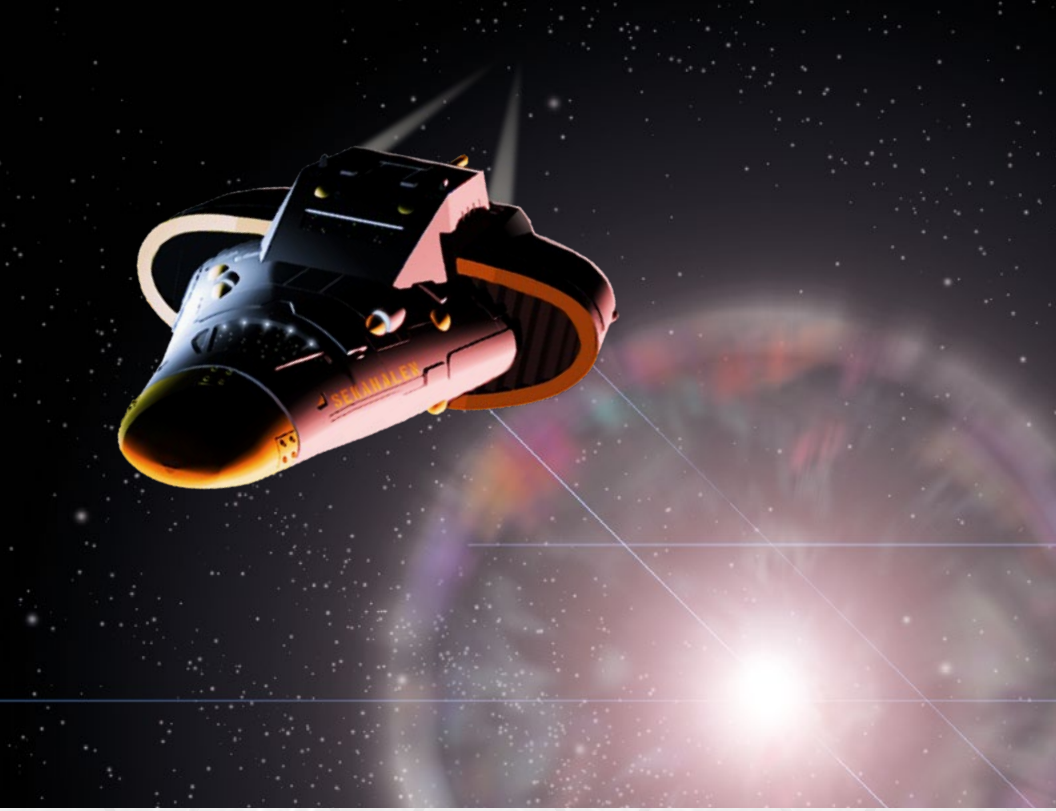
Choosing the right trade route and employing a broker who is adept at buying low and selling high can earn you all you need to pay off the ship and earn a tidy sum for your Travellers to start buying all the high-tech goodies they want. An enterprising referee can use the Trade, Spacecraft Operation and Space Combat chapters of the Traveller Core Rulebook to put his Travellers into all sorts of interesting and fun situations. Here are a few ideas to spice up your tramp trader campaign, adding a few wrinkles that will both challenge your Travellers and add fun to your gaming sessions.

TAKING ON PASSENGERS

One of the best ways to earn Credits and add to the fun of a tramp trader campaign is to put those staterooms to use. The Travellers should note they must pay the life support costs for each and every stateroom whether or not they are occupied, so should feel compelled to fill them whenever they can.

Passenger care requires a trained steward, so hopefully at least one Traveller has this very important skill. Steward is more than just cooking and cleaning after unruly passengers; it is a discipline and knowledge of protocols and behaviours that one must exhibit to convey passengers between the stars in comfort and luxury. Stewards have a unique array of social and diplomatic skills that enable them to make the cramped conditions of a starship feel like a comfortable home away from home.

The steward must provide varying degrees of service for each level of passage. Attending Middle Passage passengers is a routine affair. Such



passengers are largely expected to take care of themselves with a single level of Steward skill required to attend up to 100 passengers. High Passengers require a much higher degree of service with a great deal more care given to cuisine, entertainment, and comfort during a jump. Referees may portray High Passengers as difficult and demanding from time to time. Most human societies are class-based on some level and people like to enjoy the benefits of higher status. As a rule of thumb, the more obvious differences there are in the levels of passage aboard a ship, the easier the steward's job will be. For example, if the meals given to Middle and High Passengers are identical, complaints are likely to be more common from the upper tier of passengers. The more obvious the distinctions between each level of passage, and therefore the greater status enhancement, the less likely there are to be issues.

Referees should make use of the Exciting Passengers table on page 209 of the Traveller Core Rulebook to add spice to the cavalcade of passengers who grace the hallways and commons of their ship, but only in moderation. If every batch of passengers contains a Zhodani spy, eccentric noble or stowaway, the Travellers will quickly see passengers as more a liability than source of income. Passengers do not need to be excessively 'exciting' to be interesting additions to your game.

Here are just a few ways to make your passengers interesting without requiring them to be eccentric or disruptive:

- **Ship Tours**: One or more of the passengers requests a tour of the ship. Showing off the engine room, turrets, bridge or even cargo hold can provide an interesting aside. Have the more inquisitive among them ask lots of newbie questions. The event will test the Travellers' knowledge of their ship and make them feel more ownership over it.
- **Card Games**: Got a Traveller with Gambler skill? What better way to bilk your passengers of more Credits than to hustle them in a game of cards. Beware, though, as this may limit good word of mouth and repeat passengers. 'I took Mid Passage aboard that ship once. The astrogator cleaned me out in a game of Gaashkhamla.'
- **The Jump Space Monologues**: Put that Art (performer, holography, or instrument) skill to work! Jumps take a week and there is a lot of idle time for passengers. Entertain them with a combination of your Travellers' dramatic skills combined with the technology of the ship. Holographic controls and an Intellect program can go a long way to produce an entertaining experience for the passengers and referee alike. Depending on the Effect of the Art check, a performance might even garner repeat passengers or a positive DM on the next passenger hunt due to word of mouth.
- **The Galley**: Food preparation and consumption can provide the impetus for many an adventure. The Travellers may have the opportunity to rent out an entire suite of staterooms to a group of high passengers who also happen to be foodies, visitors to the planet the Travellers are currently on and seek passage back home. They have heard of a local delicacy and will pay a premium to consume a fine meal that features this rare food. Put that Steward skill to work. Keep in mind that the desired food may require being slaughtered just before preparation, is very difficult or expensive to obtain, or even gets loose on the ship!

LOW-TRAFFIC SYSTEMS

Travellers quickly learn to play by – and exploit – the rules. Many referees allow Travellers to run the Trade rules independently as the Traveller Core Rulebook suggests, so they soon learn that high-population, high-grade starport systems are the places where they can make the most cash. Looking at the trade codes of each world gives them an inkling of what goods they should buy (if available) and where they should go to sell them. Whilst making tons of Credits is appealing to all Travellers, if things become too routine it can take something from your campaign.

When Travellers are interacting with starport brokers, meeting fellow spacers at the starport bar or chatting with potential patrons, insert rumours and red herrings that guide them to less travelled worlds on the trade route. While running the spinward end of the Collace Main, they might discover the low-population, Class D starport world of Inchin has a sudden need for advanced machine parts and biochemicals. Rumour

has it some prospectors have found previously undiscovered lanthanum nodes in the desert world's outback and need gear to support a lengthy expedition. Hurry, though! The Travellers will not be the only ones to learn this rumour and they might have to race to the site to get the DM+4 on sale price that is there for the taking.

Not every tip should lead to riches. Some are lies and misinformation. Even when there is no pot of gold awaiting the Travellers in whichever off-the-beaten-path system they find themselves, there will always be opportunities present. Red herrings and false rumours can be a handy tool for a referee to get his Travellers to the site of an adventure.

Referees should take a moment to consider each and every star system's UWP to consider what might be going on there. Low-population, low-grade starports and low-tech worlds have the potential to be as interesting as a highfalutin trade hub, if not more so. Opportunities for trade should abound along the mains but they should not be limited to the well-travelled trade magnets. Where there is risk, there should also be reward. Which brings us to our next topic…

THE COMPETITION

A truly great tramp trader campaign can be given a 6-G rocket boost if it has great NPCs. The Travellers should have a tight relationship with their favourite starport bartender, startown informers and speculative cargo

brokers. Such characters become part of the 'astrography' of the game. The Travellers will be excited to get back to Tarsus where their good friend the Planetary Tourism Advisor awaits them with a cold brew and fresh rumours about developments along the main. Conversely… there is the dreaded competition!

Trade is a highly competitive business and Travellers are far from the only merchants running freight and cargo along the mains. The referee may generate, with as much detail as desired, several crews of traders with whom the Travellers compete. The possibilities are endless but here are just a few ideas for starters:

- A crew who runs almost the exact type of ship the Travellers do but have been earning a great deal more. What is their secret? Are their contacts better? Have they signed some kind of lucrative and exclusive contract with one of the megacorporations? Do they have some kind of genius AI robot broker? Are they smuggling illegal goods? Aspiring merchant princes will not rest until they know how they are being outperformed.
- Old friends from another crew have 'graduated to the big time', moving up from a free trader to a subsidised merchant. The Travellers look on with jealousy at that 200-ton cargo hold and the potential for wealth it portends, encouraging them to seek out a similar arrangement. Meanwhile, they find out just how tough it is to move up to the next level, that their old friends are always stressed out, on the verge of bankruptcy, and beholden to investors. Furthermore, they no longer get to choose all their own stops. Investors require them to call on certain worlds they may have skipped when independent. Have the Travellers feel a sting as their old chums eat into profits by swiping large lots of freight or speculative cargo out from under them, but also convey that it comes with a cost. Running a 'subby' means you become a company agent on some level.
- The Travellers discover that one of their trade nemeses is also an opportunistic pirate, using a double pulse laser turret to terrorise and steal from fellow traders. It could be that they are commerce raiders for one faction or another, have fallen on hard times and taken desperate steps to keep the Credits flowing, or maybe are just wicked and enjoy stealing from merchant brethren. Whatever the reason, they now pose a double threat: competition for trade goods and the possibility that they will attempt to steal from the Travellers. The pirates' actions are also causing a general distrust of tramp trader crews in the region, so it behoves the Travellers to set things straight… one way or another!

The referee may optionally employ various crew skills to get a jump on the competition. Good Broker skills are not the only ones in play. A hot rumour might have the trader community racing to a given world where robotics and radioactives have suddenly become a hot commodity. Opposed task checks between competing traders might determine who gets to the site first. Whose ship has the most thrust to get to the 100-diameter limit

first? Or will they risk the 10-diameter limit? Is theretime to make a hasty jump to the next system? Use the Going Faster or Slower rules on page 60 of the *Traveller Core Rulebook* as the astrogator and engineer work quickly to give their team a competitive edge. Even after making every effort possible, the race to the site might result in a tie, pitting the Travellers directly against their competition. Have the ships' brokers make opposed checks to obtain the precious cargo. The Travellers should be encouraged to come up with inventive or devious task chains to get the jump on the competition. The tramp trader campaign is a dog-eat-dog world and having Travellers compete for success will add richness and flavour to the game whether they win or lose.

Any number of factors can be put into play that serve to enhance both competition and cooperation between the various traders. NPC trader ships will take on a personality all their own; some will become enemies and some friends. Perhaps the Travellers work together with a friendly ship to transport a large block of freight that otherwise would have required a bigger ship… perhaps only to have those self-same NPCs compete with or betray the Travellers on another job. Events like these establish a level of camaraderie and sometimes enmity that enhances the communal feel of the Travellers' chosen trade route or stellar main. They add colour and depth to the dots, lines and UWP codes on the starmap.

ICE CRAWLER
(Palarthropodia gelidus)

When researchers first encountered the ice crawler on the frozen plains of Furioso (Alderamin 0717, Solomani Rim), they were at first unsure whether they had discovered a new and extremely alien form of life or an incredibly sophisticated example of unknown alien technology. The ice crawler is in fact a life form, but one unlike the typical animals encountered on orthodox worlds.

Furioso is a giant, frozen world with an insidious atmosphere consisting largely of hydrogen, but with significant amounts of methane and ammonia present as well. Life in this strange environment is bizarre by human standards, and the ice crawler is a good example of Furioso's unique biology.

Ice crawlers have flat, low-slung bodies, reminiscent of a Terrestrial caterpillar in shape, measuring some three metres in length and suspended between five pairs of jointed, exoskeletal legs. An eleventh 'leg' extends behind the creature; each leg ends in a polydactyl foot padded with microscopic grippers which insure firm footing on any surface – even glass-smooth ice.

Four modified legs ring the creature's anterior end (there is no head as such) and act as shovels, scrapers, and rock lifters, throwing rocks into a ventral 'hopper' ringed by muscular rock crushing 'teeth'. The creatures are sheathed in a glittering, steel-hard exoskeletal armour; this gives them the almost artificial appearance which so confused the first observers. However, spongy organs are present all along each side of the creature, just above the legbody joints. These organs, ranging in colour from brown to dull orange to bright red, are the analogues to lungs for the ice crawler which 'breathes' hydrogen. No muscular action is involved in this process; hydrogen is diffused through the spongy tissue, and sequestered and collected chemically within the creature's body.

The ice crawler metabolises rock. They have a dual poly-chain silicon-carbon biochemistry, using silicon in some biochemical reactions and carbon in others. Carbon comes from the breakdown of the methane present in the atmosphere, while silicon is liberated by heating and reduction reactions from ingested rock. In this environment, the silicon breakdown process is very dangerous, for when silicon is broken from rock, it liberates oxygen, which is poisonous to the ice crawler and produces a potentially flammable mixture in a hydrogen atmosphere. For the most part, ice crawlers immediately combine this liberated oxygen

with atmospheric hydrogen in special organic reaction chambers within the body. The exothermic reaction, though apparently not essential to their body chemistries, acts as a sort of organic 'supercharger'. As the animal is, at best, sluggish and slow-moving, this process brings about unexpected results. This reaction serves as a chemical 'pick-me-up' (as one observer put it) which can send the usually torpid animal thundering across the ice in random directions at unexpectedly great speeds (swap the Slow Metabolism (-3) trait for Fast Metabolism (+2) and increase Speed to 8 metres). Over the ages, however, some species developed an even more unique method of using oxygen liberated during the breakdown of silicon from ingested rock. These creatures can store oxygen in nearly pure form. When threatened or frightened, they can direct jets of oxygen and hydrogen through an anterior orifice located between their handling legs. This stream of hydrogen and oxygen is ignited catalytically, turning the beast into a living flamethrower. The effect has been reported to cause serious damage to the protective suits of scientists studying the animals.

This most interesting defence mechanism was developed as a protection against another of Furioso's life forms, the metre-long predatory carnivores known popularly as ice spiders. These vicious pack-hunting carnivores are virtually identical in body chemistry, but metabolise other life forms, rather than rocks, for supplies of carbon, oxygen, and silicon.

Both creatures will ingest humans (and anything else slow enough to get in their way) and are considered quite hazardous. At this time, nothing is known of their life cycles, since researchers cannot study them for prolonged periods of time in Furioso's insidious atmosphere. There have been growing speculations, however, that the ice spider may actually possess a form of rudimentary intelligence, a possibility which has intrigued many xenosophontological investigators in recent years, and inspired several expeditions to the icy wastes of Furioso.

NAME	Ice Crawler
HITS	31
SPEED	3 m
SKILLS	Melee 0, Survival 2
ATTACKS	Teeth (2D), Flame (3D, 5m, Blast 3, Fire)
TRAITS	Armour (+9), Large (+1), Slow Metabolism (-3)
BEHAVIOUR	Omnivore, Grazer

Ice crawler

Ice spider

NAME	Ice Spider
HITS	33
SPEED	4 m
SKILLS	Melee (natural) 1, Survival 2
ATTACKS	Claws (2D+3), Flame (3D, 5m, Blast 3, Fire)
TRAITS	Armour (+9), Large (+1), Slow Metabolism (-2)
BEHAVIOUR	Carnivore, Hunter

SAQ'SE'QAN

The saq'se'qan is an extremely intelligent alien parasite that feeds on the mental waves generated by ill will and aggression. While unable to verbally communicate with members of other species, it has significant psionic powers that enable it to manipulate its victims into hatred and strife. Nothing brings the saq'se'qan more joy and substance than a domestic murder-suicide.

An adult saq'se'qan resembles a fat and grumpy purple hyrax whose mood swings tend to be more comical than intimidating. This amusing appearance combined with the creature's high intelligence, apparent fondness of children and longevity can lead the uninformed buyer to consider it the perfect pet – a mistake that will cost at the very least marital happiness and possibly the lives of the entire family.

A healthy saq'se'qan can fetch a price of up to Cr2000 from a client who is unaware of the creature's sinister nature and up to Cr10000 from a client who is aware of it and intends to use it for unwholesome purposes.

NAME	Saq'se'qan
HITS	6
SPEED	2 m
SKILLS	Deception 2, Persuade 2, Survival 2, Telekinesis 2, Telepathy 2
ATTACKS	None
TRAITS	Psionic (6), Small (-3)
BEHAVIOUR	Other, Siren

KHAL'OMAN

The khal'oman is a bizarre creature that can cause dreams to manifest by gently touching a sleeping creature. In the wild, khal'omans prey on the dreams they summon, which makes them popular pets for people who suffer from night terrors and insomnia.

The latest rage, however, is to immobilise khal'omans in such a way that will enable them to create dreams but not to devour them. The results are phantasmagorical parties where dreams and reality intermingle to create an experience survivors will never forget. These parties are not only illegal due to their frequent fatalities and mental traumas but also a common target for animal rights groups' raids because of the stress and pain it inflicts on the captured khal'oman. This has led most governments to ban khal'oman import for non-medical purposes.

An adult khal'oman looks like a melon-sized jumble of colourful and luminescent strings that pulsate with ever-changing ghostly lights. Some strings hang loosely from the creature's body; their touch will end dreams but is quite harmless to real creatures.

It is unknown where or how these creatures multiply and all attempts to cause them to reproduce outside their native planet have failed.

A healthy khal'oman can fetch a price of up to Cr10000.

NAME	Khal'oman
HITS	7
SPEED	0 m
SKILLS	Recon 0, Stealth 1, Survival 1
ATTACKS	None
TRAITS	Psionic (4), Small (-2)
BEHAVIOUR	Other, Trapper

CRITICAL VECTOR

The Brufort system (Deneb 0368, C669642-6) is off the beaten path. It is a rich world, flush with natural resources, but its location far from the sector's trade routes has isolated it from the majority of interstellar traffic. The best it can hope for is the occasional visit by a wandering free trader or the punctual arrival of a bulk freighter on the tail end of its route. Nevertheless, the Travellers find themselves jumping to Brufort on a tip that it is a hot market for mid-tech common manufactured goods (computer systems) and construction polymers.

As they emerge from jump, the Travellers are probably eager to find a broker and make the sale but when they attempt to establish contact with the downport they are surprised to discover that Brufort is experiencing planet-wide panic.

Almost a week ago Brufort's Spacewatch satellite array detected a 50km-wide asteroid coming into the system from high out of the ecliptic on a collision course with the mainworld. Initial calculations had the enormous bolide making impact within 10 days. An impact from a body of its size would cause titanic tsunamis, firestorms, an impact winter, and the death of every last person on the planet.

President Emyla Gharja hastily dispatched the system's two aging corvettes to tackle the problem. The crews of the corvettes took a great deal of explosives with them, intending to redirect the asteroid using strategically placed detonations. Radio transmissions indicated the corvettes had matched vectors with the asteroid when contact with the ships was suddenly lost and both disappeared in a massive fireball that was seen from the surface of the planet.

In an extreme stroke of bad luck there were no other ships in the system who could help. Five days later, the Travellers' ship has arrived in system. Its detection by Spacewatch has been quickly relayed to the planetary government and leaked to the press. The desperate populace see the Travellers as their last hope for survival. After a brief conversation with starport control the Travellers are contacted by none other than President Gharja who begs them to act on Brufort's behalf. She informs them that if they are able to somehow deflect the asteroid, thereby saving the lives of its 4 million inhabitants, they will be able to name any price the planet can pay.

REFEREE'S INFORMATION

Brufort is experiencing an existential crisis of epic proportions. The sleepy backwater has become a chaotic free–for–all with rioting in the streets and recrimination towards a government that has let everyone down.

Shortly after the call from the president, the Travellers are also contacted by several functionaries from various levels of government and industry, begging them for passage out of the system. Many of these individuals have access to large amounts of wealth and offer to pay the Travellers exorbitant sums to get them and their families off world before the cataclysm. Situations like these can bring out the worst in people and the Travellers witness a sickening degree of cowardice and desperation. It might provide some degree of consolation for them to note that the president herself intends to 'go down with the ship' and does not request any special favours. She merely wants their help to save her planet and its people.

DEFLECTION

The Travellers have a number of options. Given the destruction of the corvettes, they might decide that trying to deflect the asteroid is too dangerous and opt to simply save whoever they can. This will be a difficult undertaking since any landing on the planet results in a panicked rush to the landing site and hordes of people attempting to get aboard. The richest people on Brufort will pay MCr1 or more per person to get off planet but the poor security of Brufort's low-tech communications network means that any attempts to coordinate an escape are intercepted by other members of the population. The scene on the ground is desperate and frightening. Should the Travellers attempt to land, there is a high probability that their ship will be mobbed and damaged or destroyed.

The best thing the Travellers can do is to attempt to deflect the asteroid. The crisis is too far along to use more subtle means of 'nudging' it into a new course but it is not too late to use more forceful methods. With a large enough explosion or series of explosions, the Travellers might be able to deflect or even fragment the asteroid, saving Brufort from its impending doom.

If the Travellers' ship carries missiles, they may be fired at calculated points on the surface of the asteroid in an attempt to redirect it. Roll 1D for each missile fired, add up the total, and consult the Time to Impact table. The closer the asteroid is to Brufort, the more points must be accumulated in order to destroy or divert it.

The most effective way to deflect the asteroid is to use explosives either detonated from a short distance or planted on or beneath its surface.

Should the Travellers choose this method, they must first approach the asteroid; there is cause for concern considering the last two ships to try this were incinerated. The Travellers should approach with caution.

Have the ship's sensor operator make an Average (8+) Electronics (sensors) check upon approach. A successful check reveals the asteroid has loose bodies of rubble orbiting it. This may have been what destroyed the corvettes. To fly close to the asteroid, apply the Effect of the Electronics (sensors) check to a Difficult (10+) Pilot check (DEX, 2Dx10 minutes). Success indicates the pilot is able to approach without problem. Failure with an Effect of 0 to -2 indicates the ship impacts the rubble and suffers 2D damage. Failure with Effect -3 or worse results in 3D damage.

The Travellers have an increased chance of success if they can find a deep crevasse or cave on the asteroid and plant the explosives within it. Finding an appropriate place requires a task chain.

First have the Travellers make a Difficult (10+) Electronics (sensors) check (INT, 1Dx10 minutes) to identify their options. Apply the modifiers from the sensors table on page 19 of High Guard, doubling the DM for Improved or Advanced sensors since those include densitometers. Apply the effect of the Electronics (sensors) check to a Difficult (10+) Science (planetology) or Profession (belter) check (INT, 1D+1 hours). This time is spent surveying the asteroid using the ship's sensors to determine which placement is optimal. Failure means the Travellers must start the procedure over, starting with the initial Electronics (sensors) check.

After finding the right spot, the Travellers must don vacc suits and travel to the asteroid, requiring 1D hours to explore the site and prepare it for the operation. After this it then takes 1D hours for two Travellers to unload one ton of explosives, carry them to the detonation site and emplace them. Each additional two-person team can carry an additional ton during the same time period. The referee should have each Traveller make periodic Average (8+) Vacc Suit checks (DEX) to avoid accidents.

If the Travellers have one or more nuclear warheads obtained from missiles or another source, 1D hours are required to place every six warheads. Planting the explosives and setting a detonator requires an Average (8+) Explosives check (DEX or INT, D3 hours).

The entire process is long and challenging. The Travellers might begin to feel the effects of fatigue after long hours of intense labour. Apply appropriate negative DMs to their checks if they are unable to rest or otherwise enhance their ability to work through exhaustion.

After getting back to their ship, the Travellers may detonate the explosives. Roll 1D, adding DM+1 for every ton over two tons planted and check the Time to Impact table for the results. Missile warheads count as one ton for every six used.

FUSION EXPLOSION

An alternative method of deflecting the asteroid is to create a fusion explosion. For the Travellers' purposes, this more than likely means detonating their ship's power plant. Whilst this generates a great deal of energy for deflection and is highly effective, it means the destruction of their starship and should only be considered as a last resort.

TIME TO IMPACT

At the time of the Travellers' arrival, there are only four standard days (96 hours) remaining before the asteroid hits Brufort, divided into eight 12-hour periods which are used to determine the effectiveness of any attempts to deflect the asteroid in the Time to Impact table.

The asteroid is travelling at a rate of about 30 kps or 108,000 kph toward the planet at a distance of 10,368,000 km as the Travellers' arrival in the system. Use this information to determine travel times to and from the asteroid for the Travellers' ship.

Roll 2D to determine the success or failure of the Travellers' attempts based on the periods remaining before impact and the method of deflection attempted. In the case of a missile attack, simply add the total points as described earlier.

Time to Impact

Periods Remaining	Missile Attack Total	Surface Explosion	Sub-surface Explosion	Fusion Explosion
8	36	7+	5+	3+
7	48	8+	6+	4+
6	60	9+	7+	5+
5	90	10+	8+	6 +
4	160	12+	10+	7 +
3	—	13 +	11 +	8+
2	—	—	12 +	10+
1	—	—	13+	11 +
4 hrs or less	—	—	—	12+

FRAGMENTATION

Regardless of the method used to deflect the asteroid, there is a chance that it will fragment into pieces each time an explosion is detonated near or beneath its surface. For each explosion, roll 2D adding DM+1 for each previous explosion. The asteroid fragments on a roll of 11+ if the explosion occurs on or near the surface or 9+ if the explosion occurs in a cavern or crevasse. If the roll was exactly one less than the required number (10 or 8) the asteroid splits into two large halves and millions of pieces of smaller rubble.

If the asteroid has not been successfully deflected, the two halves both hit Brufort, wreaking as much or more destruction as a single intact asteroid. Additional attempts to deflect both pieces may be made, but time and explosives may well be running short at this point. However, if the Travellers are successful at diverting at least one of the halves, they may reduce the damage to Brufort and save some lives.

DEFLECTION

A successful roll on the Time to Impact table indicates the asteroid has been deflected and catastrophe has been averted provided that it has not fragmented. If the asteroid has fragmented but is still two full days or more from hitting the planet, the fragments disperse enough to prevent significant damage to Brufort with only a bright and exciting meteor shower to show for it. However, if the asteroid is deflected when there are fewer than two days remaining and it fragments, many pieces strike Brufort causing an extensive and deadly meteor shower on the planet. This causes a great deal of destruction and loss of life, but far less than if the entire asteroid had made impact.

COMPLICATIONS

Each time the Travellers land on Brufort they risk being overrun by mobs or frightened businesspeople and bureaucrats attempting to buy passage off planet. They may very well need to make at least one landing to obtain explosives and other needed materials. The Travellers may be able to get President Gharja to send government forces to help protect them and their ship during landings but as they get closer to zero hour it becomes more and more difficult to avoid the effects of the increasing panic.

If additional landings are required, members of the militia might attempt to rush the ship or privileged members of society might hatch a desperate plan to hijack it. The Travellers may be able to talk their way out of such a situation with a Very Difficult (12+) Persuade or Diplomat check, but violence may be required.

AFTERMATH

If the Travellers successfully deflect the asteroid, they are showered with great rewards for saving the day. Jubilant crowds meet them at the starport with a heroes' welcome and parade, provided no loss of life occurred. Even if they only partially save Brufort and fragments hit the planet, causing some destruction, the survivors will be grateful for their efforts.

Once all is said and done, there may be another matter to attend to: who gets to lay claim to the type-M asteroid, or fragments thereof, and all the nickel-iron riches it contains! This may well be an adventure in itself.

CASE STUDY: A FIFTH FRONTIER WAR?

The following document has been declared Unclassified and Unrestricted. It is reprinted in its entirety from the 1105 Compilation of 'Proceedings: The Journal of the Imperial Navy Staff College'. Opinions are those of the original author and do not represent any official policy or position of the Staff College or the Imperial Navy.

A Fifth Frontier War against the Zhodani Consulate is inevitable.

The question is one of when and how rather than if and why.

The Zhodani Consulate is not inclined towards territorial expansion but has an aggressively defensive mindset. Its leaders apparently believe that in the long run it is better to fight a war on their terms than try to shore up a worsening situation until conflict erupts with their forces not at full readiness. Therefore it is reasonable to assume that a threat – real or perceived – such as the Imperium will be carefully watched until an opportune moment to strike presents itself.

That moment is now.

ZHODANI MOTIVATIONS

If there is no territorial motivation then the desired outcome for Zhodani planners must be the elimination of a threat – in this case the Imperial presence on their borders. A campaign into the heart of Imperial space to break the power of the Imperium is so obviously beyond the capabilities of Zhodani forces that it would not be contemplated. A more modest goal would be to create a buffer zone of Zhodani client states, at least twenty parsecs deep, and impose treaties upon the Imperium which will limit Imperial influence in the region thereafter.

This could be achieved by an invasion of Spinward Marches and Deneb sectors, securing key systems and destroying the Imperial forces based there. De facto control of the Spinward Marches and a credible threat to Deneb would be enough to force a negotiated settlement. Zhodani planners might even be ambitious enough to try for Corridor. This would give them control of the choke point created by the Great Rift. A powerful fleet based forward in that region would cut off all Imperial territory 'behind the claw' and allow the Zhodani Consulate to create a heavily defended exclusion zone.

This may be the ultimate long-term goal of Zhodani planners; to use the natural astrographic features of the region to permanently block out

Imperial expansion. Areas behind this 'Corridor Barrier' need not be directly controlled; a region of small non-aligned states just powerful enough to resist Vargr incursions would suit the Zhodani Consulate's purposes.

Be that as it may, it is unlikely that Consulate planners would expect to punch all the way through to Corridor in a single campaign. A more limited set of war aims is likely, based around pushing the Imperial border back several parsecs.

WAR START SCENARIOS

The Zhodani Consulate is known to have links with various Vargr groups and the Sword Worlds Confederation. It is conceivable that these allies, who have proven unruly in the past, might undertake actions that lead to escalation. However, this scenario seems unlikely – indeed, it is in the interests of the Consulate to rein in their allies unless war fits the Consular agenda. The likelihood of a conflict occurring in this manner is therefore low, as is the threat level since escalation would allow activation and movement of reserves. Given the low probability of success, it is unlikely in the extreme that the Zhodani Consulate would commit to a large-scale conflict.

An intervention to protect an ally is a more likely scenario. This would in all probability occur if a new Sword Worlds/Darrian conflict erupted. It is not possible to say how highly the Zhodani value their Sword Worlder associates, but intervention is possible to prevent the collapse of the

Sword Worlds Confederation. Likewise, it is possible that the Consulate would intervene to protect certain Vargr groups which have traditionally provided a useful distraction of Imperial resources.

However, the planned or unplanned escalation scenario is not at this time likely. Instead, we face the threat of a surprise Zhodani attack at a time when their forces are at full readiness and ours are dispersed in peacetime deployments. Given that the Zhodani Consulate has a history of eliminating threats along its borders and clearly considers the Imperium to be such a threat, it is desirable from the point of view of Zhodani planners to undertake a campaign when the opportunity arises. The present dispersion of our fleet creates a perfect opportunity to make rapid initial gains, creating at the very least a strong bargaining position if further advances are not possible.

In short, the criteria for a Zhodani attack on the Spinward Marches are as follows:

1. **Necessity**: A threat must be perceived either in the long or short term.
2. **Desirability**: The potential gains must be worth the losses that will certainly be taken.
3. **Opportunity**: Circumstances must exist whereby there is a strong chance of success.

All these criteria are currently fulfilled. Therefore it seems probable that the next Frontier War will be fought for control of the Spinward Marches, and that it will be fought within five years.

IMPERIAL DEPLOYMENTS

It is obvious that it would not be possible to turn the Spinward Marches into a giant fortress, and that the forces deployed to the sector are capable only of holding key worlds – and then not indefinitely. However, the current deployment of the Spinward Marches Sector Fleet invites defeat in detail by a concentrated enemy force which will rapidly overrun border regions and reach second-line deployed forces only a little behind couriers warning that war has broken out. We quite literally risk losing a significant portion of our fleet at its moorings and the rest in futile actions against impossible odds.

There are two possible strategies for holding the Spinward Marches. Both require concentration of heavy assets. A forward strategy places a significant part of the sector fleet's capital ships close to the border, acting as heavy reinforcements for the defences of 'fortress worlds' along the frontier. This permits a rapid counterattack which might blunt the enemy advance and allow forces from other sectors to reach the combat zone. However, there is a real risk that forward-deployed forces might be bypassed or attacked by surprise.

An alternative strategy is to concentrate heavy assets well back from the frontier and maintain an increased patrol presence to locate intrusions. This strategy permits heavy blocking forces to be moved into position and the axis of an enemy advance to be determined. The chance of losing heavy assets to a surprise attack is greatly diminished, albeit at the price of allowing the enemy to make rapid early gains.

Both strategies have their risks and advantages, whereas our present deployments have neither. Warship deployments are currently dictated more by internal politics than strategic necessity. Powerful dukes routinely demand a battleship – or a battleship squadron – to be deployed in their subsector for reasons of prestige, or 'request' cruisers to patrol safe trade lanes for the sake of demonstrating influence. At the outbreak of war these ships have to be summoned to a concentration point, delaying or weakening our response to an invasion.

It may be that our internal political situation is so bad that we need to pander to the whims of senior nobles who are putting their egos and own interests before those of the Imperium. If so, it would appear to be the case that in order to have a Spinward Marches sector to defend, we must render it indefensible by dispersing the fleet in these 'political deployments'.

Our admirals must tread a fine line between antagonising nobles and thereby creating dissent, and remaining ready to protect the worlds of the sector. The only way to achieve this is to correctly predict the opening movements of an enemy force and maximise the effectiveness of those ships that are available whilst others are gathered from political deployments.

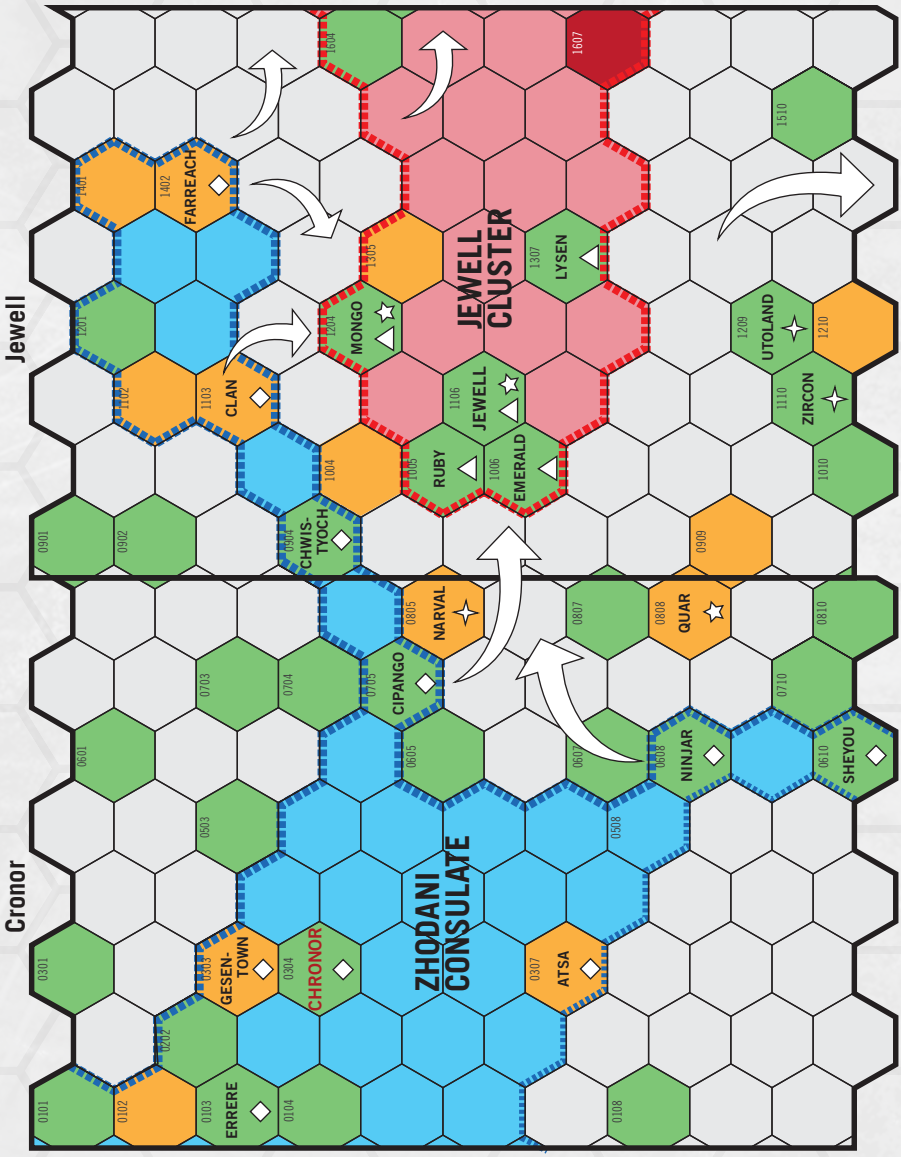
LIKELY ZHODANI STRATEGY

The likely goal of a campaign into the Spinward Marches is to capture key economic and political centres and destroy the ability of the Imperial Navy to defend its territory. This makes every high-technology or industrial world a target, along with every naval base. However, some goals are more necessary than others for political or strategic reasons.

The Jewell Cluster is an obvious target. Strategically its fleet bases are a threat to Zhodani territory, whilst its astrographic isolation makes it an obvious and useful territorial acquisition in the event of a negotiated peace. It is entirely obvious that a powerful strike will be made at Jewell and the surrounding worlds at the very beginning of the war. The cluster is heavily defended of course, and can be reinforced from the major fleet base at Efate. However, Efate is also a primary target and likely to come under early attack. The decision to send reinforcements or hold them to defend the base could dictate the fate of the Regina and Jewell subsectors.

CRONOR AND JEWELL
Spinward Marches Sector

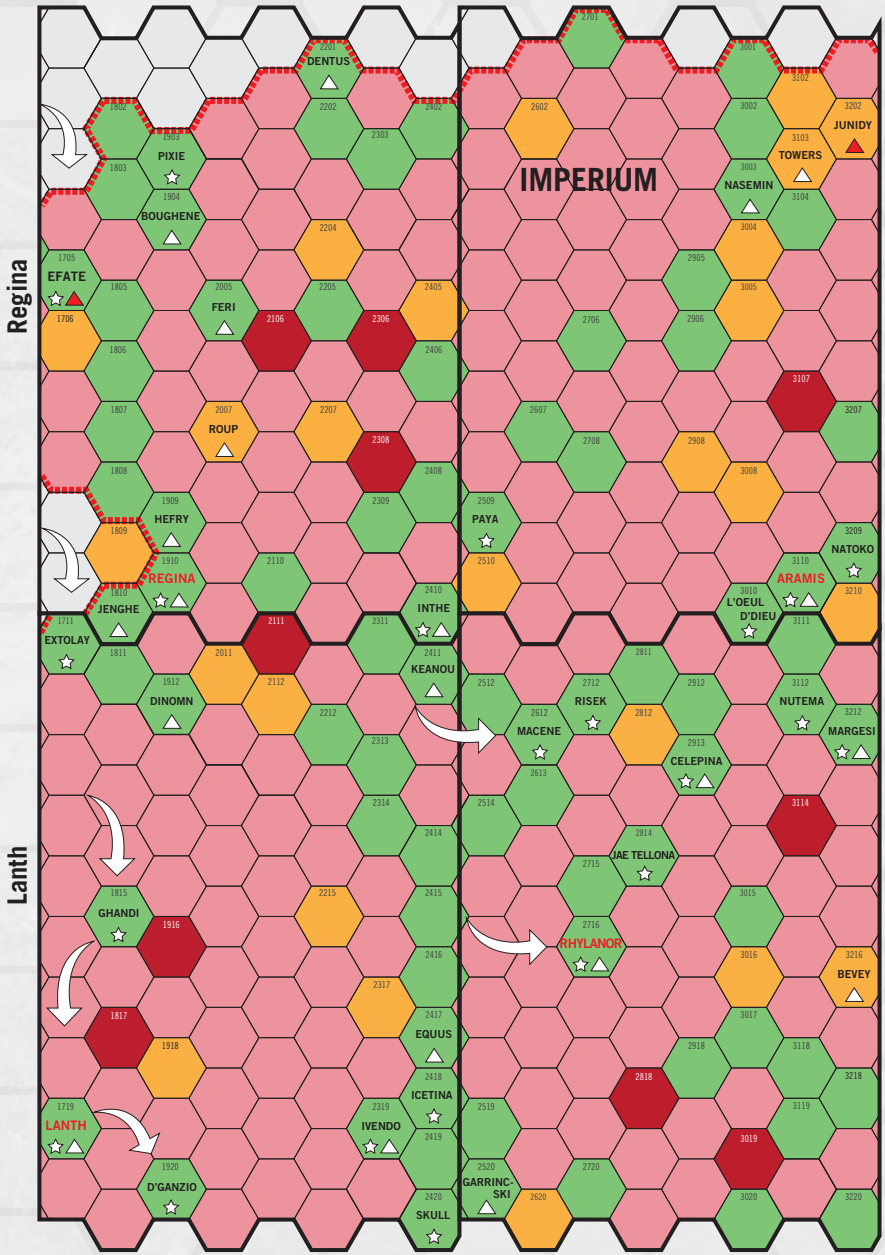
Zhodani advance on the Jewell Cluster



Secure System
Amber Zone
Red Zone
Imperial Naval Base
Military Base/Garrison
Zhodani Base
Imperial Scout Base
Imperial Scout Way Station

REGINA/ARAMIS/LANTH/RHYLANOR
Spinward Marches Sector

Zhodani advance on Efate and on the Lanth and Rhylanor subsectors



An obvious Zhodani strategy would be to attempt to isolate these subsectors by ambushing reinforcements moving up to assist in the defence. We can therefore expect an attempt to bypass the Jewell Cluster and similarly well defended worlds, establishing forces along the likely path of reinforcements. This might be with heavy fleet assets if the Zhodani hope to destroy reinforcements, or could be lighter raiding vessels sent to disrupt the movement of supplies and ground forces. Cruiser and destroyer actions can be expected as deep as the Rhylanor subsector early in the conflict, even if capital ships do not penetrate so far.

Zhodani interest in the Aramis subsector is unlikely to be great, and the 'long left hook' scenario is highly unlikely. In theory, a large force could transit through Vargr space and hook into the rear of Imperial forces by way of Aramis or Deneb. However, this would take the force out of contact with its base for a very long period. A change in plans could derail this strategy or make war inevitable when decisions to abort the attack would be more beneficial. Significant numbers of Vargr raiders and the occasional Zhodani ship will be encountered in this region, but Aramis will be essentially a 'destroyer theatre' at most.

A drive on the major Imperial Navy base at Macene in the Rhylanor subsector, and perhaps Rhylanor itself, is a possibility. The loss of the repair yards at Macene would greatly reduce the navy's capability to sustain a protracted engagement. An advance in this direction would pull Imperial reinforcements from other theatres, perhaps fatally weakening the Jewell/Efate campaign.

Involvement by the Sword Worlds Coalition is likely. If so, their initial targets will be the three 'Abyss' naval bases at Lanth, D'Ganzio and Ghandi. This will effectively isolate the Vilis subsector and allow it to be annexed in due course, whilst clearing the flank of an advance towards Lunion and ultimately Mora. If this were to happen, the minimal result would be a complete hiatus on reinforcement for the Jewell/Efate region. Reinforcements arriving from Deneb and Corridor sectors would be pulled in to a defence of the Rimward/Trailing corner of the subsector, again weakening the Jewell/Efate campaign.

All these major offensives will be made against a backdrop of commerce raiding and attacks on the ships, ports and holdings of the great nobility of the sector. If the fleet continues to bow to political pressure in wartime as it has in peace, we can expect to lose a significant number of the sector fleet's major warships to guardship deployments and politically expedient detachments. These ships will be effectively out of the fight until it is time to mop them up, and the Zhodani know it. Their strategy will involve manipulation of our internal politics to weaken the fleet in this manner.

COURSE OF THE CONFLICT

The Zhodani Consulate will strike by surprise, perhaps during some crisis or internal problem but quite possibly with no indication of a build-up. Fleets will be assembled back from the border where they are unlikely to be detected, accepting a few more weeks at combat readiness as the price for an initial hammer-blow. We can expect reports of raiders all across the sector, and in some cases there will be information blackouts caused by raiders intercepting our couriers.

The overall strategy is likely to be a two-pronged pincer, with the coreward arm initially aimed at Regina and the rimward arm driving on Lunion. The coreward pincer will have to deal with the fortress worlds of the Jewell Cluster and Efate; the rimward one will need to clear its flank at Lanth. This, therefore, is where the first fleet actions will occur. If these assaults are not successful we can expect an attempt to cut off these regions and force us to counterattack before they are taken – drawing our fleet into an engagement on the enemy's terms.

If these campaigns are successful we can expect a second-stage offensive against Macene and Rhylanor in the coreward theatre, and against Mora to rimward. By this time reinforcements from Deneb will be arriving. The enemy will expect this and threaten critical areas such as Mora or even Trin in order to force us to deploy there. The likely outcome of this plan is at least the loss of key worlds throughout the Jewell, Regina, Lanth and Lunion subsectors, with a real possibility that our reinforcements will be defeated so soundly we lose Mora as well, or have to negotiate an unfavourable peace to avert catastrophe.

CONCLUSIONS

There will be a Fifth Frontier War, and we will lose it.

How badly we lose depends on measures taken today. Our admirals are so entangled in the political webs of the sector nobility that they are doing the enemy's work for them. If war never comes, this will have been the correct strategy as it reduced internal tensions. If war does come… when war does come… it will be the ruin of us all.

MARITIME VEHICLES

The maritime environment is often overlooked by Travellers and governments alike. Focus is usually on moving from one planet to another and getting around on its surface, but sometimes that surface is largely covered with water. Maritime travel and commerce tends to become less important once grav vehicles are available, but it is still necessary to secure the seaways. The ability to hunt sneaky starship crews who have hidden their ship underwater may also be useful.

ADB-602
COASTAL PATROL CUTTER

The ADB-602 is a standard design used, with local modifications, on many worlds. Its primary tasks are coastal patrol, territorial and fishery protection plus general law enforcement. The ADB-602 is used by 'wet' navies, coast guard and maritime law enforcement agencies. It is lightly armed and thus not well suited to a straight combat role, but on many worlds vessels of this sort are the only maritime combatants available.

As a coastal patrol vessel, the ADB-602 is not designed for long-term operations, though it is quite capable of operating in open waters. Conditions for the crew of six are fairly cramped below decks, but most of the upper deck is designed to be used as working ore moving-around space. This enables the vessel to pack in survivors from a rescue at need. Basic living facilities include a pair of the tiniest bunks imaginable, a fairly decent galley and a few odd corners useful for stowage of small items.

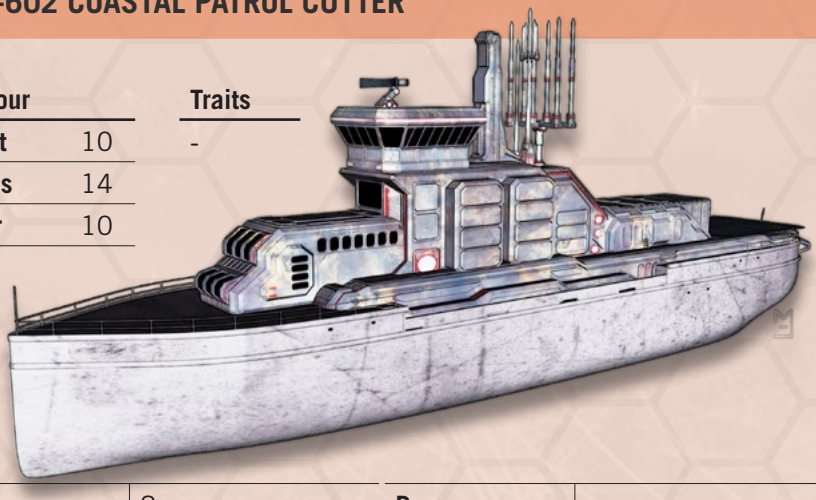
Armament is typical of small patrol craft, with a pair of 25mm light autocannon in a dual mount forward and a quad-mounted light anti-air missile launcher aft. Both are remotely controlled from the craft's tiny bridge. Each of the open bridge wings mounts a general-purpose machinegun for law enforcement self-defence purposes. The hull is lightly armoured with flexible composite materials, giving reasonable protection against small arms fire. Against heavier weapons the cutter relies on electronic countermeasures and decoys.

Weapon	Range	Damage	Mag.	Mag. Cost	Traits	Fire Control
Linked Light Autocannon	1	6D+6	500	Cr2000	Auto 3	+1
Light Anti-Air Missile	5	6D	1	-	One-Use, Smart	-
Machinegun	0.5	3D	500	Cr500	Auto 4	-

ADB-602 COASTAL PATROL CUTTER

Armour	
Front	10
Sides	14
Rear	10

Traits
-



TL	8	**Passengers**	-
Skill	Seafarer (ocean ship)	**Cargo**	-
Agility	-1	**Hull**	80
Speed (cruise)	Slow (Very slow)	**Shipping**	20 tons
Range (cruise)	800 (1200)	**Cost**	Cr 166 500
Crew	6		

Equipment	• Autopilot (Improved), Bunks • Communications System (improved, encrypted, satellite uplink) • Control Systems (Improved), Decoy Dispenser • ECM (basic), Fire Extinguishers, Fresher, Galley • Navigation System (Basic), Sensors (Improved)
Weapons	• Small Turret (linked light autocannon) • Small Turret (light anti-air missile x4) • Pintle Mount (left, machinegun) • Pintle Mount (right, machinegun)

Equipment	
Autopilot (skill level)	-
Communications (range)	500 km
Navigation (Navigation DM)	+1
Sensors (Electronics (sensors) DM)	+1
Camouflage (Recon DM)	-
Stealth (Electronics (sensors) DM)	-

ADB-511 STRIKE HYDROFOIL

From the same design bureau as the ubiquitous ADB-602, the ADB-511 is a short-range, high-speed craft intended to intercept and destroy maritime threats. A handful of these boats can be a credible deterrent to large warships of lower Tech Level, which in turn makes such vessels rare. For the price of a maritime cruiser, a flotilla of imported vessels could sink several ships from beyond the range of their guns, making the investment less attractive. Balkanised-world governments intending to fight a war in distant waters may require true warships, but for the most part defensive craft are a more cost-effective option. Manoeuvring at almost 250kph in calm waters, missile hydrofoils are virtually unhittable with conventional guns.

These craft are built for speed rather than endurance, and exist mainly to bring missiles within range of the target. The missiles are on fixed container-launcher mounts offset to port and starboard at the rear of the vessel, and are aimed in the general direction of the enemy by pointing the whole boat. Once a targeting lock is achieved the missiles are self-guiding and the launching craft withdraws at high speed.

For general patrol work, a 25mm autocannon is mounted on a remote controlled turret forward of the bridge/control space, and there are machineguns on the bridge wings. Self-defence capability is limited to decoys and high speed for major threats, and light composite armour over critical spaces. This is sufficient to protect against small shell and missile fragments, and possibly small arms fire, but more powerful weapons will easily penetrate the hull.

Weapon	Range	Damage	Magazine	Magazine Cost
Light Autocannon	1	6D	500	Cr1000
Anti-Tank Missile	6	8D	1	-
Machinegun	0.5	3D	500	Cr500

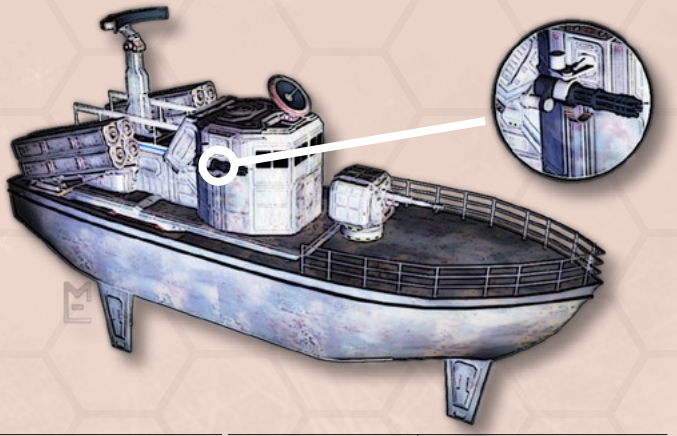
Weapon	Traits	Fire Control
Light Autocannon	Auto 3	+1
Anti-Tank Missile	AP 30, One-Use, Smart	+1
Machinegun	Auto 4	0

ADB-511 STRIKE HYDROFOIL

Armour	
Front	4
Sides	8
Rear	4

Traits

-



TL	8	**Passengers**	-
Skill	Seafarer (ocean ship)	**Cargo**	-
Agility	-1	**Hull**	80
Speed (cruise)	Fast (Medium)	**Shipping**	20 tons
Range (cruise)	400 (600)	**Cost**	Cr 391 400
Crew	4		

Equipment	• Communications System (improved), • Control Systems (improved), • Decoy Dispenser, • Fire Extinguisher, Fresher, • Hydrofoil, Sensors (improved)
Weapons	• Small Turret (autocannon) • Fixed Mount (front, 2 spaces) • Fixed Mount (front, 2 spaces) • Pintle Mount (left, machinegun) • Pintle Mount (right, machinegun)

Equipment	
Autopilot (skill level)	-
Communications (range)	500 km
Navigation (Navigation DM)	-
Sensors (Electronics (sensors) DM)	+1
Camouflage (Recon DM)	-
Stealth (Electronics (sensors) DM)	-

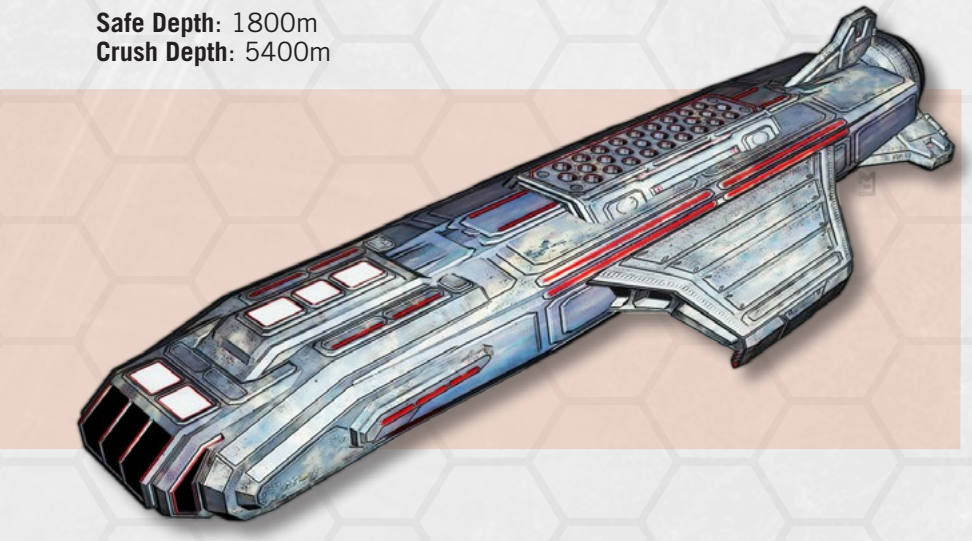
KAVARII-CLASS AEROSPACE DEFENCE SUBMARINE

The Kavarii-class is designed to provide a mobile aerospace defence capability on worlds with significant amounts of surface water. It offers advantages in terms of both deterrence and strike capability; an enemy cannot know for sure if all surface-based missile launchers have been eliminated, nor if there is a launch platform in range of incoming ships. Submarine-launched aerospace defence missiles can be added to the salvoes fired from static installations, or held in reserve to ambush enemy transports and supply ships during invasion.

Two separate sensor packages are carried; one for underwater use and one for orbital tracking and targeting. Missiles are often launched using targeting data handed off from other platforms, but the Kavarii-class is quite capable of generating its own targeting solutions. This requires extending a sensor mast above the water surface, whereas tracking data can be received at greater depths. The underwater sensor package is more basic but suffices for navigation. The Kavarii-class can engage underwater targets but generally slinks away rather than risking its missile capability in an unnecessary fight.

A high degree of automation permits a relatively low crew requirement, but all the same the vessel is as cramped as any submarine in any world's history, with the exception of the large missile bay which takes up half the hull tonnage. Much of the rest is given over to a fusion power plant that allows the vessel to remain submerged more or less indefinitely. It is necessary to come up to a shallow depth for missile launch, and almost to the surface when using the sensor mast, but otherwise this vessel remains in the depths where its stealthy, near-silent design makes it hard to detect from underwater and virtually impossible from above the surface.

Safe Depth: 1800m
Crush Depth: 5400m



KAVARII-CLASS AEROSPACE DEFENCE SUBMARINE

TL	9
Skill	Seafarer (submarine)
Agility	-3
Speed (cruise)	Slow (Very slow)
Range (cruise)	50 years

Crew	12
Passengers	-
Cargo	-
Hull	1200
Shipping	200 tons
Cost	MCr149

Equipment	• Autopilot (Enhanced), Bunks x6, Command Centre • Communications Systems (improved, encrypted, increased range, satellite uplink), Computer/1, • Control Systems (improved), Fire Extinguishers • Fresher x4, Fusion Plant (basic), Galley • Navigation Systems (improved) • Sensor Systems (improved, hardened, increased fidelity, sensor mast, increased range x3) • Sensor Systems (improved, hardened, increased fidelity, underwater), Stateroom, Stealth (improved)
Weapons	• Multi-bay (16 spaces) • Small Missile Bay

Armour	
Front	3
Sides	3
Rear	3

Traits

-

Equipment	
Autopilot (skill level)	2
Communications (range)	5000 km
Navigation (Navigation DM)	+2
Sensors (Electronics (sensors) DM)	+1
Camouflage (Recon DM)	-
Stealth (Electronics (sensors) DM)	-2

Weapon	**Range**	**Damage**	**Magazine**	**Magazine Cost**
Small Missile Bay*	Special	4D	144	MCr3
Torpedo	50	5DD	8	Cr96000

Weapon	**Traits**	**Fire Control**
Small Missile Bay*	Smart	+2
Torpedo	AP 50, One Use, Smart	+2

* Spacecraft scale – see page 27 of *High Guard*.

PRANGS, DINGS AND CRASHES

A GUIDE TO STARSHIP MISHAPS

Starship pilots normally prefer to land their craft in the same place, and with it roughly the same shape as before touchdown. The old adage that 'any landing you walk away from is a good one' is probably setting the bar a bit low. A better guideline might be 'a landing that does not cost you money or repair time is acceptable'. However, there are those for whom the dings in their ship and the starport fines clocked up for taking divots out of the landing pad are a badge of honour.

There are may ways to damage a starship without the slightest hostile intent on anyone's part. Most are relatively minor, but any situation involving hundreds of tons of out-of-control metal has the potential to make a very bad day for everyone concerned.

In the parlance of pilots, a ding is an incident than causes minor physical damage, usually to the outside of a vessel. The actual damage is also referred to as a 'ding' if it takes the form of a dent or other physical scar on the hull. A prang, to most pilots, is an incident that causes physical damage to the vessel or its occupants but does not reduce the functionality of the vessel to any significant degree. A crash is a situation that does impair functionality or poses significant threat to life and limb. Accident investigators have different terms for these situations, of course, but 'prang' sounds better in a pilot's bar than a 'class four unscheduled foreign-body interaction'.

The amount of damage caused to and by a vessel in an incident depends on its speed and circumstances of the collision. The mishaps noted here assume, for the most part, that craft are engaged in low-speed manoeuvring and not intent on causing catastrophic damage to themselves or any other vessel. Collisions and mishaps of this sort typically occur in orbital space or close to a port, in areas where ships are expected to slow down to a sensible speed. The following speed categories are used as a general indication of a vessel's velocity and the amount of damage it is likely to do itself.

Extreme: The vessel is going far too fast to enter orbit without a hard and sustained braking manoeuvre. Any ship going this fast in orbital space will attract both attention and alarm.
Fast Transit: The vessel has been accelerating hard for some time, or is arriving from a fast interplanetary transit without slowing down. A system defence craft boosting to intercept a contact, or a ship making an urgent run (such as a smuggler or fast courier) might be travelling at this rate.

Transit: A vessel moving in or out between jump point and orbital space will normally be moving at 'transit' speed.
Slow Transit: Slower vessels or ones moving cautiously will typically be manoeuvring at this rate. Traffic control will normally object to ships moving faster than this pace within its controlled area.
Orbital Transfer: Standard speed at which ships enter and leave orbit, or manoeuvre in orbital space.
Slow Transfer: Cautious manoeuvres of a sort normally used in crowded orbital space.
Port: Movement within the confines of a port is normally carried out at this speed, balancing brisk and efficient against safety.
Slow Port: Careful movement within the confines of a port, typically used by large ships and in crowded areas.
Creep: Extremely slow movement such as in final docking or when making small adjustments to position.

Speed and Severity

Speed	Cumulative Thrust	Severity
Stationary	0	0
Creep	1	D3
Slow Port	2	1D
Port	4	2D
Slow Transfer	8	3D
Orbital Transfer	16	4D
Slow Transit	32	5D
Transit	64	6D
Fast Transit	128	7D
Extreme	256	8D

The amount of cumulative Thrust required to go from one speed class to another is determined by subtracting the current value from the desired value. This also applies to deceleration. So, if a vessel wanted to decelerate from Fast Transit to Port speed, this would require 64-4 = 60 cumulative Thrust. Obviously a 4g vessel could do this a lot more quickly (60/4=15 rounds) than a 1g ship. A pilot could leave their deceleration too late and fly into the ground…

Typically landings are made at Slow Port speed, with a final deceleration to Creep. Takeoffs usually involve a smooth acceleration to Port speed to clear the docking area before further acceleration is applied. However, not all pilots observe these niceties. It is possible to come in at Orbital Transfer speed until the ship is almost on the pad then brake hard, though this is uncomfortable for the passengers, crew, and everyone watching alike.

USING SEVERITY

When a vessel suffers an incident, roll a number of dice as shown on the Speed and Severity table with the following modifiers, applying any other special considerations noted below, and consult the Prangs table.

Passengers and crew prepared for impact:	DM-1
Passengers and crew fully prepared for impact, for example strapped into seats or crash frames:	DM-2
Vessel is hit from an angle other than along its main axes:	DM+3
Vessel strikes relatively soft surface such as soil and grass:	DM-1
Vessel strikes yielding surface such as water:	DM-3

For example, a pilot decides to show off by making a landing approach at Slow Transfer speed, and ends up slamming the belly of the ship into the grass short of the landing area. Base Severity Index is 2D, -1 because the crew have time to grab something, -1 for the nice springy turf, but unfortunately +3 for hitting at an awkward angle – ships tend to be more resilient along their main axes. The pilot rolls 2D+1 and consults the Prangs table.

Minor Collisions

There are few circumstances under which a ship would or even could deliberately ram another with the intent of causing serious damage, but there have been instances of pilots 'giving another vessel a nudge' in crowded areas. Most collisions are accidental and occur at relatively low speed, however. A low-speed bump can occur when docking at an arm or boom, or clipping the side of an orbital port's docking bays. This is unlikely to do much harm, though it may dent the hull or scrape off an antenna, and will more than likely earn the pilot the displeasure of the port operator.

In the event of a minor collision, the speed of the fastest-moving vessel is used unless it is obviously inappropriate, such as when a vessel sideswipes another travelling at the same speed in the same direction. Such a collision would normally be taken as occurring at Creep or Slow Port speed. In the event that one ship 'nudges' another to move it or shake the occupants about, the same Severity is used for both craft but the results may be different if one crew are braced and prepared and the other is not. Collisions with buildings, the ground, or large animals are considered to be much the same as hitting another ship, though a light building might be considered a yielding surface.

Hitting Atmosphere

Hitting atmosphere whilst going too fast can be harmful to ships and their occupants. This can occur for various reasons; an inopportune drive

failure on approach to a world, perhaps, or a spectacularly bad piece of course plotting that results in arrival at high speed. Atmosphere will not cause a problem at Slow Transfer speeds or less, and ships already in atmosphere do not suffer these effects. Thus a vessel accelerating hard up to orbit does not need to worry about a potential prang; one coming down from orbit unwisely fast does.

Streamlined ships can enter atmosphere safely at one speed class higher (Orbital Transfer); unstreamlined ships at one class lower (Port). Once the craft has entered atmosphere it can accelerate again; it is the sudden deceleration caused by hitting the outer layers of atmosphere that causes the hazard.

Trace:	DM-6
Very Thin:	DM-3
Thin:	DM-1
Dense:	DM+2
Very Dense:	DM+4

A very high-altitude aerobraking manoeuvre might be used to try to shed excess speed, or just because the pilot thinks it looks cool. A

vessel may decelerate by an additional amount of Thrust equal to twice the Effect of an Average (8+) Pilot check. However, if the check is failed the craft is considered to have hit the atmosphere and may suffer a prang. A failed aerobraking check counts as 1D of cumulative decelerating Thrust; a desperate pilot might deliberately turn the ship to present maximum air resistance and hope the damage is less than striking the ground would cause.

Bad Take-offs and Landings

The normal Pilot check to put a ship on the pad (starport landing) is Routine (6+) difficulty. It is possible to make the task easier by extending the time taken, but in a busy port this may not be possible. Traffic control needs to get ships on the ground or out of their airspace as quickly as possible, so parking like a geriatric turtle may not be acceptable. Thus most ships make their approach under smooth deceleration and final movements at Slow Port speed.

If a pilot wants (or needs, or is forced to) come in hot, DM-2 applies for every speed category above Slow Port. The actual landing must still be made at a survivable speed, but it is possible to streak in, decelerate hard and drop gently onto the pad to the admiration of onlookers. It is also possible to end your days as a hole in the ground. Likewise, pilots who take off and accelerate smoothly away make traffic controllers happy. Those who buzz the tower under full throttle do not.

If a Pilot check to take off or land is failed, determine the Severity of the incident with the negative Effect of the failed check as a positive DM. So, if a pilot takes off at Port speed but loses control for some reason, with an Effect of -3 on the Pilot check, Severity is 1D+2 for Port Speed and an additional +3 for the extremely poor Pilot check.

PRANGS

Most incidents do not result in a prang or crash, but whenever a ship suffers a mishap such as a failed Pilot check for atmospheric entry or take-off, there is the potential for people to get hurt and objects broken. Determine the Severity of the incident and apply the results from the Prangs table.

The Personnel Outcome column indicates the difficulty of an Athletics check to avoid being bounced off something or struck by a lose object. Failure results in the indicated damage being taken. Success reduces damage by 1D+Effect, which for lesser prangs likely means no damage is taken. Personnel strapped into proper seats or crash frames (good quality stateroom beds have one) do not need to make this check and reduce damage by 2D.

Dings, Prangs and Crashes

Severity	Outcome	Personnel Outcome
0-	Slight shudder, no problems	No check required; no damage.
1-3	Some vibration, loose objects fall over or roll about, passengers stumble	Easy (4+), no damage but possibly some inconvenience
4-6	Minor and momentary control loss, possibly sufficient to cause unrestrained passengers to fall over. Some minor internal mess such as lockers spilling their contents. No damage to the ship.	Routine (6+), D3 damage
7-9	Hull is dinged (1 Hull damage) and personnel are thrown around, possibly causing significant injuries. All unsecured objects are spilled, some may be broken.	Average (8+), 1D damage
10-12	Hull is dinged (D3 Hull damage), personnel are severely thrown around. Some internal damage to fittings, partition doors and the like.	Difficult (10+), 1D damage
13-15	A Prang has occurred. 1D Hull is lost, personnel are severely thrown around. Internal damage to many light components. No threat to functionality.	Difficult (10+), 2D damage
16-18	A serious Prang has occurred. As 13-15 above, but 3D Hull is lost. 1 component suffers the effects of a Critical Hit	Very Difficult (12+), 2D damage
19+	A rather extreme Prang has occurred. As 13-15 above but 3D Hull is lost. D3 components suffer the effects of a Critical Hit.	Very Difficult (12+), 3D damage
22-24	The vessel suffers a 'mild crash', losing 2Dx3% of its Hull and taking 1D Critical Hits	Formidable (14+), 3D Damage
25+	The vessel has crashed, losing 2Dx6% of its Hull and taking 2D Critical Hits.	Formidable (14+), 4D Damage

INTERCEPTORS

The conventional System Defence Boat is intended to operate from a patrol station in orbit or be based out of an installation. This is not always feasible, however; if no suitable orbital or offworld base exists then SDBs have to launch from ground installations. For small, low-gravity worlds this imposes only a slight delay in deployment, but a ship that must climb out of a deep gravity well is vulnerable to a fast-moving intruder and may fail to make an intercept in time.

Various solutions to this problem have been tried. Some are doctrinal, such as keeping system defence craft in orbit and rotating crews with support vessels. Others are technical, the simplest of which is to provide SDBs and other craft with a boost system to assist getting into orbit as quickly as possible. SDB crews also use boost systems for extra acceleration when pursuing hostiles or making an early intercept.

JAVELIN LIGHT GUNBOAT

The Javelin is designed for short-range interception rather than long patrols. It is officially designated a gunboat rather than system defence craft as it is designed to be carried aboard a tender or similar vessel in addition to performing a system defence role. Configuration is similar to that of a 200-ton SDB.

The Javelin is built around the Atlatl Boost System which was designed as an integrated part of the hull. The vessel's standard manoeuvre drive is impressive on its own, being capable of sustained 6g thrust, but under maximum boost the Javelin can overhaul almost any vessel. A Javelin that uses all of its reaction fuel will take much longer to get home than it did to reach the target, but this is not a problem in a vessel designed for rapid interception and high-speed firing passes.

The reaction drive can be used in combat, enabling the Javelin to engage in a series of rapid 'one pass and haul ass' strikes against a hostile vessel or streak away from danger. The primary armament is a fusion gun barbette, with a dual pulse laser turret for use against smaller targets. The hull is lightly armoured to withstand weapons fire from fighters; the Javelin can use its speed when engaging craft capable of doing significant damage.

Normal crew is four, all of whom have workstations on the bridge. The drives are remotely operated for the most part, though the engineer can enter the cramped spaces around them to make adjustments if necessary.

For the most part, however, the crew confine themselves to the bridge, living space and small recreation area, rarely entering the drive room or turrets. These are typically maintained groundside or aboard a parent ship, and entered from external hatches rather than through the ship. There are rumoured to be Javelins whose internal access corridor has never been used.

CREW	RUNNING COSTS
Pilot, Engineer x3, Gunners x2	**Maintenance Costs**: Cr6346.67/month **Purchase Costs**: MCr76.16

JAVELIN LIGHT GUNBOAT

TL12		TONS	COST (MCR)
Hull	200 tons, Streamlined	-	6
Armour	Crystaliron, Armour: 6	15	1.8
M-Drive	Thrust 6	12	24
High Burn Thruster	Thrust 16	64	12.8
Power Plant	Fusion (TL12), Power 225	15	15
Fuel Tanks	4 weeks of operation	1.5	-
Reaction Fuel Tank	30 minutes at Thrust 16	40	-
Bridge	Standard Bridge	10	1
Computer	Computer/10	-	0.16
Sensors	Military Grade	2	4.1
Weapons	Fusion Gun Barbette	5	4
	Dual Turret (pulse lasers)	1	2.5
Software	Library	-	-
	Manoeuvre/0	-	-
	Fire Control/1	-	2
Staterooms	Standard x4	16	2
Common Areas		8	0.8
Cargo		10	-
		Total	76.16

POWER REQUIREMENTS

Basic Ship Systems	40
Manoeuvre Drive	120
Sensors	2
Weapons	29

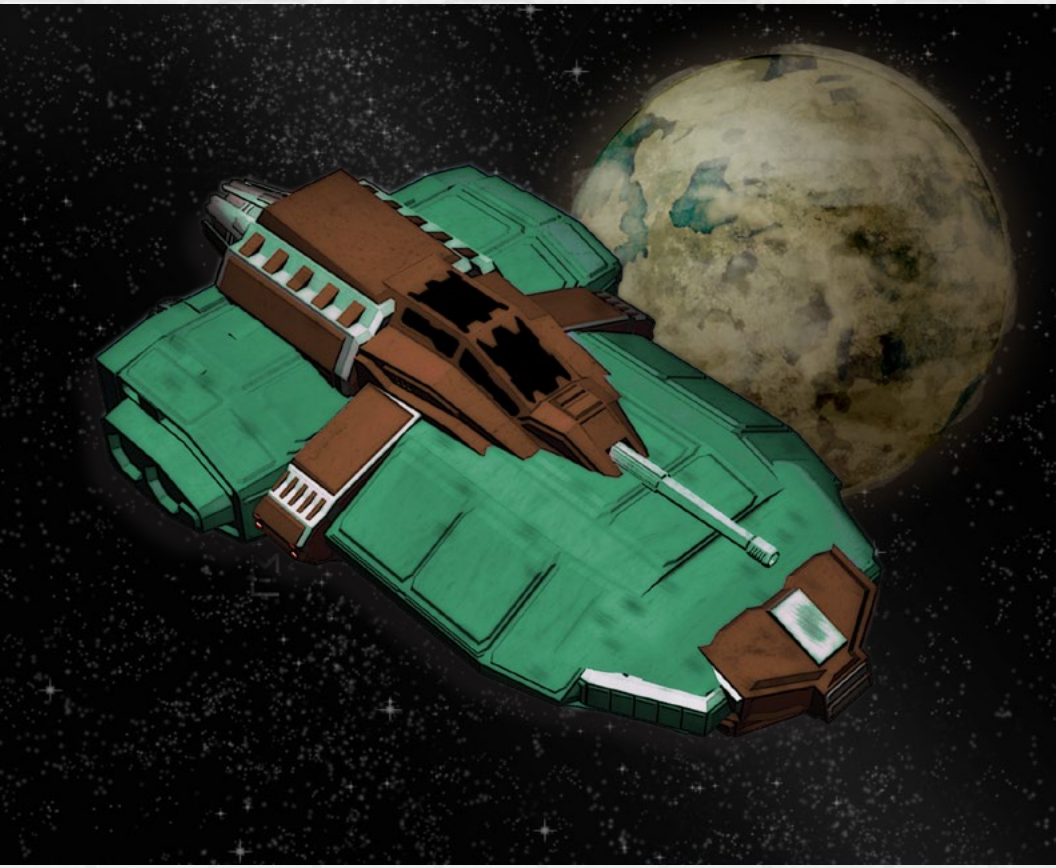
1. Sensors
2. Bridge
3. High burn thruster
4. Fresher
5. Ship's locker
6. Air lock
7. Stateroom

8. Common area
9. Cargo hold
10. Power plant
11. Manoeuvre drive
12. Fusion gun barbette
13. Pulse laser turret

DART INTERCEPTOR

The Dart interceptor is one of the most exciting craft to fly, but not always in a good way. Its incredible acceleration is certainly exhilarating, but the prospect of having insufficient reaction fuel to cancel a high velocity is a constant source of stress. Automated systems warn the pilot of 'bingo' fuel on a dynamic basis, ensuring they know where the limit of endurance lies and can get back to base.

Fuel management is a critical skill when flying a reaction fighter. The Dart has a nominal power plant endurance of 32 hours – far longer than any pilot would want to be in the cockpit – but all fuel is available for drive and power plant functions. In theory this means the craft could power its systems for almost a week without manoeuvring, though more commonly the power plant allocation is used as a last reserve – a Dart that can get home in three hours by using up all but three hours' worth of power plant fuel has no real reason to keep much more in reserve.



Similarly, reaction fuel calculations are not as simple as they might at first appear. One hour at maximum thrust translates to sixteen hours of constant 1g acceleration. A Dart will normally undertake short patrols of under four hours' duration, or be launched from a ship or ground station as an interceptor. In the latter case high acceleration will be applied early to ensure a rapid climb to orbit and intercept, but most manoeuvres will be made at a more modest rate. By coasting much of the way a Dart can make a patrol of several hours duration and still have plenty of fuel for high-speed manoeuvres.

USING REACTION DRIVES

The simple way to calculate fuel is to use g-hours (one hour of continuous 1g thrust) and g-turns (one turn of 1g thrust). A Dart sets out with 16g-hours of thrust at the beginning of a mission. There are ten turns in an hour, so the fighter has 160 'g-turns'. If the pilot engages in maximum power manoeuvring for five turns of space combat, they use 16 g-turns every turn, or 80 g-turns total. At the end of the fight they have 80 g-turns of fuel left, minus whatever it took to get to the combat area.

Alternatively, combat endurance can be calculated using fuel tonnage. One hour (10 turns) at Thrust 16 requires 8 tons of fuel, so one g-turn requires 0.05 tons of fuel. That is to say, fuel is expended per turn at a rate of 0.05 tons times the amount of Thrust the pilot uses: if they manoeuvre at Thrust 7 one turn this costs 0.35 tons of fuel. If the pilot was desperate, they could draw on the power plant reserve; 0.1 tons of power plant fuel gives 1.6 hours of power plant operation, which is longer than most fights are likely to be. A pilot could therefore draw on this reserve for a last desperate attempt to take out the target.

Both of these methods require bookkeeping, but they allow Travellers to wring the very last drop of performance out of a fighter. If large numbers of fighters are in use it is simpler to assume they have one hour (10 turns) of combat endurance regardless of the Thrust they use every turn, and can creep home on power plant fuel afterwards.

DART INTERCEPTOR

TL12		TONS	COST (MCR)
Hull	20 tons, Streamlined	-	1
Reaction Drive	Thrust 16	6.4	1.28
Power Plant	Chemical, Power 10	2	2
Fuel Tanks	32 Hours of Operation	2	-
Reaction Fuel Tank	1 hour at Thrust 16	8	-
Bridge	Cockpit	1.5	0.01
Computer	Computer/10	-	0.16
Sensors	Military Grade	2	4.1
Weapons	Fixed Pulse Laser	0	1.1
Software	Library	-	-
	Manoeuvre/0	-	-
	Fire Control/1	-	2
Cargo		0.1	-
		Total	11.65

CREW

Pilot

RUNNING COSTS

Maintenance Costs:
Cr970.83/month
Purchase Costs:
MCr11.65

HULL POINTS

8

POWER REQUIREMENTS

Basic Ship Systems	4
Manoeuvre Drive	0
Jump Drive	0
Sensors	2
Weapons	4

1. Fixed pulse laser
2. Power plant (above reaction drive)
3. Sensors
4. Reaction fuel tank
5. Fuel tank
6. Cockpit
7. Reaction drive

FIRST CONTACT

First Contact is one of the most exciting and rewarding – not to mention dangerous – aspects of the Scout Service. Well-established protocols are in place, but every situation is different. Exploration beyond borders occasionally results in contact with an entirely new species, and even within the boundaries of well-explored space there are species that have been overlooked.

If a species has not yet been encountered, there will usually be a reason. The most common are:

The homeworld is far away: In this case, contact will usually be made by explorers from one side, or perhaps both. Contact may be accidental, such as when a ship misjumps into unexplored territory, or might occur when a migrating race moves into a new area. In many cases contact is made by planned exploration missions, and it is generally not a surprise. A starfaring civilisation can often be detected from several parsecs away by its emissions, or evidence may be left on nearby planets. Other races can often tell explorers about their neighbours, though their information may be biased.

The species has been overlooked: Some species are not initially recognised as sentient, or are difficult to detect. In the former case, the reason might be a very alien physiology and behaviour, or extremely low intellect bordering on animal level. Alternatively, a species might leave a very small footprint, using extremely clean energy and blending cities into the natural environment. Sparse populations of low-tech people are also likely to missed by a survey.

The species may live in unusual conditions: Some species require conditions so far beyond those tolerable by humans that contact is not possible. Such beings may be so alien that they escape notice or recognition. Alternatively, the species may live in a place where contact is difficult and even detection unlikely. One reason for doing so is to obtain a necessary resource, or the species may have been transplanted and found a way to survive in a hostile environment.

Contact has been avoided: Some species actively hide from others, possibly in hazardous conditions. A variant on this concept, popular in entertainment vids, is a species that does have contact which has been kept secret. This situation is potentially the most dangerous a first contact team can face, especially if there are powers at work to suppress knowledge of the species.

PRECONTACT PROCEDURES

The IISS prefers to make contact with new species in a careful and methodical manner, gathering all possible information before initiating contact. Events may force their hand, such as a band of Travellers blundering into the area, but if things go to plan the regulations will be followed and the contact team will have a clear plan to follow.

The first stage is to conduct a physical and electromagnetic observation of the target species' homeworld or the worlds they frequent. Standard survey equipment will give an indication of the conditions the new species prefers, its requirements for life support, and a general idea of its technological sophistication. It may be possible to create a framework for communication out of intercepted transmissions, or even to decode the species' language if sufficient time is available.

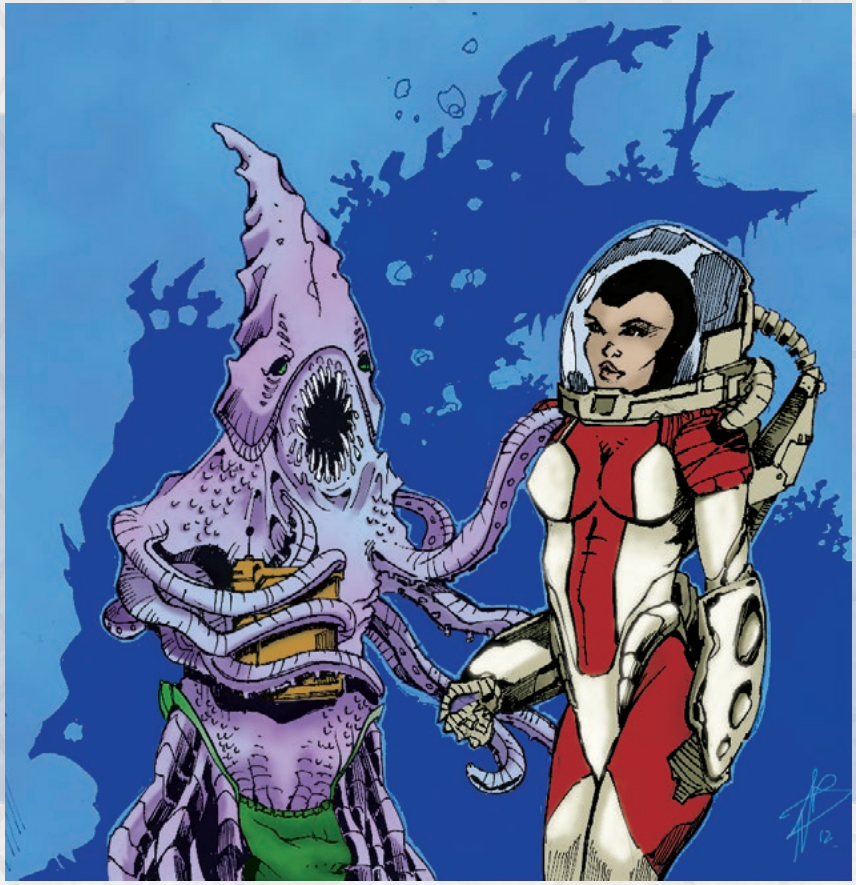
If communications are possible – even just an exchange of indecipherable signals – this is the preferred method of initiating contact. Standard procedure dictates that if a scout vessel is believed to have been spotted or the alien species attempts to initiate contact, signals should be immediately broadcast. Friendly contact is far more likely if scout ships are open about their presence.

GENERAL CONTACT PROCEDURES

Most commonly, contact is made on the ground. There have been exceptions of course; species capable of orbital flight might prefer to send up a mission to meet the scouts, and of course starfaring cultures are likely to have an orbital port where an initial meeting will take place. The latter is potentially a risk of course; an alien culture might decide to hold a landed ship in its port to learn more about the crew, or as hostages. Contact mission commanders generally prefer to risk only small craft by sending them into an installation they might not be able to quickly get out of.

For the most part, however, contact is a matter of landing and meeting the locals. The majority of encountered species are not capable of interstellar travel, and many lack the technology to communicate other than in person. As a general rule, the lower the Tech Level of a species, the more likely it is to think it is the only sentient species in existence. Panic or superstitious dread is possible in such cases, but on the other hand a low-tech species poses little threat to scout ships. The ground contact team, on the other hand, may be in mortal danger.

Standard procedure is to land a contact team in an open area away from large populations, with a backup and rescue group available at zero notice.



The contact team will usually be unarmed, though concealed weapons may be carried in some circumstances. The backup group is responsible for getting the contact personnel out if the meeting goes badly, ideally with a minimum of violence. Distraction techniques are preferred to the use of force, and if violence is necessary efforts are made to use less-lethal weapons first.

There have been cases where the contact team were taken hostage without intervention by the backup. This might be a useful gambit, allowing the contacted species to think they are in control of the situation. Such actions must be carefully judged but sometimes there is a fine line between being the guests of a nervous alien government and being a hostage. Lasting relationships have been built on the strength of words heard by captors who thought they were the ones in control.

If the ground team were to be taken hostage, retrieval is not guaranteed. All scouts have a 'no hostage' clause in their contract for this situation, and their superiors will not enter into a bad agreement to save the lives of a contact team. They might, on the other hand, conduct a rescue in

a manner that makes the contacted species realise they have bitten off more than they can chew. If so, further contact will be from a position of strength and the locals will find themselves being dictated to rather than amicably contacted.

Standard procedure is to risk as little as possible on a first contact mission. Teams are rarely more than half a dozen personnel, usually deployed in air/rafts rather than from spacecraft. This is seen as non-threatening but also allows starships and spacecraft to be kept out of reach of the locals. Likewise, equipment is light and basic, though the contact team can call upon the resources of their ship(s) to conduct analysis or provide advice.

Initial contact is cautious, and wherever possible the team will not enter enclosed spaces or areas where they can be ambushed or seized. However, circumstances do vary and risks will be taken where appropriate. Gift-giving is generally a part of contact procedures, but contact teams do not carry such wealth that murdering them seems worthwhile. Instead, gifts are used as token of friendship and more importantly to whet the appetite of the local elite for more. Ideally, gifts make further contact seem desirable and at the same time establish how powerful and important the new arrivals are.

RISKY CONTACT

If preliminary assessment or other data indicates that a standard contact is too risky, an extended information-gathering process is begun. Once there is sufficient information about the targeted culture a suitable contact strategy may be devised, or in some cases the world may be Red Zoned on a temporary or permanent basis. All information gathering is performed covertly in this situation.

Observations of cities and settlements gives a general indication of population size, Tech Level, infrastructure and industrial development, all of which allows an estimate of military capability as well as economic value of the world. Settlement patterns sometimes give an idea of the nature of society, or at least how centralised it is. Scattered or clumped cities might indicate balkanisation, for example, though evidence of warfare is usually a clearer indication.

Technological capability combined with settlement pattern will give an indication of the world's government type. A centralised bureaucratic government is not possible unless the population are concentrated or electronic communications are available. A low-tech world with scattered settlements probably has a decentralised government system such as a feudal technocracy if it is not balkanised. Governmental buildings and areas of a city given over to the business of governance are usually apparent as such. Once identified they can be closely observed, possibly using drones or planted sensor packages. This will allow an approach to be formulated based on the characteristics of the ruling elite.

DEFINING SENTIENCE

In some cases it can be unclear whether a species is sentient or not. Some particularly intelligent animals display characteristics that mimic sentience, and some particularly low-intelligence species do not match the usual criteria. Neural Activity Sensors are highly useful in making an initial appraisal, but the degree of intelligence indicated does not always equate to sentience. Some species have a huge intellectual potential but are not self-aware; others are sentient but extremely limited.

The discovery of a sentient species imposes limits on the commercial exploitation and colonisation of a planet, and measures are generally taken to protect close-to-sentient animals. However, these factors must be proven before measures can be implemented. Instrument readouts are not enough here; an assessment must be made based upon standard criteria. These include tool use, language and social structure.

Language is not in and of itself a certain indicator of sentience. Many animal species are capable of communicating in various ways, and can often indicate objects or locations by distinct names. What is relevant is the indication of conscious thought and transmission of concepts. At its most basic level, 'language' is merely an indication of emotional state. A cat's purr is a means of communicating contentment and happiness; a snort of alarm from a deer is more sophisticated and conveys useful information to other animals – but it is not an indication of thought.

Even where different sounds or other forms of communication convey detailed information this is not an indication of sentience. Some animals give different warning sounds depending on the threat, and take defensive actions appropriate to the information they receive. What is an indicator of sentience is the ability to convey information that has been processed to make it concise and useful. Even more significant is the ability to convey abstract thought that goes beyond observation and to teach others without having them simply copy actions.

An animal might learn to perform complex tasks by watching its parents or other members of its social group, but a sentient person can be told what to do or to expect. This indicates the ability to conceptualise and imagine a situation the person has not seen, which is one of the hallmarks of sentience. It is also necessary for the long-term development of the species, since it allows the young to be taught more, and more quickly, than by a see-and-copy process. This ability to quickly bring the young up to speed creates the potential for further development and innovation which might someday lead to a technological civilisation.

What might be termed 'stupidity' is also sometimes an indicator of sentience. Animals react to stimuli in a predictable manner. If there is little competition for resources and no obvious need, yet members of a race leave a fertile and pleasant area to struggle across badlands, there must be a reason. Such activity is not necessarily proof of sentience,

but animals do not as a rule leave habitable places for less habitable ones without obvious necessity. People, on the other hand, explore for exploring's sake or leave their homes due to social issues that would never arise among animals.

Complex social structures are not necessarily an indication of sentience, nor is absence proof of its lack. However, most sentients create social structures that go beyond simple cooperation in searching for food or protecting the young. Compassion and protection of the group rather than the individual are not restricted to sentient beings, but protecting and nurturing essentially worthless members of a group is unlikely in non-sentient species. Social structures that permit individuals to specialise permit the development of society, and are a hallmark of sentience or proto-sentience.

Tool use, in and of itself, is not an indicator of sentience. Many animals use tools, and some will even use a basic tool like a stone to create a better one, such as by scraping a stick to make it sharp. However, complexity of tool use is an indicator, especially where higher-order tools are made by specialists using tools created for the task. This harks back to the ability to abstract and imagine; a smart animal can use a tool it finds but abstract thought is required to figure out how to make a better one.

ONCE SENTIENCE IS DETERMINED

Ultimately, the decision as to whether a species should be considered sentient or not is made on a 'big picture' basis. If sentience is proven, it is necessary to decide how to proceed. Low-tech societies are, in general, contacted discreetly and measures taken to ensure interactions are kept low-key. It is not usual to inform such a society of the existence of a large interstellar civilisation, but equally it is considered inadvisable to give false or inaccurate information. Fragile societies or those liable to pose a threat to visitors are Red Zoned. More advanced or adaptable species are introduced as gradually as possible to the wider interstellar community.

Once a race is deemed to be sentient, it is protected by interstellar law. The killing of a sentient being of any species without cause is murder, and it is illegal to take people of any species as slaves. Laws also exist to reduce exploitation, such as by unscrupulous merchants selling substandard goods at ridiculous prices to a culture that has just discovered the wider universe.

Such measures are not always successful, but wherever possible a sentient species is protected if it needs it and assisted if it wants to be, in the hope that eventually its people will join the wider interstellar community and contribute to the Imperium. Ideally, such transition is made in a way that preserves the unique culture of the newly contacted species. Study of that culture and the changes it goes through after contact is an area of great interest to the Scout Service, but goes beyond the first contact mission.

>> VEHICLE MOUNTED MISSILES <<

The guided missile is a game-changer in mid-technology warfare, and never becomes completely obsolete despite the development of meson guns and other advanced weapons. In principle, a missile is a simple enough device, consisting of just a few elements.

Propulsion: The majority of missiles use chemical propulsion, typically a rocket engine. Other propulsion systems are possible, such as jet engines or gravitic drives, but these are far less common.

Casing: The main body of the missile is termed its casing. Normally the casing has movable fins or directable propulsion for guidance. The combination of casing and propulsion system is sometimes called a 'bus'. It is not uncommon for the bus of a military missile system to be adapted to carry civilian payloads such as satellites or scientific probes.

Guidance: A guided missile, by definition, requires some form of guidance. This might be simple dead-reckoning system taking the weapon to a defined location, or an advanced seeker system capable of selecting its own targets once it reaches the target zone. Many missiles receive external guidance, either as direct control signals or in the form of a designator whose target point is followed by the missile. An unguided 'missile' is typically referred to as a rocket, even if it uses some other form of propulsion, to differentiate it from a guided weapon.

Payload: This is whatever the missile is designed to deliver. If something explosive, incendiary, or similarly intended to cause harm and mayhem, it is usually referred to as a warhead. A missile might carry several warheads which may have their own guidance and propulsion systems.

GUIDED TRAIT

Weapons that can seek a target without input from an operator have the Smart trait. Those that require either designation or direct guidance have the Guided trait. A Guided weapon that loses contact with its operator will become unguided and continue on its present trajectory unless programmed to self-destruct. If a laser designator goes off target but remains switched on, the weapon will follow it and hit an unintended target.

Use of suitable guidance allows the weapon's operator or the operator of a designator to target a weapon very precisely, with no penalties for range. Hand-held or vehicle mounted designators can be used with the Heavy Weapons or Gunner skills; missile control/guidance systems require the

Gunner skill. If the operator succeeds in the skill check (usually Average difficulty but possibly harder if the target is small or on the move), the weapon will automatically hit the target. Some guidance systems provide assistance, making a hit more likely.

Blue Fantail 70mm FFGR

A staple of mid-tech battlefields, the 70mm Folding Fin Guided Rocket is actually a guided missile of sorts. The weapon is a modified version of the standard rocket launched from a rocket pod (see page 133 of the *Central Supply Catalogue*), fitted with a basic seeker head capable of following a laser designator. The designator is usually mounted alongside the rocket pod on a helicopter or light aircraft, in which case the rockets follow the path of the beam. However, a handoff targeting lock can be deployed by personnel or vehicles on the ground. In this case, the rockets can be launched on an indirect trajectory, such as over intervening terrain. However, range is halved as these weapons are designed to be air-launched and do not have the thrust required to climb to great altitude.

The 'Blue Fantail' designation comes from the brand name of a leading guided rocket system. It is generically applied to all rocket systems of this sort, though most have their own codenames. The Blue Fantail designator is designed to be fitted in a fixed mount on an aircraft, or a pintle mount on a ground vehicle. The pintle mount could also be used on the perimeter of an installation, allowing precise rocket fire to be directed against an assault. The hand-held version resembles a bulky set of armoured binoculars.

Weapon	TL	Range	Damage	Kg	Spaces
Blue Fantail FFGM Rocket Pack	8	2.5	4D	250	1
Blue Fantail Designator (mounted)	8	2.5	-	5	0
Blue Fantail Designator (hand-held)	8	2.5	-	4	0

Weapon	Cost	Magazine	Magazine Cost	Traits
Blue Fantail FFGM Rocket Pack	Cr12000	6	Cr12000	Auto 3, Blast 5, Guided
Blue Fantail Designator (mounted)	Cr2000	-	-	-
Blue Fantail Designator (hand-held)	Cr3000	-	-	-

Blue Fantail 70mm FFGR

GLMM-128 Gun/Missile Launcher

GLMM-128 Gun/Missile Launcher

The GLMM-128 (Ground-Launched Multirole Missile, 128mm) is a lightweight battlefield missile system intended to be fitted to any light combat vehicle. Primary munitions are 128mm missiles suitable for anti-armour and medium-range air defence work in a mid-tech combat environment, and are capable of engaging light grav tanks.

The gun/launcher has an unusual breech-loading system, which must be manually served. This reduces rate of fire compared to an autoloaded weapon of a similar calibre, but the complex missile/munitions loading system originally developed for the launcher proved unworkable. Despite this drawback, the GLMM-128 is popular with mercenary units and incorporated into many light military vehicles. A variant, designated ALMM-128, is designed for retrofitting to aircraft and light grav vehicles, acting as a one-shot launcher. It can be reloaded on the ground, but not in flight.

The GLMM-128 uses a missile prosaically designated ‘Project 414’, but better known by its marketing title as Jorden-Hurade-Hammare, a corruption of a phrase from an old Terran language roughly translating as ‘Earth-Flung-Hammer’. The JHH missile normally carries a high explosive shaped-charge warhead, but its bus can be used to deliver other munitions. Multiple high explosive/fragmentation submunitions can be scattered across a small area by the anti-personnel payload package, and a plasma warhead is available for those with the credits to afford it.

Weapon	TL	Range	Damage	Kg	Spaces
GLMM-128 Missile System	8	Varies	-	900	4
ALMM-128 Launcher	8	Varies	-	700	2
JHH Missile (shaped charge)	8	20km	12D	-	-
JHH Missile (HE-frag)	8	20km	9D	-	-
JHH Missile (plasma)	9	20km	1DD	-	-

Weapon	Cost	Magazine	Magazine Cost	Traits
GLMM-128 Missile System	Cr68000	1	-	-
ALMM-128 Launcher	Cr42000	1	-	-
JHH Missile (shaped charge)	Cr24000	-	-	AP 12, One Use, Smart
JHH Missile (HE-frag)	Cr19000	-	-	Blast 12, One Use, Smart
JHH Missile (plasma)	Cr50000		-	Blast 16, One Use, Smart

AP-150 (Actiune Puternica) 150mm Battlefield Missile

The AP-150 is a large, long-range battlefield missile intended for use aboard maritime ships and large vehicles. It can also be used as an aerospace defence missile, though it is not ideal for this role. The missile lacks agility, making a hit on a grav tank or similar vehicle unlikely, whilst not having the punch required to do much damage to a starship.

The AP-150 is normally deployed in its own container-launcher, a self-contained unit fitted to a missile boat, maritime ship, or vehicle. Alternatively, batteries of AP-150s can be positioned to cover strategic waterways or the approaches to a city. These are sometimes turreted, but deployment in a simple concrete pit containing four container-launchers is common. Launch sites attract return fire much of the time, so a group will usually be expended as a single salvo.

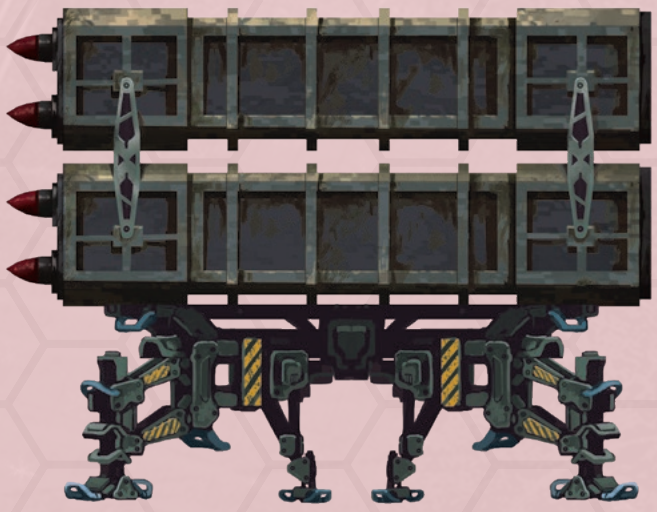
The standard warhead is a multimode explosive core surrounded by tungsten cubes. These can be hurled forward by a shaped-charge detonation or outward in a cone for an area effect. The missile is smart

enough to determine which mode is most effective against its current target, and will use the most appropriate if a direct hit is not possible. If a direct hit can be obtained – and the target merits it – the warhead will attempt to punch through the target's hull. In this case the tungsten sheath protects the warhead until it detonates inside the target, flinging white-hot tungsten cubes around inside.

Setting up an AP-150 is intentionally easy. It uses a plug-and-fight architecture compatible with most standard military systems, whilst fittings are designed to allow the container-launcher to be added to a vehicles or maritime vessels with a minimum of deck penetrations.

Weapon	TL	Range	Damage	Tons	Spaces
AP-150 Missile System (direct hit)	8	125km	6DD	4	16
AP-150 Missile System (proximity detonation)	8	125km	6DD	4	16

Weapon	Cost	Magazine	Magazine Cost	Traits
AP-150 Missile System (direct hit)	Cr175000	1	-	AP 40, Blast 12, One-Use, Smart
AP-150 Missile System (proximity detonation)	Cr175000	1	-	AP 10, Blast 24, One-Use, Smart



AP-150

Spearwall Orbital Defence Missile System

The only sure defence against attack by starships is starship-grade weapons. The Spearwall system is designed to make orbital-defence available to as wide a range of users as possible. The system is built around the Spear missile, a starship-grade weapon modified for launch from ground-based platforms. On small worlds, Spear missiles are often used in their basic configuration, but the Longspear is favoured by governments of larger planets.

Longspear missiles have an extra stage added to their bus, increasing mass and volume but allowing a much more rapid climb to orbit when combined with an additional booster. The standard Spear missile has Thrust 10. Longspear increases this to Thrust 15. The Longspear cannot be used in a standard launcher, and requires the use of a Spearwall erector-launcher.

The Spearwall system uses one of three launchers. The first is a standard starship missile system, intended to be mounted in a groundside bunker but otherwise no different from the shipboard equivalent. The static launcher is an armoured container designed to be dug into the ground, pointing upwards. Its recharging and control interface unit is normally buried nearby, just under the topsoil, and commands are received remotely. When the unit is ready to fire, a set of explosive charges clears most of the soil off the mouth of the container, after which hydraulic rams move the lid aside. Buried container/launchers are virtually impossible to detect by emissions and are likely to survive an attempt to suppress planetary defences.

The third launch system is an erector-launcher designed to be carried on a large vehicle. This is usually a military transport of some kind, but some governments mount their Spearwall systems on ships or trains. A bunker containing multiple erector/launchers on a movable platform is another possibility, allowing missiles to be brought into firing position under a narrow launch tube whilst the rest remain protected. The Spearwall erector-launcher can only carry one missile at a time, but is capable of launching Longspears in addition to the standard Spear missile.

Warheads are normally conventional starship-grade munitions, though some world governments deploy nuclear warheads as a deterrent or extreme-circumstances defence. Detonating nuclear weapons in your own orbital space comes at a price, so wherever possible such missiles are held in reserve for the direst emergency or as a bargaining chip.

Spear and Longspear missiles are spacecraft scale weapons.

Spearwall Orbital Defence Missile System

Weapon	TL	Range	Damage	Spaces
Spear Planetary Orbital Defence Missile	9	Low Orbit	4D	-
Longspear Planetary Orbital Defence Missile	9	High Orbit	4D	-
Spearwall Shipboard Missile Rack	9	-	-	4
Spearwall Erector-Launcher	9	-	-	8

Weapon	Cost	Magazine	Traits
Spear Planetary Orbital Defence Missile	Cr60000	-	One Use, Smart
Longspear Planetary Orbital Defence Missile	Cr90000	-	One Use, Smart
Spearwall Shipboard Missile Rack	Cr350000	12	-
Spearwall Erector-Launcher	Cr280000	1	-

PLANETSIDE TRANSPORTATION

Travellers, by definition, travel over great distances between the stars – often without really thinking about the difficulties involved. A starship can also serve as a means of planetside transportation, though there are some problems involved with hopping around in a huge chunk of flying metal. Worlds with the means to enforce it typically restrict spacecraft and interstellar vessels to the starport and any subsidiary spaceports. Few governments want privately owned starships wandering around in their airspace, for reasons that range from accident prevention to local security. This particularly applies to armed starships, which might outgun the local military by a wide margin.

There is also the problem of finding a suitable landing spot to consider. Instruments can do so much but the only way to tell if a piece of ground really can support a starship's weight is to survey it at ground level or land and hope for the best. Leaving aside the possibility of causing damage with a bad or ill-advised landing, there is a real possibility that Travellers might touch down on soft or unexpectedly uneven ground. One way to avoid this is to use public spaces like car parks or school yards as a landing area… and this is why governments like to restrict interstellar jerks from just landing where they please.

Travellers thus often want or need a means of transportation when they get planetside. Carrying a vehicle aboard ship is a possible solution, but this takes up space and may not be suitable for all worlds the Travellers visit. A high-tech city is not really the place for a heavily armoured custom ATV capable of crossing airless moons or the most extreme wilderness imaginable, so Travellers will often want to use local transportation. This can be a cheap, efficient and generally enjoyable experience… or an ordeal the Travellers will never forget.

AT THE STARPORT

Orbital starports are effectively high-tech cities in space, and usually have a well-planned local transportation network, light ground vehicles and rapid rail-based transport being the norm. Some ports use grav vehicles tied into a local traffic network to prevent accidents. These are often lightweight designs unsuited to operations outside an enclosed environment but entirely suitable for internal passenger and freight movement. Destinations are usually chosen from a menu, with custom journeys set up with an equally user-friendly interface.

Transportation of this sort is often free, usually efficient and rarely difficult to use. However, it does make the movements of the Travellers

easy to track, and access will be restricted to parts of the installation. Ironically, it may be more difficult to reach a distant part of the orbital port than the most remote regions of the world below. A combination of distance, difficulty of navigating through a strange city and restrictions on public transport might make part of the installation inaccessible without advertising the fact.

A high-quality downport will usually have a similar transportation setup, usually tied into the traffic network of the startown or nearby city. Again, this is often used to subtly restrict access and contact between offworlders and the local population. A quick monorail ride takes Travellers to the capital, but the capital-starport rail link terminates there and does not connect to the rest of the city. The result is that visitors tend to remain in the easily accessed part of the city and cultural pollution or smuggling is kept to a minimum – all without walls, barriers and checkpoints.

PLANETSIDE

Planetside transportation can vary enormously. Imported higher-tech transport may be quite common among the elite or near the port, but as Travellers venture further afield they may find themselves having to use the same means of getting around as the locals. There is also a possibility that, away from the starport, little or no provision is made for non-native species. This is unlikely to be due to racism as such; it is more that budgets are always limited and whilst it may be desirable to make portside transportation useable, a city four thousand kilometres away which receives a handful of offworld visitors in any given decade is unlikely to spend money on making its rail net Virushi-friendly.

TL0

There will be no planetside transportation network.

TL1-2

Water provides the only mass or heavy transportation available on most worlds. This may be sailing or rowed ships, or animal-drawn barges on canals. Personal transportation relies on animals for riding or to pull carts. Most of the population will never go farther than they can walk in a day or two, but the elite will have a degree of mobility. For most this means riding animals or animal-drawn conveyances but imported vehicles are possible if there is offworld contact. These must be maintained, of course, so they become status symbols as much as conveyances and therefore unlikely to be rented out to offworlders. There will be few roads suitable for vehicles in any case.

TL3-4

Long-distance travel on land uses powered railways for the most part, providing a degree of personal mobility to all classes of society. Conditions aboard these trains will be basic to say the least. Sometimes power plants

are bought in from offworld, especially when long-distance lines are run through wilderness. It is possible to find what looks like a low-tech steam locomotive powered by a black-boxed nuclear power plant, driving a train made up mostly of locally produced rolling stock with a luxury car for VIPs.

Maritime travel is similar in many ways. Advanced sailing ships may be in use, or powered vessels using steam or combustion engines. Again, it may not be uncommon to find more advanced power plants or navigation and communications equipment in use. Often the local maritime shipping companies that can afford imported equipment edge out those who cannot, coming to dominate the main sea lanes whilst non-upgraded vessels operate elsewhere.

Ground vehicles are primitive, but the creation of a road network suitable for them makes importing offworld ground cars a viable option. These are usually cheap and simple vehicles, sometimes styled to match locally produced designs. Ground vehicles are normally only encountered in major population centres as they have a short range and the infrastructure to support them is primitive if it exists at all.

TL5-6

Mass transportation becomes a possibility at TL5, and is widespread by TL6 unless there is reason not to implement it. Land and water travel generally use advanced developments of earlier concepts, though a TL5-6 economy may be strong enough to permit a few advanced vehicles to be bought offworld. Thus executives and government officials may have access to grav transport, though this is rare and seen as a symbol of extremely high status. High-quality offworld ground vehicles are more common.

Air transportation is an option at TL4, but commercial exploitation of the technology is unlikely before inexpensive and reliable aircraft are developed. Although grav vehicles supercede aircraft as Tech Level increases, on worlds where interstellar contact is common there is a different trend. A world that develops technology in isolation will start with primitive aircraft and improve them before finally developing grav

vehicles, but one that is aware of grav technology or the capabilities of advanced aircraft will take a different route. Usually this means buying aircraft that are more advanced than local technology would allow but which can be maintained, and then learning to replicate them. This usually occurs after a few grav vehicles demonstrate the advantages and desirability of air transport, almost a reverse of the normal process.

TL7-8

Electric vehicles tend to supercede others by the early pre-stellar era, even if fossil fuels were widely used before. Combustible liquid fuels offer advantages at lower Tech Levels, not least because they allow mechanical vehicles to be built which require less advanced equipment and knowledge to maintain. Once an electric-based infrastructure is in place and batteries or fuel cells are light enough to be useful, electric systems are generally seen as more desirable for environmental, safety, and efficiency reasons.

Air transport is common at TL7-8, and often mixed with imported grav vehicles. A TL7-8 economy may be important enough at the interstellar level to permit widespread importation of grav vehicles, but in most cases locally manufactured vehicles still predominate. Traffic control procedures are in place for air travel but ground vehicles tend to be self-driven in a frighteningly chaotic manner. Major cities may have automated ground traffic control systems in place but this is rare and not always effective. Most worlds with even moderate offworld contact tend to adopt standard driving rules, but there are always local exceptions and variations, which might make local roads very interesting for unwary Travellers.

TL9

Tech Level 9 is a turning point in transportation, and not merely due to the availability of grav vehicles. Internal transportation within cities tends

to take the form of overhead or underground light railways, often monorail or high-speed maglev systems. Automated control makes these network extremely efficient, permitting trains to run very close to one another in a manner that would lead to innumerable serious incidents without the controls in place. Disasters are rare but, as a result of the small margins in place, they tend to be very serious.

The use of grav vehicles requires city planners to think in three dimensions to a greater degree. Buildings tend to be tall and more widely spaced than in mid-tech cities, with rail ports a little above ground level or underground, roads at ground level, and grav ports on the sides or tops of buildings. Automated traffic control is commonplace, with ground and grav vehicles locked into a control grid that may not permit manual control within city limits. This is sometimes used as a form of social control, limiting access to parts of the city other than by way of easily monitored rail routes.

Controls are less strict outside major population centres, though some worlds have designated air lanes that grav vehicles are funnelled into. This keeps skies elsewhere clear and ensures any accidents occur on known paths, greatly simplifying search and rescue attempts. Grav vehicles also ply back and forth between maritime ships and the shore, supplanting helicopters and light aircraft in a variety of transport, rescue and commercial roles.

TL10

As technology increases a world is better able to take part in interstellar commerce at a profit, which translates to prosperity and availability of more sophisticated vehicles in greater numbers. The pattern for interstellar societies of this sort tends to be one of light local transport and large-scale or heavy-duty intercity transit along a limited number of routes. Thus vehicles, both grav and ground, tend for the most part to be very light and suitable only for city roads. Some may not be manually drivable at all.

Inter-city travel is typically by very high-speed rail links, or sometimes water transport using large surface ships and submarines. Bulk land transportation is typically by way of railways, but the availability of grav technology makes it possible that there may be absolutely no ground-level infrastructure outside cities. One alternative to rail transport is the use of very large grav vehicles which may carry passengers and/or freight at high speed at modest altitude. Other than these sleek wedges hurtling overhead from time to time, the countryside may be entirely undisturbed on many worlds.

TL11-13

Grav transportation becomes ever more prevalent and affordable as technology improves, though there will still be some light vehicles in

use. These are typically short-distance runarounds and light transports for goods, often running indoors or in enclosed transit tubes between building complexes.

If a world has multiple orbital facilities such as factories or shipyards, infrastructure begins to go vertical rather than horizontal. Once enough shuttles and interface craft are available, it is actually cheaper to go from one city to another in a high ballistic arc or by way of orbital station than maintain a planetside transportation net. Cities and the immediate area around them generally have a light transportation hub, but anything moving over any distance goes up first, then down to the destination. It may be virtually impossible to get from one city to another without going through an orbital shuttle terminal. At this point, the world's cities are often more connected to the wider universe than to one another; and citizens may visit other planets more often than other cities of their homeworld.

TL14-15

Grav-supported structures first appear at TL11, but by TL14-15 gravitic technology is usually an integral part of city design. Some structures are built as floating modules, reconfiguring as required, and by TL14 whole cities may be supported by gravitic lifters. Such a city can go anywhere on the planet, making ground transportation outside city limits meaningless other than for the rural population. Society is almost entirely 'vertical' by this point, with small ground transport hub around landing areas, but most transits are made by grav vehicle.

On these extremely high-tech worlds, the transportation network is a complex matrix containing fixed ground installations and communities, mobile cities and installations, and orbital facilities. Planning a journey is a matter of knowing not merely how to get from A to B, but also where B will be located when you arrive. For the average citizen this is done by selecting a destination from a menu and boarding the right grav transport or shuttle. For Travellers, there is always the possibility of arriving at the right place… only to find the destination city is not there anymore, or the building they intend to visit has flown off to another city.

Overall, it is safe to say that advancing technology makes it faster, easier and generally safer to get around, but also vastly more complex for anyone taking responsibility for their own journeys. On the other hand, high-tech citizens have less need to move around and when they do it is made very easy for them providing they remain within the expected limits of internal travel. It may be that as getting from place to place becomes easier, the average person becomes less adventurous and more inclined to stay at home. Small wonder, then, that many ordinary citizens consider Travellers to be a bit strange!

INCARNATE-CLASS STRIKE DESTROYER

Towards the end of the Fourth Frontier War (1082-1084), with heavy losses among Fer-de-Lance and Chrysanthemum destroyer escorts, a call went out from the Imperial Admiralty. They were searching for a design at the same tonnage for a more powerful vessel. The Incarnate-class strike destroyer was the answer provided by a collaboration between Makhidkarun and GSbAG.

Engineers at Makhidkarun had designed an advanced gunnery artificial narrow intelligence system. Their attempts to market it to the Imperial Navy had met with, at best, a lukewarm responses. In an attempt to prove the software's value, executives of the company in the Deneb sector approached their counterparts at GSbAG to craft a starship specifically designed to utilise their advanced software. Instead of requiring twenty gunners, as other vessels of this size did, the design would incorporate a state-of-the-art computer running their new ANI, saving both personnel costs and space.

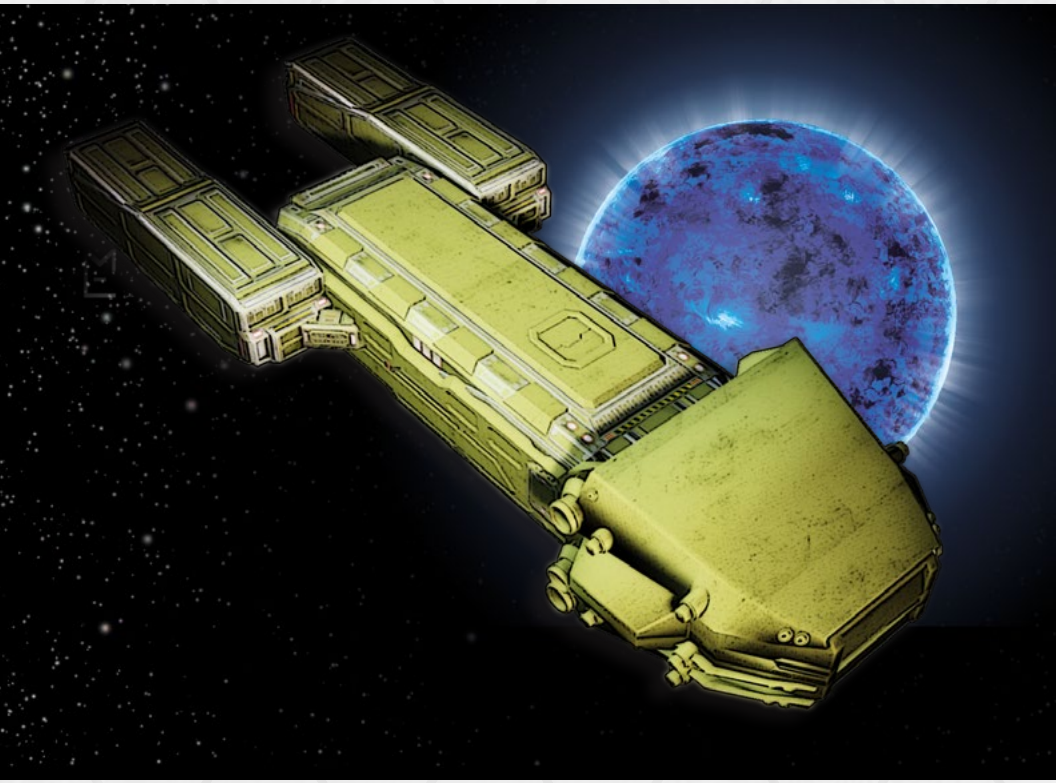
In a deliberate attempt to confuse enemy ship recognition systems, the Incarnate was laid out similar to the older Fer-de-Lance with major differences in the forward section. With its much heavier armour and orders of magnitude greater firepower, any foe making confusing them would pay dearly. Those improvements, coupled with others, had a hefty price tag; the new Incarnate vessels came in at almost twice the cost of the Fer-de-Lance.

Still, the Admiralty saw benefits in the design, especially after a stellar performance shakedown cruise of the Retribution Incarnate, the maiden vessel of the line. She left the drydocks at Magash (Deneb 0316) in late 1087 and headed corewards to perform anti-piracy patrols. While escorting a convoy of merchantmen, they were set upon by a pair of 800-ton Vargr frigates shortly after emerging from jump space. With her stealth jump drives dampening her exit signature, they had failed to notice the Retribution Incarnate's presence in the flotilla. Both Vargr ships were well within her fusion bay's range before she opened up. The fight lasted less than ten minutes, ending with the complete destruction of both corsairs. While the Retribution Incarnate did not escape without being struck, she did escape unscathed. Her heavy armour protected her from everything the corsairs could throw at her. After her return to Magash, the Imperial Navy placed an order for eleven more.

Unfortunately, as the years passed and the Zhodani threat faded from memory, the costs of the Incarnate came to seem more and more unnecessary. Coupled with unsettling reports concerning the advanced

synaptic processors in the gunnery system, the Imperial Navy chose not to order any more. Others, though, had taken note of the vessel's power and survivability. Orders started coming in from several private concerns, particularly other megacorporations, looking for an escort vessel. Several dozen were built and examples can be found throughout the spinward reaches of the Imperium.

Of note, some of GSbAG's customers expressed concern with the gunnery software. A variant of the class was built that replaced the heavy fighter and its docking bay with a dozen additional staterooms. This change, coupled with reducing the capabilities of the main computer and removal of most of the advanced software, reduced the price by almost a quarter billion Credits.



CREW

Captain, Officers x 2, Pilots x 3, Engineers x 5, Maintenance x 2, Small Craft Pilot, Medic

RUNNING COSTS

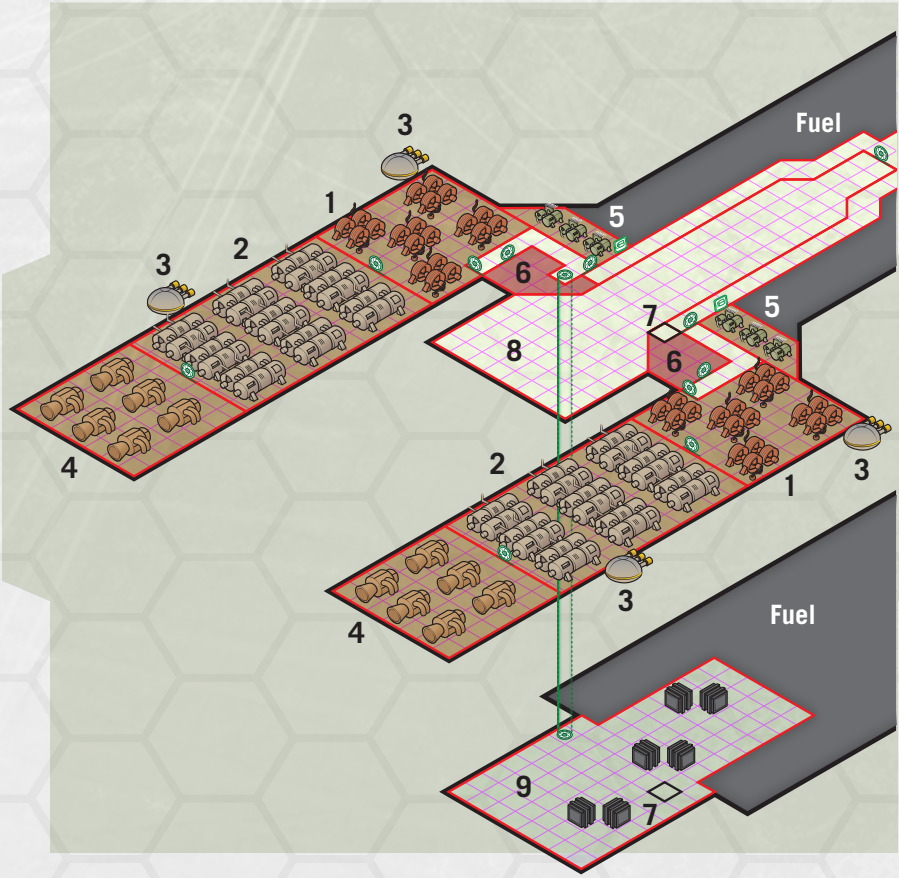
Maintenance Costs: Cr88000/month
Purchase Costs: MCr1060.57

INCARNATE-CLASS STRIKE DESTROYER

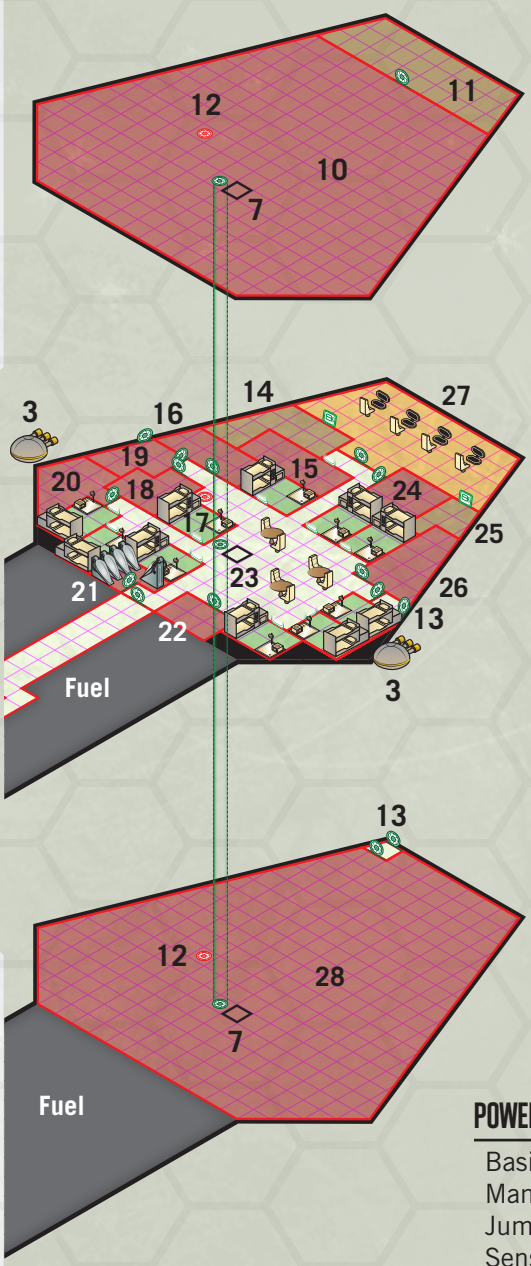
TL 15		TONS	COST (MCR)
Hull	1,000 tons, Close Structure, Radiation Shielding, Reinforced	-	95
Armour	Armour: 15	120	84
M-Drive	Thrust 6 (energy efficient, reduced size x2)	48	144
J-Drive	Jump 3 (decreased fuel, stealth jump)	80	180
Power Plant	Fusion (TL15), Power 900	45	90
Fuel Tanks	J-3; 4 weeks of operation	289.5	-
Bridge	Holographic Controls	20	3.13
Computer	Core/100 (hardened)	-	195
Sensors	Advanced, Enhanced Signal Processor, Life Scanner Analysis Suite, Military Countermeasures	23	45.3
Weapons	Triple Turrets (pulse lasers, long range, high yield) x6	6	36
	Small Fusion Bays (long range, reduced tonnage) x2	90	24
	Small Particle Bays (reduced tonnage x3) x2	70	60
Systems	Heavy Fighter	-	42.73
	Docking Space (50 tons)	55	13.75
	Fuel Processor (200 tons/day)	10	0.5
	Biosphere	7.5	1
	Repair Drones	10	2
	Armoury	3	0.75
	Breaching Tube	3	3
	Fuel Scoops	-	1
	Briefing Room	4	0.5
	Library	4	4
	Workshop	6	0.9
	Medical Bay	4	2
	Drop Tank Collar	1.14	0.57
	Advanced Probe Drones x5	1	0.8
Staterooms	Standard x10	40	10
	Low Berths x5	2.5	0.25

INCARNATE-CLASS STRIKE DESTROYER

Software	Jump Control/3	-	-
	Advanced Fire Control/3	-	18
	Library	-	-
	Manoeuvre/0	-	-
	Evade/3	-	3
	Auto-Repair/2	-	10
	Electronic Warfare/3	-	24
	Virtual Gunner/3	-	10
	Intellect	-	1
	Anti-Hijack/3	-	10
Common Area		10	1
Cargo		46.5	-
		Total:	1060.57



HULL POINTS
480



1. Power plant
2. Jump drive
3. Triple turret
4. Manoeuvre drive
5. Fuel processor
6. Repair drones
7. Lift
8. Docking space
9. Cargo hold
10. Particle beam bays
11. Military countermeasures
12. Hatch
13. Air lock
14. Sensors
15. Weapon controls
16. Medical bay
17. Stateroom
18. Library
19. Breaching tube
20. Biosphere
21. Low berths
22. Armoury
23. Common area
24. Briefing room
25. Sensors
26. Workshop
27. Bridge
28. Fusion gun bays

POWER REQUIREMENTS

Basic Ship Systems	200
Manoeuvre Drive	450
Jump Drive	300
Sensors	11
Weapons	232
Fuel Processor	10

MERTACTOR: GLISTEN'S GATEKEEPER

Mertactor (B562732-B) is a small, low-gravity world on the trailing side of District 268. Its close links with the powerful economy of Glisten, and position at the border of Imperial space have earned it the nickname 'Glisten's Gatekeeper'. Whilst insignificant in its own right, Mertactor's location makes it a strategic asset. It is generally considered to be part of Glisten subsector's administrative apparatus, and protected by the Glisten subsector fleet.

Mertactor itself is habitable enough but lacks the mineral resources to be a major industrial centre. In addition to being fairly small, the world's composition is primarily lighter minerals, resulting in low surface gravity. Despite this, Mertactor is rated as having a standard atmosphere. This is true at sea level, but sea level is rather low on this world.

Mertactor has only 20% surface water coverage, most of it located in deep basins. Air pressure at these altitudes is normal, so cities are located around the shores of the seas. Inland, where the land rises, atmospheric pressure drops away quickly due to a really large contrast between the ocean and the highlands. The interior is habitable to those who have acclimatised, but someone ascending from a coastal city or stepping off a starship with normal air pressure aboard would suffer altitude sickness in most areas. Hills and mountain ranges are positively dangerous to ascend, and there are few flying creatures outside the ocean basins.

HISTORY

Mertactor was colonised as part of a gradual spread outward rather than a grab for important resources. At the time there was no intent that this would be the Imperial border; Mertactor was just one more system to be claimed. There was no large-scale investment or government-backed settlement plan. Instead modest colony expeditions arrived over the course of many decades. Each found a suitable spot and began expanding, typically setting up an agricultural or aquacultural base and exporting foodstuffs to begin recouping the enormous cost of colonisation.

Expansion was gradual, especially since those resources present were hard to get at, and for many years the colonies received little outside support or funding. During this time the original founders became a hereditary ruling elite, with each major settlement developing into a sort of proto-nation. Conflict was uncommon but destructive when it did occur.

The beginnings of 'modern Mertactor' lay in the discovery that whilst the world lacked the sort of mineral wealth necessary for heavy industry – iron, copper and the like – its surface rocks contained a high percentage of compounds useful in electronics and light fabrication. These minerals found a ready market in the asteroid communities of Glisten, beginning a long economic and cultural partnership. A collective bargaining agreement among colony directors became a world government that regulated offworld exploitation of Mertactor's light-mineral wealth.

Income from mining operations funded a technological advancement programme, which also benefited from funds supplied by the Glisten subsector administration. Much of the cost of the orbital Class B starport came from this source, as part of a border security and trans-border trade initiative. A secondary, and probably unintentional, outcome of this project was the curtailment of expansion into District 268. With a robust border control and trade hub in place at Mertactor, further expansion would mean repeating the expense and was deemed undesirable. Thus Mertactor became the 'gatekeeper' for District 268.

SOCIETY

The people of Mertactor are mostly humans of mixed stock, plus a scattering of various alien races. All are Imperial citizens, and culture is very much 'standard interstellar' for the most part. This stems from the amount of traffic passing through Mertactor's starport and close ties with Glisten, ensuring the latest fashions, fads and social foibles reach Mertactor's populace.

Society is, on the whole, well integrated and peaceable. The ruling oligarchy is not particularly well liked, but laws are liberal and standards of living are quite high, so most people are content. There are opportunities for advancement through talent and work, though there is a readily apparent class divide between the upper echelons of society and general citizens. It is possible to become very wealthy without acquiring much in the way of status or social elevation.

Most of the population, numbering around ten million, are concentrated in the cities of the ocean basins. Bulk movement of goods uses sea transport, but most people travel between the cities in large grav transports operated by one or another of the world's transportation companies. Movement of this sort is commonplace, with the result that people from one city will often take a job in another and settle down there. Over time this has created a very even – some would say bland – social distribution.

Offworld trade is critical to the economy of Mertactor. Its orbital port is the turnaround for many large cargo ships out of Glisten, with cross-border

commerce undertaken by smaller vessels or independent operators. This has made Mertactor something of a trade hub, with ships crossing out of the Imperium spinward in the direction of Collace or coreward towards the Sword Worlds. Whilst technically part of the Spinward Main, this chain of star systems is not well travelled by Imperial ships due to political issues in the region. There are plenty of non-Imperial vessels on the local spacelanes, however.

The majority of Mertactor's population are employed by businesses connected with interstellar commerce or the support of installations. Recruiters from merchant lines are always active at the starport, providing a glamorous route out of the cities for those who want it.

Mining has become a major industry, though it is carried out in an unusual manner. Rather than seeking veins of metals and heavy minerals, mining on Mertactor is based around extraction processes applied to bulk ore. The light minerals and compounds that make up most of the world's exports are obtained by crushing and processing large quantities of rock, extracting what is needed then discarding the remainder.

One method used is to strip-mine a promising area down to the depth of a kilometre or more. This sort of operation would not be possible with ground vehicles, but gravitic ore barges can lift huge quantities and carry it to the processing sites. There is always employment for skilled and careful grav pilots alongside the usual array of machinery operators, chemists, and explosives experts. The mines do not employ many unskilled workers, but Mertactor's good education system ensures that anyone wanting to learn a skill has the opportunity.

Some mining is also undertaken by surface crawlers, which break up the surface layers of rock with lasers and penetrator charges, then scoop up and process the rubble. After passing through the bowels of these vast vehicles the processed minerals are formed into ingots and loaded aboard grav transports to be shipped to the industrial sector of the downport.

The crawlers operate in the thinner air of the uplands much of the time, and are a hazardous workplace. Serious accidents are rare largely because strict rules are in place about air quality and protective equipment. Explosives and laser operators in particular are confined to air-conditioned control rooms during their shifts, and anyone going outside is required to wear a compressor mask unless 'good air' indicators are clearly visible.

STARPORTS AND SPACEPORTS

The world's ruling elite have their own spaceports, small installations off-limits to almost all traffic. Other traffic does through the main Class B starport. Mertactor has a central downport, divided into industrial, commercial, and public sectors. The latter also serves as a grav-port

for the world's transportation hub, linking to grav-ports at other cities. The commercial sector is not large at the downport, as most business is conducted in orbit. The majority of cargoes that pass through the highport are split up and loaded onto ships to be taken to distant destinations; only a small proportion descends to Mertactor's surface.

The orbital port is a large installation, with subdivisions according to function. A portion of the station is taken up with facilities for the world's system protection flotilla. Not coincidentally this is located next to the private section reserved for the ruling elite and a small number of favoured merchant ship and liner operators. The 'Imperial Quarter' of the station is in fact its largest component, serving trade ships from Glisten and ore transport shuttles from planetside. The 'Border Quarter' as it is known is dedicated to serving cross-border traffic. It is well secured and smartly operated, carrying out customs checks and spaceworthiness inspections on vessels crossing into or out of the Imperium.

Mertactor's highport is a favoured entry point to the Imperium for legitimate and large-scale commercial traffic, not least because its checks are stringent. A vessel that can show it came in through Mertactor will avoid further checks deeper in the Imperium, whereas one that bypassed the 'gatekeeper' might have its paperwork inspected on several occasions thereafter.

Mertactor's yards and repair works are likewise a popular place for non-Imperial vessels to receive maintenance or have new components fitted. Work is always done to a high standard, and Mertactor stamps on the component listing can help a vessel retain its resale value. Just as importantly, the yards have a good reputation for not cutting corners, which is important to those who trust their lives to their vessel.

MERTACTOR SCOUT BASE

The Imperial Interstellar Scout Service maintains a small base on the surface of Mertactor, high in the mountains where the air is very thin. A handful of small ships operate out of it, mainly on routine surveying and chart-maintenance operations. There are rumours that covert IISS missions are launched into District 268 to conduct intelligence-gathering. Small bases of this type support routine operations all across the Imperium, ensuring that charts are kept up to date and shipping data reaches central information repositories.

Scouts from the base are routinely assigned to the orbital port as observers, where they collect information on the volume and type of ships crossing the border. Scouts are sometimes spotted accompanying customs teams during their routine boarding operations; again this is part of the constant

information flow that allows strategic planners to make economic and military decisions.

MILITARY AND NAVAL

Mertactor has a small professional ground force, lightly equipped for the defence of cities and installations. It has little capability to project power beyond the ocean basins, though a grav-cavalry contingent exists which can strike at any point on the planet. The military is backed up by forces loaned from the personal guards of planetary oligarchs and the Mines Protection Service. The MPS is a private security organisation funded by contributions from the mining companies. Its personnel are rescue workers, police and armed security all in one – professional and competent, but spread very thin.

In theory, these forces would form the backbone of a planetary defence effort, with volunteer citizen militia rounding out the numbers. The militia dates from the earliest days of colonisation and remains well regarded, though it is poorly equipped. Nevertheless, an attack on the cities of Mertactor would result in thousands of volunteers with at least some basic training answering the call to arms.

Offworld defence is considered more important than planetside capability. The system defence flotilla is stronger than most, and partially funded by the Glisten subsector administration. In addition to armed customs boats and wings of fighters, the system defence flotilla has three destroyer-sized monitors. These are all conversions of old warships and not equipped with state-of-the-art systems, but they are quite capable of dealing with most threats without need for backup. Their presence is a strong deterrent to piracy and raiding.

The Mertactor system is also patrolled by the Glisten subsector fleet, which tries to maintain a guardship over the world and push patrols through the system and into District 268. The subsector fleet is stretched thin, however, and is not of high quality. Glisten is a 'safe' posting – both in terms of action and the damage an incompetent officer can do – and has long been something of a dumping-ground for personnel who cannot be dismissed but cannot be put in charge of a warship in a sensitive area.

The majority of officers commanding ships in this region are not incompetent, but do tend to be over-promoted 'plodders' who achieved command due to political connections. There are exceptions – the Glisten subsector fleet has some really excellent officers, like all such forces – but it is not uncommon to hear a port official wearily state that 'someone's cousin passed through today' when a visit by the navy has been particularly tiresome and unproductive.

VEHICLES OF THE IISS

The Imperial Interstellar Scout Service makes use of a wide variety of vehicles. Some are improvised or obtained locally, but wherever possible standardised designs are used. Vehicles are obtained in large numbers by regional scout bases and held as pools to be assigned as needed. This approach reduces procurement and maintenance costs, but the budget for transport alone is still enormous.

Most IISS vehicles are clearly marked and use colour schemes associated with the Scouts; typically mid-grey with yellow or high-visibility orange for general-purpose vehicles and a darker shade without obvious high-vis panels or decoration for operations in more dangerous areas. The IISS 'Galloping Poni' logo is usually prominently displayed, though its colouring and vibrancy are toned down where appropriate.

For covert or 'low-observable' operations the IISS prefers to use locally obtained vehicles or generic designs which blend in with traffic in the target area, or more stealthy versions of its standard vehicles. Equipment assigned to these missions will not be marked with the Scout Service logo, though it is usually traceable back to the IISS. The Scout Service rarely engages in 'deniable' missions, though its personnel often seek to avoid attracting attention.

IISS PERSONAL FIELD TRANSPORT DEVICE, GRAVITIC

Better known as a 'Scout grav belt', the PFTSD has many applications, from safety when operating in high places or from open-topped vehicles, to slipping into an area unnoticed. It is similar in many ways to a TL15 civilian grav belt, but has a few additional features.

The grav belt is more like a short garment, with legs almost down to the knee and short upper sleeves. A harness within the garment distributes weight well, though using a grav belt is a distinctly strange sensation. Three small gravitic units provide propulsion as well as lift, and can be controlled by means of a belt unit or a chest pack. The latter allows for chin or mouth control if necessary; most users prefer the belt controls even though this occupies a hand and limits tasks that can be carried out.

IISS Personal Field TRANSPORT DEVICE

Item	TL	Kg	Cost
Scout Grav Belt	15	3	Cr125000

Performance is similar to a civilian unit – top speed is around 300kph (High) in a standard atmosphere but this is unpleasant for the user even when wearing an enclosed helmet. Nap-of-Earth speed is officially 40kph (Very Slow), but this is a safety limit set by the programmers of the control software. An override is provided, allowing the user to fly at top speed if desired, but since hitting almost anything at 100+ kph is likely to be both messy and fatal, sticking to the programmed limit is advised.

Where the Scout Service grav belt differs from the standard civilian model is in its additional capabilities. The standard unit can lift around 300kg; the Scout Service variant uses heavy-duty lifters that increase this to nearly 400kg. An attachable lift-bag allows additional equipment to be carried by a grav belt-equipped scout, though the tendency of the bag to act like a pendulum can make flying tricky. Flyer (grav) 2 is required to fly safely with a slung load in a carry bag. For every point of skill less than this, DM-2 applies to all checks whilst airborne, increasing to DM-3 if the load is more than 50kg.

The belt harness is ruggedized, acting as Protection +3 in the event the wearer comes under fire or encounters a sharp obstruction. This does not protect from impact damage, but will keep branches or jagged rocks from making holes in the Traveller. The unit also features an enlarged backpack, which contains one of the lifter units. The remaining space can be used to carry whatever small items the scout might desire.

GRAV TUBE

The grav tube is essentially a two-person grav belt using the same lifting units – only more of them – as the Scout Service grav belt. It falls somewhere short of being a true vehicle, but is useful for a variety of reconnaissance tasks. On the other hand, it has few utility or transportation applications due to its lack of cargo capacity.

The base of the grav tube is a disc, which contains the lifters, batteries, and control electronics. The floor of the tube contains a set of light grav plates similar to those used aboard starships, though much lighter and less robust. These more or less cancel the motion of the vehicle, ensuring a smooth ride under almost any conditions. A ring of lights on the rim of the tube allows illumination of the ground around the tube, with a more powerful directional light in the centre of the ring.

The pilots stand rather than sit, leaning against a 'seating post' with their feet secured by straps. The tube can be controlled by one person, so occasionally an equipment package is jury-rigged into the other position. In this case a vertical arrangement is necessary, with the seating post acting as a spine from which wires, sensor devices or whatever else is installed can dangle. Liberal use of industrial-strength duct tape can create a resilient setup, but one that cannot be quickly removed.

Grav Tube

Item	TL	Kg	Cost
Grav Tube	15	80	Cr235000

The canopy takes the form of an elongated bubble, with little room for the occupants. Two Travellers can fit inside wearing light vacc suits – TL12 and above – along with a few small items. The canopy is very light, and offers little resistance to damage. It is sufficiently well sealed to allow operation down to 15m underwater, after which the door seals will start to leak. At around 30-50m, the seals will fail completely. However, scouts wearing underwater breathing gear can use the tube as an underwater transport platform with the door left unsealed. The unit's systems are, in theory at least, impervious to water down to 100m or perhaps more. However, this application is considered inadvisable and generally discouraged.

The grav tube's batteries are good for around 120 hours of low-speed mobility, with a performance equivalent to that of the Scout Service grav belt. During this time the unit can provide life support to two Travellers, whilst recharging their personal vacc suits. However, endurance of the life support unit is around 24 hours with two Travellers, or 48 with one. This limits the utility of the grav tube in hostile environments, and as a result it is generally assigned to teams working on habitable worlds.

IISS GRAV BIKE

Whereas the grav tube is basically a metal disc with the innards of a couple of grav belts built into it, the grav bike is an altogether more glamourous piece of equipment. That comes with a price – grav bike accidents are a significant contributor to Scout Service mortality rates.

The IISS grav bike is a very expensive vehicle for its type. It is based on the Ling-Standard Products Kaivii performance model, using a slightly elongated frame and additional electronics. The bike is quite 'chunky' in appearance but highly streamlined with a powerful yet efficient engine capable of driving it at high subsonic speeds. Use of the autopilot is highly recommended when operating at low altitude, and the pilot and passenger can do little but cling to their restraints if the bike has to manoeuvre at such speeds.

The primary purpose of vehicles of this sort is reconnaissance and surveying. The advanced sensor package can automatically generate highly detailed maps including information on air pressure and temperature, received sunlight and similar data, even when transiting at several hundred kph. The passenger can direct the sensor package or use hand-held equipment stowed in lockers at the side of the fuselage. Bikes can also deliver a ground team or move them from one location to another very rapidly.

One unusual feature of the IISS grav bike is its possession of a life support system. This cannot protect crewmembers on an open vehicle unless they wear vacc suits or suitable clothing, but can extend the duration of a mission in a hostile environment by a considerable margin. A set of emergency life-support clothing is carried for the pilot and passenger; similar to softsuits used aboard may starships, these suits will hold up for a nerve-wracking ride back to base after an incident, but not much more than that. If sealed helmets are used, the bike's life support equipment allows users to operate at high altitudes or in very thin atmospheres without a vacc suit.

Grav Bike

IISS GRAV BIKE

Armour	
Front	4
Sides	4
Rear	4

Traits
Open Vehicle

TL	15
Skill	Flyer (grav)
Agility	+5
Speed (cruise)	Subsonic (Very Fast)
Range (cruise)	7500 (11250)
Crew	1

Passengers	1
Cargo	250kg
Hull	12
Shipping	3 tons
Cost	Cr 843 500

Equipment	• Autopilot (advanced) • Communications System (advanced, increased range, encrypted, satellite uplink) • Computer/4, Control Systems (advanced) • Life Support (short term) • Navigation System (advanced) • Sensors (advanced, hardened, increased fidelity, increased range)

Equipment	
Autopilot (skill level)	3
Communications (range)	10 000 km
Navigation (Navigation DM)	+4
Sensors (Electronics (sensors) DM)	+3
Camouflage (Recon DM)	-
Stealth (Electronics (sensors) DM)	-

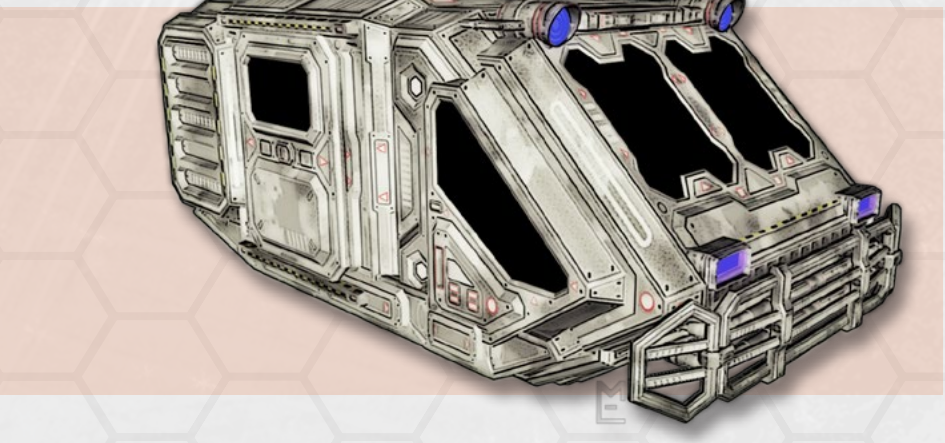
IISS AIR/RAFT

A number of air/raft designs are used by the IISS, many of them standard civilian designs painted grey and given a new logo. However, some applications require an advanced-capability vehicle. The IISS thus commissioned a variant of the Ling-Standard Products Venture 400 4-seat air/raft for its own use, assigning licenses to favoured companies to produce these vehicles to the highest standard.

The IISS 'raft is a solid-body design, sealed against vacuum, and can provide life support to the vehicle's occupants for up to four days. There is no airlock, however. Crewmembers will normally wear Scout field dress, and can don helmets before the doors are opened. The access points are designed to mate to external doorways on Scout Service field shelters and base modules, allowing crewmembers to pass in and out of their base without needing to suit up.

The IISS air/raft is a powerful communications, sensor, and processing platform, often used to provide support to 'lesser' vehicles such as ordinary (cheaper) air/rafts used by most of a mission's personnel. In this role it is sometimes referred to as a command raft or support raft, but this does not mean any changes have been made – the IISS air/raft is capable of fulfilling this role and more as standard.

Capacity is two front-seat crewmembers and two back-seat passengers who have less room to work. Indeed, anything requiring more movement than tapping keys on a laptop console requires getting out of the back seat. The small internal equipment locker is designed to be removable, creating a small additional working space in the rear of the vehicle for 'backseaters' to use.



IISS AIR/RAFT

Armour	
Front	4
Sides	4
Rear	4

Traits

-

TL	15
Skill	Flyer (grav)
Agility	+5
Speed (cruise)	Subsonic (Very Fast)
Range (cruise)	7500 (11250)
Crew	1
Passengers	3
Cargo	250kg
Hull	20
Shipping	5 tons
Cost	MCr 1.09

Equipment	• Autopilot (advanced), • Communication Systems (advanced, encrypted, increased range, satellite uplink), • Computer/5, Control Systems (advanced), • Fire Extinguishers, • Navigation System (advanced), • Life Support (short term), • Sensors (advanced, hardened, increased fidelityx2, increased range), • Vacuum Protection

Equipment	
Autopilot (skill level)	3
Communications (range)	10 000 km
Navigation (Navigation DM)	+4
Sensors (Electronics (sensors) DM)	+3
Camouflage (Recon DM)	-
Stealth (Electronics (sensors) DM)	-

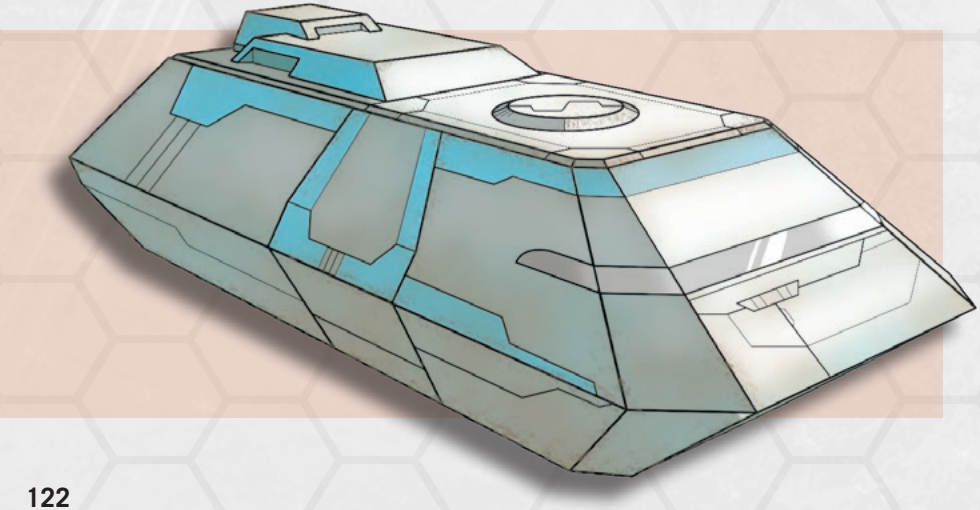
IISS SURVEY G/CARRIER

The G/carrier is a common paramilitary vehicle used by mercenary units and some planetary armed forces. The Scout Service finds its rugged construction useful for operations on worlds prone to meteorite showers as well as regions made hazardous by their inhabitants. For this reason the Scout Service version uses a different armour layout to a paramilitary G/carrier. The upper surfaces are heavily protected and angled to deflect incoming projectiles from above, providing protection from micrometeorite strikes.

The IISS G/carrier fulfils a similar role to the command raft, though with much greater survivability in a dangerous environment. It has the same sensor package, and normally carries no weaponry. The crew of two have a reasonable amount of space in the driving cab, and up to eight personnel can be accommodated in the rear compartment. This is a tight fit, and if equipment must be carried or installed for use, the complement must be reduced.

The IISS G/carrier has an airlock, unlike the air/raft, and a basic fresher which sometimes serves as a 'light decontamination unit'. It is not suitable for much more than washing dust off a suit, but the heavy-duty filtration and recycling unit can get rid of particles that would otherwise get into all corners of the vehicle. This is important when operating on airless worlds; 'dust' in this case is small rock fragments that can be sharp. Personnel can be injured by such particles getting inside clothing, and equipment damaged by abrasion.

G/carriers are often converted to other roles by the Scout Service, such as rescue vehicles or even construction units. Surplus Scout G/carriers are popular with mining companies, for the same reasons they are used by the Scouts.



IISS SURVEY G-CARRIER

Armour	
Front	60
Sides	60
Rear	60
Top	89

Traits

AFV

TL	15
Skill	Flyer (grav)
Agility	+5
Speed (cruise)	Fast (High)
Range (cruise)	7500 (11250)
Crew	2

Passengers	8
Cargo	-
Hull	60
Shipping	15 tons
Cost	MCr 6.77

Equipment	• Airlock, • Autopilot (advanced), • Communications System (advanced, increased range, encrypted, satellite uplink), • Computer/4, Control Systems (advanced), • Fire Extinguishers, Fresher, Life Support (short term), Navigation System (advanced), • Insidious Environment, Vacuum protection • Sensors (advanced, hardened, increased fidelity, increased range)

Equipment	
Autopilot (skill level)	3
Communications (range)	10 000 km
Navigation (Navigation DM)	+4
Sensors (Electronics (sensors) DM)	+3
Camouflage (Recon DM)	-
Stealth (Electronics (sensors) DM)	-

AMBUSH-CLASS HUNTER-KILLER CORVETTE

The Ambush-class was designed for a single purpose – to annihilate small vessels. This it does admirably well, and it can pose a serious threat to larger ships. Whether acting as commerce raider or pirate-hunter, the Ambush-class is a threat that must be taken seriously.

Sales of vessels with this level of combat capability are, in theory at least, carefully regulated. However, this has not stopped multiple examples falling into the hands of pirates and rogue governments. These sometimes use the Ambush-class as the centrepiece of a raiding group, with support vessels picking up loot or providing boarding parties to take control of surrendered ships. The ability to vaporise any challenger is attractive to many corsair leaders.

More conventionally, these corvettes are normally deployed on solo operations, sometimes with an assigned supply vessel. In this role they live up to their designation, hunting down small raiders and pirates. Given that the average pirate vessel is a converted trader, few stand any chance and even a small squadron can be scattered and dispatched whilst its weapons do little more than char the corvette's paintwork.

Small flotillas are also used as strike assets by minor governments. A handful of these vessels can pose a serious threat to a much larger warship, though they would take heavy losses in return.

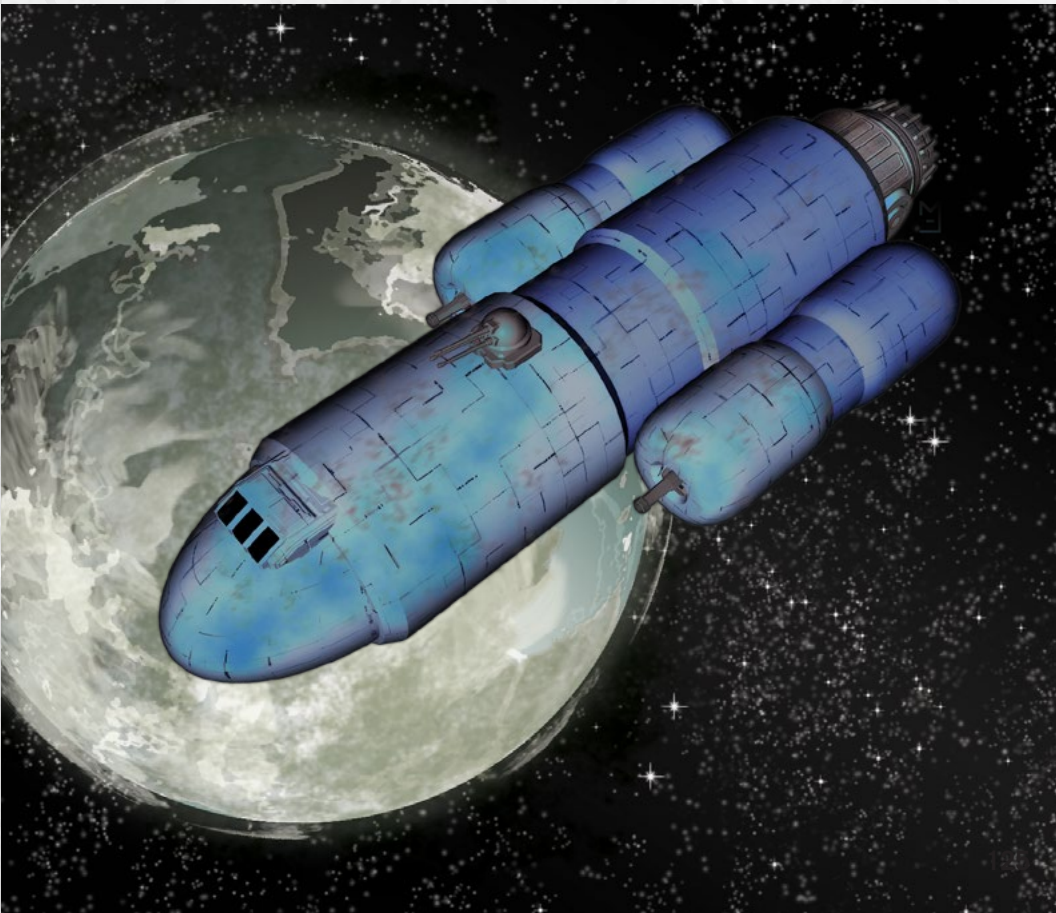
Jamming all this firepower into such a small hull was no easy task, and required the use of advanced miniaturisation and optimisation techniques. The result was an extremely powerful small vessel with extensive electronic warfare capabilities and the agility to intercept almost any target. The same high levels of thrust also allow a quick strike-and-flee attack in the event that the Ambush-class is required to take on a larger and more powerful vessel.

The vessel is built as three cylinders, with the primary hull containing living and working areas, fuel, main powerplant and control spaces whilst the smaller, shorter cylinders are given over mostly to a single weapon and its supporting systems. The 'weapon' cylinders contain an armoured bay holding a miniaturised high-yield particle accelerator and compact 3-ton fusion power plant capable of supporting its function even if power feeds

from the main hull are compromised. The power plant and weapon bay are surrounded by armoured bulkheads and a small amount of fuel tankage.

The main hull contains around 75% of the vessel's tonnage. The bridge is located forward, with an electronic warfare/fire direction room immediately aft. Accommodation for senior crewmembers is provided by three standard cabins and one high cabin, which also serves as an office for the ship's commanding officer. The armoury and briefing room lie aft of this block, with a further group of cabins and the medical bay accommodating the rest of the crew.

The ship's main power plant is surrounded by additional bulkheads, though the jump and manoeuvre drives are not. This represents the emphasis of the vessel – keeping the big guns in action is considered all-important; survivability less so. However, with triple pulse laser turrets in dorsal and ventral mounts on the main hull and a good electronics fit, the Ambush-class is well protected against missiles and small craft, whilst its hull can shrug off most weapons it is likely to encounter.



AMBUSH-CLASS HUNTER-KILLER CORVETTE

TL14		TONS	COST (MCR)
Hull	400 tons, Close Structure Reinforced	- -	18 9
Armour	Bonded Superdense, Armour: 12	38.4	25.92
M-Drive	Thrust 6 (reduced tonnage, energy efficient)	21.6	51.84
J-Drive	Jump-2 (decreased fuel x2)	25	45
Power Plant	Fusion (TL12), Power 500	34	34
Fuel Tanks	J-2, 16 weeks of operation	82	-
Bridge	Standard Bridge	20	2
Computer	Computer/30	-	20
Sensors	Improved	3	4.3
Weapons	Small Particle Beam Bays (high yield, size reduction x2) x2	80	40
	Triple Turrets (pulse lasers) (long range, high yield) x2	2	8
Systems	Armoured Bulkheads (power plant, weapon bays)	10.5	2.1
	Sensor Stations x2	2	1
	Repair Drones	4	0.8
	Countermeasures Suite	2	4
	Enhanced Signal Processing	2	8
	Additional Airlock	2	0.2
	Armoury	1	0.25
	Briefing Room	4	0.4
	Medical Bay	4	2
	Fuel Processor (40 tons/day)	2	0.1

AMBUSH-CLASS HUNTER-KILLER CORVETTE

TL14		TONS	COST (MCR)
Software	Library	-	-
	Manoeuvre/0	-	-
	Jump Control/2	-	0.2
	Advanced Fire Control/1	-	12
	Anti-Hijack/1	-	6
	Broad Spectrum EW	-	14
	Electronic Warfare/1	-	15
	Virtual Gunner/1	-	5
Staterooms	Standard x8	32	6
	High Stateroom	6	0.8
Common Areas		17	1.7
Cargo		5.5	-
		Total	337.61

POWER REQUIREMENTS

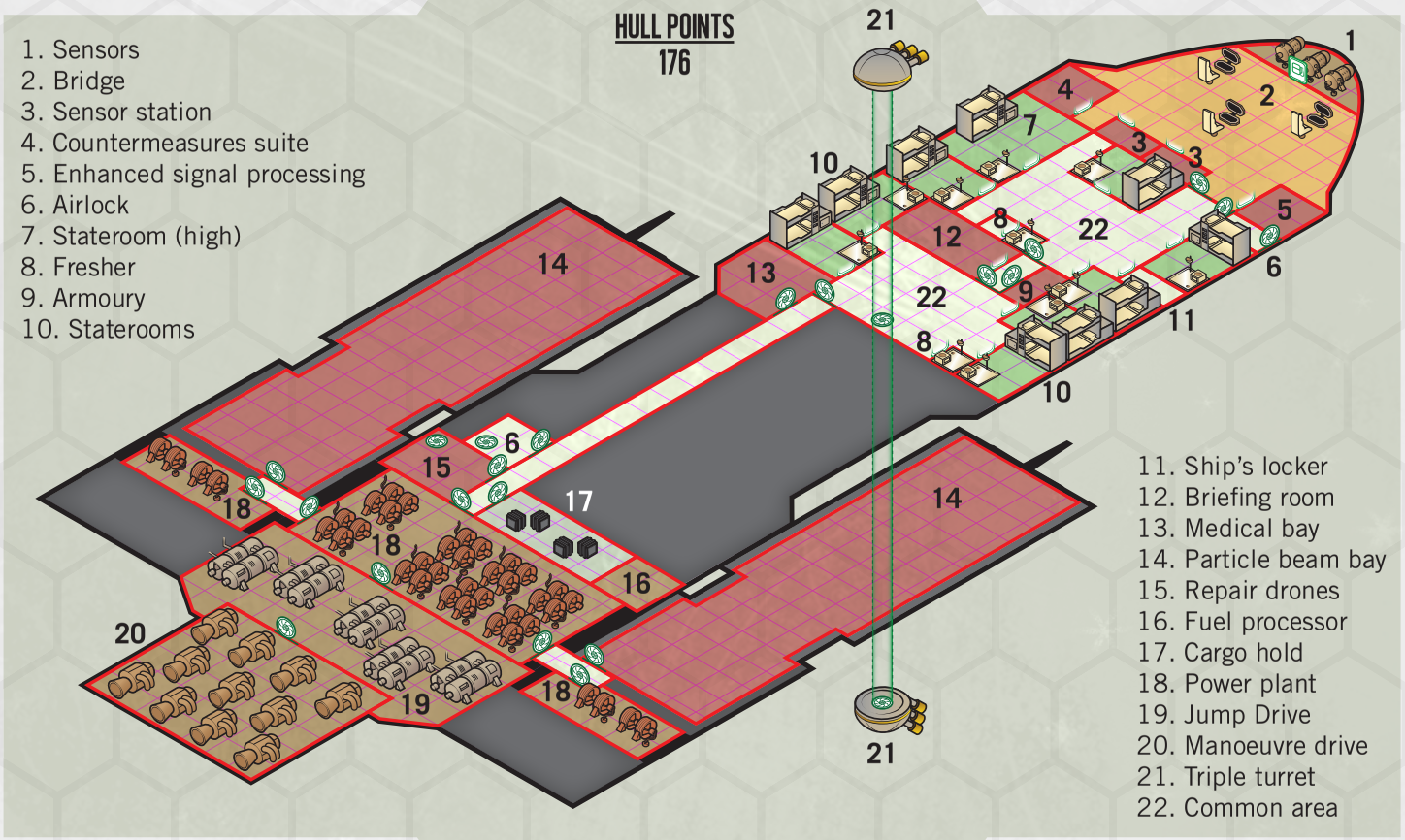
Basic Ship Systems	80
Manoeuvre Drive	240
Jump Drive	80
Sensors	4
Weapons	84
Systems	5

CREW

Captain, Pilot, Astrogator, Medic, Gunners x6

RUNNING COSTS

Maintenance Costs: Cr28134/month
Purchase Costs: MCr337.61


HULL POINTS
176
1. Sensors
2. Bridge
3. Sensor station
4. Countermeasures suite
5. Enhanced signal processing
6. Airlock
7. Stateroom (high)
8. Fresher
9. Armoury
10. Staterooms
11. Ship's locker
12. Briefing room
13. Medical bay
14. Particle beam bay
15. Repair drones
16. Fuel processor
17. Cargo hold
18. Power plant
19. Jump Drive
20. Manoeuvre drive
21. Triple turret
22. Common area