Full Thrust
Cross Dimensions

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Credits and Thanks

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This version would not exist without the earlier inspiration and hard work of Jon Tuffley and all the previous contributors to FULL THRUST.

Text, figures, and layout by Hugh Fisher. Cover and interior artwork by Rob Armstrong of Bullseye Graphics.

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Contents

1 Introduction **3**

1.1 For experienced players 3

1.2 For new players 3

1.3 How to use this book 3

1.4 Playing equipment 3

2 Rules Overview **5**

2.1 Distance and direction 5

2.2 3D, or not 3D? 5

2.3 Ship classes 5

2.4 Ship System Status Display 6

2.5 Game turns 6

2.6 Sequence of play 7

3 Cinematic Movement **9**

3.1 Ship movement 9

3.2 Thrust ratings 9

3.3 Advanced drives 10

3.4 Making course changes 10

3.5 Orders 11

3.6 Squadron operations 11

3.7 Collisions 12

3.8 Ships leaving the table 12

3.9 Vector movement 12

4 Beam Combat **13**

4.1 Beam weapons 13

4.2 Fire Arcs 13

4.3 Range bands 14

4.4 Fire control systems 14

4.5 Beam fire 14

4.6 Defensive screens 15

4.7 Armour 15

4.8 Optional rule: rear arc attacks 15

4.9 Threshold points 16

4.10 Rolling dice 16

4.11 Introductory scenario 16

4.12 Strange events 17

5 Offensive and Defensive Systems **18**

5.1 Grasers 18

5.2 Torpedoes 18

5.3 Submunition packs 18

5.4 Needle weapons 19

5.5 FireCon 19

5.6 Defensive screens 19

5.7 Advanced screens 19

5.8 Shell armour 19

5.9 Stealth 20

5.10 Point defence 20

5.11 Area-defence fire control 20

5.12 Alien technologies 20

6 Missiles **22**

6.1 Launching missiles 22

6.2 Point defence 22

6.3 Damage 23

6.4 Mountings and magazines 23

6.5 Magazine capacity 24

6.6 Optional: multi-stage missiles 24

7 Fighters **25**

7.1 Launch and recovery 25

7.2 Movement 25

7.3 Screens and pursuits 26

7.4 Ship fire against fighters 26

7.5 Target selection 26

7.6 Point defence 26

7.7 Fighter combat 27

7.8 Endurance 28

7.9 Specialised types 28

7.10 Extra capabilities 29

7.11 Optional rules 29

8 Threshold Points **30**

8.1 Damage to systems 30

8.2 Core systems 30

8.3 Damage control parties 31

8.4 Crew casualties 31

8.5 Cargo and passengers 31

9 FTL **32**

9.1 Advanced FTL drives 32

9.2 FTL exit 32

9.3 FTL entry 32

9.4 FTL tugs and tenders 33

9.5 Battle riders and motherships 33

9.6 Jump gates and portals 34

10 Optional Rules **36**

10.1 Sensors and ECM 36

10.2 Advanced sensors 36

10.3 Dummy bogeys and weasel boats 36

10.4 Electronic counter measures 37

10.5 Mines 37

10.6 Ortillery 38

10.7 Boarding actions 38

10.8 Fleet morale 39

10.9 Striking the colours 39

11 Ship Design **40**

11.1 Scale 40

11.2 Mass rating 41

11.3 Hull strengths 42

11.4 Systems 43

11.5 Ship design procedure 45

11.6 Mass and points cost 46

12 Special Moves **47**

12.1 Thrust 0 drives 47

12.2 Rolling ships 47

12.3 Towing ships 47

12.4 Moving table 47

12.5 Disengaging from battle 47

12.6 Docking 48

12.7 Ramming 48

13 Terrain **49**

13.1 Asteroids 49

13.2 Dust or nebulae clouds 49

13.3 Solar flares 49

13.4 Meteor swarms and debris 50

13.5 Battle debris 50

13.6 Collisions 50

13.7 Starbases 51

13.8 Planets 51

13.9 Atmospheric entry 53

14 No! Not the *Nova Cannon!* **54**

14.1 Spinal mount nova cannon 54

14.2 Wave gun 54

14.3 Reflex field 54

14.4 Cloaking field 55

15 Battles and Campaigns **56**

15.1 Deployment 56

15.2 Tournament fleets 56

15.3 Combat Points Value 56

15.4 Humour 57

15.5 The GZG setting 57

15.6 The cross dimensional setting 58

Summary of Changes **59**

Quick Reference **60**

Introductory SSDs and counters **61**

1 Introduction

First and foremost, **this is not the third edition**. This is a variant, a different version of FULL THRUST produced with the (much appreciated) permission of Ground Zero Games and Jon Tuffley.

Because this is not an official GZG publication, **do not** send questions, complaints, or suggestions to GZG. Hugh Fisher has final responsibility for everything in this book, so bother him by email to laranzu@ozemail.com.au.

1.1 For experienced players

CROSS DIMENSIONS has many small differences from the GZG edition of FULL THRUST – think Rugby Union and Rugby League, or American football and Canadian football – but the intent has always been to remain as similar as possible to the style and spirit of the original. The *First Rule of Full Thrust* still applies: if you don't like any rule, ignore it or change it!

For an overview of the differences between CROSS DIMENSIONS and FLEET BOOK 1 and FLEET BOOK 2 see the Summary of Changes on page 59. Play a few battles as soon as possible and carefully read each section of the rules as you need them to discover what has changed. And while I hope you will find the changes in CROSS DIMENSIONS to be interesting, there is no guarantee that any of the new rules in this book will be used in any future edition of FULL THRUST.

This is a rule book, not a fleet book, so does not include any ship designs. All of the ships in FLEET BOOK 1 can be used unchanged with CROSS DIMENSIONS. The alien ships and rules from FLEET BOOK 2 and the newer fleets for the GZG setting available online may require slight changes to mass or points cost.

1.2 For new players

The premise of FULL THRUST has always been that this is not a 'super-realistic' simulation that takes hours to make a single move. It is a system for fast, fun games with fairly large numbers of ships (a dozen or more per side is no problem), which can be played in a reasonable length of time.

FULL THRUST puts you in the role of squadron or fleet commander. The commander decides what to do and when based on knowledge of the ships' own capabilities and those of the enemy, but doesn't personally tune the laser frequencies or tweak the ECM programs. In the vast majority of science fiction battles are not won by remodulating the coffee maker diodes or other forms of technobabble, and FULL THRUST is no different. You may be surprised by how simple the rules are and how few different types of weapon there are, but this doesn't make the game any less challenging.

FULL THRUST has an original setting and range of miniatures, but you are not obliged to use either. This seems to surprise many gamers so is worth repeating: you don't *have* to use the 'official' miniatures. Nor is there a monthly magazine or endless stream of supplements that you need to keep up with. Obviously the more GZG products you buy the happier GZG will be, but buy them because you want to, not because somebody says you have to.

Above all, FULL THRUST is intended to be an enjoyable game. If you are not happy with a rule or system, throw it out and use your own – that is what science fiction gaming is (or should be) all about!

1.3 How to use this book

This section and the next three give an overview of how FULL THRUST: CROSS DIMENSIONS is played and an introduction to the cinematic movement system and to beam weapon combat. Once you have read those, you will be ready to try an introductory scenario – like most games, the best way to learn is by actually playing. This shouldn't take more than an hour.

After that read the remaining sections which describe additional weaponry and defensive systems, faster than light (FTL) drives, fighters, ship design, and various other topics.

Throughout this book you will see that some rules are labelled **optional**. (While every rule in FULL THRUST is optional, some are more optional than others.) Pick and choose which of these you wish to use, but just remember to agree with your opponent which ones are in play and which are not.

1.4 Playing equipment

To play FULL THRUST you need a medium sized table, some space ship models or counters and corresponding SSD sheets, a tape measure, some standard six-sided dice, pens or pencils and some paper for writing movement orders.

Playing area

One of the great advantages of starship combat games is that you do not need any 'terrain'. A table about 6' by 4' (1.8m by 1.2m) is best, but you can use any suitable flat area for the game or even the floor. (Pets, small siblings, and vacuum cleaners notwithstanding...)

If you want maximum visual appeal, obtain a large piece of black cloth, paper or card to cover the playing area and speckle it with varying-size dots of white and yellow paint. A 'starfield' can be produced in about half an hour and looks surprisingly effective.

Although terrain is not needed, once you are accustomed to the rules you will find that battles involving space stations, asteroids, or other features are more interesting.

Ship models

As this is primarily a miniatures game, we obviously recommend that it is played with actual starship models. These can be placed flat on the table, but we recommend

they be mounted on hexagonal base stands. Ships on stands look better, acquire less fingerprints, and the centre of the stand gives a useful reference point for measuring distances in play.

If you do not wish to use model ships, the game will also run perfectly well using card or plastic counters to represent ships; all you need is some identification mark or code on each counter, a mark to indicate the centre of the counter for measurement, and something to show the facing (present direction) of the ship.

We have supplied enough copy-and-cut-out counters in the back of the book to enable you to play out the introductory scenario. We hope this will get you sufficiently interested in the game to start collecting your own fleet of models.

Every ship needs a matching *system status display* (SSD) which shows all the weapons and systems that a ship is fitted with and records damage. SSDs for the introductory scenario are provided in the back of the book. Photocopy these, and if you wish you can then put the copies in clear plastic document wallets and record orders and damage with erasable markers, so the sheets can be re-used.

If you are using fighter groups in the game, there are a number of ways these can be represented. To give maximum visual appeal you can mount the correct number of individual fighter models on a single base so that they are removable in some way to indicate losses. A simpler way is to permanently mount a few fighter models (or even a single one) on a base and use a separate counter to indicate the actual number of fighters it represents.

Although not compulsory, the FULL THRUST starship miniatures line now includes over 200 different models and is highly recommended. For sales in the UK, Europe, or the Americas, contact Ground Zero Games:

http://www.gzg.com

Customers in Australia or nearby should contact Eureka Miniatures:

http://www.eurekamin.com.au

Dice

To play FULL THRUST you need a number of 'normal' (6-sided) dice, referred to in the rules as *D6*. Just a couple of dice will do, but a half-dozen or more will be useful when firing lots of weaponry at once.

CROSS DIMENSIONS tries to balance game outcomes across die rolls. Mostly high rolls are better, but sometimes high rolls cause failures, or low rolls are successful.

Occasionally the rules require a *D12* roll. If you don't have a twelve sided die, just roll 2D6: if the first is 1-3, use the second as rolled; if the first is 4-6, add 6 to the second.

Measurements

You will need a tape measure or long ruler, graduated in whatever units you are using for play (inches or centimetres); a ruler or straight edge can also be useful for checking lines of fire.

The Course and Fire Arc Gauge printed at the back of this book may be photocopied, cut out and stuck to a piece of thick card, or a more elaborate version may be constructed as players desire. (Eg from clear plastic sheet or similar.) While this template is not essential to play, it does make moving ships much easier and more accurate, and should also reduce any arguments about fire arcs.

Fellow players

The introductory scenario can be played against an opponent or solo. After that, ask around at your local gaming club, or venture online and search for GZG and Full Thrust related web sites – an excellent starting point is

http://www.star-ranger.com

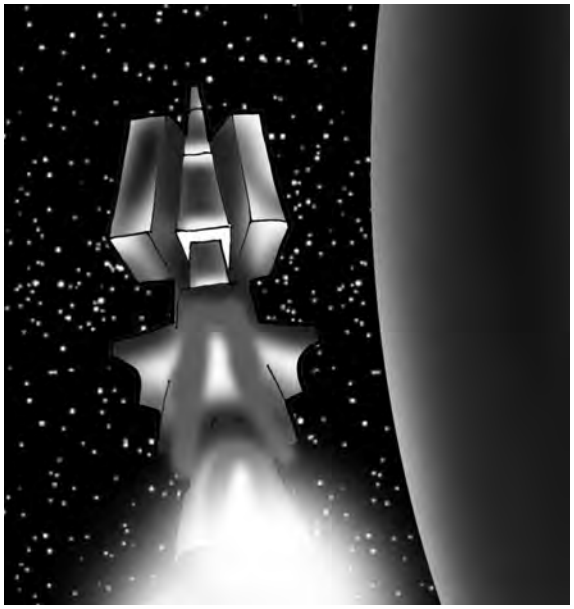
There is an active world wide community of FULL THRUST gamers, happily creating new rules and new ships for all manner of purposes. Join us and add your distinctiveness to the collective, or something like that.

Updates

This is the first revision of CROSS DIMENSIONS. The changes from the original are listed on page 59.

Any updates to these rules will be available online at:

http://members.ozemail.com.au/~laranzu/fullthrust/



2 Rules Overview

2.1 Distance and direction

FULL THRUST measures distance and velocity in Measurement Units (MU).

One MU on the table represents hundreds to thousands of kilometres, depending on player preferences. For tactical purposes:

- 0– 6 MU is 'point blank' range where fighters attack and missiles home in.
- 0– 12 MU is close range, where weapons fire will be particularly deadly.
- 12– 24 MU is medium range where the smallest weapons cannot fire.
- 24– 36 MU is long range where most light ships cannot fire.

Only unusually powerful (and expensive) weapons can fire at ranges beyond 36 MU.

Using the common 1 inch = 1 MU scale, an average 6' by 4' table is 72 x 48 MU, a good size for a typical battle.

It is just as valid to have a scale of 1 MU = 1 centimetre if you are playing on a small tabletop, or if you want a game with very high speeds and lots of manoeuvring room on your normal size of table. Basically, 1 MU can be any distance you want it to be according to the size of playing area you have, the size of models you are using, and simply personal preferences. If you have a whole sports hall to use, then why not try using giant ship models and 1 foot (or even 1 metre) units?

The ship models used in Full Thrust (and indeed any tactical space game) are actually vastly over-size compared to the distances represented in the game; in true scale, the actual ships would be so tiny you probably couldn't see them. All measurements and arcs of fire are therefore relative to a designated centre point on the model, not the edges or corners. For the same reason there are no line of sight or inter-penetration rules for ships: they can freely fly or shoot 'through' each other.

In addition to the actual ships, there are a number of other items that can be represented either by counters or models (depending on your time, resources, and the overall visual impression you are aiming for). These include asteroids and 'bogeys' (unidentified sensor contacts). Suggestions on how to model these are included in the appropriate sections.

Direction

Ship direction, or *course*, is measured in clock *points*. (For our younger readers, we mean the analog clocks that were common in the previous millennium.) Each point is equal to 30° . Courses are measured relative to the table edge a fleet starts from, so 12 is straight ahead, 3 90° to the right, and so on. Ship orders are given relative to the current course: 'Starboard 2' would change from 12 to 2, or 7 to 9. See section 3.1 for how facings are used in movement and section 4.2 for weapons fire.

Ships mounted on hex bases are easy to align. Ships with course 12, 3, 6, or 9 will have the front edge parallel to a table edge; for the courses in between one pair of opposite edges must be aligned to table edges.

Ship course represents the average or majority direction in a single game turn, not that the ship is precisely following that line.

FULL THRUST uses the naval terms port, starboard, fore, and aft for directions, but you can use left, right, front, and back if you prefer.

2.2 3D, or not 3D?

Some starship combat games have made attempts to simulate 3-dimensional movement and combat, with varying degrees of success. The FULL THRUST authors believe that while it can be done, it is not worthwhile. Tables are 2D surfaces: adding a 3rd dimension requires special stands, is harder to follow, and the extra complications remove one of the major elements of the game – having fun!

In an aerial combat game the third dimension (height) is vital, because atmospheric craft behave differently in the vertical plane than they do in the horizontal. Once you move into space, however, all the dimensions are essentially the same, and while the front and back of a spacecraft are different the sides, top, and bottom are usually almost identical. Very little is lost by compressing the game to only two dimensions, and a great deal is gained in the way of simplicity and playability.

2.3 Ship classes

Mass

Ship size in FULL THRUST is measured in abstract *mass* units.

The total mass of a given hull is a representation of the capacity of that hull for outfitting it with drives, weapons, defensive systems, etc. This total mass figure is used to refer to the size of the ship: a size 24 ship could be fitted with a maximum of 24 mass of systems.

Mass ratings indicate the required volume, power requirements, crew stations, etc rather than being an exact measure of the bulk or weight of a single piece of equipment. In the GZG setting, one mass unit represents about fifty to one hundred actual tons.

Points

All the systems and equipment fitted to a ship have a points cost, calculated from the mass. The more effective or 'high-tech' systems have a higher points cost for a given mass, so it is possible for two ships of the same total mass to have different points costs due to differences in systems carried.

As in many games, the points system is used for one-off and tournament battles to ensure roughly equal forces on each side despite a variety of ship designs. See section 11 for ship design and section 15 for suggestions about fleet composition.

The FULL THRUST ship design and points system is very easy to work with and does not require a spreadsheet. Modifying existing ships and designing new ones is common among FULL THRUST players.

Classes

FULL THRUST, like most science fiction, uses 20th century western naval terms to describe spacecraft. (Irritating though this may be to the current day air forces.)

Fighters are the tiny spacecraft that are carried into battle by larger starships, individually very weak but dangerous in large numbers. Fighters do not need SSDs, and are not referred to as 'ships' in these rules.

Combat starships are divided into three broad groups: escorts, cruisers, and capital ships.

Escorts are the smaller ship classes, ranging from the tiny couriers through corvettes and frigates up to destroyer class ships. Frequently used on detached duty in low-threat areas, or patrol missions and courier duties, and to support heavier ships of cruiser or capital class. Ships of the escort group are lightly armed and protected; they are effective against their own kind, but of relatively little use against heavier ship units.

Cruisers are the medium sized warships, used to support the heavy line of battle ships but also capable of holding their own on independent operations. Cruisers are often further divided into light, escort and heavy cruiser classes. They are reasonably agile and well protected, with heavier weaponry than the small escorts.

Capital ships are the heavy line-of-battle classes, from battlecruisers and battleships up to the vast superdreadnoughts and fleet carriers. These ships are leviathans, bristling with heavy weaponry and defences against attack. Capital units form the core of a battlefleet or task force and many carry their own onboard fighter groups as both an offensive and defensive weapon.

In addition to these classes, a *carrier* is any ship with hangar space for fighters, even if that is not its primary role in battle.

See section 11.2 for more refined ship designations within each class.

2.4 Ship System Status Display

The *system status display* (SSD) for each ship has symbols for all the drives, weapons, and systems fitted. Figure 1 shows the SSD for one of the cruisers used in the introductory scenario.

In the bottom row of the SSD are the symbols for the FTL and main drive, and the optional *Core Systems*.

The rows of small boxes above the drive symbols are the *hull* or *damage track* that shows the actual damage point total that the ship can take. When damage is inflicted, these points are marked off the target ship's hull boxes on its SSD, starting at the top left and crossing out one box per damage point inflicted. When you reach the end of one line of boxes, this is a *threshold point* (section 4.9) and each ship system must make a *threshold check*.

Immediately above the hull are some round armour symbols, which absorb damage, and above those and to the right the various offensive and defensive weapon systems carried. If a system is knocked out as a result of a threshold point check it is crossed off the diagram.

When a ship has had *all* of its hull boxes crossed out (ie it is reduced to 0 damage points or less) then it is considered destroyed and removed from play.

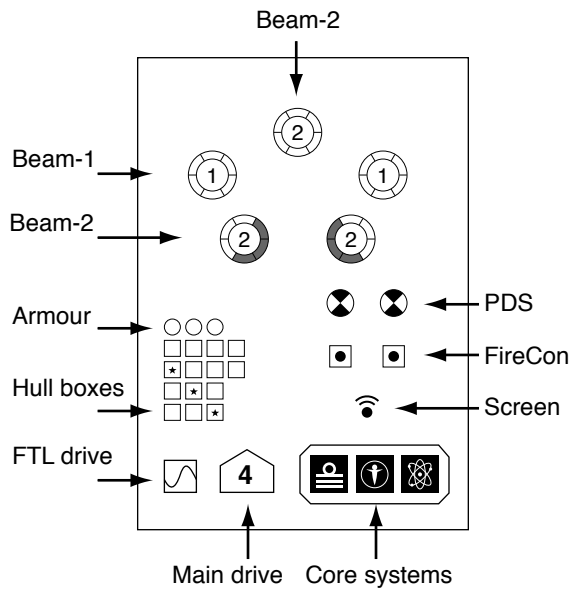


Figure 1: System Status Display

Individual symbols will be explained in the following sections.

2.5 Game turns

FULL THRUST, like most tabletop games, divides time into turns.

A game turn in FULL THRUST represents about five to ten minutes of action, enough time for the commander to order a change of course and have it carried out, a ship to aim and fire an effective salvo or volley and take defensive measures against incoming fire, or a fighter group to make an attack run against a ship.

A typical six to twelve turn battle therefore represents an hour or two of actual combat. A ship with velocity 8 will go from long range to close range in 3 or 4 game turns, assuming that the target is standing still, and will cross from one end of a typical table to the other in 9 turns, assuming no further acceleration.

Both (or all) sides perform the same actions in a single turn. When the order matters, players alternate one ship at a time, not by entire fleet.

Turns exist only to make the game playable, and should not be regarded as a rigid division of non-overlapping time. The sequence of engine burns and course adjustments that are represented by one turn of movement would really start about half way through the previous turn and be completed by the half way point, while the weapons fire in one turn starts at about the middle of the turn and continues into the next.

Resource management

FULL THRUST does not track power consumption, fuel consumption, or ammunition supply other than for one-shot weapons. Ships are assumed to enter battle with sufficient fuel and ammunition to fight a normal battle.

2.6 Sequence of play

A game turn consists of *phases*. Each phase represents a different kind of action (move, shoot, etc.) carried out by all the ships on the board.

Each turn, all players move and fire their ships in the sequence given below.

For the introductory scenario you will need only phases 1, 2, 5, 11, and 12. The game turn sequence is not as complex as it may appear at first sight, and performing actions in the correct order will soon become second nature.

1. **Write orders.**

   Each game turn starts with both players simultaneously (and secretly) writing the movement orders for all the ships they control.

   Announce ships entering by FTL and place markers at each designated entry point.

   Announce ships entering or leaving a squadron.

2. **Roll for initiative.**

   Players roll a D6 each: highest roll has initiative for this turn. (If there are more than two players, the winner decides the order for the others.)

3. **Launch missiles.** Both players alternate in announcing and placing heavy missiles, salvo missiles, or any similar *ordnance* weapons. Players alternate by ships, not by missile or salvo. The player who lost initiative launches first.

4. **Move fighter groups.**

   Both players alternate in moving one fighter group each until all fighter groups in play have been moved (if desired). All fighter groups being launched this turn must be moved before those already in flight. The player who lost initiative moves first.

   Any fighter group may declare it is screening or pursuing instead of making a normal move.

5. **Move ships.**

   Any asteroids, starbases, or other objects with fixed movement paths are moved first.

   Both players simultaneously move their ships, strictly in accordance with orders written in phase 1. Ships laying mines are moved before all others. Screening or pursuing fighter groups are moved at the same time with the appropriate ship.

   Ships entering or exiting FTL are moved or placed last.

   Resolve collisions, mine sweeping, or mine attacks as they occur.

6. **Secondary fighter moves.**

   Fighter groups may, if desired, make a secondary move in this phase.

7. **Allocate missile and fighter attacks.**

   All missiles and fighter groups that are within the specified attack ranges of suitable targets (and wish to attack, in the case of fighters) are moved into attack positions: counters and/or fighter models are moved next to the intended target model, so it is clear exactly what they are attacking.

8. **Fighters against fighters or missiles.**

   Fighter vs. fighter actions (dogfights), attempted fighter interceptions, fighter groups defending against missile attacks, and screening actions by fighters are resolved before actual point defence fire is allocated to surviving ships.

9. **Point defence fire.**

   Any ship under missile and/or fighter attack allocates its defences against attacking elements, then rolls for effect. As with ship fire, announce all targets before rolling any dice.

   Ships with ADFC may choose to fire in defence of other ships, even if they are not under attack themselves.

   Any ship that wishes to shoot at multiple fighter groups or missiles must divide point defence weapons between them.

10. **Missile and fighters against ships.**

    All missiles and fighter groups that survive defensive fire in the previous phase now have their attacks resolved. Damage resulting from these attacks is applied immediately, including threshold point checks if applicable.

11. **Ships fire.**

    Starting with the player who won initiative, each player alternates in firing any/all weapon systems on one ship at one or more targets (ships or fighter groups) subject to available fire control. Damage caused is applied immediately, and threshold point checks are made where applicable as soon as all weapons fired by one ship at that one target have been resolved.

    When a ship is selected to fire, announce the targets for all the fire the player intends to carry out with that ship, *before* any dice are rolled for fire effects; for example: "I am firing both 3 batteries at the heavy cruiser in my fore arc, and the 2 battery at the frigate to starboard".

    After a ship has fired some or all of its weaponry and play has moved on to another ship, that ship may not fire any other ship to ship weapons in that game turn. A single target ship may, of course, be fired on more than once in the turn by different attackers.

12. **Damage control.**

    Make any damage control repair rolls.

    If the Core System rules are being used, count down 1 completed game turn from damaged bridge or life support systems and roll to see if damaged reactor systems explode.

In FULL THRUST weapons can only be used once per turn, so any system used for point defence can only be directed against a single fighter group or missile, and cannot be used again in that turn against a ship.

Variations

Many players combine the point defence and missile/fighter attack phases. Once all the defensive fire has been allocated, it is easier to carry out the defensive fire and missile or fighter attack phases one ship at a time.

In a single ship per side battle, the initiative roll becomes too important. It is **optional** but recommended in such battles for players to record the amount of damage suffered from ship's fire but not actually apply damage and threshold checks until after both ships have fired.

Information

Before writing movement orders, players can ask opponents for the last known velocity and course (ie at the end of the previous turn's movement phase) of any ships.

Most games are played as 'open book' where players can look at the SSDs of enemy ships at any time. This is because they are assumed to have intelligence briefings (military designs are never as secret as their owners think!) and various types of reconnaissance platforms, sensors, computer predictions, etc that give quite accurate knowledge about the current state of the enemy fleet. In space, there isn't any place to hide so this is quite reasonable.

Players do not have access to enemy SSDs when using the optional Sensors and ECM rules in section 10.1, or if the designer of a scenario specifies otherwise. Velocity and course can only be hidden under exceptional circumstances.

Differences

The phase order in CROSS DIMENSIONS is slightly different to earlier editions of FULL THRUST: fighter movement is now after missile launch instead of before.

3 Cinematic Movement

3.1 Ship movement

FULL THRUST uses a *Cinematic* set of rules for ship movement which allows ships to move as they are most often depicted in the sci-fi media, with little regard for the laws of physics.

The movement of a ship in any given game turn is defined by two factors: the ship's course and velocity. The current course indicates the direction in which the ship will move, and the velocity shows how far it will move along that course.

Ships obey one of the basic Laws of Motion, in that once they are moving in a particular direction they will continue to move in the same direction and at the same speed until they apply thrust to alter course and/or velocity.

This means there is effectively no maximum speed for any ship – theoretically it can continue to accelerate each game turn if the player so wishes, and will maintain whatever velocity it reaches until it applies more (reverse) thrust to decelerate again. At higher velocities, however, a ship may not be able to manoeuvre quickly enough to remain on the playing area, so think carefully before going too fast.

Ships may not have negative velocities, ie they may not move backwards. To retrace its course, a ship must be turned around.

Velocity

The current *velocity* of a ship is defined as the number of Movement Units (ie inches or centimetres) that the ship will move in that current game turn. A ship travelling at velocity 8 will move 8 MU in that game turn, unless it applies any thrust to alter that velocity.

Ships must always move the full distance specified by their current velocity.

Velocity changes take effect immediately at the beginning of each game turn: a ship ordered to change from 8 MU to 12 MU velocity moves the full 12 MU in that turn. (This is not in accordance with the Laws of Physics, but it is easier.)

Course

A ship may only move on one of twelve *courses*, which are defined by the clock face method. At the start of the game, each player should decide which direction represents course 12 – usually away from the base edge of the play area is convenient – and then work out each course from this reference point.

The direction that the nose or bow of the ship points to is the *facing*. In the cinematic movement system, the course and facing are always identical.

Example: In figure 2, ship A is travelling on course 12 and ship B is on course 5.

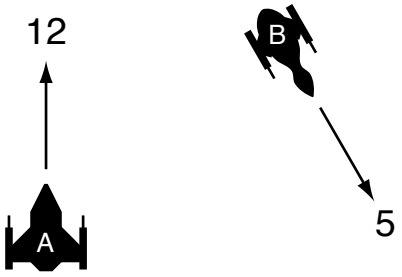


Figure 2: Ship Course Example

3.2 Thrust ratings

Each ship has a *Thrust Rating*, which is a measure of the output of its drive systems relative to the *Mass* of the ship. The thrust rating of the ship is the combined acceleration, deceleration, and course changing that can be performed in one turn. The higher the rating, the faster and more 'agile' the ship.

The ship SSD has an symbol for the main drive and thrust rating as shown in figure 3.

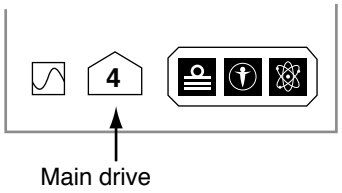


Figure 3: Main drive symbol

Up to the full rating may be used to accelerate or decelerate, changing the velocity of the ship.

Up to half the rating, rounded down, may be used to change facing. Each point of thrust applied to course changes will alter the ship's course by one course point during the game turn. A ship with a thrust rating of 4 could accelerate or decelerate by up to 4 MU per game turn, or could apply up to 2 points of thrust to course changes and still be able to make a 2 MU change to velocity in the same turn. The ship cannot however, apply more than 2 of its available thrust points to changing course.

Example: A ship with thrust rating of 6 decides to apply 3 points (its available maximum) to altering course. The ship is currently travelling on course 10; if it is to turn to port it will turn anticlockwise, ending up on course 7. Should the turn be made to starboard (clockwise), the final course will be 1.

(Whether to round up or down has changed from version to version of FULL THRUST. This revision of CROSS DIMENSIONS uses the second edition rule.)

A ship that has a thrust rating of 1 can change facing by 1 point, but not on consecutive game turns. Such a ship can accelerate or decelerate by 1 MU each game turn, or change facing by 1 provided it did not change facing on the previous turn.

3.3 Advanced drives

Unusual species or ships may be capable of amazing spins and turns due to their advanced drives. These are rare: it is not enough for such ships to be more agile than others, but to be able to perform manoeuvres impossible to normal ships.

To differentiate advanced drives from normal drives, a slightly different symbol is used on the System Status Display, and when the thrust rating of an advanced drive is written down it is suffixed by an "A" to indicate that the advanced drive rules should be used.

Ships with advanced main drives move and manoeuvre in exactly the same way as other ships with one exception: they are permitted to use up to *all* of their thrust rating to change course instead of half. A ship with an advanced drive with a thrust rating of 6 could actually make a full 180°about-face in a single turn, though its path would in fact be an L-shaped manoeuvre rather than a turn in place, as it is still bound by the normal rules about splitting course changes between the start and midpoint of the movement.

Typical thrust ratings

Thrust 0: Space habitats, satellites, asteroid bases, giant battle stations. Thrust 0 doesn't mean it can't move or turn, but that any change of course or speed takes planning and a few hours or days to take effect. The captain doesn't just shout 'Helm, hard a-port!'

Thrust 1: Orbital defence platforms or satellites with minimal ability to change position, primitive spaceships, enormous bulk cargo carrying merchant ships. Warships don't have thrust 1 drives: it is just too dangerous to be so limited in movement.

Thrust 2: Many civilian ships, and huge and lumbering warships that rely on power and brute force, not manoeuvre. This doesn't necessarily mean slow, as they can build up quite a speed over a long straight stretch, but nobody would describe such a ship as a graceful mover.

Thrust 3: Still clumsy on the turn but with better straight line speed and acceleration.

Thrust 4: A common velocity for capital warships that allows a good balance of speed, protection, and firepower. Cruisers or escorts with thrust 4 are expected to stand and fight rather than dodge or chase.

Thrust 5: Faster than average capital ships used by fleets that value rapid strikes and ambushes. Also a good speed for cruisers that need just enough margin to be able to escape the typical thrust 4 capital.

Thrust 6: Ships that rely on speed and agility, often at the expense of protection. A few very fast and manoeuvrable capital ships, much larger than their equally well armed thrust-4 equivalents. Most fast cruisers and destroyers, and escort sized pirates or ships designed to catch pirates.

Thrust 7-8: Very fast scouts, couriers, and reconnaissance ships; usually lightly armed and not intended for serious fighting.

Thrust 9+: The space going equivalent of turbocharged street racers, probably with chrome paint job and extremely loud sound system!

3.4 Making course changes

A ship making a course change is assumed to be applying a sideways thrust vector throughout the movement in that game turn, and would therefore move in a curved path ending the turn pointing towards its new course.

To simulate this when moving the ship model, half of the course change is made at the start of the ship's movement, and the remaining half at the mid-point of the move. If the total course change is an odd number, then round *down* the initial part of the change and round *up* the mid-move part.

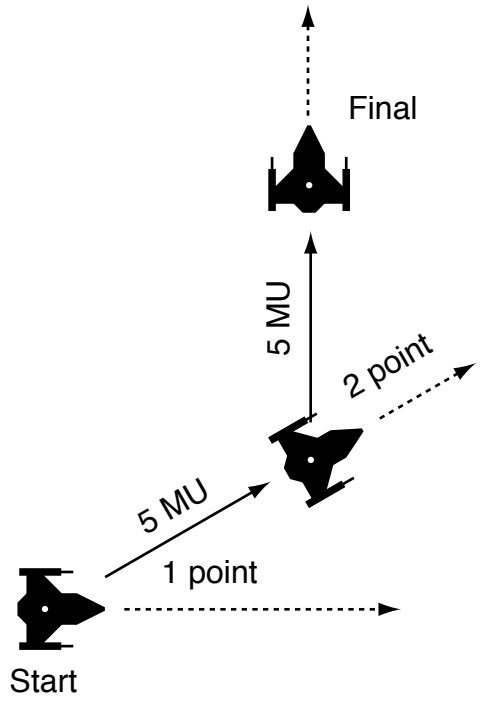


Figure 4: Course change by 3 points

Example: The ship in figure 4 is currently moving on course 3 at a velocity of 10. The player decides to alter the ship's course to 12, by turning 3 points to port. At the start of its movement, the ship is turned one point to port (half the total course change, rounded down) bringing it to course 2. It is then moved half its velocity – 5 MU – along course 2,

then turned again through two course points, bringing it round to course 12 as intended. Finally, the ship completes its movement by travelling its remaining 5 MU along course 12. All measurements are made from a point on the model.

If the ship's velocity is an odd number, also round down the first half of the distance and round up the second half.

Example: The ship in figure 5 is moving on course 7 at a velocity of 6, and is to accelerate by 5 to velocity 11 and make a one-point turn to starboard to bring it on to course 8. At the start of its movement the ship does not alter course (half of one being rounded down to zero), so moves half its distance (5 MU after rounding down) along course 7. Now the ship makes its one point of turn to course 8, and then moves the remaining 6 MU.

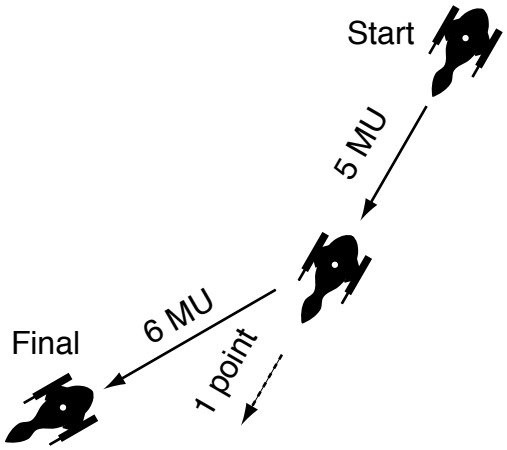


Figure 5: Course change by 1 point

3.5 Orders

At the start of the turn, each player must write orders for each ship. If you wish a ship simply to move ahead at its current speed, no orders are necessary; but we recommend that you at least write down the (same) final velocity. Any ship with no orders will move straight ahead at unchanged speed, as will any that are given impossible orders, such as one that would exceed the ship's thrust rating.

The actual orders are written in brief notation, giving course change (if any) and direction (port or starboard), plus any acceleration (as a +) or deceleration (as a -). The new final velocity is then written after the order, as reference for the next turn.

For example, an order of *P2+4: 12* would indicate a ship with an initial velocity of 8 making a two point turn to port (P), plus acceleration of 4 MU, with a new final velocity of 12 (8 + 4).

Orders can be either written on SSD sheets or on a separate order sheet as desired.

Although not strictly movement orders, certain other actions such as launching fighters and FTL entry or exit must be written down as well.

Halted ships

In earlier editions of FULL THRUST a halted ship with velocity zero could change facing by any number of points. This no longer applies: as 'cinematic' spaceships turn at the same rate regardless of velocity, a halted ship is still restricted to pivoting no more than half the drive rating.

Double course change

A ship with a sufficient thrust rating may make a double course change in one turn. A ship making a double course change always makes the first course change before moving and the second at the half way point, even if the first change is greater than the second.

Example: The ship in figure 6 has orders P1 S1 to first turn to port and then back to starboard, resuming the original course but at some distance to port.

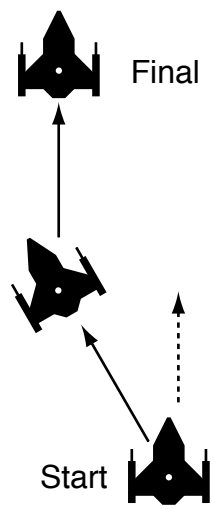


Figure 6: Double course change

3.6 Squadron operations

Orders and movement can be speeded up by dividing all or part of each fleet into squadrons of several ships each, which then move as cohesive units.

Squadron operations are especially suited to groups of smaller escort ships, though there is no reason why major craft should not also operate in this way. A squadron is two to four ships in line ahead, line abreast, wedge, or diamond formation; but it could also be one large ship surrounded by a ring of up to six escorts. The models must be as close together as practical.

A squadron of ships, once announced as such, all move together, using just one movement order. The *lead* ship moves as normal, while the others maintain the same relative position to it throughout the manoeuvre. The lead ship is often but not always the one at the front. The player has only to write the one set of orders for the squadron each turn, rather than orders for each individual ship.

For ships in line ahead, always move the lead ship according to orders with the others staying in formation behind it.

For ships in other formations, the lead ship is the ship that has to move *furthest*, which is the leftmost for starboard turns, the rightmost for port.

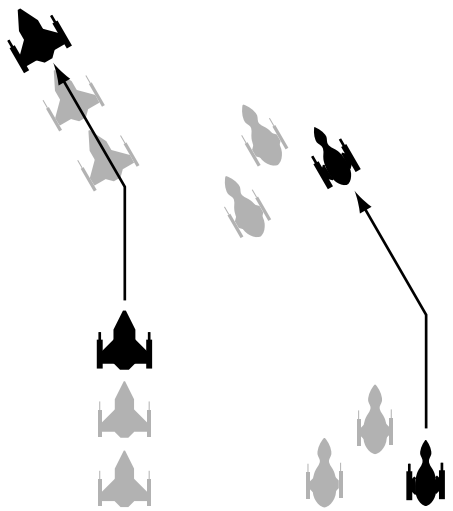


Figure 7: Squadrons turning 1 point to port

Squadron acceleration/deceleration and turning is restricted to that of the ship with the lowest drive rating in the squadron. Squadrons cannot mix ships with standard and advanced drives.

Squadrons can be formed or broken at the start of the game turn, before writing movement orders. (This is necessary because if the ships in the squadron start moving individually, they will move to slightly different locations than they would as a squadron, and missile launching players worry about such things.)

3.7 Collisions

The distances represented by the movements and ranges in the game are so vast that the risk of an accidental collision between two ships is incalculably small, and is therefore ignored for all game purposes. (Collisions with asteroids and other large bodies are possible, see the *Terrain* section.) Ships can freely move 'through' both friendly and enemy ships or fighter groups. If two ship models would actually be touching at the end of all movement, they should simply be arranged as closely as possible, to the agreement of both players.

3.8 Ships leaving the table

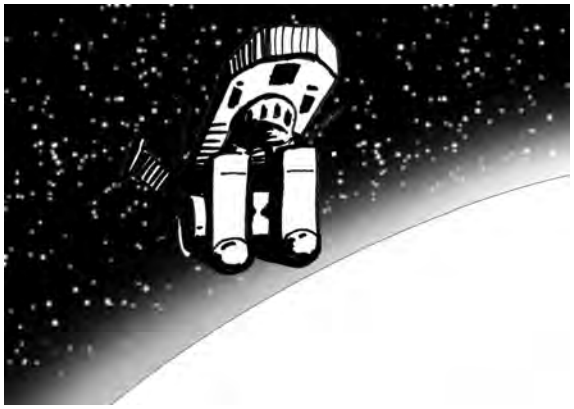
As there is no maximum speed for any ship (they can theoretically keep accelerating each turn without limit), sometimes a ship may find it impossible to turn enough to avoid flying off the playing area. This is usually considered a retreat from the battle unless using the moving table rules (section 12.4) or fighting an orbital scenario (section 13.8).

As an **optional** rule roll 1 die: on a roll of 1, 2, or 3; the ship may not return to play during the game. A roll of 4, 5, or 6 indicates the ship may re-enter the table after the equivalent number of turns have elapsed (eg 5 turns if a 5 is rolled). Ships will always re-enter play from the same side of the playing area as they left, though the actual point of entry is up to the player.

Ships can also leave the playing area from any location by use of FTL as explained in section 9.2.

3.9 Vector movement

FLEET BOOK 1 introduced a vector movement system. This book does not include any vector movement rules, but you can still use the older system.



4 Beam Combat

4.1 Beam weapons

Beams are the primary armament of science fiction warships in FULL THRUST, whether called lasers, phasers, masers, disruptors, particle beams, turbolasers, CREWS, etc. Beams travel at lightspeed (although some TV and film sci-fi beams appear to be slower!) so cannot be dodged, but as the range increases it becomes more difficult to keep the beam from spreading and focused onto a precise spot.

Continuous or rapid fire plasma weapons and most fighter weapons are also treated as beams in FULL THRUST.

Beams are classed numerically. The higher the class, the longer the effective range and the more damage inflicted at closer ranges.

Class 1 beams, or beam-1, are the shortest ranged and the least powerful. They are the only armament for the smallest ships, and are able to track rapidly enough to be also used against missiles and fighters.

Class 2 are medium weapons, the primary armament for light warships and the secondary for major warships.

Class 3 are the largest usually carried by warships with the longest range. Class 4 beams are occasionally found on very large vessels, while Class 5 or above are usually restricted to starbases.

The standard symbol for a beam weapon is a circle with the beam class inside it, segmented to show which *arcs* (section 4.2) it can fire through.

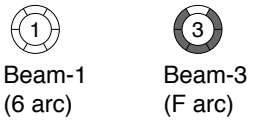


Figure 8: Beam symbols

Each beam on a ship can potentially fire independently of the others, but the total number of different targets that can be engaged during one turn of firing depends on the number of FireCon systems the ship is equipped with, as explained in 4.4.

4.2 Fire Arcs

The 360 degree space around each ship is divided into six *arcs*, each of 60 degrees. The arcs are indicated in figure 9, and are designated *Fore (F)*, *Fore Starboard (FS)*, *Aft Starboard (AS)*, *Aft (A)*, *Aft Port (AP)*, and *Fore Port (FP)*. Each fire arc covers the angle between two of the course facings used in movement, and can be judged by eye from hexagonal ship bases.

These fire arcs determine which of a ship's weapons may be brought to bear on a particular target, as some will be

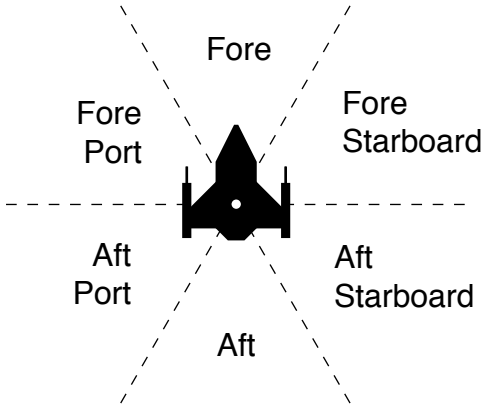


Figure 9: Firing Arcs

unable to fire through certain arcs. A given target ship may only be in one fire arc of the firing ship. (If the line dividing the arcs passes so nearly through the centre of the target that it is impossible to determine which arc it is in, then decide by a random D6 roll, odds = one arc, evens = the other.)

Note that it is the centre of the model, or the centre of the stand if it is mounted on one, that is used to determine the exact location of the ship itself; all distances and ranges are similarly measured to and from this centre point. Other ships do not block lines of fire – no ship can hide behind another.

All weapons that are capable of bearing through more than one arc have this indicated by putting a ring of segments around the system symbol, with white segments showing the arcs that the weapon is permitted to fire through. See figure 8 for examples.

Weapons or systems that can only bear through one arc have this indicated by the orientation of the system symbol on the ship diagram – ensure that it is pointing clearly towards the relevant arc. Systems that have no 'directionality' to their symbol, eg PDS, have all-round (6-arc) fire capabilities.

Aft arc

No ship may fire offensive weaponry through its aft arc due to the interference of the ship's main drive, which makes it impossible to accurately track a distant target through the rear 60° of the ship's arcs.

Optional rule: Aft-arc fire is permitted on any game turn in which the firing ship did not use any thrust from its main drive to accelerate, decelerate, or change course.

Spinal mounts

Spinal mount weapons are considered to be fore arc weapons in FULL THRUST. The game turn is long enough for the ship to make small course adjustments and bring

the weapon to bear on any target within the 30° either side of straight ahead.

Broadside arcs

Some weapons fire through *broadside* arcs, the two port and two starboard arcs but not the fore and aft.

Figure 10: Broadside beam and missile

4.3 Range bands

A range band in FULL THRUST is a minimum and maximum distance over which a particular weapon type is considered equally effective. Some weapons have only a single range band, but ship to ship beams have a number of range bands equal to their class.

(Range bands are another simplification necessary for a tabletop game. In reality, the effectiveness of weapons declines gradually over distance instead of suddenly changing.)

Each beam range band is 12 MU. The class of a beam is the number of range bands that it has, so a beam-1 (class 1 beam) has a maximum range of 12 MU, a beam-2 maximum range of 24 MU, and so on.

The FULL THRUST range of a weapon is not the maximum range, but the range at which it can be fired with a reasonable chance of hitting and effectively damaging a target. In space, a scout ship beam-1 can still hit a target at the same range as a battleship beam-3, but the beam-1 will have dispersed too much to do any actual damage.

4.4 Fire control systems

The fire control systems (*FireCons* or *FCS*) of a ship are some of its most important fittings. Each FireCon represents a suite of sensor systems and computer facilities to direct the fire of the ship's offensive weaponry. Without these, ships are unable to locate and track an enemy with the precision required to fire at it.

Each FireCon system permits the ship to engage one target during the firing portion of a turn. Thus if a ship has two FireCon systems operational it can split its fire between two separate targets in one turn if desired; these targets may be in the same or different fire arcs, and fire from the ship's various weapons may be divided in any way between the targets (depending on the arcs through which each weapon may bear, of course).

The more FireCon systems a ship has, the more targets it can engage simultaneously. In general, escort classes each carry a single FireCon as standard, cruisers have two systems, and capital ships have three or more. Merchant ships may have a single system.

Individual FireCon systems are not specifically linked to individual weapon systems. If a ship loses one of its FireCons, the remaining ones may still be used to fire any or all of the ship's weaponry.

Unlike previous editions of FULL THRUST, ship weapons can also be fired against fighter groups under some conditions: see section 7.4. Each fighter group targeted requires a FireCon as if it were a ship.

Point defence fire against fighters or missiles does not require the use of the ship's main FireCon systems.

4.5 Beam fire

A beam weapon rolls a number of dice equal to the class, minus 1 die for each range band beyond the closest.

Example: A class 3 beam rolls 3 D6 at less than 12 MU, 2 at 12-24 MU, and 1 only at 24-36 MU. At ranges greater than 36 MU the weapon is out of range. A class 1 beam rolls 1 D6 at ranges 0-12 MU, and is out of range beyond 12 MU.

For every die rolled, damage is inflicted on an unscreened target ship as follows:

- Every 1,2, or 3 rolled = no effect. (Either a miss or insignificant surface damage.)
- Every 4 or 5 rolled = 1 damage point to the target.
- Every 6 rolled = 2 damage points inflicted.

These damage levels can be reduced by the use of screens or armour on the target ship. (Sections 4.6 and 4.7).

No single weapon may split its die rolls between targets in any circumstances, eg a beam-3 at close range must roll all three dice against the same target ship. Two separate beam-3 weapons may each engage a separate target, provided that two FireCon systems are available.

Re-rolls

Beam weapons are capable of *penetrating damage*. Any roll of six inflicts the usual damage *and* allows a re-roll: roll an extra D6, and apply any further damage that is indicated by the result. The re-rolls ignore any defensive screens or armour and damage is applied directly to the hull. If a re-roll is also a six, then apply the damage and roll again. There is no limit to the number of re-rolls you can make if you keep throwing sixes.

Re-rolls are made for a natural (unmodified) 6 **only**. For example, if the die roll is modified by +1 then a roll of 5 inflicts 2 damage points as if it were a 6, but does not re-roll.

If the target ship has screens active, then the effects of the screen are deducted from the initial attack dice as usual (if applicable) but not from the result of any re-roll dice – the re-roll is assumed to have already penetrated the screen, and any further damage is applied directly to the ship itself.

Re-roll damage is applied to armoured ships in a similar manner: half any damage from the initial die rolls of an attack can be taken on armour boxes on the ship, but if a 6 is rolled then any damage caused by the re-roll die(s) is applied directly to the ship's ordinary hull damage track irrespective of whether it still has armour remaining.

Example: A ship fires at an enemy vessel at a range of 18 MU. The firing ship can bring two beams to bear through the arc containing the target, one beam-3 and one beam-2. (Whether the ship also carries any beam-1 weapons is not relevant to this example, since they would be out of range.)

The beam-3 has a firepower of 2 dice at a range of 12-24 and the beam-2 has 1 die at the same range; thus the firepower total against the target is 3 dice.

Rolling the 3D6, the firing player scores 1, 5, and 6. This inflicts a total of three points of damage on the target – the 1 is a miss, the 5 does 1 point of damage, and the 6 does 2 points and a re-roll. The re-roll is 4, inflicting 1 more point.

Note that this example assumes that the target ship does not have any screens to protect it.

4.6 Defensive screens

Screens are the primary defence against beam weapons. Screens are force fields or magnetic fields that deflect or defocus beam energy, but also include materials that reflect energy, or stealth systems that interfere with beam targeting. Screens can be burnt through, but quickly rebuild or recharge themselves.

The actual degree of protection given depends on the level of screens that the target ship is carrying. Each level is represented on the SSD by a screen generator symbol, so a ship with level-1 screens would have a single screen generator.

If a ship that is protected by screens is fired on by beam weapons (of any class) the damage inflicted by each die is varied as follows:

- For level-1 screens, rolls of 5 inflict one point of damage and rolls of 6 do two points. In other words, ignore any rolls of 4 that would have damaged an unscreened ship.
- With level-2 screens, rolls of 5 and 6 each inflict only one point of damage.

Example: A ship fires six dice of beams at an enemy vessel with level-2 screens. The player rolls 2, 3, 3, 4, 6, and 6. Against level-2 screens the 4 is a miss and each 6 does only 1 damage point, for a total of 2. The re-rolls are 4 and 6, and the further re-roll is 3: because this is penetrating damage which ignores screens, the 4 inflicts 1 damage point and the 6 another 2 for a total of 5.

4.7 Armour

Armour is ablative, metal, ceramic, or similar outer layers that absorb weapons fire but are broken or consumed in the process. Armour also includes force fields that can't be recharged in the time frame of a battle.

Armour is represented as additional damage boxes that absorb hits, indicated on the ship diagram as a row of circles placed above the top row of hull boxes. (Yes, calling round circles 'boxes' is a little strange, but it's traditional.) As damage is taken, some of the armour boxes are crossed off on the SSD. There is no threshold roll (see below) made at the end of the row of armour, but any further damage is applied to the first row of hull.

When one ship fires on another, add up the damage inflicted (except for re-rolls). Up to half this damage, rounded up, can be taken on armour if available, the rest is applied to the hull.

In earlier editions of FULL THRUST *all* the damage from beams and some other weapons could be taken on armour. This does not apply in CROSS DIMENSIONS: all weapons are now 'armour-piercing'.

Penetrating damage from re-rolls bypasses armour and is applied to hull boxes directly, even if there is intact armour left.

Example: A ship with eight armour boxes and no screen comes under fire from a battleship rolling ten D6 of beams. The rolls are 2, 3, 3, 4, 4, 5, 5, 5, 6, 6, a total of 9 damage points and two re-rolls. The battleship re-rolls are 3, 6, and then a final 4 for 3 more points.

For the 9 initial damage points, half rounded up is 5 so 5 armour boxes are crossed off and 4 applied to the hull. The 3 points of re-roll damage go straight to the hull even though there are 3 armour boxes remaining, for a total of 4 + 3 = 7 hull damage points from this attack.

Next turn the battleship fires again with ten dice, inflicting another 10 damage points. Half this is 5, but there are only 3 armour boxes left, so those are crossed off and the remaining 7 points is applied to the hull.

4.8 Optional rule: rear arc attacks

Spaceships tend to be exceptionally vulnerable to attack from the rear because the engines are large and difficult or impossible to protect. Any ship firing from within the rear arc of the target ship automatically does *penetrating* damage, ignoring screens or armour.

This rule does not apply when firing at starbases (section 13.7 or other Really Big Things.

(Missiles or fighters do not benefit from rear arc attacks. At short ranges the engines of a spaceship emit a considerable amount of energy, enough to melt a missile or fighter before it can finish an attack.)

4.9 Threshold points

As a ship takes damage from incoming fire, there is a chance that some of the ship's specific systems (drives, weapons, etc) will be damaged or destroyed.

To avoid having to roll for possible 'critical hits' every time damage is inflicted we instead use the idea of *threshold points* at which the player will check to see if each system on the ship is still functioning. A threshold point occurs each time the accumulated damage points reach (or pass) the end of one row of hull boxes on the ship's damage track. At this point, the player must roll one D6 for each system on the ship not already destroyed.

At the first threshold point (the end of the first row of hull boxes), any system for which a 6 is rolled is knocked out. At the next threshold point (end of the second row) a system is lost on a roll of 5 or 6; at the end of the third (if present) 4, 5, or 6. (No threshold checks need to be made at the end of the last hull row, since the ship is considered to be destroyed!)

(Threshold failures occur on high rolls rather than low to help balance good and bad game outcomes across die rolls, and to provide extra opportunities for players to grumble about the iniquities of fate.)

If a ship suffers enough damage in a single attack to push it over more than one threshold check, make only one check (for the last row destroyed) but add 1 to each die roll for each extra threshold point passed in that attack. Note that one 'attack' is defined as the ship being fired on by one other ship, regardless of how many or few weapons are fired at it; it also counts as one attack if the ship is under fire by any number of missiles and/or fighter groups at the same time.

Example: A ship with 12 hull boxes in four rows of three takes 7 damage points from another ship in one attack, crossing off two complete rows. At the end of the second row systems are normally lost on a roll of 5 or 6, but this time they will be lost on 4-6. If the ship is fired on again and takes 3 more points of damage, the third row will be crossed off, but since only one row was lost the threshold rolls will be as normal, 4+.

As each system is knocked out as a result of a threshold point check it is crossed off the diagram, with the exception of the ship's main drive system. When the drive first suffer a 'destroyed' roll on a threshold check it is reduced to half the original thrust rating, provided it has a drive rating above 1. If it is then hit a second time on a subsequent threshold check, it is disabled completely. A drive rated only 1 is immediately disabled by the first threshold failure.

4.10 Rolling dice

We encourage you to roll for all weapon systems of a particular type together and add up the results instead of rolling weapon by weapon. If a ship is firing two beam-1s, four beam-2s, and one beam-3 at an enemy ship 9 MU away, just roll 2 + 8 + 3 = 11 dice at once (provided you have that many) instead of worrying about which are which.

To keep track of normal and re-roll damage, we recommend putting all dice in the initial volley that score hits to one side, then roll new dice for any re-rolls. (And if any of those are also sixes, roll more dice, ...) At the end you will have two clumps of dice to add up, the initial damage that can be absorbed by armour or screens and the penetrating damage from re-rolls.

In the same way you should roll as many threshold checks at once as you can, rather than one by one. If a ship has three PDS, or FireCons, or similar just roll three dice at once and cross off the destroyed systems from left to right.

For weapons with limited fire arcs, it does matter if, for example, the port beam is knocked out rather than the starboard. You can still roll for multiple systems at once by matching the fall of the dice to the symbol positions on the SSD. If there are three beam-3 symbols arranged left to right, then roll three dice: the one that lands most to the left is for the corresponding leftmost symbol, etc.

4.11 Introductory scenario

You are now ready to play the introductory scenario. This is a very simple, quick game designed to allow players to familiarise themselves with the basic mechanics of movement and combat in the game. The two forces involved are evenly balanced and the situation is a simple 'meeting engagement' between two fleets. On page 61 you will find a full set of counters and SSDs to represent the ships used in the battle, so you can set up and play almost immediately without needing any ship models. All you need to do is make two copies of that page (one copy for each player) and fill in names for your ships if you desire. (You may wish to glue the ship counters onto some heavier card to stop them moving too easily by accident.) The game is then ready for play.

Each side has the following forces:

Two cruisers, each with a thrust rating of 4, armed with three class-2 beams, two class-1 beams, and two FireCons, defended with level-1 screen and grade 3 armour. They also have two PDS, though these will play no part in this scenario as there are no fighters or missiles. Each cruiser has 14 damage points. The SSD for one of these cruisers is shown in figure 11.

Three frigates. Compare the SSD for a frigate with the cruiser and note the differences in thrust, number of FireCons and weapons, lack of defences, and fewer hull boxes.

(For the curious, you can find these ships in FLEET BOOK 1.)

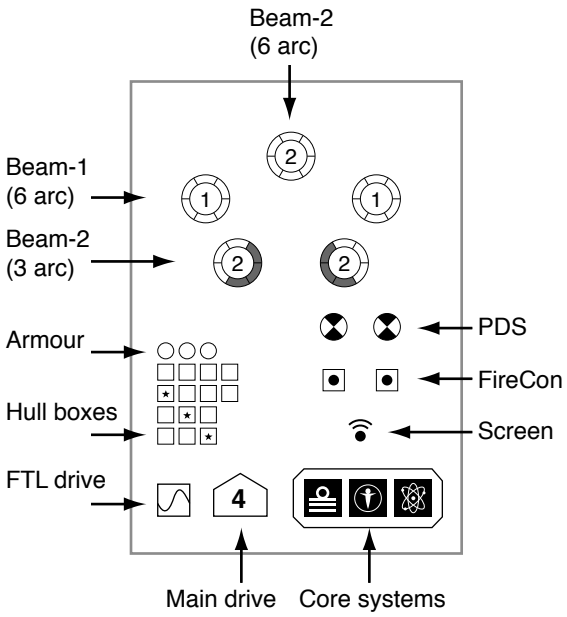


Figure 11: Cruiser SSD

Setup

With two players, the opposing fleets enter the table from opposite ends. Roll D6 to see who goes first and take it in turn to place one ship at a time on the table edge. All ships have an initial velocity of 6 and course 12 when writing orders for the first turn. Victory goes to the player who survives longest or who persuades the enemy to flee the table.

For a solo version, your ships deploy anywhere along one narrow end of the table, with initial velocity of 6 and course 12. The opposing ships deploy in two line ahead squadrons at the far right corner of the table with an initial velocity of 6 and course 1, roughly pointing towards the opposite diagonal corner. Each turn you write orders for your ships – although there is no opponent to keep them secret from, it's good practise. The opposing ships accelerate by 2 MU along the same course each turn and fire at the closest ship within range.

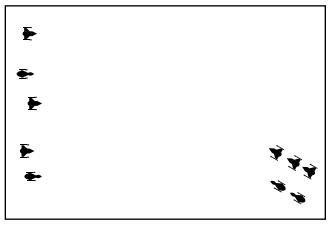


Figure 12: Solo game setup

The battle ends when either the opposing ships fly off the far edge or you have destroyed them all. You may wish to fight the solo battle a second time to see if you can improve your intercept course, for example by attacking from behind.

Once you have played through this small battle, read the rest of the rules and then try the same battle again with some different weapons. Experiment with giving the cruisers a torpedo or missile rack instead of beams, or allow each side to use a fighter group or two. (Assume the fighters are based at a nearby starbase.)

4.12 Strange events

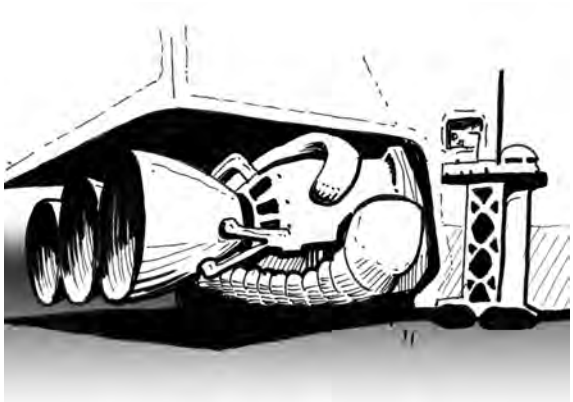
The FULL THRUST turn sequence can sometimes lead to unusual events. One example is the 'fly-by', where two spaceships start the turn out of range, move past each other in the movement phase, but in the ship fire phase are unable to shoot because they are now out of range again or each is in the rear arc of the other.

The initial reaction from players is always "Huh? But we flew right past each other!"

This only happens when ships are moving at very high speed. The closing velocities of the two ships are enormous, and, importantly, beyond the capability of fire control systems. Each 'shot' in FULL THRUST represents a few minutes of sustained beam fire or a burst of torpedoes, which need accurate target tracking and concentration of fire. A quick snap shot during the few seconds of actual time in range is incredibly unlikely to do any actual damage.

What has really happened in such cases is that both commanders have failed to correctly anticipate the enemy movement. Making a high speed strike run against a stationary target is difficult enough; against a moving target it takes skill and luck to obtain a good (not fleeting) opportunity to fire.

You may not find this convincing. The other explanation is that no set of game rules is ever perfect. Adding more and more rules to try and solve rarely occurring problems would be more trouble than it is worth.



5 Offensive and Defensive Systems

This section describes most of the additional offensive and defensive systems that can be fitted to ships. Missiles and fighters have their own sections.

5.1 Grasers

Grasers are more advanced and especially destructive beam weapons. Like beams, grasers have numeric classes, although the increasing cost means that class 3 and above grasers are less common. The symbol for a graser is similar to a beam but with the class rating in white on a black triangle.

The range bands for grasers are 18 MU, not 12, so a class 2 graser rolls 2D6 at 0-18 MU, 1D6 at up to 36 MU.

Grasers score hits as beam weapons: against unscreened targets rolls of 4 or 5 inflict 1 hit; rolls of 6 inflict 2. Against level-1 screens rolls of 4 do no damage, and against level-2 screens rolls of 5 or 6 inflict only 1 hit. Grasers are not penetrating weapons and do not re-roll on a 6.

Unlike beams, each hit from a graser inflicts 1D6 of damage on the target.

Example: A ship with two graser-1 and two graser-2 mounts fires at a target with level-1 screen and 24 MU away. The two graser-1s are out of range (maximum 18 MU) and the graser-2s get 1D6 each. The player rolls 4 and 6. The 4 is a miss because the target has a level-1 screen and the 6 scores two hits but no re-roll. The player now rolls 2D6 for damage, getting 4 and 3 for a total of 7.

Graser-1s cannot be used for point defence.

5.2 Torpedoes

Torpedoes (pulse torpedoes in previous editions) are railguns, unguided rockets, plasma launchers, and similar weapons that fire projectiles as single shots or in very short bursts. As the projectiles are unguided the firing ship must accurately predict the movement of the target, which becomes more difficult at longer ranges and flight times. While not travelling at lightspeed the projectiles are too fast to be shot down, and since they don't need to be focused the damage remains constant at all ranges.

Torpedoes have five range bands, each of 6 MU. Roll 1D6 per torpedo fired and score hits on the following rolls:

Band	Range	Score to hit
1st	0-6	2+
2nd	6-12	3+
3rd	12-18	4+
4th	18-24	5+
5th	24-30	6

Damage per hit is 1D6, and no re-roll is applied to scores of 6.

Neither screens nor advanced screens (below) affect torpedo hits, but advanced screens reduce the damage inflicted by 1 for each level.

Torpedoes are limited to a maximum of three adjacent firing arcs, or four in a *broadside* mount (section 4.2). A torpedo symbol without arcs fires through the fore (F) arc only.

CROSS DIMENSIONS uses a new style of torpedo symbol, a circle with a star inside. The previous black and white rectangle symbol is still common.

Torpedo classes

Torpedoes in CROSS DIMENSIONS now have numeric classes. The default is 1, which was the only class in the original edition of FULL THRUST.

Each extra class above 1 adds 3 MU to the torpedo range bands, so a class-2 torpedo hits on a roll of 2 at range 0-9, 3 at range 9-18, and so on up to 6 at range 36-45. The damage for all classes of torpedo remains at 1D6.

5.3 Submunition packs

A *submunition pack* (SMP) is a single use weapon that fires a cloud of small projectiles either all at once or in quick succession against a single target. They are often used to give smaller ships a cost-effective punch against larger vessels. As the range increases the cloud disperses and the chance of significant damage becomes lower.

An SMP fires through a single arc only, by default the fore arc. Once fired, cross the symbol off the SSD and it may not be used again.

The maximum range of a submunition pack is 18 MU. The number of dice rolled depends on the range:

- At a range of 0-6 MU, 3D6
- At 6-12 MU, 2D6
- At 12-18 MU, one D6.

Damage points are scored from these dice rolls just as for beam weapon fire: 1, 2, 3 = no damage; 4, 5 = 1 damage point; 6 = 2 damage points and a re-roll.

Standard screens do not affect submunition packs. Advanced screens (section 5.7) affect SMPs as if they were beams: against level-1 advanced screens rolls of 4 do no damage, against level-2 advanced screens rolls of 5 or 6 do 1 damage point only.

5.4 Needle weapons

Needles are very accurate beams, precision guided missiles, sabotage drones, or similar sneaky weapons that are used for 'sniping' to knock out individual systems on the target vessel.

The maximum range of a needle is 12 MU. Within this range the firing player may nominate any one specific system on the target, and attempt to kill it with the needle shot. Once the target is nominated, roll 1D6. On a score of 6, the targeted system is knocked out and 1 damage point is applied to hull boxes. On a score of 5, the target system is unaffected but 1 damage point is still inflicted on the hull. Rolls of 1-4 have no effect.

Needles are *penetrating* weapons: ignore all screens and armour.

A functioning FireCon system is necessary to fire a needle weapon, and may only direct needles at *one* specific system on the target. If a ship was firing two needles at an enemy and both were targeted on the enemy drive, then only the one FireCon would be needed for the two shots. If however one needle fires at the drive and the other at a weapon, the firing ship would need two FireCons to make these attacks.

A FireCon that is being used to direct a needle attack may not be used to fire other weapons at the same time, even if they are firing at the same target ship.

A needle always fires through a single arc, the fore arc by default.

Note that, as with threshold point damage rolls, a needle hit on a ship's drive does not automatically destroy the drive. The first such hit reduces the ship to half thrust capability, and a second hit knocks the drive out altogether.

Needle weapons cannot target a ship's Core Systems (section 8.2).

Aiming weapons

Sci-fi commanders are fond of ordering their subordinates to 'Target their weapons!' FULL THRUST assumes that such precise shots are usually unlikely or impossible given the long ranges and high speeds in space combat, not to mention enemy crews who refuse to co-operate and warships designed not to be rendered helpless by a single shot. Only needle weapons at short range can achieve such results.

5.5 FireCon

An operational FireCon is needed for each of the following in each phase of a turn:

- Firing ship weapons (not point defence) at a single ship or fighter group
- Firing needle weapons against a single ship system
- Launching salvo or heavy missiles

To avoid the need for record keeping these limitations are per *phase*, not per turn, so a FireCon used to launch missiles can also be used to direct other weapons in the ship fire phase of the same turn.

5.6 Defensive screens

The maximum *active* screen level for any ship is 2. Extra screen generators may be fitted but will only be useful as backups should one of the main screens be lost through damage.

Screens only protect against fire from beams and similar weapons such as grasers and fighters. Other weapons such as torpedoes and missiles are able to penetrate screens with no degradation of their damage effects. See the description of each individual weapon system type for whether they are affected by screens.

5.7 Advanced screens

Advanced screens not only protect against beam weapons, but also against torpedoes, missiles, and other weapons that normally ignore screens.

Beams, grasers, fighters, and other weapons that are affected by standard screens are affected in the same way when attacking a ship with advanced screens.

SMPs and similar weapons that ignore standard screens and roll a combined hit and damage D6 are affected by advanced screens as if they were beams. Against level-1 advanced screens a roll of 5 inflicts 1 damage point, 6 inflicts 2. Against level-2 advanced screens a roll of 5 or 6 inflicts 1 damage point.

Torpedoes, missiles, and other weapons that are unaffected by standard screens and roll one or more D6 for damage subtract 1 from each damage die against level-1 advanced screens. Against level-2 advanced screens, subtract 2 from each die. (Negative damage is treated as zero: the target ship cannot regain damage points!)

A ship cannot be fitted with both advanced and standard screens, as they are assumed to represent different types of technology.

As with standard screens, a ship cannot have an advanced screen level greater than 2, even if it has additional generators.

5.8 Shell armour

Shell or layered armour is unusually effective at absorbing damage and is represented by stacked rows of armour boxes on the ship SSD. The bottom or innermost row (the only row for standard armour) is layer 1, the next above that layer 2, and so on.

When hit by weapon fire, half the damage (rounded up) can be absorbed by the top layer as usual. Each successive

layer can absorb up to half again of the remaining damage until the hull is reached.

Penetrating damage is still applied directly to the hull, regardless of shell armour.

5.9 Stealth

FULL THRUST: CROSS DIMENSIONS does not include any rules for stealth systems.

There is a strong argument that in any kind of hard science fiction, stealth in space is flatly impossible due to heat radiation.

In not so hard science fiction, stealth systems that don't completely hide the ship are represented by screens, or by ECM systems. Different technology but same effect: the ship becomes harder to hit or scan.

Stealth systems that completely hide the ship produce uninteresting battles. If the stealth system works, opposing ships are helpless and will be massacred. (Unless both sides have stealth, in which case you have a game of hide and seek in a pitch black sports stadium.) If there is a countermeasure that works – and if there is, everyone is going to learn about it very quickly – the stealth system is pointless.

If you disagree, you are of course free to write your own stealth rules – one example is given later in this book.

5.10 Point defence

Point defence weapons are designed for shooting down incoming missiles or fighters. See sections 6.2 and 7.6 for details. Point defence fire does not require FireCons.

Point defence systems (PDS) include light beams, autocannon, or countermissile launchers with a large number of reloads. The more PDS symbols a ship has, the stronger the point defence.

Beam-1 systems are dual purpose and can also be used for point defence. In this role they do not require a FireCon.

Point defence weapons can be fired through any arc, including the rear arc even if the ship has used the main drive in this turn. The ranger is shorter and the missiles or fighters must themselves avoid the energy output of the drive.

Scatterguns

A *scattergun* is any short range projectile PDS usable for only one turn, such as a one shot canister gun or countermissile launcher with a limited number of reloads. A scattergun can fire through any arc at a target like other point defence systems, but once fired must be crossed off the SSD.

A ship cannot be fitted with both PDS and scatterguns, as they represent different technological or tactical methods of point defence. (A ship can carry scatterguns and light beams.) If as an optional rule you do decided to allow ships to be fitted with both types of point defence, only weapons of one type can be fired in a single turn.

A scattergun used for point defence rolls as if it were four PDS.

Against ships

Point defence weapons can be fired against ships with a maximum range of 6 MU, and do not require an operational FireCon to do so.

PDS can only be fired against ships without an operational screen or any remaining armour boxes – undamaged warships are not vulnerable to such light weapons. Scatterguns may not be fired against ships with an operational advanced screen or armour, but are not affected by standard screens.

Each PDS rolls only 1D6, with a roll of 6 inflicting 1 DP with no re-roll. A scattergun rolls four PDS dice.

5.11 Area-defence fire control

An *ADFC* is an enhanced anti-fighter/anti-missile fire control system that allows a ship to protect other nearby ships with fire from its own point defence. One ADFC allows the ship's PDS or scatterguns (but *not* beam-1) to fire at any combination of threats (fighters, salvo missiles, etc) that are directly attacking one other ship that is within 6 MU of the ADFC carrying ship.

Ships with multiple ADFCs may divide their fire to protect as many other ships as the number of operational ADFCs, but each weapon may only be fired once per turn. Weapons used in area defence mode roll dice and score kills exactly as normal PDS fire.

An ADFC may not be used if the ship launched or recovered any fighters (section 7.1) in the movement phase of the turn.

An ADFC functions only as an enhanced PDS fire-director link, and may not be used as a normal fire control.

5.12 Alien technologies

FLEET BOOK 2 introduced new alien systems for FULL THRUST. When using such ships with CROSS DIMENSIONS, the following changes should be applied:

Kra'Vak

Advanced drives are already included in CROSS DIMENSIONS and do not change.

Kinetic guns (K-guns) are affected by advanced screens. When rolling to see if damage is doubled, deduct the advanced screen level from the class of the K-gun to give the final number for the die roll.

Example: A class 5 K-gun hits a ship with 2 levels of advanced screen. On a roll of 1-3 (5 - 2) the damage is doubled to 10, on a roll of 4-6 the damage stays at 5.

MKPs are affected by advanced screens as if they were beams. Against level-1 advanced screens a 4 is a miss. Against level-2 advanced screen a 4 is a miss, and a 6 inflicts only 1 hit.

Kra'Vak scatterguns use the rules in CROSS DIMENSIONS, rolling 4 PDS dice for effect and costing only 4 points. They cannot automatically be used for area defence of other ships, so the *Si'Tek* escort cruiser or similar ships should exchange one K-1 gun for an ADFC. Kra'Vak scatterguns no longer risk damaging friendly ships when used for area defence.

Kra'Vak fighters pay the extra points for being armed with kinetic weapons (section 7.10). If you are using the optional fighter morale rules, use the Ro'Kah rules in FLEET BOOK 2 for Kra'Vak fighters.

Sa'Vasku

Advanced drives do not change.

Lance pods are affected by advanced screens as if they were torpedoes or missiles: subtract 1 from the damage per level of advanced screen.

Leech pods are not affected by advanced screens. They continue to be non-penetrating against armour.

Interceptor pods roll 4 PDS dice as if they were CROSS DIMENSIONS scatterguns. (And may be used against heavy missiles.)

Stingers are equivalent to beam weapons, so now do penetrating damage.

Phalons

Shell armour does not change.

As beam weapons, pulsers inflict penetrating damage against armour.

Kra'Vak scatterguns and Sa'Vasku interceptor pods, like other scatterguns, roll 4 PDS dice against plasma bolts.

All screens, standard or advanced, affect plasma bolts. Subtract the screen level from the damage dice instead of negating rolls of 5 or 6. A roll of 2 therefore inflicts no damage against a level-2 screen, while a roll of 6 inflicts 5 points against level-1.

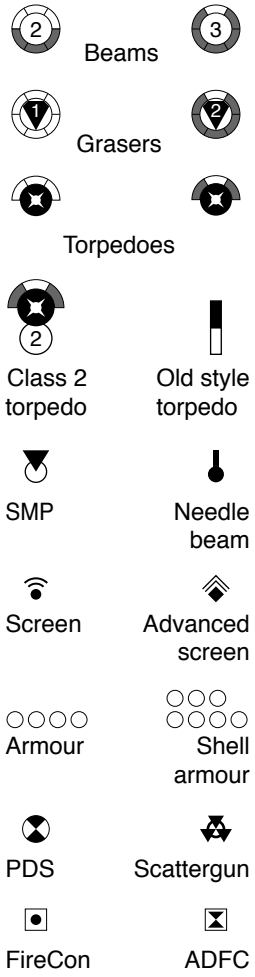
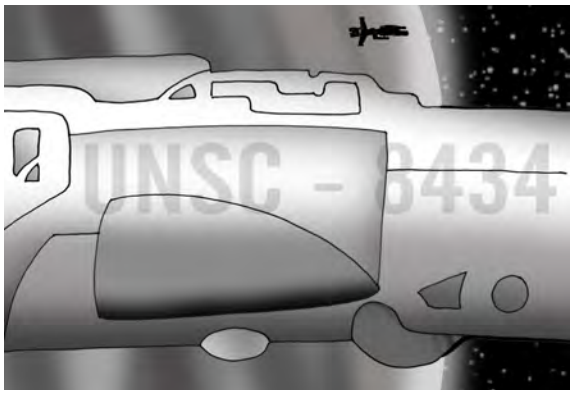


Figure 13: System symbols



6 Missiles

Missiles are long range homing weapons with nuclear, bomb-pumped laser, or simple kinetic warheads. Missiles are large enough to have very dangerous warheads, but this also limits the number that can be carried by a ship. The missiles are slower than beams or torpedoes, so fast target ships may be able to dodge the missiles entirely and others use short range point defence weapons to intercept them.

A *salvo missile* (SM) system fires salvos of anti-ship missiles. Normally there are six missiles in one salvo, either fired as a cluster, in quick succession from a smaller number of launchers, or as multiple warheads from a single missile; but can also represent a smaller number of more powerful warheads with accompanying decoys and jammers. Fleets with lighter or unreliable missiles are assumed to fire more in each salvo for equivalent effect.

Salvo missiles can be fired from a *rack*, a single salvo launcher, cluster, or pod that can be used only once; or from *launcher* tubes or cells supplied by magazines that can fire each turn until the supply of missile loads is exhausted.

While each salvo is considered equally dangerous, ships vary in the number of racks or launchers and the capacity of magazines.

Heavy missiles are long range homing weapons fired individually, with more powerful warheads and armour or countermeasures that make them harder to shoot down. Heavy missiles are always fired from one-shot launcher racks.

There are two grades of missile available: standard and extended range (ER). Both grades work in the same way, but the ER missiles have (as their name implies) a greater range than the standard, and are larger and more expensive.

Missiles in FULL THRUST are not like current day guided or homing missiles used by ground troops and aircraft, which by space combat standards are far too short ranged and cannot change course without atmosphere. The nearest equivalent today are the anti-ship cruise missiles that are fired to where the target is expected to be, fly for some time, and finally search for a target when they arrive in the right area.

6.1 Launching missiles

Missile launch occurs in the phase before fighter group movement after orders are written. The firing player announces the launch of a missile or salvo, and places a salvo counter at the intended point of aim. This may be anywhere up to a maximum range of 24 MU from the firing ship, or 36 MU for extended range missiles, but must be within the boundaries of the fire arcs through which the launcher system may bear. (And not obstructed by any asteroids, planets, or similar obstacles.) The marker is left in place while all ships are moved.

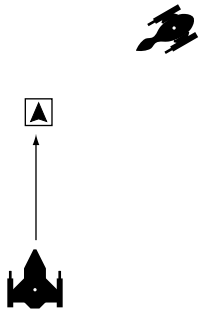


Figure 14: Missile launch

An operational FireCon is necessary to launch heavy missiles, salvo missile racks, or salvo missile launchers (section 5.5).

If after ship movement there is an enemy ship within 6 MU of the marker (in any direction) then the missile(s) will attack it. If there is more than one potential enemy target within 6 MU then the missile will go for the closest of them. Move the missile marker next to the target ship and apply point defences before resolving missile hits. Note that if there is no valid target within 6 MU at the end of movement, the missile launch was wasted and the counter removed from play.

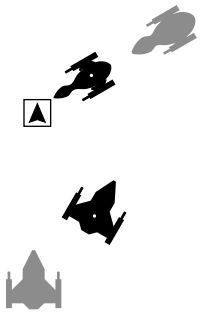


Figure 15: After movement

Optional If you choose to use vector movement instead of the standard cinematic movement rules, then we strongly suggest reducing the attack radius of missiles from 6 MU to 3 MU – this will prevent the missiles becoming too accurate against the more predictable manoeuvre envelope of a vector movement ship. If a particular scenario calls for the mixing of vector and cinematic movement ships, then allows missiles to attack if within 6 MU of a cinematic drive ship but only within 3 MU of a vector drive ship. If you want to justify this, assume that the cinematic drive movement ships have a higher drive signature for the missiles to home on than the drives of the vector movement ships.

6.2 Point defence

When resolving missile fire, the defending player must first decide what defences to allocate against each heavy missile or salvo marker. Once that has been done for all ships,

resolve defensive fire as follows:

Against salvo missiles, the defending player rolls per point defence weapon:

- Each PDS rolls a D6, 'killing' one missile on a roll of 4 or 5. Rolls of 6 kill two missiles and re-roll.
- Each beam-1 or fighter rolls a D6, killing one missile on a roll of 5 or 6, with a re-roll on 6.
- Each scattergun rolls four D6, results as for PDS.

The attacking player then rolls a D6 for each salvo missile marker. The result is the number of missiles in the salvo that are actually on target. Subtract the number of missiles killed from the D6 score that the attacker rolled. Any positive number is the number of missiles that actually get through the defences and hit the target.

If defensive fire killed more missiles than were in the salvo then the extras are 'overkill', they cannot be allocated to other salvos or heavy missiles. If there are no defences at all then at least one missile in a salvo will always get through.

Against heavy missiles:

- Each PDS rolls a D6 and kills the missile on a roll of 5 or 6.
- Each beam-1 or fighter rolls a D6 and kills the missile on a roll of 6.
- Each scattergun rolls four D6, results as for PDS.

Note that fighters get one roll each in screening groups, so a full strength group will roll 6 dice. For each salvo or heavy missile killed by a fighter roll an additional D6: on a roll of 6 the fighter is destroyed as well. (Trying to take out missiles is a tricky and dangerous job at high speeds and very close quarters.)

6.3 Damage

Each heavy missile inflicts 3D6 of damage on the target. (As usual, half rounded up can be taken on armour, the remainder on the hull.)

Each missile in a salvo that hits the target ship inflicts 1D6 of damage.

Standard screens have no effect on missiles. Advanced level-1 screens subtract 1 from each damage roll, advanced level-2 screens subtract 2.

If using the optional rear arc attack rule (section 4.8), missiles do not do penetrating damage.

Example: Two missile salvoes are fired at a single target ship. The ship has the following systems that can defend it against missile fire: one point defence battery (PDS) and two beam-1 batteries that can function in a defensive role. Before the defender knows exactly how many missiles will actually strike home, the ship's captain has to decide how to allocate defences.

The defender chooses to use the PDS alone against one incoming salvo, and the 2 beam-1 batteries to combine fire against the second salvo. The attacking player now rolls for each missile salvo. For the first the roll is 2, but the second is luckier and rolls 5.

The first salvo has only two missiles on target, and the defending player rolls the PDS die and gets a 6, thus shooting them both down. (There would be a re-roll for the six, but there is no point as both target missiles are already stopped.) For the second salvo with five missiles incoming, the defender gets to roll 2 dice for the 2 beam-1 batteries, and rolls a 4 and a 6. The 6 allows a re-roll, but this only gets a 2. So the defender has killed only one incoming missile from this salvo of five.

The end result is that four missiles of the second salvo get past all the defences, and deliver their warheads in a blaze of energy. A D6 is rolled for each of them, scoring 3, 1, 3, and 6; missile hits don't re-roll so this gives a grand total of 13 damage points to the target ship. Enough to cripple a smaller warship and cause serious harm to even a large one. If the ship has four boxes of armour, 4 points of damage will be taken on the armour and the remaining 9 on the hull boxes.

6.4 Mountings and magazines

Heavy missiles and salvo missile racks (SMR) have individual symbols on the ship SSD. Once fired, it is crossed off and cannot be used again. Each counts as one system for threshold point checks.

A salvo missile launcher (SML) may fire one salvo per turn provided ammunition is left in the magazine. The magazine symbol is a box linked by lines to the SML(s) it feeds. Each magazine has a mass rating, which determines the number of salvo loads carried: mass 2 for a standard salvo, mass 3 for ER. Salvo loads are indicated by small arrowhead symbols within the box which are crossed off as they are fired. Magazines and launchers are considered separate systems for threshold point checks.

Standard grade heavy missiles, SMRs, and salvo loads are white; extended range shaded in black. Launchers have a black arrowhead in the actual launcher symbol, but this has no bearing on the load carried in the magazine.

Once fired, racks and magazines are empty until replenished after the battle from a base or fleet auxiliary.

In general, SMRs tend to be fitted to smaller craft where the saving in mass is critical (and the ship may well not survive long enough to fire more than one or two salvoes anyway!), while SMLs and magazines are used more on larger classes which need sustained fire capacity. Heavy missiles can be carried by all classes.

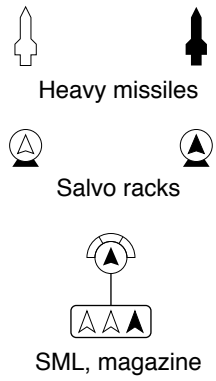


Figure 16: Standard and ER missiles

6.5 Magazine capacity

The mass allocated to magazine space during a ship's design stage may be broken down into separate magazines at the designer's discretion, but with the following important limitation: any one launcher system may only be fed from one magazine, though a single magazine may feed more than one launcher. Thus if a ship has 2 SMLs and 8 mass of magazine space, the designer may decide to fit just a single 8 space magazine feeding both launchers, or could give each launcher its own 4 space magazine instead, as shown in figure 17.

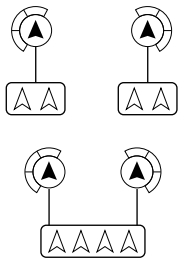


Figure 17: SMLs and magazines

The disadvantage of the single magazine is that all the missile loads could be lost with one bad threshold roll (as one magazine is rolled for as a single system, regardless of its capacity or the number of salvo loads in it); on the other hand, with two smaller magazines the player does not have the option to feed missiles to either launcher – if one launcher is lost while it still has missiles in its dedicated magazine, those missiles are useless, they cannot be fired by another undamaged launcher that was not originally fed from that magazine.

The intended type of load is another factor to consider when installing missile magazines. In the example above, the ship with a single mass 8 magazine could choose its load as 4 standard salvoes, or 1 standard and 2 ER salvoes. (A 2 standard and 1 ER load is also allowed, but wastes 1 space in the magazine.) If the same ship had two mass 4 magazines, however, carrying any ER salvoes would be much less efficient as the spare space in each magazine would be wasted.

The ship designs in the fleet books assume standard salvo loads in the magazines. If you wish to load a ship with ER salvoes then shade in the required number of salvo symbols and delete any excess – if a ship design shows 3 standard salvo symbols in a mass 6 magazine and you wish to use 2 ER salvoes instead, shade two symbols black and cross off the third one.

6.6 Optional: multi-stage missiles

An extra stage for a heavy missile, salvo missile rack, or salvo missile load increases the mass by 2 and doubles the points cost. Only standard missiles may be multistage, not ER; and a magazine may only carry either regular missiles or multi-stage missiles, not a mixture. The extra stage increases the range by 24 MU and the 'duration' by 1 turn.

On the turn fired, a two stage missile marker is placed between 16 and 24 MU from the launching ship and within the normal 180° arc for missile launch. The marker itself has a facing, which must be the nearest clock facing to the direction from the launching ship to the missile marker.

If no enemy ship is within 6 MU of a missile marker at the end of ship movement, it is not removed. Instead in the missile launch phase of the following turn the missile marker is placed at the intended point of aim, anywhere from 16 to 24 MU within the 60° front arc of the marker. Multi-stage missiles only have the full 180° firing arc on the launch turn, and must always be moved at least 16 MU each turn.

After ship movement, the missile or salvo then homes in on the nearest enemy target as usual, or is removed if none is within 6 MU.

While the missile is 'in flight' the marker may be fired on by fighters or ADFC.

7 Fighters

Fighters are small combat craft that are not capable of operating for any time or distance on their own; they are carried between stars by true starships, either specialised fighter carriers or some of the larger ship classes. Fighters usually have a pilot and possibly one or two other crew, but can be remotely controlled drones or fully autonomous robotic craft with AI pilots.

Fighters operate in *groups* of 1 to 6 craft, with each group moving and firing as a single unit.

As fighters are very small craft, it is assumed that they will carry only a limited amount of fuel, ammunition, and even life-support for their crew. They will not be capable of prolonged operation away from their carrier or base, but rather are launched for a specific mission or attack and will return quickly to the carrier following completion. The endurance limit is six *Combat Endurance Factors*, CEF, per standard fighter group.

7.1 Launch and recovery

Fighter groups may be *launched* from a carrier in any turn. A ship that is launching fighters cannot use the main drive to perform any velocity, course, or facing changes, so need only write *Launch* as the movement order for that turn.

Recovery ('landing') of fighters back on their carrier is similar to launching: the carrier must move at a constant course and velocity for that turn. The fighter group moves into contact with the carrier in the fighter movement phase.

Launching fighters move before all others in that game turn. The launching group may immediately form a screen for the carrier, attack other fighters or ships, or carry out any other normal action. Move distance on the launch turn is only half normal, representing time lost for successive launches and/or to form up.

All carriers are allowed to launch as many groups per turn as they have operational fighter bays. Fighter recovery is of necessity a slower process than launching, so any carrier may only recover fighter groups equal to half its number of operational bays in any one turn; or one group every other turn if it has only a single operational bay. Launching and recovery operations may both be performed by one ship in the same turn if desired, provided each hangar bay is only used by a single fighter group.

A ship that launches or recovers fighters cannot use an ADFC (section 5.11) in that turn.

7.2 Movement

Fighter group movement is performed after both players have written their ship movement orders, but before the ships are actually moved.

If using cinematic movement, a fighter group can move any distance up to the maximum allowed and in any direction, without needing to write orders or record course and velocity. A fighter group does have a facing, which need not be the same as the course or direction of movement. Standard fighter groups have a maximum move distance of 24 MU.

Players alternate in moving one fighter group each until all have been moved (if desired), with the player who won initiative for this turn moving second.

Once all ship movement has been made, players have the option of making a secondary move with any fighter groups they wish, of up to 12 MU. As with the basic move, this can be in any direction up to the maximum 12 MU, even if the group moved its full distance in the primary move phase. Any fighter group that makes this secondary move expends 1 CEF.

The secondary move may be used to bring a group into range of a target that would otherwise have evaded it, or in some cases to get them out of trouble – but it may not be taken if the group has already been engaged in a dogfight by another group.

Whoever moved first in the main fighter move phase must also move first in the secondary move phase.

Example: In figure 18 one of player A's standard fighter groups is moved 20 MU in the main fighter movement phase, being placed in a position that A hopes will allow it to intercept one of B's ships. Both A and B now move their ships in accordance with their orders. Player A sees that the fighter group is now out of position to attack its intended target (B having anticipated well and changed course), but by taking a secondary move with the group then it could either follow its original target or it could move to intercept the salvo that is attacking A's ship. A has a free choice as to which option to take (if any), but if A chooses to move the fighter group then 1 turns worth of combat endurance for the group must be marked off.

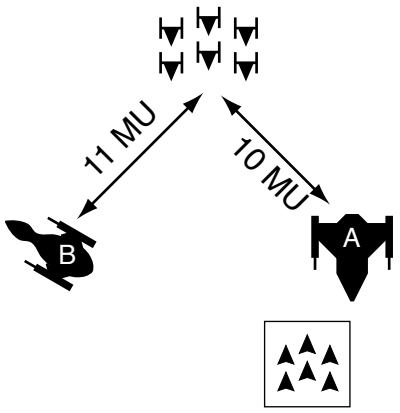


Figure 18: Fighter Secondary Move

7.3 Screens and pursuits

Screens

Fighter groups may be assigned as close escorts for larger ships, specifically to ward off enemy fighter attacks on that ship. When used in this role, the fighter group is said to be acting as a *fighter screen* for the ship it is escorting. When assigned as a fighter screen, the fighter group must remain adjacent to the ship it is escorting at all times – if it is moved further away then it has broken off from its escorting duties and no longer functions in a screening role. A fighter screen (which may be a single group or several) always moves at the same time as the ship it is screening, rather than being moved in the normal fighter movement phase. Screening fighters can exceed the normal fighter movement allowance if the ship they are screening is moving faster than the fighters could normally move.

Fighters may also screen other fighter groups, for example one or more interceptors (7.9) could screen a torpedo fighter group to protect them from enemy fighters. Fighter can not screen fighters which are themselves screening…

Whenever a ship or group that is being escorted by a fighter screen comes under attack from enemy fighters, the attacking group(s) must engage the screening fighters using the dogfighting rules instead of attacking the ship in that turn. Each group of screening fighters must be engaged by at least one attacking fighter group, but once this condition has been satisfied any further uncommitted attacking groups may fire on the escorted ship.

Example: A NAC transport ship is being escorted by a screen of 3 groups of fighters. 4 groups of ESU fighters move to attack the transport – three of them must 'pair off' against the three groups of screening fighters and engage them in dogfights, while the fourth is then free to attack the ship directly. The ESU player could prefer to instead allocate all four groups against the screening fighters (two onto one, and one each onto the other two) in an attempt to destroy as many as possible, leaving the transport without fighter cover for the rest of the game.

Pursuits

A fighter group that attacked an enemy ship or an enemy screening fighter group last turn can declare it is pursuing the ship. Like a screening group, the pursuing fighters move with the ship being pursued in the ship movement phase even if the distance is greater than the fighter group normal move.

7.4 Ship fire against fighters

In the ship fire phase, fighter groups that are not engaged (7.5) can be fired at with ship to ship weapons. As with ships, the fighter group must be in range and firing arc and each fighter group targeted requires a separate FireCon.

Ship to ship weapons roll 1D6 only against fighter groups, regardless of range band or normal damage. A roll of 6 kills one fighter, no re-roll. (Fighters are very difficult to target with ship weapons, but any hit will be certain to destroy the fighter.)

After a player has announced fire against a fighter group but before actually rolling the dice, the fighter group can choose to *evade* the attack by spending a CEF. An evade automatically negates the attack and any further ship weapon fire in that turn. Evading does not cancel any casualties already inflicted.

Example: A fighter group has moved within range for an attack on a battleship. The opposing player announces that a destroyer 9 MU away will fire two beam-2 weapons against the group. The fighter group chooses not to evade. Each beam-2 would normally roll 2D6 at this range, but against fighters it is always 1D6. The destroyer rolls 4 and 6, killing one fighter.

Later in the ship fire phase, the opposing player announces that the battleship will fire ten of its beam weapons against the fighter group. This time the fighter group chooses to spend 1 CEF and evade. The ship weapons automatically miss (and cannot be fired against another target), but the group has been forced to expend a CEF.

Evades must be declared quickly: the fighter group player can ask 'How many?' but if they reach for a calculator or otherwise start mumbling and counting, it is too late! If a player announces ship fire against an already evading fighter group and hence would automatically miss, the player must be told and can switch targets.

Point defence fire cannot be evaded.

7.5 Target selection

After fighter movement and secondary moves a fighter group may declare an attack against any ship, missile marker, or other fighter group within 6 MU and within its front 180° arc. All fighters in the group must engage the same target.

Fighters attacking other fighters are *dogfighting*, fighters declaring attacks against ships (or starbases, etc) are making an *attack run*. Any fighters attacking or being attacked are *engaged*.

Attacks are not resolved until after point defence fire (if any).

7.6 Point defence

Allocating point defence

Each point defence system (PDS) or scattergun on a ship may fire once per turn, either as an anti-fighter or anti-missile defence weapon. The defender allocates all point defence fire against missile and fighter attacks before resolving any.

Ships without ADFC systems may only target fighters (or missiles) attacking them directly. Ships with ADFC (section 5.11) may provide *area defence* in support of one other ship per ADFC carried, dividing their point defence among ships as desired by the defending player. In either case, the fighter group targeted must not be engaged by other fighters.

Ships with ADFC may also target unengaged fighter groups within 6 MU. Each group targeted requires one ADFC.

Class-1 beams may be allocated for point defence of the ship itself, provided that they did not fire earlier in the turn. Beam-1s may not be used for area defence.

Example: In figure 19, ship A is under attack by fighter group X which is 2 MU away. Fighter group Y could attack ship B but has chosen not to, and Z is too far away. Ship B is carrying PDS and an ADFC, while ship A has PDS only. Ship A can engage fighter group X with its own PDS. Ship B can also engage group X, as although the fighters are more than 6 MU away, they are currently attacking a ship which is within ship B's protective ADFC range of 6 MU; or group Y because it is within 6 MU. Fighter group Z is safe from point defence fire.

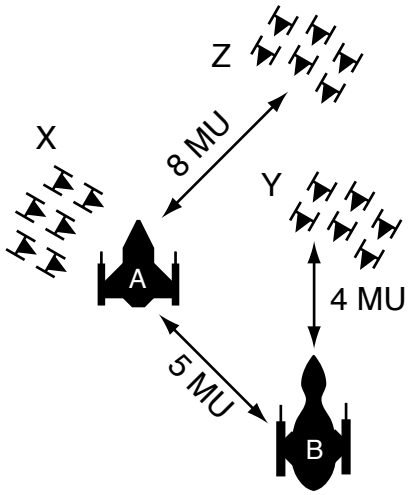


Figure 19: Point defence

Point defence fire

For each point defence system:

- A PDS rolls a D6 and kills one fighter on 4 or 5. A 6 kills two fighters and re-roll.
- A beam-1 rolls a D6 and kills one fighter on 5 or 6, with a re-roll on 6.
- A scattergun rolls four D6 with results as for PDS.

'Wasted' shots when point defence kills more fighters than are in the group may not be reallocated to other groups.

7.7 Fighter combat

Attack runs

For each group attacking a ship, roll 1D6 per remaining fighter in the group. Hits and damage are scored per die using the same results as beam-1 weapon fire (section 4.5): fighters are affected by screens, and re-roll for penetrating damage on 6.

If using the optional rear arc attack rule (section 4.8), fighters can attack ships from the rear arc, but like missiles gain no advantage from doing so as it is assumed that they must avoid being melted by the drive.

If a fighter group making an attack run is engaged by other fighters, the ship attackers have the choice of either breaking off the attack and engaging in a dogfight, or continuing the attack. In the latter case, the 'intercepting' fighter group fires as if in a dogfight, and the survivors carry out the attack against the ship.

Dogfights

All fire between fighter groups in a dogfight is considered simultaneous. Roll 1D6 per fighter and inflict casualties as for beam-1 fire against an unscreened target: 4 or 5 kills one fighter, 6 kills two fighters and re-roll.

If one player moves a group into base contact with an enemy group, and the opponent does not wish to engage in the dogfight, the group may move away provided it has not already moved that turn. if it does not have a higher speed (maximum move) the attacking group gets a free round of attack rolls before contact is broken.

Ships may not fire into a dogfight: the fast action and sensor interference risks too many 'friendly fire' casualties.

Example: Player A moves a group of 5 fighters into contact with an enemy group of 4 fighters which has already taken its movement for that turn. As player B's group cannot evade, it is forced to engage in a dogfight. Player A rolls 5 dice, scoring 2,2,6,4,1 and a re-roll of 3; therefore getting three kills. (One with the 4, two with the 6.) In retaliation, player B rolls 4 dice – combat in dogfights is simultaneous, so all four fighters get to engage even though three have been hit – and scores 3,1,5,5 for two kills. (One with each 5.) Both players now remove the lost fighters, leaving A with three and B with only one.

Multiple group dogfights

There will be cases, especially when fighters are screening larger ships, where multiple group dogfight situations (known to fighter pilots as 'furballs') may occur. In such combats, all groups engaged in the dogfight may fire only once per turn, but may choose to attack just one enemy group or to split their kills between two or more. If the player chooses to split fire, the dice are rolled as normal and the casualties then divided as equally as possible between the relevant groups.

Interception of missiles

A fighter group may attempt to intercept and engage any missile or salvo that is within 6 MU and front 180° arc of it at the end of either the fighter's main or secondary movement. Simply move the group up to the missile marker. See section 6.2 for scores required.

Attack or torpedo fighters cannot intercept missiles; neither can any fighter group that has exhausted its combat endurance.

7.8 Endurance

A group will use up 1 CEF each turn it engages in combat, whether attacking a ship, another fighter group, or missiles. A fighter group also uses 1 CEF every time it makes a secondary move or evade. Normal movement during the main fighter movement phase does not consume combat endurance factors.

When all combat endurance is exhausted, the group may still move normally (though it may make no secondary moves) but may not make any attacks. There is no time limit on a group returning to its carrier after exhausting its CEF. A group that is engaged in a dogfight by an enemy group after exhausting its CEF may return fire, but only scores one kill on rolls of 6.

We recommend recording the remaining combat endurance and the number of fighters left in each group with two small D6, in different colours, which may be placed either behind or on the stand of the fighter group they relate to. An alternative to this is to have a single fighter group roster sheet on a piece of paper, with each group having two rows of six boxes – one row represents the number of fighters left in the group, and the other the remaining CEF.

7.9 Specialised types

Fighters are assumed to be good average, basic types – moderately fast, with reasonable anti-ship and anti-fighter capabilities; an all-round 'multi-mission' type of craft. The rules that follow modify fighters into rather more specialised or improved types.

All fighter groups, regardless of type, have the same mass and hangar space requirements in the carrier or mothership, and operate under all the normal rules for launching, recovery, and turn sequence.

Fighter types must be specified before the battle begins in one-off games. In a campaign the ability to change fighter types will depend on your chosen replenishment and re-equipment rules.

Fast fighters

While normal fighters have a movement allowance of 24 MU per turn, fast fighters have more powerful drives giving them a movement of 36 MU per turn; they still have a limit of 12 MU for secondary moves.

Heavy fighters

Heavy fighters have the same offensive capabilities as normal fighters, but are better protected against attack by armoured hulls, heavier structural components, etc. When heavy fighters are attacked by PDS point defence fire or other fighters, rolls of 4 have no effect. Standard fighters and PDS will therefore inflict only 1 casualty on an original roll of 5, 2 casualties on a roll of 6 and a re-roll.

Heavy fighters have a maximum move of 18 MU per turn, with 12 MU secondary.

Interceptors

The interceptor is a specialised type of fighter with no effective anti-ship capability, but optimised for anti-fighter performance. Interceptors may only fire against other fighter groups or missiles, not ships or starbases. When they make such an attack they may add 1 to all die roll results other than a 6. Thus they kill one normal fighter on a roll of 3 or 4, two on rolls of 5, and two on rolls of 6 with a re-roll. Against heavy fighters they would kill one on a roll of 4, two on rolls of 5, and two on rolls of 6 and re-roll.

When themselves attacked, either by fighters or point defence, they take casualties normally.

Attack fighters

Attack fighters are really the opposite of interceptors: they have very little ability to engage other fighters, but carry increased weaponry loads for anti-ship missions. When in a dogfight with an enemy fighter group of any kind, attack fighters only hit and kill opposing fighters with rolls of 6, which destroy one fighter only and do not re-roll. When engaging other ships, however, attack fighters add 1 to all their die rolls other than 6, ie if firing on an unscreened target ship they would inflict one damage point with rolls of 3 or 4, and two damage points with 5 or 6.

Long range fighters

While normal fighters have six combat endurance factors, a long range group has nine CEFs due to additional fuel tanks, life support, ammunition, etc.

Torpedo fighters

These are a further specialisation of the attack fighter, carrying a heavy single shot anti-ship weapon on each fighter. Torpedo fighters can also represent Autonomous Kill Vehicles (AKVs) or similar tiny 'one-shot' craft.

When the group attacks an enemy ship, roll once per fighter to see how many hits are scored. Each fighter needs a roll of 4 or more to score a hit, and each hit inflicts damage equal to the die roll. A roll of 1-3 is a miss, but 4 = 4 DP, 5 = 5 DP, and 6 = 6 DP. No re-rolls are made on 6. Standard screens do not protect against torpedo fighters, but

advanced screens reduce the damage inflicted by 1 point per level of screen.

The group may only attack once in this manner, and for simplicity assume that all the fighters in the group will attack the same target at the same time – it is not permitted to fire just some of the group and save the others for a later attack. (Unless of course you wish to agree this between yourselves, and work out the necessary record keeping.) Once the group has expended its 'torpedoes' it may then only fight in the same limited anti-fighter mode as for attack fighters (needing rolls of 6 for one kill) and may not make any further attacks against enemy ships. The torpedo fighter group is thus very much a one-shot weapon, but a potentially extremely powerful one.

Torpedo fighters have a maximum move of 18 MU per turn, with 12 MU secondary.

7.10 Extra capabilities

FTL fighters

FTL capable fighters are those which can travel through hyperspace, either by having their own FTL drive or by travelling in close proximity to a larger FTL capable ship. FTL fighters still require a carrier with hangar space, as they do not have sufficient fuel or life support for long journeys. (Unless all the pilots are Jedi Knights.)

FTL fighters can be deployed at the start of the battle anywhere that a normal ship would be allowed or as a screen for another ship, without needing to launch. If the fleet is making an FTL entry, fighter groups deploying individually are subject to normal FTL scattering while screening groups stay with the ship being protected. FTL fighter groups can retreat off table at any time without needing to re-embark – but count as lost if no carrier with sufficient hangar space for the group also escapes.

FTL capability can be bought for all types of fighter.

Kinetic fighters

Some species or cultures may use fighters armed with kinetic projectile weaponry instead of the usual beam-like armament. When attacking ships kinetic fighters ignore standard screens but do not re-roll on a 6; in dogfights they have exactly the same behaviour as other fighters including re-rolls on 6 if appropriate.

Kinetic weapon capability can be bought for all types of fighter, but has no benefit for interceptors or torpedo fighters.

7.11 Optional rules

Re-arming

When a fighter group is recovered by its carrier, roll 1 D6. On a score of 1, the group may not be re-launched in this game (severe damage to returning fighters, crew fatigue, etc). On 2-5 the group will be patched up, refuelled, and rearmed after 1 full turn, so it may re-launch in the second turn after recovery. On a 6, the group makes a crash turnaround and may re-launch on the turn immediately following that of recovery.

If depleted groups are combined to make full strength ones, roll for each partial group and the worst case result applies to the entire new group.

Morale

A fighter group is a collection of individual pilots and their craft, and as such is much less predictable in its actions than a single ship with a captain and crew. If there are only two fighters left out of a group of six, it is by no means certain that they will press home an attack on a battleship that is spitting flak at them – they may well decide that it is a lot safer somewhere else!

Any fighter group that has lost one or more members must roll a D6 before making an attack. If the roll is less than or equal to the number of fighters remaining in the group, the attack is carried out; if greater than, they abort this attack and do not fire. Any group that fails an attack roll is not considered to have expended combat endurance for that turn, as they never went through with the attack.

Kra'Vak fighters (FLEET BOOK 2) have their own Ro'Kah morale rules.

Swing role fighters

Fighters which are 'swing role' can have a specialised type chosen at launch time during the battle from a set of permitted types. Once launched, the group stay as that type until recovered. A group of swing role fighters has the full points cost of the most expensive type, plus half the cost of each extra type.

Example: A fighter group can be launched as standard, interceptor, or attack depending on weapons load and mission plan. The group costs 24 points for the attack type and 18 ÷ 2 = 9 for each of the interceptor and standard types, for a total points cost of 42.

8 Threshold Points

8.1 Damage to systems

The first threshold damage inflicted on a main drive halves the thrust rating of any drive rated above 1. Drives with thrust rating 1, or any drive that has already suffered threshold damage, are reduced to zero.

Each screen generator on a ship is considered a separate system when checking for system damage at threshold points, and may be knocked out individually either by threshold damage or needle weapons. If a ship with screen level-2 has to make a threshold damage check and loses one of its screen systems, it drops to level-1 screen.

Ships carrying fighter groups have their hangar bays rolled for just as for any other system. When a fighter bay is knocked out any fighters still aboard that bay are lost, and the fighter bay can no longer recover fighters that are in flight. For example, if a fleet carrier has launched its full fighter complement and then loses two of its six fighter bays in a threshold point check, then if all six groups make it back two of the groups will not be able to land! (Though the individual fighters may take spaces in other bays available due to losses in other groups – basically the loss of a bay simply reduces the carrier's capacity by six individual fighters.)

Weapons carried in a magazine, such as salvo missiles and mines, roll just once for the magazine rather than each load. All missiles and mines in a magazine are permanently destroyed when knocked out and cannot be repaired.

Heavy missiles and salvo missile racks roll per launcher. If destroyed, this is permanent and cannot be repaired.

8.2 Core systems

Core systems are **optional** but recommended.

While weapons, fire control sensors, and screen emitters are all surface features and thus are very vulnerable to incoming fire, there are certain vital systems that are usually buried deep within the ships hull. These are the *core* systems and consist of the *Command Bridge* (which also includes computer systems, electronics, etc), the *Power Core*, and the *Life Support System*.

These three systems are grouped together on the ship system status display, with a box drawn around them. Whenever the ship reaches a threshold point, the systems within the core box are each rolled for but subtract 1 from the die roll – thus at the first threshold point, where systems are lost on rolls of 6 only, the core systems do not need to be rolled for as the minimum score will be 7. At the second threshold point, where normal systems go down on rolls of 5 or 6, the core systems are only hit on rolls of 6, and so on for subsequent threshold points.

The core systems do not need to have mass allocated to them during ship design: they are assumed to be part of the essential structure of all ships.

Figure 20: Bridge, life support, and power core

If using needle weapons, the core systems may not be targeted by these weapons. Needles may only fire at surface features on the ship such as weapons, sensors, or drives.

f you do not wish to use the core system rules, simply ignore the systems within the core box on the ship SSDs.

Command bridge

If the command bridge takes a hit, then make a further D6 roll immediately. If the roll is 1 to 5, then the ship is 'out of control' for that number of turns including the remainder of the current one, until command can be restored through backup links and secondary command systems. If the roll is a 6, then the ship is permanently out of control for the duration of the game.

While a ship is out of control it will continue on its present course and velocity, and may not fire weapons, launch fighters, or take any other offensive action. Passive defences (screens, armour) are still operational, though active defences (PDS) are not. Once control is regained after the number of turns indicated by the die roll or a successful repair roll, all undamaged systems come back on line.

Damage control parties may be used on any turn to try and restore control, using the rules below (section 8.3).

Life support hit

If the life support systems take a hit, then a further D6 roll is made immediately. The number rolled indicates that the life support will fail after that number of turns. Damage control parties may be allocated to try and repair the life support system as for any other system. If life support fails before being repaired, then the crew must immediately abandon ship or be lost. A ship without life support becomes a drifting hulk, though it may of course be recovered and repaired after the battle if it survives.

Power core hit

If the power core takes a hit, it is damaged and may 'go critical' and explode. It continues to supply power for the ship, but the safety systems that control it are damaged or destroyed.

At the end of each turn the player must roll a D6: on a 5 or 6, the core explodes and destroys the ship. Damage control parties may be used as normal to try and stabilise the power core – such attempts are made before the roll for explosion for that turn, and success will bring the core back under control and negate any further effects. (Unless the core is then damaged again, when the process will repeat.)

Each turn, before rolling the die, the player may make a choice: 'dump the core' or abandon ship.

Dumping the core avoids the risk of explosion, but leaves the ship without power for anything but emergency life support. The ship is intact, but unable to do anything further in this battle except continue to drift on its present vector.

If the player chooses to abandon ship, the ship continues to drift while still rolling each turn to see if the core explodes – in this case, however, the needed number for an explosion drops by 1 each turn as the core is running out of control with no-one to damp it down, thus it will explode eventually and the ship will be lost. A ship that dumps core will be of no further use for that battle, but may be salvaged afterwards and its power restored.

8.3 Damage control parties

The number of damage control parties (DCP) a ship has is proportional to its crew size, which is in turn a function of ship mass. This assumes that a certain percentage of the crew is allocated to form damage control teams during combat. Military ships have one crew factor (CF) for every 20 mass or part thereof, and one DCP per crew factor. Thus a mass 1-20 ship has one CF and hence 1 DCP, a mass 21-40 ship 2 CFs and 2 DCPs, a mass 81-100 ship 5 CFs and 5 DCPs, and so on.

For merchant and civilian vessels, which usually have much smaller crews than warships, there will be one CF per 50 mass (or part thereof) of ship size. How many crewmen a single CF represents is entirely up to the kind of background you are using, but in the GZG setting assume that one CF represents about 20 personnel.

A single DCP might therefore be four or five crew, and usually includes medical personnel to assist crew casualties as well as engineers to patch up equipment.

For ships with multiple DCPs, more than one may be allocated to a single repair job at one time. A system can be brought back online by rolling a D6 result less than or equal to the number of DCPs assigned. The maximum number of DCPs on a single job is three, so the highest chance of repairing a system is 50% (1-3 on a D6) if three teams are allocated to it. Note that all teams put on one system in a single turn make just the one roll.

Example: A mass 90 ship, with 5 CF and thus 5 DCPs available, is trying to repair systems lost at a threshold point. The player decides to combine 3 DCPs (the maximum allowed on one job) to try and get a FireCon back online, and use the other two to attempt to fix a damaged weapon system. The FireCon will be fixed if the player can roll 1-3, and the weapon on 1 or 2.

8.4 Crew casualties

For simplicity, assume that crew casualties are proportional to the amount of hull damage suffered by the ship. As damage is taken and crew casualties are suffered, CFs are lost, and the available DCPs are reduced accordingly. To record this on the ship SSD, dots or stars are placed in certain boxes on the damage track to denote the points at which crew factors are lost; a ship's current CF (and thus its current number of DCPs) is the number of dots still remaining in non-destroyed boxes on the damage track.

All the designs given in the Fleet Books already have the CF marked in their damage tracks, but if you are designing a new ship type from scratch then you will need to distribute the CFs correctly through the damage track. To do this, divide the number of hull boxes the ship has by the number of crew factors. Round the result up if it is not a whole number, then count along the damage track until you reach the number and place the first dot there. Count the same number again and place the second dot, and so on. When you reach the end of the damage track, put the last dot in the last box – assume that the last of the crew will be killed when the ship is finally destroyed, if they haven't abandoned ship by then.

Example: The mass 90 ship above, with 5 CFs, has an average hull integrity and thus has 27 hull boxes (30% of 90), arranged as 7/7/7/6. Dividing 27 by 5 gives us 5.4, which is rounded up to 6. The first CF dot will be placed in the sixth box of the damage track, the second in the twelfth (ie the fifth box of the second row), the third dot in the 18th box, the fourth in the 24th box, the fifth and final dot is placed in the last box on the damage track (the 27th). Each time the ship takes six points of cumulative damage, it will lose another CF and thus another DCP.

8.5 Cargo and passengers

The holds and passenger space are arranged on the ship SSD as a row of boxes, containing an H or P identifier as appropriate and a number that represents the actual capacity of the space. The larger spaces are the first to be crossed off as damage is taken.

One of the holds or passenger areas is automatically lost each time the ship's cumulative damage reaches a threshold point. When a hold or passenger space box is crossed off, any cargo stored in it is assumed lost and any non-evacuated passengers in that area are killed.

Note that specialist areas on other ships may be represented in the same way as cargo and passenger space using exactly the same rules – for survey ships devoted to science, staff and lab facilities can be represented by boxes marked S, and naval troop carriers will have T boxes to represent their troop accommodation.

9 FTL

Faster than light drives

The forces generated by FTL drive units are very powerful, and result in spatial distortions that can be highly dangerous in close proximity to any other mass, including other ships. Most transitions to and from FTL are therefore made well out in open space, far from other shipping or planetary bodies. A fleet entering a system by FTL will generally perform normal space re-entry on the fringes of the system, with the ships of the fleet widely dispersed for safety, and then assemble into formation before entering the inner system on normal drive.

Occasionally, however, it may be either necessary or tactically expedient to run the risk of an FTL transition while actually engaged with the enemy. Such a dangerous manoeuvre might be a frantic attempt by a threatened ship to escape from the action, or a surprise attack by dropping out of FTL directly into combat.

Hyper limit

In many science fiction settings decent sized planets or the local sun have a 'hyper limit' distance within which FTL travel is not possible. As most of the interesting bits of any solar system are on or near such planets, or relatively close to the sun, many battles will take place within the local hyper limit. In such a setting, FTL entry or exit is only permitted by player agreement or scenario design.

9.1 Advanced FTL drives

Certain ships may be able to enter or leave space very precisely without risk of collisions or scattering. These ships have *advanced FTL drives*.

Since this isn't useful in many friendly or competition games, such ships only have to pay the points cost for standard drives. The player may choose to pay extra points for advanced FTL capabilities for a one-off battle or tournament, and should always pay the extra points in a campaign.

9.2 FTL exit

If a ship attempts to engage its FTL drive while on the table, the owning player must note this in movement orders for that turn. The ship may not apply any thrust in that move, nor may it use any offensive weaponry or ADFC. (Point defence and screens may continue to be used.) When the ship is actually moved, the player must announce that the FTL drive is being 'warmed up' – the energy emissions from the ship will be immediately obvious to enemy sensors.

On the following turn, the ship moves half its current velocity on its present course, then disappears from the playing area, having gone into FTL space. Note that ships exiting by FTL are moved after all other ships.

If any other ship-sized or larger object, but not fighter group or missile salvo, is within 6 MU of the actual point of FTL exit (the point that the ship disappears from the table) then problems may occur.

The ship attempting to enter FTL rolls a D6:

- On a roll of 1, the FTL drive fails to engage. The ship remains in normal space at its present course and velocity (and completes the current movement).
- On a roll of 2 to 4, the ship immediately suffers 1D6 of damage. Unless the ship is actually destroyed by this it completes its FTL transition safely. (Any threshold point checks would be made 'off table'.)
- On a roll of 5 or 6, the ship attempting the FTL jump is completely destroyed. All other ships or starbases within 6 MU immediately suffer 2D6 damage, and any fighter group or missile marker within 6 MU is destroyed.

Non-FTL ships being carried by a tug or tender (9.4) or battle riders carried by a mothership (9.5) also suffer 1D6 damage or are destroyed depending on the FTL entry roll.

Once a ship has left the table under FTL drive, it may not return to play at any time during that battle.

9.3 FTL entry

Any ships that are to enter the game by dropping out of FTL onto the playing area must be noted as such at the start of the game, giving the number of the game turn in which they will enter, plus a specified point of entry on the table; the latter is usually most easily defined as a simple pair of coordinates measured from one corner of the table. The player must also note, at the same time, the starting course and velocity of the ship after its emergence from FTL space.

When the specified game turn arrives, the player must announce at the start of the turn (after writing of movement orders) that the ship is making an FTL entry, and place a counter or other marker at the intended entry point.

In the movement phase, for any ship without an advanced FTL drive (or without paying points for advanced FTL capability), roll a D12 to give a direction on the course gauge and a D6 for distance. The marker is then moved in the direction rolled to a distance in MU equal to the D6 roll. The resulting final location of the marker is the point at which the actual ship is placed on the table.

The FTL entry is the ship's movement for that turn, with velocity being applied from the start of the next.

Example: The two ships in figure 21 attempt FTL entry side by side. Each rolls for direction and distance of error in their entry points. Ship A rolls 6 for direction and 4 for distance, and ship B rolls 10 for direction and 5 for distance.

Ships carried by a tug or tender (9.4), battle riders carried by a mothership (9.5), or FTL-capable fighters screening a

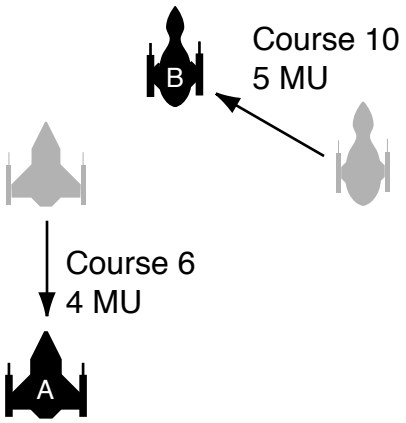


Figure 21: FTL Entry

ship (section 7.10) move the same distance and direction as their ship.

Optional rule: To add extra confusion and danger, if the distance D6 roll gives a 6, then roll a second D6 and multiply the result by the original roll of 6. This gives a potentially massive error (up to 36 MU) and represents the dangerous inaccuracy of FTL exit – if this means a ship appears off table then that ship is deemed unable to enter the table during the battle.

As with ships leaving the table via FTL, those entering battle also risk damage if they appear too close to another object. Again, the danger radius is 6 MU around the actual point of appearance; if any ship or other body (not fighters or missiles) is within this distance when the ship enters normal space, roll a D6 for the ship:

- On a roll of 1 to 5, the ship being rolled for takes damage equal to the dice score.
- On a roll of 6, roll a second D6 and multiply the result by the original 6, giving from 6 to 36 points of damage. Any other ship within 6 MU takes 2D6 damage, and any fighter group or missile marker is destroyed.

Damage from FTL entry or exit cannot be absorbed by screens or armour. If sufficient damage is inflicted to reach a threshold point (and the ship remains on the playing area), roll threshold point checks as usual.

9.4 FTL tugs and tenders

There are times when ships are unable to travel in FTL drive under their own power, but still must be moved between star systems. Obvious examples are system defence ships being transferred between duty stations, and starships that have suffered drive damage and loss of FTL capability which can only be repaired at a major naval facility.

For jobs such as these, most forces use FTL *tugs* or *tenders*. A tug is normally a ship designed to recover other large vessels, while a tender is more commonly a transport for several smaller ships such as light system defence boats.

The main use for tugs and tenders will be in campaign games, for moving system defence ships around the map and for recovering crippled starships for repair. It is unlikely that a tug or tender would ever be risked in combat, but of course there is always the possibility of a scenario concerning the attempted recovery of a damaged ship in a hostile star system, or a surprise attack on a recovery mission.

Any ship can be made a tender by having internal bay space allocated to carry other ships (whether the carried craft are FTL-capable or not), at the same rate as for carrying fighters and other small craft: every 1.5 mass used for hangar bay space provides capacity for 1 mass of carried ship(s). Note that this allows for support and launching facilities, and is thus different from plain cargo space. A ship with 30 mass devoted to bay space could carry a mass 20 ship, or two mass 10 ships, etc. The points cost of such space is the same as for other hangar facilities, 3 × the total mass used.

Tugs, which are designed to carry other ships by extending their jumpfield around them, require massively overpowered FTL drives. They need a drive equal to 10% of their mass just to provide their own jump capability, plus for every 1 additional FTL drive mass they can tow an additional 5 *transfer mass* of other ships. Thus to tow a ship of mass 108, the tug would need spare jump drive capacity of mass 22. If the tug itself was a mass 60 ship, it would need its own mass 6 FTL drive plus the additional 22 – so it would have to devote a total of 28 mass to its jump drive package.

FTL tugs use a modified drive symbol that also displays the transfer mass capacity.

Figure 22: Tug FTL drive

Tugs with standard FTL drives can haul any number of ships, provided that the total mass does not exceed the transfer mass capacity of the drive. Tugs with advanced FTL drives can also combine to haul ships larger than any individual ship capacity.

Example: A crippled battleship with mass 120 can be hauled off table by one tug with a standard FTL transfer mass of 120 or more, or by two tugs with advanced FTL drives of transfer mass 60 each.

9.5 Battle riders and motherships

Some warships are designed as *battle riders* without an FTL drive of their own, transported into battle like giant fighters by *motherships*.

The battle riders are designed in exactly the same way as other warships, except that they do not pay mass or points cost for an FTL drive. The mothership is treated as an FTL tug or tender, paying extra mass and points for internal bays or an oversized FTL drive.

A fleet with battle riders must deploy the motherships as well. If the mothership makes an FTL entry, the battleriders cannot detach and move independently until the next turn. They start with the velocity and course of the mothership.

Until they detach, only the mothership can be fired at and battleriders are protected by any mothership screens (but not armour). Damage received can be applied to either the mothership or battleriders at the choice of the defending player. In one-off battles, battleriders are considered casualties at the end of the battle if their motherships have been destroyed.

The maximum mass for any battle rider is 60, following the science fiction convention that battle riders are smaller than the FTL-capable motherships.

System defence ships

Although most ships in the game are considered capable of FTL travel between star systems, there are many possible classes of non-FTL capable vessels which operate entirely within a single star system. Typical examples are in-system freighters, system defence ships, and monitors (large, low thrust weapon platforms designed for close orbital defence).

Non-FTL ships – other than battleriders with a mothership – cannot be part of fleets for one-off battles unless specifically permitted by player agreement or scenario design.

9.6 Jump gates and portals

Jump gates and portals are an alternative to standard FTL drives. Instead of a ship moving itself with an internal FTL drive, a stationary external object moves the ship to where it is going.

A *jump gate* is any natural 'wormhole' or artificial construct that provides entry or exit between hyperspace and normal space at a given point. A ship transfers from normal space to hyperspace through the jump gate, travels for some time through hyperspace to another jump gate, and there transfers back to normal space. The two transfers are not linked: once in hyperspace a ship can change destination, or the ship can use its own FTL drive if it has one instead of a jump gate at either end.

A *portal*, natural or artificial, creates a fixed connection between two points in normal space, either as a shortcut through hyperspace or some other dimension, by matter to energy to matter conversion and transmission, psionic powers, etc. What distinguishes a portal from a jump gate is that the transfer is instantaneous or nearly so and cannot be changed in flight. Natural portals usually connect two fixed points in space, while artificial portals usually can be programmed for a specific destination.

Jump gates are only found in space, near planets or space stations, as the equivalents of terrestrial railway stations or airports. Warships need to be able to go anywhere so must have FTL drives, but civilian cargo or passengers often just travel between fixed locations. With jump gates, these ships can avoid the expense and overhead of their own FTL drive. Even warships may choose to use jump gates when available to reduce wear and tear on their own FTL drives and to ensure a more accurate arrival point.

Portals can exist anywhere, although some technologies may require portals to be in space to avoid problems with atmospheric displacement. A big portal on an enemy world is a great way to invade without all the bother of troop transports, so there are good non-technical reasons to keep the larger models in space. Whether due to technological reasons or simple caution, small portals are far more common in science fiction than large ones.

Ships that enter or exit normal space through a jump gate or portal never suffer from direction or distance errors, unlike normal FTL drives.

Where the game rules are identical for both types the term *gate* will be used to mean 'jump gates and portals'.

In a setting where **all** FTL travel is through jump gates or portals, artificial or natural, the FTL 'drive' for starships should be considered as representing the mass required for the sensors, computers, navigation records, special construction, mutated psionic pilots, or whatever else is needed to locate and use gates and survive the journey.

Representation

In game terms a gate is a stationary object represented by an appropriate model or counter. (This is not to say that they can never be moved, just that it won't happen within the time frame of a single battle.)

The capacity of natural gates is usually very high to unlimited, and the gate itself cannot be destroyed by normal weapons fire, so no record keeping is necessary.

Artificial gates have a *transfer mass*, the maximum capacity or mass that it is capable of handling in one turn. A gate must also have a certain number of hull boxes to represent essential control systems and structural elements. Armour, screens, and weaponry are optional, but even in settings where attacking gates is 'not cricket' it is sensible to have at least some protection against accidental damage.

An artificial jump gate must have an FTL drive, which has 10 transfer mass points for every 1 point of drive mass, and does not need to include the mass of the jump gate itself. A jump gate should also have hull boxes equal to at least 10% of the transfer mass.

An artificial portal should have the FTL drive with mass equal to the transfer mass of the portal, representing the (usual) higher cost and more advanced technology.

A gate takes damage in the same way as other ships. For each 10% of hull boxes marked off the current transfer

mass is reduced in proportion: a jump gate that begins with a transfer mass of 60 and 6 hull boxes will be reduced to 50 at 5 hull boxes, 40 at 4, and so on as it takes damage. Whenever a complete row of hull boxes is lost the gate must make threshold checks as usual for the FTL itself and other systems.

Operation

Artificial gates must be activated before used. The player writes an activate order at the beginning of the turn and announces the activation when ships are moved. The gate may be used for transfers from the following turn until deactivated again.

If the gate is under control of the player, usually the case when the gate is part of the infrastructure for a home system being defended, activation is automatic. If the gate is not under control and an attacker wishes to activate it to transfer forces into the system the defender rolls a D6 in the movement phase:

- On a roll of 1,2, or 3 the activation is delayed that many turns.
- On a 4, 5, or 6 the activation succeeds straight away.

  (This assumes, as is usually the case, that the gate is part of a general purpose transport network open to all so the attackers will eventually be able to override the control system.)

Some gates can be used from any angle, but more commonly they have one entry and exit facing. If this is, for example, 9 then ships wishing to use the gate to exit the play area must write an *Gate exit* order and be on course 9 within 3 MU and within the 60° arc of the entry facing. All ships entering the gate are placed on the gate marker as their movement for the turn.

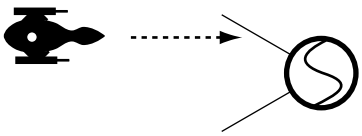


Figure 23: FTL gate approach

At the end of the turn, the transfer takes place. If the transfer mass of the gate exceeds that of the combined ships entering, they all transfer successfully. If the transfer mass was reduced due to damage or the gate FTL failed a threshold check, roll a die for each ship. On a 1 the ship transferred successfully, on a 2 it manages to back out in time and remains at the location of the gate with a velocity of zero, on a 3 or higher it is destroyed.

To enter through a gate, a ship likewise writes an *Gate entry* movement order with a velocity up to the maximum rating of its main drive. In the movement phase the entering ship is placed on the gate with an initial course that is 180° opposite (3 in the example above) and then moves the distance specified by the velocity order.

If for some reason both ends of the portal are on the playing area, a ship exiting through one and entering again through the other does so with the same velocity that it entered.

Battles in hyperspace

FULL THRUST, like a lot of science fiction, assumes a clear distinction between faster than light travel, which exists because otherwise it would take years for ships to actually get anywhere; and 'normal' space where most of the action, including combat, takes place. Modifying the rules given here to match such a setting is not difficult.

If you do decide to allow battles at FTL speeds or in hyperspace, the challenge of designing suitable rules – and answering questions such as 'what happens when a ship travelling faster than light fires a laser beam?' – is entirely yours!

10 Optional Rules

10.1 Sensors and ECM

Sensors and ECM allow a basic form of 'limited intelligence' to be brought into the game, to make the initial fleet dispositions for a battle more interesting and tactically challenging.

When the opposing forces enter the playing area, the actual ship models are not placed on the table. Instead, each ship is represented by a *Bogey* marker (either a simple counter or something like a 'black globe' made from a ping-pong ball or bead). These bogeys represent long range sensor contacts indicating the presence of a ship, but not revealing its exact type. All that can be deduced about the ship is its general classification (escort, cruiser, capital, or merchant) from its detectable drive emissions, and the course and velocity.

Each bogey marker should be identified with a code letter or number, which the owning player must secretly note as representing one actual ship. The bogeys should also be marked in some way to show the classification of ship they are representing. The easiest way to do this is with small adhesive coloured stickers on the globe bases, using different colours for escorts, cruisers, etc.

During the opening moves of the game, players write orders and move their bogey markers just as if they were moving the actual ships. (They must of course remain within the manoeuvring ability of the ship that each bogey represents.)

Bogeys may be 'revealed' (positively identified and replaced by the actual ship model) in one of two ways: either by *passive* or *active* sensor scans.

Passive sensors are carried by all vessels, civil and military. When any ship comes within 36 MU of an opposing bogey, its passive sensor array can identify the contact firmly: replace the bogey with the actual ship. (If both ships are represented by bogey markers, then they are both revealed simultaneously.)

All military vessels also carry *basic* active sensor arrays as part of their Fire Control Systems. These are longer-ranged detection systems than the passive sensors, but have the side effect that when they are operated, the emissions from them will reveal the identity of the ship making the sensor scan, as well as the ship being scanned.

The maximum range for active sensor scans is 54 MU. If a player wishes to use active sensors on a ship, note this in the orders for that turn. If the ship is still represented by a bogey at that time, reveal it and announce that it is making an active scan. A ship may scan one opposing bogey per operational FireCon each turn. The player chooses which of the enemy bogeys to scan (of those within 54 MU range) and these must then be revealed.

10.2 Advanced sensors

If not playing an *open book* game, these optional rules for more advanced sensors can be used for disclosing information about ship capabilities and status to opponents.

Advanced sensor suites are classified as *enhanced* or *superior* grade. Enhanced sensors require 2 mass, superior 4. The points cost is mass × 4, so 8 for enhanced and 16 for superior.

Basic sensors immediately 'illuminate' the ship using them and the scanned ship, so models for both are placed on the table.

If enhanced or superior active sensors are used, the scanning player also rolls 1 D6. If the ship is using enhanced active sensors use the die score as rolled; for superior sensors add 2 to the score. The final adjusted score gives a result from the table below:

- 1-2: No information disclosed
- 3: Mass only of ship disclosed
- 4: Data on mass, drive, and screen systems (original values)
- 5: Data on all onboard systems (original values)
- 6+: As for 5, plus current damage status and systems functional, ie all data about vessel

The owner of the scanned vessel must disclose the required information verbally to the scanning player. The information should only be stated once per successful scanning attempt – it is up to the player to remember and/or note down information about the opposing ship.

Obviously a degree of trust is necessary here that true information is being given – if advanced sensors are being used in a competitive game we suggest the umpire should check and relay the information rather than the player.

10.3 Dummy bogeys and weasel boats

These are optional rules for adding extra confusion and uncertainty to play. With the agreement of both players, each side may deploy a number of 'dummy' bogey markers alongside the real ones, representing drones equipped to output the signature of an actual ship and thereby confuse the enemy as to the actual strength and disposition of the fleet.

Each dummy bogey costs 20 points from the owner's fleet budget, and emits the drive signature of an escort class ship. It can be moved on the table with the manoeuvring ability of any main drive strength the owner chooses. The dummy is simply removed from play as soon as it is scanned, either with active or passive sensors.

The maximum number of dummies that may be employed in any battle is equal to the number of real ships in the player's forces.

'Weasel' boats are an alternative to the drone decoys. These are small manned ships that are equipped with systems designed to emit the signature of a much larger vessel.

A weasel decoy system requires 2 mass to emit the signature of an escort or cruiser class, 4 mass to emit the signature of a capital ship. The points cost is mass × 4.

While the weasel boat is represented by a bogey marker, that bogey is labelled as if it were the classification that the decoy system is emitting. Once it is scanned, the true nature of the ship is revealed. (The system can only confuse the initial long-range information, not the close in sensors.)

The weasel boat can of course manoeuvre as a normal courier, scout, or whatever class it really is, but remember to restrict its moves to those possible for what it is acting as – your opponent may become just a little suspicious if a 'battleship' suddenly makes a four point turn!

10.4 Electronic counter measures

These additional optional rules allow players to use ECM (Electronic Counter Measures) to jam enemy sensors.

Ships may be fitted with individual ECM packages (to protect that ship only) at a mass requirement of 4 and a points cost of 16. Alternatively, a ship may be fitted with an area-effect ECM package that can also protect other nearby ships against sensor scans, at a mass of 6 and points cost of 24. It should be noted that, in general, area effect ECM is only fitted to dedicated electronic warfare ships that would then accompany a flotilla of non-ECM equipped vessels.

Individual ECM systems can only jam sensors aimed at the actual ship carrying the system, while area effect ECM systems can jam sensor scans against any friendly vessel that is within 12 MU of the ECM ship. While an individual or area effect ECM system is in active use, the carrying ship (or any ship covered by the area of jamming effect) also suffers the jamming effects if it tries to use its own active sensors to scan an enemy. (The jamming produces a blanket effect that inhibits all active sensor use, friendly and enemy.) For this reason, it is necessary to note in a ship's orders for a given turn that the ECM is active for that turn – otherwise it is assumed to be switched off.

When an active ECM system, individual or area, is protecting a ship, the player owning that ship may make a D6 roll whenever an enemy tries to scan the ship with active sensors. This die roll is then subtracted from the roll the scanning player makes for sensor results, and the final figure applied to the sensor table above. Thus jamming is not always effective – if a player is using superior sensors (+2) and rolls a 6 giving a total of 8, while the opposing player only rolls a 1 for ECM, the final result will be 7; still enough to reveal everything about the scanned ship.

If a player is trying to make a sensor scan while being effectively jammed by friendly ECM, simply roll twice, subtracting the second roll from the (modified) first roll.

10.5 Mines

The 'mines' used in FULL THRUST are actually more like dormant missiles, small drones equipped with detonation beam warheads. When a hostile ship (ie one not answering the correct IFF codes) comes within a certain distance of the mine the warhead charge will detonate, directing a focused pulse of energy into the target ship in the microseconds before the mine itself is consumed by the blast. If the resulting beam hits that target, it does similar damage to a close range hit from a beam weapon.

The detection range of a mine is 3 MU. Any enemy vessel that enters this radius from the mine marker, at any point during its movement, not just at the end of its move, will be detected and fired on by the mine. Roll 4D6 and apply damage as for normal beam fire, reducing accordingly if the target is screened. After a mine has detonated, remove its marker from the table.

Minelaying

Ships equipped with minelaying systems may deposit mine markers on the table during their movement phase. The player must note in the order for that ship that it will deploy mines in that turn by writing *Mine* in the order box.

Individual mines are carried as loads within a magazine. Each minelayer system fitted may deploy one mine per turn, so a ship with two mine systems may drop two markers during its movement, either both at the same spot or at different points. The mines may be placed anywhere along the ship's course during that movement. Ships dropping mines are moved first after writing orders, so there can be no question of a player positioning mines in response to the enemy's movement in that turn.

Each minelayer system carries a number of mines – as each one is deployed, cross out one load on the minelayer magazine symbol.

A mine marker does not become active until the game turn after the one in which it is deployed. Once placed, the marker will remain on the table (completely stationary) until it detonates, or is cleared by a minesweeping system.

Minesweeping

Just as certain ships may be equipped to lay mines, so others may be provided with systems to clear enemy mines safely.

To attempt to dispose of a mine marker, the minesweeping ship must have its sweeper system activated by noting this in its orders for that turn. It must then pass within 3 MU of the mine during the course of its movement, and at that point 1D6 is rolled. On a score of 1, the mine immediately attacks the minesweeper, detonating and causing damage as normal. On a roll of 2, the mine does not attack, but is also not disabled; it remain in position and can attack other ships as normal. On rolls of 3 to 6, the

minesweeper system succeeds in disabling the mine safely: the mine marker is removed from play.

A minesweeper can attempt to dispose of all the mines it passes within range of in one turn.

When a ship is using a minesweeping system in active mode, it may not use any offensive weapon systems in that same turn; it may use defensive weaponry and any screens as normal.

10.6 Ortillery

This is orbital artillery or a planetary bombardment system used for ground support fire from orbiting starships. It has no function in space combat, and cannot be used as an anti-ship weapon. (Unless a ship has landed in the target area...) Effects should be determined by players according to the ground combat system rules in use.

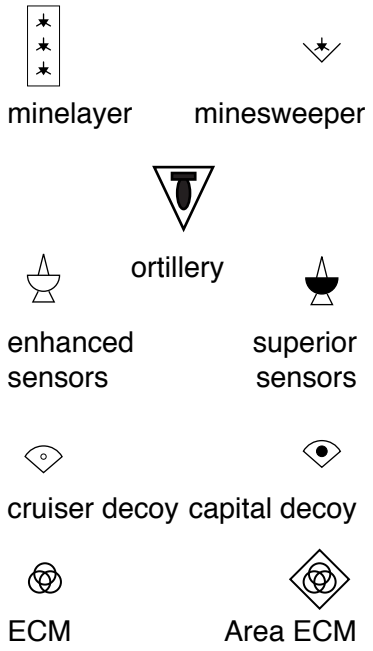


Figure 24: Optional system symbols

10.7 Boarding actions

A boarding party is normally composed of part of the Marine contingent from the attacking ship with specialised equipment.

To launch a boarding action the attacking ship must first be brought close to the target vessel, so that it is within 3 MU of it at the end of movement. The attacking ship must also be travelling at a velocity that is not more than 1 factor different from the velocity of the target ship, and on a course that is again not more than 1 point different from the target's course.

Example: If the target ship ends its movement at velocity 6, on course 4, a boarding attempt could only be made if the attacking ship can get within 3 MU with a final velocity of not less than 5 or greater than 7, and on a course between 3 and 5 (using the same 12 as the target ship).

This rule is to allow players a little leeway when it comes to trying to 'match trajectory' but not too much; it will still be quite difficult to do so unless the ship you are attacking has very little thrust available to evade with – such as if you have already crippled its drive.

Once you have got your ship into the correct position to be able to launch a boarding assault, the Marines may cross between the ships by small assault pods, powered armour suits, transporter beams, etc.

For the size of Marine forces available for boarding actions, consider the marine detachment to have 1 *boarding factor* per crew factor, each boarding factor representing a small team. (The number of boarding factors is therefore equal to the number of damage control parties that the ship has.)

If the ship has taken damage, it is safe to assume marine casualties are in proportion to other crew – thus the available boarding factors are always equal to the current number of crew factors that the ship has left.

The strength of the defenders is determined in the same way. We assume for simplicity that the same percentage of the marines is available to defend as for the attackers, as the rest have probably been seconded to damage control teams and the like. Anyway, these are only supposed to be abstract rules!

The defensive strength of a full troopship is increased by the number of mass allocated to troop holds divided by 4 (rounded down). Carried troops cannot be used for offensive boarding actions due to lack of training and specialised equipment.

If the target is a civilian craft, it will be able to muster only defensive factors equal to *half* the remaining damage control parties, rounded down – this is because a merchant crew will be much more poorly armed and equipped for combat. (And remember that civilian ships already have fewer crew factors than military.)

To resolve the combat between the attacking and defending parties, roll 1 D6 per factor for each side and total their results. Thus if 4 boarding factors were up against 2 defending factors, the attacker would roll 4 dice and total the scores while the defender would roll 2 and total them.

If either side's total score is more than twice the other player's roll, the higher scoring player has won the action. If this is not the case, then the action continues with the lower scoring force losing 1 factor and both sides then rolling again. (Obviously if this causes one side to lose its only factor, they have lost.)

Thus in the example above, if the attackers rolled 2,5,1, and 3 for a total of 11; and the defenders were lucky enough to roll 6 and 6 for a total of 12, the attacking (boarding) side would lose 1 factor, dropping them to 3. The combat would

then be rolled for again, but with the 3 attacking factors to the 2 defending.

The combat continues to be fought in repeated 'rounds' like this until there is a clear-cut winner who takes or retains control of the ship. If the attacking party loses and is repulsed, they may return half (rounded up) of their surviving factors (teams) of marines to their own ship. The remainder are assumed captured or killed in the attempted withdrawal.

Should the boarding party win the combat, the surviving defenders are assumed to be 'locked below decks' and a prize crew will be sent over from the attacking ship to bring the captured vessel fully under control.

(It must be noted that all of the boarding action is fought to a conclusion in the space of one game turn – the action does not carry over several turns.)

Of course, if you want to work out more detailed rules for boarding that fit more accurately with the troop contingents aboard the ships, feel free to do so. (A hold full of heavy tanks won't do the defenders much good!) Boarding actions should be sufficiently uncommon, however, that the rather abstract system here will suffice in most cases.

10.8 Fleet morale

The question of morale in naval games, whether science fictional or historical, is always a bit of a problem. Will a fleet fight to the last ship, or will it turn tail and run (or even surrender) after relatively few losses?

The answer to this really depends on the kind of scenario being played, as the reactions of the fleet and its overall commander will be heavily influenced by what is at stake. If a force is defending a colony world against an invading fleet, it may well fight 'to the death' in a desperate attempt to protect the colony. On the other hand, if it is a meeting engagement in a relatively unimportant star system, then it would be quite likely that the admirals on either side would consider the preservation of their own ships and crew to be quite a high priority.

If playing a simple engagement (or a competitive game) then we suggest that the loss of 50% of a player's overall force (calculated in mass of ships destroyed) would be enough to cause the commander to withdraw from battle.

For other games we recommend that the level of losses to force a withdrawal should be written into the scenario when it is designed, bearing in mind the story-line being used.

10.9 Striking the colours

The surrender of an individual ship is a slightly different matter to the withdrawal of the complete fleet. There are many possible circumstances where the captain of a ship may decide that, orders notwithstanding, the survival of the crew is more important than continuing to fight in a hopeless situation.

One possibility is to make an extra roll at the same time as any threshold check, using the normal scores for losing systems at threshold points, ie 6 the first time, 5 or 6 the second, etc. If the ship fails this roll then its captain decides to 'strike the colours' and surrender to the nearest enemy vessel.

Using this rule can result in the surrender of a vessel that has taken relatively little damage – however naval history is rife with precedents for this where colours were prematurely struck due to damage suffered being grossly overestimated. Players may prefer to roll as if for a core system check, in which case ships will never surrender on the first row of damage.

One point must be made here – the use of this rule is strongly dependant on exactly who the two fleets are; for example, if using the GZG background then it is very unlikely that any human ship would even attempt to surrender to a Kra'Vak or vice-versa, simply because they would not expect to survive capture.

11 Ship Design

Overview

Most players will probably run their first few games using just the basic ship types. Sooner or later, however, many of you will want to start modifying the designs provided, or else designing your own ships from scratch: experimenting with different weapons fits, hull sizes, and so on.

Ship design is all about a balance between the three essential factors: mobility, firepower, and protection. Mobility is represented by the thrust rating available to the ship, firepower by the amount and types of weapons carried, and protection by the screens and armour used (if any) and the overall damage points.

The ship design rules detailed in this section are constructed so that every ship has to be a compromise between the three basic factors. Although a near-perfect super fast, ultra heavily armed, and heavily protected ship is theoretically possible, it will turn out to be so incredibly expensive in points cost that just one will take most of your fleet budget! Remember that, especially in a campaign, a ship can only be in one place at one time – for most purposes a balanced fleet of lighter craft will be more cost effective than just a few superships.

Designing a ship involves two main considerations: the ship's mass, which is a measure of its overall size, and its point cost.

The *mass* of the ship determines its class and how much in the way of systems (weapons, screens, fighter bays, etc) can be fitted into the hull.

The *cost* of the ship is the total of the mass cost, the hull cost, the drives cost, and the individual costs of all the systems that you decide to install.

11.1 Scale

FULL THRUST is deliberately vague about scales: there is no exact definition of how many tons a mass unit represents, or how many kilometres per MU. Ships are defined by their role: fighter, escort, cruiser, capital, carrier; and the relative value of their weaponry and protection in abstract mass units rather than number of turrets or megajoules. FULL THRUST is intended to be a fairly generic set of rules that you can adapt to your own setting, so these abstractions – or fudge factors if you prefer – are necessary.

For an example, consider fighters. In most science fiction TV and film these resemble space going versions of current jet fighters, with a pilot and sometimes one or two other crew. This does not mean that your fighters cannot be much bigger and with sizeable crews. What matters in FULL THRUST is how they behave: if they are launched in swarms from carriers, zip about at speed, are very difficult to hit with normal ship weapons but easily destroyed, and attack enemy ships or fighters at very short range; then in FULL THRUST terms they are fighters.

Scaling also applies to numbers. Nominally each fighter group in FULL THRUST has six fighters, but you are free to declare that each 'fighter' represents 2 or more actual vessels. It is standard in space opera for a single Heroic Good Guy (of any gender or species) to be worth several of the multitudes of low quality cannon fodder used by the Evil Bad Guys. In such a setting fighter groups belonging to the first side would be just six fighters each, while fighter groups belonging to the other would represent three dozen unfortunates whose destiny is to be shot down six at a time!

Going the other way, FULL THRUST takes a large scale 'bang you're dead' approach to fighter combat. But you could easily design various types of fighters as small corvette or frigate sized ships, each with their own unique combination of thrust, weaponry, and protection. Shorten the game turn to 5 seconds, add in one or two giant warship models to fight around, and you have a dramatic dogfight.

Really big ships are also found in science fiction, such as the superdreadnoughts in the Honor Harrington books or the Super Star Destroyer that Darth Vader uses as his flagship. CROSS DIMENSIONS imposes an upper mass limit on ships, which would be far too low if mass units represented a fixed number of tons. Instead you can assume a sliding scale from perhaps fifty tons per 1 mass for the smallest escorts, increasing to several hundred or even thousands per 1 mass for the largest superdreadnoughts. There are three reasons for this.

Firstly, the combat effectiveness of larger ships in FULL THRUST increases at a faster rate than the mass does, so one ship of mass 200 is (almost always) superior to two ships of mass 100. The mass represents weaponry and protection, not just volume.

Secondly, you can always scale everything else around the really big ships down. The smaller sized combatants in such a fleet would normally be considered dreadnoughts themselves, but in a fleet with such monsters (and presumably equally formidable opposition) would be reduced to the role of escort cruisers.

Lastly and much less seriously, the really big ships are usually constructed by megalomaniacal Evil Overlords and they never work as well as expected, often being destroyed by nothing more than a puny fighter! The CROSS DIMENSIONS mass limit represents the actual performance of the ship, not that promised by the (terrified or over-optimistic) designers.

Systems

When designing ships, there is not necessarily a 1:1 match between FULL THRUST system symbols and individual weapon systems. For example, a single beam-1 symbol represents the ability to deliver a certain amount of firepower in all directions, which on all but very small ships will require more than one actual weapon mount.

Each beam on a ship SSD can represent an individual mount, or a battery consisting of a number of projectors slaved together under a single control system.

A beam system that is twice as damaging as another but not longer ranged would be represented by two symbols instead of one. A powerful alien beam that is also very accurate against fighters would be represented by a graser symbol for fire against ships and a PDS symbol for use against fighters.

A broadside symbol can represent an actual turret unable to fire fore or aft (as seen on the *Sulaco*); or two weapons, one on each side, that share a common fire control or ammunition supply; or that the ship is able to roll quickly enough to combine the fire from two individually weaker weapons in either direction.

11.2 Mass rating

The total mass of a given hull is a representation of the capacity of that hull for outfitting it with drives, weapons, defensive systems, etc. This total mass figure is used to refer to the size of the ship: a size 24 ship could be fitted with a maximum of 24 mass of systems.

Note that the mass ratings of systems are abstract figures used to indicate the required volume, power requirements, etc rather than being an exact measure of the bulk or weight of a given system. If you assume that (in a given background) one mass is equivalent to around 100 tonnes, then a mass 1 system (such as a point defence installation) will not necessarily weigh in at 100 tons; it will, however, require 100 tons of hull capacity to mount the system and its infrastructure, control and power requirements, sensors, crew, etc.

Escorts have a maximum mass of 44, *cruisers* have a maximum mass of 90. Anything over mass 90 is a *capital*.

If a ship has a mass over 10, it must be even.

The maximum possible mass for a ship is 300. If you do decide to design larger ships, consider using the rules for starbases (section 13.7) with multiple individual sections and SSDs.

The table below shows the standard basic ship classifications, along with the accepted designations and a rough guide to the typical mass ratings of each. These figures are very loose, as most navies tend to classify ships by function rather than by tonnage: one fleet's destroyer may, in reality, be a bigger and more powerful ship than another's light cruiser.

Ship class	Abbreviation	Mass
Scout or Courier	SC	4 - 10
Corvette	CT	8 - 16
Frigate	FF	14 - 28
Destroyer	DD	24 - 36
Heavy Destroyer	DH	30 - 44
Light Cruiser	CL	40 - 60
Patrol or Escort Cruiser	CE	50 - 70
Heavy Cruiser	CA	60 - 90
Battlecruiser	BC	80 - 110
Battleship	BB	100 - 140
Heavy Battleship	BDN	120 - 160
Dreadnought	DN	140 - 180
Superdreadnought	SDN	160 - 300
Escort Carrier	CVE	60 - 140
Light Carrier	CVL	120 - 180
Heavy Carrier	CVH	160 - 300
Attack Carrier	CVA	150 - 300

Names

Historically 'battlecruiser' has been used both for fast, heavily armed, but lightly protected British and American ships; and for lighter armed but better protected French and German ships. In FULL THRUST it is used for ships bigger than heavy cruisers but smaller than most capitals.

'Escort cruisers' and 'escort carriers' are cruisers or carriers, not escorts. The designation simply indicates that its primary function is that of supporting (escorting) other ships rather than independent action.

These names are used in the GZG setting but are not at all compulsory. Other navies have different ship classifications, for example *Escorteur d'Escadre* or *Raketny Kreyser*; or you could adapt aircraft terminology. This is an area where a little research and imagination can go a long way. (As a matter of courtesy, you should always be willing to inform your opponents whether a ship is an escort, cruiser, capital, or carrier.)

Note that if you are using commercial model ships, just because a manufacturer happens to classify a particular model in the range as a 'Destroyer' in no way prevents you calling it a cruiser, or anything else that fits in with your fleet structure.

System mass

The total mass includes the *Core Systems* (section 8.2) and passive sensor arrays (section 10.1). No extra points are paid for these.

Some systems, eg weaponry, are a fixed mass per system, regardless of the size of the ship on which they are mounted. Other systems including drives and screens are a percentage of the total mass, and thus become more expensive as the mass of the ship goes up. (As, of course, does the cost of the hull itself.)

Because they are calculated as percentages of the overall ship mass, choosing a hull size that is not an exact multiple

of 10 will mean that some system masses may not be whole numbers. Some of these will be rounded up and some down: in general terms, decimals of .49 and less should be rounded down, while those of .5 or higher should round up.

For example, if you are building a mass 64 ship then the 10% required for the FTL drive will be 6.4, which will round down to 6. If the same ship's main drive is thrust-4, however, this will take 20% = 12.8 which will round up to 13 mass. In general, most designs will come out about even in the rounding; occasionally a ship may end up fractionally better or worse off than another of broadly similar design, but that shouldn't be a serious problem. Besides, if we don't give the maximisers and number crunchers something to work at they'll all get bored!

Important: no single system can ever be rounded down to mass 0. A very tiny ship of (say) mass 4 will still have to pay 1 mass for an FTL drive, even though 10% for it is only 0.4. Thus the smallest possible FTL-drive ship is actually a mass 3 scout or courier boat, that will use 1 mass for hull integrity, 1 mass for FTL drive (the smallest unit available) and 1 mass for main drive (for which it could get thrust-6). The boat would be unarmed, and have just 1 damage box.

The smallest usable combat ship will be around 5 or 6 mass, which will get you a tiny armed scout or light corvette with only a single fire control and probably only a single small weapon system, crewed by a handful of very brave spacers.

11.3 Hull strengths

The *hull integrity* represents the amount of the ship's structure that is devoted to reinforcing the basic hull envelope, including bulkheads, compartmentalisation, internal strengthening, etc. It is entirely separate from the armour used (if any), which is external protection. It is perfectly possible to have a ship with a fragile hull structure but lots of armour and screens: such a ship will be fine until some damage manages to get through, at which point the hull integrity will fail very quickly!

There are no fixed percentage limits on hull integrity. Ship designs may have as many or as few hull boxes as the designer wishes, subject only to a lower limit of a minimum of 10% of the total ship mass. The actual number of hull boxes chosen does not have to exactly equal any given percentage of the ship's total mass, but the following terms may be used to describe the kind of structure a ship has:

Fragile hull	10% of total mass
Weak hull	20% of total mass
Average hull	30% of total mass
Strong hull	40% of total mass
Super hull	50% of total mass

The mass used for hull integrity is the number of hull boxes that the ship has to absorb damage points. For standard ships, the hull boxes are arranged in four rows to form the damage track for the ship.

Example: For a mass 60 ship with hull strengths chosen to be exact multiples of 10%, a weak hull would be 12 hull boxes arranged in rows 3/3/3/3; while a strong hull would be 24 hull boxes in rows 6/6/6/6.

Each row should be of equal length, but if the number of hull boxes does not exactly divide by the number of rows the extra boxes are placed in the upper rows. For a standard four row design, a ship with just 2 hull boxes has one box in each of the first two rows and nothing in the last two, and a ship with 15 boxes has three rows of 4 boxes and one of 3.

The points cost of the hull is mass × 2.

Advanced hulls

Some ships have superior construction technology or internal protection and are therefore much more resistant to the initial effects of damage. Such ships have *advanced hulls* with the boxes arranged in three rows, not four. In the example above a strong hull would still have 24 hull boxes but arranged in three rows 8/8/8, requiring more damage to inflict a threshold point check than before – but still only the same amount of total damage to destroy.

The points cost of an advanced hull is mass × 3 instead.

Ships with less than four hull boxes are always considered standard hulls, not advanced.

Figure 25: Strength 14 standard and advanced hulls

Drives

The FTL drive for interstellar capability requires 10% of the total mass. Non-FTL ships may only be used in certain scenarios: see section 9.5. Tugs, tenders, and motherships use more than the standard mass for their FTL drives: see section 9.4.

A standard FTL has cost mass × 2. For ships that choose to pay the extra cost of advanced FTL capability (section 9.1), the cost increases to mass × 3.

The ship's main drive requires 5% of total ship mass per thrust factor. Add the percentages together and then determine the mass required.

Example: A cruiser has total mass 64. A main drive rating of 4 would be 20% of 64 = 12.8, rounded up to 13. Main drive rating 6 would be 30% of 64 = 19.2, rounded down to 19.

The points cost of the main drive is mass × 2 for standard, mass × 3 for advanced. Ships with advanced main drives never have the choice to 'turn off' advanced capability to reduce points cost.

Advanced drives and FTL

Advanced drives or FTL represent new 'tech levels' or different mechanisms, not just that one ship is a bit better than another. All the ships built by a given species, culture, or state are expected to have the same kind of main drives and same kind of FTL. Exceptions can be made when a fleet has acquired ships from a different source, or is undergoing some kind of major technological transformation.

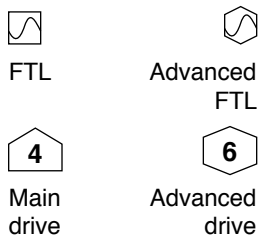


Figure 26: Ship drives and FTL

Atmospheric streamlining

Streamlining allows ships to safely enter a planet's atmosphere as described in section 13.9. Partial streamlining requires 5% of the ship's total mass, while full streamlining requires 10% of the total mass. The points cost of streamlining is 2 points per mass used for the aerodynamics.

Example: To give a mass 50 ship partial streamlining will use 3 mass and cost an additional 6 points on top of the basic hull cost; to give the same ship full streamlining will use 5 mass and cost 10 points.

Hangar bays

Hangar bays for fighter groups and other small craft have a mass equal to 1.5 × mass of capacity and a points cost three times the mass. The typical fighter hangar bay has a mass of 9 (6 fighters at 1 mass each × 1.5) and a points cost of 27. Hangars for other types of craft use a different symbol with the capacity in mass marked.

The points cost for a hangar bay does not include the fighters or craft carried inside.

Cargo and passengers

Mass devoted to cargo or passenger space costs no additional points during the ship costing procedure, though of course the actual hull that encloses them is paid for in the normal way. Each mass factor used provides one factor of hold space (H) or passenger space (P).

The total amount of cargo or passenger space available on the ship is divided into separate groups, one for each row of hull damage boxes, in much the same way as the ship's hull damage boxes are divided into rows. If the number does not divide evenly then the first holds or passenger areas are the larger ones.

The space is divided up purely for damage and threshold point checks, and does not mean that the ship is actually limited to cargo items that would fit within each individual hold.

Example: If a freighter has 50 mass of cargo hold space and a standard hull (four rows), this would be divided into two holds of mass 13 and two of mass 12.

Figure 27: Fighter bay, ship bay, cargo hold

11.4 Systems

Armour

Armour requires 1 mass per box of protection. The total number of armour boxes is called the *grade*.

The points cost of standard armour is twice the grade, 2 points per box.

For shell armour, the points cost of each box is equal to standard armour multiplied by the layer number. Each box in the lowest layer therefore has the same cost as standard armour; each box in the second layer is 4 points per box, each box in the third layer 8 points.

Screens

Screens require 5% of the ship's mass for a level-1 screen system (one generator), and 10% for a level-2 screen (two generators), but with minimum requirement of 3 mass for level-1 and 6 mass for level-2 screens. Any ship up to mass 60 thus requires 3 mass to install a level-1 screen system, while larger ships require 5% of their total mass.

The points cost of a screen is mass × 3, minimum of 9 points for level-1 and 18 points for level-2.

Advanced screens

Each advanced screen generator requires 7.5% of the ship's mass, minimum 4 mass for level-1 and 8 mass for level-2. The points cost is mass × 4.

A ship cannot be fitted with both advanced and standard screens.

FireCons and ADFC

A FireCon has a mass of 1 and costs 4 points.

Area-Defence Fire Controls (ADFC) have a mass of 2 and cost 8 points each.

Ships with ADFC systems are usually escort or cruiser sized in FULL THRUST. Capitals with ADFC are either dedicated to the area defence role or have unusual backgrounds, while carriers with ADFC are extremely rare.

Beams

Basic mass requirements of a given battery start at 1 for a class 1, and double for each class increase, so a class 2 requires 2 mass, a class 3 requires 4 mass, a class 4 requires 8 mass, and so on. At 16 mass for a class 5 and 32 for a class 6, these larger systems rapidly become non cost-effective for most purposes.

Class 1 batteries are automatically capable of all-round (6 arc) fire at their basic mass cost of 1.

Class 2 batteries at their base mass of 2 are capable of 180° traverse, firing through any 3 adjacent arcs, and may be given full traverse (6 arc) for an additional 50% mass cost (3 mass rather than 2).

Class 3 batteries and above have only 1 fire arc (60°) at their base mass cost. Each additional arc of fire requires 25% of the base mass per arc covered, so a class 3 covering 3 arcs would require 4 + 1 + 1 = 6 mass, while a class 4 with the same traverse would require 8 + 2 + 2 = 12 mass. Arcs must be adjacent.

Broadside arcs are a special case: class 1 and class 2 beams with broadside fire arcs have the same mass as all-round 6 arc; class 3 and above beams with broadside fire arcs have the same mass as 3 arcs.

Beams and all other weapons without 360° traverse must have their fire arcs chosen when the ship is designed.

Beam points cost is mass × 3.

Grasers

The mass requirement for a class 1 graser are:

- Firing through 1 arc: mass 2
- Firing through 3 arcs: mass 3
- Firing through broadside or 6 arcs: mass 4

A basic class 2 graser has a base mass of 9 and fires through only 1 arc. Each extra arc requires 3 mass; or 6 mass for a broadside mounting.

A class-3 graser requires 24 mass and +6 per extra arc (+12 for broadside). Each higher class triples the base mass and doubles the extra per arc.

Graser point cost is mass × 4.

PDS

Point defence systems have a mass of 1 and cost 3 points each.

Scatterguns

Each scattergun has a mass of 1 and costs 4 points.

Ships cannot be fitted with both PDS and scatterguns.

Torpedoes

The basic mounting for a class 1 torpedo has a mass of 4 and fires through only 1 arc. The torpedo may be mounted to traverse through up to two extra adjacent arcs for a maximum total of three, requiring one mass per extra arc; or through a broadside fire arc, costing 2 extra mass.

Higher class torpedoes double the base mass and extra per arc for each class increase, so a class 2 torpedo takes 8 mass and +2 per extra arc (+4 for broadside), a class 3 is 16 mass and +4 per arc (+8 for broadside) and so on.

Torpedo points cost is mass × 3.

Needle weapons

Needle weapons have only 1 fire arc. The mass is 2 and the cost is 6 points.

Submunition pack

A submunition pack has a mass of 1 and fires through only 1 arc. The cost is 3 points.

Salvo missiles

If salvo missile launchers are fitted to a ship, the launcher itself takes 3 mass while each salvo load carried in an internal magazine takes up 2 mass for standard missiles or 3 mass for extended range types.

An SMR takes 4 mass for the complete rack including a standard missile salvo, or 5 mass for a rack with an ER salvo.

The points cost of an SMR or SML system is three times the total mass of launcher and magazine capacity.

All salvo missile launchers and racks fire either through 3 consecutive arcs or broadside arcs.

Heavy missiles

Each heavy missile has mass 2 for standard or 3 for extended range. Points cost is mass × 3.

Heavy missile racks also fire either through 3 consecutive arcs or broadside arcs.

11.5 Ship design procedure

The easiest way to begin your career as a warship designer is by taking an existing ship design (the SSD) and modifying it in some way. Ships can be tailored for particular missions by changing the weapons while keeping the original hull and drives, for instance replacing beams with missiles. Or you could try reducing the mass spent on weapons and defences to increase the drive rating and hence agility.

For this example, though, we will dive in and demonstrate the entire process from beginning to end.

1. Decide on the overall size of your ship, the total mass rating.

Example: We are building a heavy cruiser , and decide on a total mass of 86. The basic points cost will be the same, 86 points.

2. Choose the hull integrity for the ship.

Example: We decide to give our heavy cruiser a standard hull of average strength. This will use up 30% of the total 86 mass, or 26 mass (actually 25.8, rounded up). The points cost of the hull will be 26 × 2 = 52. The chosen hull integrity gives the ship 26 hull boxes that will be arranged in rows of 7/7/6/6.

3. Choose and fit drives to the ship.

An FTL drive to give the ship interstellar capability will require 10% of the total mass.

Decide on the required thrust factor for the ship's main drive, which requires 5% of total ship mass per thrust factor.

Example: Our heavy cruiser needs an FTL drive (8.6, rounded up to 9); we also decide on thrust-4 for the main drive, which takes 4 × 5% = 20% of ship mass (17.2, rounded down to 17). Total mass of the drive package is thus 26, and points cost for the drives is 26 × 2 = 52.

We now have a hull with drive systems installed. The total mass used so far is 26 + 26 = 52, leaving 86 - 52 = 34 for other systems. The points cost so far is 86 + 52 + 52 = 190.

4. Select the desired mix of offensive and defensive systems to fit to the ship, according to its intended role. The mass and points values of the various systems are set out in the systems table.

Example: Our heavy cruiser is intended as a multi-role ship, so we decide on a balanced mix of offensive and defensive systems to cope with a wide variety of possible threats.

Two standard Fire Control systems use 1 mass each and cost 4 points each. This leaves us 32 mass.

The main offensive punch of the ship will be a mix of beam batteries and salvo missiles. We decide on two beam-3 batteries each bearing through 3 arcs (fore arc and two side arcs port and starboard respectively, to give an overlapping coverage), at 6 mass each; one beam-2 with all around fire (3 mass), plus a backup armament of 2 beam-1 at 1 mass each. A single salvo missile launcher is mounted forward, covering the front 3 arcs or 180° zone at 3 mass, with a magazine holding 3 standard salvoes (3 x 2 = 6 mass). Total offensive systems mass is 6 + 6 + 3 + 1 + 1 + 3 + 6 = 26, with all offensive systems costing mass × 3 = 78 points.

We have 6 mass left for defensive systems to protect the ship: we decide on an active defence capability of two point defence systems (PDS) at 1 mass each, leaving 4 mass to use up. We decide to fit a level-1 screen generator for 4 mass. (5% of 86 = 4.3, rounded down to 4); alternatively, we could spend this on 4 boxes of hull armour which would be slightly cheaper. Total defensive systems mass is 6, costing mass × 3 = 18 points.

So, the total systems fit for the ship is:

Basic hull	*86*	*86 pts*
Hull integrity	*26*	*52 pts*
FTL drive	*9*	*18 pts*
Main drive thrust-4	*17*	*34 pts*
sub-totals	*52*	*190 pts*
2 × beam-3 (3 arc)	*12*	*36 pts*
beam-2 (6 arc)	*3*	*9 pts*
2 × beam-1	*2*	*6 pts*
2 × FireCon	*2*	*8 pts*
SML	*3*	*9 pts*
magazine (3 loads)	*6*	*18 pts*
level-1 screen	*4*	*12 pts*
2 × PDS	*2*	*6 pts*
sub-totals	*34*	*104 pts*
Totals	*mass 86*	*294 pts*

The System Status Display for this ship is figure 28.

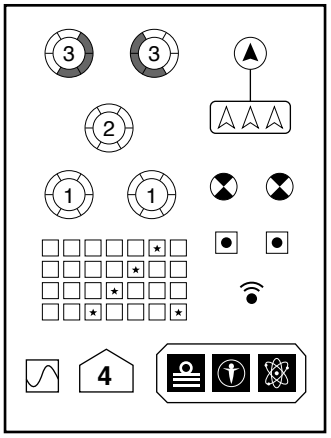


Figure 28: Heavy cruiser SSD

11.6 Mass and points cost

System	Mass	Points
Basic hull	total mass of ship	× 1
Standard integrity	10+% of total mass	× 2
Advanced integrity		× 3
Standard drive	5% total per factor	× 2
Advanced drive		× 3
FTL drive	10% total mass	× 2
Advanced FTL drive		× 3
Partial streamlining	5% of total mass	× 2
Full streamlining	10% of total mass	× 2
Cargo/passenger	1 per space	None
Hangar bay	1.5 × mass carried	× 3
Hangar bay, standard	9 (space 6 fighters)	27
Hull armour, per box	1	2
each layer		× 2
Screen generator	5% total mass minimum 3	× 3
Advanced screen	7.5% minimum 4	× 4
Fire Control	1	4
ADFC	2	8
Beam-1	1	3
Beam-2, 3 arc	2	6
broadside or 6 arc	3	9
Beam-3, 1 arc	4	× 3
extra arc	+1	
broadside	+2	
Beam-4, 1 arc	8	× 3
extra arc	+2	
broadside	+4	
Graser-1, 1 arc	2	× 4
3 arc	3	
broadside or 6 arc	4	
Graser-2, 1 arc	9	× 4
extra arc	+3	
broadside	+6	
Graser-3, 1 arc	24	× 4
extra arc	+6	
broadside	+12	
Torpedo, 1 arc	4	× 3
extra arc, max 3	+1	
broadside	+2	
Each extra class	× 2	
Submunition pack	1	3
Needle weapon	2	6
Point defence system	1	3
Scattergun	1	4
SML	3 (launcher only)	9
Missile magazine	2 per salvo	× 3
	3 per ER salvo	× 3
SMR	4	× 3
extended range	5	
Heavy missile	2	6
extended range	3	9
Extra missile stage	+2	× 2

Optional Systems

System	Mass	Points
Enhanced sensors	2	8
Superior sensors	4	16
Weasel cruiser emitter	2	8
Weasel capital emitter	4	16
ECM system	4	16
Area effect ECM	6	24
Minelayer	2	6
	+ 1 per mine minimum 2	× 2
Minesweeper	5	15
Ortillery system	3	9

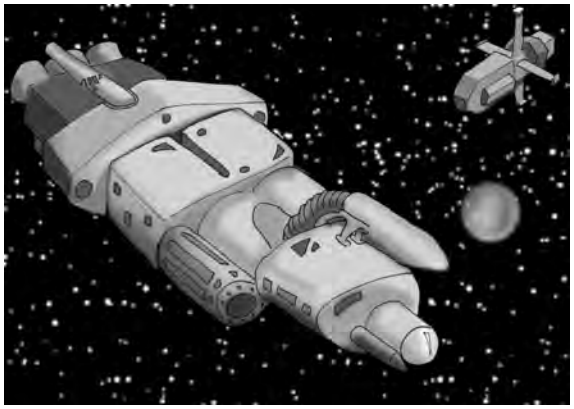
Fighter types

All fighters require 1.5 mass of hangar bay space per fighter. A standard group has 6 fighters, requiring a mass 9 hangar. Points costs for fighters are:

Fighter	Each	Group
Standard	3	18
Fast	4	24
Heavy	5	30
Interceptor	3	18
Attack	4	24
Long range	4	24
Torpedo	6	36
FTL	+1	+6
Kinetic	+1	+6

Light vessels

Interface craft, shuttles, etc cost 2 points per mass of craft and require 1.5 mass of hangar bay space per 1 mass of craft.



12 Special Moves

12.1 Thrust 0 drives

Ships with thrust 0 drives, and any asteroids or similar object that have significant movement relative to ships, never write orders. The controlling player, or scenario designer, determines the initial position, course, and velocity before the game begins. Each turn, the ship or asteroid moves along this predetermined course before all other ships.

12.2 Rolling ships

Although FULL THRUST makes no attempt to simulate 3-dimensional movement or combat, there is one simple rule addition that we are including here: the ability to roll a ship 180° on its central axis, thus effectively swapping the port and starboard sides (ie the ship is 'upside down' relative to the other ships on the table). This manoeuvre can be very useful when ships start to lose systems due to damage, as it can allow undamaged weaponry to bear on targets that would otherwise be on the wrong side of the ship.

To perform a roll, the player simply writes *Roll* in the movement orders for that turn; the roll expends 1 thrust factor which comes off the turning allowance. For example, a thrust-4 ship, normally capable of 2 points of turn, could only turn 1 point if it also rolled that move; but would still be able to use its other two thrust factors to accelerate or decelerate as normal. The roll then occurs at the start of the ship's movement, and a marker is placed by the model to indicate its inverted condition. Rolling has no effect on combat (except that the port batteries now bear to starboard, and vice versa). An inverted ship may roll back 'upright' in any subsequent turn, or may remain inverted as long as the player wishes.

For simplicity of play, rolled ships still have their movement orders written in relation to the actual miniature rather than their theoretical inverted condition – thus an order written for a port turn will still turn the model to the left, even though to the inverted ship this would actually be a starboard turn. Keeping to this convention should avoid a lot of confusion and arguments.

12.3 Towing ships

In normal space, ships can tow other ships.

First the towing ship must match courses. The two ships must be within 3 MU of each other and either both halted, or both moving at the same velocity and course facing.

At the start of a turn (before movement phase) where the two ships have matched courses, the towing ship can begin establishing a link.

- A ship equipped for towing as part of its normal duties requires one complete turn for each ship.
- Any other ship requires two complete turns and can only tow a single ship.

If either ship changes velocity or facing during this time without an exact match by the other ship, or if the target ship fires any weapon against the other and inflicts at least one hull box of damage, the link is broken and the procedure must be restarted from the beginning.

Once linked, the two ships move as if they were in a line ahead squadron formation. Multiply the mass of the towing ship by its main drive rating: this is the available thrust. Divide the available thrust by the combined mass of the linked ships and round down to the nearest whole number: this is the thrust rating of the linked ships.

(If the thrust rating of the linked ships rounds down to zero, the tow can still succeed, but the time required will be many hours or days, outside the time frame of a FULL THRUST battle.)

Example: A salvage ship with mass 80 and thrust 4 attempts to tow a dreadnought of mass 160 that has no operational main drive. It is currently drifting at velocity 3, course 9. The salvage ship first matches velocity and course within 3 MU, then spends one turn establishing a link. The salvage ship has mass 80 × thrust 4 = 320 available thrust. Dividing this by the combined mass of 80 + 160 = 240 gives 320 ÷ 240 = 1.5, thrust rating 1 for the linked ships.

12.4 Moving table

Earlier we mentioned ships leaving the edge of the table or playing area, and thus leaving the battle. However, as space does not actually have edges, it really should be possible for the entire battle to 'move' off the edge of the playing area and still continue – this may happen if both sides are moving in the same general direction, eg in a pursuit scenario. If you find that all ships in the action are starting to get very close to one end or side of the table, it is a simple matter to move every ship and object in play a certain agreed distance back towards the opposite table edge; effectively you can think of it as extending the playing area under the ships. (All things are relative, as someone once said.)

12.5 Disengaging from battle

If you use the moving table in a game, it will become possible to continue pursuit of a fleeing enemy. Under the normal rules a retreating force simply has to leave the table in order to break off combat, but with the moving table the pursuit may go on until one side either catches or outruns the other.

Particularly when playing campaign games, which for obvious reasons are very seldom fought 'to the death', it is advantageous to be able to disengage from battle if things are going badly for you – saving your remaining ships for the next engagement can be much more important than going out in a heroic blaze of glory.

If one player decides to disengage, it is possible to actually play out the full pursuit stage as described above. If, however, this is felt to be too time consuming, there is an alternative abstract method that may be used.

The disengaging player's ships must all move off the table via the same table edge; until the last ship has left the table, the battle will continue as normal. When all the ships are off the table edge, each player rolls a D6. If one player has any ship that has a higher thrust than all opposing ships, then add 2 to the die roll. Eg, if the disengaging player has some thrust-8 escorts while the opposing fleet has nothing with a thrust above 6, the former adds 2 to the roll.

If the final total of the player who is trying to disengage is equal to or higher than their opponent's roll, they have successfully disengaged and are safe from pursuit. If, on the other hand, the opponent's roll is higher, then the pursuing player may elect to continue pursuit; in which case the game continues with a new set-up as a stern chase. The fleeing player may then attempt the disengagement again by leaving the opposite edge of the new playing area.

12.6 Docking

Ships may attempt to dock with other ships or with starbases (section 13.7) although this is unlikely during combat. To accomplish a docking, the ship's movement orders must be planned so that it ends up within 3 MU of the target ship/starbase at the end of the turn. If the target is stationary, the ship must also come to a dead stop, otherwise it must exactly match both course and velocity with the target ship or starbase at the end of the turn. On the following turn, the ship may be taken as docked. One full turn is also required to 'cast off' and undock again, after which the ship may manoeuvre as normal.

12.7 Ramming

Deliberate attempts to ram another ship are possible in some circumstances, but such suicide attacks should be rarely attempted – crews would not be very keen on officers who ordered such tactics as a matter of routine! Ramming is therefore an **optional rule**.

(Very small ships that ram, such as Autonomous Kill Vehicles with AI pilots, are represented in FULL THRUST by missiles or torpedo fighter groups.)

A player who wishes to attempt a ramming attack writes as part of movement orders that the ship is going to attempt to ram, *and* then rolls a D6 at the end of the movement phase. Only on a roll of 6 may the ramming attempt proceed.

In order to attempt the ram, the ship must end the movement within 2 MU of the intended target ship (or models touching in the case of large ship models). Only if you succeed in anticipating the enemy move, and then succeed in rolling a 6 as explained above, may the actual ram be attempted.

Both players (attacker and target) roll a D6 each, and add the score to their respective ship's thrust ratings. If the attacker ends up with the highest total, the ram is successful. If the target's total is equal or higher, it has evaded the ramming attempt.

When a ram succeeds in making contact, each player rolls another D6 and multiplies the result by the current (remaining) hull boxes that the ship has. The final result of this is the number of damage points inflicted on the other ship as a result of ramming.

Example: A corvette with 2 of its original 3 damage points left actually succeeds in ramming an undamaged heavy cruiser with all 16 of its damage points. The corvette player rolls a 4, which inflicts 8 points of damage on the cruiser. The cruiser owner rolls a 3, thus doing 48 points to the corvette. The result is one vaporised corvette, and a badly damaged cruiser.

It will be clear from this example that ramming can be very deadly when it succeeds, small ships are almost certain to be destroyed, and even the largest can be crippled. Players who insist on using this tactic in unrealistic circumstances should be penalised in the most effective way possible: don't let them play again.

Ramming ability

Players may agree that certain scenarios and/or certain races may make ramming attacks more likely, and hence reduce this required die roll for them.

Any ship that can automatically attempt to ram should have an extra cost of at least +1 per mass of the ship, which represents the difficulty of indoctrinating crews willing to sacrifice their own lives, the cost of a fully automated ship with remote controls or AI pilot, or the remote hive mind/queen intelligence controlling expendable beings.

13 Terrain

It may sound a bit odd to talk of 'terrain' in a space battle, but if you think about it there are a number of possible ideas you can use to render certain parts of the table more difficult, dangerous, or just plain different. The following suggestions are mostly pure space opera and anyone who has seen a few episodes of the typical science fiction television show will doubtless be able to think of lots more!

13.1 Asteroids

Asteroid is used in this section for all asteroids, planetoids, comets, starbases, orbitals, and all other Really Big Things. Asteroids can either be stationary, or be thrust 0 objects with a predetermined course (section 12.1) and velocity.

Ships cannot block line of sight or line of fire, but bodies such as asteroids do have a significant size in relation to the playing area and therefore are able to block lines of fire or sensor detection and pose a collision risk. If you are using round or spherical objects to represent the asteroids then it is simple: any line between two ships that crosses any part of the asteroid is blocked. (Between centre points of models, remember.)

If, however, you are using irregularly shaped asteroid models, such as foam chunks, then it is necessary to mount them on bases, perhaps 1 to 6 MU across, depending on the asteroid size. A line between two ships is then blocked if it crosses any part of the asteroid's base, which solves any disputes that could be caused by the irregular shape of the asteroid model itself.

If the line of sight between opposing ships is blocked by an asteroid, those ships may not fire at each other with any weapons, or place missiles along that line. Fighters may still fly around the asteroid to attack as normal.

Example: In figure 29, ship A has a clear line of fire to ship C, but cannot engage ship B due to the intervening asteroid.

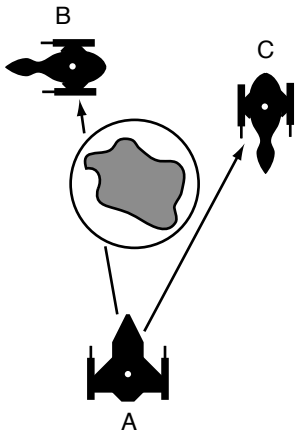


Figure 29: Combat in asteroid field

Sensor scans are also blocked by asteroids. At the start of the game, some ships may be hidden behind bodies in an asteroid field; they are represented by bogey markers in the usual way for unconfirmed contacts, but do not have to be revealed until an enemy ship comes within scan range and can get a clear line of sight onto the bogey. (Note that this blocking applies equally to active scan attempts as to passive.)

Damage to asteroids

The normal rules assume that asteroids cannot be destroyed by weapons fire. (Or even by ships impacting with them.) However, you may give each asteroid a large damage point value (perhaps 50 for a very small chunk, 100 for a larger one, etc) and then allow players to fire at them. When an asteroid is reduced to zero damage, it disintegrates into 1D6 smaller chunks, which all move at random courses and speeds out from the point of destruction. Try to avoid that lot…

13.2 Dust or nebulae clouds

These have the following effects:

1. Travel through a cloud is restricted to a maximum safe velocity of 12; any ship attempting to exceed this in a cloud will suffer potential damage – roll 1 D6 and apply damage as for beam weapons fire. Screens offer no protection, but armour does.

2. Clouds inhibit beam weapons and fire control lock-on: when attempting to fire at a ship in a dust cloud, or if the firing ship is itself in a cloud, roll a D6 after nominating the target. On a roll of 1-3 the dust has prevented a successful target lock-on and the ship may not be fired at. On a 4-6 the shot may be fired as normal, but if using beams or grasers treat the target as having one screen level higher than normal due to beam attenuation caused by the dust. (Screen levels above 2 remain at 2.)

3. Fighters always lock on, but treat the target as having one screen level higher as for beam weapons.

Note that this rule may, if desired, also be used to simulate the effects of ships operating in the fringes of planetary atmospheres, such as when skimming gas giants.

13.3 Solar flares

Flares may occur at random, perhaps diced for each turn, if the battle is happening fairly close to a very active star. They may be assumed to affect the entire table, or just a specific area as the players desire. Any ship that is caught in a flare rolls a D6 for each of its FireCons and sensor systems (if the advanced sensor rules are being used), adding 1 to the score per active screen level. On a score of 4+ the system is undamaged, otherwise it is knocked out as if by a threshold check.

13.4 Meteor swarms and debris

These may cover areas of between 6 MU and 12 MU diameter (or other shapes/sizes at players' discretion) and may be stationary on the table or moving in a similar way to the moving asteroid rules.

Any ship that enters or is hit by such a meteor swarm or debris field has 1 D6 rolled for every full 6 MU of velocity, with the actual score rolled equalling the (penetrating) damage sustained. Up to velocity 5 = no damage, 6-11 = 1 D6, 12-17 = 2 D6, etc.

This rule may also cover the effects of the debris in the rings of a planet such as Saturn, in which case a large arc of it could be depicted on the table to cause all sorts of problems!

13.5 Battle debris

When a ship is destroyed by enemy fire, ie reduced to zero damage points or less, it may simply become a drifting hulk, or it may actually explode into a cloud of debris.

To determine if this happens, note the amount of excess damage inflicted (over that required to reduce the ship to zero points) and roll a D6. If the score is less than or equal to the excess damage then the remains of the ship explode. For example, if a ship has 2 hull boxes left and suffers a further 5 points of damage, a die roll of 5 - 2 = 3 or less will cause it to explode.

An exploding ship creates a cloud of debris 2 MU in diameter for an escort, 4 MU for a cruiser, or 6 MU for a capital ship. The debris cloud exists for only 1 turn after the explosion, during which it moves on the same course and velocity as the ship was travelling at the point of destruction. In this turn any ship encountering the cloud treats it exactly as for the meteor and debris rules given in the section above. After the one turn the debris is assumed to have spread out sufficiently to present little risk to other ships, and is removed from play.

Depicting spatial phenomena

The various effects suggested above may be represented on the table by means of pieces of card, cloth, or acetate cut to the relevant sizes for the affected areas. Meteors and debris clouds can be depicted by small cork-bark chips or even gravel spread over the required area. Explosion templates may be made if desired for destroyed ships, which if suitably graphic (lots of red and orange explosion effects!) can be very effective.

13.6 Collisions

Collisions can occur between ships and asteroids.

If the asteroid is stationary – ie never changes position on the playing area – then a ship risks collision with the asteroid if its path during the movement phase crosses any edge of the asteroid.

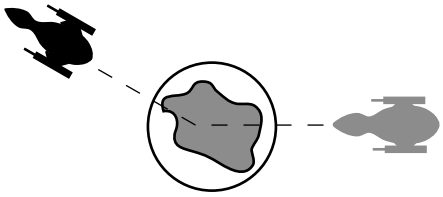


Figure 30: Collision with stationary asteroid

If the asteroid is itself moving, a collision risk can occur under either of these circumstances:

- The movement path of the asteroid brings it into contact with a ship at any point. (This is before the ship itself has moved, at the beginning of the movement phase.)
- The final position of a ship after making its move is inside the asteroid.

Collisions do not occur if the movement paths of the asteroid and ship merely cross. Use the base or model edges of the asteroid and the centre point of the ship model to determine collisions, not the edges of the ship model.

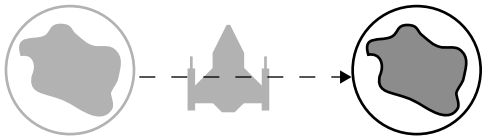


Figure 31: Moving asteroid collides with ship

These collision rules are simple rather than physically accurate, but do ensure that as the movement of both asteroids and ships is completely predictable, you have only yourself to blame if you run into one!

To determine if the ship manages to avoid a fatal collision, subtract the ship's total available thrust rating from its current velocity. This number must be equalled or exceeded by the roll of 1D6 in order for the ship have avoided the collision.

Example: If a cruiser with a thrust rating of 4 is travelling at velocity 9 and its movement intersects with an asteroid body, subtract the thrust (4) from the velocity (9) to give 5. Thus a 5 or 6 must be rolled for the cruiser to evade the asteroid – on a roll of 4 or less, exit one cruiser!

If the needed number for avoidance is 1 or less, then the ship is automatically able to avoid a collision; if the number is greater than 6, then a crash is inevitable.

When any ship, regardless of its class, hits an asteroid, the ship is completely destroyed. Ramming a billion tons of rock at any speed is not recommended, even in a super-dreadnought!

13.7 Starbases

A *starbase* is any space station, habitat, drift, orbital, asteroid base, or other artificial construct large enough to be treated as terrain rather than a ship. A starbase is always thrust 0 for movement.

A starbase has one or more *sections*, each with its own SSD. For game purposes these are considered to be arranged on a hexagonal grid with each section having a central point for determining fire arcs and ranges.

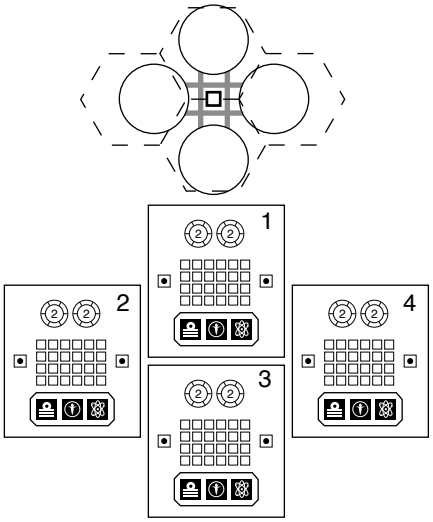


Figure 32: Starbase and SSDs

(The hex grid is purely to determine spatial relationships, ie 'is this bit next to that bit?', and the actual sections can be any desired shape.)

Each section has at least symbols for core systems and a hull damage track, plus weapons or defences as appropriate. Non-military starbases should have many small sections to represent their less robust construction.

Like asteroids, weapons may not be fired or missiles launched by ships through the space occupied by a starbase.

Individual sections may fire or be fired at if they have a direct point to point line of sight, or through sections that have already been destroyed. 'Interior' sections are therefore immune to attack until at least one outer section has been lost.

In figure 33, the ship and sections 2 and 4 can fire at each other, but sections 1 and 3 cannot. Sections either have no drive or a comparatively much smaller drive than a ship, so are not affected by rear arc firing limitations or vulnerability.

If a section of a starbase is destroyed by a core reactor explosion, all immediately adjacent sections take 3D6 of penetrating damage. If this also destroys those sections, repeat the process again: this can create the chain reaction of explosions so often seen in sci-fi television and film.

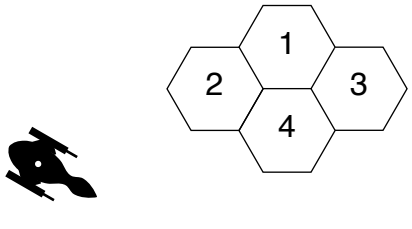


Figure 33: Starbase combat

Movement and starbases

The mass of a starbase represents only that used for ship equivalent systems. The true mass would be many times higher: you cannot use a tow ship or FTL tug to steal a starbase or sections thereof!

While a ship is docked to a starbase the ship may be fired on as normal unless it is actually docked internally. (Some very large stations will have bays large enough to take smaller vessels.) An externally docked ship is, however, protected by any screen systems that the starbase has while docked. Whether a ship docked externally to a starbase can fire any of its own weaponry is up to the players or scenario designer.

Should a starbase happen to have an FTL drive, the symbol should be in the innermost or best protected section. Assume that it has enough excess capacity to carry along any docked ships with it.

A starbase is the same collision risk as an asteroid. If a collision occurs the ship is destroyed and the nearest starbase section takes D6 × ship hull boxes damage as if it had been rammed.

13.8 Planets

For FULL THRUST purposes a *planet* includes not just planets but also major moons and even suns at the larger scales: any stellar body with a significant gravitational effect on spaceships.

In this section we present three different possible systems for representing planets at varying scales. Pick the one that best suits your scale or scenario.

Orbital table

At this scale the table represents an area at a given orbit radius above a planet (plus or minus some distance – higher velocities are 'lower'), with the equatorial orbit path running between the centres of the short edges and a polar orbit across. The planet itself would be underneath the table.

A ship can leave the table at any time to make an orbit around the planet. When it does so, record the ship velocity, course, and distance from the nearest table corner at the point of exit. A number of turns later, the ship can enter again by being placed before orders on the opposite edge

at the same velocity and course, and within 6 MU of the same distance from the diagonally opposite corner edge.

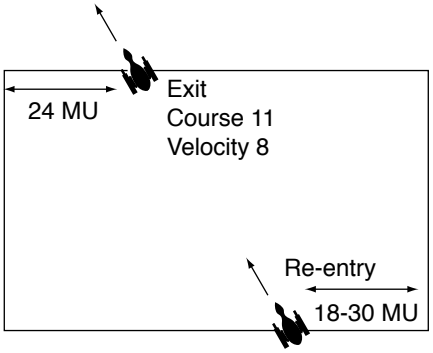


Figure 34: Orbital table

Thrust 0 or 1 ships cannot enter until the 5th turn after exiting, thrust 2 to 4 until the 4th, and thrust 5 or greater the 3rd. (This assumes that the ship is making a powered atmosphere skimming circumnavigation rather than a genuine orbit, plus a bit of dramatic license.)

Whether fighter groups can orbit is optional but not recommended: making the orbit would consume too much fuel for such small craft.

Medium scale

At medium scale a planet should be represented on the table by a half sphere, although a plate or disk will suffice. Decide whether the planet can be landed on or that contact with the planet will be a fatal collision.

The edge of the planet is the orbit track and should be marked with 12 clock face points. The orbit track has an entry velocity and an orbital speed in clock faces per turn.

A planet may have satellites or starbases in orbit. These move at the orbit speed of points per turn around the orbit track, and always face 'away' from the centre of the planet.

A ship enters orbit with any move that intersects the orbit track at the entry velocity and is placed at the nearest marker point. While in orbit, the ship does not have to have any course change orders written for it. The player simply notes that it is *in orbit* and moves the ship by a number of points equal to the orbit speed around the track. Any velocity change will cause the ship to leave orbit, either down or up.

If using cinematic movement, ships in orbit face forward in the closest course facing to the orbit path at that point. In vector movement, ships may change facing as usual. Ships in orbit may fire at any ships outside the orbit track, or at ships at the point immediately in front or behind.

For simplicity we recommend only one ship or starbase may occupy each marker point, or only ships from the same side. If you do allow hostile ships within the same point, they may fire at each other as if at 1 MU range,

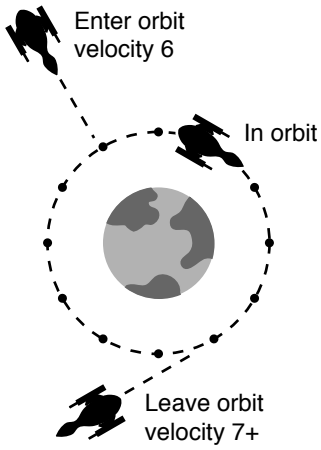


Figure 35: Orbiting a planet

through any arc the firing ship chooses. Missiles home in on a target chosen by random die roll.

Entering and leaving orbit

If the ship hits the orbital distance at less than the orbital velocity, it will enter an automatically decaying orbit and start to enter the atmosphere (section 13.9). If it arrives with greater than the correct velocity it will ram straight into the atmosphere in an uncontrolled entry – you have been warned!

If the ship decelerates to less than the orbital velocity, its orbit will decay and it will start to enter the atmosphere. If it accelerates to above the orbital velocity it will leave orbit and move normally, in a straight line at the clock face heading that is the closest tangent to its orbital path.

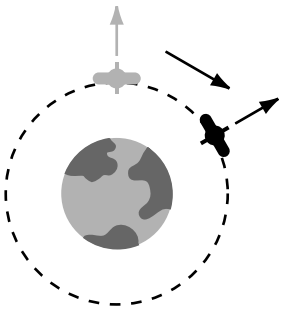


Figure 36: Orbiting starbase

Any ship that suffers a drive or bridge threshold failure while in orbit must make a second threshold check to stay in orbit. If this too fails, the ship orbit has decayed and it enters the atmosphere.

Large scale

These rules are for those who prefer their space battles on a grand scale with the table representing a significant chunk or all of an entire solar system.

Represent planets by small disks up to several MU in diameter, much smaller than for medium scale. A planet is surrounded by three concentric gravity zones, each extending the radius by at least 1 MU. The outer zone is strength 1, the middle strength 2, and the innermost 4. For large planets increase the radius of the zones; treat a sun as a large planet with an extra inner zone of strength 8.

If the movement path of a ship intersects a gravity zone, pause the ship in the innermost zone contacted and adjust the speed and course as follows.

First, determine where the centre of the planet is relative to the ship.

- If the centre is in the fore arc of the ship, add the zone strength to the ship velocity.
- If the centre is in the aft arc, subtract the zone strength from velocity.
- If the centre is in a port or starboard arc, add half the zone strength to the velocity, and turn the ship towards the centre by a number of points equal to the strength of the zone.

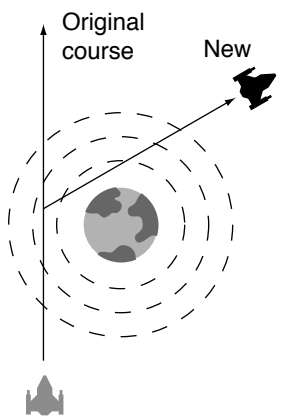


Figure 37: Slingshot around planet

If the ship ends the movement phase in a gravity zone, apply the changes in velocity and course to the start of the next turn movement instead.

A ship that has unused thrust points for changing course may use them to change the gravity zone turn. In figure 37, the ship changes course by 2. If it were a ship with thrust 4 drive and had not changed course, it could increase this up to 4 or decrease it down to none.

The velocity increase may not seem very high, but remember at this scale, the ship must already be moving at considerable speed.

The ship is considered to make a partial orbit within the zone while changing course, so cannot collide with the planet or enter another zone even if the straight line path would indicate otherwise. After leaving it can however intersect the gravity zone of another planet which will change the course and velocity again – clever players may be able to bounce their ships around like billiard balls.

13.9 Atmospheric entry

A fully or partially streamlined ship may enter atmosphere deliberately in order to land on the world's surface. Alternatively, a ship of any configuration may be forced to enter atmosphere due to either a decaying orbit or approaching a planet at too high a velocity.

To make a deliberate safe atmospheric entry, a ship must first enter orbit as described above and then decelerate to less than orbital velocity. A fully streamlined (capable of aerobraking or gliding) ship can land provided it has some main drive thrust. A partially streamlined ship can land if it has main drive thrust at least equal to the planet gravity in Earth Gs; if it has insufficient thrust it will make a crash landing with the effects being up to the individual scenario.

If any ship without streamlining enters atmosphere, or a streamlined ship makes an uncontrolled entry, roll a D6 and apply the following modifiers:

- If the ship is non-streamlined, add 4.
- If partially streamlined, no modifier.
- If fully streamlined, subtract 2.
- Add 1 for every 1 point of velocity in excess of entry orbital velocity.
- Add 1 if the ship's drive is damaged (half normal thrust), or add 3 if drive knocked-out.

On a final result of 2 or less, the ship manages to miraculously survive a ballistic entry, and crash-lands on the planetary surface. The chances of survival for crew/passengers and subsequent events are up to the individual scenario.

On a final score of 3 to 5, the ship burns up in the upper atmosphere, but there is enough time for any interface craft (shuttles, dropships, etc), fighters, or life pods on board to launch.

On a final score of 6 or above, the ship burns up and all crew, passengers, and equipment on board are lost.

14 No! Not the *Nova Cannon!*

The intention behind these optional (*extremely* optional) rules is to simulate some of the weird and wonderful weapons seen in television and film that operate with a blatant disregard for the laws of physics and common sense. As they were never meant to fit in with the basic game system, they can do very strange things to the game balance. We strongly recommend that these systems are used with discretion, and then only with the express agreement of all players. They are not recommended for games where there is any kind of competitive element in play or in fleet design.

Please note that we're *not* telling you not to use any or all of these systems if you wish. Just be aware that their indiscriminate use may throw up anomalies in the game, and you should be prepared to deal with these as you see fit.

14.1 Spinal mount nova cannon

This is probably the single most deadly system available; however it does have its disadvantages as well – by all means experiment with fitting one to your largest ships, but don't say we didn't warn you!

The nova cannon is a massive weapon that can only be mounted in the spinal core of a capital ship, and fires only directly forward – not just through the fore arc, but actually on the centreline of the ship only. In other words, the weapon fires in whatever direction the ship's bow is pointing.

Firing a nova cannon draws a massive amount of power from the ship's power plant. On the turn it is to be fired, the player must note this in orders for that ship, and the ship may not expend any other power at all for that turn: it may not apply any thrust to accelerate or manoeuvre, may not fire any other weapons, and even its screens do not function for that turn! If the nova cannon is then not fired that turn, for any reason, then its 'arming' is lost and it must be re-armed the next turn the player wishes to use it.

When the cannon actually fires, it launches a round of compressed plasma in a containment field and a nuclear or antimatter explosive core. The projectile is hurled out to 6 MU in front of the ship (its minimum arming distance) and the core is detonated, with the field holding the contents long enough for it to form a self-sustaining reaction, like a miniature sun.

Place a 2 MU diameter template at the arming point (6 MU from the ship's bow) and then move the template 18 MU outward along the line of flight. Any and all ships or other objects that are contacted by the template during its flight immediately suffer 6D6 of damage! At the end of its total 24 MU move, the template is left in place on the table. On the next turn, at the start of the firing phase, the 2 MU template is replaced by a 4 MU one, which is then moved 24 MU along its original course. Anything hit by this new template is subject to 4D6 of damage. Finally, on the third turn, the 4 MU template is replaced by a 6 MU one which is then moved another 24 MU, damage from this template being 2D6. At the end of the third turn of movement the nova reaction exhausts its fuel and burns out – the template is removed from play.

Damage from a nova cannon is penetrating damage: neither type of screen nor armour has any effect.

14.2 Wave gun

The wave gun is a smaller and slightly less over-the-top variant on the nova cannon. The system fires a plasma charge that expands as it travels along its line of flight, causing damage to any vessels in its path.

As with the nova cannon, the wave gun may fire only along the main axis of the carrying ship, ie in a straight line bearing directly forward along the ship's current course. The ship may not fire any other weaponry in the turn that it fires the wave gun, and also counts as unscreened through its entire frontal arc while the weapon is being fired.

The wave gun needs to be charged prior to firing. Each turn that the player orders the weapon to charge, roll one D6 and write the result down; when the accumulated rolls reach six or more the weapon is fully charged and may then be fired on any turn. Firing the wave gun totally discharges the capacitors, which must then recharge from zero again. Note that a ship fitted with a wave gun may apply thrust or change course in the same turn that it fires the weapon, unlike the nova cannon.

Unlike the nova cannon, the wave gun burst has a life of only one turn. Its full range is 36 MU. Over the first 12 MU, move a 2 MU diameter template along the line of fire, at 12-24 MU the template expands to 3 MU diameter, and then from 24-36 MU it expands again to 4 MU diameter. This all happens in the one turn, after which the template is removed. Any ship touched by the template during its flight suffers damage: 4D6 at 0-12 MU range, 3D6 at 12-24 MU and 2D6 at 24-36 MU.

Advanced screens affect wave gun damage rolls, but against standard screens or armour the damage is penetrating.

If the wave gun is knocked out by a threshold roll or a needle beam hit while it is charging or charged, the carrying ship suffers damage equal to the current charge in the weapon's capacitors.

14.3 Reflex field

The reflex field is a variation on conventional screen technology in that it protects its carrying ship (partially) against attack from energy weapons such as standard beam batteries. The interesting aspect of the reflex field is that it has the capability to actually 'return' some or all of the attacking beam energy back to its source, causing damage to the firing vessel! 'Energy weapon' includes beams, grasers, fighters, and any other weapon affected by standard screens.

This nasty little device may be activated in any desired turn, but it must be written in the carrying ship's orders

that the field device is to be activated. On any turn that the player does not order the field to be in use, assume it is turned off. The opposing player is not told of the field's status until the ship is fired upon, by which time it may be too late.

If the reflex field is activated, the carrying ship may not use any weaponry of its own that turn, thought it may move and manoeuvre normally. Other specialised actions, eg launching or recovering fighters, are also prohibited while the field is active.

When a ship with an operating reflex field is fired on by energy weapons, roll for hits and damage in the normal way. Now the player owning the target ship tells the attacker that the ship has an active field, and rolls 1 D6.

- On a roll of 1 the field has no effect: full damage is applied to the target ship as normal.
- On a 2 the field stops some damage: the target receives only half the normal damage, rounded up.
- On rolls of 3 or 4, the field absorbs all the damage and none is applied to the target.
- On a 5, no damage is applied to the target, but half (rounded up) is reflected back to the firing ship.
- On a 6, the field reflects the full damage back to the firer!

If a fighter group attacks a ship with an active reflex field, roll a single D6 for the entire group after rolling fighter attack damage. Rolls of 1-4 have the effect described above. On a roll of 5 or 6, each fighter that inflicts any damage is destroyed by the reflected energy.

14.4 Cloaking field

Cloaking fields are systems that render ships totally invisible and undetectable on all forms of sensors and visual scanning. They are thus very useful under certain circumstances, but they have one big disadvantage as well: though the cloaked ship cannot be seen, it also cannot see out. While the cloak is active it is in its own little world, with no interface to outside reality. (A bit like some gamers...)

The cloaked ship is thus reduced to navigating inertially, based on the data it had when entering cloaking mode – it has no idea what is going on around it until it decloaks again. The suggested way of simulating this is that when a ship wishes to 'cloak' the player must note this in orders for that turn, and the number of turns the ship is to remain cloaked, eg 3 turns. At the start of its movement for that turn, the ship model is removed from the table and a marker of some kind is placed to mark its location on entering cloaked mode. This marker then remains stationary until the ship decloaks, when it can be removed. For each turn the ship is in cloaked mode, the player writes movement orders for it exactly as normal, although of course nothing is placed on the table to indicate its movement. After the required number of turns in cloak have elapsed, the player returns to the cloaking marker and proceeds to plot out all the moves written for the ship while cloaked, finally placing the ship wherever it actually ends up. Properly planned it will still be on the table, if not it may well be halfway into the next room!

Of course, the player has an advantage over the imagined captain of the cloaked ship, in being able to see the flow of the battle and write orders accordingly – however this is balanced somewhat by having to specify in advance the number of turns in cloak, to prevent ships choosing to decloak just because a juicy target has wandered into range.

This is just a rough idea for the system, and it may be tinkered with as much as you like – in multiplayer games where each participant has only one ship, it may be interesting to try sending the player out of the room for the turns the ship is cloaked so he or she really has no idea what is going on!

Mass and points cost

System	Mass	Points
Nova cannon	20	60
Wave gun	12	36
Reflex field	10% total mass minimum 10	× 6
Cloaking field	10% total mass minimum 2	× 10

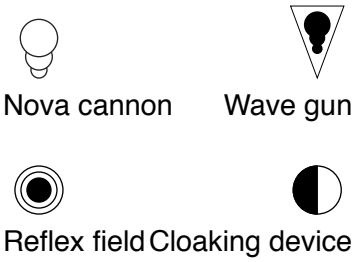


Figure 38: SSD symbols

15 Battles and Campaigns

Space battles may be fought in a vacuum, but the commanders will still have some purpose or objective in mind. Once you are familiar with the rules, we strongly recommend the use of terrain and planets to make the games more interesting, and scenarios with objectives other than a simple 'beat up the enemy'.

15.1 Deployment

A conventional if uninspiring way to begin the battle is with fleets at opposite short ends of the table in a 'meeting engagement'. Players alternate in placing one ship at a time within 6 MU of their table edge (or two to four ships at a time for large battles) with any desired course and an initial velocity.

Space does provide much more freedom of movement than a planetary surface, so there is no reason not to use other deployments. One likely scenario is two fleets heading for the same objective on converging courses. Players deploy their ships along the opposing long edges of the table up to the half way mark, within 6 MU of the edge and initial course limited to 11, 12, or 1.

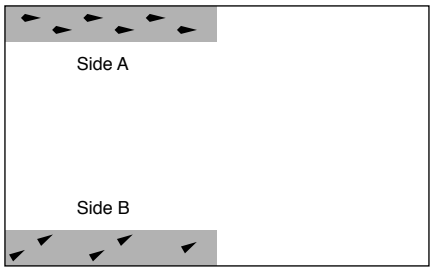


Figure 39: Converging deployment

For a battle between offensive and defensive fleets, the defending fleet deploys all its ships first anywhere within their own half of the table. The defender can also place a planet or similar terrain feature anywhere they desire. The attacking ships can either enter under main drive at the opposite table edge, or (if permitted) some or all may make an FTL entry.

Big battles

Very large battles with dozens of ships will flow more smoothly if threshold point checks are postponed instead of being done immediately. With one player per side, use 'simultaneous' fire with all threshold checks done at the end of the turn. With more than one player per side, postpone threshold checks for any ship that is itself about to fire or that is going to be shot at by multiple ships in succession, until they can be done while another player is firing. A free flowing game with a minimum of waiting is more important than rigid adherence to the turn sequence.

15.2 Tournament fleets

Ship designs for competitive tournaments need to be controlled, for instance by restricting players to only designs given in the FULL THRUST fleet books, with no modifications, changes in weapons, etc. (Players can of course use their own ship models even if they don't resemble the 'official' designs.) This should give a game where the tactics of play decide the victor, rather than who can stretch the design rules to the furthest limit!

An even more limiting but quite useful idea is to actually give each player a fixed, identical force – that way you are really finding out who is the better tactician (or just luckiest with the dice). This method can be effectively used for 'enter on the day' competitions where players do not have to bring their own fleets along, but use one provided by the organisers.

Fleets should be kept fairly small to allow games to be played to completion in a reasonable time. The ideal size is probably between 1000 and 1500 points in total, though fleets as small as 500 points can still be interesting. Forces of over 3000 points will probably be too large unless plenty of time is available.

To finish games faster, use the optional Striking the Colours rules (section 10.9) and/or disallow repairs to systems (section 8.3).

Fleet composition

Battles can be made more interesting by restricting the proportions of different ship classes as well as the overall points total.

For 'patrol' battles, restrict fleets to having no capitals at all and no more than 50% of the points spent on cruisers. Allowing small carriers is optional but not recommended.

For larger battles, you can restrict fleets to no more than 50% of points spent on capitals, including their fighters; or require that each capital class ship must have one or two corresponding cruisers and escorts. Or you could decide that large 'fleet actions' can be fought entirely by capital class ships with no requirement to have smaller ships present. Either can be argued based on historical precedent or different science fiction settings, so feel free to experiment.

15.3 Combat Points Value

Experience has shown that the FULL THRUST points system does not fully reflect the advantages of increasing ship size: one larger ship will usually defeat two ships each costing half as much, even though the combined points of the two sides are equal. The *Combat Points Value*, CPV, is a more complex method of calculating the points value for each ship that gives more equally matched battles when ships of different classes are mixed together.

The simple CPV calculation changes only the basic hull cost calculation (section 11.2). Instead of being equal to mass, the points cost for the hull becomes

$$\text{hull} = \frac{\text{mass}^2}{100}$$

rounded off to the nearest integer.

(If the ship has mass 7 or less the CPV calculation would give zero as the hull cost, but in FULL THRUST everything must cost at least 1 point.)

The effect of the simple CPV is that ships with mass below 100 become cheaper, over 100 more expensive. The change to the points value can be calculated by subtracting the actual ship mass from the CPV hull value.

For example, the *Suffren* class light cruiser from FLEET BOOK 1 has mass 54 and a points cost of 181. Using the CPV calculation, the hull cost is

$$\frac{54^2}{100} = \frac{2916}{100} = 29$$

a reduction of 25 points for a new total points cost of 156. On the other hand, an *Excalibur* class dreadnought has mass 140 and points cost 472. Using the CPV, the hull cost is

$$\frac{140^2}{100} = \frac{19600}{100} = 196$$

an increase of 56 for a new total points cost of 528.

The simple CPV given here is still unbalanced for some cases. A more elaborate method of CPV calculation is online at http://fullthrust.star-ranger.com

15.4 Humour

Some players take their gaming far too seriously. FULL THRUST is an ideal antidote to an overdose of 'serious gaming', and it is unusual not to have participants in laughter after someone cracks a particularly awful sci-fi cliché.

There is quite a lot of good science fiction humour around in books, television, and films from which to gain inspiration for running some really silly games. Just remember when running this sort of game that humour is generally more effective in small quantities – a little satire can often hit the mark much better than a pie in the face joke. If you go too far over the top the game will degenerate into chaos, whereas a few well-timed bits of silliness will liven up the evening no end.

If you *do* want the game to degenerate into chaos, it is traditional in any humorous GZG game for sheep to be present, if not actually the greatest threat to humanity. No walking balls of wool, these sheep range from the merely savage and carnivorous to the twisted unnatural flocks that worship Primordial Horrors From Beyond Space and Time. If you find yourself in a scenario with the mission objective being to defend Baabylon 5 against the forces of Baath Vader, expect the worst!

15.5 The GZG setting

The ultimate source of interesting battles is a campaign. This can be anything from a series of linked battles with only the survivors from previous actions able to keep fighting, up to a full fledged 'space opera' where each player represents a major power and must worry about politics and economics as well as simple combat. What all campaigns do need though is some sort of setting so the players know who is who and what resources are available.

The GZG setting, or 'GZGverse', is the background and reference for FULL THRUST and companion GZG products such as the STARGRUNT and DIRTSIDE ground combat rules. It has been developed and expanded for well over a decade, so there is only space for a very brief introduction here. For more information, read the relevant sections in the FULL THRUST 2nd edition rulebook and the two Fleet Books.

Please treat this background just like any of the rules: if you like it, by all means use it – if you don't, then write your own and ignore anyone who tries to say you're doing it wrong!

The GZGverse future history begins (or began) in the 1990s, but the period covered by the rules is roughly 2160 CE (AD) to, so far, 2194.

The major technological advances are efficient space travel and the development of a faster than light drive, widespread use of compact and powerful energy sources, and the early stages of artificial gravity. The GZGverse is neither transhuman nor approaching a singularity. Human biology has remained almost the same, while ethnic, religious, and national rivalries continue unabated or even intensified.

Earth remains the central planet of humanity. Surrounding it are the inner colonies, long settled worlds divided among the major powers. The outer worlds beyond are home to a staggering variety of colonies, factions, and settlements.

The two superpowers of the GZGverse are the New Anglian Confederation (NAC), present day Britain, Canada, and United States; and the Eurasian Solar Union (ESU), present day China, India, and most of Russia. The other two major powers are the Federated States of Europe (FSE) and New Swabian League (NSL) which between them include almost all of present day Europe. The fleets used by these four major powers are described in FLEET BOOK 1.

Twenty second century warfare can be so destructive that the major powers, reluctantly, have allowed the United Nations sufficient authority to maintain an uneasy peace on Earth and the inner colonies. Diplomatic and military struggles for power and influence have largely shifted to the outer worlds. The United Nations Space Command (UNSC) and some of these outer world fleets have not yet been published in book form, but can be found online.

Beginning in 2183 humanity met three different alien races in quick succession. The Sa'Vasku are ancient and enigmatic, relying on living biological technologies. The

Phalons are similar enough to humans to be allies, enemies, or trade partners – but by human standards are exasperatingly changeable and can be all three on different days.

The third are the Kra'Vak who are much more consistent in their approach to humanity: consistently hostile. 2185 is the official date for the start of the Xeno War between humanity and the Kra'Vak. The war has seen the United Nations become a major power itself, and the introduction of advanced weapons and systems for a new generation of human warships. (The older designs remain in service, especially among lesser powers.)

The Sa'Vasku, Phalon, and Kra'Vak fleets are described in FLEET BOOK 2. The current GZG history stops at 2194, with Earth itself under threat from a massive Kra'Vak attack.

15.6 The cross dimensional setting

Or "Hey! How did the Daleks get hold of a Death Star?"

FULL THRUST makes it possible for fleets from different systems, galaxies, or universes to do battle with each other. As every TV sci-fi viewer knows, space is cluttered with tachyon bursts, negative polarity fields, and quantum singularities that routinely push ships back and forth in time, into parallel universes, or even other dimensions. If ships, why not whole fleets or solar systems?

If you do decide to bring fleets from different settings together, it is best to require that players translate all designs into those allowed by the standard FULL THRUST rules only. This is contrary to advice given everywhere else in this rulebook, but the more you modify the rules to match a particular setting, the less suitable those rules become for ships from different settings.

Restricting ships to the standard rules will upset players who want to use the MkIX MegaCannon with the Viridian Amplification Element as seen in episode 64, but it is by far the easiest and also fairest method. (In the worst case, "fair" in that everyone will be equally disappointed.)

The first step in converting from another setting to FULL THRUST is to determine the role of each ship, whether escort, cruiser, or capital. This will give an initial mass range for the design. If feints and rapid strikes are important in battle then the drive ratings should be higher than in settings in which the opponents plough straight into each other like herds of dinosaurs.

If ships grind away at each other in drawn-out firefights, the designs should allocate more mass to defensive systems and hull and less to weapons. In other settings ships frequently explode with the first good shot, so should be designed with plenty of weapons and little or no protection. Most science fiction ships use beams of some sort, but there may also be torpedo like weapons, or missiles.

You will find that FULL THRUST is flexible enough to recreate the distinctive fighting styles of different fleets even without one for one equivalents and special rules. And it's lots of fun.

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Summary of Changes

Construction

If a ship has mass over 10, it must be even. Maximum mass is 300.

Advanced FTL drives allow more precise jumps without risk of scattering.

Advanced (three row) hulls from the UNSC BETA RULES are included, but not five or six row hulls.

'Battleriders', non-FTL capable escorts or cruisers, can be used in standard games provided the fleet includes motherships (tugs or tenders) to haul them around.

Turn sequence

Fighters move after missile launch.

Movement

FTL jump gates and portals are included.

Halted ships (velocity zero) have no special turning ability in Cinematic.

Sidesteps, a port and starboard facing change in the same turn, specified.

Squadron movement details added.

Ships making FTL entry and exit near other objects can be damaged by the transition, but not (usually) other ships in the vicinity.

New systems

Grasers have been modified from the UNSC BETA RULES. Grasers do not re-roll on a 6.

The current pulse torpedo is the 'Class 1' torpedo. Higher class torpedoes add 3 MU per class to the range bands but no extra damage.

Broadside fire arcs, the two port and starboard but not fore or aft, are allowed for beams, torpedoes, and missiles.

Heavy missiles are back: now launched just like salvo missiles. (But are not interchangeable).

Multi-stage missiles are optional.

No AMT torpedoes.

Scatterguns are now standard rather than alien. A scattergun rolls as if four PDS.

Advanced screens provide all the protection of a standard screen, and also protect against missiles, torpedoes, and other weapons.

Shell armour is now standard rather than alien.

New combat rules

All weapons are now 'armour-piercing': half the total damage from each ship attack (rounded up) is taken on armour, regardless of weapon type. Needle weapons and beam or fighter re-rolls still go straight through to the hull.

Optional: attacks by ship weapons, but not fighters or missiles, into the rear arc of a ship ignore screens and armour for penetrating damage.

PDS fire against ships is only possible if the target has no screens or armour.

Damage repair rolls are low rather than high, needing less than or equal to the number of DCPs.

Fighters

Ships can now fire with normal weapons on fighter groups not dogfighting or screening. Any weapon rolls a single D6 and kills one fighter on 6. The fighters can evade by spending a CEF.

FTL-capable fighters cost an extra point. They still require a carrier, but can be deployed on table without needing to be launched and retreat off table without re-embarking.

Heavy and torpedo fighter move is reduced to 18 MU.

Kinetic weaponry fighters ignore standard screens.

Fighter morale is no longer recommended.

Changes in CROSS DIMENSIONS 1.1

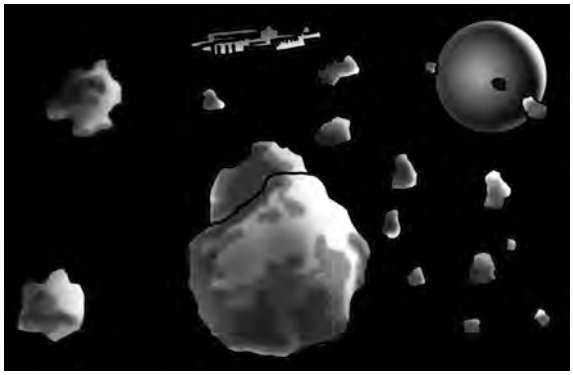
Cinematic turn ability changed back to half main drive rounded *down*.

Fighter and missile attack phases changed back to being *before* ship fire.

Restored point defence fire against (unprotected) ships.

Scatterguns roll 4 PDS dice, not 3.

Added changes for FLEET BOOK 2 aliens.



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Quick Reference

Turn Sequence

1. Write orders.
2. Roll for initiative.
3. Launch missiles.
   Initiative launches last
   Ship by ship
4. Move fighter groups.
   Launch groups, half distance
   Other groups
   Initiative moves last
5. Move ships.
   Fixed movement objects
   Minelayers
   Normal moves
   FTL entry or exit
6. Secondary fighter moves.
7. Allocate missile and fighter attacks.
8. Fighters against fighters or missiles.
9. Point defence fire.
10. Missile and fighters against ships.
11. Ships fire.
    Initiative shoots first
    Ship by ship
    Threshold checks after each
12. Damage control.
    Repair rolls
    Core System effects

Movement

1. Turn half, rounded down
2. Move half, rounded down
3. Remaining turn
4. Remaining move

Standard max turn is half thrust rounded down.

T or H fighters 18 MU; F 36; others 24.

Defence

- Armour
  Half rounded up, each layer
- Screen
  Beams, grasers, non-Torpedo fighters
- Advanced screen
  Subtract 1 per level from damage die
  SMP affected as if beam vs screen
  Torpedo fighter -1 damage per level
- Penetrating weapons ignore defences

Ship fire vs fighters

1. Announce weapons fire
2. Option to evade 1 CEF
3. 1D6 per weapon, 6 = 1

Ship fire

- Beam

D6/range	0-12	12-24	24-36
Class 1	1	-	-
Class 2	2	1	-
Class 3	3	2	1

  Beam damage

Unscreened	1-3 = none	4,5 = 1	6 = 2
Level-1	1-4 = none	5 = 1	6 = 2
Level-2	1-4 = none	5 = 1	6 = 1

  Re-roll on 6, penetrating
- Graser
  Hit as for beam, 18 MU range bands
  D6 DP per hit, no re-rolls
- Torpedo

MU	0-6	6-12	12-18	18-24	24-30
Hit	2+	3+	4+	5+	6

  D6 DP from hit
  +3 MU to bands per class above 1
- SMP
  0-6 MU 3D6, 6-12 2D6, 12-18 1D6
  Damage as beam, re-roll on 6
- Needle
  Range 12 MU, penetrating
  5 = 1 DP, 6 = 1 DP + system
- Missile
  Range 24 MU, Extended 36
  Salvo: D6 in salvo, D6 each
  Heavy: 3D6
- Point defence
  Unarmoured, unscreened targets
  6 = 1 DP, no re-roll

Point defence

- PDS vs
  Fighter or salvo: 4,5 = 1, 6 = 2 + re-roll
  Heavy fighter: 5 = 1, 6 = 2 + re-roll
  Heavy missile: 5, 6
- Beam-1 vs
  Fighter or salvo: 5 = 1, 6 = 1 + re-roll
  Heavy missile: 6
- Scattergun rolls four PDS dice.

Fighters

- vs ship
  Interceptor, no CEF: none
  Torpedo: 4,5,6 = DP
  Other as beam-1, Attack +1
  Kinetic ignore standard screen
- vs fighter
  Attack, Torpedo, no CEF 6 = 1
  Other as PDS, Int +1
- vs missile
  Attack, Torpedo, no CEF: none
  Salvo: 5 = 1, 6 = 1 + re-roll, Int +1
  Heavy: 6 = 1, Int +1

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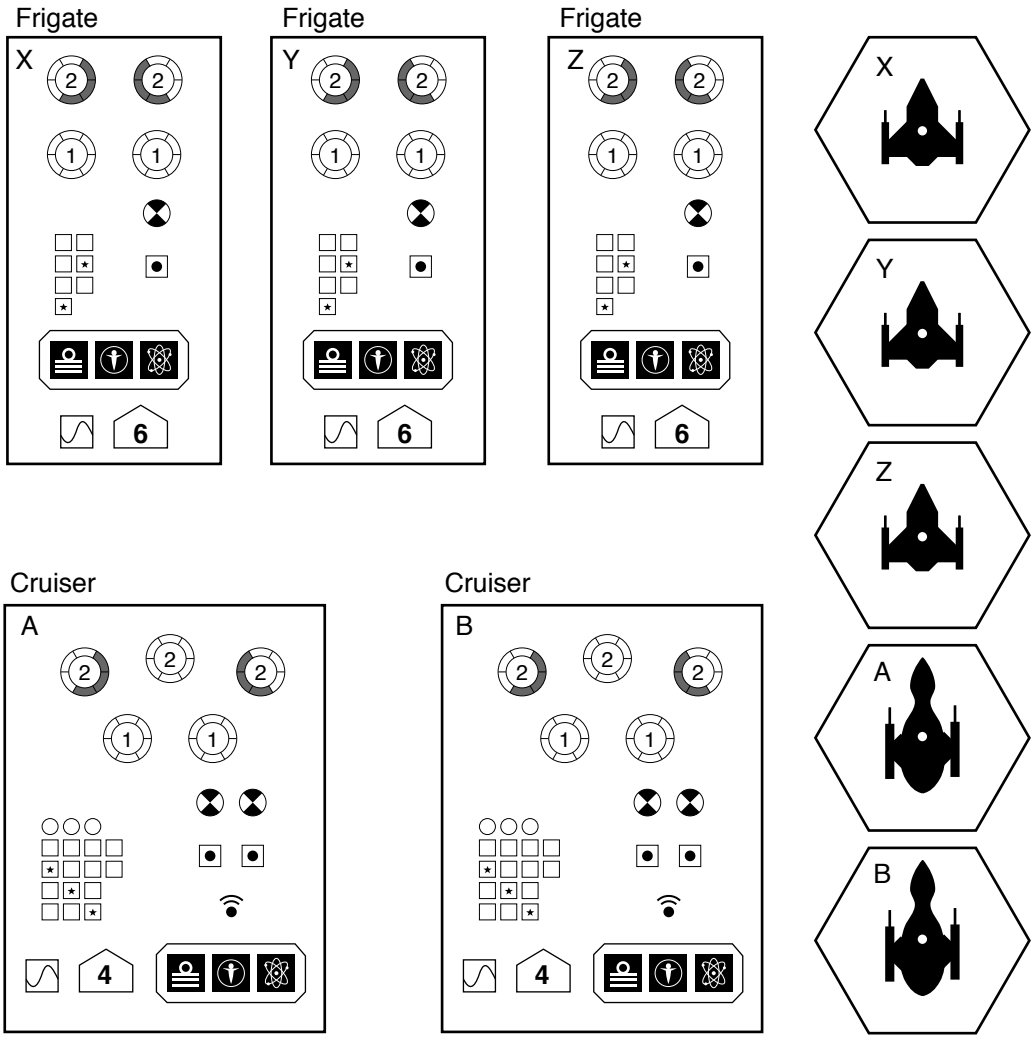
Introductory SSDs and counters



Turn 1 2 3 4 5 6 7 8

Cruiser A V: 6 _____

Cruiser B V: 6 _____

Frigate X V: 6 _____

Frigate Y V: 6 _____

Frigate Z V: 6 _____

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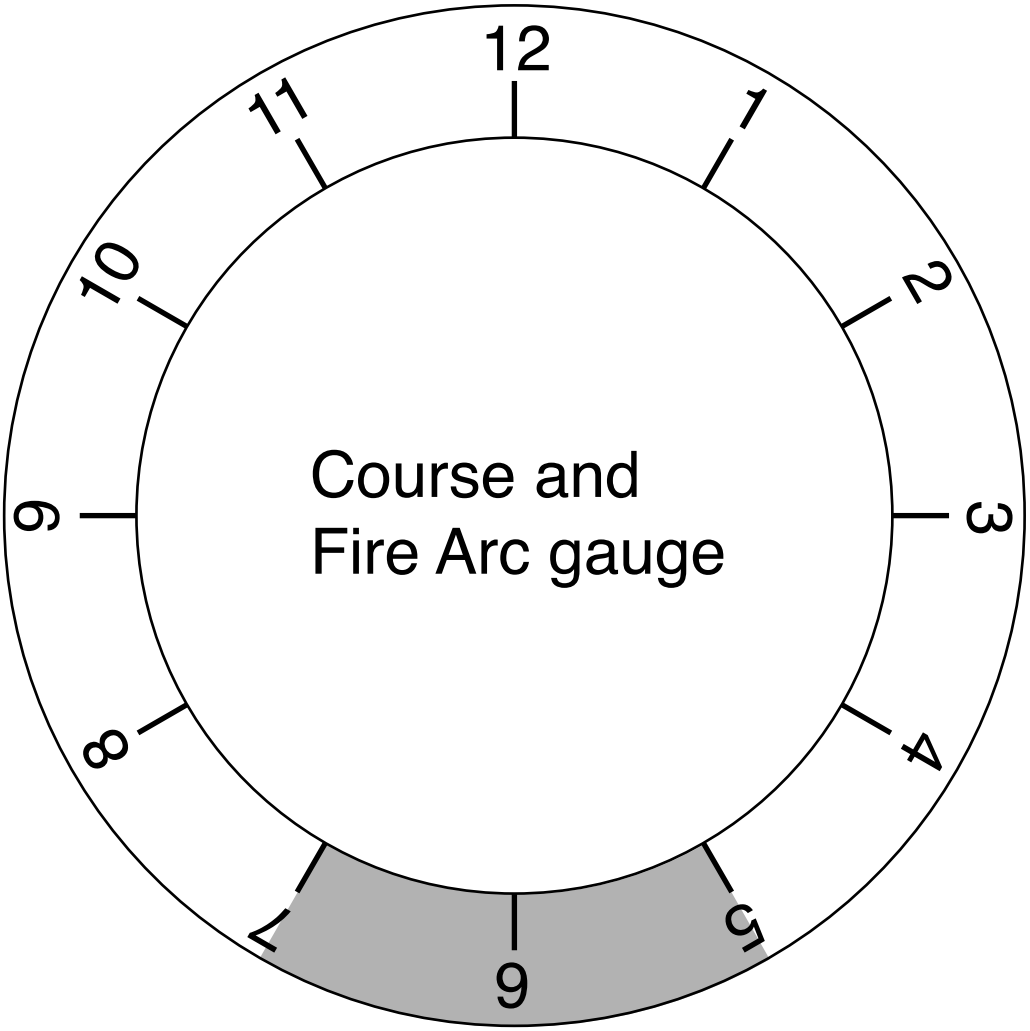

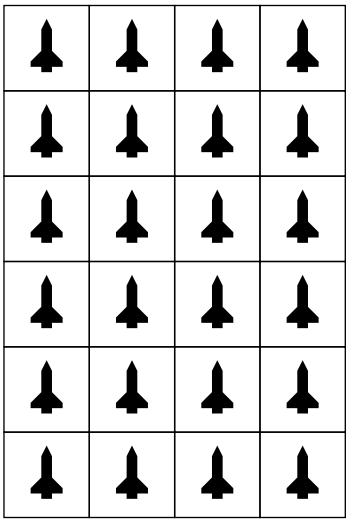

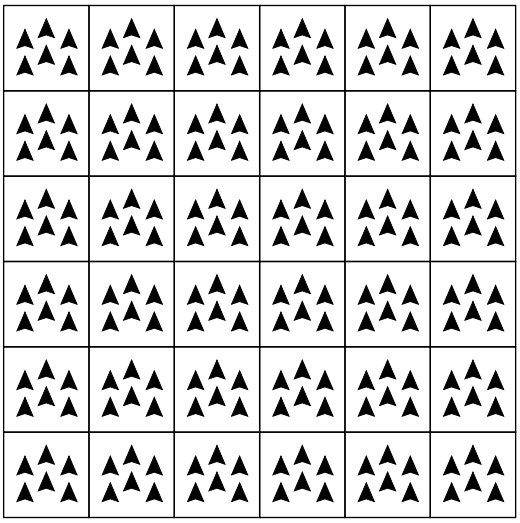

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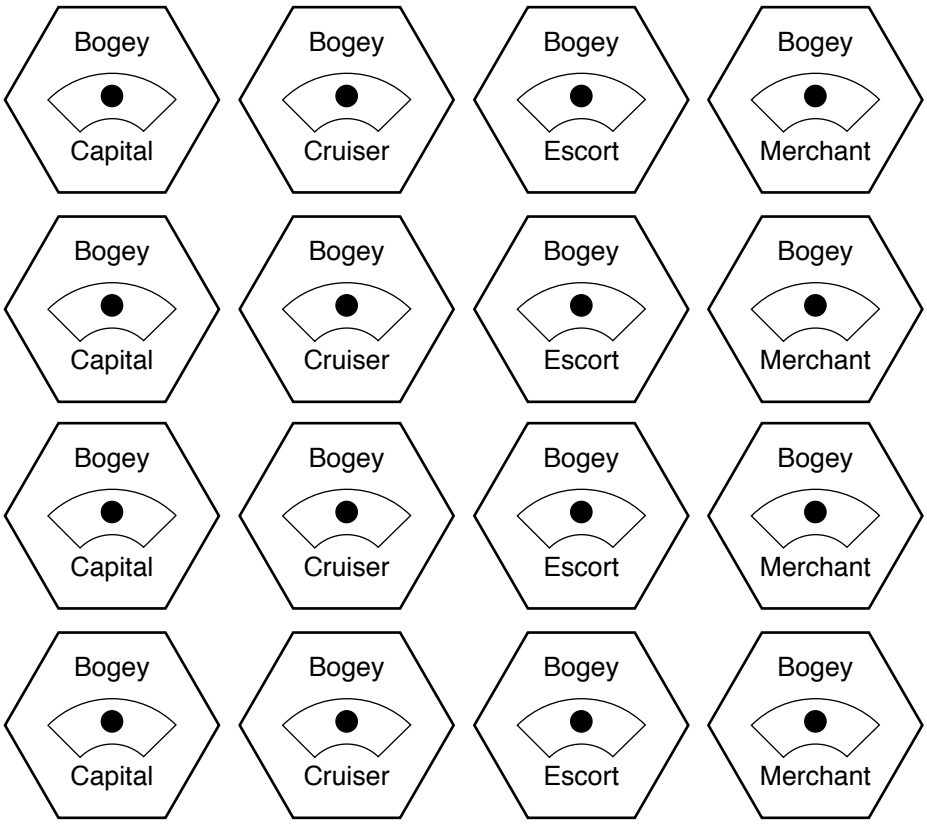

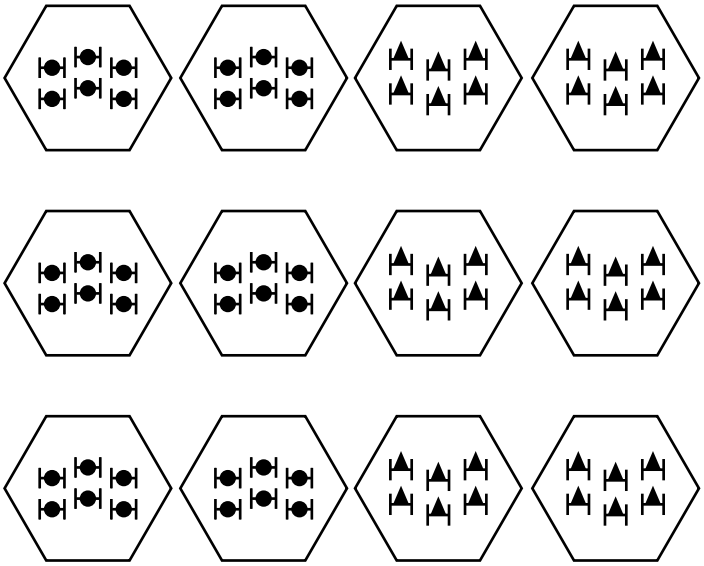

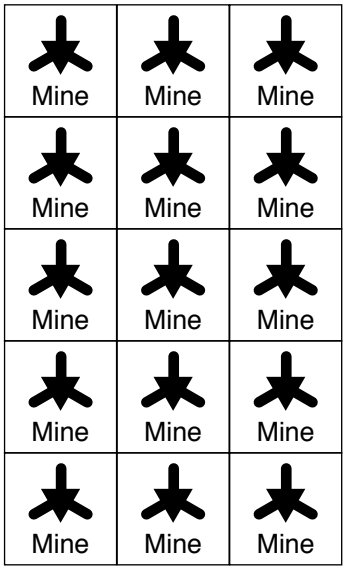

CONTENTS

RNS NASHVILLE clawed at the fabric of space as her howling drives fought to push the ship round in a crash turn. Captain Garrett tried to ignore the waves of nausea as her ship's gravitic compensators struggled to keep pace with the huge gee-force shifts that would otherwise have reduced her crew to thin red smears.

On the tac plot, Garrett watched the red trails indicating the incoming missile spreads just fired from the FSE warship. She had ordered Nashville into a frantic turn before the Feds launched, on that sixth sense that starship skippers either learn quickly or die; if she had waited until her sensors had picked up the missiles inbound, it might well have been too late.

The Fed captain, on the other hand, had expected the Nashville to keep coming right down the line, trying to close the beam range - although he'd tried to hedge his bets by spreading his missile salvos well apart, Garrett could already see that one flight was going to run wide of her ship by enough margin that its sensors could never get a lock on. The other salvo was a different matter....

"Ma'am, confirm one salvo tracking us on active, point defence is responding!" Garrett's Tac officer called as he stared at the plot with a familiar feeling of helplessness - no human could react as fast as the computer systems, and the fire direction of Nashville's point-defence lasers was already out of his hands. The rapid-pulse laser clusters spat coherent light at the incoming missiles, with the ship's smaller beam batteries adding their own fire - built for antiship combat, they were much less effective than the dedicated PD systems, but there was no point in holding anything back.

The plot flared with simulations of the huge energies being released outside the ship as Nashville's defences sought the threat tearing down on her. The hypervelocity missiles consumed almost all their drive power in the first seconds of their flight, pouring it out in a frantic burst of acceleration - but they retained just enough to allow terminal homing on to their target provided it stayed within the limited range of their sensors. Of the six missiles in the salvo, five achieved sensor lock on the Nashville and bore in for their attack run. The flaring PD clusters ripped two to fragments, and one of the ship's beam mounts scored a lucky hit on a third, but two slipped through the maelstrom of energy and closed on their target.

"Confirm two birds through!!" shouted the Tac officer, and a moment later the Nashville bucked and shuddered as the missiles' warheads released their violence against her hull. Alloy and armour rent and split as energy and shrapnel tore through the ship's midsection. Air howled from ripped compartments and fourteen of her crew died mercifully fast in the sleet of charged particles and hard radiation.

The bridge gradually stopped shaking, and Garrett could see the red lights peppering the normal green of her ship systems repeater board. "Damage control, status please?"

The helmeted face of her chief DC officer appeared on one of the small comm repeater screens: "Aye, Ma'am, reading structural damage between frames twenty-six and forty-one, decks C through F, but hull integrity still showing within safety limits. Total decompression in six compartments, but all other seals and bulkheads seem to be holding. We've lost one of the secondary mounts on the starboard side, and point-defence two is offline - may be just the tracking system, I'm still getting a response from the projector and we may be able to slave it across to PD one's tracker - I'm getting a team on it now. Looks like we were lucky on vital systems - drives and environmental are reporting green. Wouldn't like to take another hit like that till we've had the chance to patch things up though."

Garrett smiled briefly at the pickup, then replied in a grimmer tone. "Thanks, Jim. Get me a casualty count as soon as you can, please. We'll do our best to stop the Feds getting another chance..... Helm, come about to 0100; Gunnery, lock all batteries on that bastard, and fire as you bear....."

CONTENTS

Introduction and Designer's Notes	2
Vector Movement System	3
New Fire Arc Rules	4
Rolling Ships	5
Reroll and Damage Rules	5
Core Systems Rules	5
Expanded Fighter Rules	6
Modified Weapons Systems	6
Defensive and Other Systems	7
Turn Sequence Summary	8
Salvo Missile Systems	9
Ship Design	10
Mass and Points Cost Table	11
Summary of Weapon Systems	12
NAC Ship Designs	13
NSL Ship Designs	20
FSE Ship Designs	27
ESU Ship Designs	34
Merchant and Support Vessels	42
Background Information	43
Final Comments and Counters	46
New Ship Record Sheet	47
Full Thrust Starship Miniatures List	48

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Many grateful thanks to everyone who has helped in the development of this book, and apologies to anyone we've missed out!
Special thanks to: Mark "Indy" Kochte, Mark Seifert, Oerjan Ohlson, Allan Goodall and Aaron Teske, who checked the ship designs for us very quickly, at very short notice!

This book is dedicated to the memory of Adam Delafield.

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INTRODUCTION & DESIGNER'S NOTES

INTRODUCTION

This is the first volume of (at least) two Fleet Books that we intend to publish for **FULL THRUST**, to provide players with a resource of pregenerated ship designs that tie in with the GZG ranges of Starship Miniatures. This book concentrates on the major HUMAN fleets of the timeframe of the game background; volume 2 will cover the *ALIEN* forces (the Kra'Vak, the Sa'Vasku and maybe a few other races as well) and, time and interest permitting, we may also do a volume 3 that will cover minor nationalities and miscellaneous ships.

The Full Thrust (Second Edition) rulebook was first published in 1992. Since then, we have printed and sold well over ten thousand copies, a fair number for what started out as a "small press" system! The book you are now reading is the second official supplement for FT, and the first to be published since More Thrust in 1993; in this volume we have taken the opportunity to update a few things about the game in the light of our own and players' experiences with the rules over the past six years.

None of the changes are just for change's sake - they are to improve and update the game, and to correct some of the mistakes and loopholes in the original rules. There is a completely updated and revised ship design system that removes some of the odd effects of the old system while being just as easy to use and much more internally consistent; we also provide a complete alternative movement system for simulating "true" vector movement of ships, which it must be stressed is COMPLETELY OPTIONAL and may be used in place of (or even as well as) the conventional "cinematic" movement as you prefer.

Aside from a couple of basic items (for example, the revised Fire Arc rules), the actual gameplay of Full Thrust will be changed very little by the new rules, though you may find the new possibilities opened up by the new ship design mechanisms will cause you to look hard at your tactics!

The most important thing, as we always emphasised in the original Full Thrust, is that you should feel free to modify and adapt the game to the personal preferences of yourself and your gaming group - use as much or as little of the new material here as you wish, and don't let anyone else tell you are doing it wrong!

DESIGNER'S NOTES

THE "OFFICIAL" SHIP DESIGNS

The bulk of this book consists of designs for the ships depicted in the four major human fleets of the Full Thrust miniatures range, which represent the space navies of the four main human "superpowers" of the late 22nd Century in the GZG future history. Each entry is a representative example of one particular class of ship for a given fleet, and in most cases is not the only class of vessel that fills that slot in the fleet inventory. For example, the New Anglian Royal Navy has several different classes of Destroyers in service aside from the Ticonderoga class shown - some are much older designs, while others are new construction that will supplement and eventually replace the current classes. In addition to there being many other classes of ships in service, the specific classes shown will all have minor variations of weapons or system fits on individual ships within the class. Players should therefore feel free to modify the listed designs and/or to create their own new ones while still remaining within the guidelines of the background provided.

It should be noted that the designs presented in this volume have been configured to fulfil sensible roles within their fleet structures, and as such are not "rules-lawyered" or maximised to exploit the limits of the designs system. If you set out to build a perfect fleet to beat a given type of opponent in a one-off game, you can probably come up with designs that are a lot more effective than those listed here, but that is not the way "real" navies work - they have to have the flexibility to perform many varied missions against different potential enemies, and this is what we have tried to reflect in the designs of the ships in this book.

For those of you who do not use the "official" background setting, the designs in this book should still provide an invaluable resource of pregenerated ships. Need a Heavy Cruiser? Just pick any of the ones listed, modify it (or not) as you desire, and call it whatever fits your preferred background!

NOTES ON THE NEW SHIP DESIGN SYSTEM, AND COMPARISON WITH FT 2nd EDITION

Using the design system given here, ships will end up with much higher MASS ratings than the comparable classes in FT2, but with broadly similar offensive and defensive capabilities. Under the new system of variable hull strengths, the Damage Point values of some ships will be a little higher than under FT2 (especially when using Average strength hulls or better), but this will be balanced by the slight increase in offensive power of most weapons due to the reroll rules and the increased vulnerability of some ships caused by the new style damage tracks. Overall, we think most of these factors will balance out and the game play should not be too unlike FT2.

So, why bother with the new design system at all? Well, its main advantage is that it offers increased flexibility. While an AVERAGE ship (average hull strength, medium thrust levels and a balanced weapons fit) should be broadly similar to its FT2 counterpart, the new system removes a lot of the artificial limitations of FT2 design and gives players the opportunity to experiment with decidedly strange design concepts if they so desire. It is now possible to try out ships with hugely powerful drives and little else, designs with massive armour and hull strength but very weak engines, all-offence ships that can dish out huge amounts of damage but have to rely on other ships to protect them, and so on.

Another very important point is that the new system removes the artificial "break points" that plagued the original design system - there is now no arbitrary division of ships into Escort, Cruiser and Capital sizes, and the construction system works on sliding scales from the smallest to the largest ship. Players used to the FT2 design system will notice that they now have to expend mass and points for such things as Fire Control systems that used to be "free" under the old rules, but no longer will there be the odd problems caused by the old mechanisms, whereby the larger ships of one category were much more effective (and cheaper) than the smaller classes of the next group up.

For every gain, there will have to be sacrifices made - every design will be a juggling act between offence, defence and mobility, and there will never be room for the best of everything. Some may be better than others in certain roles, but the ship that is perfect in one type of battle against one particular opponent may find itself in deep trouble against another fleet with a different design strategy.

USING FT 2ND EDITION DESIGNED SHIPS WITH THE NEW RULES

If players wish to make use of existing ships while using the new rules given here, a rough comparison of force strength can be made using the points values of both old and new designs. While the old and new systems differ greatly in the cost of individual ship components and weapons, the overall points costs of ships are similar enough that an approximate balance between fleets can be made on a one-to-one basis.

It should be noted that forces using both FT2 and new design ships should NOT be balanced on MASS ratings alone, as equivalent ship classes have a much higher overall MASS under the new system - normally between two and three times higher.

The most important difference between FT2 and the new designs for actual gameplay (as opposed to design) purposes is the fire arcs; for this you can choose to either play the FT2 ships with their original 4-arc system, or make simple conversions to the new 6-arc rules; in the latter case we suggest that systems with one-arc facing in FT2 be given either one or two new arcs as seems most appropriate to the individual ship design, 2-arc FT2 weapons have 3 new arcs (180 degrees in both cases), and 3-arc FT2 weapons become 5-arc (i.e.: all but Aft).

Note that mixing the two systems like this will NOT be guaranteed to give an exactly balanced game, but then nothing will short of 100% identical forces. We don't claim that there will be no contradictions or rules clashes if you try to mix designs between the old and new versions of the game, but we're sure that most of you are sensible enough to sort out any that occur in the true spirit of the game.

WEAPON TYPES AND BACKGROUNDS

In MORE THRUST we gave rules for a number of different "alternative" weapons and systems, including cloaking fields, the Wave Gun and even some downright silly ones such as the Reflex Field. The intention behind many of these was to simulate certain special weapons seen in certain TV series or films, to enable battles from those settings to be fought under the FT rules. What has happened, however, is that many players have used ALL the optional systems and weapons in their games. Now, there is nothing inherently wrong with this EXCEPT that, as some of the weapons were never meant to fit in with the basic game system, they can do very weird things to the game balance.

The following systems and weapons in particular are ones that were never intended to fit into the "standard" FT background: Wave Guns, Nova Cannons*, Reflex Fields, Cloaking Systems. (* OK, so this was in the basic rules and not in More Thrust, but it was still intended to be a token "ludicrous mega-weapon" .....)

We would strongly recommend that these systems are used with discretion, and then only with the express agreement of all players; they are not recommended for games where there is any kind of "competitive" element in play or in fleet design.

Please note that we're NOT telling you not to use any or all of these systems if you wish - just to be aware that their indiscriminate use may throw up anomalies in the game, and you should be prepared to deal with this as you see fit. It should also be noted that the use of Kra'Vak technologies (their railguns, scatterguns, armour and advanced drives, as per the More Thrust rules) on human or other ship designs will also have a potentially unbalancing effect on the game, and should be used with discretion if at all. Volume 2 of the Fleet Book series will address the alien weapons and systems in detail, and provide some modified rules to fix the inconsistencies in the More Thrust rules for them.

VECTOR MOVEMENT SYSTEM

This is a completely OPTIONAL alternative movement system, which players may use instead of the standard FT movement rules described in the basic rulebook. To differentiate the two systems, the new system presented here is referred to as VECTOR MOVEMENT, while the standard FT movement rules are termed CINEMATIC MOVEMENT (because they allow ships to move as they are most often depicted in the SF media, with much less regard for the laws of physics!)

The Vector movement rules give a much more accurate portrayal of how objects really manoeuvre in space; they are also a little more complicated than standard FT movement, though far less so than certain other rules' attempts at the same thing! Whether you choose to use them or not will depend entirely on personal taste and whether they fit the particular background you are using - if you are recreating a film or TV series where the ships clearly do NOT move in a true vector fashion, then you will obviously not want to use these rules.

Using the vector movement rules will become very straightforward once you are used to it, but we suggest taking a short while to read through the rules and examples carefully, and to plot a few movement examples out with a ship model to get the feel of the system before starting your first game. Radical course changes become much more difficult to do under the vector rules, especially at high velocities - remember that the faster you are moving, the less manoeuvrable your ship will be under the vector system. It may also take you a while to get used to the fact that the ship is not always pointing in the direction it is moving!

If you are using the "official" GZG background, or one of your own devising, then you may feel free to use either system at the agreement of your players, or even to mix the two to reflect older and newer ships in the timeline or differing levels of technology. Because the Thrust Ratings of ships are used in similar ways in both systems, any given ship design may be used with either movement system without modification - the only thing to be aware of is that ships with low thrust ratings may prove VERY unmanoeuvrable under the vector system.

It is perfectly possible to mix both vector and cinematic movement in the same game, to represent ships with different drive systems or technology levels - each ship simply follows the relevant rules according to its own drive system.

COURSE AND FACING

Under the standard Cinematic FT movement, a ship will always be facing in the same direction that it is moving; under the VECTOR system the ship may be moving one way and facing another. The direction in which the ship is actually MOVING is termed its COURSE, while the direction in which the ship model is actually pointing is called its FACING. The current COURSE is indicated by a small arrow marker placed next to the ship's stand, and this marker is also used as a reference point during the process of moving the model. It should be noted that the FACING of a model should always be one of the 12 "clockface" points, though the mechanics of the vector movement mean that the COURSE will usually NOT correspond exactly to a clockface direction.

MAIN DRIVE THRUST

The THRUST RATING of any ship is the amount of thrust that can be produced by its MAIN DRIVE - the "big engine" at the back. Each point of thrust applied in a turn will accelerate the ship by 1 inch (or other movement unit) ALONG THE AXIS OF THE SHIP, so if a ship that is facing in its direction of travel (i.e. its "course" and "facing" are the same) and currently moving 6" per turn applies 4 points of thrust from its main drive, it will end up moving at 10" per turn. If the ship's facing and course are NOT the same (i.e.: the model is pointing one way and moving another) then the application of thrust from the main drive will alter the ship's course AND velocity. To DECELERATE using the main drive (as opposed to using the forward "retro" thrusters), the ship must be turned so that it is pointing "backwards" relative to its current course. When writing orders for your ship, Main Drive thrust is written as MD followed by the number of thrust points being applied - so MD4 will move the ship 4" in the direction of its present facing.

If using existing ship designs (whether from this book, from FT2 or elsewhere) then the thrust level shown in the ship's drive icon is the rating used for the main drive.

MANOEUVRING THRUSTERS

In addition to the main drive, all ships have THRUSTERS - small drives positioned in clusters around the ship, pointing forward, port, starboard etc. (in reality ships would also of course have "up" and "down" orientated thrusters, but as we are not concerned with 3D movement in FT we can ignore these except for their use in rolling the ship).

The thrusters may be used to "push" the ship to alter its course, or to rotate the ship onto a new facing. The power available to the ship's thrusters is equal to half the thrust rating of the main drive - so a ship with a main drive TR of 6 would have 3 manoeuvre points available from its thrusters; unlike the Cinematic movement rules, thruster use is allowed in addition to applying full available thrust with the main drive - so that a ship with a Thrust Rating of 4 could apply 2 points of thruster use and still use all 4 thrust points from its main drive.

We have not depicted the Thruster systems as separate icons on the ship diagrams, in order that any design may be used with either movement system without alteration. For the purposes of damage, assume that the thrusters are driven by the same power systems as the main drives - when the main drive takes damage, thruster power is halved or lost accordingly.

ROTATION

Rotation of a ship around its axis requires much less power than actually changing its vector. When the thrusters are used to rotate a ship onto a new heading, ONE manoeuvre point from the thrusters allows the ship to be rotated by any desired number of facing points. Thus, for the expenditure of one point of thruster power a ship can be rotated to face in any of the 12 possible facing directions, regardless of the thrust rating of its drives (the only difference between rotating 30 degrees and rotating 180 degrees is simply that, once the thrusters have started the ship spinning, the ship is allowed to rotate for longer before the thrusters burn again to cancel the spin). Note that a ROTATION changes the ship's FACING only, and never its COURSE.

Note: when thrusters are used to rotate the ship onto a new facing, it is assumed that several of the ship's thrusters are fired in unison to achieve the desired effect - for example, to rotate the ship to starboard it would fire the PORT FORWARD thrusters and the STARBOARD REAR ones simultaneously to spin the ship around its centre of mass. It is assumed that, in the same turn, a compensating burst is applied as the desired new facing is reached in order to stop the ship's rotation - the combined effect of these operations constitutes one "rotation" action.

ROTATION orders should be written down as TP (Turn Port) or TS (Turn Starboard), followed by the number of points of heading change - thus TP2 indicates a rotation to port of 2 clockface points (ie: 60 degrees).

THRUSTER PUSHES

A thruster "push" is firing a combination of manoeuvre thrusters to alter the course and/or velocity of the ship, WITHOUT affecting its actual facing (i.e.: the ship ends the turn with its model pointing the same way it started, although its course may have changed). Pushes may be made to PORT, STARBOARD or REVERSE (using the forward "retro" thrusters to slow the ship down without having to spin it round and use the main drive). It requires ONE manoeuvre point of thrust applied to displace the ship by one movement unit; a push of 3 with the port-side thrusters will shift the ship 3" to starboard (for simplicity of play, this is referred to as a STARBOARD PUSH - to avoid confusing of orders we always use the direction of the EFFECT rather than the location of the thrusters being used). Note that a PUSH changes the ship's COURSE (and/or VELOCITY) only, and never its FACING.

PUSH orders should be written as PP (Push to Port), PS (Push to Starboard) or PR (Push in Reverse), again followed by the number of thrust points applied - so PR3 would be using 3 manoeuvre points from the retros to push the ship 3 units "backwards" relative to its current heading. Pushes may only be applied directly to port, starboard or rearward relative to the ship's facing at that moment.

COMBINING MANOEUVRES

If desired, a ship may combine both ROTATION and PUSH uses of its manoeuvring thrusters in a single game turn, but no more than ONE of each, provided the TOTAL of manoeuvre points expended does not exceed the total available. It is quite acceptable for a ship with (say) 3 manoeuvre points of thruster power available to make a rotation (using up 1 thruster point), then apply a main drive burn, then use the remaining 2 manoeuvre points for a 2" thruster push to port, starboard or aft as desired. The final position, course and velocity would be measured after ALL manoeuvres are completed.

ORDER SEQUENCE

The actual sequence in which thruster and main drive burns are applied in a single turn will make a difference to the final course and velocity of the ship, so it is necessary to rule on what order things are done in. Each effect is applied to the ship strictly IN THE ORDER THEY ARE WRITTEN DOWN BY THE PLAYER. If the player writes TP2, MD6 then the ship will first be moved according to its starting vector (as always), then turned 2 points to port (TP2) and then moved 6" along its new facing (MD6). If, on the other hand, the order is written MD6, TP2 (thus applying the main drive burn BEFORE rotating the ship to its new facing) then the result will be VERY different in terms of the ship's final vector and position - plot each one out and you'll see what we mean!

COLLISIONS

If there are any objects on the board that are deemed big enough to pose a collision risk, such as asteroids or very large space installations, such a risk will only occur if the line between the ship's STARTING and FINAL positions intersects with the object. In effect, it is this line (as shown by the tape or rule when measuring the final velocity of the ship) that most nearly approximates the "true" path followed by the ship during the turn - the position of the ship model at any other time during the movement sequence is merely for calculation purposes and does NOT indicate that the ship actually occupies that point at any time. Of course, even doing it this way is an over-simplification of the true mechanics - but we feel it is close enough for game purposes!

MOVING SHIPS UNDER THE VECTOR SYSTEM

Once the orders are written by all players, all ships are moved simultaneously in accordance with their starting vectors and any relevant manoeuvre orders. When moving a particular ship, ALWAYS start by moving it according to its starting vector - i.e. move the model in the direction of its present COURSE (as indicated by its course marker arrow) a distance equal to its current VELOCITY, being very careful to keep the FACING of the model exactly the same as at the start of the turn; at this stage, LEAVE THE COURSE MARKER IN ITS STARTING POSITION. Now apply any thrust (main drive and/or thrusters) indicated in the ship's orders, making sure to apply each effect in the sequence it is written down. Where the model ends up after all thrust has been applied is its finishing position for that turn; now place the tape measure or rule between the course marker and the ship's final position, and read off the distance - this (rounded to the nearest whole inch or other movement unit) is the ship's final VELOCITY for the turn, and should be written in the "V" box on the order sheet ready for the next turn. Finally, move the course marker up to the stand of the model again, with its arrow pointing in the direction of the ship's new COURSE - i.e.: parallel to the tape-measure. The ship's VECTOR at the start of the next turn will now be in the direction of the course marker arrow, at the new velocity written down.

VECTOR MOVEMENT EXAMPLES:

i) The ship in Diagram 1 is facing in the same direction it is moving (ie: its COURSE and FACING are currently the same), and its current velocity is 10. The ship starts the turn at position A. The player writes movement orders of TP3, MD6. Firstly, the ship is moved along its present course by 10", to position B - it is then rotated 3 points (90 degrees) to PORT, to position C. Now, it is moved along its new facing by the amount of its Main Drive burn, ie: 6", to its final position D. Finally, the distance between starting and finishing positions (A and D) is measured - rounded to the nearest whole number it will be 12", and this is recorded as the starting velocity for the next turn - and the course marker is moved up to the model again parallel to the line between positions A and D.

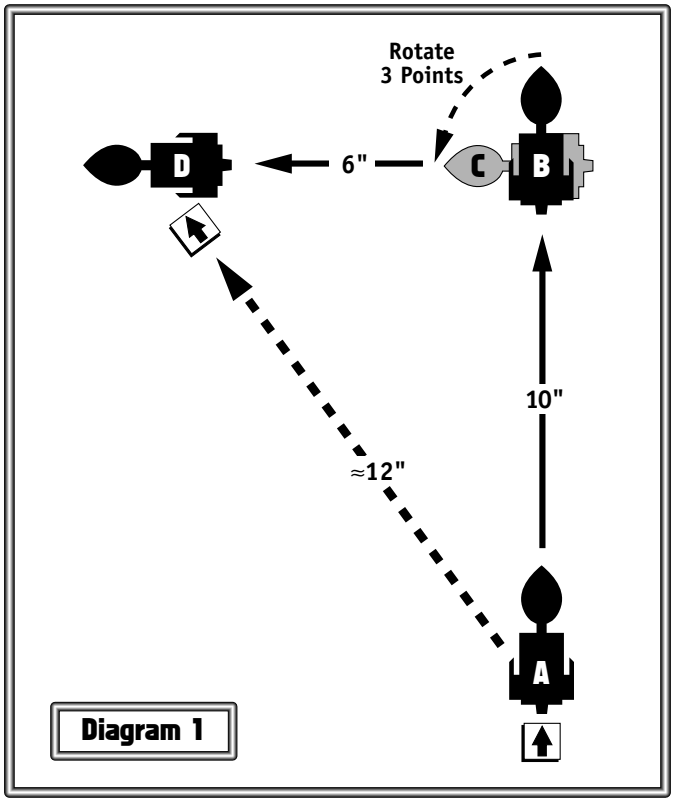


Diagram 1

ii) The ship in Diagram 2 is facing in the same direction it is moving, and its current velocity is 6. The ship starts the turn at position A. The player writes movement orders of PS2. Firstly, the ship is moved along its present course by 6", to position B. Now, the ship's side thrusters fire to push it 2" to starboard, to the final position C, without changing its facing. The distance between starting and finishing positions is measured - rounded to the nearest whole number it will be 6", and this is recorded as the starting velocity for the next turn - and the course marker is moved up to the model again parallel to the line between positions A and C.

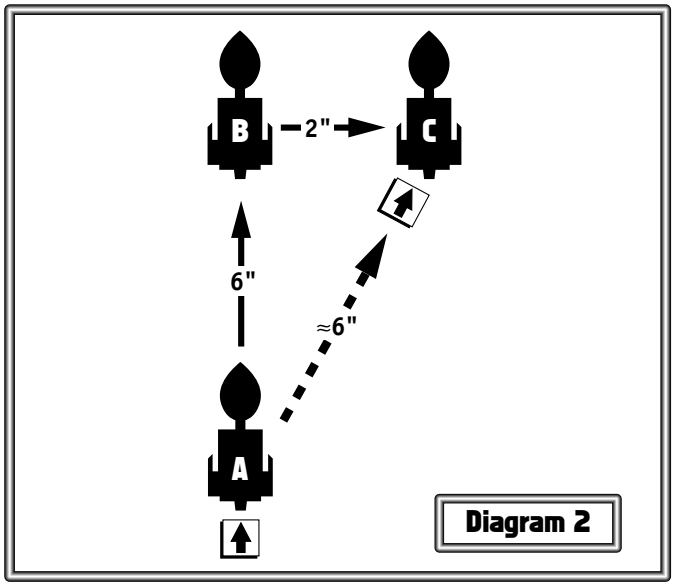


Diagram 2

NEW FIRE ARC RULES

ARCS OF FIRE

The four 90-degree fire arcs originally used in FT are now replaced with SIX arcs, each of 60 degrees. The new arcs are indicated in Diagram 3, and are designated (clockwise, from dead ahead) FORE (F), FORE STARBOARD (FS), AFT STARBOARD (AS), AFT (A), AFT PORT (AP) and FORE PORT (FP). This brings the fire arcs into line with the 12 "course points" used in movement, and also makes fire arcs much easier to judge by eye from the hexagonal or clockface-style bases that most players mount their ships on.

All weapons that are capable of bearing through more than one arc may have this indicated either by the "pointers" used in FT2, or by putting a ring of six segments round the system icon, and blacking-in the segments through which fire is NOT permitted. Examples of both these methods are also shown in Diagram 3. The old "pointers" method may be easier to hand-draw for your own ship designs, though the segment method is more visually attractive and has been used for the designs in this book.

Weapons or systems that can only bear through ONE arc have this indicated by the orientation of the system icon on the ship diagram - ensure it is pointing clearly towards the relevant arc.

Systems that have no "directionality" to their icon (eg: PDS) have all-round (6-arc) fire capabilities.

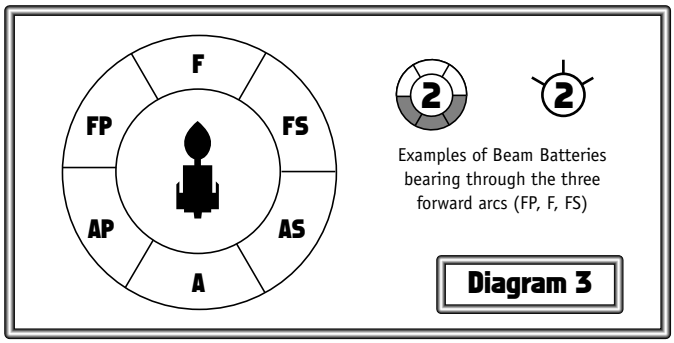


Diagram 3

OPTIONAL RULE: AFT-ARC FIRE

The FT (2nd ed.) rules prohibit any weapons fire (except point-defences) through the aft arc of a ship, and no weapons are mounted to bear through that arc in the FT2 ship designs. You will note that some of the designs presented under the new system in this volume DO have weapons bearing directly aft (those weapons mounted in all-round (6 arc) turrets). As an OPTIONAL RULE, players may decide to PERMIT aft-arc fire (by weapons that are mounted to bear accordingly) on any game turn in which the firing ship did NOT use any thrust from its main drive engines. Course changes (if using Cinematic Movement) or Thruster use (if using Vector Movement) are permitted without affecting fire through any arc, but any acceleration or deceleration applied by the main drives blocks any outgoing fire through the aft arc in that turn only.

ROLLING SHIPS

Although FT makes no attempt to simulate 3-dimensional movement or combat (as explained in the FT rulebook, we feel that the additional complication far outweighs the benefits gained), there is one simple rule addition that we are including here: the ability to "roll" a ship 180 degrees on its central axis, thus effectively swapping the port and starboard sides (the ship is "upside down" relative to the other ships on the table). This manoeuvre can be very useful when ships start to lose systems due to damage, as it can allow undamaged weaponry to bear on targets that would otherwise be on the wrong side of the ship.

To perform a roll, the player simply notes RO in his movement orders for that turn; the roll expends 1 thrust factor, which comes off the "turning" allowance - i.e.: a thrust-4 ship, normally capable of 2 points of turn, could only turn 1 point if it also rolled that move (but it would still be able to use its other two thrust factors to accelerate or decelerate as normal). The roll then occurs at the start of the ship's movement, and a "rolled" marker is placed by the model to indicate its inverted condition. Rolling has no effect on combat EXCEPT that the ship's port batteries now bear to starboard, and vice-versa. An inverted ship may, of course, roll back "upright" in any subsequent turn, or may remain inverted as long as the player wishes.

For simplicity of play, it is suggested that rolled ships should still have their movement orders written in relation to the actual miniature rather than their theoretical inverted condition - thus an order written for a Port turn will still turn the model to the left, even though to the inverted ship this would actually be a "starboard" turn. Keeping to this convention should, hopefully, avoid a lot of potential confusion and arguments!

ODD-NUMBERED THRUST FACTORS

It is permitted to design ships with odd-numbered Thrust factors (eg: Thrust-3); such drives operate just as for even-numbered ones except that to determine the thrust available for course changes the thrust rating is halved (as normal) but is rounded DOWN, so that a ship with Thrust-5 is only capable of 2 points of course change. Note, however, that ships which (through design or through drive damage) have a Thrust factor of 1 may always change course by 1 point per turn, but may not accelerate or decelerate at all while doing so.

HULL DAMAGE TRACK

For all classes and sizes of ship, the total number of hull damage boxes (which is equal to the MASS used for Hull Integrity) is divided into 4 rows to make up the "damage track" on the ship diagram. Each row should be of equal length, but if the number of damage boxes does not exactly divide by four the extra boxes are placed in the upper rows - so a ship with just 2 damage boxes has one box in each of the two first rows and nothing in the last two, and a ship with 15 boxes has three rows of 4 boxes and one of 3.

APPLYING DAMAGE

As the ship takes damage, these boxes are crossed off, one row at a time, from left to right. At the end any one attack, a target ship that has had the last box in a row crossed off during that attack must immediately take a Threshold Check (exactly as per original FT2 rules); the threshold number is 6 for the first row, 5 for the second and 4 for the third. When the last box in the fourth row is crossed off, the ship is effectively destroyed for game purposes. If a ship suffers enough damage in a single attack to push it over more than one threshold check, make only one check (for the last row destroyed) but add 1 to each die roll for each extra threshold point passed in that attack. [Note that "one attack" is defined as the ship being fired on by ONE other ship, regardless of how many or few weapons are fired at it; it also counts as "one attack" if the ship is under fire by any number of missile salvoes and/or fighter groups at the same time.]

REROLLS (PENETRATING DAMAGE)

This is an OPTIONAL rule, but one that we recommend is used - the new design system results in ships that are somewhat larger and may (depending on chosen hull strength) have more damage boxes than FT2 standard classes, and the extra damage potential of the Reroll option goes some way to redressing the balance.

Simply, when firing any weapon system that is capable of penetrating damage (as specified for each type of system), any roll of SIX inflicts the usual damage AND allows a "reroll" - roll an extra die, and apply any further damage that is indicated by the result. If this reroll is ALSO a six, then apply the damage and roll again. There is no limit to the number of rerolls you can make if you keep throwing sixes (but if you get more than three in a row maybe you should go out and buy a lottery ticket this week...!).

If the target ship has no screens or armour, any damage done by the reroll die is counted exactly as for normal damage by that weapon type - e.g.: if a beam battery shot scores a six, then apply two points of damage and reroll - on a reroll score of 1-3 there is no further damage, on a 4 or 5 apply 1 more point, and on a 6 apply two (and reroll again).

If the target ship has SCREENS active, then the effects of the screen are deducted from the initial attack dice as usual (if applicable), but NOT from the result of any reroll dice - the reroll is assumed to have already penetrated the screen, and any further damage done is applied directly to the ship itself.

Reroll damage is applied to ARMOURED ships in a similar manner - any damage from the basic die rolls of an attack is applied to armour boxes on the ship, but if a six is rolled then it knocks out two armour boxes and any damage caused by the REROLL die is applied directly to the ship's ordinary hull damage boxes, irrespective of whether it still has armour boxes remaining.

CORE SYSTEMS (OPTIONAL RULE)

While weapons, fire control sensors and screen emitters are all "surface" features on most ships and are thus very vulnerable to incoming fire, there are certain vital systems that are usually buried deep within the ship's hull; these are the "core" systems, and consist of the Command Bridge (which also includes computer systems, avionics etc.), the Power Core and the Life Support System.

If using the "core systems" rules, these three systems are grouped together on the ship systems diagram, with a box drawn round them. Whenever the ship reaches a threshold point, the systems within the core box are each rolled for as normal, but at +1 to the current threshold number - thus at the first threshold point, where systems are lost on rolls of 6 only, the core systems do NOT need to be rolled for (as they would only be lost on a "7"). On the second threshold, where normal systems go down on rolls of 5 or 6, the core systems are only hit on rolls of 6, and so on.

Notes: i) The core systems, and their basic "protective" box, do NOT need to have MASS allocated to them during ship design - they are assumed to be part of the essential structure of all ships. ii) If using Needle Beams, the core systems may NOT be targeted by these weapons; Needles may only fire at surface features on the ship, such as weapons, sensor grids, drive units etc.

EFFECTS OF THRESHOLD DAMAGE ON CORE SYSTEMS

COMMAND BRIDGE HIT

If the Command Bridge takes a hit, then a further D6 roll is made immediately - if the roll is 1 to 5, then the ship is "out of control" for that number of turns, until command can be restored through backup links and secondary command systems. If the roll is a 6, then the ship is PERMANENTLY out of control for the duration of the game. While a ship is "out of control", it will continue on its present course and velocity, and may not fire weapons, launch fighters or take any other offensive action. Passive defences (screens) are still operational, though active defences (PDS etc.) are not. Once control is regained (after the number of turns indicated by the die roll), all undamaged systems come back on line. Damage Control parties may be used at any turn to try and restore control earlier, using the normal damage control rules.

POWER CORE HIT

If the Power Core takes a hit, it is damaged and may "go critical" and explode, destroying the ship. It continues to supply power for the ship, but the safety systems that control it are damaged or destroyed, and each subsequent turn the player must roll a die at the start of the turn - on a 5 or 6, the core explodes. Damage Control parties may be used as normal to try and stabilise the power core - such attempts are made before the roll for explosion for that turn, and success will bring the core back under control and negate any further effects (unless the core is then damaged again, when the process will repeat). Each turn, BEFORE rolling the die, the player may make a choice - he may abandon ship, or he may "dump" the core - this avoids the risk of explosion, but leaves the ship without power for anything but emergency life-support (from backup batteries) - the ship is intact, but unable to do anything further in this battle except continue to drift on its present vector. If the player chooses to abandon ship, the ship continues to drift while still rolling each turn to see if the core explodes - in this case, however, the needed number for an explosion drops by 1 each turn, as the core is running out of control with no-one to damp it down; thus it WILL explode eventually and the ship will be lost. A ship that dumps its core will be no further use for that battle, but may be salvaged afterwards and its power restored.

LIFE SUPPORT HIT

If the Life Support Systems take a hit, then a further D6 roll is made immediately - the number rolled indicates that the life support will fail after that number of turns. Damage control parties may be allocated to try and repair the LSS as for any other system. If the LSS fails before being repaired, then the crew must immediately abandon ship or be lost. A ship without LSS become a drifting hulk, though it may of course be recovered and repaired after the game if it survives.

NOTE:
The Core Systems rules given above are entirely optional; if you do not wish to use them, simply ignore the systems within the core box on the ship diagram for all game purposes.

EXPANDED FIGHTER RULES

FIGHTER MOVEMENT

In the original FT basic rules, fighter groups were moved AFTER all ship movement had been made. This meant that the player could position his fighters easily to attack a desired enemy ship, which was why we kept the standard fighter movement distance down to only 12" to stop them becoming TOO powerful. We now strongly suggest that the optional rule given in MORE THRUST is used as the standard rule, so that all fighter groups should be moved after the players have written their movement ORDERS for their ships, but BEFORE the ships are actually moved - if a fighter group then ends up within 6" of an enemy ship after that ship has been moved, it may attack. This forces players to try and predict at least roughly where the enemy is going to move, in order to position their fighters effectively - thus simulating the fact that although fighters are very fast and highly manoeuvrable (hence the abstract nature of their movement, without orders or course/velocity recording) they have limited fuel reserves for extended travel and must therefore try to predict "intercept" trajectories to get them close to their intended prey.

Fighter Endurance (also introduced as an optional rule in MT) is also now a recommended standard rule (provided it fits the background you are using), but the endurance limit is increased from 3 turns of combat to SIX turns per standard fighter group. A group will use up 1 Combat Endurance factor each turn it engages in combat, whether attacking a ship, another fighter group or being attacked itself, and 1 CEF every time it makes a Secondary Move (see below). Normal movement during the main fighter movement phase does NOT consume Combat Endurance factors. When all combat endurance is exhausted, the group may still move normally (though it may make no secondary moves) but may not make any attacks. There is now no time limit on a group returning to its carrier after exhausting its CE. A group that is engaged in a dogfight by an enemy group after exhausting it's CE factors may return fire, but only scores kills on rolls of 6.

Standard fighter groups now have a maximum move distance of 24". Fighter group movement is performed AFTER both players have written their ship movement orders, but BEFORE the ships are actually moved.

Fighter movement is performed BEFORE the placing of markers for SMB fire.

Once all ship movement has been made, players have the option of making a SECONDARY MOVE with any fighter groups they wish, of up to 12" ; as with the basic move, this can be in any direction and any distance up to the maximum 12", even if the group moved its full 24" in the primary move phase. Any fighter group that makes this secondary move loses 1 COMBAT ENDURANCE factor if players are using the endurance rules. The secondary move may be used to bring a group into contact with a target that would otherwise have evaded it, or in some cases to get them out of trouble - but it may NOT be taken if the group has already been engaged in a dogfight by another group.

[We recommend recording the remaining Combat Endurance and the number of fighters left in each group with two small D6, in different colours, which maybe placed either behind or on the stand of the fighter group they relate to; an alternative to this is to have a simple fighter group roster sheet on a piece of paper, with a box drawn for each group that contains two rows of six smaller boxes - one row represents the number of fighters left in the group, and the other the remaining CE factors.]

Example: *One of player A's standard fighter groups is moved 20" in the main fighter movement phase, being placed in a position that A hopes will allow it to intercept one of B's ships. Following the fighter movement, player B fires an SMB salvo and places its counter in a position that will threaten one of A's ships after it has moved. Both A and B now move their ships in accordance with their orders. Player A sees that his fighter group is now out of position to attack its intended target (B having anticipated well and changed course), but if he takes a secondary move with the group then it could either follow its original target OR could move to intercept the SMB salvo that is attacking A's ship. A has a free choice as to which option he takes (if any), but if he chooses to move the fighter group then he must mark off 1 turn's worth of Combat Endurance for the group to represent the additional fuel it has consumed to make the intercept.*

FIGHTER SPEED AND ENDURANCE OPTIONS

FAST FIGHTERS may move up to 36" in their main movement, and up to 12" (as standard fighters) in the secondary movement. **LONG RANGE FIGHTERS** move as Standard types, but have their Combat Endurance increased to NINE rather than 6.
[Note that these and some other rules refer to the specialised fighter variants detailed in the MORE THRUST supplement book.]

FIGHTER MOVE SEQUENCE

Players alternate in moving one fighter group each until all have been moved (if desired); players should agree before the game whether they will dice for "initiative" each turn to see who moves a group first, whether they will take turns in moving first, or whether the player with the most groups in play will always move first.

If dicing for initiative (which we recommend as the "default" method if players do not agree otherwise, particularly in competitive games) then players may add one to their roll for every ACE they have in action at that time, and subtract one for every TURKEY group (see MT for Ace and Turkey rules). The lower scorer must move a group first. Whoever moves first in the main fighter move phase should also move first in the secondary move phase. Whatever method is used to determine first move, we recommend that both players should move all their TURKEY groups before any normal ones, and all normal groups before any that include ACES.

FIGHTER "SCREENS"

Fighter groups may be assigned as close escorts for larger ships, specifically to ward off enemy fighter attacks on that ship; when used in this role, the fighter group is said to be acting as a "fighter screen" for the ship it is escorting. When assigned as a fighter screen, the fighter group must remain within 3" of the ship it is escorting at all times - if it is moved further away then it has broken off from its escorting duties and no longer functions in a screening role. A fighter screen (which may be a single group or several) always moves at the same time as the ship it is screening, rather than being moved in the normal fighter movement phase. Screening fighters CAN exceed the normal fighter movement allowance if the ship they are screening is moving faster than the fighters could normally move. Whenever a ship that is being escorted by a fighter screen comes under attack from enemy fighters, the attacking group(s) MUST engage the screening fighters using the DOGFIGHTING rules instead of attacking the ship in that turn. Each group of screening fighters must be engaged by at least one attacking fighter group; once this condition has been satisfied then any further uncommitted attacking groups may fire on the escorted ship. Example: an NAC transport ship is being escorted by a screen of 3 groups of fighters. Four groups of ESU fighters move to attack the transport - three of them must "pair off" against the three groups of screening fighters and engage them in dogfights, while the fourth is thus free to attack the ship directly. If the ESU player prefers, he could instead allocate all four groups against the screening fighters (two onto one, and one each onto the other two) in an attempt to destroy as many as possible, leaving the transport without fighter cover for the rest of the game.

Attacking fighter groups that are forced to engage screening fighters may NOT then attack the ship in the same turn, even if they defeat all the fighter screen; they will have to try to follow the ship and attack it in the following turn if they wish to (though if all the screening groups are engaged by other groups, then any "excess" attackers may of course attack the ship in that turn while the defenders are occupied). While they survive, screening fighters are thus very useful for keeping attacks away from lightly-protected shipping.

MULTIPLE GROUP DOGFIGHTS

There will be cases, especially when fighters are screening larger ships, where multiple-group dogfight situations (known to fighter pilots as "furballs") may occur. In such combats, all groups engaged in the dogfight may fire only once per turn, but may choose to attack just one enemy group or to split their kills between two or more enemy groups. If the player chooses to split his fire, the dice are rolled as normal and the casualties divided as equally as possible between the relevant groups. The resolution of the attacks alternates between groups, with the player having initiative for that turn firing first - all losses are applied immediately, before the other player may return fire.

INTERCEPTION OF MISSILES BY FIGHTERS

A fighter group may attempt to intercept and engage any missile salvo that is within 6" of it at the end of either the fighters' main or secondary movement. Simply move the group up to the missile counter, and roll one die for each fighter: one missile from the salvo is destroyed for each 5 or 6 scored by the fighters (scores of 6 allow rerolls). The missiles cannot actually fight back or target the fighters, but for each missile that is hit roll 1 die: on a roll of 6 (no reroll) then a fighter is lost by being caught in the blast of the destroyed missile (trying to take out missiles is a tricky and dangerous job at high speeds and very close quarters).

MODIFIED WEAPONS SYSTEMS

NEW BEAM BATTERY DESIGNATIONS

For the new design system, we have reclassified the standard FT beam batteries with NUMERICAL designations, rather than the old "A", "B" and "C" classes. The "C" battery becomes a Class 1, the "B" a Class 2 and the "A" a Class 3; this new designation allows us to extend the system to Class 4, 5 and even larger, which effectively replace the "AA" batteries covered in More Thrust.

IMPORTANT NOTE:
There is NO change to the way the beam batteries function in the game - all that has changed is the designation.

This change allows the range and dice of each battery to be directly related to the Class number, thus:

Battery class number indicates the number of dice rolled per shot, minus one die for every full 12" in range to target.

E.g. a Class 3 battery rolls 3 dice at less than 12", 2 at 12" - 24" and 1 only at 24" - 36". At ranges greater than 36" the weapon is out of range.

The most common weapon batteries are Class 1 (used as secondary/defensive armament in most cases, or as a limited offensive system on very small ships), Class 2 (primary systems for small/medium ships, and secondary weapons on large classes) and Class 3 (the most common primary weapon system for capital ships); Class 4 batteries are occasionally found on very large vessels, and a few forces have experimented with Class 5 and above (especially for fixed installations and stations) - however the huge size and power requirements for these large systems preclude their general use.

Basic MASS requirements of a given battery starts at 1 for a class 1, and DOUBLES for each class increase - so a class 2 takes 2 MASS, a class 3 takes 4 MASS, a class 4 takes 8 MASS and so on. At 16 MASS for a class 5 and 32 for a class 6, these larger systems rapidly become non-cost-effective for most purposes.

Class 1 batteries are automatically capable of all-round (6 arc) fire at their basic MASS cost of 1. Class 2 batteries at their base MASS of 2 are capable of 180 degree traverse, firing through any 3 adjacent arcs, but may be given full-traverse (6 arc) turrets for an additional 50% MASS cost (i.e.: 3 MASS rather than 2). Class 3 batteries and above have only 1 arc fire (60 degrees) at their base MASS cost; adding additional arcs of fire requires 25% of the base MASS of the battery per additional arc covered - so a Class 3 covering 3 arcs would require 4 + 1 +1 = 6 MASS, while a Class 4 with the same traverse would need 8 + 2 + 2 = 12 MASS.

The standard icon for a beam battery remain as before, i.e.: a circle with the battery class (now a number rather than a letter) inside it. Arcs through which the battery can bear are indicated either by the "pointers" used in FT2, or by a six-segmented circle around the icon.

Beam battery hits and damage remain exactly as per the original FT rules, but may be augmented by the REROLL rule if you are using this option.

CLASS-1 BEAM BATTERIES AS POINT-DEFENCE

Instead of firing in an offensive role, Class-1 beam systems may act as secondary point-defence systems against both fighters or missiles; in this role they fire as for a PDS, but rolls of 1-4 are misses, while 5 or 6 each kill ONE missile or fighter; a 6 allows a reroll as usual. If used in the PD role, a Class-1 battery may NOT fire offensively in the same turn. ONLY Class-1 beams are usable in this way - larger beam batteries are not capable of the fast response times necessary for the role. Class-1 beam batteries may NOT be used in an Area-defence role, even if an ADFC is available.

ENHANCED PULSE TORPEDOES

In the light of player feedback and experience over the years that FT has been in use, we have decided to enhance the capabilities of a couple of weapon systems from the original rulebook to make them a little more cost-effective in game terms. The Pulse Torpedo tube is one weapon to get this upgrade - its maximum range is increased to 30", and its range bands and associated to-hit scores are now as follows:

At 0-6" a hit is scored on 2+, at 6-12" on 3+ , at 12-18" on 4+, at 18-24" on 5+ and at 24-30" on 6 only. Screens do not affect damage.

Damage per hit is still 1D6, and ***NO*** reroll is applied to scores of 6. If the target is ARMOURED, then half the damage scored (rounded UP) is taken on the armour, and the remainder applied directly to the HULL boxes.

The basic mounting for a Pulse Torp tube still only fires through 1 arc (though this can be ANY one arc, chosen at the time of ship design), but the tube may be mounted to traverse through up to THREE arcs at the expenditure of a further MASS per extra arc.

All references to Pulse Torps in the ship designs in this book are of this "new" version, which replaces the original type.

ENHANCED NEEDLE BEAMS

The much-underused FT Needle Beam is the other weapon to get an upgrade here; its maximum range is increased from 9" to 12", and it now has the potential to do at least a small amount of hull damage whether or not it hits its intended target system. As in the original rules, the firer must nominate which system on the target ship he is firing at, and roll 1 die. On score of 6, the targeted system is knocked-out and 1 DP is applied to HULL (the weapon ignores both SCREENS and ARMOUR). On score of 5, the target system is unaffected but 1 DP is still inflicted on hull. Rolls of 1-4 are no effect.

The Needle Beam is still only a one-arc weapon, though it may be mounted to fire through any one arc at the time of design.

DEFENSIVE AND OTHER SYSTEMS

POINT DEFENCE SYSTEMS

Under the revised rules, we have done away with separate systems for Point and Area defence weapons; we now have just one standard system, the PDS (POINT DEFENCE SYSTEM), which can if desired be linked to an AREA-DEFENCE FIRE CONTROL system to allow it to fire in the role of the old "ADAF" system.

Each Point Defence System (PDS) on a ship may fire once per turn, either as an anti-fighter or anti-missile defence weapon. In either case, roll 1 D6 per PDS: scores of 1-3 have no effect, 4 and 5 each kill ONE missile or fighter, while a 6 kills two and allows a reroll (same results apply to rerolled scores). All PDS batteries on a ship must have targets allocated to them BEFORE any of the effects are rolled for, and "wasted" shots may NOT be reallocated to other targets (e.g.: if two PDS are allocated against a single missile salvo, but the missile targeting roll only gives two missiles on target, if the 2 PDS then get hits on three missiles the third "kill" is wasted - it cannot be reallocated against a different salvo).

AREA-DEFENCE FIRE CONTROL (ADFC)

An ADFC is an enhanced antifighter/antimissile Fire Control system that allows a ship to protect other nearby ships with fire from its own PDS. One ADFC allows the ship's PDS (any number of them) to fire at any combination of threats (Fighters, Salvo Missiles, etc) that are directly attacking one other ship that is within 6" of the ADFC-carrying ship. Any PDS used in this mode may not fire in other modes in the same turn. PDS used in AD mode roll dice and score kills exactly as normal PDS fire. An ADFC functions ONLY as an enhanced PDS fire-director link, and may NOT be used as a "normal" Fire Control.

Note that this system is a replacement for the original ADAF installation used in the FT2 rulebook, and apart from the rules above it functions in the same way and with the same limitations.

HULL ARMOUR

Armour may be added to the ship in the form of additional damage boxes that absorb hits before the hull structure begins to take damage. Armour consumes 1 MASS per box of protection, so if you choose to allocate 10 MASS to armour you will get 10 armour boxes on your ship chart in addition to the normal hull damage boxes, and will be able to absorb a total of 10 damage points with the armour before taking any damage to the actual ship structure; once the armour is all gone you will be taking damage to the hull in the normal way. Note that some or all of the damage from certain weapons, and damage caused by REROLLS, is classed as "penetrating" damage - this bypasses armour boxes and affects hull boxes directly, even if there are intact armour boxes left.

Armour boxes are indicated on the ship diagram as a row of CIRCLES to differentiate them from the square boxes of the main damage track, and are placed above the top row of hull damage boxes. There is NO threshold roll made at the end of the row of armour boxes, but any further damage is applied to the first row of hull boxes.

SCREENS

Energy screens, which protect against beam weapons fire and some other kinds of damage, require 5% of the ship's MASS for a level-1 Screen system, and 10% for a level-2 Screen, but with MINIMUM requirements of 3 MASS for level-1 and 6 MASS for level-2 screens; thus any ship up to MASS 60 requires 3 MASS spare to install a level-1 screen system, while larger ships require 5% of their total MASS. Apart from any limitations described in the rules for specific weapon systems, screens work exactly as their counterparts in the original FT rules. IMPORTANT NOTE: THERE ARE NO LEVEL-3 SCREENS UNDER THE NEW DESIGN SYSTEM - additional screen generators above two may be purchased and installed if desired (at 5% of ship MASS each), but will NOT be of use except as back-ups to bring online if one of the main screens is lost through damage.

FIRE CONTROL SYSTEMS

Fire Control Systems (FCS) operate under exactly the same rules as the original FT rules, the only difference being that you must now "buy" them during the ship design procedure; each FCS requires 1 MASS. There is no limit to the number of firecons that may be installed on a ship if the MASS is available.

DAMAGE CONTROL PARTIES

The number of Damage Control Parties a ship has is proportional to its crew size, which is in turn a function of ship mass. This assumes that a certain percentage of the crew is allocated to form damage control teams during combat situations. Military ships have one Crew Factor for every 20 MASS or part thereof, and one DCP per Crew Factor. Thus a MASS 1-20 ship has one CF and hence 1 DCP, a MASS 21-40 ship 2 CFs and 2 DCPs, a MASS 81-100 ship 5 CFs and 5 DCPs etc.

For Merchant and Civilian vessels, which usually have much smaller crews than warships, there will be one CF per 50 MASS (or part thereof) of ship size. How many crewmen a single CF represents is entirely up to the kind of background you are using, but in the "official" one we assume that one CF represents up to about 20 personnel.

A single DCP might therefore be four or five crewmen, and usually includes medical personnel to assist crew casualties as well as engineers to patch up equipment.

For ships with multiple DCPs, more than one may be allocated to a single repair job at one time; one DCP on its own will manage to bring a system back on-line on a roll of 6, and each additional DCP on the same job reduces this needed number by 1. The maximum limit of DCPs on a single job is THREE, so that the highest chance of repairing a system is 50% (4+ on a D6) if three teams are allocated to it. Note that ALL teams put on one system in a single turn make just the ONE roll.

Example: a MASS 90 ship, with 5 CF and thus 5 DCPs available, is trying to repair systems lost at a threshold check. The player decides to combine 3 DCPs (the maximum allowed on one job) to try and get a FireCon back on-line, and use the other two to attempt to fix a damaged weapon system. The FireCon will be fixed if the player can roll 4+, and the weapon on a 5+.

CREW CASUALTIES

For simplicity, it is assumed that crew casualties run proportional to the amount of hull damage suffered by the ship; as damage is taken and crew casualties are suffered, CFs are lost and the available DCPs are reduced accordingly. To record this on the Ship Diagram, dots are placed in certain boxes on the Damage Track to denote the points at which Crew Factors are lost; a ship's current CF (and thus its current number of DCPs) is the number of dots still remaining in non-destroyed boxes on the damage track.

All the designs given in this book already have the CF dots marked in their damage tracks, but if you are designing a new ship type from scratch then you will need to distribute the CFs correctly through the damage track; to do this, divide the number of Hull Boxes the ship has by the number of Crew Factors. Round the result UP if it is not a whole number, then count along the damage track until you reach the number and place the first dot there. Count the same number again and place the second dot, and so on. When you reach the end of the damage track, put the last dot in the last box - it is assumed that the last of the crew will be killed when the ship is finally destroyed, if they haven't abandoned ship by then!

Example: The MASS 90 ship above, with 5 CFs, has an Average hull integrity and thus has 27 Hull Boxes (30% of 90), arranged as 7/7/7/6. Dividing 27 by 5 gives us 5.4, which is rounded up to 6 for this purpose. The first CF dot will be placed in the sixth box of the damage track, the second in the twelfth box (i.e.: the fifth box of the second row), the third dot in the 18th box and the fourth in the 24th box; the fifth and final dot is placed in the last box on the damage track (the 27th). Each time the ship takes six points of cumulative damage, it will lose another CF and thus another DCP.

CARGO HOLDS AND PASSENGER ACCOMMODATIONS

Mass devoted to cargo or passenger space costs no additional points during the ship costing procedure, though of course the actual hull that encloses them is paid for in the normal way. Each Mass factor used provides one factor of Hold space (H) or Passenger space (P). The total amount of cargo or passenger space available on the ship is divided into four separate groups, in much the same way as the ship's hull damage boxes are divided into the four lines of the damage track - if the number does not divide evenly by four then the first holds or passenger areas are the larger ones.

Example: If a freighter has 50 MASS of cargo hold space, this would be divided into two holds of MASS 13 and two of MASS 12.

One of the holds or passenger areas is automatically lost each time the ship's cumulative damage reaches a threshold point, so in effect a ship loses approximately 25% of its cargo or passengers each time it suffers approximately 25% damage. When a hold or passenger space box is crossed off, any cargo stored in it is assumed lost and any non-evacuated passengers in that area are killed.

The holds and passenger spaces are arranged on the ship diagram as a row of four boxes, containing an "H" or "P" identifier as appropriate and a number that represents the actual capacity of the space. The larger spaces are placed first (to the left), and are the first to be crossed off as damage is taken.

Note that specialist areas on other ships may be represented in the same way as cargo and passenger space using exactly the same rules - for survey ships space devoted to scientific staff and lab facilities can be represented by boxes marked "S", and naval troop carriers will have "T" boxes to represent their troop accommodations.

TUGS AND TENDERS:

Under the new construction system, any ship can be made into a TENDER by having internal bay space allocated to carry other ships (whether the carried craft are FTL-capable or not), at the same rate as for carrying fighters and other small craft - ie: every 1.5 MASS used for hangar bay space provides capacity for 1 MASS of carried ship(s). Note that this allows for support and launching facilities, and is thus different from plain cargo space. Thus a ship with 30 MASS devoted to bay space could carry a MASS 20 ship (or 2 x MASS 10 ships, etc.). The points cost of such space is the same as for other hangar facilities, ie: 3 x the total MASS used.

TUGS, which are designed to "tow" other ships through Jump by extending their Jumpfield around them, require much larger than normal FTL drives; they need a drive equal to 10% of their MASS just to provide their own Jump capability, plus additional drive MASS equal to 20% of the total MASS of ships they can tow. Thus to tow a ship of (say) MASS 100, the tug would need spare Jump drive capacity of MASS 20; if the tug itself was a MASS 60 ship, it would need its own MASS 6 FTL drive plus the additional 20 - so it would have to devote a total of 26 MASS to its Jump drive package.

TURN SEQUENCE

This is a summary of the full game turn sequence that should be followed if players are using all the options and new rules listed in this volume.

1) **WRITE ORDERS FOR ALL SHIPS**

2) **ROLL FOR INITIATIVE**
Both/all players roll a D6 each - highest roll has initiative for this turn.

3) **MOVE FIGHTER GROUPS**
Both players alternate in moving one fighter group each until all fighter groups in play have been moved (if desired); player who LOST initiative roll moves first. Fighter groups being launched this turn must be moved before those already in flight.
Any fighter groups currently allocated to screening ships are NOT moved in this phase .

4) **LAUNCH SALVO MISSILES**
Both players alternate in announcing and firing missile salvoes from any missile-armed ships; play alternates BY SHIP, not by single salvo. Player who LOST initiative roll launches first. A missile salvo marker is placed at the point of aim of each salvo.

5) **MOVE SHIPS**
Both players simultaneously move their ships, strictly in accordance with orders written in phase 1.
Fighter groups currently acting as fighter screens are moved at the same time as the ship they are screening, and must remain within the screening distance of the ship.

6) **ALLOCATE MISSILE AND FIGHTER ATTACKS**
All Missile Salvoes and Fighter Groups that are within the specified attack ranges of suitable targets (and wish to attack, in the case of fighters) are moved into attack positions (counters and/or fighter models are moved close to intended target model, so it is clear exactly what they are attacking). Fighter groups may, if desired, make a secondary move in this phase by expending a Combat Endurance factor.

7) **POINT DEFENCE FIRE**
Any ship under missile and/or fighter attack allocates its defences against attacking elements, then rolls for effects. Fighter vs. fighter actions ("dogfights"), attempted fighter missile interceptions and screening actions by fighters are resolved BEFORE actual Point Defence fire is allocated to surviving targets. Note that ships equipped with Area-Defence Firecon systems may use their point-defence batteries to help defend other nearby ships in this phase, but each PDS may only be used ONCE in the turn - if it is used in support of another vessel, it is NOT available to defend the ship carrying it as well. Fighter groups defending against missile attacks fire in this phase also.

8) **MISSILE AND FIGHTER ATTACKS**
All missile salvoes and/or fighter groups that penetrate defences in phase 7 now have their attacks resolved; damage resulting from these attacks is applied immediately, including threshold damage resolution if applicable.

9) **SHIPS FIRE**
Starting with the player who WON the initiative roll in phase 2, each player alternates in firing any/all weapon systems on ONE ship at one or more targets subject to available fire control. Damage caused is applied immediately, and threshold damage checks are made where applicable as soon as all weapons fired by one ship at that one target have been used.

10) **TURN END**
Players confirm that all actions for the turn have been completed as necessary. Any untargetted missile counters are removed from play.
The next turn may now commence.

SALVO MISSILE SYSTEMS

The Salvo Missile System is the only completely new weapon introduced in this book - it is either a set of launch tubes or external racks that fire groups of six relatively small anti-ship missiles, each group being termed a "salvo". The missiles are only one-turn duration (unlike the heavier missiles in the More Thrust rules). Each SM system may fire one missile salvo each turn. There are two types of missile salvo available - "standard" SMs and Enhanced-Range (ER) SMs. Both types work in the same way, but the ER missiles have (as their name implies) a greater range than the standard types, and cost proportionally more. Missile fire occurs in the same phase as FIGHTER GROUP MOVEMENT; that is, AFTER orders are written but BEFORE ships are moved. The firing player announces that he is firing a missile salvo, and places a salvo counter at his intended point of aim - this may be anywhere up to a maximum range of 24" from the firing ship (or 36" for an Enhanced-Range (ER) missile salvo, but must be within the boundaries of the fire arcs through which the SM system may bear. The marker is left in place while all ships are moved; if at the END of movement there is an enemy ship within 6" of the marker (in any direction) then the missiles will attack it; if there is more than one potential enemy target within 6", then the salvo will go for the CLOSER of them. Move the missile salvo marker next to target ship and apply countermeasures/defences before resolving missile hits. Note that if there is no valid target within 6" at the end of movement, the salvo is wasted and the counter removed from play.

[SPECIAL NOTE: if you choose to use the VECTOR MOVEMENT system given in this book instead of the "standard" FT movement rules, then we strongly suggest reducing the attack radius of Salvo Missiles from 6" to 3" - this will prevent the missiles becoming too accurate against the more predictable manoeuvre envelope of a vector-movement ship. If a particular scenario calls for the mixing of vector and cinematic movement ships, then allow missiles to attack if within 6" of a cinematic-drive ship but only within 3" of a vector-drive ship - if you want some "PSB" to justify this, then assume that the grav-drive (cinematic movement) ships have a higher drive signature for the missiles to home on than the reaction drives of the vector-movement ships.]

When resolving SM system fire, the target player must first decide what defences he is allocating against each missile salvo; after he has announced this the attacking player rolls a D6 for each salvo marker attacking - result is the number of missiles in the salvo that are actually on target. The target player then resolves defensive fire as follows:

For each Point-Defence System (PDS) that is allocated to anti-missile defence roll a D6 - rolls of 4 and 5 each stop ONE missile, 6 stops TWO and allows a reroll.

For each Class-1 Beam Battery or screening fighter that is allocated to anti-missile defence roll a D6 - rolls of 5 or 6 stop ONE missile (reroll on 6); 1-4 rolls have no effect. (Note that this is the roll PER FIGHTER in screening groups - so a full-strength group will roll 6 dice, killing a missile on each 5 or 6 scored.)

After subtracting any missiles that are intercepted from the score that the attacker rolled, any positive number is the number of missiles that actually get through the defences AND hit the target (yes, if there are no defences at all then at least ONE missile will always get through!).

For EACH missile of the salvo that reaches the target ship, roll 1 D6 - the number rolled is the number of damage points inflicted, and rolls of 6 score 6 but do NOT get a reroll. Screen systems do NOT reduce missile damage. If the target is protected by ARMOUR, then HALF of the total damage (rounded up) done by the salvo is taken on the armour, and the remainder on the hull even if there are still armour boxes left at that point.

Missiles that get through the defences ARE deadly, so try and stop them if you can!!

Example: two missile salvoes are fired at a single target ship. The ship has the following systems that can defend it against missile fire - one point-defence battery (PDS) and two Class-1 beam batteries that can function in a defensive role. Before he knows exactly how many missiles will actually strike home, the ship's captain has to decide how he will allocate his defences - he chooses to use the PDS alone against one incoming salvo, and the 2 Class-1 batteries to combine fire against the second salvo. The attacking player now rolls for each of his missile salvoes; for the first he scores a miserable 2, but gets luckier with the second and rolls 5. The first salvo has only two missiles on target, and the defending player rolls his PDS die and gets a 6, thus shooting them both down (he would be allowed a reroll for the six, but there is no point as both target missiles are already hit). For the second salvo, with five missiles incoming, the defender gets to roll 2 dice for his 2 Class-1 batts, and gets a 4 and a 6 - the 6 allows him a reroll, but he only gets a 2 with it. So, he has hit only ONE incoming missile. The end result is that four missiles of the second salvo get past all the defences, and deliver their warheads in a blaze of energy - a D6 is rolled for each of them, scoring 3, 1, 3 and a lucky 6; missile hits don't reroll 6s, so this gives a grand total of 3+1+3+6 = 13 damage points to the target ship - enough to cripple a smaller warship and cause some serious harm to even a large one. If the ship has seven boxes or more of ARMOUR, half of the total missile damage (rounded up), ie: 7 points, will be taken on the armour and the remaining 6 on the hull boxes.

SALVO MISSILE MOUNTINGS AND MAGAZINES:

Salvo Missile systems come in two types: reloadable launching tubes (denoted Salvo Missile Launchers, or SML) which are fed from internal missile magazines, and externally carried one-salvo launch racks (termed Salvo Missile Racks, or SMR).

If SMLs are fitted to a ship, the launcher itself takes 3 MASS while each salvo load carried in the internal magazines takes up 2 MASS for standard missiles and 3 MASS for enhanced-range types. An external SMR takes 4 MASS for the complete rack including a standard missile salvo, or 5 MASS for a rack with an ER salvo.

One SML may fire one salvo per turn provided ammunition is left in the magazines; one SMR may fire its salvo load at any time, but is then empty until replenished from a base or fleet auxiliary. SMRs provide the cheapest "maximum throw weight", since every missile on the ship may be fired at the same time if desired; for extended operations, however, one or two conventional launchers backed up by a good magazine capacity is the most flexible and cost-effective solution.

In general, SMRs tend to be fitted to smaller craft where the saving in mass is critical (and the ship may well not survive long enough to fire more than one or two salvoes anyway!), while SMLs and magazines are used more on larger classes which need sustained fire capability.

Examples: Fitting one SMR (assuming standard missiles) takes 4 MASS, as opposed to the 5 MASS needed for an SML with the same one salvo; however, one SML with a 2-salvo magazine takes only 7 MASS against the 8 needed for a pair of SMRs - though the ship with the single SML and the magazine can only fire one salvo per turn, while the twin-SMR ship can fire both at once.

As the weapon load increases, the difference becomes more significant still - if you had 40 MASS available on a very large warship you could, if desired, fit 10 SMRs and be able to deliver all ten salvoes simultaneously, but the same 40 MASS would allow you to fit (say) four SML tubes and a 14-salvo magazine to feed them.

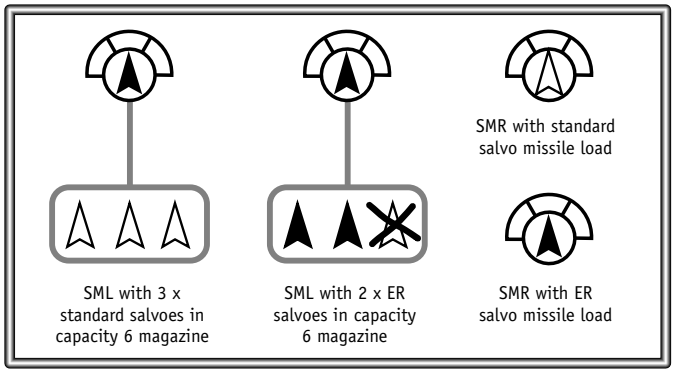
MAGAZINE CAPACITIES

Missile Salvoes for SMLs take up Magazine Capacity at the rate of 2 MASS per standard salvo, and 3 per enhanced-range salvo. The MASS allocated to magazine space during a ship's design stage may be broken down into separate magazines at the designer's discretion, but with the following important limitation: any one Launcher system may only be fed from ONE magazine, though a single magazine may feed more than one launcher. Thus if a ship has 2 SMLs and 8 MASS of magazine space, the designer may decide to fit just a single 8-space magazine feeding both launchers, or could give each launcher its own 4-space magazine instead. The disadvantage of the single magazine is that all the SM capability could be lost with one bad threshold roll (as one magazine is rolled for as a single system, regardless of its capacity or the number of salvo loads in it); on the other hand, with two smaller magazines the player does not have to option to feed missiles to either launcher - if one launcher is lost while it still has missiles in its dedicated magazine, those missiles are useless; they cannot be fired by another undamaged launcher that was not originally fed from that magazine.

The intended type of loadout is another factor to consider when installing missile magazines - in the example above, the ship with a single MASS 8 magazine could choose its loadout as 4 x standard salvoes or 1 x standard and 2 x ER salvoes (a 2 x standard and 1 x ER loadout is also allowed, but wastes 1 space in the magazine). If the same ship had 2 x MASS 4 magazines, however, carrying any ER salvoes would be much less efficient - the spare space in each magazine would be wasted.

The SM Magazine icon is a box linked by lines to the SM Launcher(s) it feeds; the number of salvoes carried in the magazine is indicated by small arrowhead icons within the box, which are crossed off as they are fired. For a STANDARD SM salvo leave the arrowhead white, and for an ER salvo shade it in black. SM Launchers have a black arrowhead in the actual launcher icon, but this has no bearing on the load carried in the magazine - SM RACKS, on the other hand, have either a white or black icon according to the load carried.

[Note that the ship designs in this book all assume standard salvo loads in the magazines - if you wish to load a ship with ER salvoes then shade in the required number of salvo icons and delete any unwanted ones - eg: if a ship design shows 3 standard salvo icons in a MASS 6 magazine, and you wish to use 2 ER salvoes instead, shade two icons black and cross off the third one.]



NEW SHIP DESIGN SYSTEM

The new design system presented here is intended to completely replace the original system given in Chapter 7 of the Full Thrust (2nd edition) rulebook. DO NOT mix parts of the two systems when designing a ship, as the results will be very odd!

The new system requires just a little more calculation than the old one, as some ship systems now take up percentages of the total ship mass, rather than being fixed values - however it is still a very quick and simple mechanism, and once used to it you should be able to generate new ship designs with as much ease as under the original system.

TOTAL HULL MASS RATING

The "TOTAL MASS" of a given hull is a representation of the CAPACITY of that hull for outfitting it with drives, weapons, defensive systems etc. This total MASS figure is used to refer to the size of the ship - e.g.: a size 25 ship could be fitted with a maximum of 25 MASS of systems. Note that the MASS ratings of systems are abstract figures used to indicate the required volume, power requirements etc. rather than an exact measure of the bulk or weight of a given system - if you assume that (in a given background) one MASS is equivalent to around 100 tonnes, then a MASS 1 system (such as a Point Defence installation) will not necessarily weigh in at 100 tonnes; it will, however, require 100 tonnes (1 MASS) of hull capacity to mount the system and its infrastructure, control and power requirements, sensors, crew etc. etc.

CHOOSING OVERALL SHIP MASS

Because the sizes of major items like Hull Integrity and Drives are calculated as percentages of the overall ship MASS, choosing a hull size that is not an exact multiple of 10 will mean that some system masses may not be whole numbers; some of these will be rounded UP and some DOWN.

In general terms, decimals of .49 and less should be rounded DOWN, while those of .5 or higher should round UP. The only specific exception to this rule is in the case of Thrust Factors, as explained below.

For example, if you are building a MASS 64 ship then the 10% required for the FTL drive will be 6.4, which will round down to 6. If the same ship's Main Drive is thrust-4, however, this will take 20% = 12.8, which will round UP to 13 MASS. In general, most designs will come out about even in the rounding of factors; occasionally a ship may end up fractionally better or worse off that another of broadly similar design, but that shouldn't be a serious problem - besides, if we don't give the maximisers and number crunchers SOMETHING to work at they'll all get bored!

IMPORTANT: Note that NO single system can ever be rounded down to MASS 0. A very tiny ship of (say) MASS 4 will still have to pay 1 MASS for an FTL drive (even though 10% for it is only 0.4). Thus the smallest possible FTL-drive ship is actually a MASS 3 scout or courier boat, that will use 1 MASS for Hull Integrity (an Average hull at 30%), 1 MASS for FTL drive (the smallest unit available) and 1 MASS for Main Drive (for which it could get thrust-6). The boat would be unarmed, and have just 1 damage box.

The smallest usable combat ship will be around 5 or 6 MASS, which will get you a tiny armed scout or light corvette with a single fire control and probably only a single small weapon system, crewed by a handful of VERY brave spacers.....

ATMOSPHERIC STREAMLINING

The provision of a streamlined hull to permit in-atmospheric operations consumes some of a ship's available MASS; this represents the necessary aerofoils, control surfaces and heatshields as well as the reduction in usable internal capacity caused by the streamlined hull shape.

In MORE THRUST, two types of aerodynamic hull were considered - FULLY and PARTIALLY streamlined. These classifications (and their effects) are retained under the new design system, but they now require MASS on the ship thus:

PARTIAL STREAMLINING uses 10% of the ship's total MASS, while FULL STREAMLINING uses 20% of the ship's total MASS. The POINTS COST of streamlining is 2 points per MASS used for the aerodynamics.

Example: to give a MASS 50 ship partial streamlining will use 5 MASS and cost an additional 10 points on top of the basic hull cost; to give the same ship FULL streamlining will use 10 MASS and cost 20 points.

Both MASS and points cost of streamlining are in addition to the costs of the basic hull strength chosen for the ship (see below).

VARIABLE HULL STRENGTHS

Rather than the old FT2 definitions of "Military" and "Merchant" hulls with fixed values for damage boxes (50% and 25%), FT3 uses a sliding scale of five different hull strength factors; the chosen hull strength now uses MASS from the ship's total, and is directly related to the number of damage boxes the ship has.

The Hull Strength represents the amount of the ship's structure that is devoted to re-inforcing the basic hull envelope, including bulkheads, compartmentalisation, internal strengthening etc. It is entirely separate from the ARMOUR used (if any), which is external protection - it is perfectly possible to have a ship with a FRAGILE hull structure but lots of armour around it; in such a case the ship will be fine UNTIL some damage manages to get through the armour, in which case the hull integrity will fail very quickly!

FRAGILE hull:	**10% of total MASS**	**Hull Boxes = 10% of MASS**
WEAK hull:	**20% of total MASS**	**Hull Boxes = 20% of MASS**
AVERAGE hull:	**30% of total MASS**	**Hull Boxes = 30% of MASS**
STRONG hull:	**40% of total MASS**	**Hull Boxes = 40% of MASS**
SUPER hull:	**50% of total MASS**	**Hull Boxes = 50% of MASS**

Examples:

MASS 60 ship:

FRAGILE hull:	*6 MASS*	*Hull Boxes = 6*	*(2/2/1/1)*
WEAK hull:	*12 MASS*	*Hull Boxes = 12*	*(3/3/3/3)*
AVERAGE hull:	*18 MASS*	*Hull Boxes = 18*	*(5/5/4/4)*
STRONG hull:	*24 MASS*	*Hull Boxes = 24*	*(6/6/6/6)*
SUPER hull:	*30 MASS*	*Hull Boxes = 30*	*(8/8/7/7)*

SHIP DESIGN PROCEDURE

STEP 1:
Decide on the overall size of your ship - the total MASS rating.

Example: We are building a Heavy Cruiser - sized vessel, and decide on a total MASS of 85. The basic POINTS COST of the basic hull will be the same as the MASS, i.e.: 85 points.

STEP 2:
Choose the HULL INTEGRITY level for the ship, from the following five options:

FRAGILE hull:	10% of total MASS
WEAK hull:	20% of total MASS
AVERAGE hull:	30% of total MASS
STRONG hull:	40% of total MASS
SUPER hull:	50% of total MASS

The MASS used for hull integrity is the given % of the total mass of the ship; the same number gives the HULL BOXES that the ship has to absorb damage points. The hull boxes are arranged in four rows to form the DAMAGE TRACK for the ship.

The POINTS COST of the hull integrity is TWICE the MASS used on it.

Example: We decide to give our Heavy Cruiser an AVERAGE hull integrity. This will use up 30% of the total 85 MASS, or 26 MASS (actually 25.5, rounded up). The points cost of the hull integrity will be 2 x the MASS used, i.e.: 2 x 26 = 52 points.

For HULL BOXES (or Damage Boxes) the chosen hull integrity gives the ship 26 Hull Boxes that will be arranged as 7/7/6/6.

STEP 3:
Choose and fit DRIVES to the ship: if selecting an FTL drive to give the ship an interstellar capability, this will require 10% of the total MASS. Decide on the required THRUST FACTOR for the ship's main drives, which use up MASS at the rate of 5% of total ship mass per thrust factor.

The POINTS COST of the total drive package is TWICE the MASS used on it.

Example: Our Heavy Cruiser needs an FTL drive, which will require 10% of the total ship mass (= 8.5 mass, rounded up to 9); we also decide on THRUST-4 for the Main Drive, which takes 4 x 5% = 20% of ship mass, i.e.: 17 mass. Total mass of drive package is thus 26 mass. Points cost for the drives is 26 x 2 = 52 points.

We now have a hull with drive systems installed; the total MASS used so far is 26 + 26 = 52, leaving 85 - 52 = 33 mass for fitting the ship out with other systems. The points cost so far is 85 + 52 + 52 = 189.

STEP 4:

Select the desired mix of offensive and defensive systems to fit to the ship, according to its intended role.

MASS and POINTS values of the various systems are set out in the systems table.

Example: The Heavy Cruiser we are designing is intended as a multi-role ship, for both extended patrols and as a combat ship to support the main battleline. Accordingly, we decide on a balanced mix of offensive and defensive systems to cope with a wide variety of possible threats.

We choose to fit TWO standard Fire Control systems to the Cruiser, costing 1 MASS each. This leaves us 31 MASS to play with.

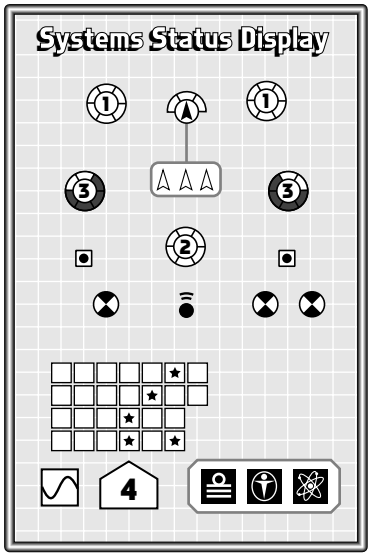
The main offensive punch of the ship will be a mix of beam batteries and salvo missiles - we decide on two class-3 batteries each bearing through 2 arcs (each will bear Fore and one of the Fore Side arcs, to give overlapping coverage), at 5 MASS each, one class-2

battery with all-round fire (at 3 MASS), plus a backup armament of 2 class-1 batteries at 1 MASS each. A single Salvo Missile Launcher is mounted forward (covering the front 180 degree zone) at 3 MASS, with a magazine holding 3 standard salvoes (3 x 2 = 6 MASS). Total offensive systems mass is 5 + 5 + 3 + 1 + 1 + 3 + 6 = 24.

We thus have 7 MASS left for defensive systems to protect the ship; we decide on a good active defence capability of three Point-Defence Systems (PDS) at 1 MASS each, leaving us 4 MASS to use up. We could spend this on 4 boxes of Hull Armour, or alternatively we could fit a level-1 Screen generator for 4 MASS (5% of 85 = 4.25, rounded down to 4). On balance, we decide the Screen would be of more value, and go for that option.

So, the total systems fit for the ship is:

Basic Hull	*(MASS 85)*	*Points cost*	*85*
Hull Integrity	*MASS 26*	*Points cost*	*52*
FTL Drive	*MASS 9*	*Points cost*	*18*
Main Drive (Thrust-4)	*MASS 17*	*Points cost*	*34*
Sub-totals:	***MASS 52***	***Points cost***	***189***
Class 3 Batts x 2 (2-arc each)	*MASS 10*	*Points cost*	*30*
Class 2 Batt x 1 (6-arc)	*MASS 3*	*Points cost*	*9*
Class 1 Batts x 2	*MASS 2*	*Points cost*	*6*
FCS x 2	*MASS 2*	*Points cost*	*8*
SML x 1	*MASS 3*	*Points cost*	*9*
SM magazine (3 loads)	*MASS 6*	*Points cost*	*18*
Screen level-1	*MASS 4*	*Points cost*	*12*
PDS x 3	*MASS 3*	*Points cost*	*9*
Sub-totals:	*MASS 33*	*Points cost*	*95*
TOTALS:	***MASS 85***	***Points cost***	***290***



Ship Diagram for the Mass 85 Heavy Cruiser described in the example above.

OPTIONS FOR THE EXAMPLE

There are any number of different choices we could have made when designing the Cruiser example above - some may have resulted in a better ship, some a worse one, though the true value of any design is really dependant on the threat it is facing at any given time.

If we had wanted to give our Cruiser a Fighter complement, we could have made space for this by dropping the SML and magazine, giving us the 9 MASS that one fighter group and its hangar bay requires. Alternatively, replacing the SML and its magazine with all Beam weapons would have given us a ship that could sustain its fire longer (as beams don't run out of ammo like the SM systems do) but would have not been able to deliver such a hard punch at the (hopefully) vital moment in the battle!

We could have chosen to drop the Hull Integrity to WEAK rather than AVERAGE, saving us 9 MASS that could have then been spent on Armour or other systems, but then the ship would only have had 17 Damage Boxes (arranged 5/4/4/4); fitting 9 boxes of armour would have boosted its survivability considerably, but only until it met a weapon that penetrated the armour and struck directly at its weaker hull. While it is of course possible to optimise a ship or fleet to take on a specific opposition, well-balanced designs will more often be the best option - if your regular opponent always seems to use beam-heavy ships then you might feel like leaving off things like PDS and armour in favour of better screens, until he turns up next week with some new designs sporting SMLs and fighter bays!

MASS AND POINTS COST TABLE

	MASS:	*POINTS COST:*
BASIC CONSTRUCTION		
BASIC HULL	Total MASS of ship	MASS x 1
HULL INTEGRITY		
FRAGILE hull	10% of total MASS	MASS x 2
WEAK hull	20% of total MASS	MASS x 2
AVERAGE hull	30% of total MASS	MASS x 2
STRONG hull	40% of total MASS	MASS x 2
SUPER hull	50% of total MASS	MASS x 2
HULL ARMOUR (per box)	MASS 1	MASS x 2
DRIVE SYSTEMS		
MAIN DRIVES	5% of ship's MASS per thrust factor (minimum MASS 1)	MASS x 2
FTL DRIVES	10% of ship's MASS (minimum MASS 1)	MASS x 2
WEAPONS AND SYSTEMS		
Class 4 BATTERY (1-arc fire)	MASS 8,+2 per extra arc	Total MASS x 3
Class 3 BATTERY (1-arc fire)	MASS 4, +1 per extra arc	Total MASS x 3
Class 2 BATTERY (3-arc fire)	MASS 2, +1 per extra THREE arcs	Total MASS x 3
Class 1 BATTERY (6-arc)	MASS 1	3 Points
SML (Salvo Missile Launcher)	MASS 3 (Launch tubes only)	9 Points
SALVO MISSILE MAGAZINE	MASS 2 per salvo, 3 per ER salvo	3 x magazine MASS
SMR (Salvo Missile Rack)	MASS 4, or 5 for ER salvo	12 (or 15 for ER)
SUBMUNITIONS PACK	MASS 1	3 Points
NEEDLE BEAM	MASS 2	6 Points
PULSE TORPEDO LAUNCHER	MASS 4 (1-arc) +1 per extra arc (up to 3 arcs maximum)	Total MASS x 3
OTHER SYSTEMS (INCLUDING GENRE-SPECIFIC WEAPONS)		
NOVA CANNON	MASS 20	60 Points
WAVE GUN	MASS 12	36 Points
MINELAYER	MASS 2, + 1 per mine carried	6 Points + 2 per mine
MINESWEEPER	MASS 5	15 Points
MISSILE (MT type)	MASS 2	6 Points
REFLEX FIELD	MASS 10 (or 10% of ship MASS if greater)	Total MASS x 6
CLOAKING FIELD	MASS 2 (or 10% of ship MASS if greater)	Total MASS x 10
ORTILLERY SYSTEM	MASS 3	9 Points
HANGAR BAY: (+craft)	1.5 x MASS of small craft carried	Bay MASS x 3
POINT-DEFENCE SYSTEM	MASS 1	3 Points
FIRE CONTROL SYSTEM	MASS 1	4 Points
AREA DEFENCE FIRECONTROL	MASS 2	8 Points
CARGO/PASSENGER SPACE	MASS 1 per space	No cost
LEVEL-1 SCREEN	MASS 3 (or 5% of ship MASS if greater)	MASS x 3
LEVEL-2 SCREEN	MASS 6 (or 10% of ship MASS if greater)	MASS x 3

FIGHTER TYPES:

All fighters require 1.5 MASS of hangar bay space per fighter, so a standard hangar for a 6-fighter group is 9 MASS.

Points costs are: (per group of 6):

Standard fighters	18 points (3 each)
Heavy fighters	30 points (5 each)
Fast fighters	24 points (4 each)
Interceptor fighters	18 points (3 each)
Attack fighters	24 points (4 each)
Long-Range fighters	24 points (4 each)
Torpedo fighters	36 points (6 each)

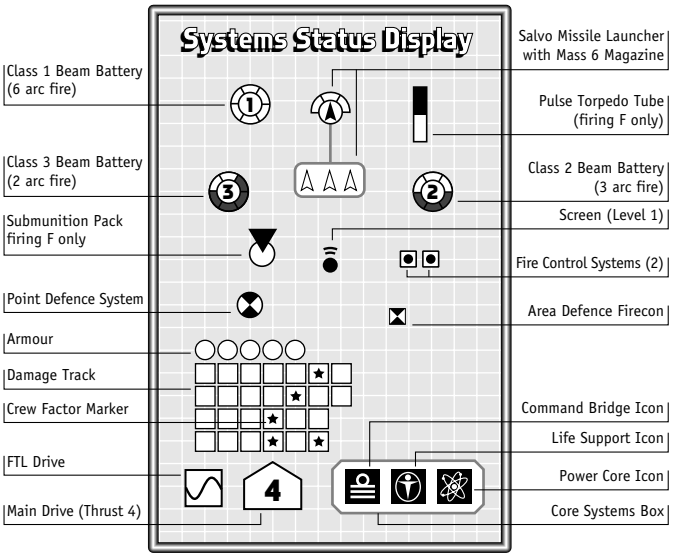
[PLEASE NOTE THAT THE SPECIALISED FIGHTER TYPES LISTED ABOVE ARE DESCRIBED IN THE "MORE THRUST" SUPPLEMENT.]

Interface Craft and other light vessels are costed at 2 points per MASS of the craft.

E.g. a MASS 10 Interface Lander would cost 20 points and require 15 MASS of available hangar bay space on its carrying ship.

NEW-STYLE SHIP DIAGRAM

The ship designs given in this book all use a redesigned ship diagram as illustrated below - please note that this is ***NOT*** an actual ship design, just a key to the symbols and icons used!



STANDARD SHIP CLASSIFICATIONS AND TYPICAL MASS RATINGS:

The table below shows the standard basic ship classifications used by most space navies, along with the accepted designations and a rough guide to the typical mass ratings of the classifications; these figures are very loose, as most navies tend to classify ships by function rather than by tonnage - one fleet's Destroyer may, in reality, be a bigger and more powerful ship than another's Light Cruiser, hence the large overlap in most of the mass groupings.

SHIP CLASS	Abbreviation	MASS RANGE
Scout or Courier	SC	MASS 4-10
Corvette	CT	MASS 8-16
Frigate	FF	MASS 14-26
Destroyer	DD	MASS 24-36
Heavy (or "Super") Destroyer	DH	MASS 30-50
Light Cruiser	CL	MASS 40-60
Patrol or Escort Cruiser	CE	MASS 50-70
Heavy Cruiser	CH	MASS 60-90
Battlecruiser or Light Battleship	BC	MASS 80-110
Battleship	BB	MASS 100-140
Heavy Battleship (or "Battledreadnought")	BDN	MASS 120-160
Dreadnought	DN	MASS 140-180
Superdreadnought	SDN	MASS 160+
Escort Carrier	CVE	MASS 80-140
Light Carrier	CVL	MASS 120-180
Heavy Carrier	CVH	MASS 160+
Attack Carrier	CVA	MASS 150+

SUMMARY OF WEAPON SYSTEMS AND EFFECTS

BEAM BATTERIES

Maximum range and number of dice rolled per shot is according to Battery class (see chart below). Screens reduce damage as noted.

Damage is as per table, with rerolls on scores of 6. All initial damage is taken from ARMOUR (if any), but REROLL damage applied directly to HULL even if armour boxes remain.

Note: Class 1 batteries ONLY may fire in limited PDS mode; roll 1 die per battery, scores of 5 or 6 kill 1 fighter or 1 missile from SM salvo (reroll on 6).

Dice at range:	0-12	12-24	24-36	36-48
Class 1 Battery	1	-	-	-
Class 2 Battery	2	1	-	-
Class 3 Battery	3	2	1	-
Class 4 Battery	4	3	2	1

Beam hit damage

Unscreened target:	1-3 = no damage;	4-5 = 1 DP;	6 = 2 DP + reroll
Screen-1	1-4 = no damage;	5 = 1 DP;	6 = 2 DP + reroll*
Screen-2	1-4 = no damage;	5 = 1 DP;	6 = 1 DP + reroll*

* All reroll damage counts as if target is unscreened, as beam is assumed to have penetrated the screens on a roll of 6.

ICONS (examples): Class-1 Battery 6 fire arcs Class-2 Battery 3 fire arcs

PULSE TORPEDOES

Maximum range 30"; at 0-6" a hit is scored on 2+, at 6-12" on 3+ , at 12-18" on 4+, at 18-24" on 5+ and at 24-30" on 6 only. Screens do not affect damage.

Damage per hit is 1D6, NO reroll. Half the damage scored (rounded UP) is taken on ARMOUR (if any), remainder on HULL.

ICONS 1 fire arc 3 fire arcs

NEEDLE BEAMS

Maximum range 12"; firer must nominate target system and roll 1 die. On score of 6, target system is knocked-out and 1 DP is applied to HULL (weapon ignores ARMOUR). On score of 5, target system is unaffected but 1 DP is still inflicted on hull. Rolls of 1-4 are no effect. Screens do not affect damage. **ICON**

SALVO MISSILES

Maximum range 24". 1 D6 missiles per salvo will be on target, minus any stopped by defensive fire. Screens do not affect damage.

Damage is 1D6 per missile that hits, NO rerolls. Half the damage scored by each missile (rounded UP) is taken on ARMOUR (if any), remainder on HULL.

Extended Range Salvoes exactly as standard SM, except maximum range is 36".

ICONS SM Rack (no magazine) SM Launcher (with magazine)

SUBMUNITION PACKS

Maximum range 18"; at 0-6" roll 3 dice, at 6-12" 2 dice and at 12-18" one die only. Screens do not affect damage.

Damage is as per Beam fire dice, with rerolls on 6. All initial damage is taken from ARMOUR (if any), but REROLL damage applied directly to HULL. **ICON**

PDS (POINT DEFENCE SYSTEM)

Against Fighters or SMBs, roll 1 die per PDS: 1-3 = no effect, 4-5 kills ONE fighter or missile, 6 kills TWO and allows a reroll (reroll kills are same as for first die roll).

On its own, a PDS may only protect the ship it is mounted on, but linked to an ADFC it may be used to engage anything that is attacking another ship within 6".

PDS may fire in a limited antiship mode instead of point-defence mode, at targets within 6" only - roll 1 die, scores of 6 inflict 1 DP on ARMOUR (if any), or HULL if no armour. There are no rerolls. Scores of 1-5 are no effect. Screens do not affect damage. PDS fire does NOT require an active FireCon system, even in its antiship mode - the installation has its own integral shortrange FireCon. **ICON**

ADFC (AREA-DEFENCE FIRECONTROL)

An enhanced FireCon system that allows a ship to protect other nearby ships with its PDS. One ADFC allows the ship's PDS (any number of them) to fire at any combination of threats (Fighters, SMBs etc) that are directly attacking one friendly ship that is within 6" of the ADFC-carrying ship. Any PDS used in this mode may not fire in other modes in the same turn. PDS used in AD mode roll dice and score kills exactly as normal PDS fire. An ADFC functions ONLY as an enhanced PDS fire-director link, and may NOT be used as a "normal" Fire Control System. **ICON**

NAC ROYAL SPACE NAVY

THE NEW ANGLIAN CONFEDERATION ROYAL SPACE NAVY

The current prefix used for NAC Navy ships is RNS, for Royal Navy Starship. Up to 2166 the prefix was CNS (for Confederation Navy Ship), but an Admiralty decision to change to RNS was reached as a compromise with the hardline Royalist factions who actually wanted a return to the old HMS (His/Her Majesty's Ship) which had been dropped in the late 2090s. NAC-registered merchant shipping is prefixed MSS, for Merchant Star Ship.

The national emblem for the Royal navy is a stylised "A" symbol with echoes of the old United Kingdom flag, in the traditional red, white and blue.

HISTORY AND ORGANISATION

The NAC Royal Navy is a direct descendant of the British RN, and proudly maintains many of the long-standing traditions of the Senior Service. The amalgamation of the British, Canadian and former US navies (that is, the Earthbound surface fleets) when the Anglian Confederation was formed in 2057 brought many American and Canadian naval practices into the new force, but the three nations' long history of co-operation served to make the integration a relatively easy one. The US Military had operated primitive in-system space warships since the early 2020s, and the development of the Jump drive in the 2060s led the new NAC RN to start a programme of FTL warship construction to support and protect their colonial expansion. The first true combat starship was the HMS Thunderer, launched from the Lunar orbit shipyard on July 10th 2076.

The Royal Navy in the 2180s is divided into Core Command, which operates the NAC fleet units still based within the Sol, Barnard and Centaurus systems, Defence Command (also known as the Home Fleet) that operates in the Inner Colonies and is tasked with protection of the NAC's Capital on Albion, and Outworld Command that operates throughout the far-flung NAC colonial possessions. The ground-combat arm of the Navy is the Royal Marines, elements of which are divided between the three Space Commands. Training Command and the Royal Naval Reserve are run as separate organisational structures, with both contributing ships and manpower to any of the main active-duty Commands in times of need.

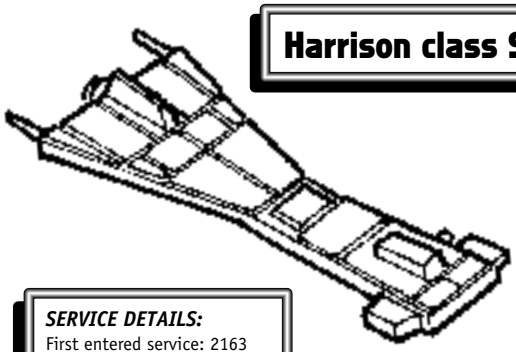
Service in all branches of the NAC armed forces is on a volunteer basis except in the most extreme circumstances, and personnel morale is generally very high. The RN encourages pride in the history and traditions of the Navy, and conditions aboard NAC ships are are comfortable as possible within the constraints of warship design and function.

SHIP DESIGN DOCTRINE

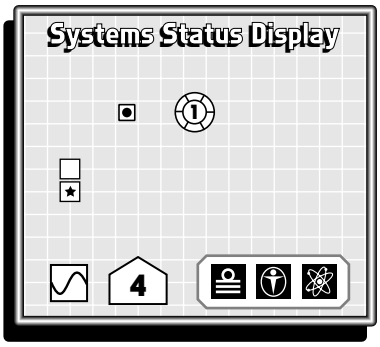
The Royal Navy employs largely general-purpose ships (with the exception of the Fighter Carrier classes), using a broad mix of weapons and systems - beam batteries, pulse torpedoes and some salvo missile systems. They have some specialised designs for duties such as minelaying and sweeping, planetary bombardment and such, but the majority of fleet units are versatile multi-role ships. Energy screens are the primary passive defence, though some hull armour is also employed especially on the heavier units. Mobility is generally average-to-good, with very few ships having less than thrust-4 drives. Fighter operations doctrine is to base them on specialised carriers which rely primarily on supporting escort ships for their defence.

Harrison class SCOUTSHIP

The Harrison is just one example of several small scoutship classes in the NAC fleet, and is an elderly design approaching the end of its projected operational life - many are being sold off to other navies or transferred to training and colonial forces, though a good number will probably remain in NAC service for some time as couriers and recon vessels. Its thrust rating is low for a scoutship, but its hull is better able to absorb damage than many other ships of its size.



TMF: 6
NPV: 21



SERVICE DETAILS:

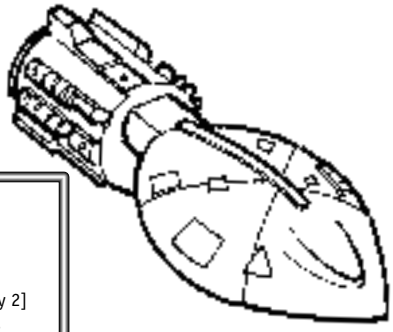
First entered service: 2163
Currently in NAC service: 70
Lost in action: 22
Decommissioned/scrapped: 12
Relegated to reserve fleet: 31
Sold to other forces: 45
Under construction: Nil
Procurement cost: 210 MUcr.

TECHNICAL SPECIFICATIONS:

Classification: Scoutship
Displacement: 600 Tonnes [MASS Factor 6]
Hull type: Average [Hull Integrity 2]
Crew: 2 officers, 4 ratings [Crew Factor 1]
Armament: 1 x Class 1 battery
Defences: None
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 4, FTL (Jump) Drive.

Arapaho class CORVETTE

Though lighter than some other navies' Corvette classes, the Arapaho is a capable little combat ship for its size; while never intended to cross swords with the enemy battleline, it can give a good account of itself against other light escort classes. A particular design feature is the choice of a small amount of hull armour over a comparatively frail hull structure, which increases the little ship's survivability considerably. A common variant, known as the Arapaho Brave, mounts a submunition pack in place of one of the class-1 beam systems.



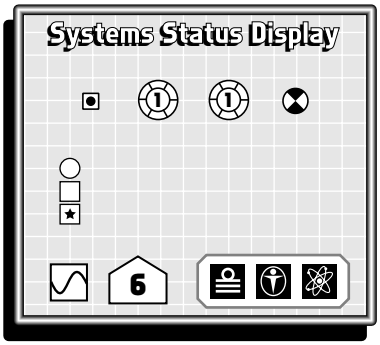
TECHNICAL SPECIFICATIONS:

Classification: Corvette
Displacement: 1200 Tonnes [MASS Factor 12]
Hull type: Weak [Hull Integrity 2]
Crew: 3 officers, 9 ratings [Crew Factor 1]
Armament: 2 x Class 1 batteries
Defences: 1 Point Defence System Grade 1 Armour
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 6, FTL (Jump) Drive.

TMF: 12
NPV: 41

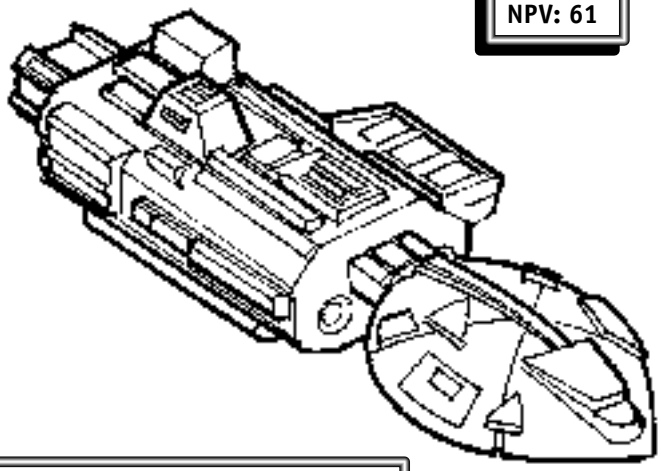
SERVICE DETAILS:

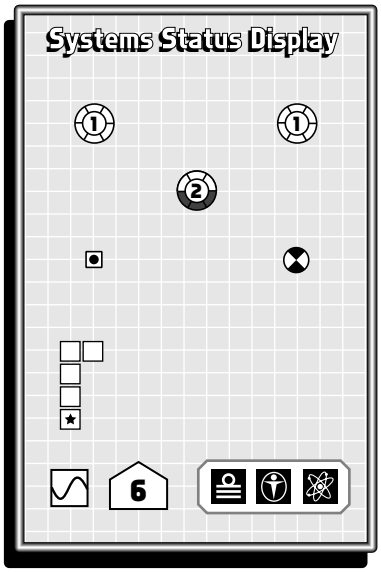
First entered service: 2173
Currently in NAC service: 87
Lost in action: 31
Decommissioned/scrapped: 6
Relegated to reserve fleet: 19
Sold to other forces: 15
Under construction: 33
Procurement cost: 410 MUcr.



Minerva class FRIGATE

TMF: 18
NPV: 61





SERVICE DETAILS:
First entered service: 2169
Currently in NAC service: 104
Lost in action: 38
Decommissioned/scrapped: 29
Relegated to reserve fleet: 17
Sold to other forces: 43
Under construction: Nil
Procurement cost: 610 MUcr.

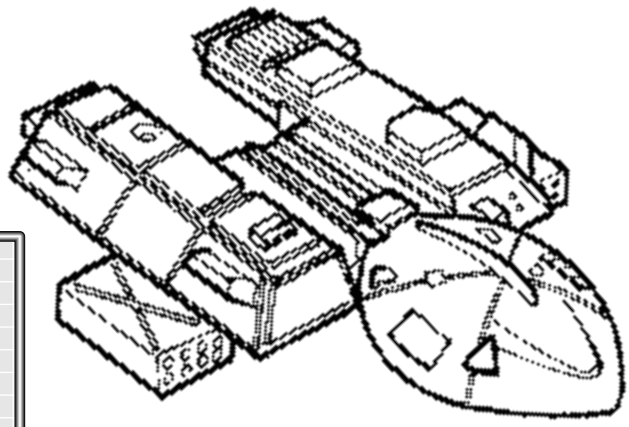
TECHNICAL SPECIFICATIONS:

Classification:	Frigate	**Armament:**	2 x Class 1, 1 x Class 2 batteries
Displacement:	1800 Tonnes [MASS Factor 18]	**Defences:**	1 Point Defence System
Hull type:	Average [Hull Integrity 5]	**Sensor suite:**	Standard sensors, 1 Fire-control system
Crew:	4 officers, 14 ratings [Crew Factor 1]	**Drive systems:**	Main Drive rating 6, FTL (Jump) Drive.

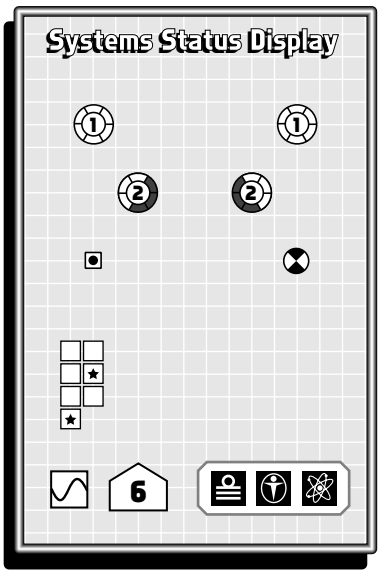
The Minerva is the class name of the second-generation refit of the earlier Miyazaki class frigates; all but a small handful of Miyazaki class ships (originally built in the early 2160s) were stripped and rebuilt to the Minerva specification during an extended refurbishment programme between 2169 and 2173. The main class variant is the Minerva/A, which has only one class-1 beam battery for offensive fire but carries an Area-Defence Fire Control system and an additional PDS installation in place of the class-2 battery and the other class-1; this version is commonly used as an anti-fighter close escort for merchant convoys and support ships.

Tacoma class HEAVY FRIGATE

SERVICE DETAILS:
First entered service: 2181
Currently in NAC service: 41
Lost in action: 13
Decommissioned/scrapped: Nil
Relegated to reserve fleet: Nil
Sold to other forces: Nil
Under construction: Nil
Procurement cost: 810 MUcr.



One of the newest ships in the NAC inventory, the Tacoma is already proving a popular and effective vessel; the class is under continuous production at both the Caledon Base and Arcadia shipyards, and within a few years will probably replace many of the older Minerva class ships. An anti-fighter escort version similar to the Minerva/A concept will enter service in 2184, with 18 of the 32 hulls currently in the yards being of this configuration. A Torpedo-carrying variant that drops both class-2 batteries in favour of a single fore-mounted P-torp tube has undergone fleet trials, but no firm order has been placed for this version as yet.



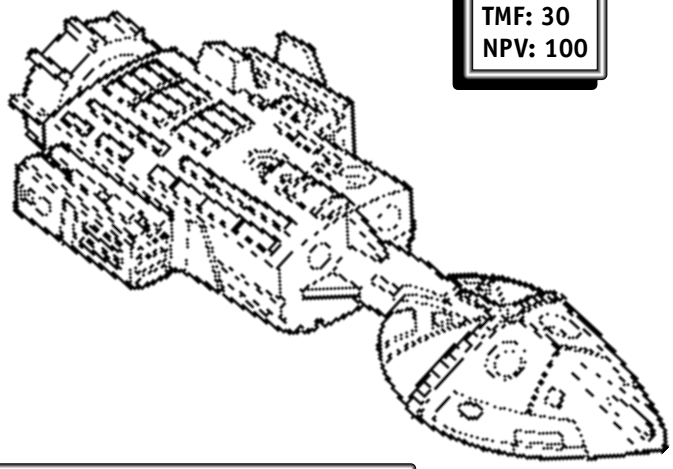
TMF: 24
NPV: 81

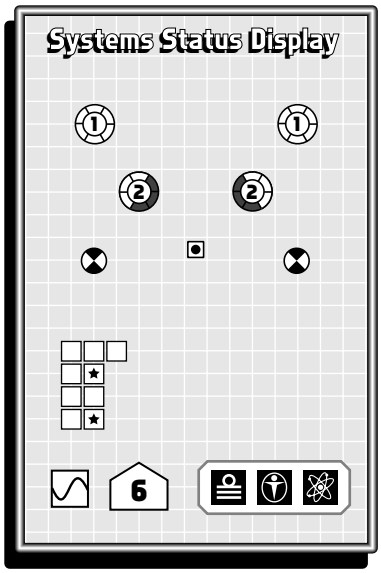
TECHNICAL SPECIFICATIONS:

Classification:	Frigate	**Armament:**	2 x Class 1, 2 x Class 2 batteries
Displacement:	2400 Tonnes [MASS Factor 24]	**Defences:**	1 Point Defence System
Hull type:	Average [Hull Integrity 7]	**Sensor suite:**	Standard sensors, 1 Fire-control system
Crew:	5 officers, 19 ratings [Crew Factor 2]	**Drive systems:**	Main Drive rating 6, FTL (Jump) Drive.

Ticonderoga class DESTROYER

TMF: 30
NPV: 100





SERVICE DETAILS:
First entered service: 2166
Currently in NAC service: 35
Lost in action: 28
Decommissioned/scrapped: 7
Relegated to reserve fleet: 23
Sold to other forces: 21
Under construction: Nil
Procurement cost: 1000 MUcr.

TECHNICAL SPECIFICATIONS:

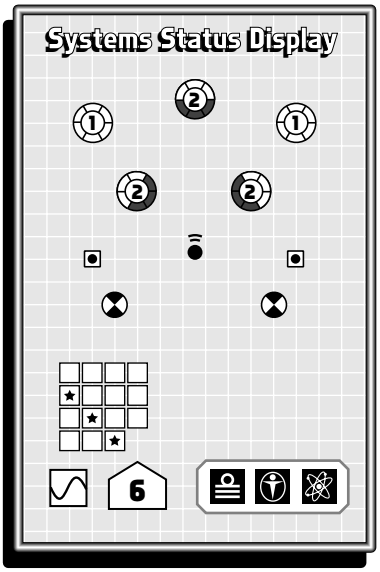
Classification:	Destroyer	**Armament:**	2 x Class 1, 2 x Class 2 batteries
Displacement:	3000 Tonnes [MASS Factor 30]	**Defences:**	2 Point Defence Systems
Hull type:	Average [Hull Integrity 9]	**Sensor suite:**	Standard sensors, 1 Fire-control system
Crew:	6 officers, 24 ratings [Crew Factor 2]	**Drive systems:**	Main Drive rating 6, FTL (Jump) Drive.

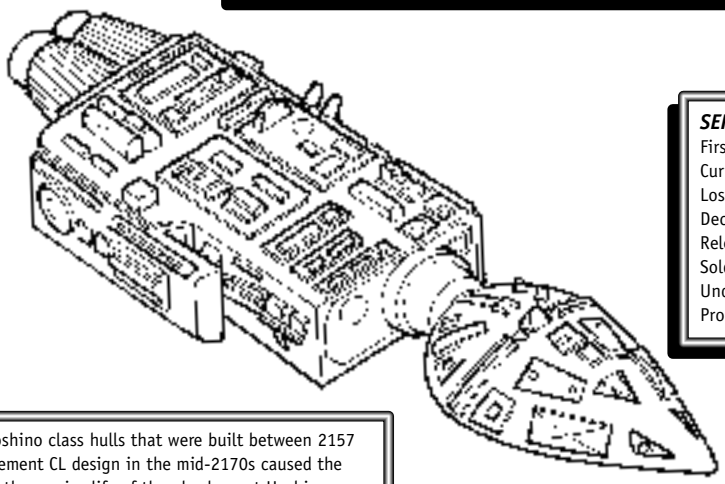
The Ticonderoga is one of the older Destroyer types currently in NAC service. It is an effective general-purpose ship, but age is beginning to tell on the earliest hulls and many are currently being sold off or transferred to reserve forces. A major refit program was undertaken between 2177 and 2179, and those Ticonderogas that are still in service are almost exclusively of the post-refit specification. No hulls of this class have been built since the first of the newer Tallahachie class DDs was commissioned in 2175.

Huron class LIGHT CRUISER

TECHNICAL SPECIFICATIONS:

Classification:	Light Cruiser	**Defences:**	2 Point Defence Systems Level 1 Screens
Displacement:	5000 Tonnes [MASS Factor 50]	**Sensor suite:**	Standard sensors, 2 Fire-control systems
Hull type:	Average [Hull Integrity 15]	**Drive systems:**	Main Drive rating 6, FTL (Jump) Drive.
Crew:	9 officers, 41 ratings [Crew Factor 3]		
Armament:	2 x Class 1, 3 x Class 2 batteries		





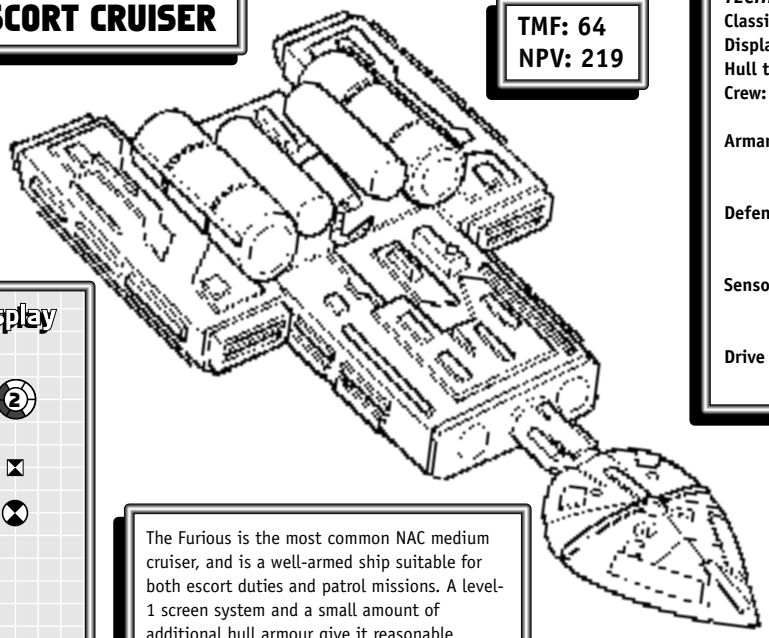
SERVICE DETAILS:
First entered service: 2177
Currently in NAC service: 56
Lost in action: 15
Decommissioned/scrapped: 2
Relegated to reserve fleet: 5
Sold to other forces: 9
Under construction: 4
Procurement cost: 1670 MUcr.

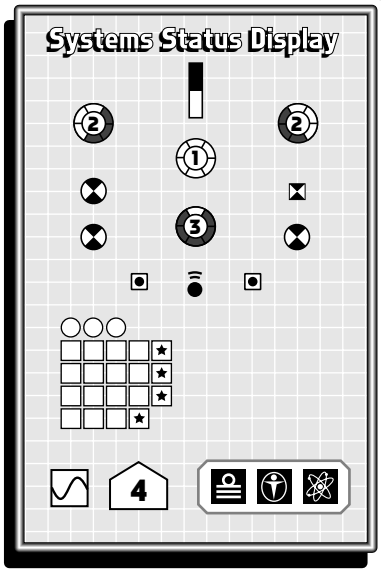
The Huron is a rebuild of the earlier Hoshino class hulls that were built between 2157 and 2165; the lack of a suitable replacement CL design in the mid-2170s caused the Admiralty to look at ways of extending the service life of the obsolescent Hoshinos, and the Huron was the outcome of the project study. Projected operational life of the totally-refitted ships is now well into the 2190s, and there are even a handful of new hulls being built to the updated design.

TMF: 50
NPV: 167

Furious class ESCORT CRUISER

TMF: 64
NPV: 219





The Furious is the most common NAC medium cruiser, and is a well-armed ship suitable for both escort duties and patrol missions. A level-1 screen system and a small amount of additional hull armour give it reasonable survivability in combat. A specialised Salvo Missile armed variant of the Furious class is in service, which dispenses with the class 3 battery, the ADFC and the P-torp tube in order to make space for one SM launcher and a 3-salvo (MASS 6) magazine, plus an additional class-1 beam battery.

TECHNICAL SPECIFICATIONS:

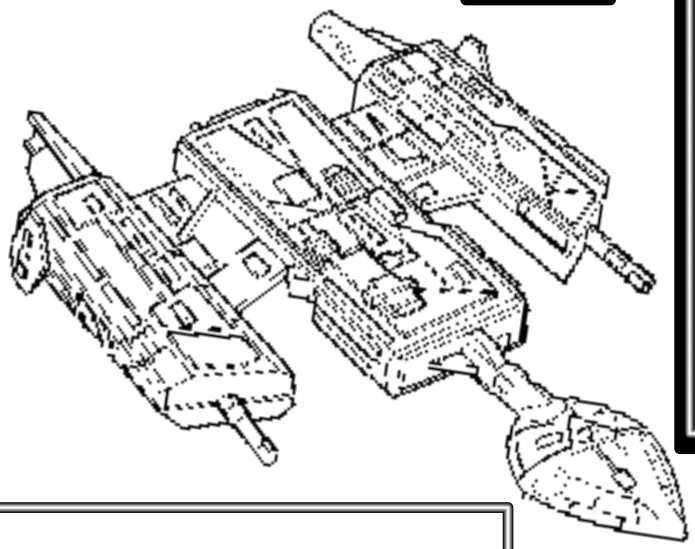
Classification:	Escort Cruiser
Displacement:	6400 Tonnes [MASS Factor 64]
Hull type:	Average [Hull Integrity 19]
Crew:	11 officers, 53 ratings [Crew Factor 4]
Armament:	1 x Class 1, 2 x Class 2, 1 x Class 3 batteries 1 Pulse Torpedo Tube
Defences:	3 Point Defence Systems Level 1 Screens Grade 3 Armour
Sensor suite:	Standard sensors, 2 Fire control systems, 1 Area Defence control system
Drive systems:	Main Drive rating 4, FTL (Jump) Drive.

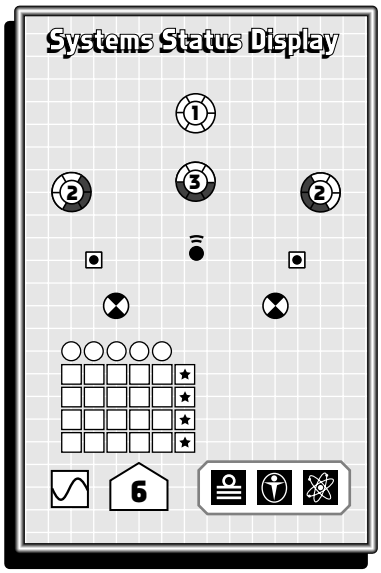
SERVICE DETAILS:
First entered service: 2174
Currently in NAC service: 36
Lost in action: 7
Decommissioned/scrapped: 5
Relegated to reserve fleet: 12
Sold to other forces: 4
Under construction: Nil
Procurement cost: 2190 MUcr.

Vandenburg class HEAVY CRUISER

TMF: 80
NPV: 261

The Vandenburg is a long-serving and powerful cruiser designed to be agile and survivable in combat; it has a higher thrust rating than most ships of its size, though the large Rockwell-Mikasa drive units providing this power make a significant dent in the ship's payload capacity. A 2175 refit programme converted a number of ships to a variant classed as the Vandenburg/T, in which the drive units have been down-rated to thrust-4 and the resulting additional payload mass used to mount two fore-firing P-torp tubes. These torp-armed cruisers provide a useful heavy anti-ship capability to NAC cruiser task forces.

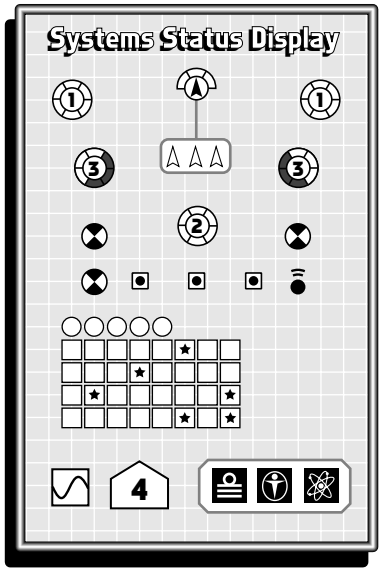




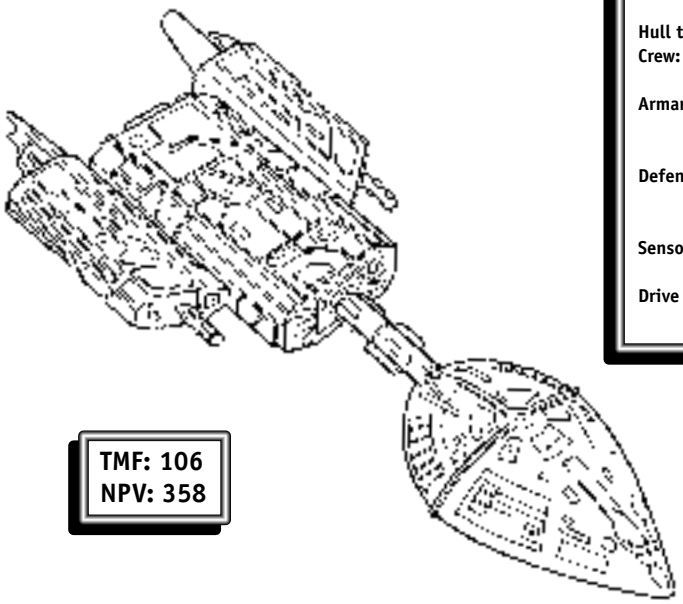
TECHNICAL SPECIFICATIONS:

Classification:	Heavy Cruiser
Displacement:	8000 Tonnes [MASS Factor 80]
Hull type:	Average [Hull Integrity 24]
Crew:	9 officers, 41 ratings [Crew Factor 4]
Armament:	1 x Class 1, 2 x Class 2, 1 x Class 3 batteries
Defences:	2 Point Defence Systems Level 1 Screens, Grade 5 Armour
Sensor suite:	Standard sensors, 2 Fire-control systems
Drive systems:	Main Drive rating 6, FTL (Jump) Drive.

SERVICE DETAILS:
First entered service: 2164
Currently in NAC service: 32
Lost in action: 10
Decommissioned/scrapped: 3
Relegated to reserve fleet: 12
Sold to other forces: 6
Under construction: Nil
Procurement cost: 2610 MUcr.



Majestic class BATTLECRUISER



TMF: 106
NPV: 358

TECHNICAL SPECIFICATIONS:

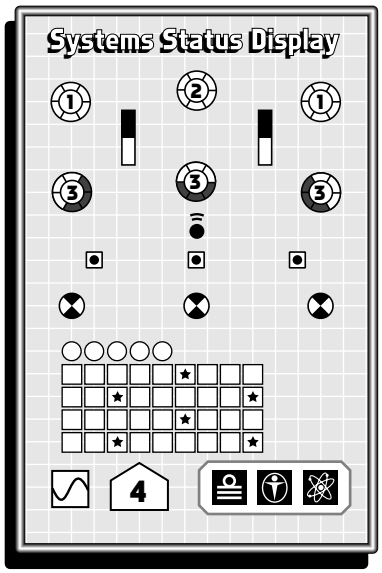
Classification:	Battlecruiser
Displacement:	10600 Tonnes [MASS Factor 106]
Hull type:	Average [Hull Integrity 32]
Crew:	15 officers, 91 ratings [Crew Factor 6]
Armament:	2 x Class 1, 1 x Class 2, 2 x Class 3 batteries 1 Salvo Missile Launcher
Defences:	3 Point Defence Systems Level 1 Screens Grade 5 Armour
Sensor suite:	Standard sensors, 3 Fire control systems
Drive systems:	Main Drive rating 4, FTL (Jump) Drive.

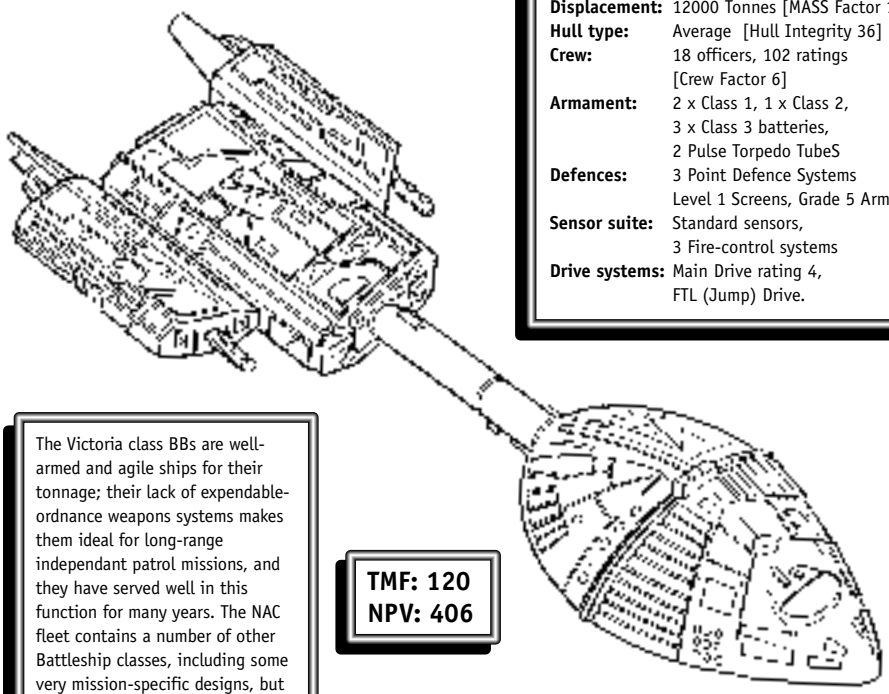
SERVICE DETAILS:
First entered service: 2164
Currently in NAC service: 32
Lost in action: 10
Decommissioned/scrapped: 10
Relegated to reserve fleet: 12
Sold to other forces: 6
Under construction: Nil
Procurement cost: 3580 MUcr.

Developed from the Victoria class BB, the Majestic BCs are a slightly lighter version designed for fleet task force operations; with Missile-based primary armament the Majestics rely more on fleet logistic support than the beam and torp-armed Victorias do, and thus are seldom used on independant patrol duties. The class has nonetheless proved itself a worthy addition to the lighter side of the battle line over its years of service, and though a number are now being moved to the reserve to make way for newer designs the Majestic is expected to serve well into the late 2180s or beyond.

TECHNICAL SPECIFICATIONS:

Classification:	Battleship
Displacement:	12000 Tonnes [MASS Factor 120]
Hull type:	Average [Hull Integrity 36]
Crew:	18 officers, 102 ratings [Crew Factor 6]
Armament:	2 x Class 1, 1 x Class 2, 3 x Class 3 batteries, 2 Pulse Torpedo TubeS
Defences:	3 Point Defence Systems Level 1 Screens, Grade 5 Armour
Sensor suite:	Standard sensors, 3 Fire-control systems
Drive systems:	Main Drive rating 4, FTL (Jump) Drive.





The Victoria class BBs are well-armed and agile ships for their tonnage; their lack of expendable-ordnance weapons systems makes them ideal for long-range independant patrol missions, and they have served well in this function for many years. The NAC fleet contains a number of other Battleship classes, including some very mission-specific designs, but none have been built in the quantities of the Victoria or gained as many honours in battle.

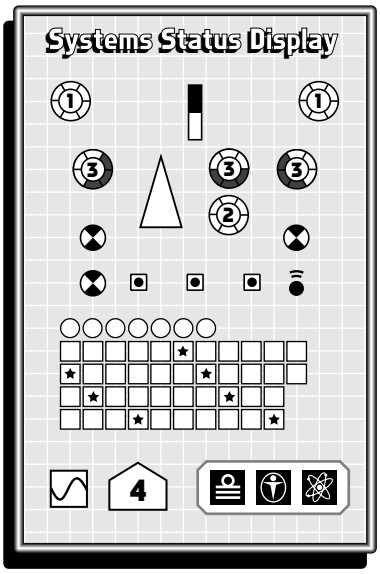
TMF: 120
NPV: 406

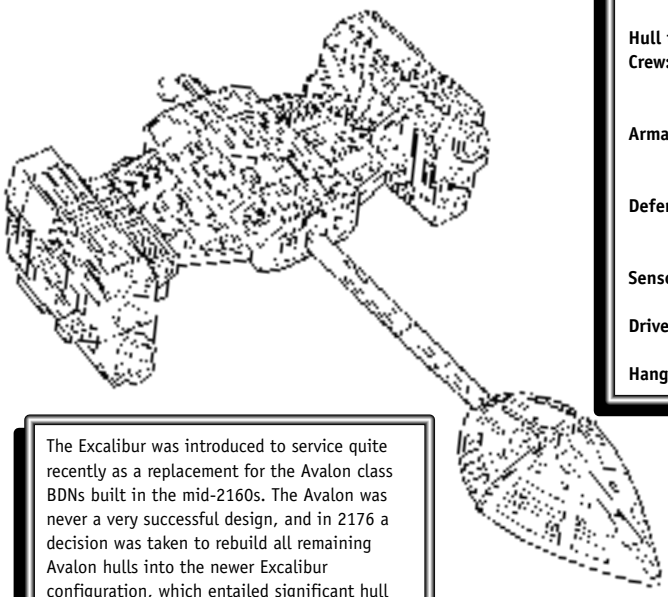
Victoria class BATTLESHIP

SERVICE DETAILS:
First entered service: 2163
Currently in NAC service: 29
Lost in action: 11
Decommissioned/scrapped: 5
Relegated to reserve fleet: 8
Sold to other forces: 3
Under construction: Nil
Procurement cost: 4060 MUcr.

Excalibur class BATTLEDREADNOUGHT

SERVICE DETAILS:
First entered service: 2178
Currently in NAC service: 16
Lost in action: 5
Decommissioned/scrapped: Nil
Relegated to reserve fleet: Nil
Sold to other forces: 2
Under construction: 5
Procurement cost: 4720 MUcr.
(Plus Fighter costs)





TECHNICAL SPECIFICATIONS:

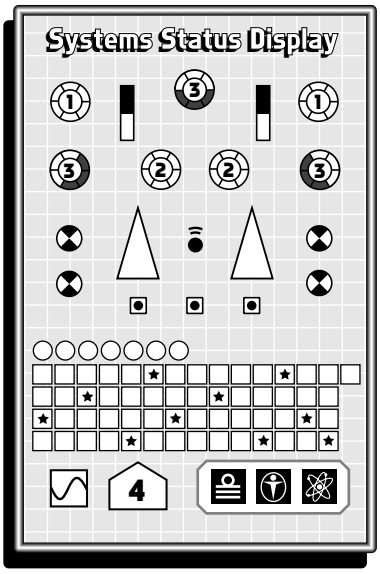
Classification:	Battledreadnought
Displacement:	14000 Tonnes [MASS Factor 140]
Hull type:	Average [Hull Integrity 42]
Crew:	21 officers, 119 ratings [Crew Factor 7] plus Fighter pilots
Armament:	2 x Class 1, 1 x Class 2, 3 x Class 3 batteries 1 Pulse Torpedo Tube
Defences:	3 Point Defence Systems Level 1 Screens Grade 7 Armour
Sensor suite:	Standard sensors, 3 Fire control systems,
Drive systems:	Main Drive rating 4, FTL (Jump) Drive
Hangar Bays:	1 bay for 6 Fighters.

TMF: 140
NPV: 472

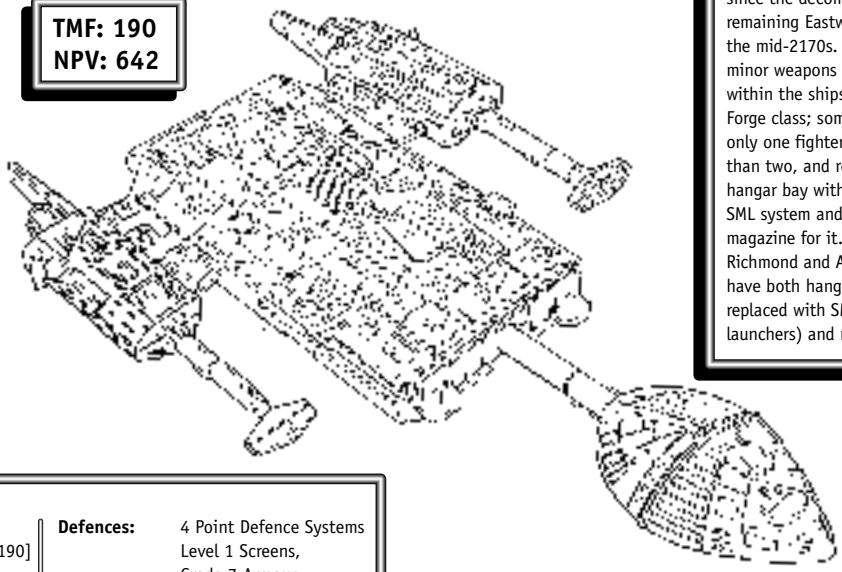
The Excalibur was introduced to service quite recently as a replacement for the Avalon class BDNs built in the mid-2160s. The Avalon was never a very successful design, and in 2176 a decision was taken to rebuild all remaining Avalon hulls into the newer Excalibur configuration, which entailed significant hull modifications and a complete internal upgrading.

Rather than recall all the ships en masse and leave the fleet seriously understrength, the refit programme has been spread out over several years as the Avalons are rotated back to major fleet bases for overhaul; as of 2183 there are still a small number of unconverted ships in service in outlying regions.

Valley Forge class SUPERDREADNOUGHT



TMF: 190
NPV: 642



The Valley Forge superdreadnought has been the mainstay of the NAC battle line since the decommissioning of the remaining Eastwood class SDNs in the mid-2170s. There are many minor weapons fit variations within the ships of the Valley Forge class; some ships operate only one fighter group rather than two, and replace the second hangar bay with a fore-mounted SML system and a Mass-6 magazine for it. Two ships, RNS Richmond and Agincourt, actually have both hangars removed and replaced with SML armament (2 launchers) and magazine space.

TECHNICAL SPECIFICATIONS:

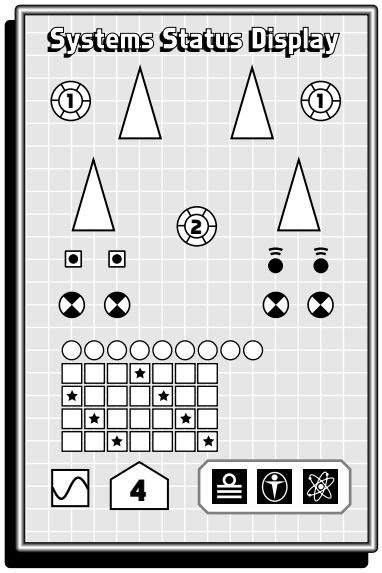
Classification:	Superdreadnought
Displacement:	19000 Tonnes [MASS Factor 190]
Hull type:	Average [Hull Integrity 57]
Crew:	28 officers, 162 ratings [Crew Factor 10] Plus Fighter pilots
Armament:	2 x Class 1, 2 x Class 2, 3 x Class 3 batteries, 2 Pulse Torpedo Tubes
Defences:	4 Point Defence Systems Level 1 Screens, Grade 7 Armour
Sensor suite:	Standard sensors, 3 Fire-control systems
Drive systems:	Main Drive rating 4, FTL (Jump) Drive
Hangar Bays:	2 bays each holding 6 Fighters.

SERVICE DETAILS:
First entered service: 2170
Currently in NAC service: 12
Lost in action: 4
Decommissioned/scrapped: 2
Relegated to reserve fleet: Nil
Sold to other forces: Nil
Under construction: 3
Procurement cost: 6420 MUcr.
(Plus Fighter costs)

TECHNICAL SPECIFICATIONS:

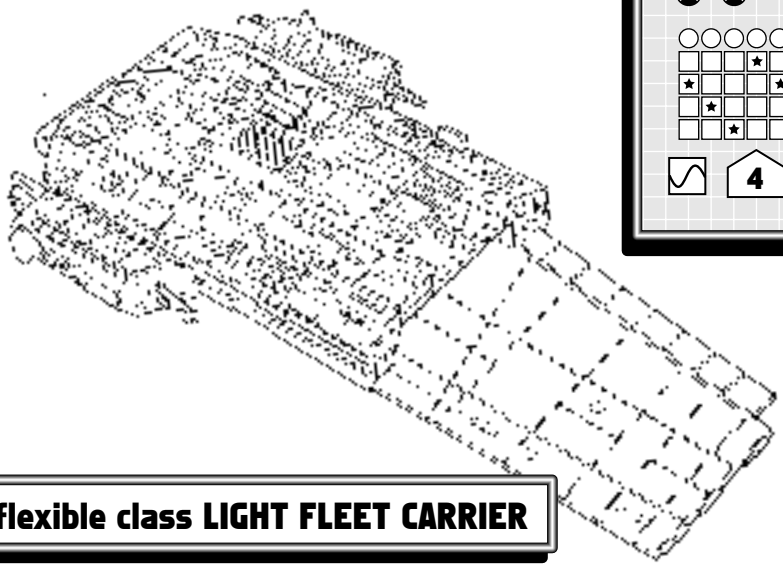
Classification: Light Fleet Carrier
Displacement: 14000 Tonnes [MASS Factor 140]
Hull type: Weak [Hull Integrity 28]
Crew: 20 officers, 120 ratings [Crew Factor 7] Plus Fighter pilots
Armament: 2 x Class 1, 1 x Class 2 batteries
Defences: 4 Point Defence Systems Level 2 Screens, Grade 9 Armour
Sensor suite: Standard sensors, 2 Fire-control systems
Drive systems: Main Drive rating 4, FTL (Jump) Drive
Hangar Bays: 4 bays each holding 6 Fighters.

The Inflexible class CVLs are intended mainly for duty in smaller task forces where the use of a supercarrier (an Ark Royal or similar class) is not warranted. Their fighter complement, while not huge, is enough to support light fleet and interface operations and an Inflexible will often be attached to the naval assets of a planetary assault mission. A number of Inflexibles have now been sold off to third-line states, and one is used by Fighter Operations Training Command as a flagship and pilot training vessel. Like all NAC carriers, the Inflexible's system installations are primarily defensive, including significant screen systems and hull armour.



SERVICE DETAILS:

First entered service: 2168
Currently in NAC service: 10
Lost in action: 3
Decommissioned/scrapped: 4
Relegated to reserve fleet: 1
Sold to other forces: 6
Under construction: Nil
Procurement cost: 4830 MUcr. (Plus Fighter costs)



Inflexible class LIGHT FLEET CARRIER

TMF: 140
NPV: 483

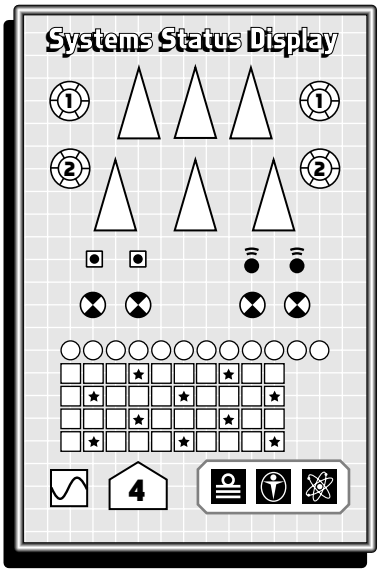
SERVICE DETAILS:

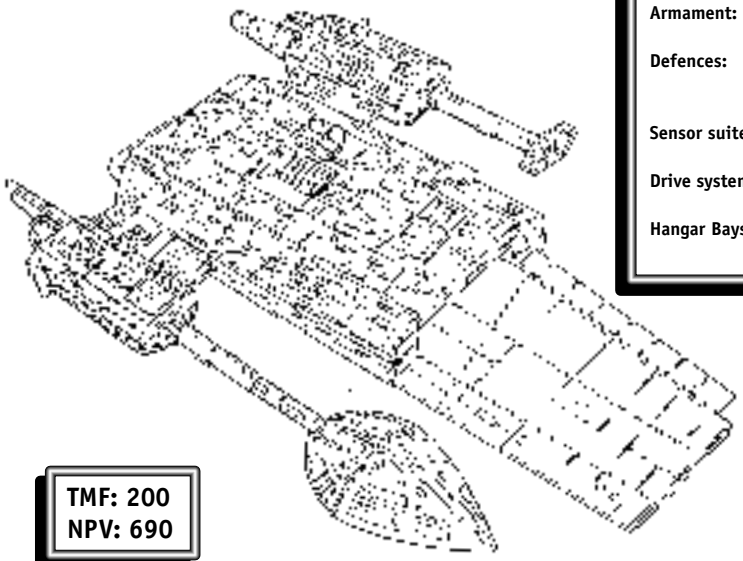
First entered service: 2171
Currently in NAC service: 14
Lost in action: 2
Decommissioned/scrapped: 1
Relegated to reserve fleet: Nil
Sold to other forces: Nil
Under construction: 2
Procurement cost: 6900 MUcr. (Plus Fighter costs)

The Ark Royal is the most numerous carrier class currently in NAC service; introduced as a replacement for the Saratoga class, it follows standard NAC doctrine of being primarily a fighter platform rather than a line-of-battle ship, though its armament suite is sufficient to permit it to engage other shipping directly should the need arise. The ships are well defended with screens, armour and point-defence weaponry, but are still usually accompanied by a significant escort force to keep major enemy units at bay.

TECHNICAL SPECIFICATIONS:

Classification: Fleet Supercarrier
Displacement: 20000 Tonnes [MASS Factor 200]
Hull type: Weak [Hull Integrity 40]
Crew: 33 officers, 167 ratings [Crew Factor 10] Plus Fighter pilots
Armament: 2 x Class 1, 2 x Class 2 batteries
Defences: 4 Point Defence Systems Level 2 Screens, Grade 12 Armour
Sensor suite: Standard sensors, 2 Fire-control systems
Drive systems: Main Drive rating 4, FTL (Jump) Drive
Hangar Bays: 6 bays each holding 6 Fighters.

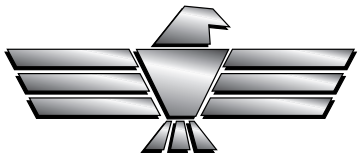




TMF: 200
NPV: 690

Ark Royal class FLEET SUPERCARRIER

NSL KRIEGSRAUMFLOTTE



THE NEU SWABIAN LEAGUE SPACE FLEET (KRIEGSRAUMFLOTTE):

German is the official language for the NSL; the space naval arm of the NSL military is known as the Kreigsraumflotte (literally translated as "Space War Fleet"), usually written as KRF, and their standard military ship prefix is KRS (for Kreigsraumschiff). Civilian vessels belonging to the NSL are simply prefixed RS, for Raumschiff.

The KRF emblem is a highly-stylised eagle symbol, which is commonly depicted in black, grey or silver without any background when applied to ship hulls; the full Naval ensign is of the eagle in silver on a black field, while the national flag is the same design but with the eagle black against a red field.

HISTORY AND ORGANISATION:

When the NSL was formed in 2101 following the split of the old European Union, the fledgling European Space Force was also divided - the NSL and FSE each appropriated what they could of the ESF ships and assets to create the beginnings of their own space navies. The Kriegsraumflotte was officially established in 2102 with a handful of primitive ex-ESF ships, comprising a very few newly-built FTL-capable vessels and a number of insystemers. The first purely NSL-designed warship was the FTL cruiser KRS Wien, launched in 2109, the first of a class that eventually numbered 23 vessels and served well until the late 2130s. Since then the KRF has rapidly expanded to become one of the four major Space Navies; it cannot yet rival the NAC or ESU fleets in terms of sheer tonnage, but it is still growing despite the attrition of the war years. The spirit and traditions of the KRF can be traced back past the German forces of the early and mid Twentieth Century, to the Austro-Hungarian Navy of the Nineteenth Century and earlier.

The organisation of the KRF is structured as a number of Fleets with different areas of operation; First Fleet is the home defence force based in the Core and Inner worlds, Second Fleet the Outer Colony defence units and Third Fleet is considered the "Strike Fleet" - based at Neu Salzburg, it is kept as a ready reserve for major operations. Logistic support units are integral parts of each Fleet. Marine ground forces are provided from specially-trained units of the regular army seconded to Naval service as required.

Most of the KRF personnel are volunteers who sign up for either a five-year term or a full career. Conscription has been used at times during the Solar Wars, but it has generally been found inefficient - good starship crew members require lengthy training and considerable dedication. Conditions on board KRF warships are not luxurious, but neither are they unpleasant; the ships are utilitarian in design, but reasonable attention has been paid to the effects of living conditions on crew morale. Many KRF officers, both senior and junior, come from the revived aristocratic families of the NSL member states which have a heritage of proud military service stretching back through many generations.

SHIP DESIGN DOCTRINE:

The ships of the KRF are generally heavily armed with beam weapons, with other systems such as missiles or pulse torpedoes only being mounted on a very few classes. NSL doctrine is for powerful ships in offence and defence, with mobility a lower priority - thrust levels tend to be low, and most large classes have only thrust-2 drives. NSL military hulls are boxy and solid, and hull armour is used extensively, but energy screens are not carried. Active defences are seen as a priority, and most ships carry extensive point-defence installations. Fighter operations are based around small numbers carried on the large general combat ships rather than specific carrier designs.

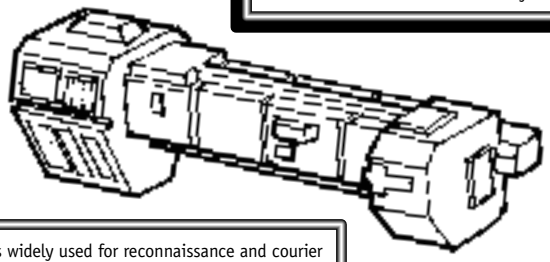
Falke class SCOUTSHIP

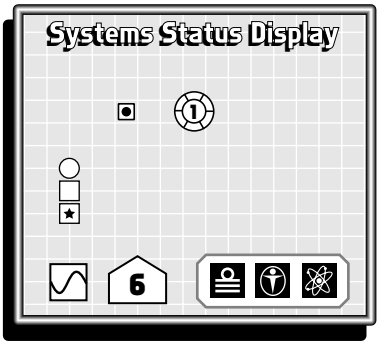
TECHNICAL SPECIFICATIONS:

Classification: Scoutship
Displacement: 800 Tonnes [MASS Factor 8]
Hull type: Average [Hull Integrity 2]
Crew: 3 officers, 5 ratings [Crew Factor 1]
Armament: 1 x Class 1 battery
Defences: Grade 1 Armour
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 6, FTL (Jump) Drive.

SERVICE DETAILS:

First entered service: 2173
Currently in NSL service: 67
Lost in action: 15
Decommissioned/scrapped: 11
Relegated to reserve fleet: 24
Sold to other forces: 8
Under construction: 12
Procurement cost: 270 MUcr.



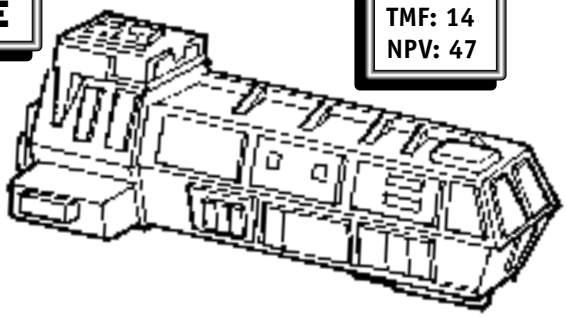


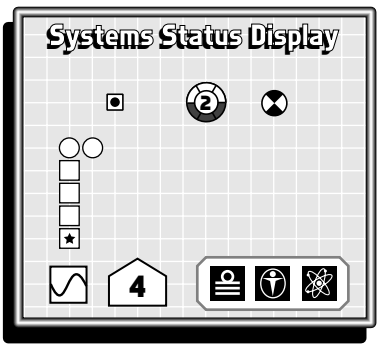
The Falke is the primary NSL scout vessel and is widely used for reconnaissance and courier duties. Its armoured hull gives it better survivability against enemy light units than many other scout ships, but the trade-off for this is its very light armament - a single Class-1 beam battery, which does dual service as a point-defence and light anti-ship weapon. There is a stripped-down "strike" version of the Falke which removes the hull armour and mounts a single disposable submunition pack in addition to the beam system.

TMF: 8
NPV: 27

Stroschen class CORVETTE

TMF: 14
NPV: 47





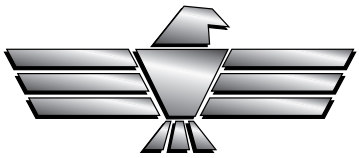
SERVICE DETAILS:

First entered service: 2174
Currently in NSL service: 51
Lost in action: 17
Decommissioned/scrapped: 5
Relegated to reserve fleet: 12
Sold to other forces: 9
Under construction: 22
Procurement cost: 470 MUcr.

The Stroschen follows standard NSL design doctrine in being relatively unmanoeuvrable, with a low thrust rating for a Corvette class ship, but being well-protected with hull armour and mounting an effective weapon; the single Class-2 beam system outranges the weaponry of many other nations' Corvettes, and can do significant damage to other ships.

TECHNICAL SPECIFICATIONS:

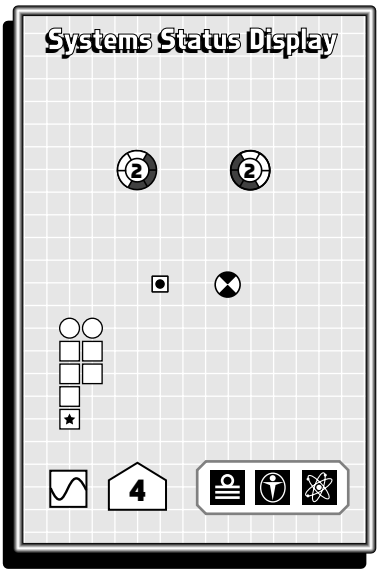
Classification: Corvette
Displacement: 1400 Tonnes [MASS Factor 14]
Hull type: Average [Hull Integrity 4]
Crew: 4 officers, 10 ratings [Crew Factor 1]
Armament: 1 x Class 2 battery
Defences: 1 Point Defence System, Grade 2 Armour
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 4, FTL (Jump) Drive.

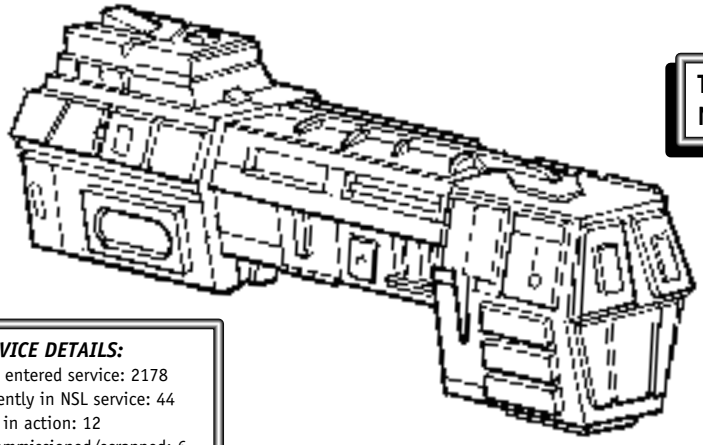


TECHNICAL SPECIFICATIONS:

Classification: Frigate
Displacement: 2000 Tonnes [MASS Factor 20]
Hull type: Average [Hull Integrity 6]
Crew: 5 officers, 15 ratings [Crew Factor 1]
Armament: 2 x Class 2 batteries
Defences: 1 Point Defence System Grade 2 Armour
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 4, FTL (Jump) Drive.

The Ehrenhold is a fairly new design that began to replace the old Nibelung class FFs in the late 2170s. It is a sturdy and well-defended ship with a good offensive potential, and is often used on convoy protection duties. The three ships listed as "sold to other forces" were not NSL cast-offs, but a commercial order of new hulls for an undisclosed individual purchaser - in accordance with UNSC-enforced treaties, the privately-ordered warship hulls were delivered without any weapons installations, a deficiency which has doubtless been rectified by this time through channels of questionable legality.

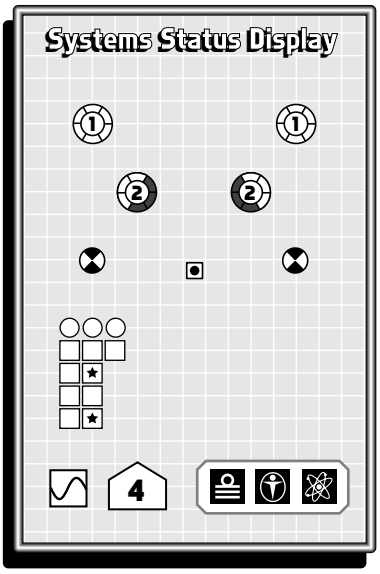




TMF: 20
NPV: 67

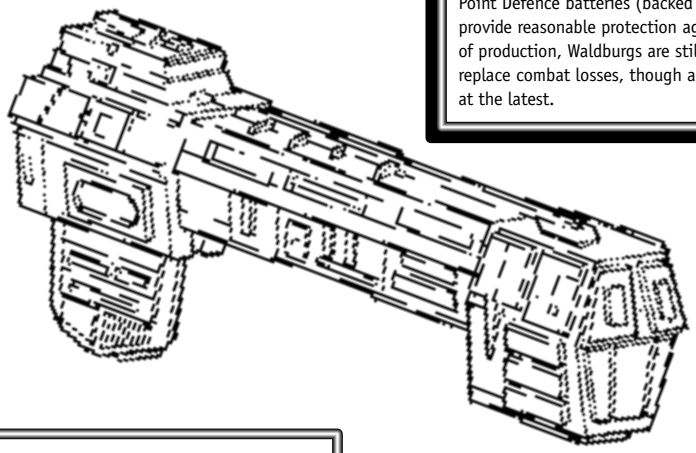
SERVICE DETAILS:
First entered service: 2178
Currently in NSL service: 44
Lost in action: 12
Decommissioned/scrapped: 6
Relegated to reserve fleet: Nil
Sold to other forces: 3
Under construction: 16
Procurement cost: 670 MUcr.

Ehrenhold class FRIGATE



TMF: 30
NPV: 100

The standard KRF general-purpose destroyer, the Waldburg is a typical heavy escort able to engage in combat with enemy light forces or to act as support for the main battleline. The pair of Class-2 beam systems give it a good primary offensive capability for its tonnage, especially in its frontal arc where both can be brought to bear on a single target. A combination of hull armour and twin Point Defence batteries (backed up by two multi-role Class-1 beams) provide reasonable protection against incoming fire. After nine years of production, Waldburgs are still being produced at a steady rate to replace combat losses, though a new DD type is expected by 2185 at the latest.

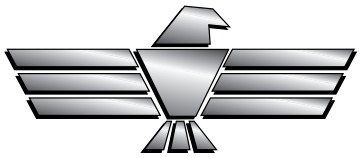


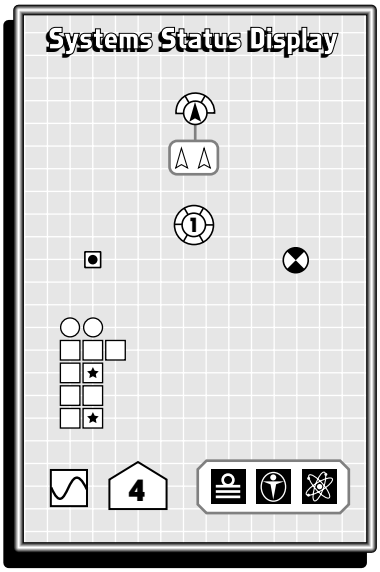
SERVICE DETAILS:
First entered service: 2174
Currently in service: 59
Lost in action: 17
Decommissioned/scrapped: 4
Relegated to reserve fleet: 7
Sold to other forces: 5
Under construction: 12
Procurement cost: 1000 MUcr.

TECHNICAL SPECIFICATIONS:

Classification: Destroyer
Displacement: 3000 Tonnes [MASS Factor 30]
Hull type: Average [Hull Integrity 9]
Crew: 7 officers, 23 ratings [Crew Factor 2]
Armament: 2 x Class 1, 2 x Class 2 batteries
Defences: 2 Point Defence Systems Grade 3 Armour
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 4, FTL (Jump) Drive.

Waldburg class DESTROYER

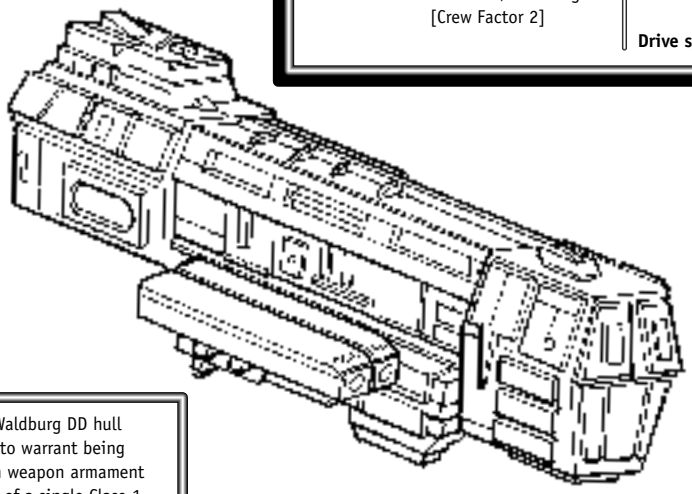




TMF: 30
NPV: 101

TECHNICAL SPECIFICATIONS:

Classification: Missible Destroyer
Displacement: 3000 Tonnes [MASS Factor 30]
Hull type: Average [Hull Integrity 9]
Crew: 7 officers, 23 ratings [Crew Factor 2]
Armament: 1 x Class 1 battery, 1 Salvo Missile Launcher with capacity 4 magazine
Defences: 1 Point Defence System, Grade 2 Armour
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 4,

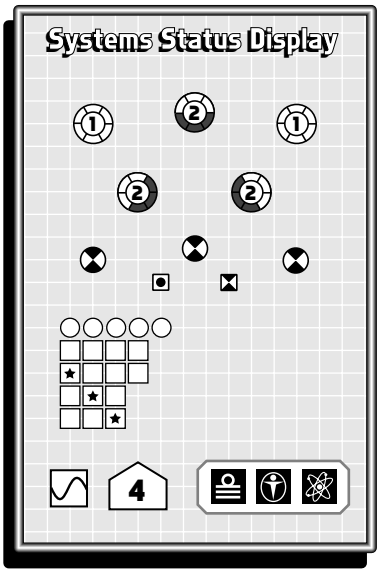


SERVICE DETAILS:

First entered service: 2178
Currently in NSL service: 26
Lost in action: 7
Decommissioned/scrapped: 2
Relegated to reserve fleet: Nil
Sold to other forces: 2
Under construction: 14
Procurement cost: 1010 MUcr.

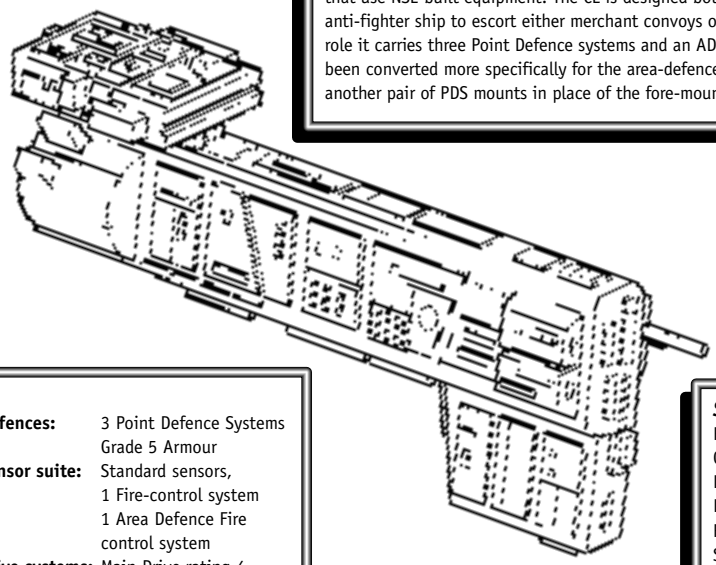
The Waldburg/M is a variant of the standard Waldburg DD hull which is sufficiently numerous in KRF service to warrant being considered a separate class. Most of the beam weapon armament of the standard destroyer (with the exception of a single Class-1 mount) is deleted and replaced by a single Salvo Missile launcher system. The SML is backed up by only a limited magazine capacity, which is a disadvantage in prolonged engagements, but the Waldburg/M is not intended for this kind of combat - it is a fast-strike vessel, designed to hit hard at major targets and then withdraw under the cover of more conventional escort ships.

Waldburg/M class MISSILE DESTROYER



Kronprinz Wilhelm class LIGHT CRUISER

The Kronprinz Wilhelm is particularly well-protected for a Light Cruiser due to its hull armour, and has so far proved to have good survivability in battle. It is liked by its crews and officers, and has also become a popular export model for other navies that use NSL-built equipment. The CL is designed both as a patrol craft and as an anti-fighter ship to escort either merchant convoys or other warships; for this latter role it carries three Point Defence systems and an ADFC installation, and a few have been converted more specifically for the area-defence role with the addition of yet another pair of PDS mounts in place of the fore-mounted Class-2 beam installation.



TMF: 48
NPV: 161

TECHNICAL SPECIFICATIONS:

Classification: Light Cruiser
Displacement: 4800 Tonnes [MASS Factor 48]
Hull type: Average [Hull Integrity 14]
Crew: 9 officers, 39 ratings [Crew Factor 3]
Armament: 2 x Class 1, 3 x Class 2 batteries
Defences: 3 Point Defence Systems, Grade 5 Armour
Sensor suite: Standard sensors, 1 Fire-control system, 1 Area Defence Fire control system
Drive systems: Main Drive rating 4, FTL (Jump) Drive.

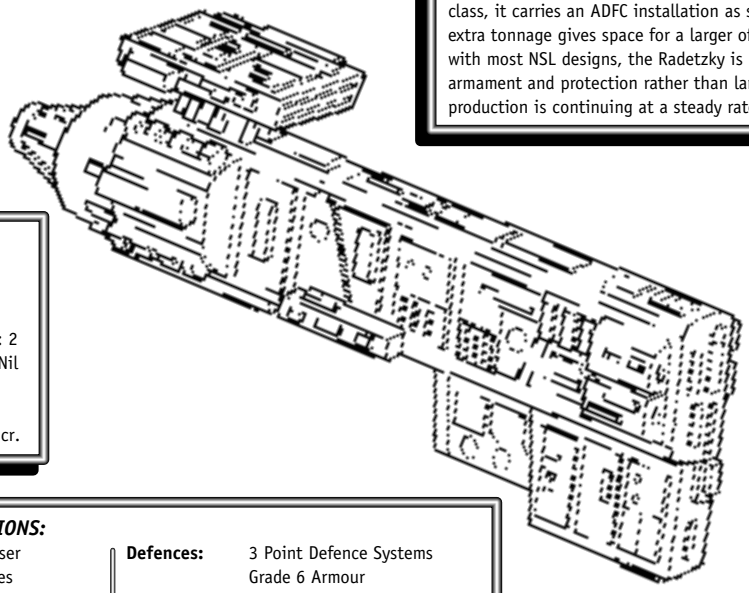
SERVICE DETAILS:

First entered service: 2175
Currently in NSL service: 35
Lost in action: 9
Decommissioned/scrapped: 5
Relegated to reserve fleet: 3
Sold to other forces: 8
Under construction: 10
Procurement cost: 1610 MUcr.

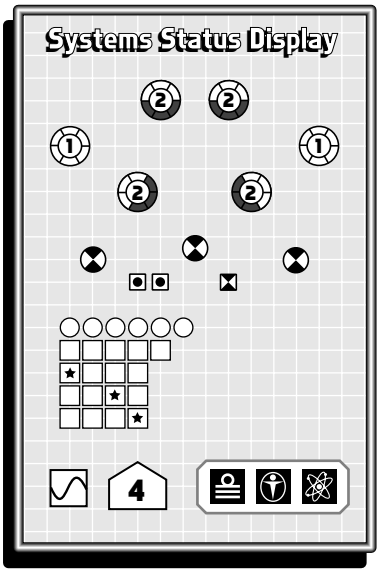
Radetzky class ESCORT CRUISER

TMF: 58
NPV: 195

The Radetzky CE is based on a modified and upgraded version of the Kronprinz Wilhelm CL hull, and is built at the same Hochbaden yards. Like its smaller sister class, it carries an ADFC installation as standard with an extensive PDS suite, but its extra tonnage gives space for a larger offensive beam weapon fit than the CL. As with most NSL designs, the Radetzky is not a fast ship, using its capacity for armament and protection rather than large drives. It is not a numerous class, but production is continuing at a steady rate.

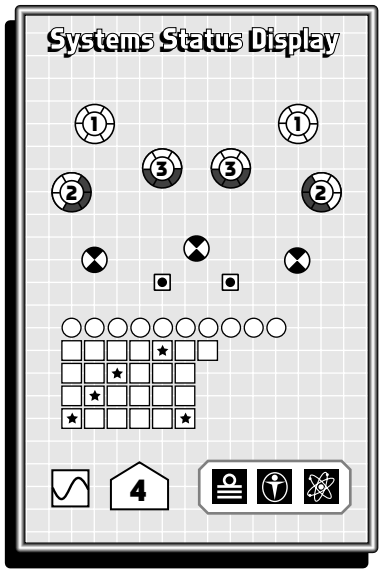


SERVICE DETAILS:
First entered service: 2177
Currently in NSL service: 22
Lost in action: 6
Decommissioned /scrapped: 2
Relegated to reserve fleet: Nil
Sold to other forces: 2
Under construction: 4
Procurement cost: 1950 MUcr.



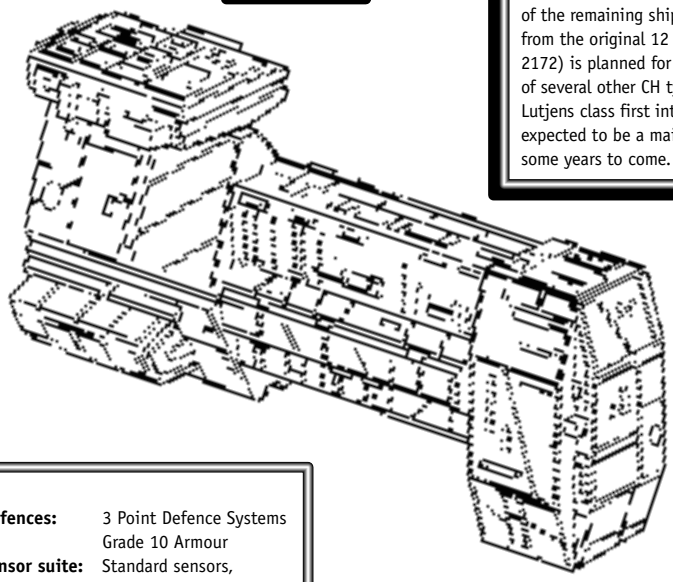
TECHNICAL SPECIFICATIONS:

Classification: Escort Cruiser
Displacement: 5800 Tonnes [MASS Factor 58]
Hull type: Average [Hull Integrity 17]
Crew: 10 officers, 48 ratings [Crew Factor 3]
Armament: 2 x Class 1, 4 x Class 2 batteries
Defences: 3 Point Defence Systems Grade 6 Armour
Sensor suite: Standard sensors, 2 Fire-control systems 1 Area Defence control system
Drive systems: Main Drive rating 4, FTL (Jump) Drive.



TMF: 82
NPV: 271

The Markgraf is generally considered one of the best overall ships in the KRF inventory, even though the early examples are beginning to show their age and production of new hulls ceased in 2178. A major overhaul and refit of the remaining ships from the first production batch (7 from the original 12 commissioned between 2169 and 2172) is planned for 2184-85. Though there are numbers of several other CH types in service, including the new Lutjens class first introduced in 2182, the Markgraf is expected to be a mainstay of the KRF cruiser force for some years to come.



SERVICE DETAILS:
First entered service: 2169
Currently in NSL service: 28
Lost in action: 9
Decommissioned/scrapped: 5
Relegated to reserve fleet: 3
Sold to other forces: 6
Under construction: Nil
Procurement cost: 2710 MUcr.

TECHNICAL SPECIFICATIONS:

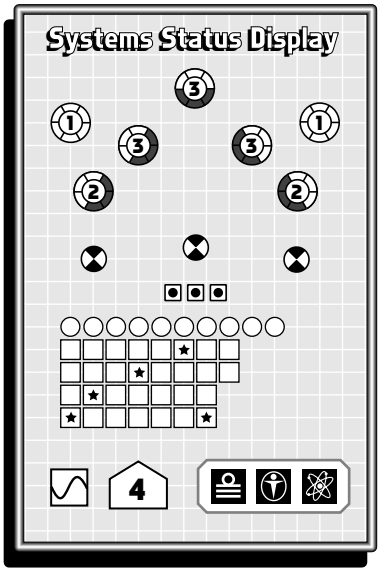
Classification: Heavy Cruiser
Displacement: 8200 Tonnes [MASS Factor 82]
Hull type: Average [Hull Integrity 25]
Crew: 12 officers, 70 ratings [Crew Factor 5]
Armament: 2 x Class 1, 2 x Class 2 2 x Class 3 batteries
Defences: 3 Point Defence Systems Grade 10 Armour
Sensor suite: Standard sensors, 2 Fire-control systems
Drive systems: Main Drive rating 4, FTL (Jump) Drive.

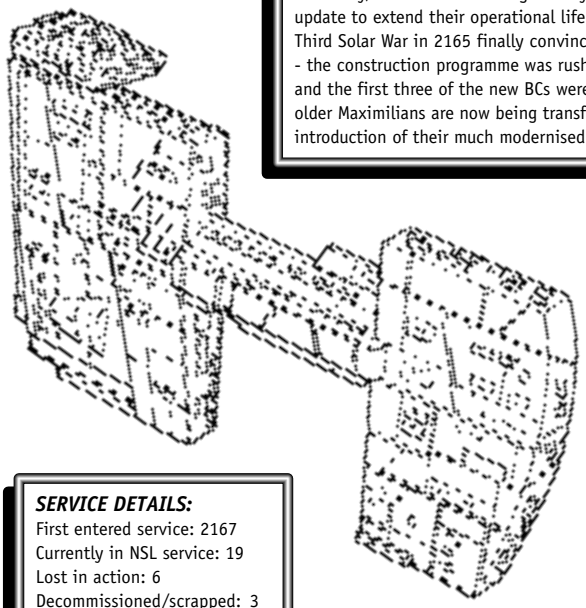
Markgraf class HEAVY CRUISER

Maximilian class BATTLECRUISER

TMF: 100
NPV: 333

The Maximilian class BC is part of a design group first proposed in 2162, which took five years to make it from drawing board to commissioning of the first hull. After three years of official procrastination as to whether a new BC class was really necessary, with the 2140-designed Bayern class having just undergone a major update to extend their operational life into the mid-2170s, the outbreak of the Third Solar War in 2165 finally convinced the NSL Government to approve funding - the construction programme was rushed into operation at the Neu Salzburg yards and the first three of the new BCs were commissioned in 2167. A number of the older Maximilians are now being transferred to the reserve following the introduction of their much modernised successor, the Richthofen class.





SERVICE DETAILS:
First entered service: 2167
Currently in NSL service: 19
Lost in action: 6
Decommissioned/scrapped: 3
Relegated to reserve fleet: 11
Sold to other forces: 2
Under construction: Nil
Procurement cost: 3330 MUcr.

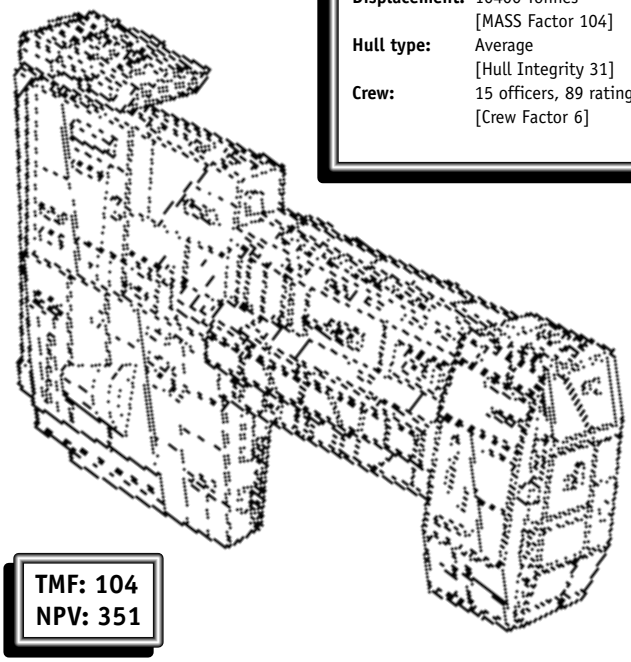
TECHNICAL SPECIFICATIONS:

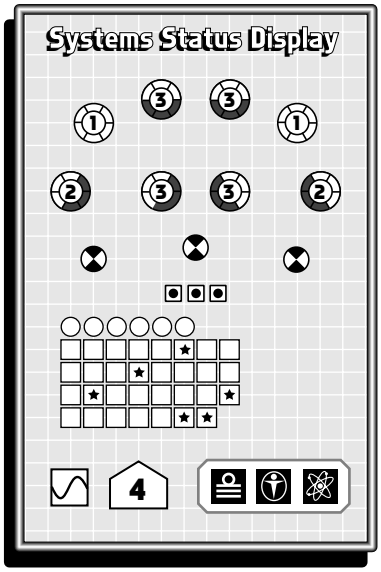
Classification:	Battlecruiser
Displacement:	10000 Tonnes [MASS Factor 100]
Hull type:	Average [Hull Integrity 30]
Crew:	15 officers, 85 ratings [Crew Factor 5]
Armament:	2 x Class 1, 2 x Class 2 3 x Class 3 batteries
Defences:	3 Point Defence Systems Grade 10 Armour
Sensor suite:	Standard sensors, 3 Fire-control systems
Drive systems:	Main Drive rating 4, FTL (Jump) Drive.

The Richthofen is a heavily-updated redesign of the Maximilian class BC, using a number of the design elements that have made the Markgraf CH such a successful ship. It carries an impressive beam armament, though it has a little less hull armour than the Maximilian. Given its heritage, it was almost inevitable that the name-ship of the class would end up painted red at some point in its life, so in a (rather uncharacteristic) fit of good humour the KRF command actually authorised an overall scarlet paint scheme for this one ship at the outset. While it serves no practical purpose, other than the negative one of attracting enemy fire, this has given the KRS Manfred Von Richthofen (to use its full title) a reputation both within the fleet and outside it, which its officers and crew strive hard to live up to.

TECHNICAL SPECIFICATIONS:

Classification:	Battlecruiser	**Armament:**	2 x Class 1, 2 x Class 2 4 x Class 3 batteries
Displacement:	10400 Tonnes [MASS Factor 104]	**Defences:**	3 Point Defence Systems Grade 6 Armour
Hull type:	Average [Hull Integrity 31]	**Sensor suite:**	Standard sensors, 3 Fire-control systems
Crew:	15 officers, 89 ratings [Crew Factor 6]	**Drive systems:**	Main Drive rating 4, FTL (Jump) Drive.





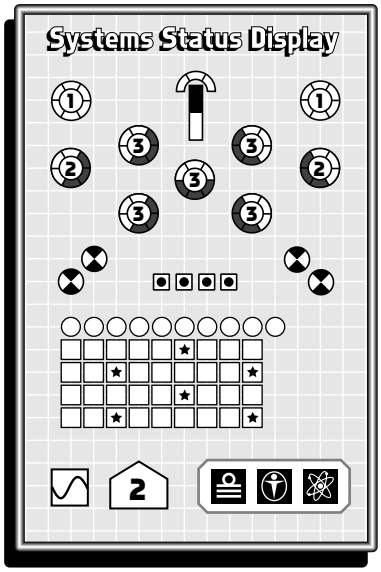
SERVICE DETAILS:
First entered service: 2179
Currently in NSL service: 24
Lost in action: 3
Decommissioned/scrapped: 1
Relegated to reserve fleet: Nil
Sold to other forces: Nil
Under construction: 7
Procurement cost: 3510 MUcr.

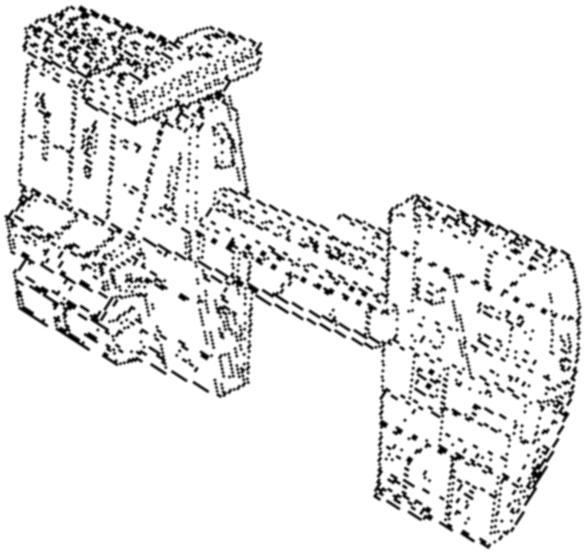
TMF: 104
NPV: 351

Richthofen class BATTLECRUISER

Maria Von Burgund class BATTLESHIP

SERVICE DETAILS:
First entered service: 2168
Currently in NSL service: 13
Lost in action: 4
Decommissioned/scrapped: 3
Relegated to reserve fleet: 3
Sold to other forces: 5
Under construction: Nil
Procurement cost: 4140 MUcr.





TECHNICAL SPECIFICATIONS:

Classification:	Battleship
Displacement:	12000 Tonnes [MASS Factor 120]
Hull type:	Average [Hull Integrity 36]
Crew:	19 officers, 101 ratings [Crew Factor 6]
Armament:	2 x Class 1, 2 x Class 2 5 x Class 3 batteries 1 Pulse Torpedo Tube
Defences:	4 Point Defence Systems Grade 10 Armour
Sensor suite:	Standard sensors, 4 Fire-control systems
Drive systems:	Main Drive rating 2, FTL (Jump) Drive.

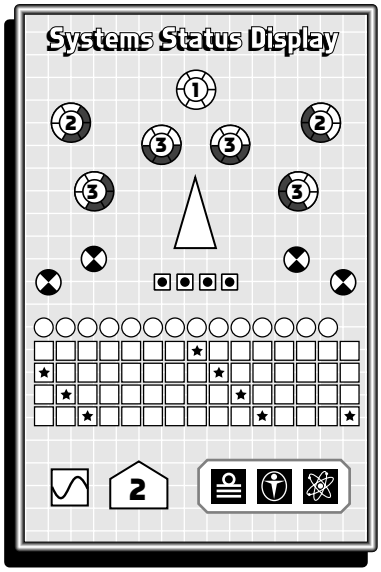
TMF: 120
NPV: 414

The Maria Von Burgund class was designed by the same group as the Maximilian BC, and shares many important features. It has relatively low powered drives which restrict its manoeuvrability somewhat, but it more than makes up for this with a very extensive weapons fit that enables the ship to put out a huge amount of beam fire, augmented by a single Pulse Torpedo tube that is particularly effective against screen-protected targets. A significant level of hull armour and four PDS mounts give the ship good passive and active defences. The Maria Von Burgund serves as a major part of the KRF battleline, alongside other serving BBs that include the newer Brocken class introduced in 2179.

TECHNICAL SPECIFICATIONS:

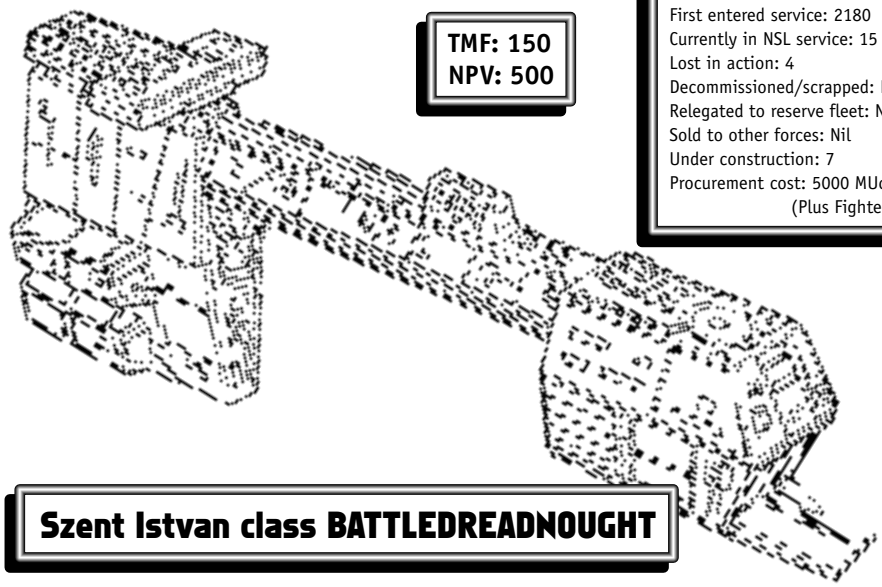
Classification:	Battledreadnought
Displacement:	15000 Tonnes [MASS Factor 150]
Hull type:	Strong [Hull Integrity 60]
Crew:	24 officers, 126 ratings [Crew Factor 8] Plus Fighter pilots
Armament:	1 x Class 1, 2 x Class 2 4 x Class 3 batteries
Defences:	4 Point Defence Systems Grade 14 Armour
Sensor suite:	Standard sensors, 4 Fire-control systems
Drive systems:	Main Drive rating 2, FTL (Jump) Drive.
Hangar bays:	1 bay for 6 Fighters

The Szent Istvan class is a recent addition to the NSL Kriegsraumflotte. The first hull was commissioned in 2178, and construction of the class is continuing at the Neu Salzburg naval yards. The BDN is a powerful multi-role vessel capable of sustained independent operations; as well as a good balance of offensive and defensive armament, it carries a single embarked fighter group to provide support for both space and surface operations. The strongly-constructed hull is very well armoured, though in common with most NSL combat ships it lacks energy screen defences.



TMF: 150
NPV: 500

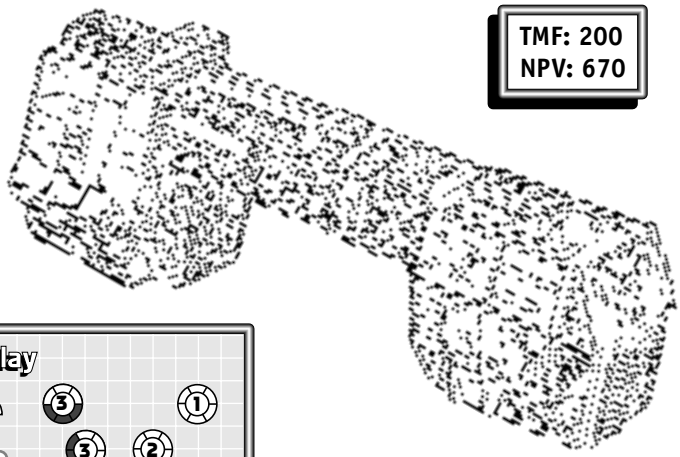
SERVICE DETAILS:
First entered service: 2180
Currently in NSL service: 15
Lost in action: 4
Decommissioned/scrapped: Nil
Relegated to reserve fleet: Nil
Sold to other forces: Nil
Under construction: 7
Procurement cost: 5000 MUcr.
(Plus Fighter costs)



Szent Istvan class BATTLEDREADNOUGHT

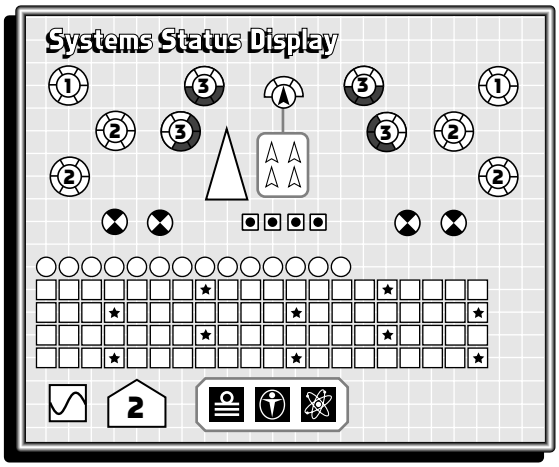
Von Tegetthoff class SUPERDREADNOUGHT

SERVICE DETAILS:
First entered service: 2173
Currently in NSL service: 12
Lost in action: 3
Decommissioned/scrapped: 2
Relegated to reserve fleet: Nil
Sold to other forces: Nil
Under construction: 2
Procurement cost: 6700 MUcr.
(Plus Fighter costs)



TMF: 200
NPV: 670

The Von Tegetthoff is the first SDN class to be built for the KRF since the old Hapsburg class ships in the 2130s (only three Hapsburgs now survive, two in mothballed reserve and one used by the KRF training command). It is a very powerful ship that follows standard NSL naval doctrine closely - it has a massively strong hull structure with significant additional armour, though it lacks screen defences; its thrust rating is low, but it is not designed to be a hit-and-run ship - it is meant to stand in the line and deal heavy blows from its extensive beam armament. The Tegetthoff is one of the few NSL ships that carries an SML system as an added anti-ship punch, though its magazine capacity is quite limited. Like the ESU Komarovs, it carries only one group of fighters.



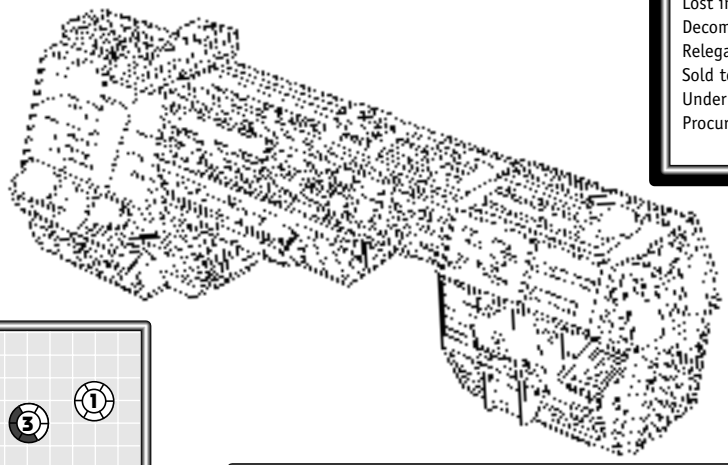
TECHNICAL SPECIFICATIONS:

Classification: Superdreadnought
Displacement: 20000 Tonnes [MASS Factor 200]
Hull type: Strong [Hull Integrity 80]
Crew: 34 officers, 166 ratings [Crew Factor 10] plus Fighter pilots
Armament: 2 x Class 1, 4 x Class 2 4 x Class 3 batteries 1 Salvo Missile Launcher with capacity 8 magazine
Defences: 4 Point Defence Systems Grade 14 Armour
Sensor suite: Standard sensors, 4 Fire-control systems
Drive systems: Main Drive rating 2, FTL (Jump) Drive.
Hangar bays: 1 bay for 6 Fighters

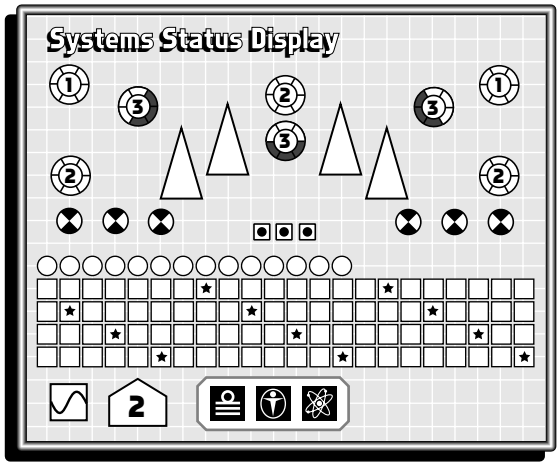
Der Theuerdank class FIGHTER CARRIER

The Der Theuerdank is a modified version of the Von Tegetthoff class SDN, with an additional fighter hangar area in a bay beneath its main central spar plus various internal modifications. In keeping with the overall KRF (Kreigsraumflotte) design philosophy, the ship is not really a true carrier so much as a multi-role SDN with enhanced fighter capacity; its fighter complement is significantly less than that of, say, an NAC carrier, but unlike the Anglian designs it is intended to stand in the line of battle and trade shots with the enemy rather than just being a fragile launching platform.

SERVICE DETAILS:
First entered service: 2175
Currently in NSL service: 15
Lost in action: 4
Decommissioned/scrapped: 2
Relegated to reserve fleet: Nil
Sold to other forces: Nil
Under construction: 5
Procurement cost: 7370 MUcr.
(Plus fighter costs)



TMF: 220
NPV: 737



TECHNICAL SPECIFICATIONS:

Classification: Fighter Carrier
Displacement: 22000 Tonnes [MASS Factor 220]
Hull type: Strong [Hull Integrity 88]
Crew: 38 officers, 182 ratings [Crew Factor 11] Plus Fighter pilots
Armament: 2 x Class 1, 3 x Class 2 3 x Class 3 batteries
Defences: 6 Point Defence Systems Grade 14 Armour
Sensor suite: Standard sensors, 3 Fire-control systems
Drive systems: Main Drive rating 2, FTL (Jump) Drive.
Hangar bays: 4 bays each holding 6 fighters

L'ASTROMARINE DES FSE

THE FEDERAL STATS EUROPA SPACE NAVY (L'ASTROMARINE):

In French, which is the standard language for their naval and other military operations, The FSE space navy is known as L'Astromarine des FSE, or simply L'Astromarine, and all FSE ships (whether military or merchant) are prefixed VFE for "Vaisseau federal europeen". It should be noted that the term "FSE" is not actually French (or it would be EFE, for Etats federaux de l'Europe), but is a standard designation agreed between the member states as a linguistic compromise.

Despite French efforts to get a version of their traditional blue-white-red National tricolour used as the FSE (and Navy) symbol, in the end the Federal Council decided on a stylised bull's head (an old symbol for Europa) in gold, with a gold star between its horns, on a field of deep blue.

HISTORY AND ORGANISATION:

L'Astromarine was formed at the same time as the FSE, in 2101, from remnants of what was previously the European Space Force. The fleet has grown along with the FSE's expanding colonisation programme, and is now roughly equivalent to the NSL Navy in terms of number of ships and personnel. Due to their design doctrine with its heavy reliance on expendable ordnance, the FSE fleet maintains a particularly large contingent of fleet tenders and replenishment vessels as well as an extensive network of naval bases and resupply outposts throughout their colonial regions.

The organisation of L'Astromarine is divided into Home and Colonial Fleets, with the former serving in the Core and Inner worlds and the latter in the Outworld settlements. The training force is administered as part of the Home Fleet, while the logistical support force is split between the two main Fleets. There is a Reserve Fleet, units of which are commonly assigned to individual colony settlements in a system defence role. The FSE Colonial Legion acts as a Marine force for ground operations when required.

FSE personnel are approximately 60% volunteers and 40% conscripts, with many colonial settlements having a conscription programme of national service to supply the fleet with manpower in exchange for their protection. Service on FSE vessels is comfortable (in relative terms - these are still warships, not cruise liners!), and broadly similar to the conditions aboard NAC ships; many of the classes are quite large, which permits spacious accommodations and facilities for both officers and ratings. Fleet morale is generally good, though the presence of a proportion of conscripted colonial ratings from different Gallic and Latin backgrounds can sometimes be a handful for the Petty Officers to keep in order. Partly for this reason and partly to ease any potential language problems, individual ships are often manned exclusively by crew from one particular nation within the FSE.

SHIP DESIGN DOCTRINE:

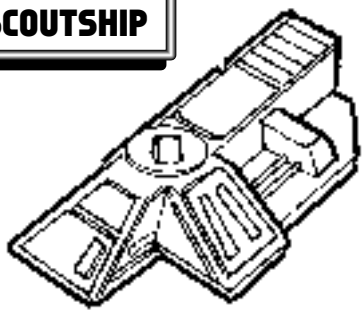
FSE ships make extensive use of salvo missiles as a primary weapon (with good magazine capacities where mass is available), with beam weapons seen as secondary systems. FSE ships are relatively fragile, with a lower priority on defences than (say) the NSL, but this is partly offset by the fact that their large capital ships are VERY big and can absorb punishment that would cripple many other vessels. As with the ESU, fighter carriers are seen as multi-role ships and carry other offensive systems besides their fighter complement. Mobility is a priority, with most ships having good thrust levels, including some capital classes with immensely powerful drives generating thrust-6!

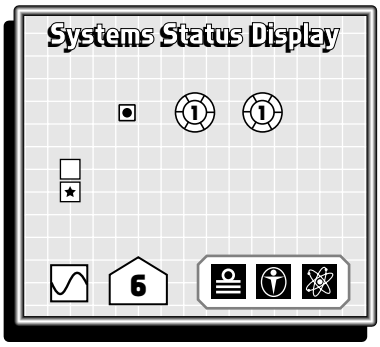
Mistral class SCOUTSHIP

The Mistral is typical of the FSE approach to scout/courier ships - it is somewhat larger than most NAC or ESU scouts, and can actually carry an ordnance fit that can threaten another small escort or freighter. Scouts are never meant to engage in combat with anything much larger than themselves, but if this is inevitable then the Mistral is capable of putting up a fight. Its accommodations are relatively spacious for a scout vessel, as it is often used as a diplomatic or command courier. There are several variants of the Mistral, including the substitution of a submunition pack for one of the class-1 beams and the "protected" version most often used for VIP transport, which replaces the FCS and both beam systems with a single PDS and two MASS of hull armour.

SERVICE DETAILS:

First entered service: 2172
Currently in FSE service: 55
Lost in action: 29
Decommissioned/scrapped: 5
Relegated to reserve fleet: 16
Sold to other forces: 22
Under construction: Nil
Procurement cost: 280 MUcr.





TMF: 8
NPV: 28

TECHNICAL SPECIFICATIONS:

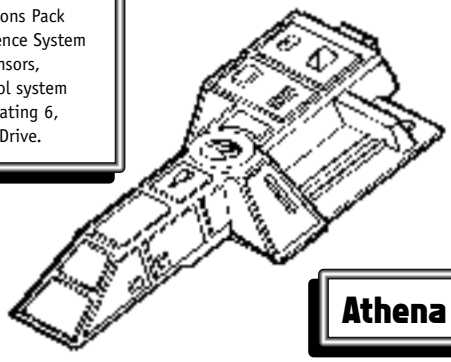
Classification: Scoutship
Displacement: 800 Tonnes [MASS Factor 8]
Hull type: Average [Hull Integrity 2]
Crew: 3 officers, 5 ratings [Crew Factor 1]
Armament: 2 x Class 1 batteries
Defences: None
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 6, FTL (Jump) Drive.

Athena class CORVETTE

TECHNICAL SPECIFICATIONS:

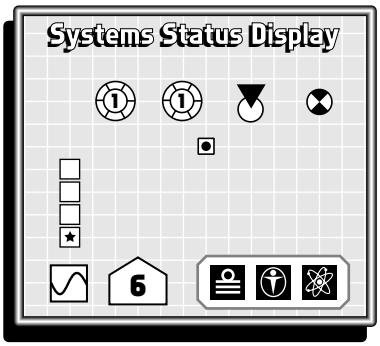
Classification: Corvette
Displacement: 1400 Tonnes [MASS Factor 14]
Hull type: Average [Hull Integrity 4]
Crew: 4 officers, 10 ratings [Crew Factor 1]
Armament: 2 x Class 1 batteries, 1 Submunitions Pack
Defences: 1 Point Defence System
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 6, FTL (Jump) Drive.

Athena class ships are practical, fast light escorts that can deliver a surprising punch for the size of ship. Many are now being transferred to colonial defence units around the FSE outworld territories as newer Corvette designs begin to supersede them in primary fleet service, though some new hulls are still being built to replace battle losses. A handful of Athenas were converted in 2177 to carry one Salvo Missile Rack each, being stripped of all their other armament (SMP, PDS and Beams) to accommodate this; the experiment (though of moderate success in battle) was not popular with the crews, who are flying what is effectively a defenceless one-shot ship, but a few of the converted vessels still survive in service.



SERVICE DETAILS:

First entered service: 2174
Currently in FSE service: 32
Lost in action: 12
Decommissioned/scrapped: 9
Relegated to reserve fleet: 29
Sold to other forces: 16
Under construction: 11
Procurement cost: 480 MUcr.

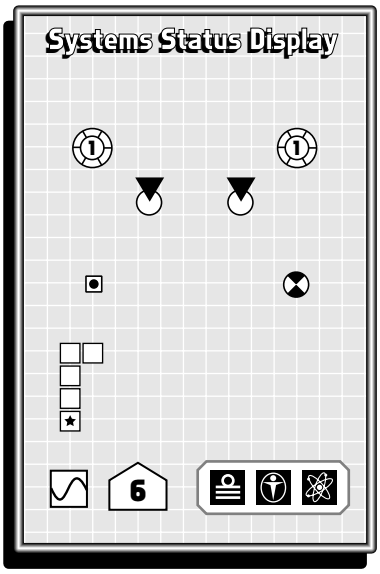


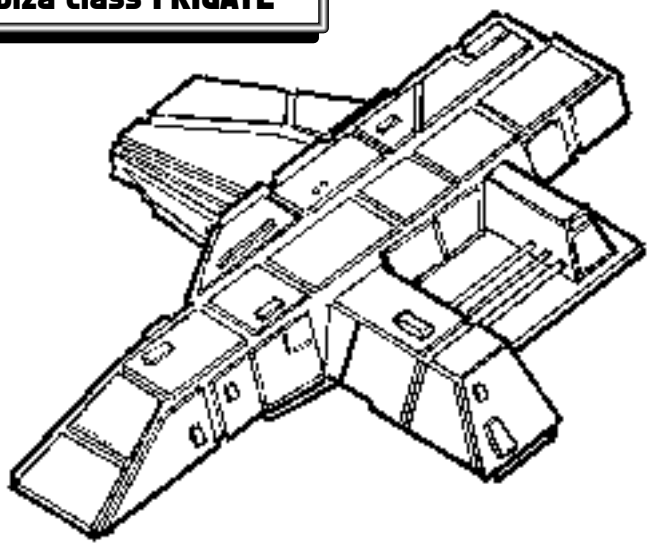
TMF: 14
NPV: 48

Ibiza class FRIGATE

TMF: 18
NPV: 61

SERVICE DETAILS:
First entered service: 2173
Currently in FSE service: 67
Lost in action: 19
Decommissioned/scrapped: 6
Relegated to reserve fleet: 10
Sold to other forces: 35
Under construction: 22
Procurement cost: 610 MUcr.



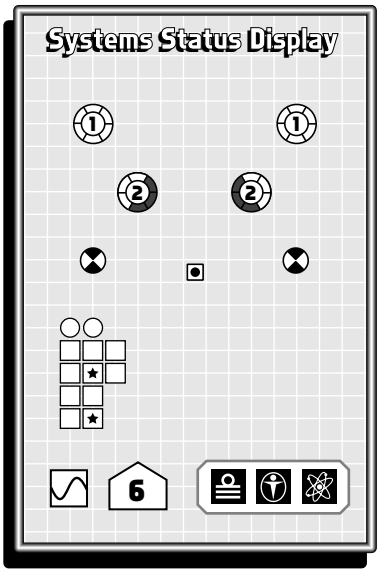


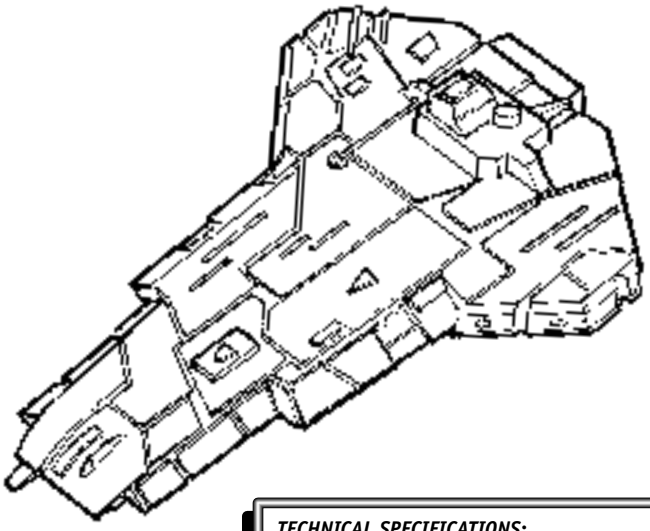
The Ibiza is small compared with many other Frigate designs, but it is cost-effective ship despite its size. The design shares many hull components with the Athena class Corvette, which simplifies construction and subsequent maintenance. Despite a number of other FF designs being introduced in later years, the Ibiza remains in production for both domestic fleet service and export.

TECHNICAL SPECIFICATIONS:

Classification:	Frigate	**Armament:**	2 x Class 1 batteries 2 Submunition packs
Displacement:	1800 Tonnes [MASS Factor 18]	**Defences:**	1 Point Defence System
Hull type:	Average [Hull Integrity 5]	**Sensor suite:**	Standard sensors, 1 Fire-control system
Crew:	4 officers, 14 ratings [Crew Factor 1]	**Drive systems:**	Main Drive rating 6, FTL (Jump) Drive.

San Miguel class DESTROYER





The most numerous FSE destroyer type, the San Miguel has had a good service career. The ship has an effective balance of offensive and defensive capabilities and is a popular class to serve on. The San Miguel's good reputation has led to a number of export orders, both for older second-hand hulls and for built-to-order new construction. There is a missile-armed strike variant that loses both class-2 beam installations in favour of a single disposable Salvo Missile Rack.

SERVICE DETAILS:
First entered service: 2170
Currently in FSE service: 44
Lost in action: 17
Decommissioned/scrapped: 10
Relegated to reserve fleet: 6
Sold to other forces: 18
Under construction: 3
Procurement cost: 1120 MUcr.

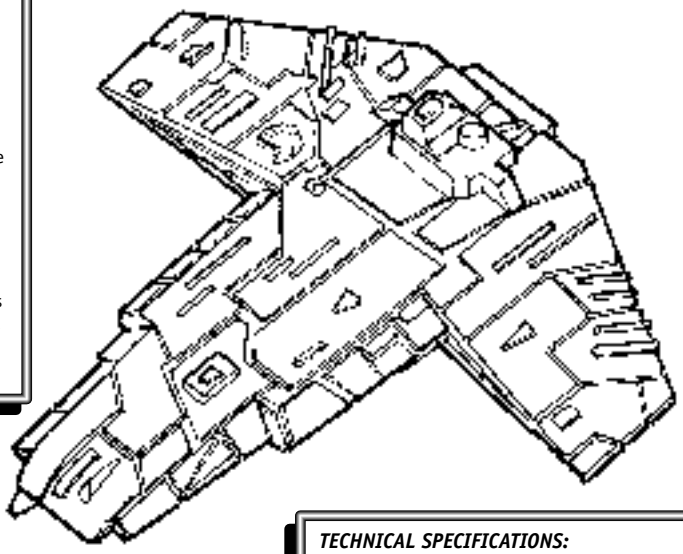
TMF: 34
NPV: 112

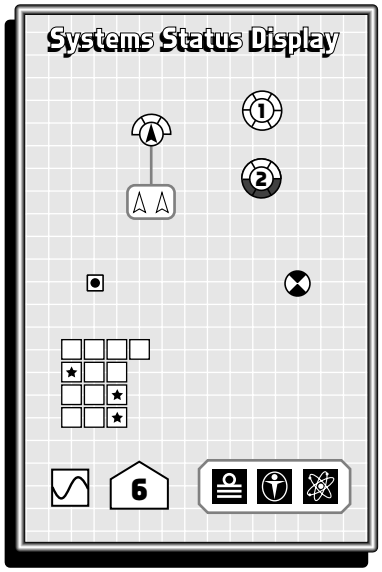
TECHNICAL SPECIFICATIONS:

Classification:	Destroyer	**Armament:**	2 x Class 1, 2 x Class 2 batteries
Displacement:	3400 Tonnes [MASS Factor 34]	**Defences:**	2 Point Defence Systems Grade 2 Armour
Hull type:	Average [Hull Integrity 10]	**Sensor suite:**	Standard sensors, 1 Fire-control system
Crew:	7 officers, 27 ratings [Crew Factor 2]	**Drive systems:**	Main Drive rating 6, FTL (Jump) Drive.

Trieste class SUPER DESTROYER

The Trieste is a much-enlarged and modified version of the respected San Miguel DD hull, and has a tonnage that almost equals the light cruisers of some navies. Designed as a heavy escort that could hold its own against cruiser forces, it has fulfilled its role admirably to date and further construction is planned to continue for several years. The Trieste is the smallest ship in the FSE inventory to mount a magazine-fed SML system as a primary design feature, making the ship very powerful in the offensive role, though the mass used for this system means that its secondary beam weapon armament is fairly light.





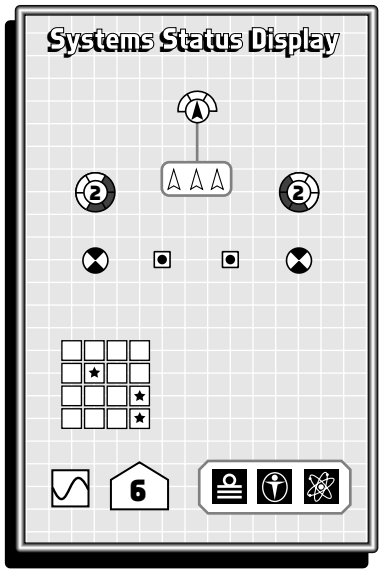
SERVICE DETAILS:
First entered service: 2177
Currently in FSE service: 26
Lost in action: 4
Decommissioned/scrapped: 3
Relegated to reserve fleet: Nil
Sold to other forces: 3
Under construction: 18
Procurement cost: 1390 MUcr.

TMF: 42
NPV: 139

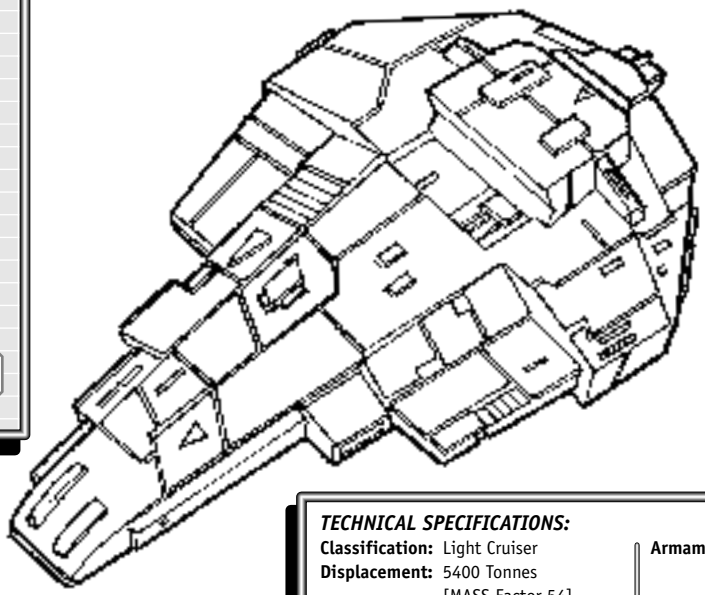
TECHNICAL SPECIFICATIONS:

Classification: Super Destroyer
Displacement: 4200 Tonnes [MASS Factor 42]
Hull type: Average [Hull Integrity 13]
Crew: 8 officers, 34 ratings [Crew Factor 3]
Armament: 1 x Class 1, 1 x Class 2 batteries, 1 Salvo Missile Launcher with capacity 4 magazine
Defences: 1 Point Defence System
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 6, FTL (Jump) Drive.

Suffren class LIGHT CRUISER



The Suffren is an effective design that has had a long service life; numerous minor variations of weapons fits exist, the result of a number of piecemeal refit programs at different naval yards over the last few years. Four new Suffren hulls are currently under construction at the Merlon yard on export order for the PAU navy, but with the high FSE losses during the current phase of the war it is suspected that the contract may be revoked under the war emergency clauses and the ships pressed into FSE service instead.



SERVICE DETAILS:
First entered service: 2169
Currently in FSE service: 42
Lost in action: 11
Decommissioned/scrapped: 8
Relegated to reserve fleet: 12
Sold to other forces: 7
Under construction: 4
Procurement cost: 1810 MUcr.

TMF: 54
NPV: 181

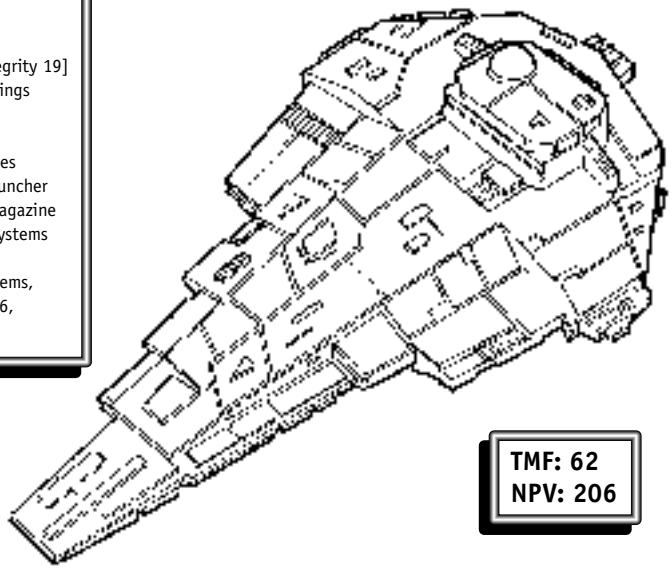
TECHNICAL SPECIFICATIONS:

Classification: Light Cruiser
Displacement: 5400 Tonnes [MASS Factor 54]
Hull type: Average [Hull Integrity 16]
Crew: 9 officers, 45 ratings [Crew Factor 3]
Armament: 2 x Class 2 batteries, 1 Salvo Missile Launcher with capacity 6 magazine
Defences: 2 Point Defence Systems
Sensor suite: Standard sensors, 2 Fire-control systems
Drive systems: Main Drive rating 6, FTL (Jump) Drive.

Milan class ESCORT CRUISER

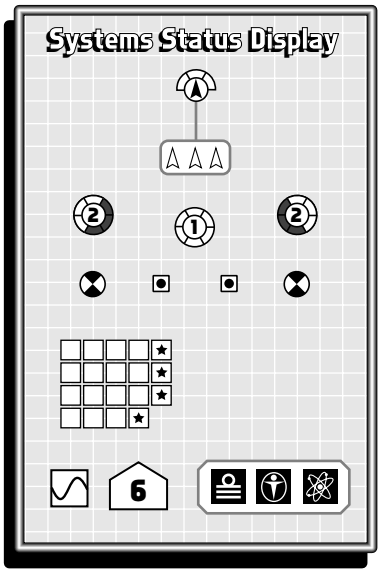
TECHNICAL SPECIFICATIONS:

Classification: Escort Cruiser
Displacement: 6200 Tonnes [MASS Factor 62]
Hull type: Average [Hull Integrity 19]
Crew: 11 officers, 51 ratings [Crew Factor 4]
Armament: 1 x Class 1, 2 x Class 2 batteries 1 Salvo Missile Launcher with capacity 6 magazine
Defences: 2 Point Defence Systems
Sensor suite: Standard sensors, 2 Fire control systems,
Drive systems: Main Drive rating 6, FTL (Jump) Drive.



TMF: 62
NPV: 206

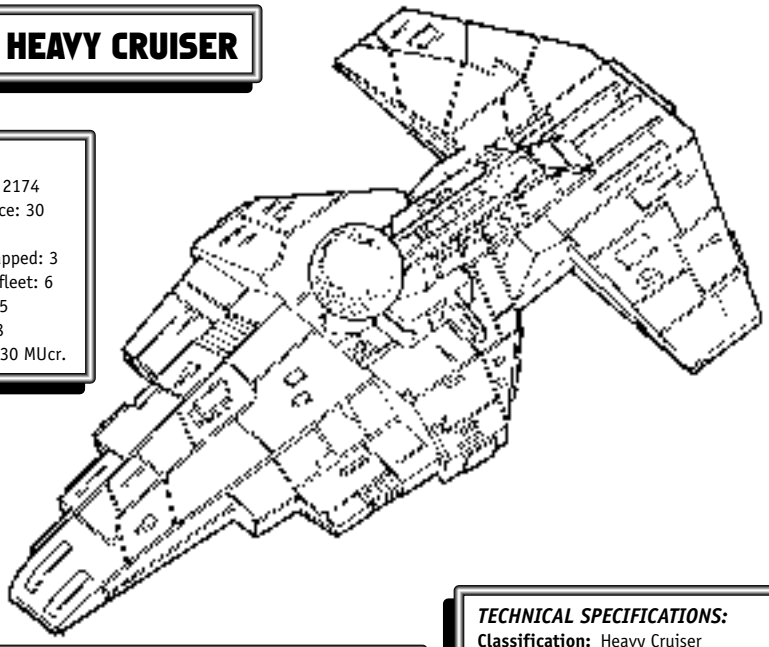
SERVICE DETAILS:
First entered service: 2171
Currently in FSE service: 39
Lost in action: 14
Decommissioned/scrapped: 6
Relegated to reserve fleet: 5
Sold to other forces: 8
Under construction: 3
Procurement cost: 2060 MUcr.



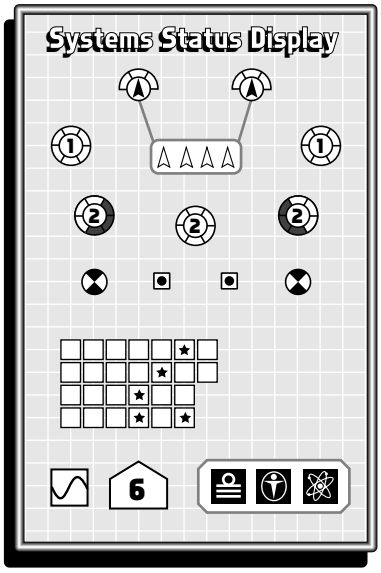
Milan class CEs are a common sight in FSE naval operations, often being used as the main combat units in small Cruiser Task Forces used to support minor colonial operations. Most of the serving Milans underwent a minor refurbishment programme in 2177. Construction of the class for FSE forces now at an end, with the Milans are gradually being replaced by the new Colbert class cruisers first introduced in 2181, but the ship has proved a popular export model and there are currently three new hulls under construction for other navies in addition to the eight second-hand Milans already sold off.

Jerez class HEAVY CRUISER

SERVICE DETAILS:
First entered service: 2174
Currently in FSE service: 30
Lost in action: 19
Decommissioned/scrapped: 3
Relegated to reserve fleet: 6
Sold to other forces: 5
Under construction: 8
Procurement cost: 2930 MUcr.



TMF: 88
NPV: 293



The large and well-armed Jerez is seen by FSE naval command as the workhorse of the cruiser fleet; its relatively high losses in combat are due to frequent combat missions against much heavier enemy units rather than any design shortcomings, and the Jerez has always aquitted itself well in battle. Construction is continuing at a fair rate to replace wartime losses, and with the FSE command's current preoccupation with its very large battleline ships it is unlikely that a new FSE CH will be introduced for several years.

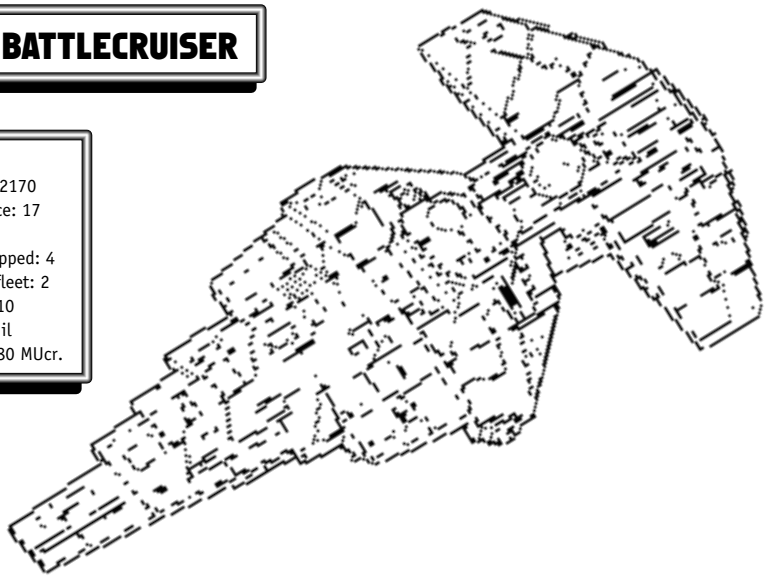
TECHNICAL SPECIFICATIONS:

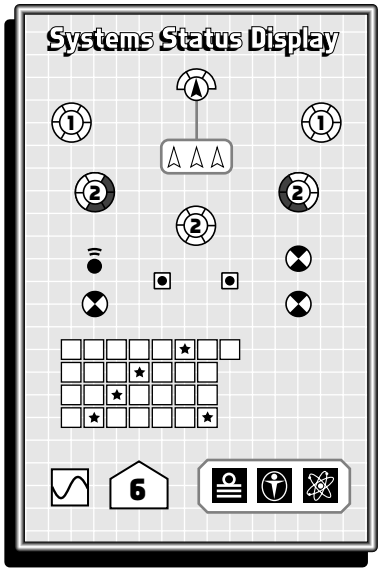
Classification: Heavy Cruiser
Displacement: 8800 Tonnes [MASS Factor 88]
Hull type: Average [Hull Integrity 26]
Crew: 14 officers, 74 ratings [Crew Factor 5]
Armament: 2 x Class 1, 3 x Class 2 batteries 2 Salvo Missile Launchers with capacity 8 magazine
Defences: 2 Point Defence Systems
Sensor suite: Standard sensors, 2 Fire-control systems
Drive systems: Main Drive rating 6, FTL (Jump) Drive.

Ypres class BATTLECRUISER

SERVICE DETAILS:
First entered service: 2170
Currently in FSE service: 17
Lost in action: 5
Decommissioned/scrapped: 4
Relegated to reserve fleet: 2
Sold to other forces: 10
Under construction: Nil
Procurement cost: 3180 MUcr.

TMF: 96
NPV: 318

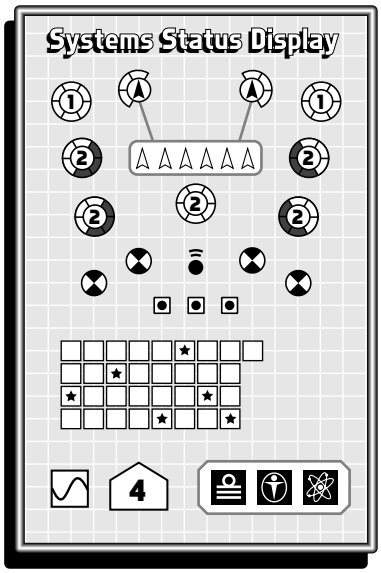




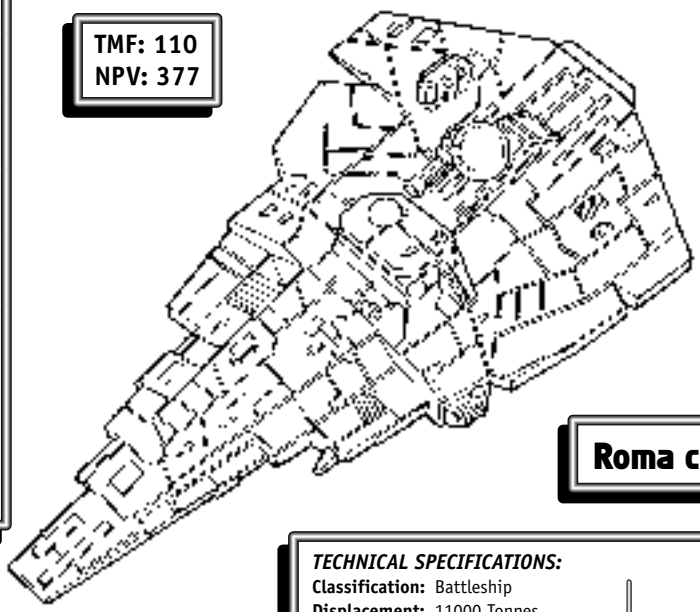
The Ypres BC is the forerunner of the Roma class BB, and is only very slightly smaller. Although a good ship, it was never built in great numbers and several are now being sold off to other navies. Most of the Ypres' mission parameters can be met more cost-effectively by the Jerez class CH, and as a result the Ypres' frontline service life is not expected to extend past the late 2180s. The early production Ypres had a second SML and larger magazine capacity, but almost all of the class still in service have lost 1 launcher and some magazine space in favour of a level-1 screen system as part of a 2176 refit following several losses to the predominantly beam-armed ships of the NSL forces.

TECHNICAL SPECIFICATIONS:

Classification: Battlecruiser
Displacement: 9600 Tonnes [MASS Factor 96]
Hull type: Average [Hull Integrity 29]
Crew: 15 officers, 81 ratings [Crew Factor 5]
Armament: 2 x Class 1
3 x Class 2 batteries
1 Salvo Missile Launcher with capacity 6 magazine
Defences: 3 Point Defence Systems
Level 1 Screens
Sensor suite: Standard sensors,
2 Fire-control systems
Drive systems: Main Drive rating 6,
FTL (Jump) Drive.



TMF: 110
NPV: 377



SERVICE DETAILS:
First entered service: 2172
Currently in FSE service: 25
Lost in action: 7
Decommissioned/scrapped: 3
Relegated to reserve fleet: 5
Sold to other forces: 2
Under construction: Nil
Procurement cost: 3770 MUcr.

Roma class BATTLESHIP

The Roma class is an uprated version of the Ypres class BC, with a small increase in tonnage to accommodate a second SML system. New hull production has stopped pending the introduction of a new BB class, though delays in the design of the replacement are causing FSE naval command to consider the ordering of several new Romas to replace combat losses. The primary armament of twin SM launchers is backed up by a high magazine capacity for extended engagements, but the class suffers somewhat from underpowered drives in comparison with other FSE designs.

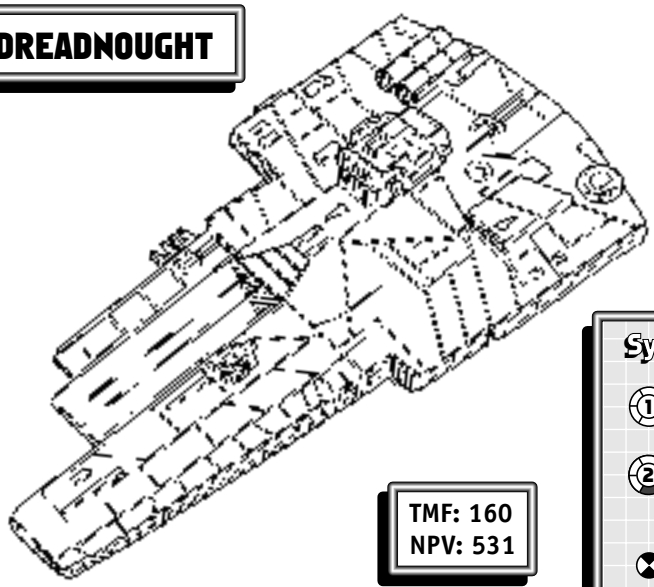
TECHNICAL SPECIFICATIONS:

Classification: Battleship
Displacement: 11000 Tonnes [MASS Factor 110]
Hull type: Average [Hull Integrity 33]
Crew: 18 officers, 92 ratings [Crew Factor 6]
Armament: 2 x Class 1
5 x Class 2 batteries
2 Salvo Missile Launchers with capacity 12 magazine
Defences: 4 Point Defence Systems
Level 1 Screens
Sensor suite: Standard sensors,
3 Fire-control systems
Drive systems: Main Drive rating 4,
FTL (Jump) Drive.

Bonaparte class BATTLEDREADNOUGHT

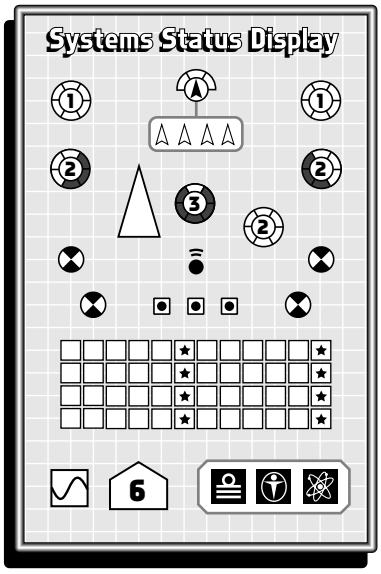
TECHNICAL SPECIFICATIONS:

Classification: Battledreadnought
Displacement: 16000 Tonnes [MASS Factor 160]
Hull type: Average [Hull Integrity 48]
Crew: 27 officers, 133 ratings [Crew Factor 8] Plus Fighter pilots
Armament: 2 x Class 1, 3 x Class 2, 1 x Class 3 batteries 1 Salvo Missile Launcher with capacity 8 magazine
Defences: 4 Point Defence Systems Level 1 Screens
Sensor suite: Standard sensors, 3 Fire-control systems
Drive systems: Main Drive rating 6, FTL (Jump) Drive.
Hangar Bays: 1 bay for 6 Fighters



TMF: 160
NPV: 531

SERVICE DETAILS:
First entered service: 2176
Currently in FSE service: 12
Lost in action: 2
Decommissioned/scrapped: Nil
Relegated to reserve fleet: Nil
Sold to other forces: 1
Under construction: 3
Procurement cost: 5310 MUcr.
(Plus Fighter costs)

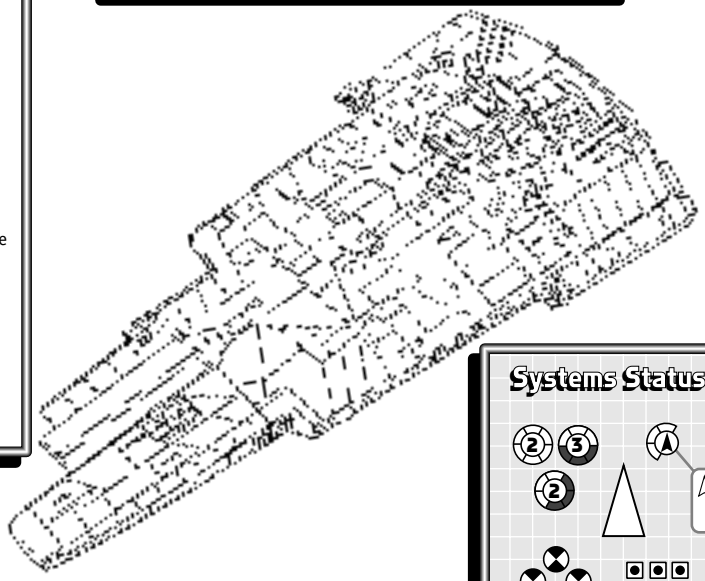


In 2173, the FSE Naval command commissioned a major design programme for the Fleet's new heavy warships. The result was a family of designs consisting of BDN and SDN classes, plus derived carriers (CVL and CVH). The Bonaparte BDN was the first of the group to see service, with the name-ship being laid down in 2175 and commissioned into service a year later. Following FSE standard doctrine, the class places great emphasis on speed and mobility - its huge drives give it a thrust rating equal or better than many ships half its tonnage. There is a large jump in size between the Roma BBs and the Bonaparte class, and some design studies have been carried out into a possible lighter version of the Bonaparte to fill the Heavy Battleship slot that is currently occupied only by a few very elderly Garibaldi class ships dating from the late 2130s.

Foch class SUPERDREADNOUGHT

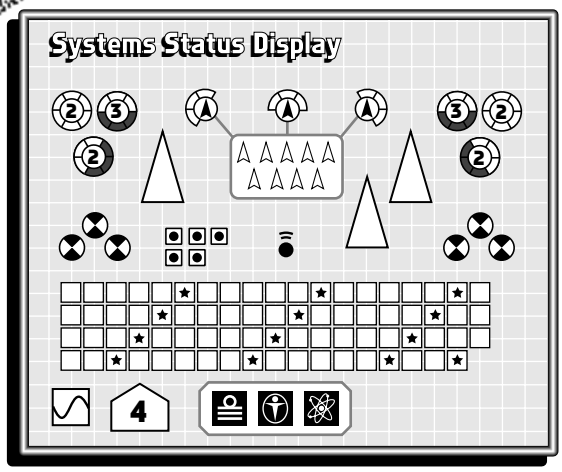
TECHNICAL SPECIFICATIONS:

Classification: Superdreadnought
Displacement: 25000 Tonnes [MASS Factor 250]
Hull type: Average [Hull Integrity 75]
Crew: 41 officers, 209 ratings [Crew Factor 13] Plus Fighter pilots
Armament: 4 x Class 2, 2 x Class 3 batteries 3 Salvo Missile Launchers with capacity 18 magazine
Defences: 6 Point Defence Systems Level 1 Screens
Sensor suite: Standard sensors, 5 Fire-control systems
Drive systems: Main Drive rating 4, FTL (Jump) Drive.
Hangar Bays: 3 bays each holding 6 Fighters



TMF: 250
NPV: 855

SERVICE DETAILS:
First entered service: 2181
Currently in FSE service: 9
Lost in action: 1
Decommissioned/scrapped: Nil
Relegated to reserve fleet: Nil
Sold to other forces: Nil
Under construction: 5
Procurement cost: 8550 MUcr.
(Plus Fighter costs)

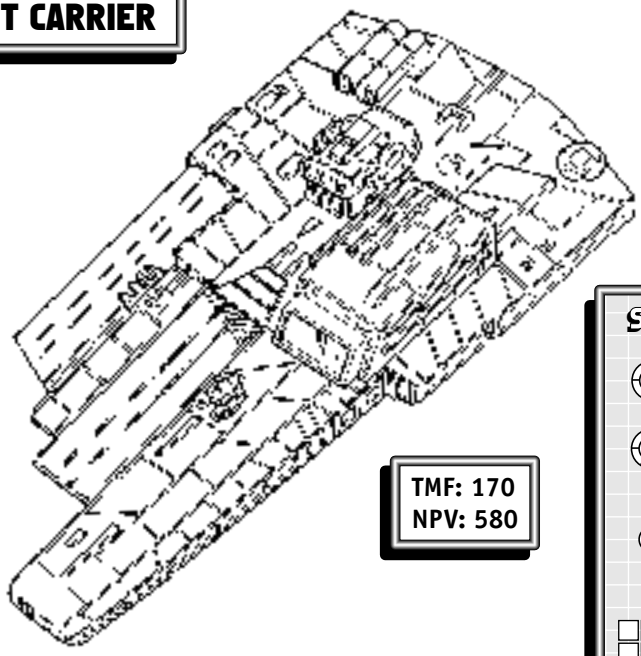


A replacement for the ageing Chirac class DN which had been the mainstay of the FSE battleline since in 2140s, the new Foch class far surpasses even the ESU Komarov dreadnoughts in size, while retaining a level of drive power equivalent to many smaller ships of other nations. An impressive and intimidating vessel, it nevertheless still has to prove itself in long term service. The class is derived from the much smaller Bonaparte BDN, and like most FSE major units it relies heavily on an extensive missile system as its primary armament.

Bologna class LIGHT CARRIER

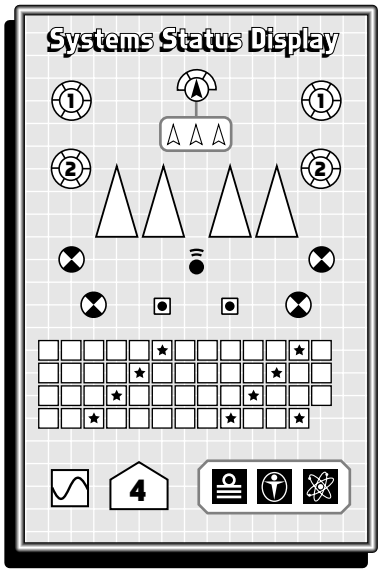
TECHNICAL SPECIFICATIONS:

Classification: Light Carrier
Displacement: 17000 Tonnes [MASS Factor 170]
Hull type: Average [Hull Integrity 51]
Crew: 35 officers, 135 ratings [Crew Factor 9] Plus Fighter pilots
Armament: 2 x Class 1, 2 x Class 2 batteries 1 Salvo Missile Launcher with capacity 6 magazine
Defences: 4 Point Defence Systems Level 1 Screens
Sensor suite: Standard sensors, 2 Fire-control systems
Drive systems: Main Drive rating 4, FTL (Jump) Drive.
Hangar Bays: 4 bays each holding 6 Fighters



TMF: 170
NPV: 580

SERVICE DETAILS:
First entered service: 2178
Currently in FSE service: 13
Lost in action: 3
Decommissioned/scrapped: 1
Relegated to reserve fleet: Nil
Sold to other forces: Nil
Under construction: 4
Procurement cost: 5800 MUcr.
(Plus Fighter costs)

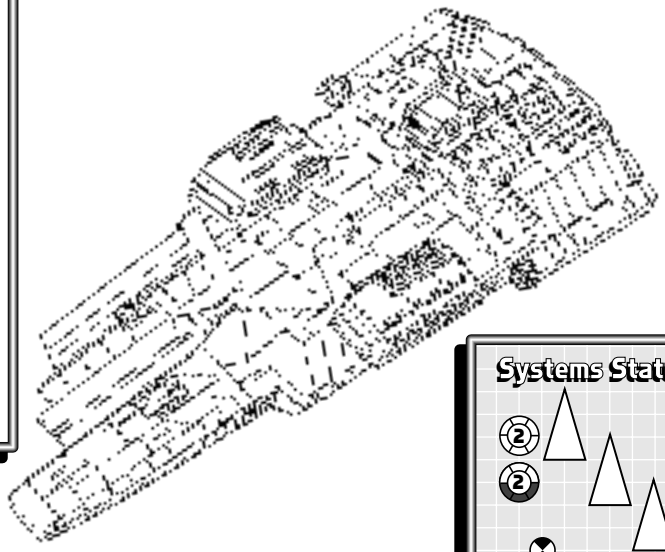


The Bologna CVL is derived from the hull structure of the Bonaparte class BDN, with a major internal redesign to accommodate the four fighter hangars and associated equipment. Most of the early teething troubles of the BDNs had been worked out by the time the first Bolognas were commissioned, and the CVL design has taken advantage of this experience to provide a reliable addition to the FSE fleet assets. Like the CVL classes of most navies, the Bologna has space for four full fighter groups, but still retains sufficient offensive armament and passive and active defences to stand in the battleline when necessary.

Jeanne D'Arc class FLEET CARRIER

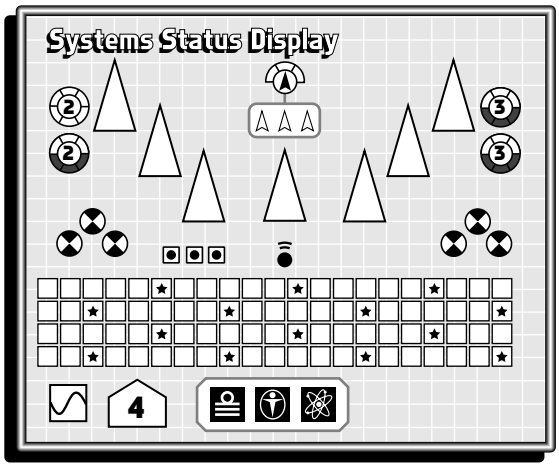
TECHNICAL SPECIFICATIONS:

Classification: Fleet Carrier
Displacement: 28000 Tonnes [MASS Factor 280]
Hull type: Average [Hull Integrity 84]
Crew: 46 officers, 234 ratings [Crew Factor 14] Plus Fighter pilots
Armament: 2 x Class 2, 2 x Class 3 batteries 1 Salvo Missile Launcher with capacity 6 magazine
Defences: 6 Point Defence Systems Level 1 Screens
Sensor suite: Standard sensors, 3 Fire-control systems
Drive systems: Main Drive rating 4, FTL (Jump) Drive.
Hangar Bays: 7 bays each holding 6 Fighters



TMF: 280
NPV: 955

SERVICE DETAILS:
First entered service: 2182
Currently in FSE service: 5
Lost in action: 2
Decommissioned/scrapped: Nil
Relegated to reserve fleet: Nil
Sold to other forces: Nil
Under construction: 4
Procurement cost: 9550 MUcr.
(Plus Fighter costs)



A development of the Foch class dreadnaughts, the Jeanne D'Arc class carriers are the newest major ships in the FSE Naval inventory and are also some of the largest space warships ever constructed. The Jeanne D'Arc has a large fighter capacity (7 full groups) but also carries a very comprehensive suite of offensive and defensive weapon systems. Building of the class continues at the Merlon navy yards, and is expected to be accelerated to replace the catastrophic loss of two ships from the first production group to an NSL ambush at the disastrous battle of Neu Bremen.

ESU VOYENNO-KOSMICHESKIY FLOT

THE EURASIAN SOLAR UNION STAR NAVY (VOYENNO-KOSMICHESKIY FLOT):

The ESU military space force is known in English as the Star Navy, in Russian as the Voyenno-Kosmicheskiy Flot (literally Military Space Fleet) and to the Chinese-speaking peoples of the ESU as the Taikong Jiann Dwee. Most of their naval traditions are Russian in origin, and the usual acronym for the Navy is VKF; individual ships are prefixed VKK (for Voyenno-Kosmicheskiy Korabl'). Merchant and civilian shipping of ESU registry is simply KK (Kosmicheskiy Korabl').

The VKF emblem is, like most ESU military symbology, based on the traditional red star with a gold outline; the ESU flag is the same star, again outlined in gold, on a red field.

HISTORY AND ORGANISATION:

The VKF was formally created in 2079 with the launch of the first Eurasian FTL warships, a few years behind the NAC. Even during the period of Chinese domination of the ESU, up to the 2120s, most of the operation of the VKF was along Russian lines, as China had little more than coastal-defence navy traditions to draw on for experience.

The VKF is divided into several Sector Fleets based in different "Military Districts", each district being made up of a number of colonies. The Military Districts in the Core systems and Inner Worlds are relatively small, with a single well-developed Inner Colony often being a District in its own right, while in the Outworld possessions a single District might encompass as many as a dozen small, far-flung outposts and settlements. The main base for the bulk of the fleet is at the ESU Capital world of Nova Moskva, though the Chiang Military District also has extensive base and shipyard facilities.

Many VKF personnel are conscripts, as they are in all the ESU armed forces, though others volunteer before being conscripted in the hope of a better career - a volunteer will generally rise through the ranks higher and faster than a conscript. Morale on board ship is not exactly high, but it is steady; ESU citizens are brought up to love the Motherland, and they feel a sense of honour in protecting it. VKF crew and officers, as in most navies, also feel that they are somewhat better than the other armed forces such as the ground troops (though they will make an exception for their own marines, the Naval Infantry). Conditions on board ESU warships are mediocre at best, and are certainly not up to the standard of NAC and FSE ships; accommodations are cramped (especially for the ratings), food is nutritious but unappetising, recreational facilities are very limited or nonexistent and discipline is harsh.

SHIP DESIGN DOCTRINE:

Most VKF ships are almost exclusively beam-armed (their superdreadnoughts mounting some of the largest beam systems ever installed on a mobile platform), with salvo missile systems used occasionally on a very few classes. Ships tend to be constructed with either inherently strong hulls, or have armour added over weaker basic construction; many classes carry screens as a further passive defence. Mobility is average for most ships, with some light classes being very fast but the big ships having drives of thrust-2 or 4. The majority of the VKF's fighters are operated from specialised carriers, but these ships generally have more offensive armament and tougher defences than NAC counterparts in addition to their fighter complements. Many ESU ship designs, especially the Cruiser and small Capital types, are optimised for long-term independent operations.

Lenov class SCOUTSHIP

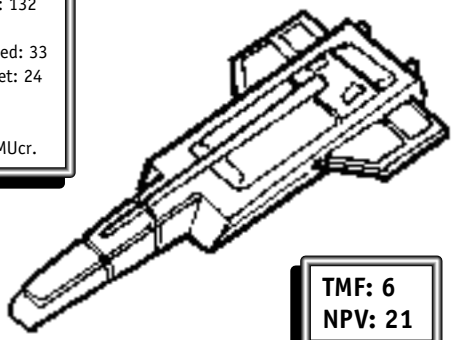
The Lenov class is the standard ESU scout and courier craft, and has also been widely exported to other nations. A very fragile ship, the Lenov sacrifices hull strength in order to mount a powerful Main Drive with a high thrust rating. Like most scouts, this design was never meant to enter full-scale combat, though some refitted versions have been reported mounting a single submunition pack in place of the class 1 beam system.

SERVICE DETAILS:

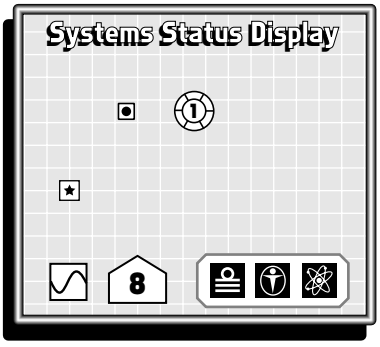
First entered service: 2160
Currently in ESU service: 132
Lost in action: 46
Decommissioned/scrapped: 33
Relegated to reserve fleet: 24
Sold to other forces: 58
Under construction: Nil
Procurement cost: 210 MUcr.

TECHNICAL SPECIFICATIONS:

Classification: Scoutship
Displacement: 600 Tonnes [MASS Factor 6]
Hull type: Weak [Hull Integrity 1]
Crew: 2 officers, 4 ratings [Crew Factor 1]
Armament: 1 x Class 1 battery
Defences: None
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 8, FTL (Jump) Drive.



TMF: 6
NPV: 21

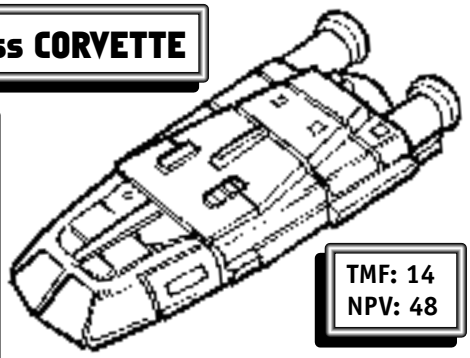


Nanuchka II class CORVETTE

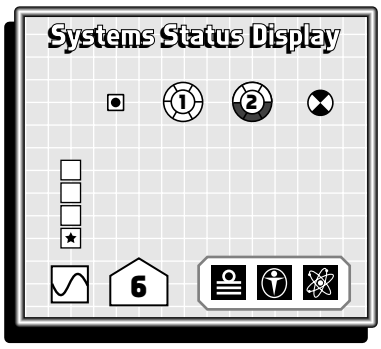
The Nanuchka II has now almost completely replaced the older Nanuchka I corvette, to which it actually bears very little similarity in appearance. The Nanuchka II is in fact a completely new design of vessel, and the retaining of the Nanuchka name is thought to be either just a quirk or a deliberate attempt at misinformation by the ESU naval intelligence bureau. The new ships are built in the same production facility at the Nova Gdansk yards that was responsible for the Novgorod FFs, and the corvettes share several design features with their "older sisters".

SERVICE DETAILS:

First entered service: 2177
Currently in ESU service: 89
Lost in action: 25
Decommissioned/scrapped: 6
Relegated to reserve fleet: 4
Sold to other forces: 15
Under construction: 38
Procurement cost: 480 MUcr.



TMF: 14
NPV: 48



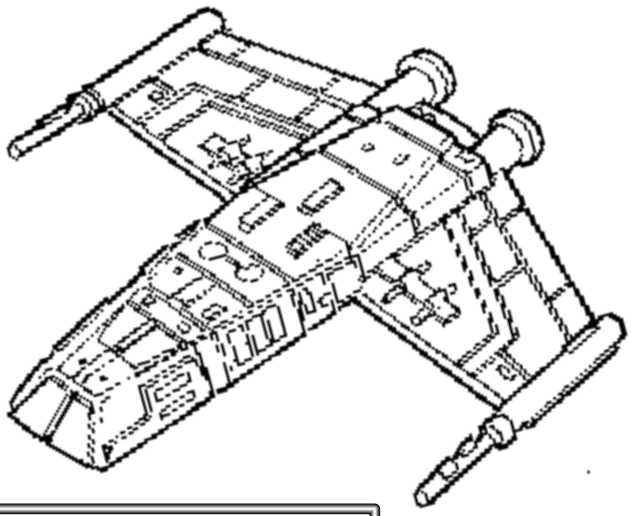
TECHNICAL SPECIFICATIONS:

Classification: Corvette
Displacement: 1400 Tonnes [MASS Factor 14]
Hull type: Average [Hull Integrity 4]
Crew: 4 officers, 10 ratings [Crew Factor 1]
Armament: 1 x Class 1, 1 x Class 2 battery
Defences: 1 Point Defence System
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 6, FTL (Jump) Drive.

Novgorod class FRIGATE

The Novgorod is just one of several FF classes currently in ESU service, including the older Riga class and the newer Grisha and Kunitsa ships; it is an unremarkable but practical design and is frequently used on convoy protection duties. The Novgorod is moderately fast and has a reasonable armament, but is also quite a frail ship and cannot stand extended combat against larger units. Among other export sales, ten second-hand Novgorods have recently been transferred to the Pan African navy, and an order for a further six has been placed as new construction to begin in 2184.

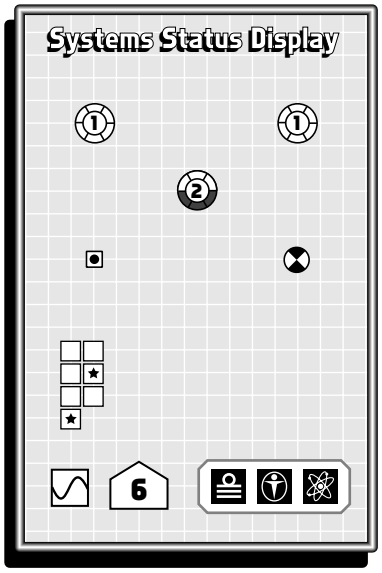
TMF: 22
NPV: 73



SERVICE DETAILS:
First entered service: 2168
Currently in ESU service: 54
Lost in action: 22
Decommissioned/scrapped: 19
Relegated to reserve fleet: 27
Sold to other forces: 17
Under construction: Nil
Procurement cost: 730 MUcr.

TECHNICAL SPECIFICATIONS:

Classification: Frigate
Displacement: 2200 Tonnes [MASS Factor 22]
Hull type: Average [Hull Integrity 7]
Crew: 6 officers, 16 ratings [Crew Factor 2]
Armament: 2 x Class 1, 1 x Class 2 batteries
Defences: 1 Point Defence System
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 6, FTL (Jump) Drive.



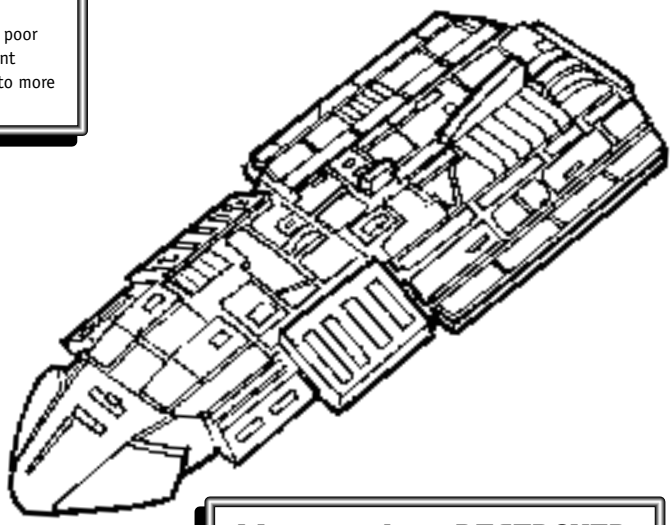
There are a lot of Warsaw class ships in ESU service; designed at the outbreak of the Third Solar War as a relatively cheap and simple DD class to reinforce the Star Navy's destroyer squadrons and replace most of the long-obsolete Krivak class, huge numbers were produced until the beginning of the 2170s. Moderately armed and protected, the Warsaw has always served well, though it is not a popular assignment for its crews - accommodations are cramped and poor even by ESU standards, to the point where the ship has been referred to more than once as the "Flying ghetto".

TMF: 28
NPV: 93

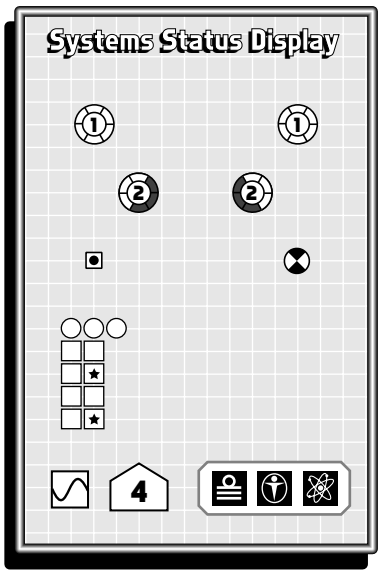
TECHNICAL SPECIFICATIONS:

Classification: Destroyer
Displacement: 2800 Tonnes [MASS Factor 28]
Hull type: Average [Hull Integrity 8]
Crew: 7 officers, 21 ratings [Crew Factor 2]
Armament: 2 x Class 1, 2 x Class 2 batteries
Defences: 1 Point Defence System Grade 3 Armour
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 4, FTL (Jump) Drive.

SERVICE DETAILS:
First entered service: 2166
Currently in ESU service: 97
Lost in action: 31
Decommissioned/scrapped: 24
Relegated to reserve fleet: 35
Sold to other forces: 28
Under construction: Nil
Procurement cost: 930 MUcr.



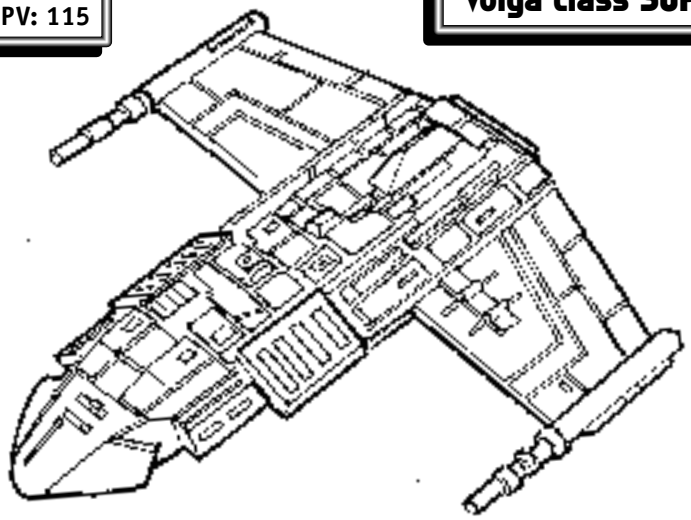
Warsaw class DESTROYER



Volga class SUPER DESTROYER

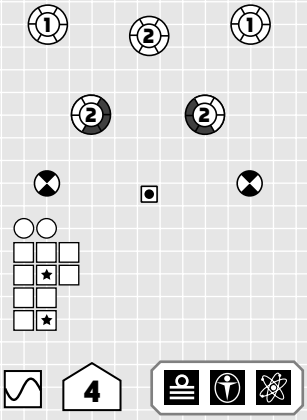
TMF: 34
NPV: 115

SERVICE DETAILS:
First entered service: 2176
Currently in ESU service: 32
Lost in action: 12
Decommissioned/scrapped: 7
Relegated to reserve fleet: Nil
Sold to other forces: 10
Under construction: 18
Procurement cost: 1150 MUcr.



The Volga is an enlarged redesign of the much older Warsaw DD, carrying a better armament suite and improved active defences, though it has a little less armour protection than its predecessor. The crew facilities have been upgraded somewhat over the almost squalid conditions aboard the Warsaws, though it must be said that the "Officers' Country" rather than the ordinary ratings' quarters has received the bulk of the improvements. Volgas and Warsaws serve together in most Star Navy task forces, and construction of the Volga is continuing steadily at the Nova Gdansk and Chiang/D yards.

Systems Status Display



TECHNICAL SPECIFICATIONS:

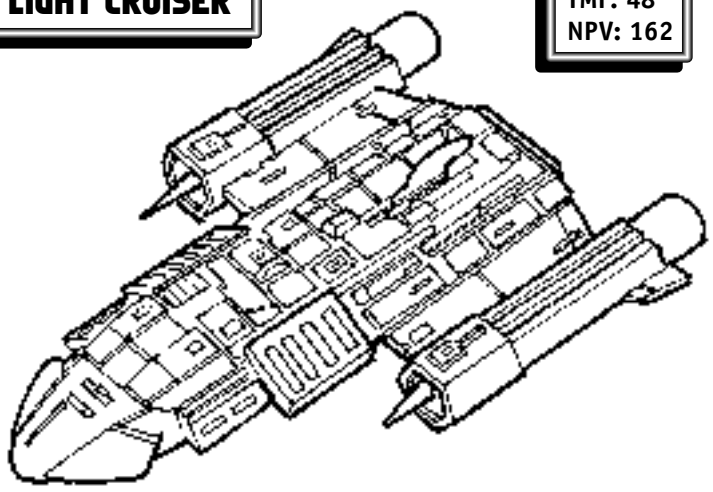
Classification: Super Destroyer
Displacement: 3400 Tonnes [MASS Factor 34]
Hull type: Average [Hull Integrity 10]
Crew: 8 officers, 26 ratings [Crew Factor 2]
Armament: 2 x Class 1, 3 x Class 2 batteries
Defences: 2 Point Defence Systems Grade 2 Armour
Sensor suite: Standard sensors, 1 Fire-control system
Drive systems: Main Drive rating 4, FTL (Jump) Drive.

Tibet class LIGHT CRUISER

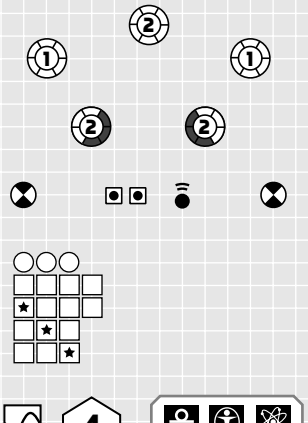
TMF: 48
NPV: 162

SERVICE DETAILS:
First entered service: 2163
Currently in ESU service: 66
Lost in action: 31
Decommissioned/scrapped: 18
Relegated to reserve fleet: 12
Sold to other forces: 15
Under construction: Nil
Procurement cost: 1620 MUcr.

The Tibet is still the standard CL design for the Star Navy, despite being twenty years old. It is a practical and efficient ship with a good balance of offence and defence, and is only very recently being supplemented by the new Kiang class introduced in 2180. The last Tibet hull left the slips in 2175 after a continuous production run of 12 years - a long period for a single unchanged design - and in 2178 the manufacturing facility was reactivated to begin laying down the first of the new Voroshilev class Heavy Cruisers which share several major design features with the old Tibets.

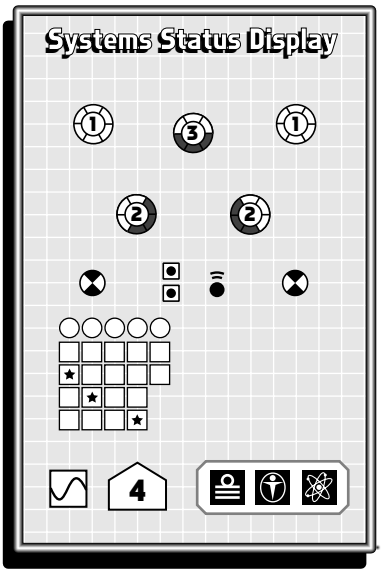


Systems Status Display

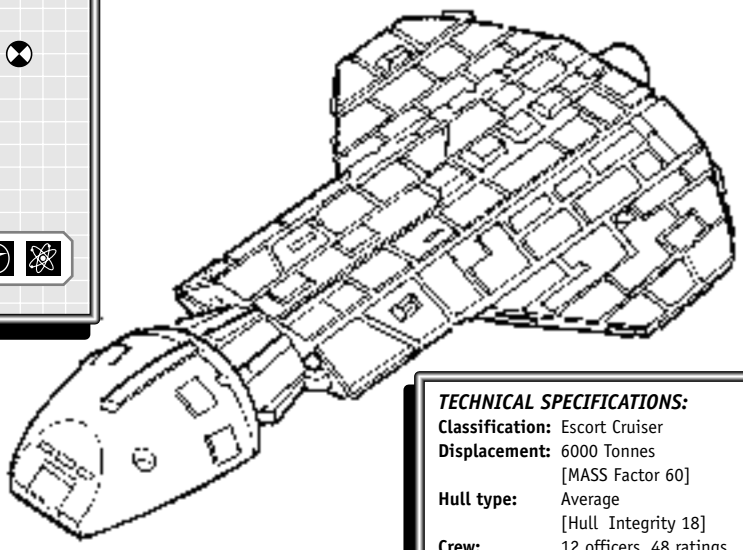


TECHNICAL SPECIFICATIONS:

Classification: Light Cruiser
Displacement: 4800 Tonnes [MASS Factor 48]
Hull type: Average [Hull Integrity 14]
Crew: 11 officers, 37 ratings [Crew Factor 3]
Armament: 2 x Class 1, 3 x Class 2 batteries
Defences: 2 Point Defence Systems Grade 3 Armour Level 1 Screens
Sensor suite: Standard sensors, 2 Fire-control systems
Drive systems: Main Drive rating 4, FTL (Jump) Drive.



The Beijing/B was essentially a new class created from the total refit of a large number of very elderly Beijing/A CEs. The programme took place between 2158 and 2164, but the original Beijing/A hulls actually date from the mid-2130s, making even the refitted Beijing/B an old ship that is in dire need of replacement. There is even a handful of unconverted Beijing/A ships still serving in ESU reserve commands, though how many of these are actually battleworthy is a debatable point. Several of the Beijing/Bs still in service are of a defensive close-support variant which carries an ADFC system and four additional Point-Defence installations in place of the single Class-3 beam system.



SERVICE DETAILS:
First entered service: 2158
Currently in ESU service: 18
Lost in action: 23
Decommissioned/scrapped: 11
Relegated to reserve fleet: 29
Sold to other forces: 8
Under construction: Nil
Procurement cost: 2010 MUcr.

TMF: 60
NPV: 201

Beijing/B class ESCORT CRUISER

TECHNICAL SPECIFICATIONS:

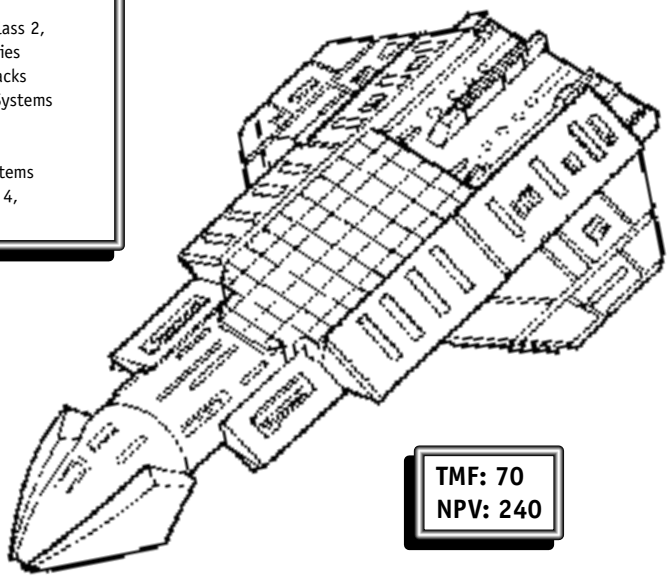
Classification:	Escort Cruiser
Displacement:	6000 Tonnes [MASS Factor 60]
Hull type:	Average [Hull Integrity 18]
Crew:	12 officers, 48 ratings [Crew Factor 3]
Armament:	2 x Class 1, 2 x Class 2, 1 x Class 3 batteries
Defences:	2 Point Defence Systems Grade 5 Armour Level 1 Screens
Sensor suite:	Standard sensors, 2 Fire-control systems
Drive systems:	Main Drive rating 4, FTL (Jump) Drive.

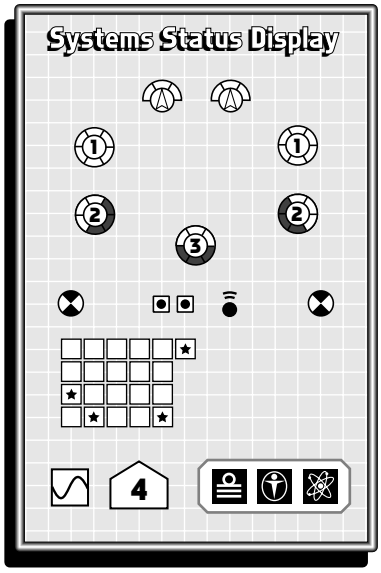
Gorshkov class HEAVY CRUISER

The Gorshkov CH was always an unusual design for the ESU Star Navy, in that it carried a pair of expendable Salvo Missile racks rather than a purely beam-orientated armament suite. While this gave the ship a very effective strike capability, the use of missiles did not really fit the standard ESU operational doctrine - it was felt that the need for frequent missile replenishment in extended combat was a liability, and limited the use of the class in long-range combat patrol duties where fleet auxiliaries could not always be on hand for resupply. Despite these shortcomings, the Gorshkov has acquitted itself well in its long service life and many that are considered too old for frontline operations are being reassigned to the reserve rather than decommissioned.

TECHNICAL SPECIFICATIONS:

Classification:	Heavy Cruiser
Displacement:	7000 Tonnes [MASS Factor 70]
Hull type:	Average [Hull Integrity 21]
Crew:	13 officers, 57 ratings [Crew Factor 4]
Armament:	2 x Class 1, 2 x Class 2, 1 x Class 3 batteries 2 Salvo Missile Racks
Defences:	2 Point Defence Systems Level 1 Screens
Sensor suite:	Standard sensors, 2 Fire-control systems
Drive systems:	Main Drive rating 4, FTL (Jump) Drive.





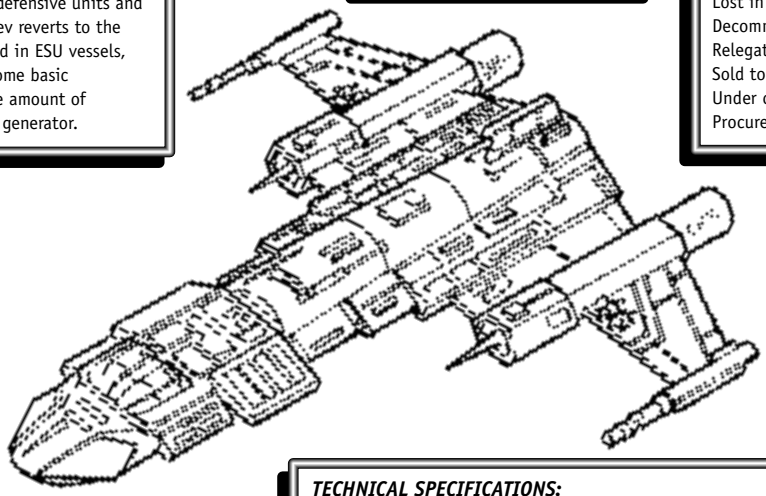
SERVICE DETAILS:
First entered service: 2155
Currently in ESU service: 27
Lost in action: 19
Decommissioned/scrapped: 13
Relegated to reserve fleet: 22
Sold to other forces: 14
Under construction: Nil
Procurement cost: 2400 MUcr.

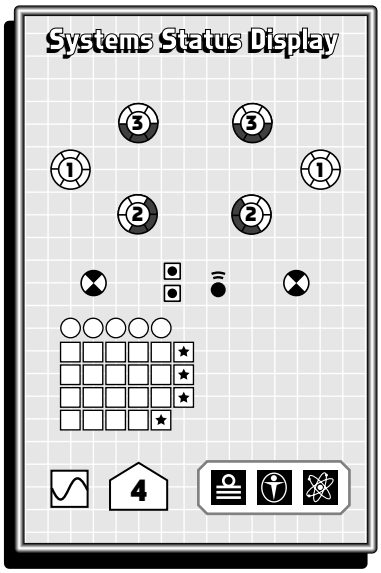
TMF: 70
NPV: 240

Voroshilev class HEAVY CRUISER

The Voroshilev is one of the ESU's newest warship designs, and is under a crash production programme to replace cruiser force losses from the ongoing war. Voroshilevs are being assigned to most frontline squadrons while the venerable Gorshkovs and other older designs are being withdrawn and reallocated to defensive units and reserve forces. Unlike the Gorshkov, the Voroshilev reverts to the primary beam armament fit most commonly found in ESU vessels, and as with the Tibet CL (with which it shares some basic constructional components) it carries a moderate amount of armoured hull protection in addition to a screen generator.

SERVICE DETAILS:
First entered service: 2179
Currently in ESU service: 24
Lost in action: 7
Decommissioned/scrapped: 1
Relegated to reserve fleet: Nil
Sold to other forces: 2
Under construction: 18
Procurement cost: 2620 MUcr.





TECHNICAL SPECIFICATIONS:

Classification:	Heavy Cruiser	**Defences:**	2 Point Defence Systems Grade 5 Armour Level 1 Screens
Displacement:	7800 Tonnes [MASS Factor 78]	**Sensor suite:**	Standard sensors, 2 Fire-control systems
Hull type:	Average [Hull Integrity 23]	**Drive systems:**	Main Drive rating 4, FTL (Jump) Drive.
Crew:	14 officers, 64 ratings [Crew Factor 4]		
Armament:	2 x Class 1, 2 x Class 2, 2 x Class 3 batteries		

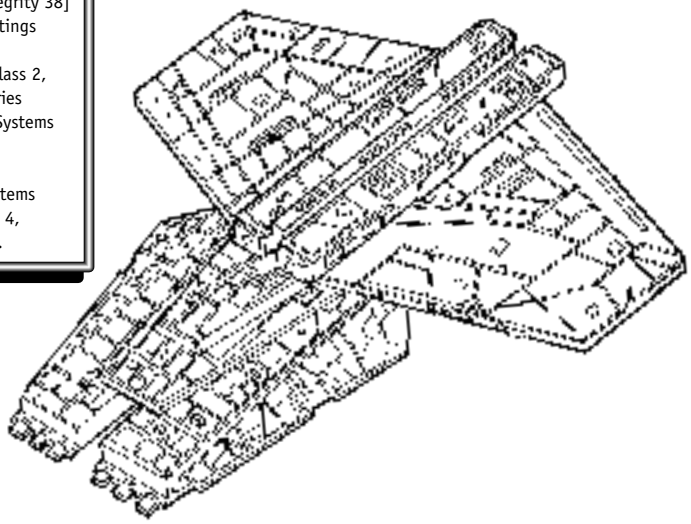
TMF: 78
NPV: 262

Manchuria class BATTLECRUISER

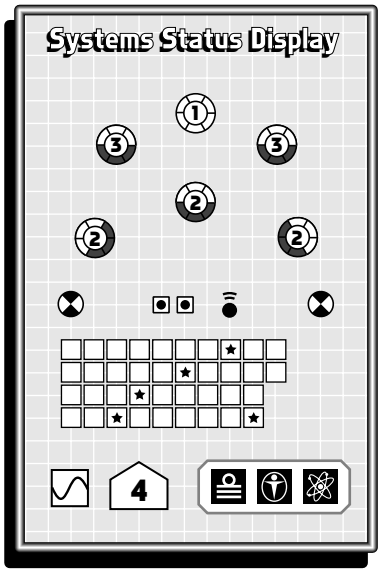
TECHNICAL SPECIFICATIONS:

Classification:	Battlecruiser
Displacement:	9400 Tonnes [MASS Factor 94]
Hull type:	Strong [Hull Integrity 38]
Crew:	16 officers, 78 ratings [Crew Factor 5]
Armament:	1 x Class 1, 3 x Class 2, 2 x Class 3 batteries
Defences:	2 Point Defence Systems Level 1 Screens
Sensor suite:	Standard sensors, 2 Fire-control systems
Drive systems:	Main Drive rating 4, FTL (Jump) Drive.

SERVICE DETAILS:
First entered service: 2171
Currently in ESU service: 19
Lost in action: 5
Decommissioned/scrapped: 2
Relegated to reserve fleet: Nil
Sold to other forces: 6
Under construction: 8
Procurement cost: 3120 MUcr.



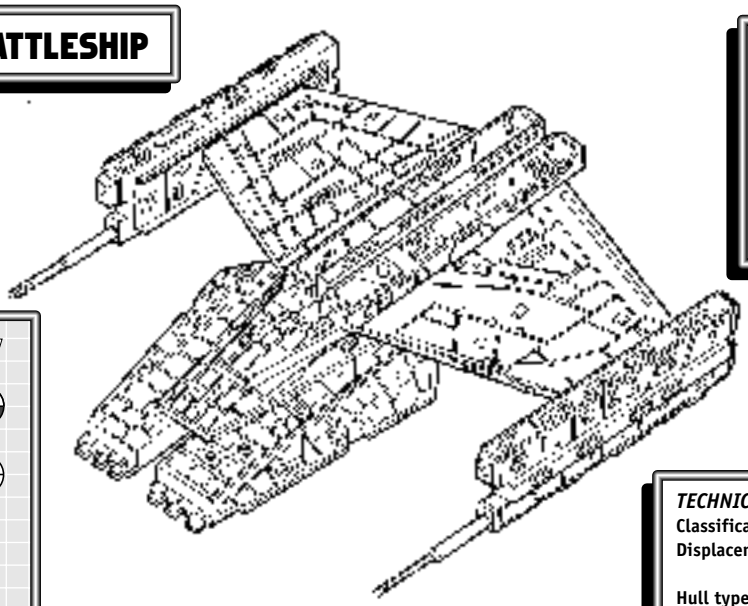
TMF: 94
NPV: 312

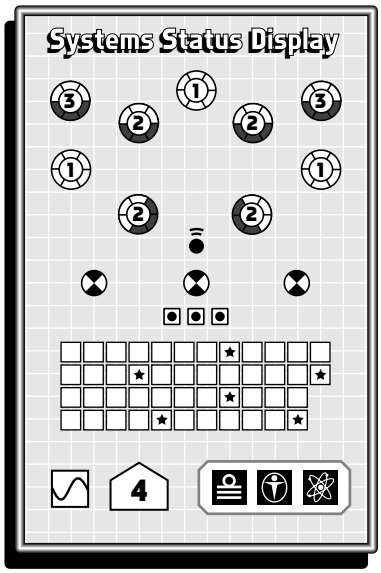


In the late 2160's the ESU Tsien-Valkov naval design bureau devised a new family of ship designs for the Star Navy which would provide BC, BB and BDN classes, plus a new CVL, all based around common major hull components. Such design practice is not unusual in most major navies to reduce both construction costs and development time, but this was the first time that the ESU fleet had applied the principle to so many major units at the same time. All the classes were originally planned for simultaneous introduction to service in 2171, but as always outside events and internal politics intruded on the process and caused delays, so that the Manchuria BC was not joined by her cousins until 2172 (for the Petrograd BB) and 2174 (the Rostov BDN). The CVL variant, the Tsiolkovsky, was not launched until 2176.

Petrograd class BATTLESHIP

TMF: 116
NPV: 386





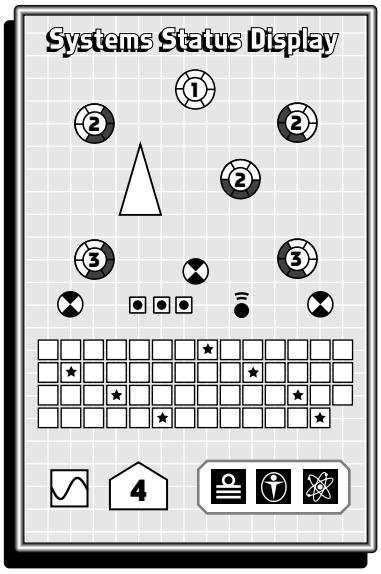
SERVICE DETAILS:
First entered service: 2172
Currently in ESU service: 23
Lost in action: 4
Decommissioned/scrapped: 6
Relegated to reserve fleet: 2
Sold to other forces: 3
Under construction: 10
Procurement cost: 3860 MUcr.

Essentially an expanded Manchuria BC hull, the Petrograd entered service a year later than its smaller counterpart despite having been designed at the same time. The Petrograd BB shares the Manchuria's robust hull structure which, along with a screen system, makes it a sturdy ship able to absorb considerable punishment. As with many ESU ships, crew accommodations are still rather cramped and spartan, but they are nevertheless a considerable improvement on those aboard the old 2130's Sverdlov class BBs that the Petrograd has largely replaced.

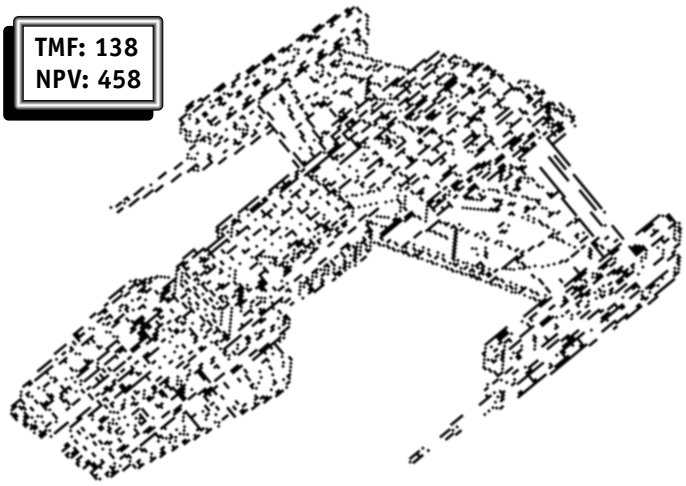
TECHNICAL SPECIFICATIONS:

Classification:	Battleship
Displacement:	11600 Tonnes [MASS Factor 116]
Hull type:	Strong [Hull Integrity 46]
Crew:	18 officers, 98 ratings [Crew Factor 6]
Armament:	3 x Class 1, 4 x Class 2, 2 x Class 3 batteries
Defences:	3 Point Defence Systems Level 1 Screens
Sensor suite:	Standard sensors, 3 Fire-control systems
Drive systems:	Main Drive rating 4, FTL (Jump) Drive.

Rostov class BATTLEDREADNOUGHT



TMF: 138
NPV: 458



The Rostov is the BDN class of the "family" of ship designs from the Tsien-Valkov design bureau, which began with the Manchuria BCs at the start of the 2170s. All of the designs are well armed and protected, with good drive power, and are giving the ESU Navy a much-needed boost in its strike capabilities. As with most BDNs, the Rostov carries a single embarked fighter group for both anti-shipping and ground support operations. Five built-to-order Rostovs were exported to the Pan African Union between 2178 and 79, to form the major battleline strength of the PAU's rapidly-expanding and modernising navy; this sale was purely a political move, which somewhat upset the ESU Admiralty who (understandably) felt that their own requirements for replacement fleet units should have taken priority.

SERVICE DETAILS:
First entered service: 2174
Currently in ESU service: 16
Lost in action: 6
Decommissioned/scrapped: 2
Relegated to reserve fleet: 3
Sold to other forces: 5
Under construction: 4
Procurement cost: 4580 MUcr.
(Plus fighter costs)

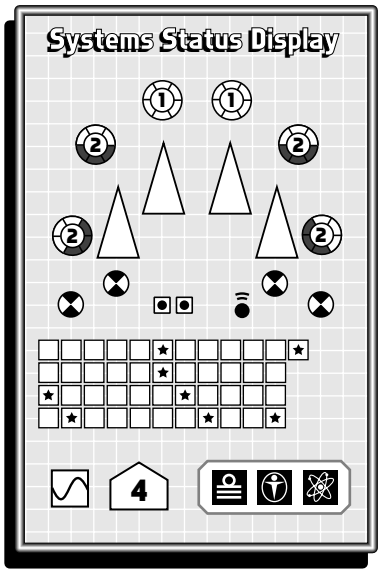
TECHNICAL SPECIFICATIONS:

Classification:	Battledreadnought
Displacement:	13800 Tonnes [MASS Factor 138]
Hull type:	Strong [Hull Integrity 55]
Crew:	20 officers, 118 ratings [Crew Factor 7] Plus Fighter pilots
Armament:	1 x Class 1, 3 x Class 2, 2 x Class 3 batteries
Defences:	3 Point Defence Systems Level 1 Screens
Sensor suite:	Standard sensors, 3 Fire-control systems
Drive systems:	Main Drive rating 4, FTL (Jump) Drive.
Hangar bays:	1 bay for 6 Fighters

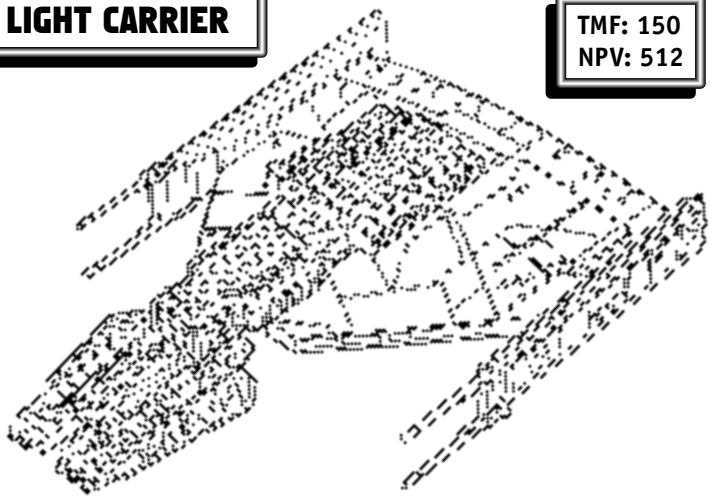
Tsiolkovsky class LIGHT CARRIER

TMF: 150
NPV: 512

SERVICE DETAILS:
First entered service: 2176
Currently in service: 26
Lost in action: 5
Decommissioned/scrapped: 2
Relegated to reserve fleet: Nil
Sold to other forces: Nil
Under construction: 7
Procurement cost: 5120 MUcr.
(Plus Fighter costs)



Since the early 2170s, the ESU Star Navy has been concentrating its carrier production efforts on larger numbers of smaller units, rather than replacing the "dinosaurs" like the Konstantin class. Typical of the light carrier approach is the relatively new Tsiolkovsky, another of the Tsien-Valkov Bureau designs, which combines the benefits of a moderate fighter capacity with good defences, a reasonable turn of speed and an effective direct-fire offensive capability. While they do not have the degree of survivability of the huge old CVAs, their sheer numbers permit flexible fighter deployment in areas where the ESU major fleet units have always been thinly spread.



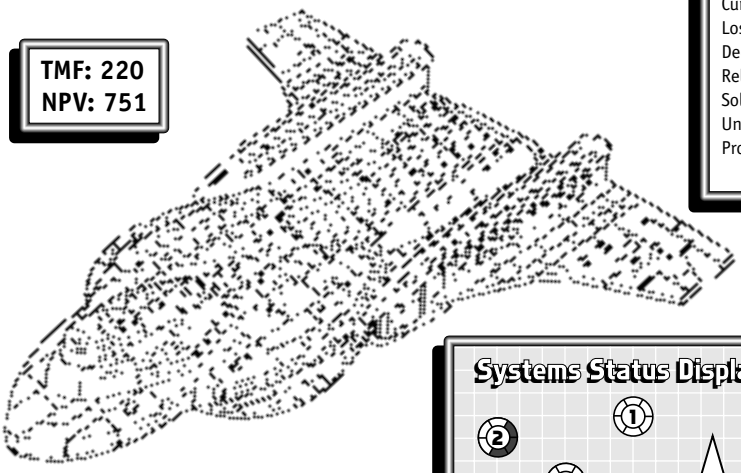
TECHNICAL SPECIFICATIONS:

Classification: Light Carrier
Displacement: 15000 Tonnes [MASS Factor 150]
Hull type: Average [Hull Integrity 45]
Crew: 24 officers, 126 ratings [Crew Factor 8] Plus Fighter pilots
Armament: 2 x Class 1, 4 x Class 2 batteries
Defences: 4 Point Defence Systems Level 1 Screens
Sensor suite: Standard sensors, 2 Fire-control systems
Drive systems: Main Drive rating 4, FTL (Jump) Drive.
Hangar bays: 4 bays each holding 6 Fighters

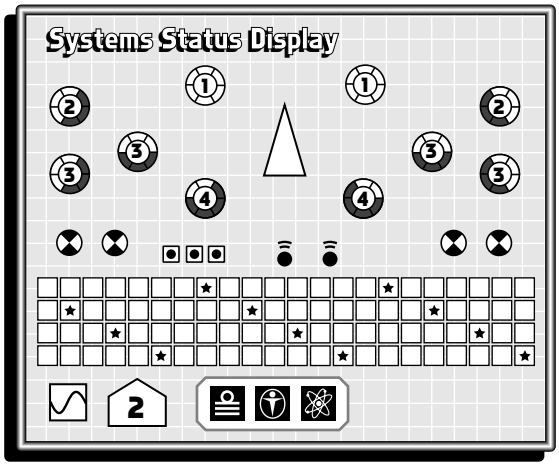
Komarov class SUPERDREADNOUGHT

The Komarovs are old ships nearing the end of their planned operational lives, but are still the mainstay of the ESU battleline. Heavy attrition factors and damage to industrial capacity during the years of the Third Solar War have delayed the introduction of new major fleet units to replace these ageing vessels, and yet another refit programme is planned for 2184 onwards to extend the service life of the Komarovs for a while longer. The Komarov is one of only a handful of warship classes to mount the very large Class-4 beam batteries, these and its extensive array of other beam weapons giving the ship a huge offensive punch. A strong hull and level-2 screens give a good level of protection against most weapons, but the ship carries only a single fighter group compared to the two of most other SDN classes.

TMF: 220
NPV: 751



SERVICE DETAILS:
First entered service: 2154
Currently in ESU service: 11
Lost in action: 5
Decommissioned/scrapped: 3
Relegated to reserve fleet: 2
Sold to other forces: Nil
Under construction: Nil
Procurement cost: 7510 MUcr.
(Plus fighter costs)



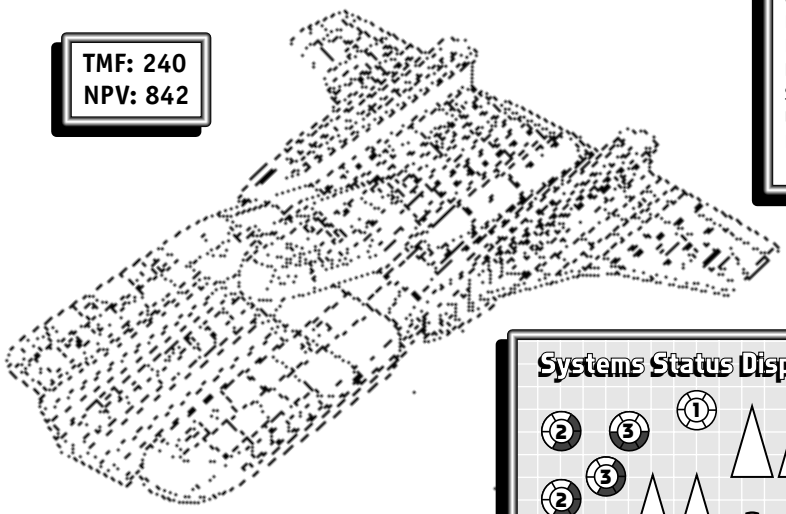
TECHNICAL SPECIFICATIONS:

Classification: Superdreadnought
Displacement: 22000 Tonnes [MASS Factor 220]
Hull type: Strong [Hull Integrity 88]
Crew: 35 officers, 185 ratings [Crew Factor 11] Plus Fighter pilots
Armament: 2 x Class 1, 2 x Class 2, 4 x Class 3, 2 x Class 4 batteries
Defences: 4 Point Defence Systems Level 2 Screens
Sensor suite: Standard sensors, 3 Fire-control systems
Drive systems: Main Drive rating 2, FTL (Jump) Drive.
Hangar bays: 1 bay holding 6 Fighters

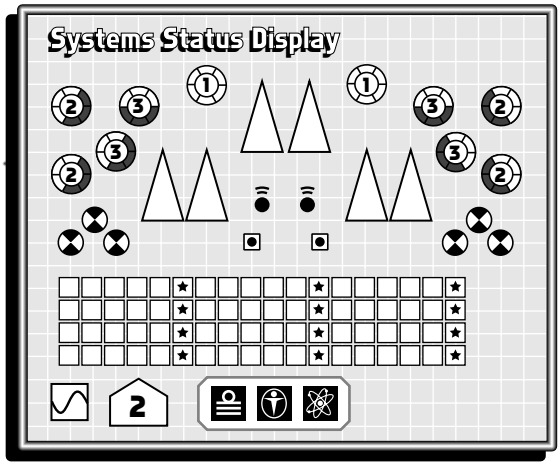
Konstantin class ATTACK CARRIER

The Konstantin CVA is a huge ship, and was the largest mass-produced warship class in service until the recent introduction of the FSE Jeanne D'Arc class carrier. Like the Komarov SDN from which its hull is derived, the Konstantin is now an old design, and its maintenance requirements are getting higher as the years pass - even the newest Konstantin hulls are now nearly twenty-five years old. The ships have been kept up to date with numerous minor refits and refurbishments throughout their service lives, and the Konstantins are still very effective units with a significant offensive fire capacity in addition to their fighter complements.

TMF: 240
NPV: 842



SERVICE DETAILS:
First entered service: 2156
Currently in ESU service: 12
Lost in action: 3
Decommissioned/scrapped: 5
Relegated to reserve fleet: 1
Sold to other forces: 1
Under construction: Nil
Procurement cost: 8420 MUcr.
(Plus fighter costs)



TECHNICAL SPECIFICATIONS:

Classification: Attack Carrier
Displacement: 24000 Tonnes [MASS Factor 240]
Hull type: Average [Hull Integrity 72]
Crew: 37 officers, 203 ratings [Crew Factor 12] Plus Fighter pilots
Armament: 2 x Class 1, 4 x Class 2, 4 x Class 3 batteries
Defences: 6 Point Defence Systems Level 2 Screens
Sensor suite: Standard sensors, 2 Fire-control systems
Drive systems: Main Drive rating 2, FTL (Jump) Drive.
Hangar bays: 6 bays each holding 6 Fighters

SHIP DATA PANELS

The preceding pages contain Ship Data Panels for the warships we have detailed in this volume. Most of the information contained in each panel should be self-explanatory, but a few notes may help.

SYSTEMS STATUS DISPLAY
This box, which is also referred to as the "Ship Diagram", is a graphic display of all the systems fitted to the ship. The icons used are explained earlier in this book. This panel should be photocopied to make up your own ship record charts for your games.

SERVICE DETAILS
This box contains a summary of the operational status and numbers of the ship class in service - it has no bearing on gameplay (unless you are doing a VERY big campaign game!), and is provided for background information only. The various figures in the box are defined as:

First entered service:
Year in which first hull of class was commissioned into Navy service.

Currently in service:
Number of ships of class (including refits and minor variants) in active duty list with nation's main fleet as of 2183.

Lost in action:
Number of ships of class posted as destroyed or missing in combat since introduction of class; this figure does not include vessels scrapped due to battle damage.

Decommissioned/scrapped:
Number of ships of class that have been decommissioned from service and/or broken up due to obsolescence or irreparable battle damage.

Relegated to reserve fleet:
Number of ships of class that have been taken out of frontline fleet duty and transferred to reserve forces - includes "mothballed" units and ships transferred to Training Commands or Colonial Defence Commands.

Sold to other forces:
Number of ships of class that have been sold, leased or otherwise transferred to other national navies or independent colonial forces; this figure includes hulls built specifically for export order as well as second-hand hulls.

Under construction:
Number of new or completely refitted hulls for naval service that are currently under construction at nation's shipyards as of 2183; this figure also includes any hulls of class currently being built commercially for navies of other nations.

Procurement cost:
The cost of construction of one ship of the class, adjusted to 2183 values - the amount is given in MUcr, or Millions of Universal Credits (the standard international exchange unit of currency).
[GAME NOTE: as you may have spotted, the Procurement Cost in MUcr is actually the ship's Nominal Points Value x 10.]

THE TMF/NPV BOX
There is a small box in each ship's Data Panel that gives "TMF" and "NPV" for the ship. These stand for (respectively): TOTAL MASS FACTOR and NOMINAL POINTS VALUE. The TMF is the MASS of the ship design, and the NPV is the Points Cost of the ship (excluding fighters and/or small craft costs in the case of ships with hangar facilities).

THE BACKGROUND INFORMATION BOX
This is a panel of notes and information on the ship class and its service history. Like the Service Details box, much of this is of background interest only, though for some classes there are mentions of certain common variants that can be used to generate further ship designs for the game.

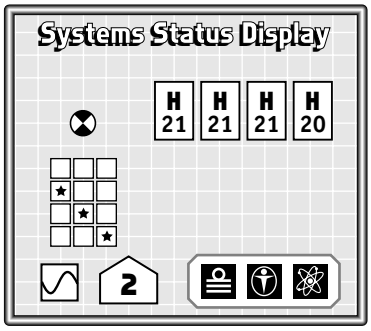
THE TECHNICAL SPECIFICATIONS BOX
This panel contains a written description of the systems fit of the ship class, listing all the items found on the Ship Diagram. Note that the "weapons" section only lists the number and class of each weapon, and not the arcs through which it may fire - that is indicated by the icons on the Ship Diagram. The Displacement figure is the total tonnage of the ship, which under the "official" background we take as 100 tonnes per MASS factor.

THE SHIP ILLUSTRATION
The line drawing of each ship is an illustration of the relevant miniature in the Full Thrust model starship range; the drawings are, of course, not to scale with each other! Note that we do occasionally redesign or modify items in the miniature ranges, and in a few cases the illustration may not be an exact representation of the model currently in production.

MERCHANT & SUPPORT VESSELS

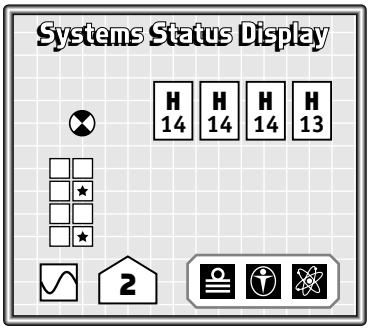
The ships on this page are a representative selection of generic Merchant and Civilian vessels suitable for convoy and commerce raiding scenarios, plus a couple of typical naval Fleet Auxiliary ships that may be used in support of your combat fleet units. Please note that, being of a generic nature, these designs do NOT specifically correspond to individual models in the Full Thrust starship miniature range, though the items in the "300" series miniatures line may be used to represent many of the ships shown here. All the ships on this page (including the Fleet Auxiliary and the Assault Transport) follow the MERCHANT rules regarding number of crew factors (and thus Damage Control Parties), in having one CF for every FIFTY Mass or part thereof.

HEAVY FREIGHTER — Mass 120 · 195 Points



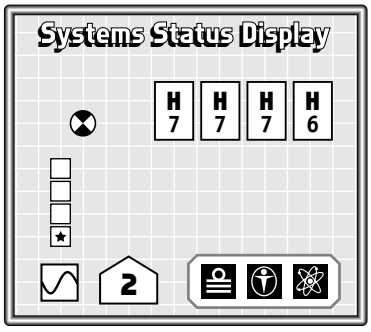
A representative example of the dozens of larger freighter classes that ply the spacelanes under the flags of many nations; such ships also serve in all star navies as replenishment and general transport ships, either as full-time naval auxiliaries or requisitioned from merchant service in times of need. The fitting of a single PDS system is typical of both those ships in naval service and of merchant craft operating outside the safety of the Core systems.

MEDIUM FREIGHTER — Mass 80 · 131 Points



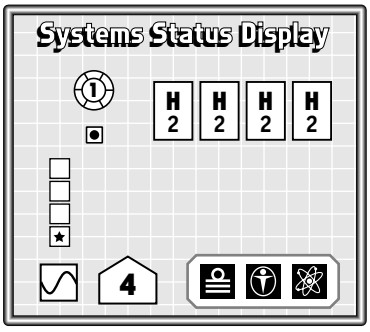
Another typical ship, this time a medium-sized merchant as used by many commercial shipping lines and naval forces. In common with most merchant shipping it has low-powered drives (at least compared with military vessels). The PDS battery would not normally be carried by merchant traffic between the major settled worlds, but is common for ships operating in more uncertain areas.

LIGHT FREIGHTER — Mass 40 · 67 Points



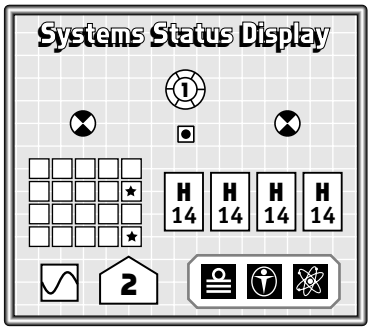
A small freight ship of a type commonly used by independent operators, as well as by major lines to cover marginal routes. It has a very fragile hull structure, and is certainly not intended to ever enter combat, reserving most of its mass for cargo space.

FREE TRADER — Mass 20 · 47 Points



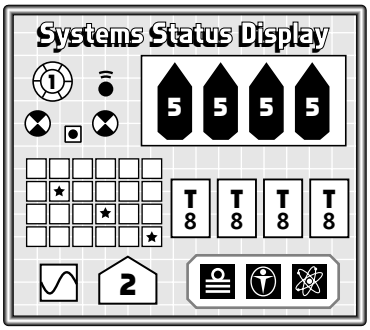
The Free Trader is a very small freighter that is usually operated by a single owner or small partnership. Such ships usually haul low-volume, high-value goods (sometimes of questionable legality) and compete with the major freight lines by offering a fast service with few questions asked. Most operators tread a very fine line between profit and loss, and are often found dodging both police/customs services and their own financiers.

FLEET AUXILIARY — Mass 100 · 193 Points



This kind of ship, typified by the NAC "Blue Ridge" class and the FSE "Durance" class, is a fleet support vessel used for carrying supplies of foodstuffs, ammunition and other expendables for warships during extended missions. While patrol ships will generally return to their base stations for replenishment, operational task forces will always have several Fleet Auxiliaries accompanying them for resupply.

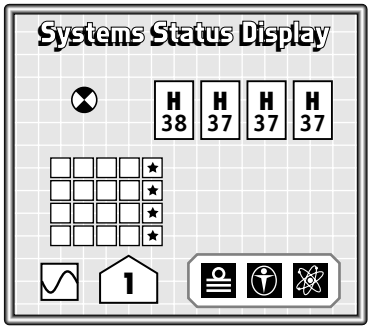
ASSAULT TRANSPORT — Mass 120 · 337* Points



This is a typical example of the Assault Transports used by all major fleets for the carrying and orbital insertion of ground troops to disputed planets; the ship is reasonably well protected and is designed to operate in hostile areas. Four assault dropships allow fast deployment of the troops and equipment carried. The actual specs here are for the NAC "Galahad" class ships, though others such as the ESU "Ropucha" class are very similar.

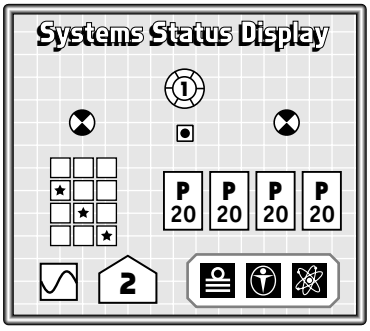
*337 + 40 points for Dropships = **377 total cost**

BULK CARRIER — Mass 200 · 303 Points



Basically nothing more than a huge tin can with a drive package at one end and a command module at the other, Bulk Carriers are used for slow hauling of large amounts of goods between star systems. They are not usually seen in naval service, but this example is sporting a PDS installation as a token defence in view of the ongoing war situation. Converted bulk carriers are often used as colony transports to ship settlers (in very basic conditions) to new worlds.

STARLINER — Mass 120 · 205 Points



A typical example of a luxury Star Liner used to carry the more wealthy travellers between settled worlds. The installed weapons and defences suite is of limited effect should the ship actually come under attack, but is there as much for the reassurance of the passengers as for actual use. Passage on a ship of this sort is expensive and luxurious, but they are also high-value targets for propaganda purposes and are usually heavily escorted in times of war.

THE BACKGROUND

The setting for the forces described in this book is, of course, the latter part of the Third Solar War from the "official" background timeline given in Full Thrust. The NAC, NSL, FSE and ESU are the four largest spacefaring human power blocs, and at the point that we have chosen in the timeline they have been at war with each other for eighteen years (the Third Solar War started in 2165 and has dragged on ever since).

The NAC and NSL are nominally "allied" with each other, as are the FSE and ESU, though individual territorial claims and disagreements through the years of the war have meant that even these allies have skirmished between themselves at certain times. The nature of communication and travel between star systems forces local commanders to take (and be allowed) a great deal of personal initiative rather than always waiting for direct orders from higher authority, which gives rise to some unusual confrontations and "misunderstandings" in disputed areas. Virtually all the human minor powers and nations are involved in the war as well, either supporting one or the other of the major "sides" or simply looking for opportunities to turn local situations to their own advantage.

The war has become one of stalemate and attrition, with forces skirmishing through dozens of star systems punctuated by the occasional burst of large-scale fleet operations as one side or the other attempts a major thrust to alter the balance of the situation. The navies (and other forces) of all the combatants have suffered heavy losses in the years of war, and their industrial capacities are struggling to replace the ships and other equipment lost in combat.

As the timeline reaches 2183, things are about to change radically as humanity discovers that it is NOT alone in the universe after all.....

LIFE ABOARD SHIP IN THE 2180s

"Space is REALLY, REALLY BIG - and really empty. This incomprehensible bigness and emptiness does strange things to the human mind. It is bad enough in-system, even though you can still see that one star is bigger than the rest and this gives you some tenuous link to those grubby little balls of dirt we call planets. Out in interstellar space, however, things get really empty. You spend a LOT of time out between the stars, in the Deep Cold, drifting along sub-light between Jumps while the ship and your body get ready for the next dislocation. Even if your ship is part of a fleet or convoy, you are probably half a light-year apart, and you won't see them again till you make the little corrective jumps at the end of the trip. Something in your mind keeps saying that if the Jump doesn't work then you'll just keep drifting, and maybe if you are really lucky then your mummified remains will get to see another star in a thousand years or so..... "

Service on a starship, whether Navy or merchant, is much like that on a 20th Century submarine - long periods of little to do except routine chores and drills, close proximity of other personnel, little privacy and absolutely nothing to see outside. It is accepted that crews need as much recreational opportunity as possible, and as such efforts are made in most forces to channel their energies into non-disruptive hobbies and interests while clamping down hard on alcohol abuse (certain amounts are quite legal while off-duty, as anti-intoxicant medication is freely available and very effective) and "recreational pharmaceuticals". Even the average lowly spacehand is generally well educated and technically adept, which at times can be a mixed blessing for the Petty Officers who maintain order "below decks".

Day-to-day life aboard ship is usually made as pleasant as possible for the crew, although cost and space limitations obviously affect this to a greater extent in some ship classes that others. Ships designed for long-range patrol duties and extended operations will often have better crew facilities that those that are intended for operations closer to main fleet bases. While it is generally accepted that a comfortable and happy crew is an efficient crew, differing national doctrines and attitudes affect the provision of crew facilities - NAC and FSE vessels are (in general) particularly well-appointed and their designers have devoted considerable effort to crew comfort and recreational facilities; those of the NSL are rather more utilitarian (though not unpleasant) while many of the ESU ships are positively spartan and cramped.

On most warships, the ratings will live in communal quarters, while Petty Officers and above will have individual staterooms, though on some ships junior and cadet officers may share wardroom quarters. The Captain will usually have a suite consisting of main (sleeping) cabin, day cabin (normally with direct access to Bridge and/or TacOps) and adjoining quarters for his/her personal steward.

Crew recreational facilities vary from ship to ship and nation to nation, but a well-outfitted vessel will have gymnasium facilities (both zero and one-gee), holovid theatre and various other rest and recreation areas. Food for both crew and officers is generally as good and varied as possible, using fresh produce from the ship's hydroponics systems to supplement frozen, dried and recycled ingredients. Even the smallest scoutships (sometimes with only three or four crew) are usually outfitted with conventional galley facilities, as prepacked or machine-dispensed rations on extended missions have long since been found to be extremely detrimental to crew morale.

Almost all major navies have both male and female personnel serving together, and the general breaking down of many taboos and prejudices among most societies over the preceding two centuries has removed a lot of the problems that would have arisen in earlier times. Crew of both sexes (and all orientations) share the same accommodations and facilities, and though "fraternisation" between crew members is not actually officially encouraged it is generally accepted provided it does not compromise ship operation or security - the official line in most forces takes the form of "we can't stop it, so we may as well regulate it". Attention of a personal nature, whether welcomed or not, that strays over the demarcation between officers and enlisted personnel IS still seen as a potential problem and is officially prohibited in most fleets.

GRAVITY AND GRAVITIC COMPENSATORS

While the principles of gravitic manipulation and artificial gravity have been understood and proven since the early 2080s, it was the beginning of the 2100s before gravitic equipment became viable on a commercial scale and practical for installation aboard spacecraft. Prior to this, the primitive starships and systemships in use were reliant on centrifuge sections for internal gravity, and were limited in their acceleration to the gee forces that their crews could withstand without injury. The first starship to be built with gravitic compensators as standard equipment was actually civilian, not military - the luxury star liner MSS Windsor, operated by Cunard-Westford Lines and launched in 2104. The first grav-equipped warships were the NAC RN's Dominator class Battleships, first commissioned in 2107. Once started, the changeover to gravitic-compensated ships was rapid in most navies as the older ships were no match for the new vessels that could out-accelerate them by a huge factor, but even so it was many years before the last of the old centrifuge ships were decommissioned - the RN Reserve still had a few of the 2090s-built Caledon class BCs on the semi-active list as late as 2150. There are still thought to be a handful of turn-of-the-Century ships operating in minor navies today, though most of these have likely been retrofitted with compensators by now.

Gravitic compensators allow ships to manoeuvre at the high gee rates necessary for combat situations without reducing the crew to red smears on the bulkheads, but though they are effective even the current fourth-generation gravitics are far from perfect - they cannot maintain an exact one-gee field perpendicular to the deckplates while the ship is being thrown through battle turns and trying to evade incoming missiles. Thus, moving around inside a ship under battle manoeuvring conditions is difficult and dangerous; the only personnel that will normally attempt it are damage-control parties, who are suited and armoured to withstand being thrown into bulkheads and fittings as the internal gee-field fluctuates.

Operations crew in vital areas such as the Bridge, TacOps, Engineering and Gunnery are cushioned in shock couches and protected by crash frames. All the crew, whether at combat stations or (in the case of personnel not required while in action) strapped down in their quarters, will experience some very strange and nauseating sensations as the compensators try their best to cancel the manoeuvre forces; to the human inner ear, the effects are like a high-speed elevator moving in several directions at once, or the worst fairground rides. Most personnel adapt to the situation fairly quickly, but some do not....

Out of combat, the compensators are used to effectively negate the much gentler gee effects of normal manoeuvring, while grav-generators in the deck plates provide an approximately one-gee environment for movement around much of the ship. There are still areas that are not provided with grav plates, sometimes deliberately but more often as a cost and power saving measure; such areas will include boat bays, cargo holds and some engineering spaces, as well as specific zero-gee recreation areas and similar.

Corridors and companionways linking zero-gee and one-gee parts of the ship are provided with "Gee-Locks", special zones of passageway (usually with doors at each end) along whose length the gravity gradient is steadily increased; this helps to prevent personnel suddenly discovering that the "ceiling" of the zero-gee space they've just come from has become the floor of the one-gee zone they are entering, with the consequent risk to health and of the amusement of other crew members.

[Game note: the Compensators and Grav Generators do NOT need to be purchased or installed separately during the ship design process; they are assumed to be an integral part of the Main Drive package.]

SHIP´S OPERATION:

Standard timekeeping on warships follows Earth-standard 24 hour days, divided into six 4-hour watches; First Watch is 0000-0400, Second from 0400-0800, then 0800-1200, 1200-1600, 1600-2000 and 2000-0000. Sixth Watch is designated the "Evening" watch, and First and Second the "Night" watches. The day-night pattern is enhanced by lowered illumination in non-essential areas during the night watches, unless under combat conditions.

Much of the ship's operation both in and out of combat is handled by pseudo-intelligent computer systems, but actual command remains in the hands of human officers. Experiments with allowing the computers to run the whole show, especially in battle, have generally resulted in utter destruction to BOTH forces. The capacity of a human Captain to work on instinct and to outguess his or her opponent is most often the deciding factor in an otherwise even match, and attempts to replicate this by using true AIs (Artificial Intelligences, truly self-aware computers rather than just close simulations of sentience) have universally ended in disaster. Much the same applies to the small "fighter" craft, which usually have a crew of between one and three depending on type; experiments with totally unmanned "drone" fighters have proven that, although cost-effective in some situations, they are no match for the instincts of a human pilot. Despite the high attrition rate of fighter crews in combat, there is never any shortage of willing recruits attracted by what they see as the glamour of being a fighter jock.

Warship crew complements are not all that large, as most ship functions require relatively little manpower (except when something goes wrong). A fair proportion of a ship's complement will be engineering crew for damage-control purposes, embarked Marines and ship's security troops, plus cooks, medical personnel and the like. To take a typical example, an NAC Victoria class Battleship has a full complement of 18 Officers (of which 8 are Line-of-Command officers, and the rest department specialists) and 102 Ratings. In addition the ship has accommodation for an embarked platoon-size Marine Combat Team who, when carried, will double as security personnel. Of the 102 ordinary crewmen and women, 24 are "operations" crew, 47 are assigned to engineering and DC functions while the remainder are general and supernumerary personnel (galley staff, sickbay orderlies, auxiliary craft crew, general deckhands etc.).

Under extreme circumstances, one command officer and a handful of operations staff and engineering personnel could theoretically fly and fight the ship, albeit with little capacity to respond to damage taken in battle.

Weapons fire direction is generally at the direct orders of the Captain from his combat station on the Bridge; in the case of his incapacitation it devolves to the First Officer in TacOps. Individual weapon "turrets" and defence installations on the hull are not "manned" as such, but are remotes controlled from the Gunnery command centre; commands from the Captain are relayed to Gunnery by the senior Tactical Officer's station on the bridge. The Tactical Operations compartment (TacOps) acts as a collection and collation point for sensor information and communications, which are then relayed to the Captain's station in a condensed and usable form; TacOps is fully equipped to take over as a reserve bridge and con the ship in the event of the main command bridge being disabled.

In the event of imminent destruction or disabling of the ship, the crew can abandon the vessel in a number of lifepods located around the hull structure - all crew stations have a lifepod bay within easy reach, and most ship designs provide enough for the entire complement plus additional redundant pods in case some are lost to hull damage. A typical pod is intended to hold between ten and twelve personnel, though up to twenty can be accommodated in extreme circumstances. Outfitted with life support and recycling systems, packaged emergency food and medical supplies, a basic sublight propulsion system and a very powerful homing beacon, a standard lifepod can keep its normal complement alive for approximately six weeks in reasonable conditions plus a maximum of another six weeks under steadily increasing discomfort and unpleasantness. Most lifepods are equipped with an ablative heatshield and parachutes for a controlled landing on any planet that they might be able to reach.

SHIP ALERT STATES

Alert States on NAC vessels (to take a typical example- most navies use something very similar) are:

WHITE (DOCKSIDE) - used when ship is tied up to an orbital facility - most of ship's systems powered down, and a skeleton watch crew maintained while the remainder of the complement are permitted shore leave. Average time to power up to Green status is three to four hours, not including time for the recall of off-ship crew members.

GREEN (STANDARD RUNNING) - general non-combat status used when vessel is travelling or in a patrol orbit. All systems functional, but weapons and active defences are under command lock. Standard rotation of duty watches for operations personnel, none are suited-up. Average time to move to Yellow One status is ten minutes.

YELLOW ONE (STANDBY ALERT) - semi-alert status, with essential Bridge and Engineering crew in open suits and modified watch rotation. Senior command officer (Captain, First or Second Officer) on Bridge at all times. All offensive and defensive systems powered-up, but still under command lock. Non-operations personnel on normal duties. Average time to move to Yellow Two status is ten minutes.

YELLOW TWO (GENERAL QUARTERS) - heightened alert: as Yellow One but all crew to combat stations in open suits. Average time to move to Red status is three minutes.

RED (BATTLE ALERT) - full combat alert status; all crew at combat stations, Bridge, TacOps, Gunnery and Engineering personnel in sealed suits and locked into crash frames, DC parties suited and on standby. Captain and Second Officer on Bridge, First Officer in TacOps. All weapons systems command locks removed, weapons held on Captain's voice command only. Internal gee-plates off, gravitic compensators and drive systems at full battle manoeuvring readiness. Generally, Red status can be held for around six hours at a time before serious degradation of crew efficiency through fatigue will become a problem.

BLUE (JUMP STATIONS) - a special alert state used only when securing the ship for Jumpspace transit. All internal gravity and non-essential systems (virtually everything except lifesupport, control systems and the Jump drive itself) are shut down, and all personnel are at their designated positions - usually in quarters for all except Engineering and Bridge crews. The Jump Stations call is normally sounded approximately thirty minutes before a planned Jump, but in an emergency a good crew can usually make it to Jump Stations within as little as ten minutes.

JUMPSPACE TRAVEL

Interstellar travel is performed in a series of short (in relative terms) "jumps" through a timeless quasi-reality generally called Jumpspace. Each jump (which is also variously referred to as a Shift, Shoot or Transit) moves the ship by anything from a few lightminutes to several lightyears*, depending on the energy put into the drive at the moment of jump and the proximity of the ship to gravitational influences - the deeper in a gravity well the ship is when the drive is engaged, the shorter the resulting jump. There is a definite limiting distance from any given gravity well that inhibits safe jumping within it - a ship must move to outside this limit before engaging the Jump Drive or risk serious mishap (at best a misjump or drive failure, at worst total destruction).

The actual jump is perceived by the ship's occupants as instantaneous, but leaves a deep subconscious memory of disturbing change in the fabric of reality - as though the recesses of the human mind can actually register the transition that the conscious levels cannot. This effect causes nausea and disorientation after the jump, which if untreated can last for as much as several hours in some cases; for this reason most Military crews use specialised drugs to minimise the aftereffects and ensure that the ship is combat-ready as fast as possible after jump emergence, especially if several jumps need to be made in relatively quick succession. Civilian vessels and those on less pressing schedules will spread out the jumps to perhaps one every couple of days, and most personnel and passengers will undergo jump asleep in their cabins with just a skeleton bridge crew overseeing the automatics conning the jump.

The fastest cycle possible is around one jump per six hours, but this requires military drives and power plants along with the most sophisticated jump navigation software and tremendous crew stamina, even with chemical assistance. On average, naval vessels on most missions will make no more than one jump per day.

The longer the jump, the greater the potential inaccuracy in both the distance travelled and the final emergence point. For this reason, most interstellar journeys begin with a couple of short jumps (necessary to fully clear the gravity well of the starting starsystem) followed by a number of longer transits to bring the ship within a few lightdays of the destination system. The vessel will then make a number of successively shorter jumps, each of increasing accuracy, to place it as near as possible to its eventual target. The final approach, under Normal Space propulsion, can then take anything from a few hours to several days depending on the accuracy of the last jump insystem and how fine the jump navigator dares to cut the gravitational limit.

When moving a fleet of ships together, the potential errors in the long mid-course jumps mean that it is highly unlikely that all the fleet will remain together throughout the journey - in fact at most of the between-jump periods each ship will be completely isolated from the rest by huge distances. For precise military operations, therefore, it is normal practice for the fleet to re-assemble well out of the target system and then proceed insystem in a succession of much shorter than normal jumps in order to maintain some semblance of cohesive formation.

** The longest verified controlled jump (i.e.: excluding random misjumps) to date was in 2177, when the NAC experimental fast courier RNS Hyacinth attained a realspace displacement of 7.328 light years in a single Jumpspace transit. The ship and its crew of five were unfortunately lost in an apparent misjump when attempting to beat this record in the following year.*

J MINUS 30 *says the readout on the main bridge screen.*

The bridge is at zero-gee, and everything on the ship is powered down except the Jump drives and minimal life-support. The ship status board is lit blue, showing Jump Stations - around me, the bridge crew are suited-up and strapped into their crash frames. The Nav systems have orientated the axis of the Jump field with our plotted destination, with millimetric precision. I settle myself deeper into the soft cushioning of the command chair and try to get my racing heartbeat under control. Breathe, breathe, slow and even... God, how I hate Jump.....

J MINUS 20

The ship says "Captain, please authorise final manual interlock release"; I move my index finger to touch three holokeys in sequence. The ship says "Thank you, Sir; all systems transferring to Jump computers, I am now going offline." and the main bridge screen reads "Manual interlock released - main Jump sequencer online; all stations reading go, all prejump checks nominal, final countdown initiating", then flicks back to the dwindling count. Everything is on automatics now - dumb computers that will decide if we jump or abort. The ship's main pseudo-sentient "brain" is even more at risk from the strangeness of Jump than we humans are, so it shuts itself down for the transit and then reboots on the other side. From this point, we're all just along for the ride.

J MINUS 10

I can feel the Jump Drugs that I swallowed a few minutes ago starting to take hold of my system. They don't make the transit itself any easier, but they are supposed to pull you out of the bad effects quicker on the other side. Sometimes I wonder if they do anything at all, or if they are just a sugar pill that the medics TELL us will help..... We don't belong in Jumpspace, and it doesn't like having bits of our reality shoved into it. The Jump field will pull us in, through the interface that I don't think even the scientists understand, and we'll be squeezed along between two realities like an orange pip between your fingers. The amount of energy we have pumped into the field will determine - at least roughly - how far we "travel" before Jumpspace throws us out again. That's the theory anyway - it's just that sometimes Jumpspace will chew you around a bit before it spits you out.....

J MINUS 5

The bridge fills with an electric haze; my skin prickles, and I feel the Jump fields surging through the ship - she groans and squirms like a live thing. Gripping the armrests too tightly - relax, let go. Fleeting images, as always - crazy thoughts of the old spacers' horror tales, of those who came through Jump without their minds, their souls lost to the Deep Cold.... Our Father, Who Art In.....

J ZERO

Jump sucks us in.....

Going nowhere and everywhere, very, very fast.

No time, no space.

A non-moment that lasts for eternity.

And spits us out.....

J ZERO

...Heaven, hallow'd be Thy....Out, out, down again.....

Disorientation, then gradual realisation. My mind works, my memory is still there, please don't let me throw up.....

The drugs seem to be kicking in, dragging me back - no, GO AWAY, I want to sleep.....

J PLUS 20

My eyes are focusing, can just make out the main screen: "Jump sequence terminated. Initial positioning scans indicate navigational accuracy 94.45%. Initiating postjump diagnostics and staged shutdown of drive units, returning command to realspace systems". The ship's brain wakes from its short sleep: "Main cortex reboot successful; Personality reconstruct at 25%...50%....75%...completed. Projected recharge cycle time for next Jump: 5 hours 48 minutes. Hello, Sir, it's nice to be back."

J PLUS 60

Starting to really wake up now, slowly clearing my mind. The older I get the worse it seems, some of these kids on the bridge are up and about already! I've lost count of the Jumps I've made, but it's still as bad as the first time. Less than six hours before the next one, I need some coffee.....

INTRODUCTION TO JUMP THEORY

From a lecture presented at Down University, Albion, by Dr. James Alvarez, Capt. NAVFLT SCI (Retd.), June 2179.

"Jumpspace, Hyperspace, Subspace - whatever you call it, it doesn't like bits of our reality being shoved into it. Push a ship in, and Jumpspace will spit it out again - the good bit is that it will spit you out somewhere else (hopefully round about where you want to be, if you've done your math right), and all in zero elapsed time! Of course, every now and then it'll chew you around a bit before spitting you out, but we try not to think about that too much....

The human mind doesn't like Jumpspace any more than the space likes us; we can take it, especially with the right drugs to help, though most of the time it's pretty unpleasant unless you're well asleep - a few people claim to even enjoy it, but then some enjoy some pretty weird things anyway. If you're unlucky (and whatever the shipping lines or Navy recruiting tell you, every now and then someone is) then you stand a small chance of coming out thinking you're Napoleon, that's if you can think at all.

Some people think that they feel time passing while they are transiting Jumpspace, but we generally put this down to their own imaginations after the event - no-one has ever managed to record a measurable time interval between Jump entry and exit. I met an old spacer once who claimed he had actually SEEN the inside of Jumpspace, but this WAS after nine hellburners in the Chrome Angel over on Farren.....

Let's get one thing clear at the outset - we don't really KNOW how Jump operates. We've been using it for over a century and even our top physicists and their AIs can't figure out what is actually going on. However, just because we don't understand it doesn't stop us using it, just like your parents programming the holovid recorder.....

What we do know is that the state of Jump is inherently unstable - we think it is actually an interface between two different types of space, ours and something else. Just what is on the other side of Jumpspace we have no idea, but we assume that is where ships end up if they misjump really badly - they fall "through" the other side of the Jumpspace interface and come out somewhere that has no connection with our reality. Since no-one has yet come back to tell us what is there, we are a bit in the dark on this one!

On a proper controlled Jump, the drive field creates a temporary access to Jumpspace that we can push the ship through; the ship then slides along the interface until it drops back into our reality again. We know how to do this so we can predict roughly where we will pop out, with an error probability that is about proportional to the distance we are trying to jump- basically, the more energy you pump into the drive field relative to your ship mass the further (in realspace terms) you go before Jumpspace gets pissed off with you and chucks you out, and fortunately it all happens in a straight line, so you can aim at your target point before jumping. Of course, that means you have to know exactly where your target point really is at that moment, which is why you people are going to spend the next three years studying Jump navigation!

Maybe someday we'll meet someone out there who has actually figured it all out, and if we ask them very nicely then they might just explain it to us....."

SHIP RECORD CHARTS

The new-style SHIP RECORD CHART is printed on P.47 of this book; it is an updated version of the one given in the basic FT rulebook, with Ship Diagram blanks to suit the new design system. Feel free to copy this chart and cut-and-paste the diagrams around to suit your own forces. To prepare a ship record chart for any of the fleets listed in this volume we recommend photocopying the Ship Diagrams (System Status Displays) from the Data Panels of the ships you want to use, and arranging them suitably on a sheet of paper along with the "order panel" from the bottom of the record chart blank, then re-copying the result. Sorry we couldn't provide ready-made sheets for each different fleet, but for one thing they would almost never match any one person's miniature force and for another they would take up half the book!

While on the subject of copy-and-cut-out bits, we have also provided a few counter masters for Missile Salvoes (the counters with little missile icons on them - there are ones with from 1 to 6 missiles, which can if desired be used to indicate how many missiles are left in a salvo after each stage of defensive fire if you can't remember it!), for Fighter Group recording (endurance remaining and number left in group) and for Course Markers for the vector movement system (the counters with a single bold arrow). Feel free to copy as many of these as you like (for personal use only please) - we recommend copying them onto coloured card if possible.

FINAL COMMENTS

We hope that you will find this book useful for your games of FULL THRUST, whether or not you actually use the background provided.

There a quite a few changes in this volume to the original FT system, though as we've already mentioned not many of them really affect the gameplay much - most are on the design side, something that many players may happily ignore if they wish to use only pregenerated ship designs.

So, why make any changes at all to such a successful system?

Well, quite simply we thought it was about time for a revamp. FULL THRUST (firstly the little A5 photocopied edition, then the glossy "2nd edition" that most of you will know) was written quite a while ago, and frankly we never expected it to be the phenomenal success that it has become, with thousands of buyers and players in all corners of the world. FT has won the "Best SF Miniatures Rules" award from the SFSFW (Society of Fantasy and Science-Fiction Wargamers) for every year since the inception of the Society (just before going to press we heard that it has won the 1998 ballot as well!), and in 1995 got to the nominations stage (no mean feat in itself) of the ORIGINS awards!

Through all this, however, it has always been apparent that there are a number of flaws and loopholes in the system - this was never a problem while it was just being played by a few friends locally, but now it has a much wider audience some of these discrepancies are causing endless debates and disputes between players. Thankfully most of you settle things amicably with a house-rule tweak or two, which is exactly the way we like to see things done; a few of the real "rules lawyers", however, seem to enjoy endlessly prolonging the debates as well as trying to twist and exploit every loophole to their best advantage.

We addressed a few of the more obvious problems when we published the MORE THRUST supplement book, but at best all we did was give suggestions to patch the holes with duct tape and baling wire; at that stage we did not want to make major revisions to key rules and systems. Now, however, we felt that a proper rework was justified. As the biggest problems were in the design system, this was the main target for the updating - after fiddling with it for a good while we decide to simply go for a ground-up reworking that kept all the essentials of the old system but presented a more logical and "seamless" mechanism. The "minimaxers" will probably still find SOMETHING to exploit, but at least it stops them getting bored and lets the rest of us get on with playing games and having fun...!

Revising any game with the popular following that FT has is a tricky and risky business. No matter how it turns out, you will ALWAYS get a section of players who say "oh, it isn't as good as second edition, why didn't they leave it alone..."

Well, to those people we say "If you don't like the new rules, stick with the old ones!" We're not going to do like certain companies and excommunicate you for ever if you are not using the latest "official" rules. We've done our best to ensure that the modified FT is every bit as good as the original, and hopefully lots better still - none of the changes are being made for the sake of change alone; they are all to tighten up the system, plug a few holes and make the game (we sincerely hope) even more fun to play.

Our intention is that there will be a full new edition of the rules, FULL THRUST THIRD EDITION, at some point in the near(ish) future, which will collect together all the new rules published here plus a lot more as well. There are many things that we haven't covered at all in this volume due to lack of both space and time, that we will be including in the new edition rulebook. It'll be out as and when time and workload permits, so please don't pester us too much for it - we'll advertise it in good time when it is ready!

We have tried as far as possible to ensure that this book you are now reading is compatible with both the existing 2nd Edition FT and with the new version when it comes out. We always welcome feedback on the rules, and player input has helped a great deal in shaping the game so far - please feel free to send us your comments (we will reply if and when possible, provided an SSAE or a couple of IRCs are enclosed, but please understand that we are still a very small business and often things are simply too busy for us to respond to everything).

Have fun, and above all: DON'T PLAY THE RULES, PLAY THE GAME!

Jon Tuffley, GROUND ZERO GAMES, April 1998.

VECTOR MARKERS		MISSILE SALVO MARKERS					FIGHTER GROUP MARKERS				COMBAT ENDURANCE MARKERS			
		6	6	6	6	6	6	6	6	6	CEF REMAINING 6	CEF REMAINING 6	CEF REMAINING 6	CEF REMAINING 6
		5	5	5	5	5	5	5	5	5	CEF REMAINING 5	CEF REMAINING 5	CEF REMAINING 5	CEF REMAINING 5
		4	4	4	4	4	4	4	4	4	CEF REMAINING 4	CEF REMAINING 4	CEF REMAINING 4	CEF REMAINING 4
		3	3	3	3	3	3	3	3	3	CEF REMAINING 3	CEF REMAINING 3	CEF REMAINING 3	CEF REMAINING 3
		2	2	2	2	2	2	2	2	2	CEF REMAINING 2	CEF REMAINING 2	CEF REMAINING 2	CEF REMAINING 2
		1	1	1	1	1	1	1	1	1	CEF REMAINING 1	CEF REMAINING 1	CEF REMAINING 1	CEF REMAINING 1

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ID: Name:

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ID: Name:

Ship ID	Turn 1	V	Turn 2	V	Turn 3	V	Turn 4	V	Turn 5	V	Turn 6	V	Turn 7	V	Turn 8	V	Turn 9	V	Turn 10	V

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FULL THRUST STARSHIP MINIATURES

The FULL THRUST Starship Miniatures line now includes over 130 different models. The range, originally manufactured by CMD, is now owned and produced by GZG, and we are steadily expanding the line with new items. For sales in the UK, Europe and the rest of the world (excepting N. and S. America and Australasia), please contact GZG at the address given below for ordering and latest release information. Customers from USA, Canada or S. America should contact Geo-Hex (address below) who produce the range under licence for the American market; customers in Australasia should contact Eureka Miniatures, who are our licensee for that region.

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The following list gives details and prices for UK availability of the FT miniature range, correct at time of going to press (April 1998). Prices/pack sizes etc. of miniatures from overseas licensees will differ - please contact them directly for prices and information.

Postage & packing on UK orders: 10% of order value, MINIMUM 75p, maximum £6.00. All cheques payable to GROUND ZERO GAMES.

Please note that all UK miniatures (EXCEPT fighter and small craft packs) include PLASTIC STANDS for the ships; the US-produced examples from Geo-Hex include cast metal stands.

NEW ANGLIAN CONFEDERATION (NAC):

FT101A	Firestorm II class FIGHTERS (pack of 6)	£0.95
FT121	Phantom class HEAVY FIGHTERS (pack of 6)	£0.95
FT102A	Harrison class SCOUTSHIPS (pack of 3)	£1.25
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IMPORTANT: WHEN ORDERING PACKS, REMEMBER TO SPECIFY WHICH FLEET (OR FLEETS) YOU WANT - eg: NAC, ESU, KV, NSL, FSE etc.

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FTPAK 3 BATTLE SQUADRON: contains 1 Battleship, 1 Battlecruiser, escort craft group plus stands **ONLY £15.00**

CONTENTS

"Still tracking the Kraks inbound towards the station, Sir, we have confirmed ID on one Kickback, one Kingpin, two Kylies plus five Kerfs in escort pattern - looks like a carrier strikegroup backed up by an SDN.... what the f....er, hold one please..... more jump exit signatures, Captain! Probable Sa'vasku waveforms...."

"Identification, Scan One?"

"Coming up, Sir..... scan patterns processing..... got them! Confirm Spikeys, two capital units and at least six smaller. OK, by mass readings we've got 90% probability on one Sandcrab and one Smudger, the other stuff may take a while to firm up but they're looking like a pair of Spankers and a number of escorts...."

"Thank you, Scan One - keep on them and give me any more data as you have it. Guns, I want a cold track on the Spikeys, but no going active until they make a move - we don't know whose side they'll be on this time, and I sure as hell don't want to push them...."

[Excerpt from bridge recorder transcript, RNS Lancaster, leading 43rd Operational Squadron in defence of Research Station Kantauris Delta 3, 2191.]

CONTENTS

Introduction	2
Basic Ship Design	3
Game Balance	3
Combining Technologies	3
Vector Movement Amendments	3
Fighter Rules	4
Core Systems	4
Turn Sequence Summary	5
Ship Data Panels	6
Ship Record Charts	6
Counters	6
Xeno File 1: The Kra'Vak	7
Kra'Vak Ship Design System	9
Kra'Vak Systems Summary	11
Kra'Vak Ship Designs	12
Kra'vak Ship Record Chart	20
Xeno File 2: The Sa'Vasku	21
Sa'Vasku Ship Design System	21
Sa'Vasku Systems Summary	25
Sa'Vasku Ship Designs	26
Sa'Vasku Ship Record Chart	33
Xeno File 3: The Phalons	34
Phalon Ship Design System	35
Phalon Ship Designs	38
Phalon Systems Summary	45
Phalon Ship Record Chart	46
Background Timeline	47
Full Thrust Starship Miniatures List	48

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INTRODUCTION

INTRODUCTION

When we published Fleet Book Volume 1 in 1998, we promised there would be a second book to cover the alien races in the Full Thrust universe; well, after two years, here it is!

This book contains full rules, design systems and pre-designed ship stats for three different alien races - the Kra'Vak, the Sa'Vasku and the Phalons. Those of you who have a copy of MORE THRUST, the first supplement for Full Thrust that we produced, will recall that early versions of the rules and backgrounds for the Kra'Vak and the Sa'Vasku were originally published in that supplement. At the time, the "MT" version Kra'Vak were actually very over-powered for their points value, which led to unbalanced games, and the MT Sa'Vasku rules were only ever intended as some experimental suggestions for players to try out.

For Fleet Book 2, we have revised and rewritten both the Kra'Vak and the Sa'Vasku rules, and have added the Phalons (who never appeared in MT) as a third protagonist.

The Kra'Vak rules in this volume are not unlike the original MT version; players of the old rules will note some cosmetic changes, such as renaming the original K'V "railguns" as "K-guns" (mainly so that we can possibly introduce a "railgun" system as another Human weapon in due course...), but the overall feel of the Kra'Vak ships and tactics will be very similar to the originals. This time, however, we think we've got the points system right so games will be more balanced!

For the Sa'Vasku, the rewrite has been much more extensive. They are still probably the most complex race to actually play in the game, but we have removed some of the more time-consuming aspects of the MT versions (particularly the original random power generation ability, which although it added a lot to the unpredictability of the race - both to its player and opponent - was very lengthy to use) and streamlined the S'V rules while adding a lot more twists and options to their ships.

The Phalons are altogether new to the FT system, and appear for the first time in this volume. We wanted to add a race that looked totally alien, but acted in a way that humanity could relate to; the Phalons' weapons and systems are different from the humans' in many ways, but alike in others, and of the three alien races they are probably the most easily understood by mankind. Phalon ships are very powerful in play, a fact balanced by their high points values, and their willingness to fight (or indeed ally with) anyone if it is in their own interest should lead to many fascinating game permutations.

This volume is not necessarily the end of the alien races for Full Thrust; even while writing it, ideas have been bubbling to the surface for races, systems and ships that we could not include here, and there is almost endless scope for more material, human and alien.

Now you've got this book, you can start pestering us for Volume 3.....

Jon Tuffley, GZG, March 2000.

CREDITS AND THANKS

Thanks to all the members, active and lurking, of the GZG email list, especially to those who have contributed ideas via the list which we have adapted for use in this volume. I can't name everyone personally, and in many cases I don't even know exactly who originated what (especially after the ideas have been chewed around by the list membership for a while!), but all the input has been invaluable in shaping not only this book but other stuff yet to come.... keep it up, chaps.

Special thanks must go to all the stalwart members of the on-line playtest group, with especially honourable mentions for sheer volume of response to Oerjan Ohlson (number-cruncher and design-checker extraordinaire!), Mark "Indy" Kochte, Alan Brain, Tom McCarthy, and of course Beth Fulton (for playtesting work above and beyond the call of duty, when I'm sure she had much more important things to do!).

Of course, this book wouldn't exist if it wasn't for all the keen Full Thrust players out there who keep buying the stuff we make, so my thanks also goes out to everyone who is reading this for your support past, present and (hopefully) future - you keep playing it, and I'll keep writing it!

AN IMPORTANT NOTE ON MEASUREMENTS

Reading through this book, you will notice that we have given all measurements, ranges and distances in the rules in terms of "MU". This stands for Measurement Units, and we have decided to adopt this to replace the old method of giving all distances in inches. Basically, 1 mu can be any distance you want it to be according to the size of playing area you have, the size of models you are using, and simply personal preference. For general play, we assume that most people will use 1 mu = 1 inch (or approx. 25mm in metric), but it is just as valid to have a scale of 1 mu = 1 centimetre if you are playing on a small tabletop (or if you want a game with very high speeds and lots of manoeuvring room on your normal size of table). If you have a huge area available to play on, then feel free to use any other conversion rate you like - 1 mu = 100mm, or 6 inches, or even more!

NOTES FOR READERS WHO DO NOT HAVE FLEET BOOK 1

Fleet Book Volume 1 (Warships of the Major Powers, 2183), the companion book to this volume, contains a number of new, expanded and revised rules for Full Thrust - including a completely new ship design sequence that replaces the one in the Full Thrust 2nd Edition rulebook. The design sequences for the three alien fleets in this volume are all based on that new system, with appropriate modifications for the specifics of each alien race.

Although it will be a great help, it is not strictly necessary to have Fleet Book 1 in order to use and enjoy this volume; if you only have access to the basic FT 2nd edition book, then the following notes will help you to make use of the ships and rules given in this book:

1) FIRE ARCS: One of the most fundamental changes introduced in Fleet Book 1 was the move to 6 fire arcs of 60 degrees each, replacing the original four 90-degree arcs of FT 2nd edition. The arcs are now referred to as FORE (F), FORE PORT (FP), FORE STARBOARD (FS), AFT PORT (AP), AFT STARBOARD (AS) and AFT (A). A weapon bearing through the frontal 180 degrees of the ship would be denoted as a 3-arc (FP/F/FS) system. This change gives greater variety of possible arcs, and makes arc judgement much easier using the standard hexagonal bases that most starship models are supplied with. All ships in this volume use the 6-arc method, but if you wish to use the original ships from FT 2nd edition then we suggest you retain the old 4-arc system for those designs.

2) VECTOR MOVEMENT: Fleet Book 1 introduced a new (optional) system of realistic vector movement, which players could choose to use if they wished in place of the standard FT movement system (which is now termed CINEMATIC movement, as it is more in keeping with the highly unrealistic way that ships are seen to move in most SF movies!).

Each of the alien races in this book has rules given for both vector and cinematic movement, so if you do not have access to a copy of Fleet Book 1 then simply ignore all references to vector movement and use the standard cinematic system.

3) SHIP MASS AND POINTS VALUES: The new design system in Fleet Book 1 had the effect of raising the total MASS ratings of ship classes by a large factor (double or more, in most cases), but the actual POINTS VALUES remained approximately the same, so you can use the points costs as a rough guide to comparing ships between the different books - a typical Destroyer from Fleet Book 1 may have a MASS twice that of one from the original FT 2nd edition designs, but both will have a value of around 100 points or so. The same applies to the ship designs in this volume - they should be approximately equivalent in terms of points cost to those in FT 2nd edition.

4) REROLLS: This rule was introduced in Fleet Book 1, and is used in this volume as well: if certain weapon systems roll a 6 for damage effect, they can get to reroll to see if they inflict further damage as well as that scored by the initial 6 - in most cases, any damage scored by the reroll will be taken as "penetrative" damage, done inside screens and/or armour. Those weapons capable of reroll damage are explained in the relevant rules sections of this volume.

5) AMENDED FIGHTER RULES: Fleet Book 1 includes quite a large number of changes to the original 2nd edition fighter rules; the most important ones are the introduction of secondary fighter moves, and modifications to the endurance rules first published in More Thrust.

Fighter groups now have 6 Combat Endurance Factors, or CEFs, which they use up whenever they engage in combat (anti-ship or anti-fighter). Once they are out of CEFs, they may no longer make attacks and must return to their carrier.

Fighter movement is increased to 24 mu for standard fighters, and 36 mu for "fast" fighters. In addition, groups may make a "secondary move" of 12 mu after ship movement takes place, if they have any Combat Endurance Factors left - a secondary move uses up one CEF.

The Fighter Group Morale rules originally introduced in More Thrust are now recommended as standard rules, requiring a group to roll less than or equal to the number of remaining fighters in the group in order to make an attack pass on an enemy ship.

There are numerous other new ideas and rules in Fleet Book 1, but the summaries above are the most important if you are jumping straight from the FT 2nd Edition rulebook to this volume.

BASIC SHIP DESIGN: RULES CHANGE

This affects ALL ship designs, human and alien; it is actually not really a change, so much as the lifting of an artificial restriction, and as such does not affect or invalidate any of the designs published in Fleet Book 1.

The change is simply to remove the fixed percentage limits on HULL INTEGRITY; instead of having to be bought in 10% increments, ship designs may now have as many or as few Hull boxes as the designer wishes, subject only to a lower limit of a minimum of 10% of the total ship mass. The actual number of hull boxes chosen does not have to exactly equal any given percentage of the ship's total mass.

Each Hull Integrity box still takes 1 MASS, and costs 2 points. The terms used to describe the hull types in FB1 (Fragile, Weak, Average etc.) may still be used to roughly describe the kind of structure a ship has, but they no longer refer to fixed percentage figures - they now indicate a range of possible hull strengths (chosen so that the FB1 designs fall about halfway into each range), so that a Fragile hull would be from the minimum 10% to about 14% of total mass, a Weak hull from approximately 15% to 24%, Average from 25% to 34%, Strong from 35% to 44% and a Super hull would be anything above 45%. These classifications are approximate, are for descriptive convenience only, and have no bearing on game play whatsoever.

FIDDLING ABOUT TILL IT ALL FITS.....

Under the design system given in Fleet Book 1, with hull integrity strictly in 10% increments, if you couldn't squeeze all the systems you wanted into the MASS you had available then you were faced with recalculating the ship from scratch, and maybe even changing its overall mass to accommodate things. However, with the revised rule explained above, it is now a lot easier: if you decide that you REALLY need another fire control system, or another weapon battery or whatever, and do not have enough MASS left over to fit it in, then the new ability of being able to buy hull boxes in any quantity becomes very useful - you can go back to stage 2 of the design process and simply drop a couple of hull boxes to free up the extra mass you need, without affecting any of the rest of the ship design. Similarly, if you get to the end of the systems fitting-out stage and find you've got a few spare mass left over, you have the choice of putting in another system or else going back and adding an extra hull box or two. Of course, you have to remember to alter the layout of the damage track and change the points value spent on hull integrity, but unlike the old design system you don't have to start recalculating the whole design from scratch.

GAME BALANCE

Throughout the design process of the rules for the three alien powers in this book, great emphasis has been placed on trying to get the points values as balanced as possible between the different fleets, so that 1000 points of (say) Kra'Vak ships will theoretically be a fair match against 1000 points of Phalons, Sa'vasku or indeed any of the human fleets from Fleet Book 1.

Now, as they say, all things are relative (and all relatives are things....), and there will be cases in which the points system won't give a perfect balance, but it should be close enough for all normal game purposes. If you really want to spend hours and hours with spreadsheets and simulations, trying to find that little loophole that will give you that extra 0.5% edge over your opponents, then be our guest - it'll keep you out of the way of the people who just want to get on and play the game to have fun....

One thing that should be pointed out is that while the points values are as accurate as we could make them, the size classes of the ships are very approximate and can be misleading if taken in isolation. Some of the alien ships (the Phalons, in particular) are actually much more powerful on a ship-for-ship basis than the human designs, but to balance this their points cost is proportionally higher - this should be taken into account when setting up games and designing scenarios.

To take an example, in a small human (NSL) vs. Phalon battle, the players may choose forces up to approximately 750 points. The NSL player might have two Waldburg Destroyers, a Radetzky Escort Cruiser and a Richthofen Battlecruiser (all designs from Fleet Book 1), for a total of 746 points. The Phalon player might choose a Ptath Battleship, two Phuun Frigates and a Vlath Battle Scout for a total of 751 points. The NSL player might look (from the class descriptions) to have a far superior force, but the combat potential of the two fleets should actually be very similar.

COMBINING DIFFERENT ALIEN TECHNOLOGIES

As soon as some players get their grubby little mitts on this book, they will start wanting to design ships based on a mixture of some or all the different races' weapons and systems.

Now, there is nothing inherently wrong in this, but please be aware that we have gone to great lengths to try and ensure that all the alien races presented here have a different feel from each other in game terms - they are not just "rubber suit aliens", with the same ships and the same weapons using different names. If you start to mix-and-match the technologies in a search for the ubership (which, if we've done the balancing right, you SHOULDN'T be able to find - not that that will stop you looking....) then all the fleets will start to look the same and a lot of the flavour of the game will be lost.

The simplest way round this is to just say "sorry, you can't do it" and back this up with some PSB about the radical differences between the various races' approach to their technologies making them totally incompatible. Rather than do this, however, we accept that it'll happen and thus need to lay down a few guidelines for those people who just can't resist it.

We have one VERY strong recommendation: NO MIXED-TECHNOLOGY SHIPS SHOULD BE USED IN ANY KIND OF COMPETITIVE OR TOURNAMENT GAME.

We would also suggest that mixed-tech designs should not be used when playing with people new to the game, or who are not part of your regular gaming group.

If you wish to discourage use of mixed tech without actually forbidding it, you may wish to consider a house-rule of applying a penalty increase to mass and/or points cost for any system or technology copied from another race.

If after all this your group of players wish (and agree) to try using mixed-tech in their designs, then by all means give it a go - you've paid us the money, and it's your game now!

[As far as our published "canon" universe background is concerned, mixed-tech ships do not appear in any forces within the time period of the First Xeno War; though each of the protagonists (except the Sa'Vasku, who consider themselves above all this innovation stuff...) will undoubtedly be devoting a good deal of time and resources to investigating the other races' technology from salvaged debris and captured or disabled ships, the problems of duplicating it with a completely different technological base are too great to be surmounted during the war years - we're not talking here about, for instance, the FSE stealing plans for something from the NSL and building a copy, we're talking about trying to integrate two or more totally alien forms of technology and materials. All the protagonists feel that it is much better to spend the shipbuilding resources they have on a dozen more warships of their own proven designs than to waste the same amount on one weird and experimental hybrid that may or may not work at all, and if it does may not be a lot better than what they've already got.]

VECTOR MOVEMENT: SUGGESTED RULES AMENDMENTS

The new system of Vector Movement that was introduced in the Fleet Book 1 as an alternative to the standard ("Cinematic") Full Thrust movement rules has now been in use with players for two years, and over that time we have received a large amount of feedback about it. While not being a strictly accurate mathematical model of how things really move in space, the system gives a reasonable "feel" of how things should be without the need for any complex calculations or excessive record-keeping, and general reaction to it from players has been very good.

One or two loopholes and oddities in the system have been discovered since it was published, and many possible solutions and fixes have been proposed by the very active members of the GZG email list among others. What we are presenting here is just a possible idea for refining the system a little, which we'd like to invite players to have a go with and, if they wish, let us know the results; these are not hard and fast rule amendments at this stage, merely suggestions - after the feedback comes in we'll make decisions about how the final "official" revisions (if any) will be worded for inclusion in the next edition of the Full Thrust rules.

REVISED VECTOR MOVEMENT [OPTIONAL]

ALL thrust, whether for Main Drive burns, ship rotations or "thruster pushes", should come out of the total thrust factor of the main drive. Thruster pushes (side or retro thrusters) are now limited to a maximum of 1 thrust point per turn from any one set of thrusters - ie: a side push plus a retro push (1 thrust point each) is allowable, but two side pushes are not.

Multiple rotations in a single turn are permitted, but 1 thrust factor is used for each rotation (no matter how many or few course points the ship rotates through each time), so a thrust-4 ship could, for example, rotate to a new facing, do a thrust-2 burn with its main drive, then rotate again to bring its weapons to bear at the end of the turn. The same thrust-4 ship could also (say) do a 1 point push to starboard, a 1 point retro push, a rotate and still manage a thrust-1 burn with the main drive, in any order desired.

Note that this makes the mechanism for "standard" vector movement more like that given for the Kra'vak and Sa'Vasku advanced drives in this volume, the difference being that the standard drives may still only apply their main drive thrust in the direction of facing, while the advanced grav drives may apply it in any direction regardless of current ship facing.

ADVANCED AND SPECIALISED FIGHTER TYPES

The Fighters depicted in FT 2nd edition are assumed to be "multirole" fighters: good average, basic types – moderately fast, with reasonable anti-ship and anti-fighter capabilities; an all-round "multi-mission" type of craft; standard multirole fighters cost 18 points per group of 6 (3 points per fighter).

The rules that follow give some ideas for modifying your fighters into rather more specialised or improved types:

[Note: these rules originally appeared in the "MORE THRUST" supplement book, in slightly different form. Some of the rules have been amended and the points values changed to bring them in line with the Fleet Book 1 system.]

FAST FIGHTERS

While normal fighters have a movement allowance of 24 mu per turn, "Fast" fighters have more powerful drives giving them a movement of 36 mu per turn; they still have a limit of 12 mu for secondary moves.

A group of 6 Fast fighters costs a total of 24 points (4 points each).

HEAVY FIGHTERS

"Heavy" fighters have the same offensive and drive capabilities as normal fighters, but are better protected against attack by armoured hulls, heavier structural components etc. When Heavy fighters are attacked by beam-type (eg: Human, Phalon or Sa'Vasku) point-defence weapons or other fighters, rolls of "4" have no effect (ie: kills are only scored with rolls of 5 or 6). When fired on by Kra'Vak scatterguns, halve the number of kills scored.

A group of 6 Heavy fighters costs 30 points (5 points each).

INTERCEPTORS

The Interceptor is a specialised type of fighter with no effective anti-ship capability, but optimised for anti-fighter performance. Interceptors may not fire on any vessels except other fighter groups (using the Dogfighting rules from FULL THRUST), but when they make such an attack they may add 1 to all die roll results – thus they kill one fighter on a roll of 3 or 4, and TWO on rolls of 5 or 6.

When themselves attacked (either by fighters or anti-fighter fire) they take casualties normally.

An interceptor group costs the same as a standard multirole group, as they are trading-off their anti-ship capability for their enhanced dogfighting.

ATTACK FIGHTERS

Specialised "Attack" fighters are really the opposite of Interceptors – they have very little ability to engage other fighters, but carry increased weaponry loads for anti-ship missions. When in a dogfight situation with an enemy fighter group, Attack fighters only hit and kill opposing fighters with rolls of 6 (which destroy one fighter only per successful roll). When engaging other ships, however, the Attack fighters add 1 to all their die rolls ie: if firing on an un-screened target ship they would inflict 1 Damage Point with rolls of 3 or 4, and 2 DP with 5 or 6.

Because anti-ship capabilities are usually of more importance in the game than dogfighting, an Attack fighter group costs 24 points (4 per Fighter).

LONG-RANGE FIGHTERS

This is an option to be used IF you are also using the "fighter endurance" rules. While normal fighters have six Combat Endurance Factors, a Long-Range group has NINE CEFs due to its additional fuel tankage, life-support etc.

A Long-Range fighter group costs 24 points (4 per Fighter).

TORPEDO FIGHTERS

These are a further specialisation of the Attack fighter, carrying a heavy single-shot anti-ship weapon on each fighter. When the group attacks an enemy ship, roll once per fighter to see how many hits are scored – each fighter needs a roll of 4 or more to score a hit with its "torpedo"; those shots that hit inflict damage equal to the number rolled (ie: roll of 1-3 is a miss, but 4 scores 4 DP, 5 = 5 DP and 6 = 6 DP. No rerolls are made). Damage is applied half to armour (if any), half to hull.

The group may only attack ONCE in this manner, and for simplicity it is assumed that all the fighters in the group will attack the same target at the same time – it is not permitted to fire just some of the group and "save" the others for a later attack (unless of course you wish to agree this between yourselves, and work out the necessary record-keeping). Once the group has expended its torpedoes, it may then only fight in the same limited anti-fighter mode as for Attack fighters (ie: needing rolls of 6 for kills) and may not make any further attacks against enemy ships. The Torpedo Fighter group is thus very much a one-shot weapon, but a (potentially) extremely powerful one – for this reason a torpedo group costs 36 points (6 per Fighter).

When using specialised fighter groups, use the normal fighter symbol for the ship record diagram, but replace the "spot" in the symbol with the appropriate letter for the fighter type: for example, an "H" for Heavy Fighters, "T" for Torpedo Fighters, etc.

Note that all fighter groups, regardless of type, have the same MASS and hangar space requirement in the carrier or mothership, and operate under all the normal rules for launching, recovery and turn sequence.

FIGHTER LAUNCHING - RULE AMENDMENT

In FT 2nd Edition, it was ruled that fighter launches were limited to 2 groups per turn for specialised carriers, and 1 group for other ships. Hindsight and a lot of play experience has suggested that this limitation should be removed, and that all fighter-carrying ships (whether specialised carriers or not) should be allowed to launch as many groups per turn as they have operational fighter bays. Fighter recovery (landing) is of necessity a slower process than launching, so any fighter carrying ship may only RECOVER fighter groups equal to HALF its number of operational fighter bays in any one turn.

Launching and recovery operations MAY both be performed by one ship in the same turn if desired.

Note: this rule amendment removes the need to define in rules terms exactly what constitutes a "carrier", as this now has no effect on play. Where reference is made to "carriers" in the rules, treat it as meaning any ship that is equipped to carry one or more fighter groups, whether or not that is its primary mission function.

FIGHTER RE-ARMING - NEW RULE

[This rule is OPTIONAL, and may be used or amended to choice according to the background you wish to use and the timescale that you prefer a game turn to reflect.]

When a fighter group is recovered by its carrier, roll 1 die: on a score of 1, the group may NOT be re-launched in this game (severe damage to returning fighters, crew fatigue etc.); on a 2-5 the group will be patched-up, refuelled and re-armed after 1 full turn, so it may re-launch in the second turn after recovery; on a score of 6, the group makes a crash turnround and may re-launch on the turn immediately following that of recovery. If depleted groups are combined to make full strengh ones, roll for each partial group and the worst case result applies to the entire new group.

CORE SYSTEMS (OPTIONAL RULE)

[Important note: the rules quoted below were introduced in Fleet Book 1, and are reprinted here because they are of some importance to using two of the three races in this book.]

Looking at the ship data panels for the Kra'Vak and the Phalon designs, you will see a box in the right hand lower corner of each Systems Status Display (SSD) which contains three icons that represent the most vital systems buried deep within the hull of the ship: these are the "core" systems, and consist of the Command Bridge (which also includes computer systems, avionics etc.), the Power Core and the Life Support System.

You will note that the Sa'Vasku ships do not have the three core system icons on their SSDs; this is because the Sa'Vasku have their power source denoted by their separate Power Generator icons, and their constructs do not need life support systems or command areas in the same way that the other races' ships do. The Core Systems rules do not apply to Sa'Vasku ships (they have more than enough special rules of their own!).

If using the core systems rules, these three systems are grouped together on the ship diagram, with a box drawn round them. Whenever the ship reaches a threshold point, the systems within the core box are each rolled for as normal, but at +1 to the current threshold number - thus at the first threshold point, where systems are lost on rolls of 6 only, the core systems do NOT need to be rolled for (as they would only be lost on a "7"). On the second threshold, where normal systems go down on rolls of 5 or 6, the core systems are only hit on rolls of 6, and so on.

Notes:

i) The core systems, and their basic "protective" box, do NOT need to have MASS allocated to them during ship design - they are assumed to be part of the essential structure of all ships.

ii) If an opposing fleet is using Needle Beams, the core systems may NOT be targeted by these weapons; Needles may only fire at surface features on the ship, such as weapons, sensor grids, drive units etc.

EFFECTS OF THRESHOLD DAMAGE ON CORE SYSTEMS

COMMAND BRIDGE HIT

If the Command Bridge takes a hit, then a further D6 roll is made immediately - if the roll is 1 to 5, then the ship is "out of control" for that number of turns, until command can be restored through backup links and secondary command systems. If the roll is a 6, then the ship is PERMANENTLY out of control for the duration of the game. While a ship is "out of control", it will continue on its present course and velocity, and may not fire weapons, launch fighters or take any other offensive action. Passive defences (screens) are still operational, though active defences (PDS etc.) are not. Once control is regained (after the number of turns indicated by the die roll), all undamaged systems come back on line. Damage Control parties may be used at any turn to try and restore control earlier, using the normal damage control rules.

POWER CORE HIT

If the Power Core takes a hit, it is damaged and may "go critical" and explode, destroying the ship. It continues to supply power for the ship, but the safety systems that control it are damaged or destroyed, and each subsequent turn the player must roll a die at the start of the turn - on a 5 or 6, the core explodes. Damage Control parties may be used as normal to try and stabilise the power core - such attempts are made before the roll for explosion for that turn, and success will bring the core back under control and negate any further effects (unless the core is then damaged again on a subsequent threshold, when the process will repeat). Each turn, BEFORE rolling the die, the player may make a choice - he may abandon ship, or he may "dump" the core - this avoids the risk of explosion, but leaves the ship without power for anything but emergency life-support (from backup batteries) - the ship is intact, but unable to do anything further in this battle except continue to drift on its present vector. If the player chooses to abandon ship, the ship continues to drift while still rolling each turn to see if the core explodes - in this case, however, the needed number for an explosion drops by 1 each turn, as the core is running out of control with no-one to damp it down; thus it WILL explode eventually and the ship will be lost. A ship that dumps its core will be no further use for that battle, but may be salvaged afterwards and its power restored.

LIFE SUPPORT HIT

If the Life Support Systems take a hit, then a further D6 roll is made immediately - the number rolled indicates that the life support will fail after that number of turns. Damage control parties may be allocated to try and repair the LSS as for any other system. If the LSS fails before being repaired, then the crew must immediately abandon ship or be lost. A ship without LSS become a drifting hulk, though it may of course be recovered and repaired after the game if it survives.

NOTE: The Core Systems rules given above are entirely optional; if you do not wish to use them, simply ignore the systems within the core box on the Kra'Vak and Phalon ship diagrams for all game purposes.

TURN SEQUENCE

This is a summary of the full game turn sequence that should be followed when using the various aliens and fleets listed in this volume and in Fleet book 1.

1) WRITE ORDERS FOR ALL SHIPS

Sa'Vasku players will also decide and note down their power allocation for the turn at this point, and Phalon players will need to note if any ships are deploying their Vapour Shrouds.

2) ROLL FOR INITIATIVE

Both/all players roll a D6 each - highest roll has initiative for this turn.

3) MOVE FIGHTER GROUPS

Both players alternate in moving one fighter group each until all fighter groups in play have been moved (if desired); player who LOST initiative roll moves first. Fighter groups being launched this turn must be moved before those already in flight.

Any fighter groups currently allocated to screening ships are NOT moved in this phase .

4) LAUNCH ORDNANCE (SALVO MISSILES*, PLASMA BOLTS etc.)

Both players alternate in announcing and firing missile salvoes from any missile-armed ships, plasma bolts from any Phalon ships, and any other launched ordnance that uses a placed marker; play alternates BY SHIP, not by single salvo. The player who LOST the initiative roll launches first. A marker is placed at the point of aim of each salvo, bolt etc.

5) MOVE SHIPS

Both players simultaneously move their ships, strictly in accordance with orders written in phase 1.

Fighter groups currently acting as fighter screens are moved at the same time as the ship they are screening, and must remain within the screening distance of the ship.

6) ALLOCATE ORDNANCE AND FIGHTER ATTACKS

All Missile Salvoes and Fighter Groups that are within the specified attack ranges of suitable targets (and wish to attack, in the case of fighters) have their targets determined and announced (missile and fighter counters/models should be turned in place to face their intended target model, and the desired target announced to the opponent so it is clear exactly what they are attacking, but should NOT be physically moved*). Phalon Plasma Bolt markers, which have an area effect and can damage all ships within their blast radius, do not need to announce targets. Fighter groups may, if desired, make a secondary move in this phase by expending a Combat Endurance factor.

* This is a change from the previously-published versions of the rules, and is stated because this book introduces weapon systems capable of point defence fire which do not necessarily have all-arc coverage (ie: the Phalon pulser batteries) - it thus may be necessary to know which arc of the target a fighter or missile attack is originating from. Of course, fighter groups may make a secondary move to try and get out of the defensive arcs, but this will burn a CE factor as usual.

The markers/models MAY be moved up to contact with the target AFTER all PD fire has been resolved in phase 7.

7) POINT DEFENCE FIRE

Any ship under missile, plasma bolt and/or fighter attack allocates its defences against attacking elements, then rolls for effects. Fighter vs. fighter actions ("dogfights"), attempted fighter missile/bolt interceptions and screening actions by fighters are resolved BEFORE actual Point Defence fire is allocated to surviving targets. Note that ships equipped with Area-Defence Firecon systems may use their point-defence batteries to help defend other nearby ships in this phase, but each PDS may only be used ONCE in the turn - if it is used in support of another vessel, it is NOT available to defend the ship carrying it as well.

If the FIGHTER MORALE rules are being used, then fighter groups should make their rolls after any PD fire against them is resolved; the chance of failing the roll is thus increased by any members lost this turn as the fighters try to press home the attack through a barrage of PDS fire.

8) MISSILE, PLASMA BOLT AND FIGHTER ATTACKS

All missile salvoes, plasma bolts and fighter groups that survive the defensive fire from phase 7 now have their attacks resolved; damage resulting from these attacks is applied immediately, including threshold damage resolution if applicable. Should it be necessary to determine exactly what order things happen in (eg: if a missile salvo is within the burst radius of a plasma bolt), then plasma bolts explode first, followed by missile resolution, and finally fighter attacks.

9) SHIPS FIRE

Starting with the player who WON the initiative roll in phase 2, each player alternates in firing any/all weapon systems on ONE ship at one or more targets subject to available fire control. Damage caused is applied immediately, and threshold damage checks are made where applicable as soon as all weapons fired by one ship at that one target have been used.

10) TURN END

Players confirm that all actions for the turn have been completed as necessary. Any untargetted missile or plasma bolt markers are removed from play. Next turn may now commence.

(* For rules on Salvo Missiles and their effects, refer to Fleet Book 1; these weapons are not used by the races detailed in this volume.)

SHIP DATA PANELS

The following pages contain Ship Data Panels for the warships of the three alien races detailed in this volume. Most of the information contained in each panel should be self-explanatory, but a few notes may help.

SYSTEMS STATUS DISPLAY

This box, which is also referred to as the "Ship Diagram", is a graphic display of all the systems fitted to the ship. The icons used are explained in the relevant rules sections for each race. This panel should be photocopied to make up your own ship record charts for your games.

THE TMF/NPV BOX

There is a small box in each ship's Data Panel that gives "TMF" and "NPV" for the ship. These stand for (respectively): TOTAL MASS FACTOR and NOMINAL POINTS VALUE. The TMF is the MASS of the ship design, and the NPV is the Points Cost of the ship (excluding fighters and/or small craft costs in the case of ships with hangar facilities).

THE BACKGROUND INFORMATION BOX

This is a panel of notes and information on the ship class, including the year (human calendar) in which the class was first identified by human forces. Most of this is of background interest only, but may be useful in generating scenarios.

THE TECHNICAL SPECIFICATIONS BOX

This panel contains a written description of the systems fit of the ship class, listing all the items found on the Ship Diagram. Note that the "weapons" section only lists the number and class of each weapon, and not the arcs through which it may fire - that is indicated by the icons on the Ship Diagram. The Displacement figure is the total tonnage of the ship, which under the "official" background we take as 100 tonnes per MASS factor.

THE SHIP ILLUSTRATION

The line drawing of each ship is an illustration of the relevant miniature in the Full Thrust model starship range; the drawings are, of course, not to scale with each other! Note that we do occasionally redesign or modify items in the miniature ranges, and in a few cases the illustration may not be an exact representation of the model currently in production.

UNDIA CODENAMES

The United Nations Defence Intelligence Agency (UNDIA) is primarily responsible for collating and coordinating all the input from the military intel units of the different human forces involved in the War, through its Xeno Intelligence Division (XID). UNDIA issues standardised military codenames for all types of alien ship encountered by human forces, and most navies use these codenames to refer to those ship types. In the cases of the Kra'Vak and the Phalons, direct communications and intercepted signal traffic mean that human forces also know each race's "native" names for their ship types, but the codenames are still used widely in both official and unofficial terms.

The UNDIA codenaming scheme works by assigning a simple and easily-recognised word or common name to each ship type; most are in English (being the standard language of official UN business) though some common non-English names and words are used on occasions. A simple convention of designating all Kra'Vak ships with "K" names, all Sa'Vasku with "S" and all Phalons with "P" helps instant recognition when different forces are reported in the heat of battle.

Each of the ships detailed in this book has its UNDIA codename given in the data panel for that ship, along with the human class type that the ship most resembles (in terms of both mass and intended operational role).

SHIP RECORD CHARTS

Three different SHIP RECORD CHARTS are provided in this book, one for each of the three races; each has Ship Diagram blanks to suit the relevant race's design system. Feel free to copy this chart and cut-and-paste the diagrams around to suit your own forces. To prepare a ship record chart for any of the fleets listed in this volume we recommend photocopying the Ship Diagrams (System Status Displays) from the Data Panels of the ships you want to use, and arranging them suitably on a sheet of paper along with the "order panel" from the bottom of the record chart blank, then re-copying the result. Sorry we couldn't provide ready-made sheets for each different fleet, but for one thing they would almost never match any one person's miniature force and for another they would take up half the book!

You will note that the Sa'vasku ship record chart is somewhat more complicated than the Kra'Vak and Phalon ones, and has space for only six ships rather than the ten of the other races; this is because the Sa'Vasku require more planning and record-keeping than the others, in the form of allocating and recording their power distribution each turn, and their order-writing sections are organised to allow this. The Sa'Vasku chart also has a large empty "notes" box on it, which may be used to jot down anything that needs to be recorded about the ships during play that will not easily fit into the order boxes.

A NOTE ON SCANNING AND COMPUTER REPRODUCTION OF SHIP DATA PANELS, SSDs AND SHIP RECORD CHARTS

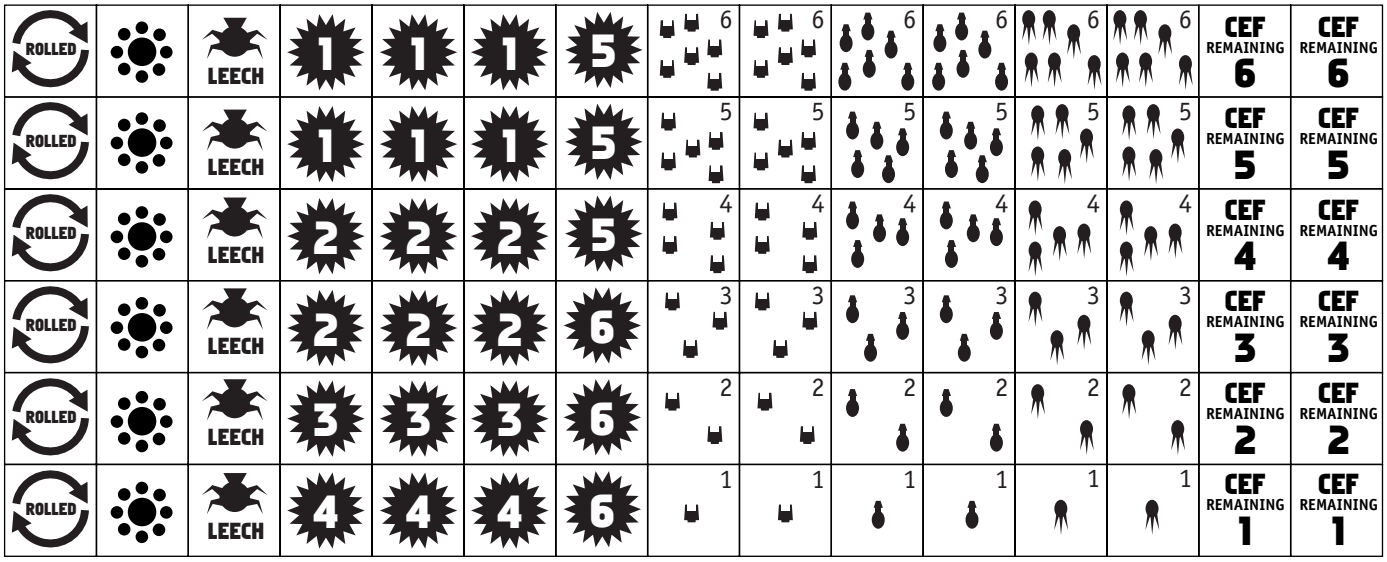
These days, a great many of you will have access to scanners and computer equipment that will enable you to reproduce parts of the ship data panels for the purpose of making up your own record charts for the game. This is perfectly acceptable provided it is for your own personal use, and not for any kind of commercial gain or payment. We also have a number of enquiries from time to time about the posting of SSDs etc. on web-sites; our policy on this is that you may web-publish your OWN designs freely for non-profit purposes, including using the standard SSD format and icons, but we would ask you NOT to post any of the actual ship designs given in this volume or any of our other publications to any website; if people want to use them, they can buy a copy of the book!

We would also ask that, for both legal reasons and out of courtesy, any website devoted to or containing material connected to Full Thrust or any of the supplements contains a clear statement of our copyrights plus details of how to contact us for further information (these can be found at the back of this book).

COUNTERS

While on the subject of copy-and-cut-out bits, we have also provided a few counter masters for plasma bolts, vapour shrouds, leech pods, fighter /drone groups (for all three races) and fighter CEF markers, and some "rolled ship" markers that we should have included in Fleet Book 1 but didn't!

Feel free to copy as many of these counters as you like (for personal use only please) - we recommend copying them onto coloured card if possible.



XENO FILE 1: THE KRA'VAK

The Kra'Vak (literal translation: "People of the Sorrow Killer ") are anthropoid oxygen-breathing carbon based lifeforms; the extreme coincidence of three such fundamentally similar races developing sentience, civilisation and technology in such a relatively small area of the Galaxy at approximately the same time lends much credence to the Sa'Vasku theories of some sort of genetic meddling by one or more of the older races, and indeed given the way the Old Ones are, the whole thing may be some kind of huge practical joke to them.....

The Kra'Vak are bipeds with bilateral symmetry, with dry skin that is scaly in some areas and leathery in others; skin colours vary between individuals and Clans, and can be anything from greenish-greys through shades of brown to almost black - some rare individuals exhibit a purplish colouration. They are hairless, but have a number of ropy tendrils that hang from a bony crown that circles their skull. Their jaws are slightly insectoid in appearance, with multiple mandibles that move in various directions, and their deep-set eyes have a much greater frequency range than human vision, allowing them to see quite a way into both the infra-red and ultra-violet bands.

Kra'Vak speech is hard and gutteral, and many of its sounds are almost impossible for human vocal organs to simulate. In theory it is just about possible for each race to mimic enough of the other's sounds to make some kind of pidgin communication work, but there has been so little verbal contact reported that there has not been much chance to put this into practice - the very few Kra'Vak captives taken by human forces seem to die quickly in confinement, even when treated well, and no human prisoner has yet returned from Kra'Vak captivity to tell any tales.

Kra'Vak physiology exhibits certain mammalian traits, though there are reptilian similarities in there as well and other aspects that bear no relation to any known form of Terran biology.

Each Kra'Vak progresses through a number of gender stages as it matures. At birth and for the first major stage of its life, the Kra'Vak is gender-neutral - this stage lasts until physical maturity is reached (they grow rapidly, and reach this point at approximately 7-8 Terran years old), when the Kra'Vak becomes "male" and fertile, and enters an adolescent stage during which its warrior and mating instincts are at their height.

At approximately 18-20 T-years of age, the Kra'Vak alters again and becomes "female", at which point it will seek an adolescent "male" to mate and produce young. This fertile female phase lasts around another ten to twelve T-years, during which time the Kra'Vak may bear as many as a dozen young under the right circumstances (gestation is short, around four months).

At the age of about 30 T-years, the Kra'vak will undergo its final life-change, returning to an infertile gender-neutral state, in which it will spend the remainder of its lifespan (which can be long, often as many as 150 T-years even without high-tech medical support).

In this stage of it's life the Kra'Vak will become a worker within the society, assisting with the raising of the War Family's young, farming, or (since the rise from barbarism to technical civilisation) working in manufacturing or business. A few of these "senior" Kra'Vak may rise through the heirarchy to positions of leadership within the War Family and ultimately the Clan or the entire Dominion.

RO'KAH (Clouded War Mind)

One physiological trait in particular has shaped Kra'Vak development and history - when a normal Kra'Vak becomes angered, fearful or otherwise strongly emotionally stimulated, chemicals released into its brain cause a reaction known as Ro'Kah (literal translation: "Clouded War Mind"), which causes the Kra'Vak to become steadily more enraged as the source of the stimulation increases. In its extreme stages, the Kra'Vak will enter a kind of "berserker rage" in which it will attack almost anything (including, in some cases, its own fellows) but loses its capacity for rational and coherent thought and planning. This gives Kra'vak warriors a kind of "reverse morale" effect, where the worse the situation gets in terms of enemy threat, casualties etc., the more frenzied the warriors will become in their attacks. In Kra'Vak prehistory, this was a survival trait - running away was of little use against the fast predators of Zha'Vak, and the only defence was to launch a furious frontal attack with all their strength.

While in the grip of Ro'Kah, a Kra'vak warrior will fight like a demon, using any and all weapons to hand (natural and manufactured), but loses all concept of tactics. In personal combat, an enraged Kra'Vak will simply launch itself at its opponent, with a weapon if it has one and with mandibles and claws if it doesn't, uttering a terrible war scream. At this point, it will either win or die. This frenzied burst of energy cannot be maintained for long, and if the warrior wins the fight it will soon subside into a much more passive state as the causes of the Ro'Kah are removed and the effects of the fury drain away.

The early forms of Ro'Kah are evident in young Kra'Vak almost from birth, though the effects are strongest during the male adolescent phase. Once it enters the female phase the Kra'Vak will lose some of the wildest extremes of Ro'Kah, though it is still present - even in the final adult life phase Ro'Kah still occurs under extreme stress, though it takes considerably more stimulation to bring on the effects.

As the Kra'Vak civilisation rose from barbarism and they began to develop technology, mechanised warfare and eventually spaceflight, the racial legacy of Ro'Kah remained with them. Its effects are most strongly seen in Kra'Vak ground troops (almost exclusively made up of adolescent male-phase warriors) , where their close proximity to the enemy triggers the neurochemical release that precipitates Ro'Kah very easily. Warriors that are more remote from the "sharp end" of the fighting, such as AFV crews and to a greater extent Starship personnel, feel some of the effects but at a slower rate and with less ferocity; they may also have the benefit of the controlling influence of a Sia'Na (see below). The area in which Ro'Kah has most bearing on space combat is with Kra'Vak fighter pilots - the exhilaration and stimulation of individual combat is strong when flying a fighter, and incoming fire and losses to a group will often push the remaining pilots into the frenzied state, causing them to make violent and sometimes-suicidal runs at their targets. Any fighter crews that survive such an attack pass will then generally rely on their computer systems to take their fighters back to the carrier while they themselves recover and calm as the effects of Ro'Kah gradually subside.

In a group, Kra'Vak will suffer the effects of Ro'Kah just as intensely as on their own; in some ways each feeds off the emotional stimulation of the others, and the tension rises even faster even among groups of older Kra'Vak. This is true both of small groups (say, a squad-size unit of ground troops) and larger gatherings, and can even extend to entire War Families. At the macro level, these effects are reflected in the interaction between Kra'vak Clan groupings and in their reactions towards other races - it is a race-wide form of Ro'Kah which has brought about the war against the perceived threat of the Hu'Man.

THE SIA'NA (Walkers of the Path)

The Sia'Na (literal translation: "Walkers of the Path", but the concept best translates as "Moderator") are a small caste of Kra'vak in which the physiological processes that cause Ro'Kah are absent or dormant. In Kra'vak pre-technic civilisation, where Ro'Kah was an accepted and necessary part of inter-Kra'Vak relations and conflict, offspring found to be Sia'Na were considered defective and either exiled from the War Family or simply killed. As the Kra'vak culture matured and their society became more sophisticated, however, it was realised that the Sia'Na held a unique place in the scheme of things - they could serve as a moderating influence on warriors consumed by the fury of Ro'Kah, making proper tactical and strategic decisions without minds clouded by the fury.

The presence, words and thoughts of a Sia'Na have a calming and controlling influence on Ro'Kah-enraged warriors, which seems to be accomplished through a mixture of cultural conditioning, "religious" belief and some kind of empathic link - the Kra'Vak's own scientists and psychologists don't fully understand it themselves, any more than human science really understands the occasional manifestation of apparent psionic abilities and other paranormal phenomena in humans.

To be born Sia'Na is to live a precarious life in Kra'Vak society; they are both revered and despised at the same time by the warriors, and it is not unknown for a warrior in the grip of Ro'Kah to turn on and kill a Sia'Na who tries to calm and control him. For this reason, the Sia'Na are masters of subtle diplomacy and persuasion; these skills grow with age and experience, as does the Sia'Na's ability to affect larger numbers of Kra'Vak over a wider area - some of the Sia'Na Elders can extend their influence to a huge crowd, or even by remote communications, while the younger and less adept of the caste must be in close physical proximity to the warriors they are attempting to "advise".

Kra'Vak warships will normally have one Sia'Na in their crew to act as advisor and moderator to the ship's commander; in very large ships (dreadnoughts and heavy carriers), and in any ship acting as a fleet flagship, there may be a small group of three or more Sia'Na assigned to the Flag command staff.

In essence, the presence of Sia'Na in a ship crew or force command is a reversal of the role of the "Political Officers" found in ESU forces; while the Political Officer will watch for signs of cowardice and dissent among the troops or crew and force them to keep fighting, the Sia'Na exists to STOP the Kra'Vak warriors from throwing away their lives, ships and equipment in their frenzied battle-rage - effectively, to stop them from losing the war for the sake of winning the battle.

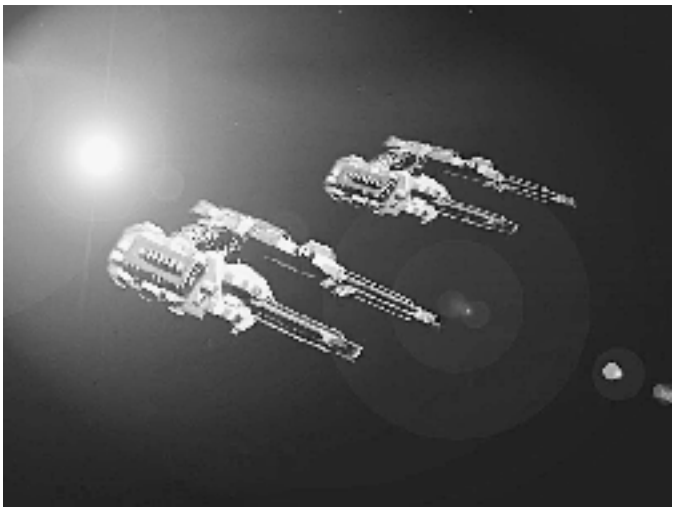
THE KRA'VAK DOMINION

The Dominion of the Kra'Vak is composed of a large number of Clans, each Clan being divided into many separate War Families. A Clan is a "nation" of Kra'Vak numbering from the hundreds of thousands to many millions, while a War Family is an extended tribal bloodline group of maybe several hundred members.

The Kra'Vak homeworld is known as Zha'Vak (Literal translation: "World of the Sorrow Killer "). The other worlds of the Dominion include heavily settled colony worlds similar to the human Inner Colonies, populated by multiple Clans, and many smaller colonial

outposts which are usually settled by members of single Clans. It is not unusual for settlers on a colony world to found their own "new" Clan as a breakaway from their origins on the homeworld, while others maintain close ties to Zha'Vak.

The Star Force of the Dominion (the Kra'Vaka'Kia'Kon - literally, Spear of War Host of the People of the Sorrow Killer), which comprises the space naval assets of the Kra'Vak armed forces, is theoretically a homogenous single entity made up from the fleets of the various Clans under a unified command structure. In practice, the individual fleets and units are still primarily loyal to their own Clans and internal dissent (and even outright combat) is not unknown; mixing units from different clans is generally a bad idea and is avoided wherever possible except in the largest operations.



A pair of Di'Tok Destroyers (model code FT 405).
Painted and photographed by Agis Neugebauer.

KRA'VAK WARSHIPS

The Kra'Vak are especially adept at gravitic manipulation technology, having developed it to a much higher degree than Humanity has. All their major weapon systems are grav-based, and rely heavily on kinetic projectile weapons rather than energy or particle beam technologies.

The drive systems of Kra'Vak ships seem to be very effective for their size, and make full use of the Kra'Vak mastery of Grav technology to permit rates of manoeuvre far in excess of those possible to human ships. Their FTL (jump) drives appear to function in much the same way as human systems, using very similar principles.

The warships of the Kra'Vak Dominion are equipped with gravitic-accelerator kinetic projectile guns, known as K-guns, which fire solid penetrators at incredibly high velocities. These kinetic penetrators cause massive damage when they impact their target; screens are of no use against them, and even heavy armour is of little effect - while armour will stop the smallest K-gun rounds from doing too much internal damage, the larger classes of K-gun will simply slice through the armour and rip into the ship's internals.

The accuracy of the K-guns is limited by their fire-control computer predictions of exactly where the target ship will be when the projectiles arrive, hence their accuracy degrades with range and the consequent increase in time lag on receiving target positioning data. The different classes of K-gun battery on Kra'Vak ships vary mainly in the mass of the projectiles fired, thus the damage caused by a successful hit increases with battery size. All K-gun classes are assumed to have similar firing velocities and targetting systems, however, so range and hit probabilities remain constant regardless of battery class. The long accelerator "barrels" of the K-guns mean that the majority of them are only able to bear through one single fire arc, and Kra'Vak ships are generally designed with all their major weapon mounts in the frontal arc - the main exception to this being the smallest K-gun, the K-1, which is compact enough to be mounted in a traversable mount and is thus capable of all-arc fire.

Normal Kra'Vak design practice is to mount a small number of the largest class of forward-mounted K-guns that the ship can carry, backed up by a one or more K-1 systems as secondary weapons. This makes tactical manoeuvring and ship facing of primary importance to the Kra'Vak, and to this end all their ships are equipped with advanced grav-drives that give them much greater manoeuvrability than Human ships of the same basic thrust level.

Kra'Vak warships do not carry energy screens or large amounts of hull armour. Instead, their ship hulls are built with a much higher degree of internal structural integrity than most Human designs, to withstand and absorb internal damage caused by penetrating weapon hits (which has an additional bonus of being better able to take the massive stresses imposed by the enhanced manoeuvring capabilities of their advanced grav drives).

The standard Kra'Vak point defence weapon is a one-shot system known as the "scattergun", which fires a large cloud of relatively small kinetic projectiles at very high velocities over a wide area. It is a very effective system against fighters, missiles and other similar threats, and can also do a small amount of damage to a close-range ship target. Reloading a scattergun with a new charge of projectiles is a lengthy operation that can only be done when the ship is not in combat, so each scattergun is only able to fire once in a battle - for this reason, larger Kra'Vak ships carry a fairly large number of individual scattergun launchers, which has the additional advantage that they can salvo-fire a number of them (or even all of them) in one go if under heavy attack. Scatterguns are all-arc weapons, able to fire at any target around the ship.

Human military forces generally refer to Kra'Vak ships by their UNDIA-assigned codenames (KEG, KERF etc.), though the actual Kra'vak names for most of the classes are known from translations of intercepted signal traffic. Human crews and troops tend to use their own slang terms for the Kra'Vak in general, the most common being "Kravs" or "Kraks", though there are many less printable variants in use.

GAME NOTES FOR KRA'VAK PLAYERS

A Kra'Vak fleet has the potential to be very powerful and effective, but requires careful handling in battle. The bulk of any Kra'Vak warship's offensive power - in the shape of its main K-guns - is concentrated in the Fore arc, and thus tactical manoeuvring is of the utmost importance to ensure that the desired targets are kept within the rather narrow fire arc.

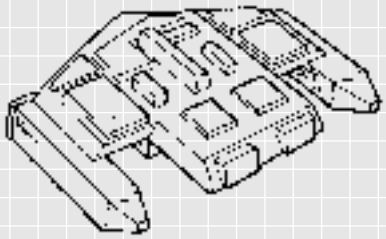
Whether you are playing in cinematic or vector movement, the ability to anticipate the enemy's movements holds the key to victory. The Kra'Vak lack any "placed-marker" ordnance (such as the Humans' salvo missiles or the Phalons' plasma bolts), but their direct fire weaponry is hugely effective IF it can be kept on target.

Use the limited supplies of scatterguns wisely - opposing forces will often try to swamp the defences of their enemies with massed attacks, but the Kra'Vak's ability to salvo-fire all their scatterguns at once if they wish can be a devastating counter to this sort of tactic, albeit at the cost of leaving some ships defenceless against any follow-up waves.

ID CONFIRM - VA'SAN

K'V FIGHTER (HEAVY)

UNDIA CODENAME: KART



CREW 2

LS 27.4 - 16.89

THR 553.7 - 22.8

KRA'VAK SHIP DESIGN AND SYSTEMS

HULL INTEGRITY

Kra'Vak hulls are generally very strong internally with (normally) no added armour - as most of their own weapons are kinetic penetrators, they build their hulls to absorb as much damage as possible before reaching each threshold point. Kra'Vak hull boxes require 1 MASS each, cost 2 points each and are arranged in a standard four-row damage track using the normal rules.

Kra'Vak ships MAY carry armour in some cases, though it is unusual for them (and none of the designs in this book use it). If required, Kra'Vak armour has the same MASS (1 per box) and cost (2 points per box) as human armour, and functions in exactly the same way.

MAIN DRIVE SYSTEMS

To differentiate the Kra'Vak advanced drives from the normal drives, a slightly different icon is used on the Ship Systems Displays, and when the thrust rating of a Kra'Vak drive is written down it is suffixed by an "A" to indicate that the advanced drive rules should be used (eg: a Kra'Vak drive with a thrust rating of 6 is denoted "6A").

Kra'Vak Advanced Grav Drives are costed at the rate of THREE points per MASS of drive system, instead of the 2 points per MASS charged for "normal" drives.

KRA'VAK THRUST AND MANOEUVRE

[Note that these rules for Advanced Drives also apply to Sa'vasku ships, but NOT to the Phalons.]

Cinematic Movement:

When using the Cinematic ("standard" FT) movement system, Kra'Vak vessels move and manoeuvre in exactly the same way as other ships, using the normal rules, with one exception: they are permitted to use MORE than half their available thrust for COURSE CHANGES, and may in fact use up to ALL their thrust rating for this. Thus a Kra'Vak ship with a thrust of 6 could actually make a full 180-degree about-face in a single move (though its path would in fact be an L-shape manoeuvre rather than a turn in place, as it is still bound by the normal rules about splitting course changes between the start and midpoint of the movement). The effect of this is to make Kra'Vak ships much more manoeuvrable than their human counterparts, which is a compensation for the more restricted fire arcs of their major weaponry.

It should be noted that this ability does NOT mean that Kra'Vak ships gain any extra thrust factors to carry out this increased manoeuvring; if the ship uses all of its thrust to change course, it will still have none left over to accelerate or decelerate with.

Vector Movement:

If you prefer to use the new Vector Movement System introduced in Fleet Book 1, the Advanced Grav Drives of the Kra'Vak ships operate in the following way:

Because their drive's grav-field may be directed as required, Kra'Vak ships may apply thrust in ANY direction (in game terms, in any of the 12 standard course directions), regardless of the facing of the ship at the time. As with standard vector movement, they may rotate to any facing for the cost of one thrust factor, but they do not use "pushes" (as their main drive capability makes this irrelevant). Any thrust used for rotation comes out of the main drive's thrust factor, so is not available as propulsive thrust in the same turn - thus a thrust-4 Kra'vak ship currently on heading 12 but facing course 9 could apply, say, 3 thrust in any chosen direction (it could apply it in direction 12, accelerating itself along its current heading without changing its facing) and then the remaining 1 thrust to rotate to any new facing desired in order to bring its main K-guns to bear on a target.

FTL DRIVES

Kra'Vak FTL (Jump) drives operate in exactly the same way as human ones, using the standard rules; MASS requirement is 10% of total ship mass, and cost is 2 points per MASS used.

KINETIC GUNS (K-GUNS)

The Kra'Vak main antiship weapons are Grav-powered kinetic projectile weapons known as K-guns.

K-guns are direct fire weapons which may fire once per turn at any target within their fire arc(s).

All K-guns, regardless of class, have the same range bands and require the same score to hit.

For each K-gun firing, roll a single die: the score needed to hit starts at 2+ at range of 0 - 6 mu, then rises by one for each additional 6 mu range band - so the hit score needed is:

Range 0 - 6 mu:	2+ to hit
Range 6 - 12 mu:	3+ to hit
Range 12 - 18 mu:	4+ to hit
Range 18 - 24 mu:	5+ to hit
Range 24 - 30 mu:	6 to hit

When a hit is scored, roll a second die: if the number rolled is GREATER THAN the CLASS of the K-gun, then the damage done is equal to the class number of the gun; if the roll is EQUAL TO OR LESS THAN the class of the K-gun, then the damage is DOUBLE the gun class.

There is one exception to this rule - a natural roll of 6 always does just damage equal to the gun class, even for K-guns of class 6 and larger.

EXAMPLE: A class-3 K-gun will inflict 6 points of damage on a roll of 1 - 3, and 3 points on a 4 - 6; a class-5 K-gun will inflict 10 points of damage on a roll of 1 - 5, and 5 points on a 6. Applying the exception rule, a class-6 K-gun will do 12 points on a 1 - 5, but only 6 points on a 6.

K-gun damage is very effective a piercing armour - if it hits a target with armour (including Sa'Vasku carapaces) then the hit does ONE point of its damage to the armour, and all the remainder straight through to the hull - so a hit doing 4 DP would knock out one armour box and three hull boxes. Note that this damage distribution is PER SINGLE HIT, not a cumulative effect of a salvo from several K-guns.

The multi-layered Phalon shell armour is an exception to this - when K-guns of sufficient power hit Phalon shells, they take out one box from EACH shell level before delivering any remainder to the hull itself (see the Phalon rules section for more explanation and examples).

It should be noted that unlike beam weapon fire, where all the dice rolled against a given target may be rolled together, in the case of K-gun fire it is important to roll the dice for each CLASS of K-gun separately (or with differently coloured dice if available), so that you know which classes scored hits and thus how to roll for the damage.

SPECIAL NOTE: Class-1 K-guns are able to fire in a limited point-defence mode, in the same way that human class-1 beams are. K-1 systems that fire in this role may not also perform antiship fire in the same turn. Roll 1 die for each K-1 firing, and one hit is scored on a roll of 5 or 6 (one "hit" kills one fighter or missile; K-1 shots have no effect against Phalon plasma bolts).

As with other Kra'Vak weapons fire, there are no rerolls - this actually makes them a little less effective than class-1 beams in the PD role, as the beams get a reroll on a score of 6.

The MASS requirements for the various K-gun classes are as follows:

K-1	(all-arc fire)	2 MASS
K-2	(one arc)	3 MASS
K-2	(two arc)	4 MASS
K-3	(one arc)	5 MASS
K-4	(one arc)	8 MASS
K-5	(one arc)	11 MASS
K-6	(one arc)	14 MASS

Class-1 K-guns automatically get all-round (6 arc) fire; class-2 K-guns may have one or two fire arcs. All other K-guns are limited to single-arc fire only.

Larger classes of K-gun are possible, and the mass required rises by 3 per additional class.

All K-guns cost 4 points per MASS used.

MULTIPLE KINETIC PENETRATOR (MKP) PACKS

The MKP is a one-shot antiship weapon similar in some ways to the human Submunitions Pack, used on some small Kra'vak ships to give a powerful shipkilling punch. It fires through 1 arc only (usually the Fore arc), and has a range of 12 mu. When fired, one die is rolled - on a 1-3 no hits are scored, on a 4 or 5 it scores 1 hit, and on a 6 it scores two hits (no rerolls).

For each hit scored, the MKP does 4 damage points, of which the first one is taken on armour (if any) and the remainder on hull - as for a class-4 K-gun hit. Phalon layered shells have the same effect as against K-gun hits.

The MKP icon is crossed out when it has been fired.

EXAMPLE: If an MKP shot rolls 4 or 5, it will inflict 4 DP, as 1 to armour and 3 to hull; if it rolls a 6, it will inflict two SEPARATE hits, so will do a total of 2 DP to armour and 6 to hull.

The MASS of an MKP is1, and the cost is 4 points.

SCATTERGUNS:

Kra'Vak ships use their one-shot scatterguns as point-defence weapons. Any number of available scatterguns may be fired at one time, at any valid targets.

After use, the scattergun icons that have been fired should be crossed through to show that they cannot be used again in that game.

Kra'Vak ships do not use (or require) ADFC (Area-Defence Fire Control) systems.

As per the standard rules for PDS fire, the Kra'Vak do NOT need a functioning fire control system in order to fire their scatterguns, even as antiship weapons.

Each scattergun may only fire once per game. It may fire at any single target (fighter group, missile salvo, plasma bolt etc.) in the point-defence phase of the turn. A scattergun may fire at any target within a range of 6 mu (they are all-arc weapons), or may fire at any target that is attacking another ship provided that the ship itself is within 6 mu of the scattergun-firing ship. In other words, it may fire as a point-defence or an area-defence system to the player's choice, according to the standard engagement rules for such systems.

SPECIAL NOTE: if used in the area-defence role, firing at fighters or missiles engaging a friendly ship, if the effect roll scores a ONE then some of the scattergun projectiles hit the ship that is being defended, and inflict 1 damage point on it.

A scattergun may also be used as a point-blank range antiship weapon, at any target within 6 mu. In this mode it is fired in the main ship weaponry fire phase, and it does not require the use of an operational fire control.

The effect of a scattergun charge depends on the type of target fired at; 1 die is rolled in all cases:

Against standard fighters or salvo missiles, the shot kills 1D6 elements from the group/salvo (ie: 1-6 fighters/missiles). If targetting HEAVY fighters, halve the number of kills (round up).

Against plasma bolts, a roll of 4 or 5 reduces the bolt strength by 1, and a 6 reduces it by 2 (no rerolls).

Against ship targets, a roll of 4 or 5 inflicts 1 damage point, and a roll of 6 inflicts 2 damage points (treated as two separate hits, so both are taken on armour if applicable). No rerolls.

Each scattergun takes up 1 MASS, and costs 5 points.

FIRE CONTROL SYSTEMS

Kra'Vak ships carry fire-control systems that function exactly as their human equivalents; use all standard rules for them. A Kra'Vak FC system requires 1 MASS and costs 4 points.

As their scatterguns have an in-built "area-defence" capability (ie: they are not only useful against targets attacking their own ship), the Kra'Vak have no need for ADFC systems.

CREW FACTORS AND DAMAGE CONTROL

Kra'Vak ships use the same rules for crew factors and damage-contol parties as human ships; there is one crew factor for each 20 MASS of ship (or part thereof), so for example a MASS 30 Kra'Vak ship has a crew factor of 2, and a MASS 41 ship a factor of 3.

There is no cost or mass requirement for crew factors.

The crew factors are indicated by small stars placed in some of the hull boxes on the SSD - the placement of the crew factors being determined by dividing the mass used for hull integrity by the total crew factor (and rounding UP in all cases): for example, a ship with a crew factor of 4 and a hull integrity of 30 would have a crew factor star placed in every EIGHTH box on the damage track (30/4 = 7.5, rounded up to 8), and the last star in the last box - so the crew factors would be in the eighth, sixteenth, twenty-fourth and thirtieth (final) boxes.

When a hull box containing a crew star is lost to damage, that crew factor is lost due to accumulated crew casualties.

Crew factors represent the number of damage control parties (DCPs) available to the ship - one DCP for every remaining crew factor on the ship. DCPs may attempt to repair systems lost to threshold damage, with up to three DCPs being allocated to each attempted system repair - the basic roll of success in the repair attempt is 6 if one DCP is working on it, -1 for each additional DCP allocated to the task (so the allowed maximum of 3 DCPs will make a successful repair on a roll of 4+). Any one system may only be the subject of one attempted repair roll in any given turn.

HANGAR BAYS

Kra'Vak ships may carry hangar bays for fighter groups (or other embarked small craft) in exactly the same way as human ships, using all the standard rules.

Each Fighter Bay uses 9 MASS and costs 18 points, to carry up to 6 MASS of fighters, ie: one group; bays for other small craft use 1.5 x the MASS of craft carried, and cost 3 points per MASS used.

FIGHTERS

Kra'Vak fighters, like human ones, operate in groups of 6 craft. They have 6 Combat Endurance Factors, which may be used up to make attacks and/or to make secondary moves.

The standard Kra'Vak fighter is the Ra'San (literally "Little Sliver of Mother", UN codename KIP) and the heavy variant is the Va'San ("Great Sliver of Mother", UN codename KART). The Ra'San is treated as a regular multirole fighter, and the Va'san gets the defensive bonus for being a "heavy" fighter. The costs per group of 6 are 18 points per Ra'San group (3 per fighter) and 30 points per Va'San group (5 per fighter).

Both types have a basic move of 24 mu, and can make a secondary move of up to 12 mu at the expense of one CEF.

Standard and heavy Kra'Vak fighters both attack with 1 die per fighter in the group, but they use kinetic rather than energy weapons and their damage profile is slightly different from the beam-armed human fighters; on a roll of 1-3 they do no damage, on a 4 or 5 they do 1 DP, on a 6 they do 2 DP but this treated like a K-gun hit: 1 DP to armour and 1 DP to the hull.

There are no rerolls made when firing at ships, and screens have no effect against the fighters' kinetic weapons. Note that when in combat against other fighters, the Kra'Vak fighters DO get a reroll on scores of 6 - in this case it represents a number of separate kills rather than an amount of damage inflicted.

Kra'Vak fighter groups are not subject to the standard Fighter Morale rules; the effects of Ro'Kah ("Clouded War Mind" - see notes on Kra'Vak psychology) affect Kra'Vak fighter pilots much more than ship crews, because they do not have a Sia'Na on hand to moderate their war rages - there are far too few Sia'Na to allocate one to every two-or three-person fighter crew, or even to each fighter group. Whenever a Kra'vak fighter group wishes to press home an attack, a roll should be made on the same basis as a standard Fighter Morale check - in this case, however, the roll is not to see if the Kra'Vak will break off, but instead to see if they will fall into the Ro'Kah frenzy. If the die score is greater than the remaining number of fighters in the group, then the remaining pilots become Ro'Kah enraged. In this state, the attack continues, but each fighter gets to roll TWICE for its attack instead of the normal once. If there is an ACE pilot in the group, it also gets a doubled attack, so actually gets FOUR rolls!

After this one attack pass in Ro'Kah, the effects will start to wear off and the group MUST return to its carrier without performing any further attacks; if using the re-arming rules, then the group may be relaunched for a new mission as normal after the necessary period.

Ro'Kah also affects dogfighting and intercepting Kra'Vak fighters - make a roll for each group at the start of the dogfight resolution, and if the check rolls more than the number of fighters then they get the doubled attacks for as long as the dogfight lasts - when it is over (when the enemy is destroyed or breaks off successfully - the Kra'Vak will not break off while in Ro'Kah) then they will attempt to return to their carrier. If "bounced" during their return they are treated as a group that have exhausted their CEF.

KRA'VAK SHIP DESIGN PROCEDURE

1) SELECT OVERALL SHIP MASS.

2) SELECT HULL INTEGRITY VALUE and create Damage Track.

3) INSTALL MAIN DRIVE.

4) INSTALL FTL DRIVE (if required).

5) TOTAL MASS USED SO FAR.

6) INSTALL CHOSEN OFFENSIVE AND DEFENSIVE SYSTEMS.

7) TOTAL POINTS VALUES to calculate NPV of ship.

1) SELECT OVERALL SHIP MASS.

This may be any size desired, though most combat starships fall within 10 - 300 MASS.

EXAMPLE: We choose to build a Kra'Vak battlecruiser-size ship with a total MASS factor of 100 . This gives us a basic hull that will take up to 100 MASS of hull strength, drives and other systems.

2) SELECT HULL INTEGRITY LEVEL and create Damage Track.

Any amount of the available MASS may be used for HULL INTEGRITY, which represents the overall structural strength of the ship's hull and its ability to absorb damage. The only restriction is that the MINIMUM amount of hull integrity is 10% of the ship's total MASS.

The actual MASS of the Hull Integrity chosen is equal to the number of DAMAGE BOXES the ship has, which are then organised into four rows (in accordance with the Damage Track rules).

Crew factors should be worked out and indicated on the damage track at this point (mainly for Damage Control purposes), in exactly the same way as for human ship designs.

Kra'Vak ships do not generally use much (if any) hull armour, but if you wish to use a little - there is no prohibition from doing so - then it should be added here using the same rules and costs as human armour from Fleet Book 1 (1 MASS per box of armour, cost is 2 points per MASS used).

EXAMPLE: Because most of their weapons are kinetic penetrators, Kra'Vak ships generally use heavy internal hull structures to minimise the effects of penetrating hits; we choose to allocate 40 MASS to Hull Integrity, so the ship has 40 Damage Boxes (which will be arranged on the Damage Track as four rows of 10). The points cost for the hull integrity will be 2 x MASS used, ie: 80 points.

3) INSTALL MAIN DRIVE .

All ships require a Main Drive; the MD takes up 5% of the ship's overall MASS for every Thrust Factor of drive power. Because they are classed as Advanced Drives, Kra'Vak main drives cost 3 points per MASS used.

EXAMPLE: We decide to give our ship a Thrust Factor of 4, so this takes 4 x 5 = 20% of the overall MASS; the ship's Main Drive takes up 20 MASS.

The cost will be 20 x 3 = 60 points.

4) INSTALL FTL DRIVE (if required).

If an FTL drive is to be part of the design, it is fitted at this stage and uses up 10% of the overall ship MASS. Cost is 2 points per MASS used.

EXAMPLE: Our ship needs an FTL drive; it will take up 100 x 10% = 10 MASS.
The cost will be 10 x 2 = 20 points.

KRA'VAK WEAPONS AND DEFENCES SUMMARY

KINETIC GUNS (K-GUNS)

Range 0 - 6 mu: 2+ to hit
Range 6 - 12 mu: 3+ to hit
Range 12 - 18 mu: 4+ to hit
Range 18 - 24 mu: 5+ to hit
Range 24 - 30 mu: 6 to hit

If hit scored, roll again; roll GREATER than K-gun class = DP equal to class, roll LESS THAN OR EQUAL to class = DP equal to class x 2. Natural roll of 6 is always class x 1 DP, even for K-6 and larger.

First DP of hit taken on armour, remainder penetrates.

Class-1 K-guns ONLY can fire in limited point-defence mode: 1 fighter/missile kill is scored on a roll of 5 or 6; no rerolls.

ICONS (examples): K-1 (all-arc) K-4 (one arc)

MULTIPLE KINETIC PENETRATOR (MKP) PACKS

One-shot system, range 12 mu. 1 die rolled: 1-3 = no hits, 4 or 5 = 1 hit, 6 = 2 hits (no rerolls).

Each hit does 4 damage points, one to armour (if any) and remainder on hull.

ICON:

SCATTERGUNS

One shot system, all-arc fire. May fire in point-defence, area-defence or anti-ship mode.

1 die is rolled in all cases:

Against standard fighters or salvo missiles, the shot kills 1D6 elements from the group/salvo (ie: 1-6 fighters/missiles). Against HEAVY fighters, halve the number of kills (round up). No rerolls.

Against plasma bolts, 4 or 5 reduces the bolt strength by 1, 6 reduces it by 2. No rerolls.

Against ship targets, 4 or 5 = 1 DP, 6 = 2 DP (two separate hits, so both are taken on armour if applicable). No rerolls.

In area defence mode, roll of 1 = 1 DP against ship under attack.

ICON:

5) TOTAL MASS USED SO FAR

Add up the total MASS used by the Hull Integrity, Main Drive and FTL Drive systems, and subtract this from the overall ship MASS to find the amount left for fitting-out with offensive, defensive and other systems.

EXAMPLE: Our design has used 40 MASS for Hull Integrity, 20 for Main Drive and 10 for FTL Drive. This totals 70 MASS from the overall 100, so we are left with 30 MASS for fitting-out.

So far, our ship has cost 100 + 80 + 60 + 20 = 260 points.

6) INSTALL CHOSEN OFFENSIVE AND DEFENSIVE SYSTEMS

Choose the desired mix of weapon installations and other systems to suit the ship's intended mission profile, ensuring that the total MASS required for all the systems does not exceed the available MASS left from step 6.

EXAMPLE: Most K'V warships have their main offensive power in a small number of large K-guns bearing in the Fore arc, plus a few small turretted (all-arc) class 1 K-guns as secondary weapons; defences consist of a number of one-shot Scattergun charges. We decide to fit the largest main guns that we can on our battlecruiser, so opt for a pair of K-5 systems backed up by just a single K-1 and four Scatterguns. We decide that 2 fire control systems will probably be enough at this stage, and add these to the design. This is a hard-hitting strike ship made to kill large enemy targets, but will need support from other K'V ships to be truly effective.

K5 x 2 (F) @ 11 MASS	*= 22 MASS*
K1 x 1 (all arc) @ 2 MASS	*= 2 MASS*
2 x Fire Controls @ 1 MASS	*= 2 MASS*
Scatterguns x 4 @ 1 MASS	*= 4 MASS*
Total MASS used for systems	*= 30*

7) TOTAL POINTS VALUES

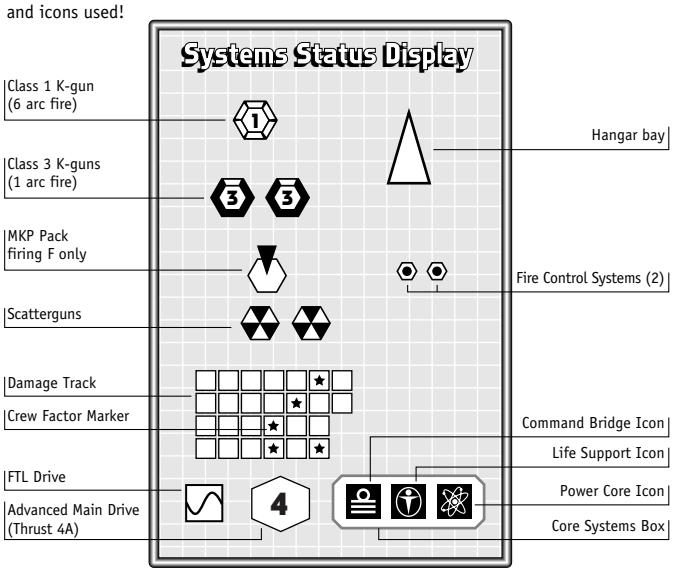
EXAMPLE: The points costing of our example ship is:

BASIC HULL (MASS 100)	*MASS x 1*	*100 points*
HULL INTEGRITY (MASS 40)	*MASS x 2*	*80 points*
MAIN DRIVE (KV type) (MASS 20)	*MASS x 3*	*60 points*
FTL DRIVE (MASS 10)	*MASS x 2*	*20 points*
K5 x 2 (F) (MASS 22)	*MASS x 4*	*88 points*
K1 x 1 (all arc) (MASS 2)	*MASS x 4*	*8 points*
4 x Scatterguns (MASS 4)	*MASS x 5*	*20 points*
2 x Fire Controls (MASS 2)	*MASS x 4*	*8 points*

Total cost (NPV - Nominal Points Value): 384 points

KRA'VAK SYSTEMS STATUS DISPLAY (SSD)

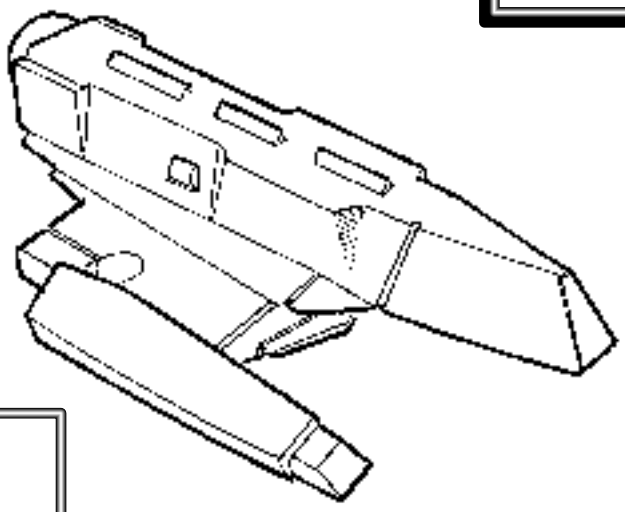
The diagram below is an example of how to read the Kra'Vak SSDs on the ship data panels. Please note that this is NOT an actual ship design, just a key to the symbols and icons used!

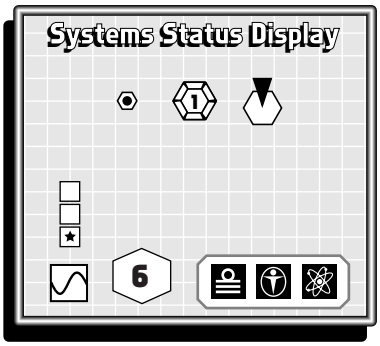


Lu'Dak class SNEAK DEADLY KILLER

LU'DAK CLASS
SNEAK DEADLY KILLER
*(UN codename **KIN**)*
HUMAN CLASS
EQUIVALENT: *Scoutship*

TMF: 11
NPV: 44





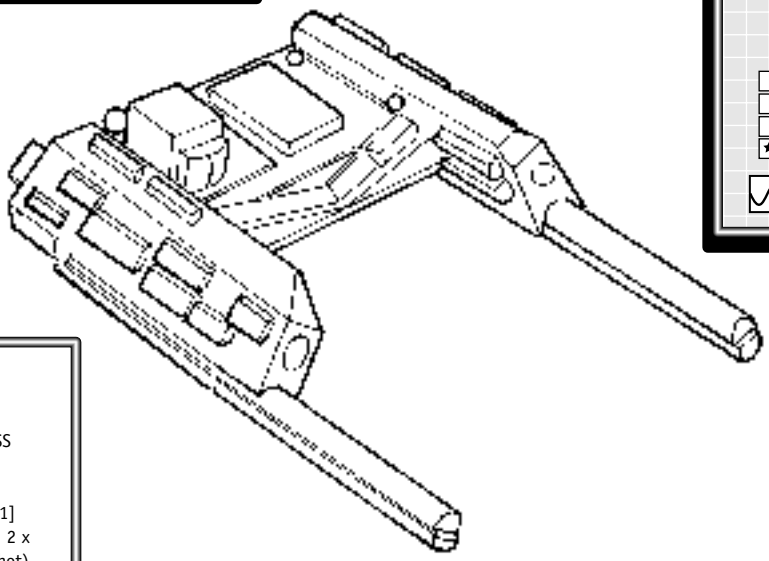
TECHNICAL SPECIFICATIONS:

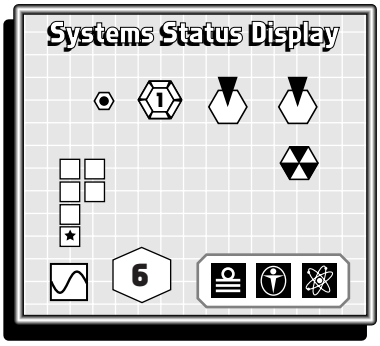
Human Class Equivalent:	Scoutship
Displacement:	1100 tonnes (MASS factor 11)
Hull Integrity:	3
Crew:	11 [Crew Factor: 1]
Armament:	1 x Class-1 K-gun, 1 x MKP packs (one-shot)
Defences:	None
Sensor Suite:	Standard sensors, 1 Fire control system
Drive Systems:	Main Drive Rating 6A, FTL (jump) drive

First encountered: 2185.
The Lu'Dak is a small ship (though heavier than most human scouts) that packs an extremely large punch for its mass. Intended as a fast strike ship for killing small enemy vessels or soft targets (eg: merchantmen), it carries a single-shot MKP pack that allows it to cause severe damage to ships much larger than itself, plus a K-1 battery that permits it to snipe at long range if required.

Ka'Tak class RAIDER DARK KILLER

TMF: 20
NPV: 79





KA'TAK CLASS
RAIDER DARK KILLER
*(UN codename **KEG**)*
HUMAN CLASS EQUIVALENT:
Striker/Corvette

TECHNICAL SPECIFICATIONS:

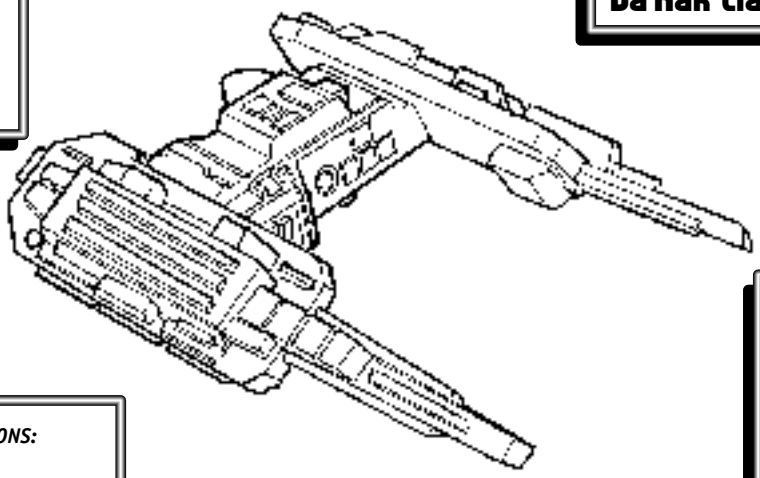
Human Class Equivalent:	Striker/Corvette
Displacement:	2000 tonnes (MASS factor 20)
Hull Integrity:	6
Crew:	20 [Crew Factor: 1]
Armament:	1 x Class-1 K-gun, 2 x MKP packs (one-shot)
Defences:	1 x one-shot "scattergun" kinetic killer
Sensor Suite:	Standard sensors, 1 Fire control system
Drive Systems:	Main Drive Rating 6A, FTL (jump) drive

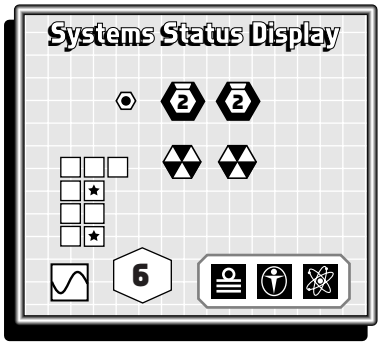
First encountered: 2185.
Like the Lu'dak scout, the Ka'Tak is a very powerful one-pass shipkiller with the ability to gut even a medium-size ship with its two MKP packs; it is quite large and expensive for a Corvette, however, with a mass and cost equivalent to many human frigate classes. Ka'Taks are commonly used as commerce raiders and to provide an independant fast strike force for fleet operations.

Da'Kak class SWIFT WAR KILLER

DA'KAK CLASS
SWIFT WAR KILLER
*(UN codename **KITE**)*
HUMAN CLASS EQUIVALENT:
Heavy Frigate

TMF: 30
NPV: 119



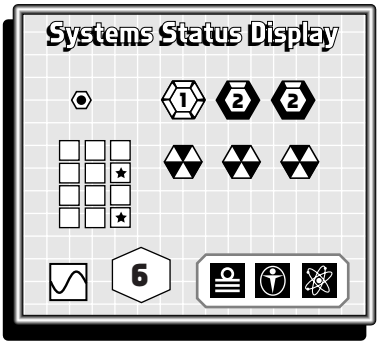


TECHNICAL SPECIFICATIONS:

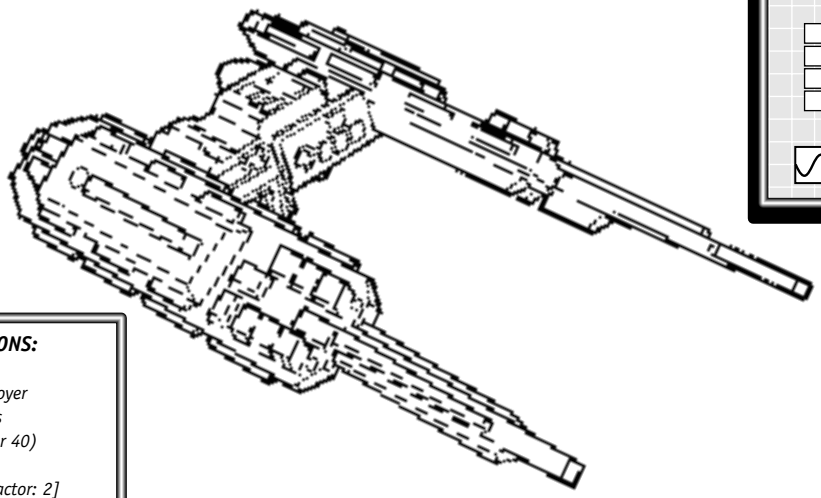
Human Class Equivalent:	Heavy Frigate
Displacement:	3000 tonnes (MASS factor 30)
Hull Integrity:	9
Crew:	30 [Crew Factor: 2]
Armament:	2 x Class-2 K-guns
Defences:	2 x one-shot "scattergun" kinetic killers
Sensor Suite:	Standard sensors, 1 Fire control system
Drive Systems:	Main Drive Rating 6A, FTL (jump) drive

First encountered: 2184.
The Da'Kak is the most commonly encountered Kra'Vak light escort, and is normally classed as a frigate although (in common with most of their smaller ships) its actual mass is very high for this classification, and is more like that of a human destroyer. It is a capable and effective ship, if slightly hampered by the lack of an all-arc K-gun system to back up the significant main armament of two forward-firing K-2 guns.

Di'Tok class LITTLE DEATH DARK SHIP



TMF: 40
NPV: 159



TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	*Heavy Destroyer*
Displacement:	*4000 tonnes (MASS factor 40)*
Hull Integrity:	*12*
Crew:	*40 [Crew Factor: 2]*
Armament:	*2 x Class-2 K-guns, 1 x Class-1 K-gun*
Defences:	*3 x one-shot "scattergun" kinetic killers*
Sensor Suite:	*Standard sensors, 1 Fire control system*
Drive Systems:	*Main Drive Rating 6A, FTL (jump) drive*

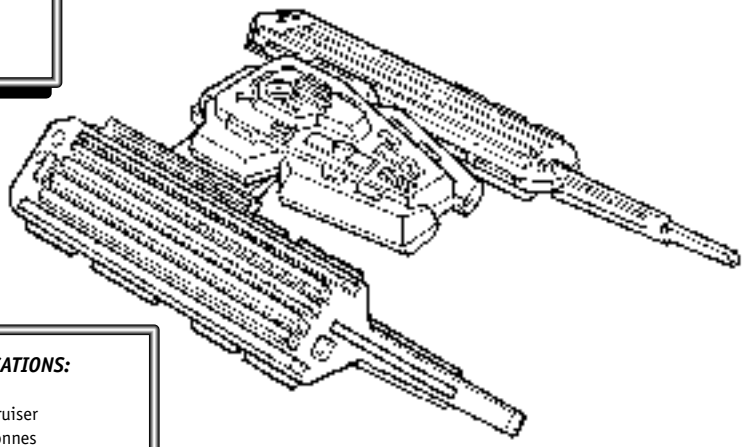
DI'TOK CLASS
LITTLE DEATH DARK SHIP
*(UN codename **KERF**)*
HUMAN CLASS EQUIVALENT:
Heavy Destroyer

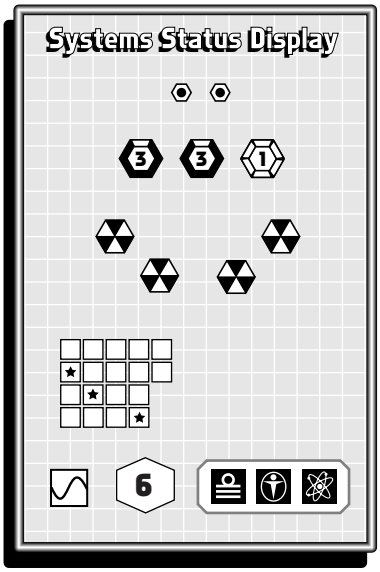
First encountered: 2183.
The Di'Tok was the first Kra'Vak ship class to be encountered by human forces, when one killed the PAU battlecruiser Kinshasa off New Lusaka in 2183. Since that opening shot, Di'Toks have been present at almost every battle between human and Kra'Vak fleets. Mounting the same main guns as a Da'Kak frigate, the Di'Tok supplements these with an all-arc K-1 and a better loadout of defensive scatterguns.

Vo'Bok class HUNTER SILENT SHIP

VO'BOK CLASS
HUNTER SILENT SHIP
*(UN codename **KESTREL**)*
HUMAN CLASS
EQUIVALENT:
Light Cruiser

TMF: 60
NPV: 238





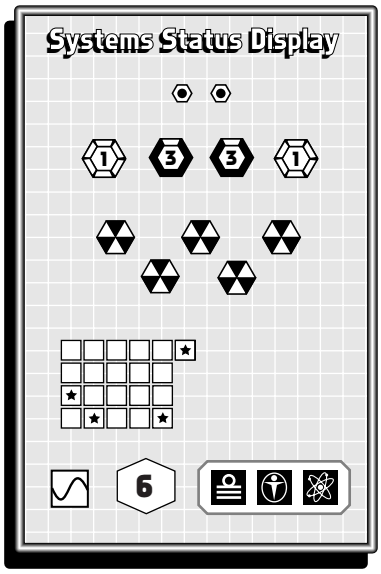
TECHNICAL SPECIFICATIONS:

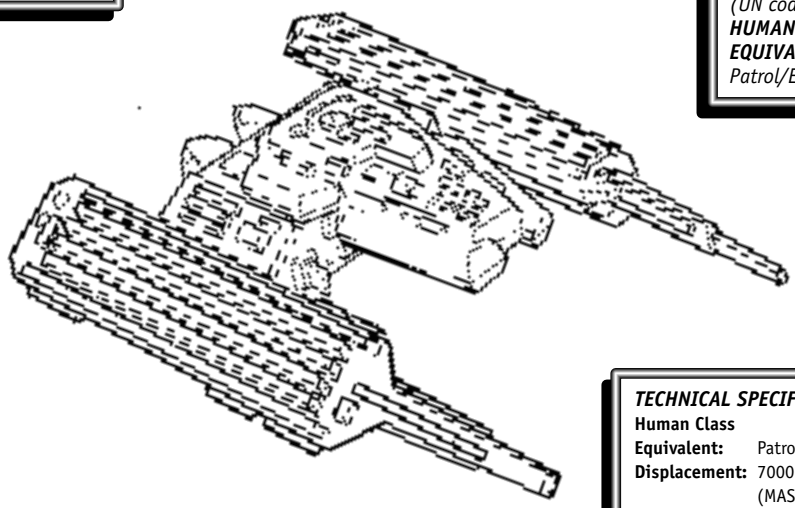
Human Class Equivalent:	Light Cruiser
Displacement:	6000 tonnes (MASS factor 60)
Hull Integrity:	18
Crew:	60 [Crew Factor: 3]
Armament:	2 x Class-3 K-guns, 1 x Class-1 K-gun
Defences:	4 x one-shot "scattergun" kinetic killers
Sensor Suite:	Standard sensors, 2 Fire control systems
Drive Systems:	Main Drive Rating 6A, FTL (jump) drive

First encountered: 2184.
The Vo'Bok is the smallest commonly-encountered Kra'Vak cruiser, and is found supporting most task force groups; they are also used as flagships for small raiding parties of Da'Kak FFs and Di'Tok DHs, and several have been reported on solo operations deep within human space.
Main armament of the Vo'Bok is good, though it has only a single K-1 system for all-arc backup.

Si'Tek class ROVER DARK SHIP

SI'TEK CLASS
ROVER DARK SHIP
*(UN codename **KERMIT**)*
HUMAN CLASS
EQUIVALENT:
Patrol/Escort Cruiser





TMF: 70
NPV: 278

TECHNICAL SPECIFICATIONS:

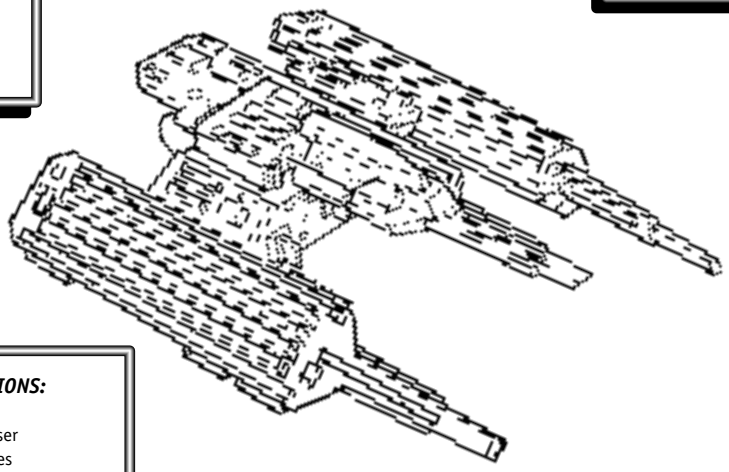
Human Class Equivalent:	Patrol or Escort Cruiser
Displacement:	7000 tonnes (MASS factor 70)
Hull Integrity:	21
Crew:	70 [Crew Factor: 4]
Armament:	2 x Class-3 K-guns, 2 x Class-1 K-guns
Defences:	5 x one-shot "scattergun" kinetic killers
Sensor Suite:	Standard sensors, 2 Fire control systems
Drive Systems:	Main Drive Rating 6A, FTL (jump) drive

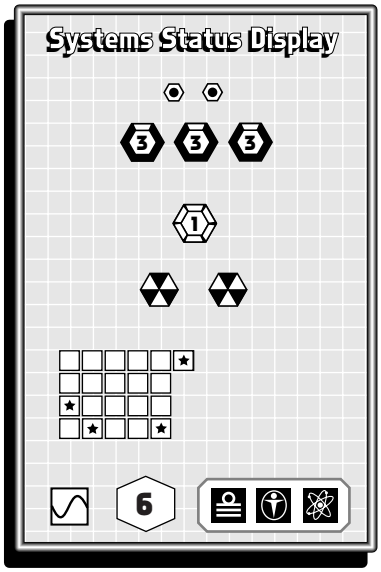
First encountered: 2185.
The Si'Tek is a typical medium sized escort cruiser, normally found supporting the Kra'Vak battleline in major operations. It has a powerful antiship armament, plus enough scattergun charges to be useful in the area-defence role to protect other ships from fighter and missile attack.

Ko'Tek class ATTACK DARK SHIP

KO'TEK CLASS
ATTACK DARK SHIP
*(UN codename **KYLIE**)*
HUMAN CLASS
EQUIVALENT:
Strike Cruiser

TMF: 70
NPV: 275





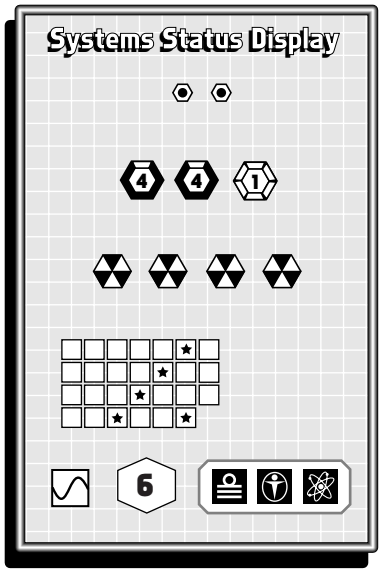
TECHNICAL SPECIFICATIONS:

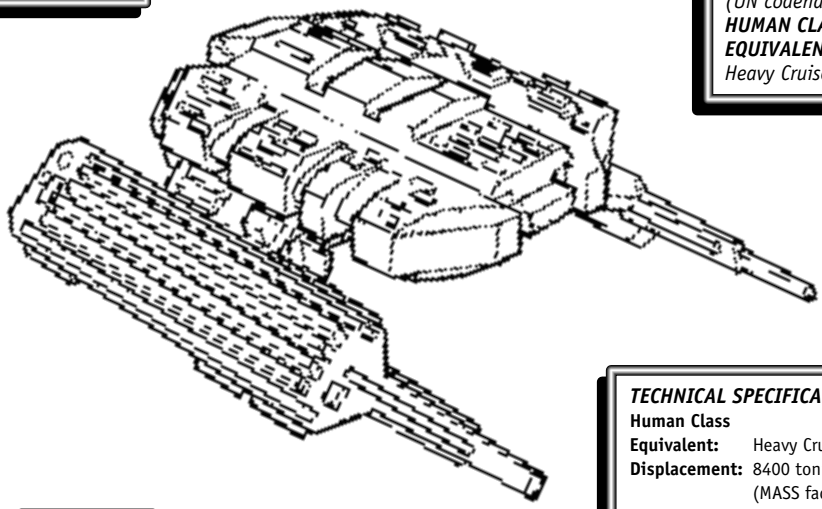
Human Class Equivalent:	Strike Cruiser
Displacement:	7000 tonnes (MASS factor 70)
Hull Integrity:	21
Crew:	70 [Crew Factor: 4]
Armament:	3 x Class-3 K-guns, 1 x Class-1 K-gun
Defences:	2 x one-shot "scattergun" kinetic killers
Sensor Suite:	Standard sensors, 2 Fire control systems
Drive Systems:	Main Drive Rating 6A, FTL (jump) drive

First encountered: 2187.
The Ko'Tek is an odd departure from "normal" Kra'Vak ship designs doctrine, in that it mounts an odd number of large primary K-guns; one of the latest types of Kra'vak warship to be identified, the Ko'Tek appears to be a modified version of a Si'Tek hull with the addition of a third K-3 system, the other defensive systems being downrated to make room for it. Whether this is a full production class or a field-expedient conversion is unclear at this time, but since its appearance a number of Ko'Teks have been seen in action.

Va'Dok class GREAT DEADLY SHIP

VA'DOK CLASS
GREAT DEADLY SHIP
(UN codename KONTOS)
HUMAN CLASS
EQUIVALENT:
Heavy Cruiser





TMF: 84
NPV: 329

TECHNICAL SPECIFICATIONS:

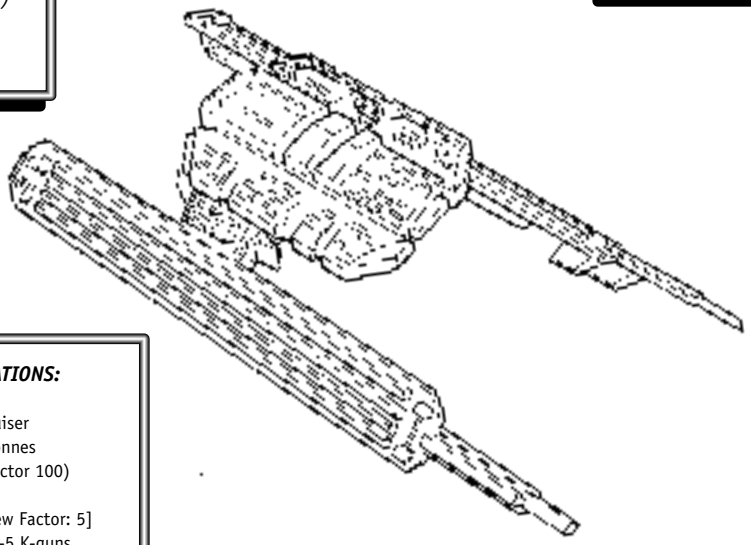
Human Class Equivalent:	Heavy Cruiser
Displacement:	8400 tonnes (MASS factor 84)
Hull Integrity:	27
Crew:	84 [Crew Factor: 5]
Armament:	2 x Class-4 K-guns, 1 x Class-1 K-gun
Defences:	4 x one-shot "scattergun" kinetic killers
Sensor Suite:	Standard sensors, 2 Fire control systems
Drive Systems:	Main Drive Rating 6A, FTL (jump) drive

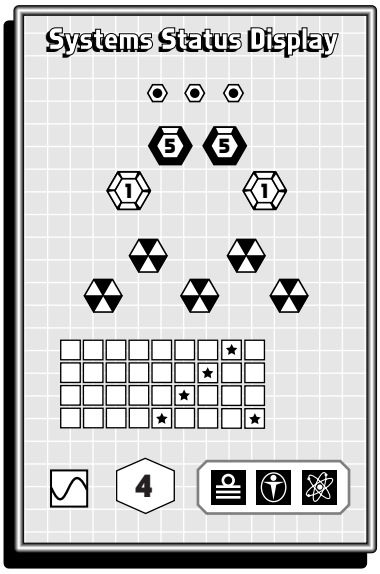
First encountered: 2184.
The Va'Dok is a typical Kra'vak heavy cruiser design, with good thrust (affording excellent manoeuvrability with its advanced grav drives), a strongly-built hull and a deadly fore-arc armament of twin K-4 guns. With only limited secondary weaponry (as single K-1 battery) and a relatively small number of scattergun charges for defence, the Va'Dok is very much a strike ship designed to kill its prey as quickly as possible.

Ti'Dak class FIGHT DEADLY FLYER

TI'DAK CLASS
FIGHT DEADLY FLYER
*(UN codename **KENNY**)*
HUMAN CLASS
EQUIVALENT:
Battlecruiser

TMF: 100
NPV: 393





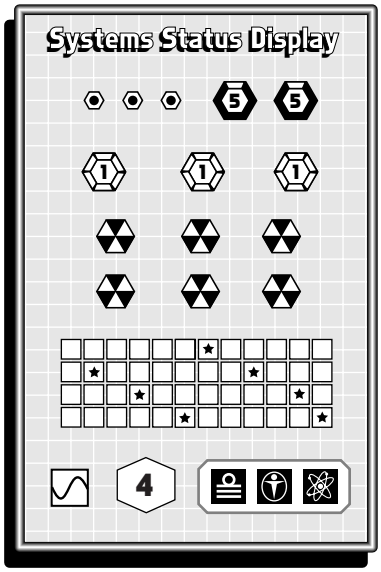
TECHNICAL SPECIFICATIONS:

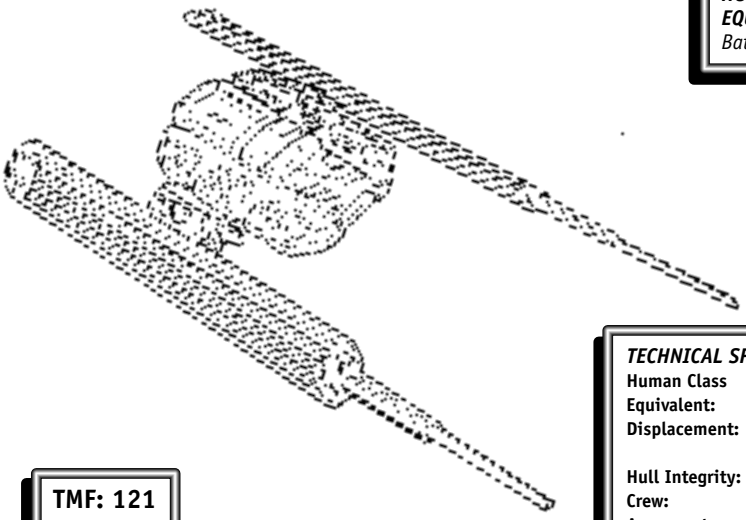
Human Class Equivalent:	Battlecruiser
Displacement:	10000 tonnes (MASS factor 100)
Hull Integrity:	36
Crew:	100 [Crew Factor: 5]
Armament:	2 x Class-5 K-guns, 2 x Class-1 K-guns
Defences:	5 x one-shot "scattergun" kinetic killers
Sensor Suite:	Standard sensors, 3 Fire control systems
Drive Systems:	Main Drive Rating 4A, FTL (jump) drive

First encountered: 2185.
The smallest Kra'Vak design to mount the immensely powerful K-5 guns, the Ti'Dak is built around a slightly smaller version of the Ko'Vol battleship design, and is commonly found as a heavy unit in cruiser task forces, often serving as a flagship for such formations.

Ko'Vol class ATTACK SORROW MONSTER

KO'VOL CLASS ATTACK
SORROW MONSTER
*(UN codename **KATSUMI**)*
HUMAN CLASS
EQUIVALENT:
Battleship





TMF: 121
NPV: 467

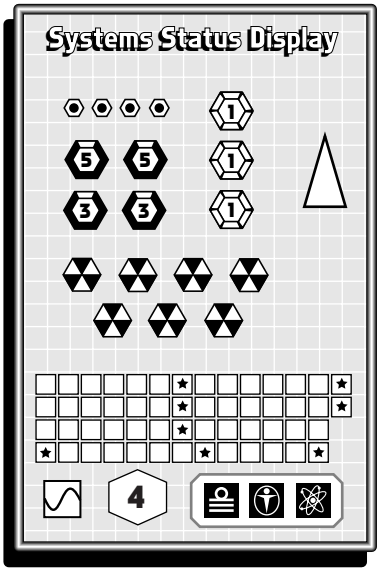
TECHNICAL SPECIFICATIONS:

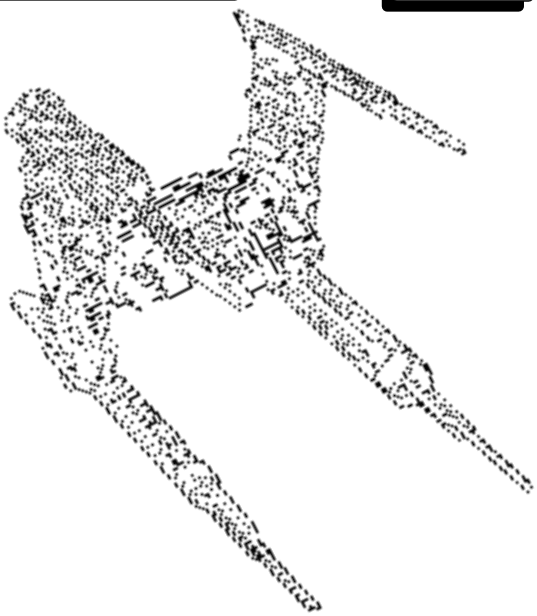
Human Class Equivalent:	Battleship
Displacement:	12100 tonnes (MASS factor 121)
Hull Integrity:	48
Crew:	121 [Crew Factor: 7]
Armament:	2 x Class-5 K-guns, 3 x Class-1 K-guns
Defences:	6 x one-shot "scattergun" kinetic killers
Sensor Suite:	Standard sensors, 3 Fire control systems
Drive Systems:	Main Drive Rating 4A, FTL (jump) drive

First encountered: 2184.
The Ko'Vol has a similar weapons fit to its smaller cousin, the Ti'Dak BC, but slightly better defensive and secondary systems and a much larger and stronger hull structure. The Ko'Vol is used as a major battleline unit, and is also commonly encountered as a long-range independant patrol craft or heavy raider.

Lo'Vok class GREAT DEATH SORROW SHIP

TMF: 160
NPV: 626





TECHNICAL SPECIFICATIONS:

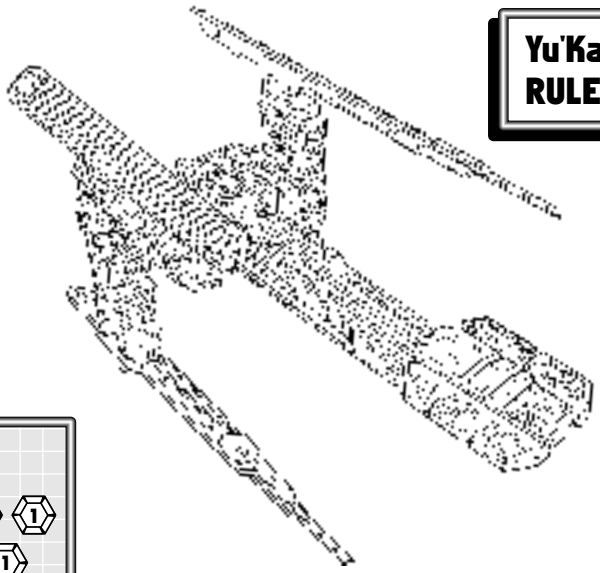
Human Class Equivalent:	Battledreadnought
Displacement:	16000 tonnes (MASS factor 160)
Hull Integrity:	54
Crew:	160 + fighter crews. [Crew Factor: 8]
Armament:	2 x Class-5 K-guns, 2 x Class-3 K-guns, 3 x Class-1 K-guns
Defences:	7 x one-shot "scattergun" kinetic killers
Sensor Suite:	Standard sensors, 4 Fire control systems
Drive Systems:	Main Drive Rating 4A, FTL (jump) drive
Hangar Bays:	1 bay holding 6 fighters (fighter cost not included)

LO'VOK CLASS GREAT DEATH SORROW SHIP
(UN codename ***KATANA****)*
HUMAN CLASS EQUIVALENT:
Battledreadnought

First encountered: 2184.
The Lo'Vok is the standard Kra'vak light dreadnought or heavy battleship class, with an extremely powerful main weapons suite comprising twin K-5 guns and a pair of lighter (but still deadly) K-3 types. Like most human battledreadnoughts, the Lo'Vok has a limited fighter handling capability, with a single hangar bay to carry one group of supporting fighters.

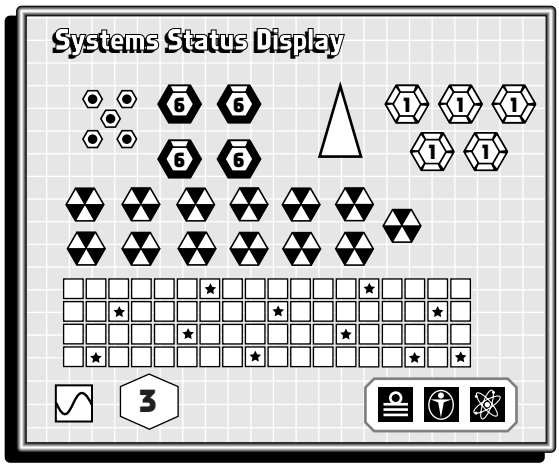
Yu'Kas class RULER WAR MOUNTAIN

First encountered: 2185.
As the human translation of its Kra'Vak name suggests, the Yu'Kas is often used as a command flagship in major war fleets, and it is a massive ship with devastating firepower. The awesome power of the four huge class-6 kinetic guns, backed up by a large array of lighter K-gun batteries, make the Yu'Kas able to cripple many a large warship with a single well-aimed salvo. As with all Kra'vak ships, its advanced grav drive allows it amazing manoeuvrability for a vessel of its size, and it also has the capacity to carry a single embarked fighter group.



YU'KAS CLASS RULER WAR MOUNTAIN
(UN codename ***KICKBACK****)*
HUMAN CLASS EQUIVALENT:
Superdreadnought

TMF: 220
NPV: 883

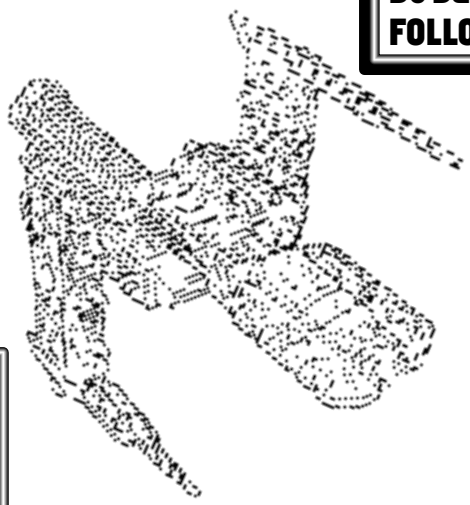


TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Superdreadnought
Displacement:	22000 tonnes (MASS factor 220)
Hull Integrity:	72
Crew:	220 + fighter crews. [Crew Factor: 11]
Armament:	4 x Class-6 K-guns, 5 x Class-1 K-guns
Defences:	13 x one-shot "scattergun" kinetic killers
Sensor Suite:	Standard sensors, 5 Fire control systems
Drive Systems:	Main Drive Rating 3A, FTL (jump) drive
Hangar Bays:	1 bay holding 6 fighters (fighter cost not included)

Do'San class
FOLLOWER SLIVER MOTHER

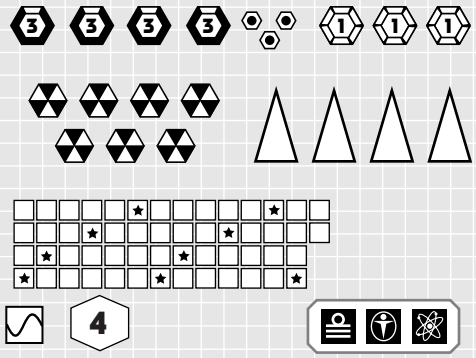
First encountered: 2185.
The Do'San is the Kra'vak equivalent of a Light Carrier, able to hold four groups of fighters (usually a mix of Ra'San standard type and Va'San heavies). It is used in smaller battle groups that do not warrant the inclusion of the huge Ko'San class. Although primarily a fighter carrier, the Do'San mounts enough antiship armament to give a good account of itself in the battleline, plus the usual Kra'vak hull strength to absorb considerable punishment.



DO'SAN CLASS FOLLOWER SLIVER MOTHER
*(UN codename **KIMONO**)*
HUMAN CLASS EQUIVALENT:
Tactical (Light) Carrier

TMF: 180
NPV: 671

Systems Status Display



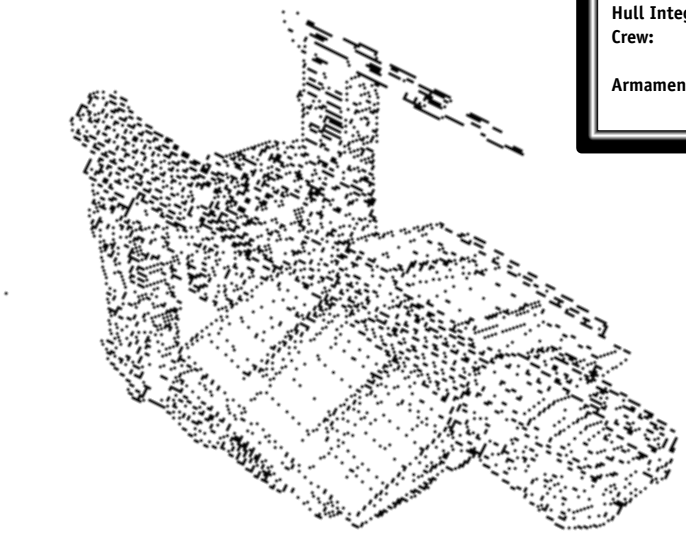
TECHNICAL SPECIFICATIONS:

Human Class Equivalent: Tactical Carrier
Displacement: 18000 tonnes (MASS factor 180)
Hull Integrity: 54
Crew: 180 + fighter crews. [Crew Factor: 9]
Armament: 4 x Class-3 K-guns, 3 x Class-1 K-gun
Defences: 7 x one-shot "scattergun" kinetic killers
Sensor Suite: Standard sensors, 3 Fire control systems
Drive Systems: Main Drive Rating 4A, FTL (jump) drive
Hangar Bays: 4 bays each holding 6 fighters (fighter cost not included)

Ko'San class
ATTACK SLIVER MOTHER

TECHNICAL SPECIFICATIONS:

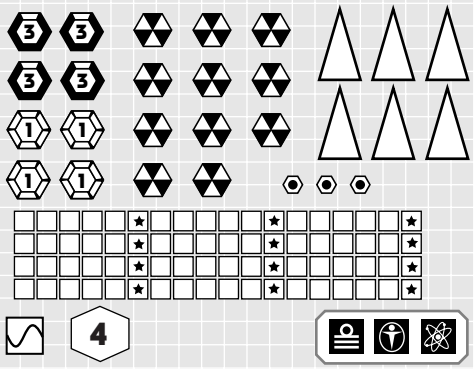
Human Class Equivalent: Heavy Carrier
Displacement: 24000 tonnes (MASS factor 240)
Hull Integrity: 72
Crew: 240 + fighter crews. [Crew Factor: 12]
Armament: 4 x Class-3 K-guns, 4 x Class-1 K-guns
Defences: 11 x one-shot "scattergun" kinetic killers
Sensor Suite: Standard sensors, 3 Fire control systems
Drive Systems: Main Drive Rating 4A, FTL (jump) drive
Hangar Bays: 6 bays each holding 6 fighters (fighter cost not included)



TMF: 240
NPV: 917

KO'SAN CLASS ATTACK SLIVER MOTHER
*(UN codename **KINGPIN**)*
HUMAN CLASS EQUIVALENT: *Heavy Carrier*

Systems Status Display

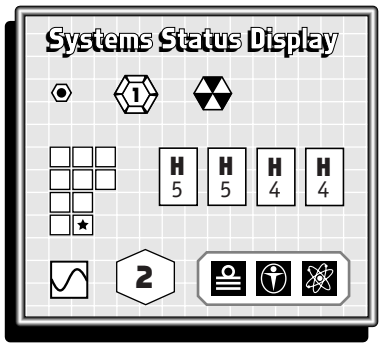


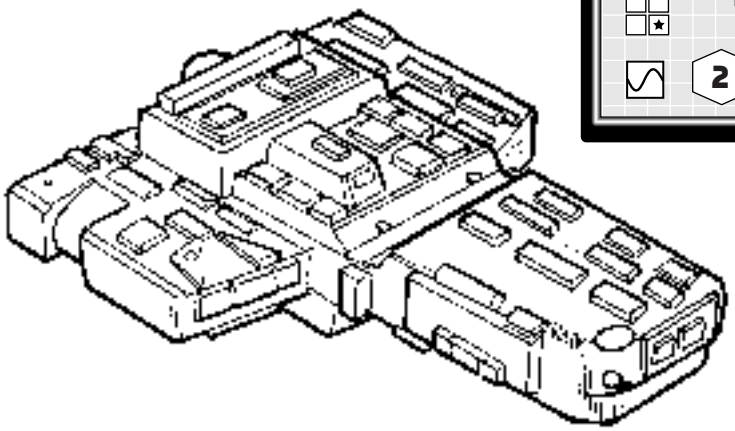
First encountered: 2185.
The huge Ko'San is the biggest Kra'vak warship yet encountered; it is primarily a fighter carrier, with 6 groups of mixed Ra'San and Va'San fighters embarked, but is also well armed and protected and can hold its own in combat against most enemies. In particular its scattergun point defence armament is extensive and makes it very dangerous for enemy fighters to attack. The Ko'San also has a drive power that gives it a manoeuvrability well in excess of any human carrier class.

Sha'Ken class WAR SUPPLIES MOVER

TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Light Freighter/ Fleet Tender
Displacement:	4000 tonnes (MASS factor 40)
Hull Integrity:	10
Crew:	40 [Crew Factor: 1 (Merchant)]
Armament:	1 x Class-1 K-gun
Defences:	1 x one-shot "scattergun" kinetic killer
Sensor Suite:	Standard sensors, 1 Fire control system
Drive Systems:	Main Drive Rating 2A, FTL (jump) drive
Cargo Holds:	18 mass [1800 tonnes]





TMF: 40
NPV: 97

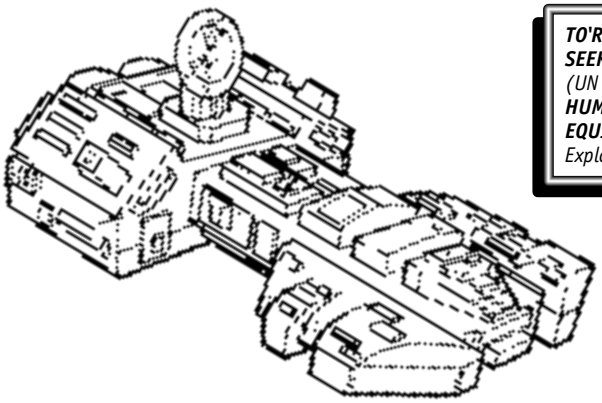
SHA'KEN CLASS WAR SUPPLIES MOVER
*(UN codename **KODO**)*
HUMAN CLASS EQUIVALENT:
Light Freighter/ Fleet Tender

First encountered: 2186.
The Sha'Ken is a small supply ship often found accompanying Kra'Vak war fleets, carrying stocks of disposable munitions (K-gun ammunition, scattergun reloads and the like) and other consumables. Sha'Ken class ships have also been known to be used as small assult carriers to transport ground troops and equipment for attacks on minor human outposts where only limited resistance is expected.

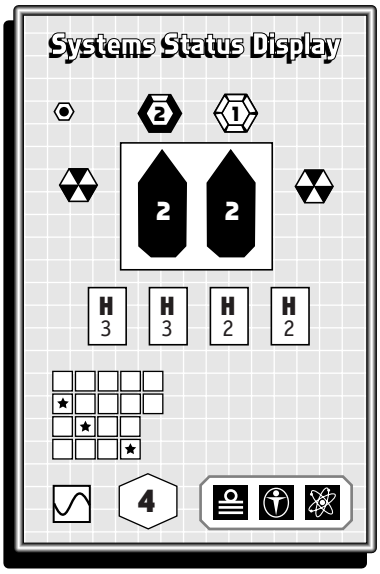
To'Rok class SEEKER STEALTHY SHIP

First encountered: 2186.
The To'Rok is a reconnaissance ship used by the Kra'Vak to scout out enemy-held systems prior to attack; it also carries considerable laboratory facilities and a pair of small interface landers, and is used to insert covert teams onto enemy occupied worlds to obtain captives for study and analysis. The ship is well enough armed to protect itself if necessary, but it is not intended to be a warship.

TO'ROK CLASS SEEKER STEALTHY SHIP
*(UN codename **KANGA**)*
HUMAN CLASS EQUIVALENT:
Explorer/Recon ship



TMF: 60
NPV: 196



TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Explorer/Recon Ship
Displacement:	6000 tonnes (MASS factor 60)
Hull Integrity:	18
Crew:	60 [Crew Factor: 3]
Armament:	1 x Class-2 K-gun, 1 x Class-1 K-gun
Defences:	2 x one-shot "scattergun" kinetic killers
Sensor Suite:	Standard sensors, 1 Fire control system
Drive Systems:	Main Drive Rating 4A, FTL (jump) drive
Lab or Hold Space:	10 mass [1000 tonnes]
Shuttle Bay:	6 mass, holding 2 x mass 2 interface shuttles (4 points each, cost not included in NPV)

KRA'VAK SHIP RECORD CHART

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

Ship ID	Turn 1	V	Turn 2	V	Turn 3	V	Turn 4	V	Turn 5	V	Turn 6	V	Turn 7	V	Turn 8	V	Turn 9	V	Turn 10	V

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XENO FILE 2: THE SA'VASKU

[Note: in terms of the game background, Humanity knows almost nothing of the Sa'Vasku beyond what has been observed of their combat capabilities. Much of the detail provided below is background material to permit the development of interesting scenarios; it does NOT represent information known to the players' "characters" on board the ships in battle.....]

The Sa'vasku have been around for a long time, and have seen many younger starfaring civilisations rise, falter and die over the millennia. The Sa'Vasku themselves are huge, almost immobile creatures that live a semi-aquatic existence surrounded and tended by their myriad biotech constructs; they are not immortal, but are incredibly long-lived by human standards, with lifespans into thousands of years. There are only a small number of actual Sa'Vasku on each of the worlds that form their domain, and they seldom leave those worlds, carrying out almost all contact between their own worlds and with other races by proxy through their constructs.

Their technology is very advanced in some ways, though restricted in others by the form that it has taken - they long ago reached a technological plateau and have remained there ever since. Their control over biological engineering and biotechnology is very great, and their constructs are supremely versatile, but they are certainly not invincible against the "hard" weapons technology of the younger races.

The almost simultaneous (in galactic terms) rise of three aggressive and expansionist young races - Humanity, the Phalons and the Kra'Vak - within the same smallish volume of space has been unprecendented in recent history (that is, in the last few hundred millennia!), and the Sa'Vasku find this highly disturbing - some of them believe it to be the result of genetic manipulation by races even older than themselves, known simply as the Old Ones, for reasons that even the Sa'Vasku do not understand.

Above all, the Sa'Vasku wish to maintain a balance - they are quite happy for things to carry on as they have for many tens of thousands of years, and they fear change and instability. They have realised that a total victory by any one of the younger races over the others would leave the Sa'Vasku themselves at a disadvantage and open to attack. While they generally dislike open interference in the affairs of other races (and consider the younger races somewhat beneath their attention), in this case they have found themselves getting involved - in effect, they wish to ensure that no-one actually wins the war, and ideally they would like to see all the protagonists wear themselves down through attrition until none of them are a further threat to the stability of the area.

The Sa'Vasku will thus involve themselves (via their constructs) on any and all sides at different times, especially if one race appears to be gaining the upper hand on a strategic level, which makes their agenda less than comprehensible to the other races - if a Sa'Vasku force is encountered it is impossible to know whether it will act as friend or foe until it makes its intentions known (often by opening fire...) and reasoned communication is impossible unless the Sa'Vasku themselves initiate it.

There have been a number of "meetings" between the Sa'Vasku constructs and humans since first contact was made in 2188, always at the instigation of the Sa'Vasku. They totally ignore all hailing and communication attempts from human ships, and humanity has learnt that they must wait for the Sa'vasku to come to them. At times, human communication attempts have been met with attacks of great ferocity, and it may well be that they interpret some of the transmissions as hostile sensor sweeps; as with everything concerning the Sa'Vasku, this remains pure conjecture to the humans.

SA'VASKU SPACE COMBAT CONSTRUCTS

Sa'Vasku starships are known as Sra'Kith'Aa (Far-Reacher War Entities), a term which has been used by their contact constructs during their limited communication with representatives of humanity. Throughout the period of the Xeno War, Humanity knows effectively nothing about the Sa'Vasku, or their motivations, beyond that little which the aliens themselves have deigned to tell them.

No signals, verbal or otherwise, between Sa'vasku craft or other constructs have ever been detected by human ships except when the Sa'Vasku desired contact with humanity, and it is theorised that they use either a form of telepathic communication or something equally undetectable to current human sensor technology.

The "names" of the Sa'Vasku ship classes are given in the ship data as the closest human-pronounceable rendition of the actual sound patterns made by the contact constructs (the specialised volitional constructs that the Sa'Vasku use to interface with humanity on the rare occasions that they deem this necessary) when describing the ships, and the nearest possible human translation of these sounds - the use of terms like "elder" and "younger" in these ship names appears to imply that Sa'Vasku ships actually grow and mature into larger classes as they get older, but this may be just a linguistic confusion (though it is the source of many "When I grow up I want to be a Superdreadnought..." jokes among the Human military!).

It is not known if Sa'Vasku ship-entities have individual names as well, and there is the possibility that some confusion may exist between these and the "class" names. Most human navies have adopted the UNDIA-assigned codenames as standard designations for the Sa'Vasku ship types encountered so far.

Unofficially, most human crews refer to Sa'Vasku ships in general as "Spikeys" or "Spineys", an obvious reference to their appearance.

Each Sa'Vasku "ship" is a single large bioconstruct, an artificial living entity in its own right. Where separate "crew" have been encountered from Sa'Vasku vessels, these have themselves been constructs engineered for specific functions, such as the terrifying biotech warriors used as boarding parties and ground assault forces. A Sa'Vasku ship-entity will carry many smaller constructs of almost limitless variety, each specialised for a particular task, and these constructs are generally divided into two types - Volitionals, which have their own individual intelligence and limited free will, and Non-Volitionals which are mindless, bio-robotic worker constructs.

The bulk of the main hull structure of a Sa'vasku ship is composed of living matter termed "biomass", which serves both as structural integrity and to provide raw material for the construction (or growth) of their fighter-equivalent Drones and for other forms of expendable ordnance; raw biomass may also be used in attempts to repair and replace damaged systems lost in combat. Most Sa'Vasku ships other than the very smallest ones also carry an "armour" layer, termed a carapace, which is composed of dead biomass that may not be converted for other purposes.

The mobility, offensive and defensive capabilities of Sa'Vasku ships are uniquely flexible - they can reconfigure themselves at will to direct their available power to drives, screens, weapons etc. in any proportion, which makes them very unpredictable to fight against - a ship that exhibits phenomenal thrust levels at one moment may suddenly divert all power to its weapon nodes and unlease a hugely powerful energy blast at potentially enormous ranges. The Sa'Vasku are not invincible, however, and a ship that is using most of its power for thrust or weapons fire is in turn very vulnerable to attack, as it will not have enough power left over to put up its defences or to repair damage it sustains.

GAMING NOTES FOR SA'VASKU PLAYERS

Commanding a Sa'Vasku fleet in combat is a challenge, and requires a bit more thought and step-by-step planning than most of the other fleets in Full Thrust. If you can master this, however, the special capabilities of the Sa'Vasku ships make them formidable and dangerous opponents.

If a Sa'vasku player correctly anticipates his enemy's actions and uses his ships' unique abilities to counter them in the most efficient way, then he will be hard to beat; if he fails to do this, he will probably get soundly thrashed!

In their "average" form, Sa'Vasku ships are no more powerful (and in some ways worse) than equivalent classes from other races and powers. Their great strength, however, lies in their ability to choose how to distribute their available energy to optimise different areas of their performance on a turn by turn basis. If a Sa'Vasku player expects to take a lot of fire from his opponent in a particular turn, then he can divert the majority of his ships' energy to mobility and/or defences to either avoid or fend off the attacks - in the next turn he may be in an ideal position to attack, and may then switch all his energy output to offensive measures and fry the opposition. A single medium-sized Sa'Vasku ship can have the maneuverability of a scout, the defences of a fleet carrier or the attack strength of a dreadnought - but NOT all at the same time..... if it gets caught in the wrong place, with the wrong energy distribution, it WILL die quickly....

SA'VASKU SHIP DESIGN AND SYSTEMS

MAIN DRIVE NODES

Unlike the other races, who all have specific thrust ratings given to their ships' drive systems at the design stage, the thrust output of Sa'Vasku drives depends on the amount of power points being fed to them each turn.

The amount of power required to produce a given thrust factor is dependant on the overall MASS of the ship, and is determined thus:

Power points required = 2% x thrust required x ship MASS .

So, for thrust-6 with a MASS 80 ship, the power requirement is 2% of (6 x 80) = 9.6 (rounded up to 10) power points.

Now, don't worry about the bit of maths here - the power requirements will be calculated at the design stage and entered up on the ship's Status Display in the form of the "thrust table" (the ship designs in this volume have these already done, of course), so you can see at a glance exactly how much power must be put into the ship's Move pool to get the thrust level you want for that turn.

When Sa'Vasku drives become damaged as a result of a threshold check (or a needle hit), they require double the normal amount of power input for a given thrust rating (4% x thrust x MASS); again, these amounts are worked out in advance and entered up on the thrust table for easy reference in play.

The THRUST TABLE on each Sa'Vasku SSD consists of a column headed "T", which is the amount of thrust produced, and a "P" column which gives the number of power points required to produce that thrust factor. There are two entries in the "P" column, the first for the drive node in its fully operational state and the second (after the slash) for a damaged drive node. A whole (integer) number of power points must be spent on thrust, so if the factor required is greater than one entry in the T column but less than the next, then the power point cost is as for the next higher entry.

SA'VASKU THRUST AND MANOEUVRE

Sa'Vasku drives count as Advanced Drives, and use the same rules for movement in either Cinematic or Vector mode as for the Kra'Vak drives. Refer to the Kra'Vak movement rules section of this volume, and apply the same rules and restrictions.

The icon used for a Sa'Vasku drive node is the same as that used for the Kra'Vak advanced drives, as a little reminder that the same movement rules are used in both cases; as there is no set thrust rating for Sa'Vasku drives, however, there is a star rather than a thrust number printed in the drive icon.

FTL DRIVE NODE

A Sa'Vasku FTL Node is the equivalent of any other race's FTL Drive system. It requires points equal to its own MASS, from the Movement (M) pool, to activate.

When activated, the FTL jump occurs according to the standard rules.

FTL Node MASS is equal to 10% of ship mass. Cost is 2 points per MASS of node.

BIOMASS BOXES

The damage track of a Sa'vasku ship is composed of biomass boxes in the same way as other ships have hull integrity boxes. Where damage is concerned, a biomass box works exactly like a hull box - one is crossed off for every damage point inflicted on the ship's structure, working along each row from left to right. A threshold check is made for the ship's systems when the end of a row of the damage track is reached.

Biomass differs from other races' ship hulls in that it can be deliberately consumed by the ship itself, to produce drone (fighter) groups or ammunition for pod launchers nodes, and also to repair damaged ship systems. All biomass consumed this way is crossed off the damage track in the opposite direction to that of inflicted damage - ie: from the right-hand end of the bottom row.

Consumed biomass does NOT cause threshold checks to be taken, even if an entire row or more is consumed. Only inflicted damage can cause threshold checks to be made.

If the consumed biomass boxes meet the damaged ones (ie: all biomass boxes have been crossed out for one reason or the other), then the ship is dead.

Each biomass box requires 1 MASS, and costs 2 points.

CARAPACE

A Sa'Vasku ship may have a number of Carapace boxes in a single row above the top row of its biomass boxes; Carapace boxes are indicated by circle icons, in the same way as human ship armour, and the carapace is treated like armour in all respects. The carapace boxes represent a hardened layer of "dead" biomass, and may not be consumed by the ship.

Carapace boxes take 1 MASS each, and cost 2 points per box.

POWER GENERATORS

A Sa'vasku ship has a number of Power Generators (usually four) placed at the end of the rows of its biomass boxes. The total amount of power points available to the ship for each game turn is the sum of the numbers in all the still-functioning Power Generators.

As accumulated damage reaches the end of a row of biomass boxes, the Power Generator at the end of that line is AUTOMATICALLY lost; it does not have to be rolled for during the threshold check. Full rows of biomass consumed by the ship does NOT cause the loss of a power generator.

MASS required for generators is 1 per power point value. Cost is 2 points per MASS.

ALLOCATING POWER

Each turn during the orders phase, the ship's available power (the sum of the functioning power generators) must be divided between 4 "power pools"; MOVEMENT, ATTACK, DEFENCE, and REPAIR, noted on the record chart as M, A, D and R. The division of the available power points between the four pools is entirely at the player's discretion, and there is no requirement to place any power points into any one pool - power may be allocated to all four pools, or concentrated in just one or two, to choice.

Power allocated to the MOVEMENT (M) pool is available for powering the Main Drive Node to apply thrust, or to power up the FTL Drive Node to make an FTL jump off-table.

The amount of power that must be available in the M pool for a given thrust factor is listed in the Thrust table on the ship's SSD.

Power allocated to the ATTACK (A) pool is available for powering the ship's Stinger Node(s) to fire beam shots, and to fire any Pod Launcher Nodes if the ship is so equipped.

The amounts of power required for each weapon system are given in the relevant rules for those systems. Power from the A pool is also used to fire the ship's point-defence systems in the form of its Spicules.

Power allocated to the DEFENCE (D) pool is available for energising the ship's Screen Node(s) if it has any; the amount required to power each screen node is equal to the mass of the node, which in turn is equal to 5% of the overall ship mass.

The allocation of sufficient power to the D pool to operate the screen node(s) implies that the screen is in operation for the whole of that turn. If a ship does not have a functional screen node, then it does not gain any benefit from power allocated to the D pool.

Power allocated to the REPAIR (R) pool is available for system repair attempts, and is also used by Broodships (or other ships with drone wombs) to "grow" their drone (fighter) groups.

IMPORTANT NOTE: Any power points that are not used by the end of the turn, whichever pool they have been allocated to, are lost. There is no power storage from turn to turn. "USE IT OR LOSE IT...."

STINGER NODES

The Stinger Node is the Sa'Vasku equivalent of a standard FT beam weapon, except that its output is variable according to how much power is allocated to each shot.

One power point channelled through a stinger node produces a 1-die beam shot at up to 12 mu range. At up to 24 mu range, 2 power points are required for a 1-die shot, at up to 36 mu it doubles again to 4 power points per die, and continues doubling as range increases - thus a Sa'Vasku beam may have any range you like as long as there is enough power to pump into the Stinger node, but it is a system of rapidly diminishing returns - you can get a shot to reach a huge 72 mu range if you REALLY want to, but you will need 32 power points just to roll a single hit die!

Power points (PP) required for 1-die shot at:

0-12 mu range 1 PP
12-24 mu range 2 PP
24-36 mu range 4 PP
36-48 mu range 8 PP
48-60 mu range 16 PP
60-72 mu range 32 PP

and so on....

A single stinger node may handle any required amount of power for each shot, but each node may only fire at one target in any given turn. All stinger nodes may fire through 3 arcs, and the node may be placed to cover any three contiguous arcs at the designer's choice.

Sa'Vasku beam die rolls are read exactly as for standard beam weapons, ie: against an unscreened target, 1-3 = no effect, 4-5 = 1 DP, 6 = 2 DP + reroll.

Human and Sa'Vasku screens, and Phalon vapour shrouds all affect stinger shots in the standard way.

Rerolls are made for natural rolls of 6, and stingers do not penetrate armour (ie: hits are taken by armour/carapace boxes if any remain, before applying any hits to hull) unless reroll damage is inflicted.

EXAMPLE 1: A Sa'Vasku ship has 6 PP available for a single stinger shot; if it was to engage a target within 12 mu, it would get to roll 6 dice; at up to 24 mu, 3 dice, and to 36 mu 1 die only (and 2 PP would be wasted).

EXAMPLE 2: A Sa'Vasku ship has 10 PP available for a single stinger shot; if it was to engage a target within 12 mu, it would get to roll 10 dice; at up to 24 mu, 5 dice, and to 36 mu 2 dice.

POD LAUNCHER NODES

A Pod Launcher Node is a projectile launcher which can fire a number of different munitions, which are created by consuming biomass and then fired using power points from the Attack (A) pool. The type of munition to be fired may be decided by the player at the time of launch - it does not have to be specified earlier. Three different munition ("pod") types are detailed below - the Lance, Leech and Interceptor Pods, but the Sa'Vasku are versatile enough to use many others - we may add a few more types later, or players are free to come up with some as house rules provided everyone in the playing group is happy with them.

Pod Launcher Nodes are single-arc weapons, and most of the pod munitions may only engage targets that fall within the launcher's arc (the exception being the short-range Interceptor Pod, as detailed below).

The phase of the turn sequence in which a pod launcher fires depends on the munition it is firing - Lance and Leech Pods are fired during the main ship fire phase, while Interceptor Pods are fired in the point-defence phase. Regardless of this, a Pod Launcher may only fire once per turn.

LANCE PODS

The Lance Pod is the Sa'Vasku's primary carapace (armour) penetrating weapon.

Lance Pods require 3 power points to fire, and consume 1 biomass. They may be fired at any target that falls within the fire arc of the pod launcher.

To score a hit with a Lance Pod, roll 1 die: at 0-6 mu, a hit is scored on 3+, at 6-12 mu 4+, at 12-18 mu 5+, and at 18-24 mu a 6 is required.

When a lance pod hits its target, roll a second D6; the number rolled is the number of damage points inflicted by the hit; as with Kra'Vak K-guns, only the FIRST point scored is taken off armour/carapace (if any), the entire remainder penetrates through to kill hull boxes. There are no rerolls for Lance Pod damage.

LEECH PODS

Leech Pods are very nasty weapon systems designed to inflict continuing damage on their target.

Leech Pods require 3 power points to fire, and consume 1 biomass. They may be fired at any target that falls within the fire arc of the pod launcher.

The range and to-hit mechanism is the same as given above for the Lance Pods.

When a leech pod hits its target, it does 2 points of immediate damage; however, it will the CONTINUE to do damage turn by turn, unless it is killed off by the target ship. For every subsequent turn that the leech torp is active, it does an additional 2 points of damage to the target ship - so on the turn of impact it causes 2 points, on the next turn a further 2 points and so on....

Leech Pod damage is non-penetrating - it will spread across the ship's surface, destroying armour or carapace first before attacking the hull.

To kill off a leech pod, a crewed ship (Human, KV or Phalon) treats it as a damage control task - the rolls, number of teams assigned etc. are exactly as for repairing a lost system - success indicates the leech has been eradicated, failure means it continues to do damage next turn. The attempts to kill it occur in the damage control phase, so if they fail then the leech will do it's next turn of damage at the beginning of the following fire phase before there is another chance to kill it.

Other Sa'Vasku ships attacked by a leech pod need to expend at least one power point allocated to the Repair (R) pool to try and kill it - the required roll is 6, -1 for each additional power point applied to the attempt up to a maximum of 3 points total (which will kill the leech on a roll of 4+).

INTERCEPTOR PODS

An Interceptor Pod is a Pod Launcher munition which "bursts" after firing and releases a cluster of miniature drones, like the Sa'Vasku's fighter drones but much smaller and with only a one-turn lifespan; they are used as an area-defence weapon to hunt down and kill enemy fighters, missiles and similar targets.

Firing an Interceptor Pod from a Pod Launcher Node requires 3 power points from the Attack (A) pool, and also consumes 1 biomass.

The range of an Interceptor Pod is up to 12 mu, and any fighter group, missile salvo or plasma bolt within 12 mu of the firing ship may be targetted - it does NOT have to fall within the fire arc of the Pod Launcher, because the Interceptor mini-drones can steer themselves aftre launching; nor does the target have to itself be attacking the firing ship, which makes the Interceptor Pod suitable for the area-defence role..

The effect of an Interceptor Pod is the same as that of a Kra'vak Scattergun - against fighters and missiles it kills 1 D6 members of the target group/salvo, and against plasma bolts a roll of 4 or 5 reduces the bolt strength by 1, while a 6 reduces it by 2.

Any fighter group, missile salvo or plasma bolt within 12mu may be targetted, not just those attacking the firing ship.

DRONE WOMBS

Sa'Vasku drones (fighters) may only be grown and launched by ships which have Drone Wombs - each womb can grow (or launch) one 6-drone group at a time. Sa'vasku ships produce drones by converting hull biomass into the necessary components - it takes 1 biomass to "grow" 1 drone, and they may only be produced in full groups of 6 - if a ship has less than 6 available biomass then it cannot grow a drone group.

Drones that survive their mission and return to their ship are "reabsorbed" - they are broken down into their constituents and the biomass that created them is available for reuse, either as more drones or for other purposes.

A Drone Womb takes 1 turn to grow a drone group, and a second turn to launch it.

Recovery is the reverse - one turn to recover the remaining drones of the group (which will almost certainly be understrength) and a second turn to reabsorb the biomass. While the womb is occupied by any drones (whether being grown, reabsorbed, or held ready for launch) it may not do anything else.

Creating drones uses power as well as biomass - one power point must be expended for every drone grown, so a full group uses 6 power points; these power points must be allocated to the Repair (R) pool at the start of the turn, and the growing of the drones must be noted in the ship's orders for the turn.

Launching, recovering and reabsorbing of drones does NOT require power point expenditure.

Each Drone Womb take up 3 MASS and costs 9 points, not including the necessary biomass to convert into drones.

EXAMPLE: a Sa'Vasku Broodship has four drone wombs. In turn one, the ship grows a drone group in each of wombs 1 and 2, which consumes 12 of its hull biomass and also costs it 12 power points. In turn 2, the ship launches both its newly-created groups, and grows two more in wombs 3 and 4, at the cost of another 12 power points and 12 biomass. These groups will be able to launch in turn 3.

Later in the game, 3 surviving drones from one of the groups straggle back to the Broodship - they are recovered, and the following turn may be broken down to recover 3 biomass for reuse (this does not cost any power points).

DRONE FIGHTERS

The standard Sa'Vasku Drone (Ku'Tho'Ra, UN codename SPRIG) is a small, limited-range space combat construct "piloted" by a single volitional brain (which is an integral part of the drone). The drones are assembled, or grown, from biomass constituents within the Drone Wombs of specially-equipped Sa'Vasku ships, which correspond to the fighter carriers of other races. The Sa'Vasku do not use specialised drone types, the standard drone being the combat equivalent of a typical human multirole fighter.

When and if recovered by their broodship (or any other Sa'Vasku ship with an functional drone womb), drones are not re-armed like human fighters - their biomass is reabsorbed by the carrier and may be reused to "grow" new drone groups, or used for other functions.

Once launched from the drone womb, Sa'Vasku drones follow the same rules as human and other fighters, including endurance (standard 6 Combat Endurance Factors), movement and combat. They are NOT subject to Fighter Morale checks, and will always attack if the owning player desires it. All Sa'Vasku drones are the equivalent of standard multirole fighters, ie: a movement allowance of 24mu, and an attack of 1 die per drone. They may make secondary moves of 12mu at the cost of one CEF.

Sa'Vasku drone groups always consist of 6 drones when at full strength.

SCREEN NODES

A Screen Node requires power points allocated to the Defence (D) pool equal to the MASS of the node in order to operate. When powered, each screen node is the equivalent of a single level of standard screen generator. A ship that carries two screen nodes may choose to power one, both or neither in a given turn, depending on how much power it allocates to the D pool. As with human screens, more than two screen nodes may be carried as redundant backups, but no more than two will have an effect at any one time.

MASS required per Screen Node is 5% of ship MASS, with a MINIMUM size of 3 MASS. Cost is 3 points per MASS of node.

Example:
A Sa'Vasku ship of MASS 120 carries two Screen Nodes; each node occupies 5% of the ship, or 6 MASS, and thus requires 6 power points to operate. If the player allocates 6 power points to the D pool, one of the screen nodes is considered active and the ship benefits from the effects of a level-1 screen for that turn. If 12 points are allocated to the D pool, then both screen nodes are powered and the ship is treated as having level-2 screens in operation.

SPICULES

Spicules are the Sa'Vasku equivalent of Point Defence Systems; each Spicule may fire once per turn at any one target that is attacking the ship, and requires one power point from the ATTACK (A) pool to fire (though they are technically "defensive" weapons, they are active weapons rather than passive systems and hence draw power from the A pool rather than the D). A spicule has all-arc fire, and when fired rolls one die with exactly the same effects as a standard PDS.

Note that the Sa'Vasku do not use an equivalent of an ADFC, and hence Spicules are not capable of area-defence fire - that role is filled by the "interceptor pods" that may be fired from Pod Launchers.

Each Spicule is 1 MASS, and costs 3 points.

CORTEX NODES

A Cortex Node is the Sa'Vasku version of a Fire Control system, and it works in exactly the same way as a standard fire control. Cortex Nodes do NOT require power allocated to them.

Each Cortex Node occupies 1 MASS, and costs 4 points.

DAMAGE CONTROL

Ship systems lost at threshold checks may have repairs to them attempted by expending power points from the Repair (R) pool equal to the MASS of the system being repaired, AND making a die roll for success; 4+ on a D6 is required to successfully repair the system.

If the roll succeeds, then 1 biomass is consumed to fabricate the components for the repair.

If the roll fails, then the biomass is not consumed but the power used IS wasted.

Only one roll is permitted per damaged system each turn. Lost Power Generator systems MAY be replaced in this manner, but only if enough power points are available from the surviving PGs for the task.

SA'VASKU SHIP DESIGN PROCEDURE

1) SELECT OVERALL SHIP MASS.

2) SELECT HULL INTEGRITY VALUE (BIOMASS) and create Damage Track.

3) ADD CARAPACE.

4) ADD POWER GENERATORS.

5) INSTALL MAIN DRIVE NODE.

6) INSTALL FTL DRIVE NODE (if required).

7) TOTAL MASS USED SO FAR.

8) INSTALL CHOSEN OFFENSIVE AND DEFENSIVE SYSTEM NODES.

9) TOTAL POINTS VALUES to calculate NPV of ship.

10) CREATE THRUST TABLE.

1) SELECT OVERALL SHIP MASS

This may be any size desired, though most combat starships fall within 10 - 300 MASS.

EXAMPLE: We choose to build a Sa'Vasku construct with a total MASS factor of 100, which will make it roughly equivalent to a human battlecruiser or small battleship in size. This gives us a basic hull that will take up to 100 MASS.

2) SELECT BIOMASS (HULL INTEGRITY) LEVEL

Any amount of the available MASS may be used for BIOMASS, which is the living inner structure of the ship; like the Hull Integrity of other ships, the BIOMASS total represents the overall structural strength of the ship and its ability to absorb damage, but also has other special functions unique to the Sa'Vasku. The only restriction is that the MINIMUM amount of biomass is 10% of the ship's total MASS.

The actual MASS of the biomass chosen is equal to the number of DAMAGE BOXES the ship has, which are then organised into four rows (in accordance with the standard Damage Track rules).

EXAMPLE: Sa'Vasku ships generally start with a fairly high biomass value, as some of it will be "consumed" during the battle to launch some weapons and repair damaged systems; we choose to allocate 30 MASS to biomass, so the ship has 30 Damage Boxes (which will be arranged on the Damage Track in four rows, split 8/8/7/7). The points cost for the biomass will be 2 x MASS used, ie: 60 points.

3) ADD CARAPACE

Sa'Vasku CARAPACE is the equivalent of human armour, and consists of "dead" biomass on the outside of the hull to give added protection.

EXAMPLE: We decide that our ship will allocate 10 MASS to its carapace, giving us 10 boxes in one row above the hull damage track. At 2 points per box (the same as armour for Human and Kra'Vak designs), the cost is 20 points.

4) ADD POWER GENERATORS

The Power Generators (PGs) are the most vital systems on a Sa'vasku ship, as they supply the energy for everything else. Any amount of MASS may be allocated to PGs, with each MASS generating one power point each turn.

EXAMPLE: We decide to allocate 22 MASS to PGs, giving our ship a power generation capacity of 22 points per turn while it remains undamaged. The PGs are always divided into 4 separate systems placed at the end of the rows of the damage track - in this case our ship will have 2 PGs each of factor 6, and 2 of factor 5; the stronger PGs are always on the lower damage track rows (so that the weaker ones are lost first when damage is inflicted), so the four PGs will be arranged as 5/5/6/6. The cost of the PGs will be MASS x 2, = 44 points.

5) ADD MAIN DRIVE NODE

All ships require a Main Drive Node, which requires 10% of the ship's overall MASS; the amount of thrust the node will produce depends on the amount of power channelled through it in any one turn.

EXAMPLE: Our 100 MASS ship thus needs to use 10 MASS for its main Drive Node. The Main Drive Node costs 10 x 2 = 20 points.

6) INSTALL FTL DRIVE

If an FTL drive is to be part of the design, it is fitted at this stage and uses up 10% of the overall ship MASS.

EXAMPLE: Our ship needs an FTL drive; it will take up 10 MASS.
The FTL Node costs 10 x 2 = 20 points.

7) TOTAL MASS USED SO FAR

Add up the total MASS used by the Biomass, Carapace, Power Generators, Main Drive and FTL Drive systems, and subtract this from the overall ship MASS to find the amount left for fitting-out with offensive, defensive and other systems.

EXAMPLE: Our design has used 30 MASS for biomass, 10 for carapace, 22 for Power Generators,10 for Main Drive, and 10 for FTL Drive. This totals 82 MASS from the overall 100, so we are left with 18 MASS for further systems.

8) INSTALL CHOSEN OFFENSIVE AND DEFENSIVE SYSTEM NODES

Choose the desired mix of weapon and other system nodes to suit the ship's intended mission profile, ensuring that the total MASS required for all the systems does not exceed the available MASS left from step 7.

EXAMPLE: For this ship, we choose three offensive Stinger (beam) nodes, each of which has three fire arcs - they will be arranged to cover the AP/FP/F, FP/F/FS and F/FS/AS arcs, giving optimum overlapping coverage of fire. One Pod Launcher Node is chosen to increase the variety and power of weaponry, aimed through the Fore arc. 2 Spicules will provide point-defence fire, and 2 Cortex nodes fulfil the functions of fire-control systems. Finally, for defence we decide on a Screen Node that will provide the equivalent of a level-one screen when powered up.

3 x Stinger Nodes @ 2 MASS	= 6 MASS
1 x Pod Launcher Node (1-arc) @ 3 MASS	= 3 MASS
2 x Spicules (PDS) @ 1 MASS	= 2 MASS
2 x Cortex Nodes (Fire Controls) @ 1 MASS	= 2 MASS
1 x Screen Node @ 5% of overall ship MASS	= 5 MASS

Total used for systems = 18 MASS

9) TOTAL POINTS VALUES

EXAMPLE: The points costing of our example ship is:

BASIC HULL:	*MASS x 1*	*100 points*
BIOMASS (MASS 30) 8/8/7/7	*MASS x 2*	*60 points*
CARAPACE (MASS 10)	*MASS x 2*	*20 points*
POWER GENERATORS (MASS 22)	*MASS x 2*	*44 points*
MAIN DRIVE NODE (MASS 10)	*MASS x 2*	*20 points*
FTL DRIVE (MASS 10)	*MASS x 2*	*20 points*
3 x Stinger Nodes (MASS 6)	*MASS x 3*	*18 points*
1 x Pod Launcher Node (MASS 3)	*MASS x 3*	*9 points*
2 x Spicules (MASS 2)	*MASS x 3*	*6 points*
2 x Cortex Nodes (MASS 2)	*MASS x 4*	*8 points*
1 x Screen Node (MASS 5)	*MASS x 3*	*15 points*

Total cost (NPV - Nominal Points Value) 342 points

10) CREATE THRUST TABLE

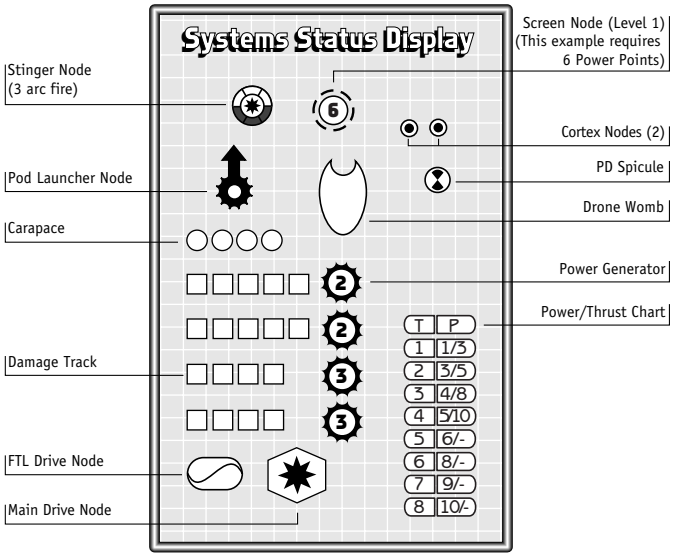
Because of the way that Sa'vasku drives function, it will be a huge help to the gameplay if you calculate beforehand how many Power Points are required to produce a certain thrust factor for a given size of ship; that way, when writing orders you can easily see the amount of power that has to be allocated to the M (movement) pool in order to achieve the desired thrust level for that turn.

EXAMPLE: Our MASS 100 ship requires power points equal to 2% of its MASS for every thrust factor generated; thrust-1 thus requires 2 power points (PP) if the drives are fully functional (4 if the drive is damaged), and so on. The thrust table will look like this:

T	P
1	2/4
2	4/8
3	6/12
4	8/16
5	10/20
6	12/24
7	14/-
8	16/-
9	18/-
10	20/-
11	22/-

SA'VASKU SYSTEMS STATUS DISPLAY (SSD)

The diagram below is an example of how to read the Sa'Vasku SSDs on the ship data panels. Please note that this is NOT an actual ship design, just a key to the symbols and icons used!



SA'VASKU WEAPONS AND DEFENCES SUMMARY

STINGER NODES

Each stinger node may fire once per turn. Any amount of power may be put through one node.
Power points (PP) required for 1-die shot at:
0-12 mu range 1 PP
12-24 mu range 2 PP
24-36 mu range 4 PP
36-48 mu range 8 PP
48-60 mu range 16 PP
60-72 mu range 32 PP
Stinger beam die rolls are read exactly as for standard beam weapons, ie: against an unscreened target, 1-3 = no effect, 4-5 = 1 DP, 6 = 2 DP + reroll.

Human and Sa'Vasku screens, and Phalon vapour shrouds all affect beam shots in the standard way.

ICON:

Stinger Node (3 arc, FP/F/FS)

POD LAUNCHER NODES

Pod Launcher Nodes are single-arc; most of the pod munitions may only engage targetswithin the launcher's arc (the exception being the Interceptor Pod, which is short-range but steerable).
Each Pod munition fired consumes 1 biomass and takes 3 power points from "A" pool.

Typical pod types:

LANCE PODS

Roll 1 die for hit: 3+ needed at 0-6 mu, 4+ at 6-12 mu, 5+ at 12-18 mu and 6 at 18-24 mu.
Hits score 1 D6 damage, first point off armour and remainder penetrating.

LEECH PODS

To-hit roll same as Lance Pods. On a hit, does 2 DP in first turn, but stays on target and does 2 further damage points (non-penetrating) each turn until removed. Leech Pods must be removed by damage control rolls in same way as system repairs.

INTERCEPTOR PODS

Range is 12 mu; any fighter group, missile salvo or plasma bolt within 12 mu of the firing ship may be targetted - it does NOT have to fall within the fire arc of the Pod Launcher.

Against fighters and missiles an Interceptor Pod kills 1 D6 members of the target group/salvo; against plasma bolts, 4-5 reduces bolt strength by 1, 6 by 2. No rerolls.

ICON:

Pod Launcher Node (Fore arc)

SCREEN NODE

Each screen node requires power points from "D" pool to operate; effect is as for 1 level of standard screens per operating screen node. Power requirement indicated by number in icon.

ICON (example):

Mass 5 Screen Node

SPICULES

Point-defence system that require 1 power point from "A" pool for one shot. May fire once per turn, all-arc. Shot is resolved exactly as for standard PDS fire.

ICON:

CORTEX NODES

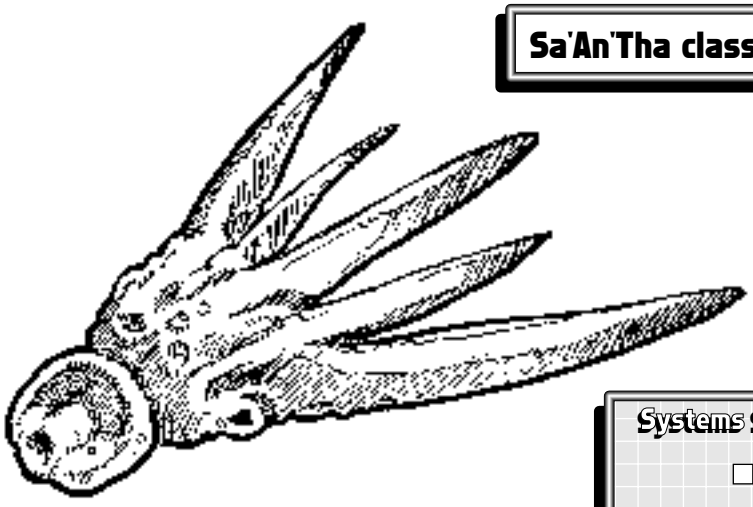
Act as Fire Control systems, using standard rules. No power points required.

ICON:

Sa'An'Tha class SCOUT SHIP

SA'AN'THA CLASS SCOUT SHIP
*(UN codename **SHAM**)*
HUMAN CLASS EQUIVALENT:
Scoutship

TMF: 10
NPV: 34



Systems Status Display

T	P
3	1/1
6	1/2
7	1/-
12	2/-

TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Scoutship
Displacement:	1000 tonnes (MASS factor 10)
Hull Biomass:	3
Carapace Integrity:	None
Power Gen:	2
Armament:	1 x Stinger node
Defences:	None
Sensor Suite:	Standard sensors, 1 x Cortex node
Drive Systems:	Main Drive node, FTL (jump) node

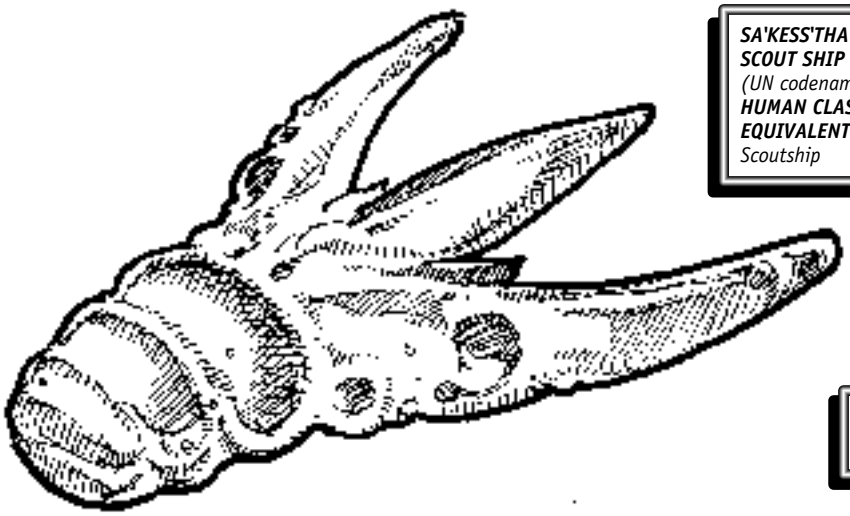
First encountered: 2188.
The Sa'An'Tha is a small Sa'Vasku scoutship with a reasonable power output for its mass, and a good amount of hull biomass to absorb damage; it does not, however, have any protective carapace and so is quite a "soft target".

Sa'Kess'Tha class SCOUT SHIP

Systems Status Display

T	P
3	1/1
5	1/2
6	1/3
7	2/3
11	2/-
15	3/-

SA'KESS'THA CLASS SCOUT SHIP
*(UN codename **STEM**)*
HUMAN CLASS EQUIVALENT:
Scoutship



TMF: 11
NPV: 37

TECHNICAL SPECIFICATIONS:

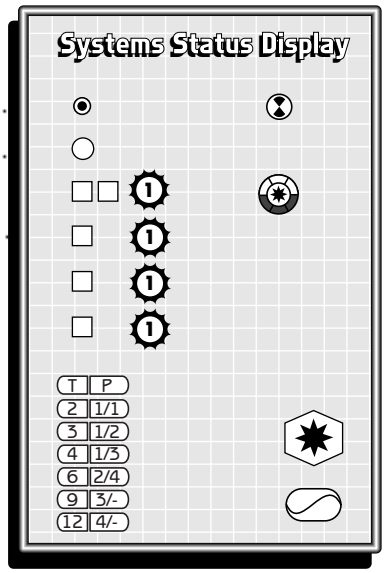
Human Class Equivalent:	Scoutship
Displacement:	1100 tonnes (MASS factor 11)
Hull Biomass:	2
Carapace Integrity:	1
Power Gen:	3
Armament:	1 x Stinger node
Defences:	None
Sensor Suite:	Standard sensors, 1 x Cortex node
Drive Systems:	Main Drive node, FTL (jump) node

First encountered: 2189.
The Sa'Kess'Tha has a lower amount of hull biomass than the slightly smaller Sa'An'Tha, but it does possess some protective carapace and enough power generation capacity to deal out an effective amount of beam fire at close ranges, or to accelerate very rapidly when it needs to.

Fo'Kiir'Tha class YOUNGER ATTACK SHIP

FO'KIIR'THA CLASS YOUNGER ATTACK SHIP
*(UN codename **SLACK**)*
HUMAN CLASS EQUIVALENT:
Corvette

TMF: 18
NPV: 59



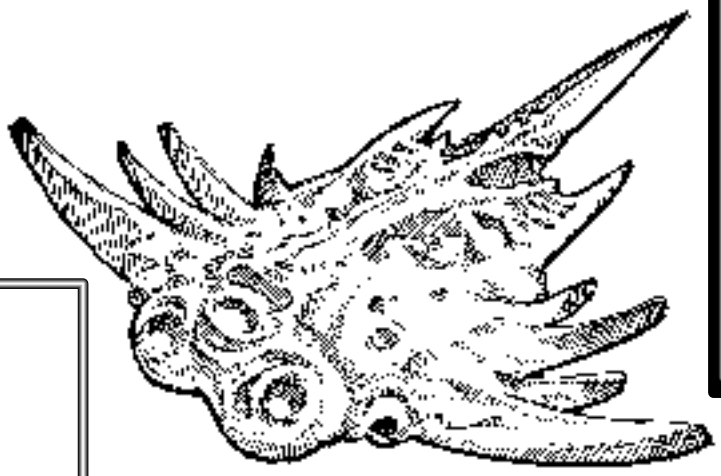
TECHNICAL SPECIFICATIONS:

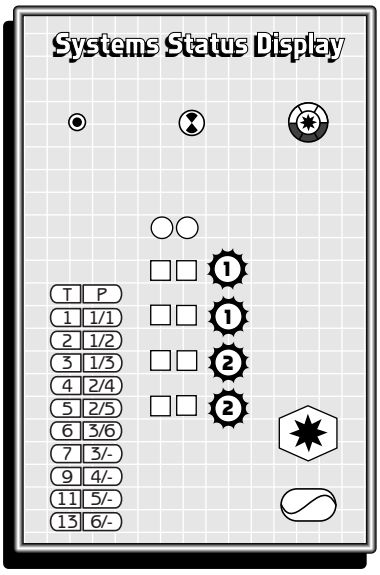
Human Class Equivalent:	Corvette
Displacement:	1800 tonnes (MASS factor 18)
Hull Biomass:	5
Carapace Integrity:	1
Power Gen:	4
Armament:	1 x Stinger node
Defences:	1 x PD Spicule
Sensor Suite:	Standard sensors, 1 x Cortex node
Drive Systems:	Main Drive node, FTL (jump) node

First encountered: 2188.
The Fo'Kiir'Tha attack ship is the smallest class of true warship in the Sa'Vasku space forces. Though of limited mass, it has sufficient power generation capacity to be a dangerous opponent to other small craft or merchant shipping, and enough biomass and carapace to survive a moderate amount of incoming fire.

Fo'Sath'Aan class ATTACK SHIP

FO'SATH'AAN CLASS ATTACK SHIP
*(UN codename **SQUID**)*
HUMAN CLASS EQUIVALENT:
Frigate





TMF: 24
NPV: 77

TECHNICAL SPECIFICATIONS:

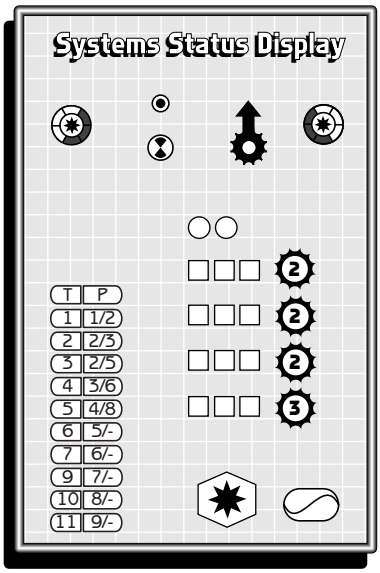
Human Class Equivalent:	Frigate
Displacement:	2400 tonnes (MASS factor 24)
Hull Biomass:	8
Carapace Integrity:	2
Power Gen:	6
Armament:	1 x Stinger node
Defences:	1 x PD Spicule
Sensor Suite:	Standard sensors, 1 x Cortex node
Drive Systems:	Main Drive node, FTL (jump) node

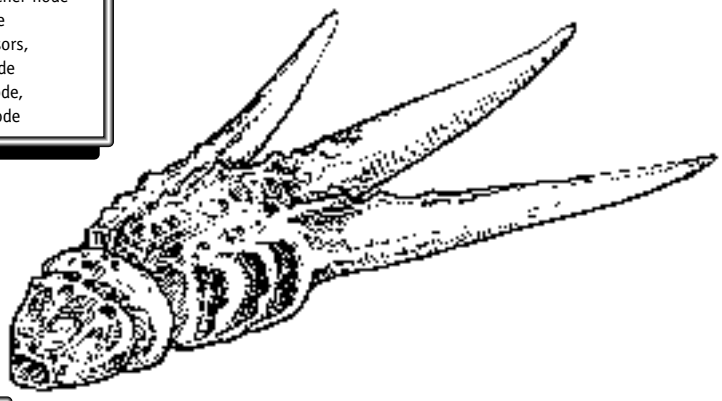
First encountered: 2189.
The Fo'Sath'Aan class attack ship is a larger version of the Fo'Kiir'Tha "corvette", with a stronger hull biomass and a tougher carapace. It is usually found in a close escort role, supporting the major fleet units.

Fo'Vur'Ath class ELDER ATTACK SHIP

TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Heavy Destroyer
Displacement:	4000 tonnes (MASS factor 40)
Hull Biomass:	12
Carapace Integrity:	2
Power Gen:	9
Armament:	2 x Stinger nodes, 1 x Pod Launcher node
Defences:	1 x PD Spicule
Sensor Suite:	Standard sensors, 1 x Cortex node
Drive Systems:	Main Drive node, FTL (jump) node





TMF: 40
NPV: 130

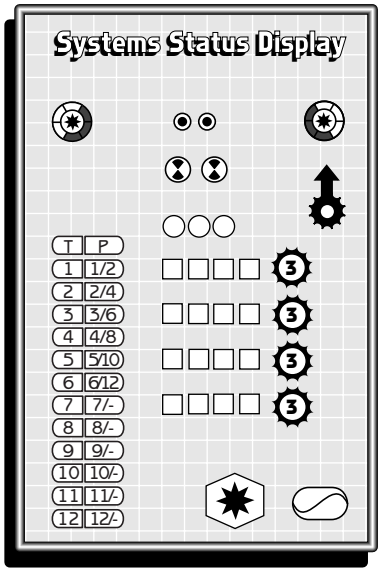
FO'VUR'ATH CLASS ELDER ATTACK SHIP
*(UN codename **STING**)*
HUMAN CLASS EQUIVALENT:
Heavy Destroyer

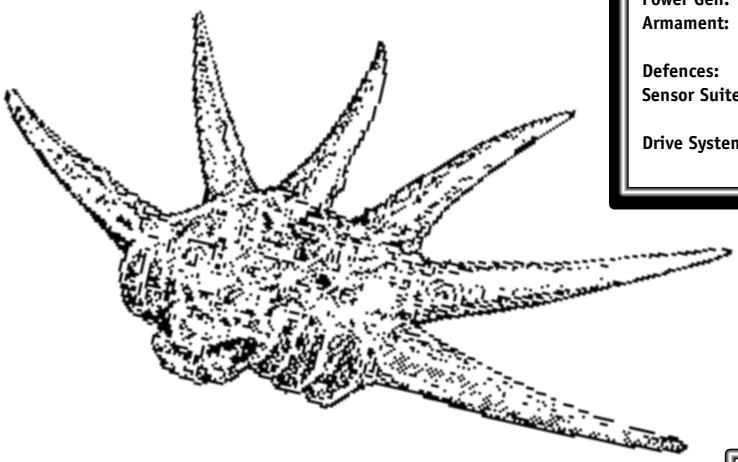
First encountered: 2188.
The Fo'Vur'Ath class is the largest common attack ship, and the smallest regularly-seen Sa'Vasku construct to carry a pod launcher node which gives it the ability to fire torpedo-type weapons. The Fo'Vur'Ath has a realatively weak protective carapace, but a good level of hull biomass (which it needs to provide raw material to feed the pod launcher).

Var'Arr'Sha class YOUNGER STRIKE SHIP

TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Light Cruiser
Displacement:	5200 tonnes (MASS factor 52)
Hull Biomass:	16
Carapace Integrity:	3
Power Gen:	12
Armament:	2 x Stinger nodes, 1 x Pod Launcher node
Defences:	2 x PD Spicules
Sensor Suite:	Standard sensors, 2 x Cortex nodes
Drive Systems:	Main Drive node, FTL (jump) node





TMF: 52
NPV: 169

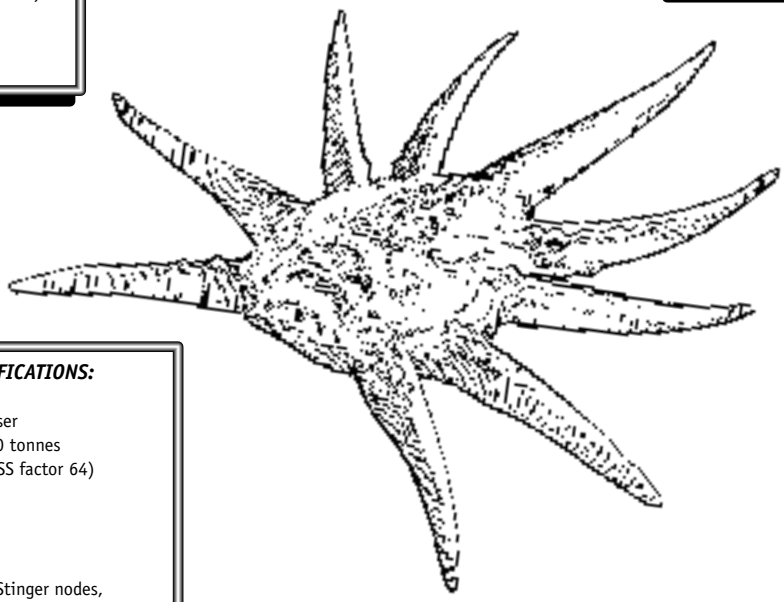
First encountered: 2188.
The Var'Arr'Sha class strike ship is equivalent to a light cruiser in human terms, and fulfils much the same roles of both independant raider and battleline escort. Well equipped with both offensive and defensive nodes and with a good power generation ability, the Var'Arr'Sha is a versatile ship and one of the most commonly-encountered Sa'Vasku constructs.

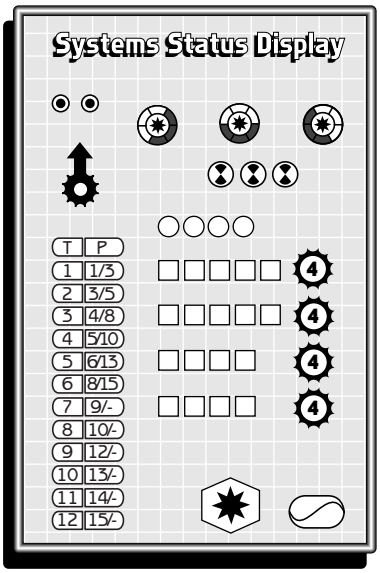
VAR'ARR'SHA CLASS YOUNGER STRIKE SHIP
*(UN codename **STALKER**)*
HUMAN CLASS EQUIVALENT:
Light Cruiser

Var'Kiir'Sha class STRIKE SHIP

VAR'KIIR'SHA CLASS STRIKE SHIP
*(UN codename **SLINKY**)*
HUMAN CLASS EQUIVALENT:
Cruiser

TMF: 64
NPV: 208



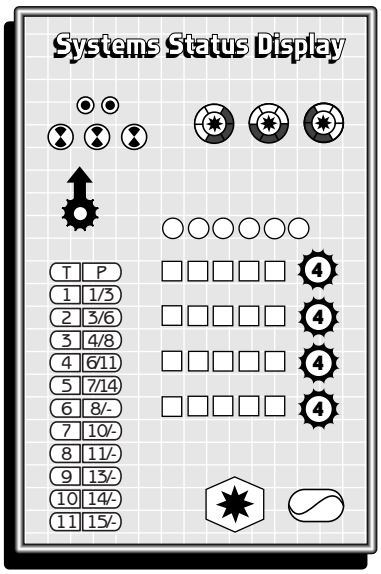


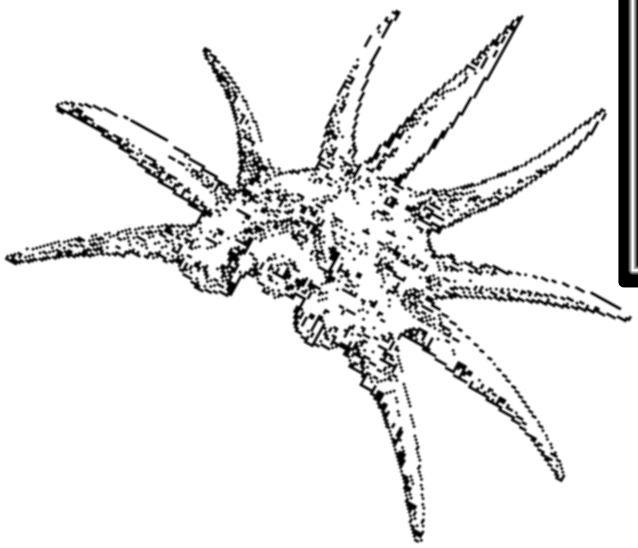
TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Cruiser
Displacement:	6400 tonnes (MASS factor 64)
Hull Biomass:	18
Carapace Integrity:	4
Power Gen:	16
Armament:	3 x Stinger nodes, 1 x Pod Launcher node
Defences:	3 x PD Spicules
Sensor Suite:	Standard sensors, 2 x Cortex nodes
Drive Systems:	Main Drive node, FTL (jump) node

First encountered: 2189.
The Var'Kiir'Sha class strike ship is a larger version of the Var'Arr'Sha, with a tougher carapace, a little more usable biomass and a significantly greater power generation capacity. It is most commonly found as a major unit in small raiding squadrons.

Var'Thee'Sha class STRIKE SHIP





TECHNICAL SPECIFICATIONS:

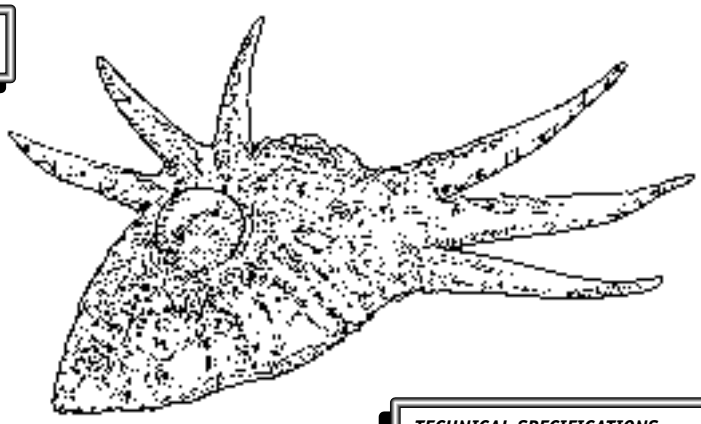
Human Class Equivalent:	Cruiser
Displacement:	7000 tonnes (MASS factor 70)
Hull Biomass:	20
Carapace Integrity:	6
Power Gen:	16
Armament:	3 x Stinger nodes, 1 x Pod Launcher node
Defences:	3 x PD Spicules
Sensor Suite:	Standard sensors, 2 x Cortex nodes
Drive Systems:	Main Drive node, FTL (jump) node

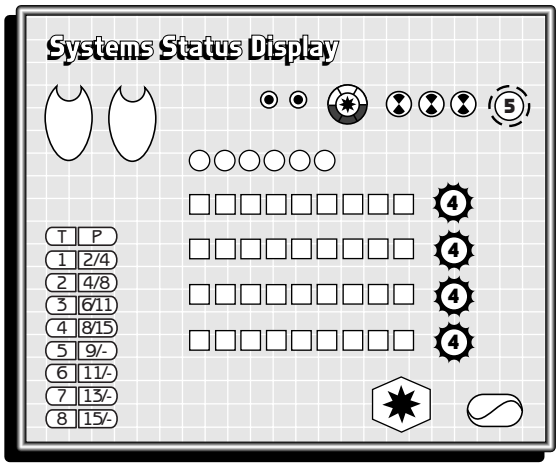
TMF: 70
NPV: 226

VAR'THEE'SHA CLASS STRIKE SHIP
*(UN codename **SPANKER**)*
HUMAN CLASS EQUIVALENT:
Cruiser

First encountered: 2189.
With a slightly higher overall mass than the similar Var'Kiir'Sha, the Var'Thee'Sha class devotes most of this extra to biomass and carapace strength, making it a more survivable ship but with similar offensive capabilities. The Var'Thee'Sha is often encountered as a solo raider or patrol ship.

Thy'Sa'Teth class YOUNGER BROODSHIP





TMF: 94
NPV: 302

THY'SA'TETH CLASS YOUNGER BROODSHIP
*(UN codename **STUBBY**)*
HUMAN CLASS EQUIVALENT:
Escort Carrier

TECHNICAL SPECIFICATIONS:

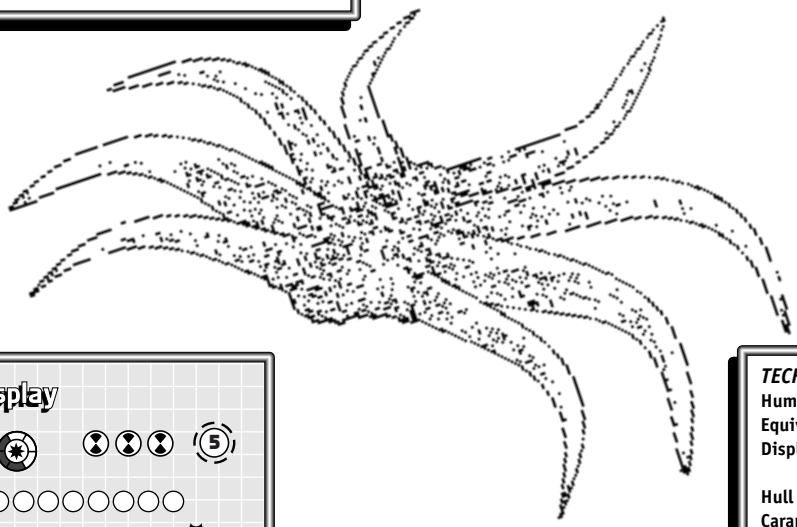
Human Class Equivalent:	Escort Carrier
Displacement:	9400 tonnes (MASS factor 94)
Hull Biomass:	36
Carapace Integrity:	6
Power Gen:	16
Armament:	1 x Stinger node
Defences:	1 x Screen node, 3 x PD Spicules
Sensor Suite:	Standard sensors, 2 x Cortex nodes
Drive Systems:	Main Drive node, FTL (jump) node
Drone Capability:	2 x Drone Wombs

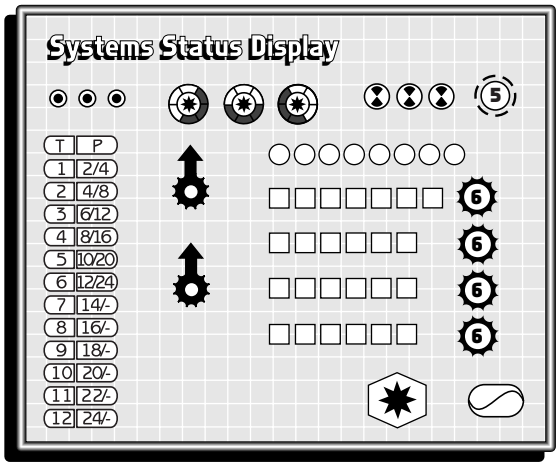
First encountered: 2189.
The Thy'Sa'Teth is the smallest class of Broodship (drone mothership) yet encountered. Used to provide drone support for small task froces, the Thy'Sa'Teth devotes most of its capacity to the raw biomass and power generation needed to produce and launch its drone groups, and is usually found escorted by a number of smaller ships to protect it from attack.

Shyy'Tha'Var class ELDER STRIKE SHIP

TMF: 100
NPV: 326

SHYY'THA'VAR CLASS ELDER STRIKE SHIP
*(UN codename **SPIDER**)*
HUMAN CLASS EQUIVALENT:
Battlecruiser



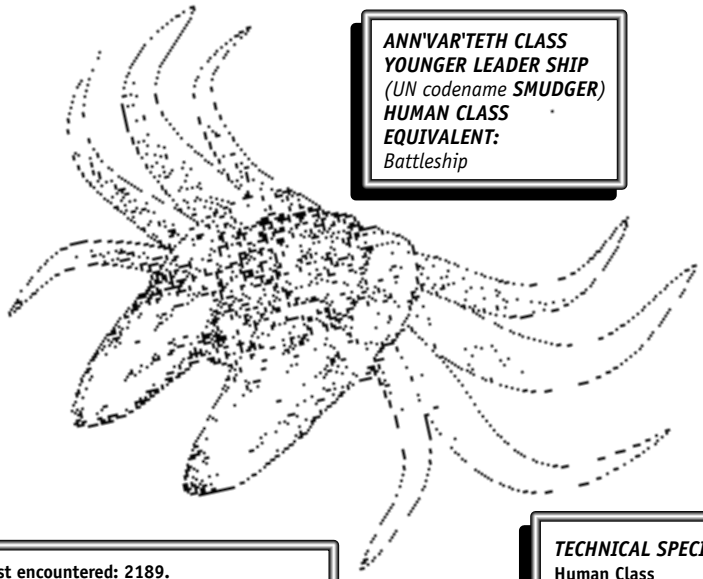


First encountered: 2188.
The Shyy'Tha'Var is a much larger version of the Var'Thee'Sha and similar strike ships, and has a large power generation capacity that makes it a very powerful ship. Its tough carapace and a screen generator node allow it to absorb a lot of punishment, and a good biomass level permits steady and deadly fire from its pair of pod launcher nodes.

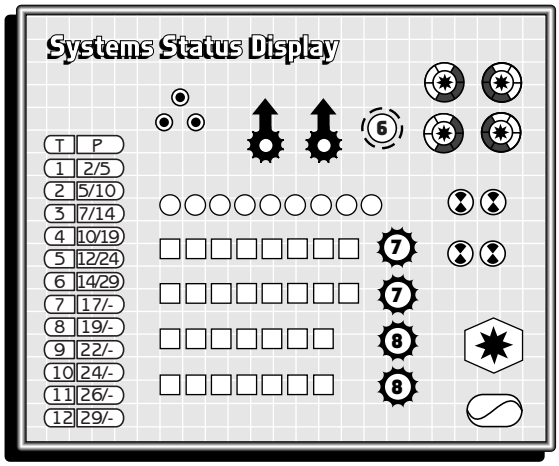
TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Battlecruiser
Displacement:	10000 tonnes (MASS factor 100)
Hull Biomass:	25
Carapace Integrity:	8
Power Gen:	24
Armament:	3 x Stinger nodes, 2 x Pod Launcher nodes
Defences:	1 x Screen node, 3 x PD Spicules
Sensor Suite:	Standard sensors, 3 x Cortex nodes
Drive Systems:	Main Drive node, FTL (jump) node

Ann'Var'Teth class YOUNGER LEADER SHIP



ANN'VAR'TETH CLASS YOUNGER LEADER SHIP
*(UN codename **SMUDGER**)*
HUMAN CLASS EQUIVALENT:
Battleship



TMF: 120
NPV: 390

First encountered: 2189.
One of the smaller of the so-called "Leader Ships" (the Sa'Vasku term for its capital ship classes) the Ann'Var'Teth is a main battleline unit that can deal out a huge amount of firepower thanks to its extensive generator capacity, and it is well protected by a screen system and a reasonably strong carapace.

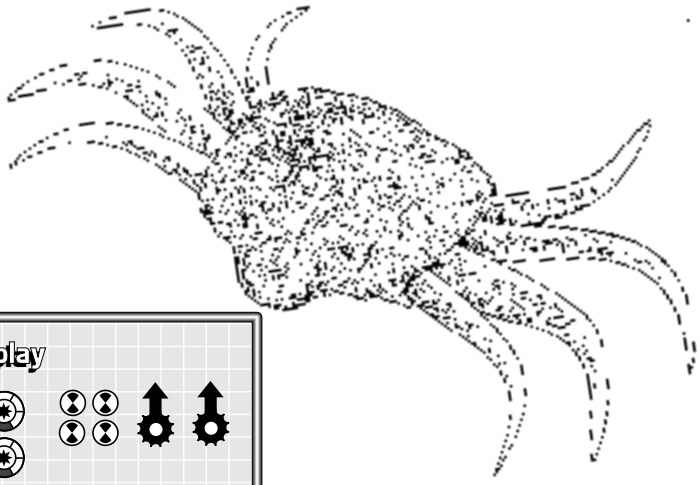
TECHNICAL SPECIFICATIONS:

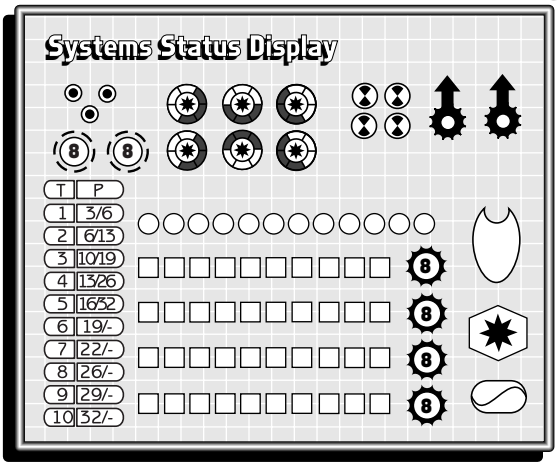
Human Class Equivalent:	Battleship
Displacement:	12000 tonnes (MASS factor 120)
Hull Biomass:	30
Carapace Integrity:	9
Power Gen:	30
Armament:	4 x Stinger nodes, 2 x Pod Launcher nodes
Defences:	1 x Screen node, 4 x PD Spicules
Sensor Suite:	Standard sensors, 3 x Cortex nodes
Drive Systems:	Main Drive node, FTL (jump) node

Sla'Tha'Rosh class LEADER SHIP

TMF: 160
NPV: 527

SLA'THA'ROSH CLASS LEADER SHIP
*(UN codename **SPECTRE**)*
HUMAN CLASS EQUIVALENT:
Battledreadnought/ Heavy Battleship



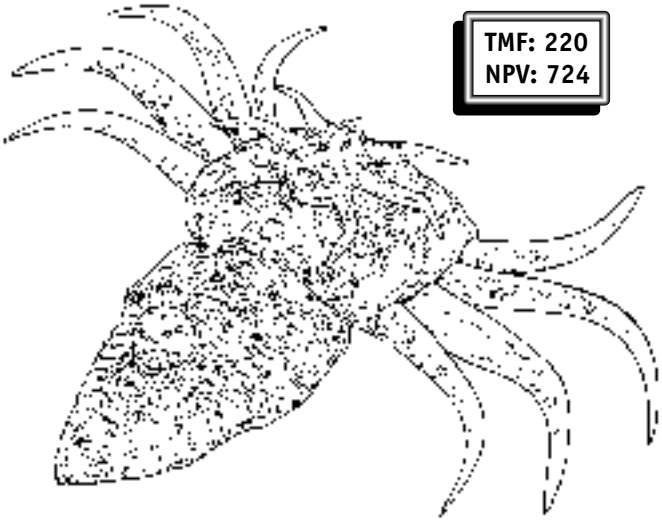


First encountered: 2190.
The Sla'Tha'Rosh is a powerful battle construct, and the smallest regular warship (ie: non-Broodship) type to carry a drone womb in addition to its other offensive and defensive systems. Its hull biomass level is particularly high to allow sufficient spare biomass to generate the necessary drone groups.

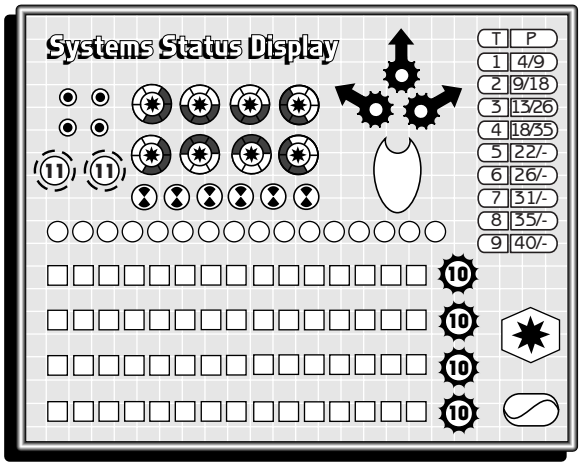
TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Battledreadnought/Heavy Battleship
Displacement:	16000 tonnes (MASS factor 160)
Hull Biomass:	40
Carapace Integrity:	12
Power Gen:	32
Armament:	6 x Stinger nodes, 2 x Pod Launcher nodes
Defences:	2 x Screen nodes, 4 x PD Spicules
Sensor Suite:	Standard sensors, 3 x Cortex nodes
Drive Systems:	Main Drive node, FTL (jump) node
Drone Capability:	1 x Drone Womb

Vas'Sa'Rosh class ELDER LEADER SHIP



TMF: 220
NPV: 724



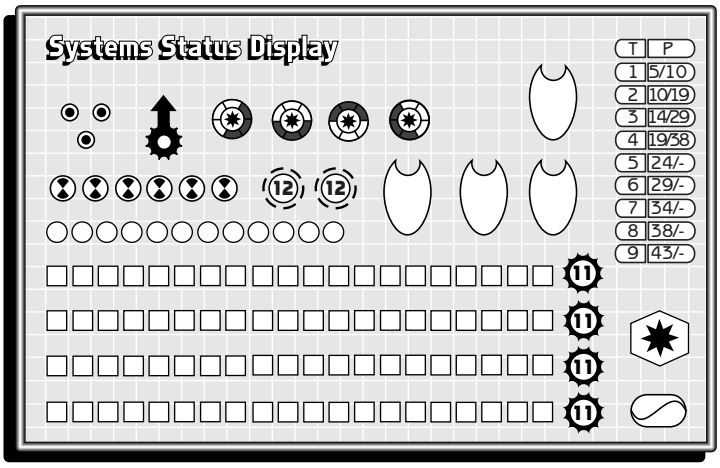
VAS'SA'ROSH CLASS ELDER LEADER SHIP *(UN codename* ***SANDCRAB****)*
HUMAN CLASS EQUIVALENT: *Superdreadnought*

First encountered: 2188.
The Vas'Sa'Rosh is a massive construct that fulfils the role of dreadnought and fleet flagship within the Sa'Vasku space combat forces. Its huge power generation ability allows it to produce a focussed energy beam of phenomenal range, or to unleash a horrific amount of lower-level firepower at closer targets, and its thick carapace and screen nodes will shrug off a large amount of incoming fire. On the very rare occasions that an actual Sa'Vasku leaves one of the homeworlds, a Vas'Sa'Rosh is usually its means of transport.

TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Superdreadnought
Displacement:	22000 tonnes (MASS factor 220)
Hull Biomass:	60
Carapace Integrity:	16
Power Gen:	40
Armament:	8 x Stinger nodes, 3 x Pod Launcher nodes
Defences:	2 x Screen nodes, 6 x PD Spicules
Sensor Suite:	Standard sensors, 4 x Cortex nodes
Drive Systems:	Main Drive node, FTL (jump) node
Drone Capability:	1 x Drone Womb

Vas'Sa'Teth class ELDER BROODSHIP



VAS'SA'TETH CLASS ELDER BROODSHIP
(UN codename ***SIDEWINDER****)*
HUMAN CLASS EQUIVALENT: *Heavy Fighter Carrier*

TMF: 240
NPV: 779

First encountered: 2190.
The huge Vas'Sa'Teth is a variant of the Vas'Sa'Rosh dreadnought, but optimised as a drone producer and mothership (known to the Sa'Vasku as a Broodship). Four separate drone wombs allow the Vas'Sa'Teth to create and hold up to four drone groups ready for launch at one time, and it has enough biomass to produce two or even three full waves of four groups. The Broodship is well armed and defended, though it is usually accompanied by a flotilla of escorting ships to protect it during the times that it spends most of its energy on drone creation.

TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Heavy Fighter Carrier
Displacement:	24000 tonnes (MASS factor 240)
Hull Biomass:	80
Carapace Integrity:	12
Power Gen:	44
Armament:	4 x Stinger nodes, 1 x Pod Launcher node
Defences:	2 x Screen nodes, 6 x PD Spicules
Sensor Suite:	Standard sensors, 3 x Cortex nodes
Drive Systems:	Main Drive node, FTL (jump) node
Drone Capability:	4 x Drone Wombs

SA'YASKU SHIP RECORD CHART

ID: **Name:**

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Turn	Move Orders	POWER ALLOCATION M	A	D	R	V
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XENO FILE 3: THE PHALONS

Phalon biology is quite similar to humans in many ways; they are carbon-based oxygen breathers, and though their ideal climate conditions are hotter and more humid than preferred human norms, each race can survive quite happily on each other's worlds.

The Phalons' physical appearance is distinctly non-humanoid - they are bipeds with bilateral symmetry, but there the resemblance ends; their limbs each have one more joint than those of humans, their short and podlike bodies are protected by an exoskeletal carapace and their wide, flat heads are dominated by a single large tri-lensed optic.

The Phalons have three sexes - fertile males and females (though the difference can be hard for human observers to discern) and a sterile asexual third variety which is far more numerous than the other two and seems to form much of their fighting forces, along with a good proportion of their leaders. The females are oviparous, laying clutches of one to five eggs. Throughout most of their cultures, after hatching the young are raised in extended family units much like those found in many human societies.

Despite their very alien appearance, the Phalons are very like humans in their thought processes, to the point where meaningful communication is relatively straightforward once translation hurdles have been overcome. Their speech is soft and hissing with occasional sharp clicking sounds, and is manageable by most humans with some practice - in their turn, Phalons can speak a lisping and heavily-accented but understandable form of Anglic.

To human standards, the Phalons appear to be completely amoral. If they want something, they will take it; if opposed in any way, they will use force without a second thought - if this is impractical, they will negotiate to try and get what they desire. Any bargains or agreements with the Phalons are strictly temporary, however - they will renege on anything at a moment's notice if they feel the balance of advantage has shifted. When questioned about this trait, their response is to the effect of "that was then, this is now" - they seem quite unable to grasp why humanity should see this as unreasonable.

Temporary alliances with the Phalons are possible, especially where they see the situation as being of mutual benefit, but should be approached with great caution - if the common enemy is defeated then the Phalons are very likely to immediately turn on their former "allies" if they feel they can gain the upper hand.

THE PHALON CONGLOMERATE

"Phalon" is an Anglicised rendition of the race's name for themselves in their own primary language, "Phey-lon'a", which literally translates as a something like "The Peoples of the Worlds". The space forces of the Phalon Conglomerate are known as the "Phey-aaksha-tath'a" (literally, "Grand Fleet of the Peoples").

The Phalon Conglomerate is a loose, highly balkanised federation of individual worlds, including the Homeworld (Cho-llon) and many colonial settlements. The various worlds of the Conglomerate are populated by many differing racial and tribal groupings of Phalons, but the differences can be hard for humans to discern - the overall alienness overrides the minor variations. In the same way, the Phalons think we humans all look alike. There are numerous sets of political systems and religious beliefs within the peoples of the Conglomerate, exhibiting a cultural diversity almost as wide as that of humanity.

Normal interrelations in Phalon society are complex and competitive, but when threatened by outside forces (such as the Human/Kra'Vak conflict) they will become remarkably co-operative with each other, as they all see the mutual benefit in it. Age-old rivalries and hatreds, though never solved, may be put aside for the duration of the crisis only to resurface afterwards, with even more petty grievances and grudges added to the ever-growing list from events and actions (real or perceived) which occurred during the period of co-operation.

The Phalons have been spacefaring for a while longer than Humanity or the Kra'Vak, but they are still one of the "younger" races in comparison with the Sa'Vasku. The Conglomerate has been aware of the Humans and the Kra'Vak for a considerable time, and has watched them fiercely expand their territories until the two met; Conglomerate space adjoins both the Human and Kra'Vak spheres of influence, and the Phalons had already fought several low-intensity border wars with Kra'Vak forces prior to either race becoming known to Humanity.

The sudden escalation of Human/Kra'Vak hostilities to all-out war has inevitably dragged the Conglomerate into the fighting, though they resolutely refuse to commit themselves to one side or the other - as always with the Phalons, the only side they are on is their own.

First contact between Humanity and the Phalons occurred in 2191, with a skirmish between a lone Phalon ship and an FSE task group; since that incident Conglomerate naval units have fought human fleets and the Kra'Vak star forces on many occasions, but equally have acted as "allies" (albeit temporary ones, and then strictly for their own ends) to both sides in other confrontations.

PHALON WARSHIPS

Phalon warship types are divided into three major class groupings, called "Protectors" (equivalent to human escort classes), "Warriors" (the cruiser classes) and "Great Warriors" (the capital ships). Within each grouping, the Phalons appear to only differentiate the ship types by class name rather than by description - for example, a Tsaara and a Keraph are both called "Warriors", though the former equates to a Human light cruiser and the latter a battlecruiser. The term "Mothership" is commonly used to refer to Phalon fighter carriers, though these vessels also fall into the Great Warrior category.

Phalon ships are snail-like constructions from organic materials; unlike the Sa'Vasku, whose ships are actual living creatures, the Phalons use advanced biotechnology in a similar way to that in which humans use metal and plastics based materials technology - Phalon ships (or any of their other equipment) are constructed with components manufactured from biotech materials, but are not living entities in their own right, any more than a human ship which is built of alloys and polymers.

The internal crew spaces in Phalon ships are rounded, moist and quite disturbing to human senses - the first human officer to board a crippled Phalon vessel, FSE Captain Yvette Delacroix, was quoted in the news media as commenting "...now I know how Jonah must have felt...". According to the memoirs of one of the Legion Marines who accompanied her on the boarding, what she ACTUALLY said was more along the lines of "...now I know how my gynaecologist must feel....".

A Phalon hull is constructed with a relatively weak inner hull structure protected by a hardened outer "shell" which is composed of organic and crystalline materials. On the larger ships, the shell is formed in multiple layers (as many as four in the biggest classes), and forms a very effective protection against even armour-penetrating weapons like the Kra'Vak kinetic guns.

The most common Phalon antiship weapon is an energy projector known as a "pulser", which is in many ways similar to the standard human beam weapons. Unlike human beams, however, the pulser is an adjustable weapon that may be "tuned" to give a very long-ranged but low power beam, a short-ranged but extremely lethal output or a mid-range setting that is a compromise between the two. Each pulser battery may be configured to one of these long (L), medium (M) or close (C) range settings at the choice of the ship commander, though the adjustment between settings is a lengthy process that requires the ship's offensive systems to be shut down - it thus cannot be done in mid-battle, and each pulser battery's configuration must be chosen prior to engagement with the enemy.

The Phalons' other primary weapon is the Plasma Bolt Launcher, normally mounted in the "head" of the Phalon ship's long forward structure (though some of the very large classes carry additional launchers in dorsal-mounted pods). This system can fire a projectile of fusing plasma, of varying strength depending on the size of the launcher system, which then explodes at a pre-set distance from the firing ship doing damage to any target within the radius of its burst with a searing wavefront of expanding plasma and hard radiation. The magnetic fields around the muzzle of the launcher which actually project the plasma bolt also allow the bolt to be "steered" when it is fired, permitting it to be aimed at any target point within a 180 degree arc of the launcher's direction of fire. The large amount of power required by the Plasma Bolt Launcher means that the system needs a significant recharge time between shots.

The Phalons use fighters in much the same way as human fleets, with each fighter being piloted by one to three Phalon crew. Several different types of Phalon fighters have been observed, the most common being the Nith class multirole (UN codename PEG), the Tuus class heavy fighter (UN codename PUD) and the Vaan class interceptor (UN codename PAM).

Rather than use specialised point-defence weapons against incoming fighters they can use their main pulser batteries in a low-power, rapid-fire point-defence role - in this mode they are also effective against Human missiles and the Phalons' own plasma bolts.

A particular point of note is that so far ONLY Phalon Motherships have been observed to carry a fighter complement. The human approach of deploying small numbers of fighters from Dreadnoughts and other large non-carrier warships does not appear to be part of Phalon naval doctrine.

The Phalons' willingness to talk and negotiate with anyone (especially when they have something to gain) means there has been enough verbal contact between Humanity and the Phalon race for each to learn much of the other's spoken and written languages. Human forces thus know what the Phalons call their ship classes, though the UNDIA codenames (POGO, PINBACK etc.) are still used to identify Phalon ships in most combat situations and reports.

In human military slang the Phalons are known by various nicknames, "Shellies" being a common example in reference to both the snail-like appearance of the ships and the external carapaces of individual Phalons.

GAME NOTES FOR PHALON PLAYERS

Phalon fleets are in some ways more like human forces than the other alien races in this book. Though their ship technology is constructed in very different ways, their drive systems are equivalent to those of human ships, and many of their weapons use similar principles. The design of the Phalon pulser weapons means that some ships will be optimised for close, medium or long range combat, and they must be deployed accordingly to get the maximum benefit - a ship configured with Pulser-C batteries will be devastating at short ranges, but completely useless if the enemy insists on keeping the range open.

The deployment of Vapour Shrouds needs careful judgement, since they are very effective protection but severely inhibit the ship's own offensive capabilities while they are in use.

Players should be aware that Phalon ships are individually quite powerful - many are in fact equivalent to a human warship of one class larger; for example, the Keraph-class "battlecruiser-sized" warrior is quite closely matched to most human battleships. The human class equivalents listed only refer to the overall mass of the ship, not its actual combat potential. The POINTS VALUES (NPV) of the Phalon ships will give a more accurate comparison of their combat power than their mass - the ships are "expensive" in points terms, so 1000 points of Phalon ships will be fairly balanced with 1000 points of human ships (or any other race).

PHALON SHIP DESIGN AND SYSTEMS

DRIVE SYSTEMS AND MOVEMENT

Phalon drives (both Main Drives and FTL Drives) are treated exactly as per standard FT rules (ie: exactly as for human ship drives). The MASS requirement for main drives is 5% of ship mass per thrust factor, with a cost of 2 points per MASS used, and FTL drives take up 10% of ship MASS, again with a cost of 2 points per MASS. Odd-numbered thrust factors are allowed.

Phalon ships may be played using either vector or cinematic movement, according to which system the players have decide to use in a given game.

HULL INTEGRITY AND "SHELL" ARMOUR

Phalon hull integrity (the inner structure of the ship) takes 1 MASS per hull box, and costs 2 points per MASS. The hull boxes are arranged in four rows using the standard rules, with the upper rows being the longer ones if the hull integrity does not divide exactly by four.

One hull box is lost to each point of damage that penetrates the shell and other defences.

Typically, the hull integrity of a Phalon ship is quite low - around 20% of the ship mass - but it is protected by the shell armour.

The protective "shells" of Phalon ships follow the same rules as human armour, with the exception of the way the boxes are laid out; any amount may be used, at 1 MASS (and 2 points cost) per shell box, and one damage point destroys one shell box.

Phalon shells, unlike standard armour, may be multi-layered - the shell boxes may be stacked in anything up to four layers (and theoretically even more if required). The first layer is the inner layer, the one nearest the hull (ie: the "bottom" layer on the ship diagram), the second layer the one above it, and so on. The topmost layer on the diagram is always referred to as the "outer" layer. Generally, the outer layers will be weaker (shorter rows) than those beneath them, but this is not a specific requirement. The points cost of a shell boxes depends on the layer it is in: the cost is 2 x layer number, so a box in the inner (first) layer costs 2 points, a second layer box 4 points, third layer 6 points and fourth layer 8 points.

When hit by weapons that do not bypass armour, shell boxes are crossed off the outermost (top) layer, just like hull boxes (moving onto the next layer down if the top one is all gone). Weapons that do half armour/half hull damage have their effects applied half to the outermost layer of shell, and half to the next layer in.

Weapons that do reroll damage apply the effects of each successive reroll to the next layer in - so if the player is lucky enough to get a double reroll (2 sixes in a row) then some of the damage may penetrate as many as the three shell layers (or directly to the hull if it is only a 2-layer shell).

Kra'Vak K-gun hits expend 1 damage point on EACH layer of shell, taking out one box from each successive layer and doing any remainder to the hull if the damage reaches that far.

Example:
Take a large Phalon ship which has three layers of shell boxes; if it is hit by a beam shot that rolls a 6, and then scores a 4 on the reroll, then the original 2 DP are taken by the outer shell layer (third layer), and the 1 point of reroll damage goes down to the second (middle) layer. If the hit was from a pulse torpedo instead, which rolled a 5 for damage, the 5 DP would be split between as 3 DP to the outer and 2 DP to the middle layer.

If the same ship was hit by a small K-gun round that did 2 DP, it would suffer 1 DP to the outer layer and one to the second layer; if the K-gun was a larger round that did 6 DP, it would inflict 1 DP to the outer (third) layer, 1 to the middle (second) layer, 1 to the inner (first) layer and its final 3 DP to the hull itself.

PULSER BATTERIES

The Phalons' primary anti-ship weapon is the Pulser, which is an energy weapon very like the standard human beam systems. There is only one "class" of pulser, and it may have one, three or six arcs of fire - the MASS requirement is 2, 3 or 4 MASS respectively according to the number of fire arcs chosen, and the cost is 5 points per MASS used.

The differences between pulsers and standard beams are as follows:

i) The pulser delivers a set amount of power (ie: die rolls) over its full effective range (unlike beams, whose number of dice rolled degrades with increasing range), and:

ii) Each pulser system may be "configured" before each battle as a LONG range weapon (pulser-L), MEDIUM range (pulser-M) or CLOSE range (pulser-C).

The different configurations roll different numbers of dice per shot, as below:

LONG range mode (pulser-L):	range 0-36mu	1 die per shot
MEDIUM range mode (pulser-M):	range 0-24mu	2 dice per shot
CLOSE range mode (pulser-C):	range 0-12mu	6 dice per shot

Any mix of pulser configurations may be chosen by the Phalon player for each of his ships before the game, and the relevant letters (L, M or C) written into the blank pulser icons on the ship SSD. Under no circumstances may the configuration be altered DURING a game.

[For an added twist, if Phalon ships are attacked unexpectedly (eg: an ambush scenario) and do not have time to adjust the tuning of their pulsers to suit the coming battle, players may agree to choose the settings at random - roll a D6 for each pulser battery: on 1 or 2, it is currently configured as a pulser-L, on 3 or 4 as a pulser-M, and on 5 or 6 a pulser-C.]

Pulser fire dice are read as for standard beam weapon fire, ie: 1-3 = no effect, 4-5 = 1 Damage Point, 6 = 2DP plus a reroll.

Screens ARE effective against pulser fire as per standard rules, as are the Phalons' own vapour shrouds (see below).

Pulser fire is non-penetrating (ie: damage is taken on armour first) with the exception of damage inflicted by rerolls.

All Pulsers, regardless of current configuration, can function as PDS instead of anti-ship fire in any given turn, using the normal PDS rules, ranges and effects - see point defence rules below.

POINT-DEFENCE AND AREA-DEFENCE

Phalon ships do not have separate point-defence system (PDS); instead, they may elect to use any of their pulser batteries as PDS during the point-defence phase, firing at any one fighter group, missile salvo or plasma bolt that is attacking the firing ship. A pulser used in this mode fires exactly as for a standard PDS shot, with the same die rolls and effects. Any pulser used in the PDS mode rolls only ONE die, regardless of how the pulser is currently configured.

Unlike standard point-defence systems, pulsers can have limited arcs of fire - in this case, a pulser in PDS mode may ONLY engage a target (fighter group, missile salvo, plasma bolt etc.) that is actually within that pulser's normal fire arc(s). It is thus an acceptable tactic for fighters engaging a Phalon ship to try to manoeuvre so as to be out of the pulsers' defensive fire arcs, but this will often entail them making a secondary move and thus burning up a valuable combat endurance factor.

Phalon ships may carry ADFC (Area-Defence Fire Controls), advanced firecontrol systems that allow them to use their pulsers' point-defence capability to support any other ship that is within 6mu of the firing ship; they operate exactly as standard human ADFC systems*, and have the same mass and cost requirements - 2 MASS and a cost of 8 points per ADFC.

Any pulser that fires in either the point or area defence mode may NOT also fire in anti-ship mode in the same turn.

As per the standard rules for PDS fire, the Phalons do NOT need a functioning fire control system in order to fire in the point-defence mode.

[*Note that the ADFC system was introduced in Fleet Book 1 to replace the ADS used in FT 2nd edition; unlike the original ADS, the ADFC is not a weapon system in its own right - it is a specialised fire control director that allows the ship's PDS to function in the area-defence mode.]

PLASMA BOLT LAUNCHERS

The Phalon Plasma Bolt Launchers (PBLs) are available in sizes from class-1 upwards, with class-6 being the largest commonly seen (though larger ones are possible). The launcher is a 3-arc (180 degree) system, and is normally (but not always) mounted to fire through the forward arcs of the ship (FP/F/FS).

A plasma bolt launcher of any size must spend 1 turn recharging between shots, so can only fire every OTHER game turn - whenever a ship fires a PBL, a note or mark should be made in the order-writing box for the next turn to indicate that the launcher is recharging and cannot be fired.

A plasma bolt launcher fires a bolt of a size equal to the launcher class, to a maximum range of 30mu; a suitable marker, numbered with the bolt size, is placed during the ordnance fire phase of the turn; it may be placed anywhere within the appropriate 180 degree fire arc.

During the point defence phase, any ship within 6mu of a plasma bolt marker may fire at the bolt with its PDS. Note that this does NOT require the use of an ADFC system, as all ships within 6mu of the bolt are considered to be "under attack" by the bolt.

Roll a D6 per PDS firing - each roll of 6 reduces the effective strength (class) of the bolt by 1, so one roll of 6 will eliminate a size 1 plasma bolt altogether, or reduce a size 4 bolt to a size 3, etc. These PDS hit effects are cumulative, so 3 hits on a size 4 bolt will reduce it to a size 1. The bolt marker should be exchanged for one of an appropriate number for the reduced bolt strength.

Phalon pulsers fired in PDS mode roll as for normal point defence systems against plasma bolts.

Class 1 beams and class 1 K-guns may NOT be used in their secondary PDS role against plasma bolts, but Kra'Vak scatterguns may, and are even more effective than standard PDS: they roll like a "beam" die, removing 1 strength from a bolt on a 4 or 5 result, and 2 strength classes on a 6 (NO reroll). Sa'Vasku interceptor pods may also engage plasma bolts, with the same roll as a Kra'Vak scattergun.

Fighter groups may target PBs if they are within 6mu; roll for each fighter as if it was a PDS (ie: each roll of 6 counts as a hit).

Ships with ADFC capability may add their PDS fire in support of any ships within 6 mu of them that are within the effect radius of a plasma bolt, even if the ADFC-equipped ship is itself outside the danger area.

After the PDS fire is completed, any remaining plasma bolts on the board explode; their burst radius is 6mu* (irrespective of their size) and they inflict a number of full dice of damage (ie: damage points = number rolled) equal to their size, on ALL ships within that radius (roll individually for each ship that may suffer damage).

Example:
A class-5 plasma bolt is disrupted and weakened by two successful PDS hits, so when it explodes it will have an effective strength of a class-3 bolt. The bolt detonates, catching two ships in its burst radius. 3 D6 are rolled for each ship - the first rolls 2,3 and 6 and takes a total of 11 Damage Points, the second rolls 1,3 and 5 and takes 9 DP.

Plasma bolt damage is non-penetrating, and takes all damage off armour /shell/carapace (if any) before damaging hull. There are NO rerolls for plasma bolt damage.

Screens (human or S'V) and the Phalons' own Vapour Shrouds are effective against PB damage - Level-1 Screens negate any rolls of 6, level-2 screens and Vapour Shrouds negate all rolls of 5 or 6. Thus, in the example given above, if the first ship had a level-1 screen up it would have only taken 5 DP (ignoring the 6 rolled), and if the second ship had a level-2 screen (or a vapour shroud) it would only take 4 DP (the 5 roll would be negated, as would any 6s that were rolled).

A Plasma Bolt Launcher system takes up a MASS of 5 times the class of the launcher. The points cost is 3 points per MASS.

[* If using the vector movement rules from Fleet Book 1, you may wish to reduce the burst radius of plasma bolts to 4 (or even 3) mu to compensate for the more accurate prediction of target movement that occurs when using the vector system; a similar rule was suggested in FB1 with regard to the attack radius of salvo missiles, for the same reason. If you decide on this, ensure all your players know before the game which version you will be using - 6mu should be considered the default value unless agreed otherwise!]

FIRE CONTROL SYSTEMS

Phalon ships carry fire-control systems that function exactly as their human equivalents; use all standard rules for them. A Phalon FC system requires 1 MASS and costs 4 points.

Note that an operational fire-control system is required in order for a Phalon ship to launch a plasma bolt, but the same fire-control may also be used for anti-ship pulser fire in the main fire phase.

CREW FACTORS AND DAMAGE CONTROL

Phalon ships use the same rules for crew factors and damage-contol parties as human ships; there is one crew factor for each 20 MASS of ship (or part thereof), so for example a MASS 30 Phalon ship has a crew factor of 2, and a MASS 41 ship a factor of 3.

There is no cost or mass requirement for crew factors.

The crew factors are indicated by small stars placed in some of the hull boxes on the SSD - the placement of the crew factors being determined by dividing the mass used for hull integrity by the total crew factor (and rounding UP in all cases): for example, a ship with a crew factor of 4 and a hull integrity of 17 would have a crew factor star placed in every FIFTH box on the damage track (17/4 = 4.25, rounded up to 5), and the last star in the last box - so the crew factors would be in the fifth, tenth, fifteenth and seventeenth (final) boxes.

When a hull box containing a crew star is lost to damage, that crew factor is lost due to accumulated crew casualties.

Crew factors represent the number of damage control parties (DCPs) available to the ship - one DCP for every remaining crew factor on the ship. DCPs may attempt to repair systems lost to threshold damage, with up to three DCPs being allocated to each attempted system repair - the basic roll of success in the repair attempt is 6 if one DCP is working on it, -1 for each additional DCP allocated to the task (so the allowed maximum of 3 DCPs will make a successful repair on a roll of 4+). Any one system may only be the subject of one attempted repair roll in any given turn.

HANGAR BAYS

Phalon ships may carry hangar bays and fighter groups (or other embarked small craft) in exactly the same way as human ships, using all the standard rules. Refer to the Fighter Rules section for more details on the different Phalon fighter types available. Each Fighter Bay uses 9 MASS and costs 18 points; bays for other small craft use 1.5 x the MASS of craft carried, and cost 3 points per MASS used.

Note that in general only the Phalon "Motherships" carry fighter bays, though this is for doctrinal rather than technical reasons.

FIGHTERS

The Phalons use fighters in much the same way as human fleets, with each fighter being piloted by one to three Phalon crew. Several different types of Phalon fighters have been observed, the most common being the Nith class multirole (UN codename PEG), the Tuus class heavy fighter (UN codename PUD) and the Vaan class interceptor (UN codename PAM).

Phalon fighter groups follow all the normal fighter rules, and have the usual points costs for their specialised types; the basic multirole type has a movement allowance of 24mu (plus 12mu secondary move) and a standard 1-die attack, and Heavy and Interceptor specialised variants all follow the relevant rules. If you are using the Fighter Morale rules, they apply to Phalons exactly as to human forces.

VAPOUR SHROUDS

The Phalons have the ability to puff out a shroud of vapour droplets and ice crystals around their ships, which shields them from incoming fire but also blocks outgoing fire as well.

Deploying the shroud must be noted in movement orders, and affects the ship for the entire turn. A shrouded ship may move as normal, but may not fire any weapons at all, including point-defence fire.

A deployed shroud acts like a level-2 screen against all energy weapon attacks, including Phalon pulsers and plasma bolt damage, human beams etc. Weapons normally unaffected by screens (K-guns, Pulse Torps, SMs etc) are unaffected by vapour shrouds.

Fighters may attack a shrouded ship, but suffer the same penalty as other weapons fire - it is the same as attacking a screen-2 target, UNLESS they are using non-beam weapons (ie: Kra'Vak fighters, and other races' Torpedo fighters or equivalents). Phalon Motherships may not launch or recover fighters while their shroud is deployed.

System mass: 5% of total ship mass, minimum 1 MASS. Cost = MASS x 3.

PHALON SHIP DESIGN PROCEDURE

1) SELECT OVERALL SHIP MASS.

2) SELECT HULL INTEGRITY VALUE and create Damage Track.

3) ADD ARMOUR SHELL.

4) SELECT MAIN DRIVE THRUST FACTOR.

5) INSTALL FTL DRIVE (if required).

6) TOTAL MASS USED SO FAR.

7) INSTALL CHOSEN OFFENSIVE AND DEFENSIVE SYSTEMS.

8) TOTAL POINTS VALUES to calculate NPV of ship.

1) SELECT OVERALL SHIP MASS

This may be any size desired, though most combat starships fall within 10-200 MASS.

EXAMPLE: We choose to build a Phalon Warrior (cruiser) type ship with a total MASS factor of 100 which is towards the high end of the Warrior category. This gives us a basic hull that will take up to 100 MASS of drives, shell and other systems.

2) SELECT HULL INTEGRITY LEVEL

Any amount of the available MASS may be used for HULL INTEGRITY, which represents the overall structural strength of the ship's hull and its ability to absorb damage. The only restriction is that the MINIMUM amount of hull integrity is 10% of the ship's total MASS.

The actual MASS of the Hull Integrity chosen is equal to the number of DAMAGE BOXES the ship has, which are then organised into four rows (in accordance with the Damage Track rules).

Crew factors should be worked out and indicated on the damage track at this point (mainly for Damage Control purposes), in exactly the same way as for human ship designs.

EXAMPLE: Phalon ships generally use fairly weak internal hull structures protected by their special "shell" armour; we choose to allocate 20 MASS to Hull Integrity, so the ship has 20 Damage Boxes (which will be arranged on the Damage Track as four rows of 5). The points cost for the hull integrity will be 2 x MASS used, ie: 40 points.

3) ADD ARMOUR SHELL

Phalon armour works in a different manner to that of other races, in that the "shell" of armour may be multi-layered; each SHELL box takes up 1 MASS, but its COST in points increases as more layers are added.

EXAMPLE: We decide that our Phalon Warrior ship will allocate 12 MASS to its shell, giving us 12 boxes which may be arranged in any chosen pattern - we decide to have an inner (first) layer of 8 boxes (for a cost of 2 points per box, = 16 points) and an outer (second) layer of 4 boxes (at 4 points per box, = 16 points).

4) SELECT MAIN DRIVE THRUST FACTOR

All ships require a Main Drive; the MD takes up 5% of the ship's overall MASS for every Thrust Factor of drive power.

EXAMPLE: We decide to give our ship a Thrust Factor of 4, so this takes 4 x 5 = 20% of the overall MASS; 100 x 20% = 20, so the ship's Main Drive takes up 20 MASS. The Main Drive will cost 20 x 2 = 40 points.

5) INSTALL FTL DRIVE (if required)

If an FTL drive is to be part of the design, it is fitted at this stage and uses up 10% of the overall ship MASS.

EXAMPLE: Our Warrior ship needs an FTL drive; it will take up 100 x 10% = 10 MASS. The FTL drive will cost 10 x 2 = 20 points.

6) TOTAL MASS USED SO FAR

Add up the total MASS used by the Hull Integrity, Shell, Main Drive and FTL Drive systems, and subtract this from the overall ship MASS to find the amount left for fitting-out with offensive, defensive and other systems.

EXAMPLE: Our design has used 20 MASS for Hull Integrity, 12 for Shell, 20 for Main Drive and 10 for FTL Drive. This totals 62 MASS from the overall 100, so we are left with 38 MASS for fitting-out.

7) INSTALL CHOSEN OFFENSIVE AND DEFENSIVE SYSTEMS

Choose the desired mix of weapon installations and other systems to suit the ship's intended mission profile, ensuring that the total MASS required for all the systems does not exceed the available MASS left from step 6.

EXAMPLE: We choose a good suite of pulser batteries for our Warrior, with 2 single-arc pulsers firing in the Fore arc only, a single 3-arc (FP/F/FS) and a final pair of all-arc batteries. The configuration of the pulsers into C, M or L types will be chosen prior to each battle, but the most likely configuration that we have in mind when designing the ship will be for the single-arc systems to be used as a pulser-L long-range sniping weapons, the 3-arc one as a pulser-M for medium range firepower and the two all-arc batteries as pulser-Cs which will also serve in the point-defence role (ANY pulser battery may fire in PDS mode, but the all-arc ones will be the most versatile for this).

A Plasma Bolt Launcher of class-3 is fitted in the ship's bows, and the whole weapon suite is directed by three fire control systems.

The standard Phalon Vapour Shroud gland is fitted for passive defence when needed.

2 x Pulser (1 arc) @ 2 MASS	*= 4 MASS*
1 x Pulser (3 arc) @ 3 MASS	*= 3 MASS*
2 x Pulser (6 arc) @ 4 MASS	*= 8 MASS*
1 x Plasma Bolt Launcher (class 3)	*= 15 MASS*
3 x Fire Controls @ 1 MASS	*= 3 MASS*
1 x Vapour Shroud gland @ 5% of overall ship MASS	*= MASS 5*

Total MASS used for systems = 38

8) TOTAL POINTS VALUES

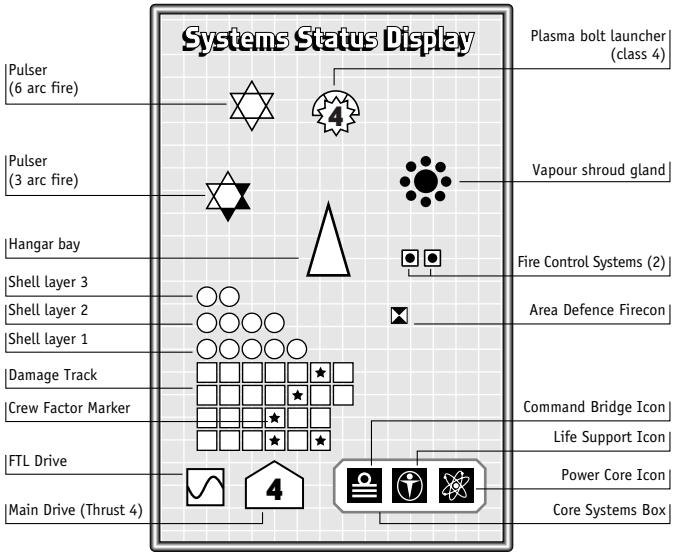
EXAMPLE: The points costing of our example ship is:

BASIC HULL (MASS 100)	*MASS x 1*	*100 points*
HULL INTEGRITY (MASS 20)	*MASS x 2*	*40 points*
SHELL (MASS 12)	*(8x2) + (4x4)*	*32 points*
MAIN DRIVE (MASS 20)	*MASS x 2*	*40 points*
FTL DRIVE (MASS 10)	*MASS x 2*	*20 points*
2 x Pulser (1 arc) (MASS 4)	*MASS x 5*	*20 points*
1 x Pulser (3 arc) (MASS 3)	*MASS x 5*	*15 points*
2 x Pulser (6 arc) (MASS 8)	*MASS x 5*	*40 points*
1 x PBL (class 3) (MASS15)	*MASS x 3*	*45 points*
3 x Fire Controls (MASS 3)	*MASS x 4*	*12 points*
1 x Vapour Shroud (MASS 5)	*MASS x 3*	*15 points*

Total cost (NPV - Nominal Points Value) 379 points

PHALON SYSTEMS STATUS DISPLAY (SSD)

The diagram below is an example of how to read the Phalon SSDs on the ship data panels. Please note that this is NOT an actual ship design, just a key to the symbols and icons used!



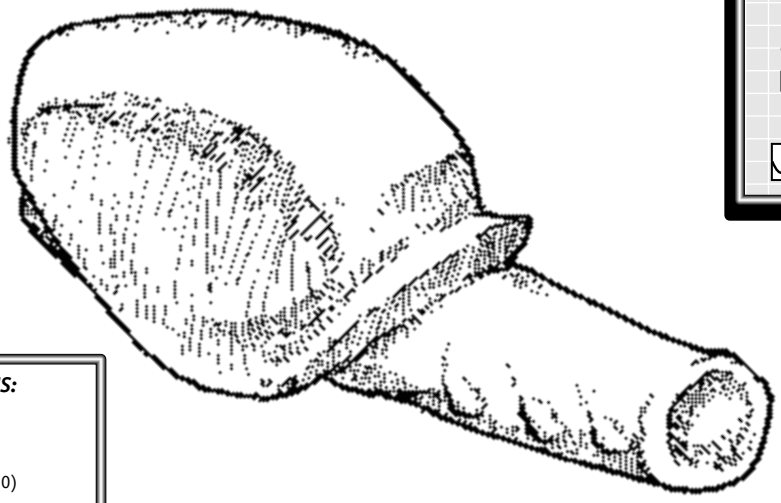
See page 45 for Phalon weapons and defences summary box

Phyaa class PROTECTOR

Systems Status Display

6

TMF: 10
NPV: 39



TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Recon Scout
Displacement:	1000 tonnes (MASS factor 10)
Hull Integrity:	1
Shell Strength:	Layer 1: 1
Crew:	10 [Crew Factor: 1]
Armament:	1 x Pulser battery
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 1 Fire control system
Drive Systems:	Main Drive Rating 6, FTL (jump) drive

PHYAA CLASS PROTECTOR
*(UN codename **PIKE**)*
HUMAN CLASS EQUIVALENT:
Recon Scout

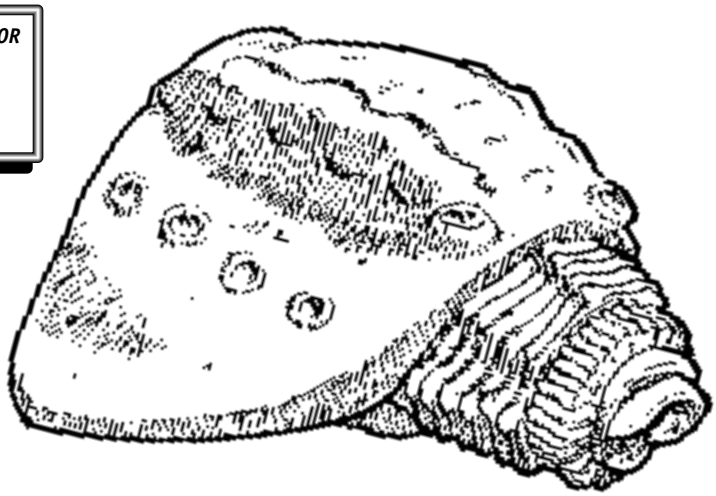
First encountered: 2191.
The tiny Phyaa recon scout is never meant to enter close combat; as its designation implies, it is primarily a reconnaissance and intelligence gathering ship. Its single one-arc pulser battery is almost always configured in L mode, to give it the ability to snipe from long range where the enemy cannot effectively respond. If caught at closer ranges, the Phyaa will try to withdraw under the protection of its vapour shroud.

Vlath class PROTECTOR

Systems Status Display

4

VLATH CLASS PROTECTOR
*(UN codename **POGO**)*
HUMAN CLASS EQUIVALENT:
Battle Scout



TMF: 12
NPV: 51

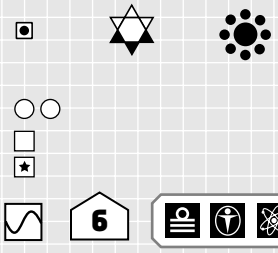
TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Battle Scout
Displacement:	1200 tonnes (MASS factor 12)
Hull Integrity:	2
Shell Strength:	Layer 1: 1
Crew:	12 [Crew Factor: 1]
Armament:	1 x Pulser battery
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 1 Fire control system
Drive Systems:	Main Drive Rating 4, FTL (jump) drive

First encountered: 2192.
Classed as a "Battle Scout", the little Vlath is a fragile ship with a big punch - its single all-arc pulser is most often encountered in C mode for maximum fire output at short range, and squadrons of Vlaths have been known to "swarm" a larger enemy ship and pound it rapidly to death from all sides before it can kill all the tiny attackers.

Dorrth class PROTECTOR

Systems Status Display



TMF: 16
NPV: 60

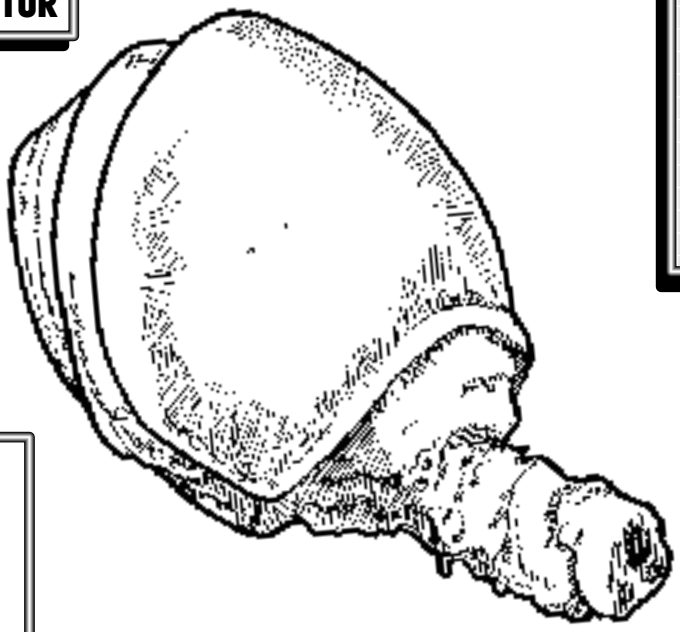
TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Corvette
Displacement:	1600 tonnes (MASS factor 16)
Hull Integrity:	2
Shell Strength:	Layer 1: 2
Crew:	16 [Crew Factor: 1]
Armament:	1 x Pulser battery
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 1 Fire control system
Drive Systems:	Main Drive Rating 6, FTL (jump) drive

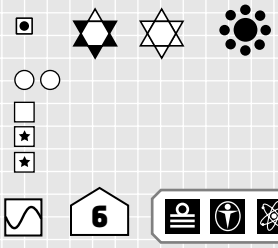
DORRTH CLASS PROTECTOR
*(UN codename **PHONY**)*
HUMAN CLASS EQUIVALENT:
Corvette

First encountered: 2191.
The Dorrth class fills the "corvette" role in Phalon naval forces, being a small Protector ship designed to escort convoys and act as outriders to combat task groups. The single limited-arc pulser battery is most often configured as either a long-range sniping weapon or a close-range shipkiller, depending on the role that the ship is assigned to at that time.

Tyaph class PROTECTOR



Systems Status Display



TMF: 21
NPV: 84

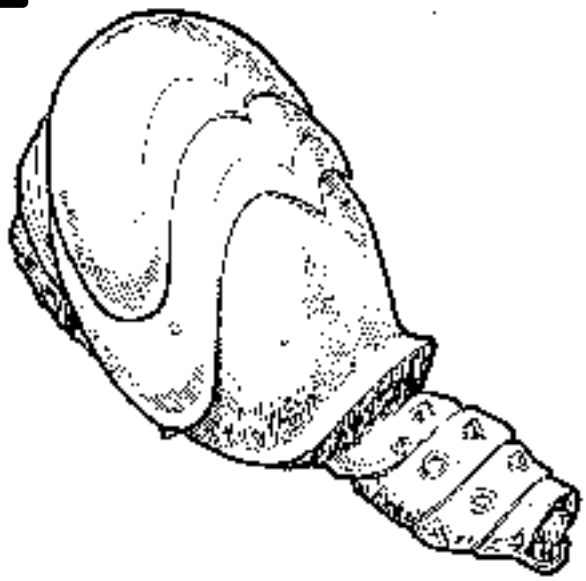
TECHNICAL SPECIFICATIONS:

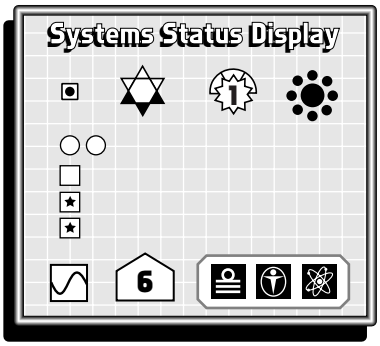
Human Class Equivalent:	Frigate
Displacement:	2100 tonnes (MASS factor 21)
Hull Integrity:	3
Shell Strength:	Layer 1: 2
Crew:	21 [Crew Factor: 2]
Armament:	2 x Pulser batteries
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 1 Fire control system
Drive Systems:	Main Drive Rating 6, FTL (jump) drive

TYAPH CLASS PROTECTOR
*(UN codename **PINKY**)*
HUMAN CLASS EQUIVALENT:
Frigate

First encountered: 2192.
The Tyaph class is slightly smaller than its Phuun class sister ship, and lacks the latter's plasma bolt system, but makes up for this with twin pulser batteries. As a close escort for major fleet units, the Tyaph is most often encountered with both pulsers tuned for C mode to give a very large fire output against any enemy ships that venture too close to the Phalon fleet.

Phuun class PROTECTOR





TMF: 24
NPV: 89

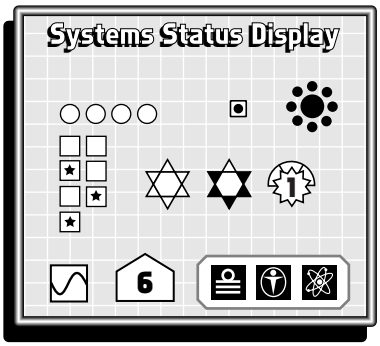
TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Frigate
Displacement:	2400 tonnes (MASS factor 24)
Hull Integrity:	3
Shell Strength:	Layer 1: 2
Crew:	24 [Crew Factor: 2]
Armament:	1 x Pulser battery, 1 x Class-1 Plasma Bolt launcher
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 1 Fire control system
Drive Systems:	Main Drive Rating 6, FTL (jump) drive

PHUUN CLASS PROTECTOR
*(UN codename **PERKY**)*
HUMAN CLASS EQUIVALENT:
Frigate

First encountered: 2192.
The Phuun is the smallest Phalon ship class in regular use to mount a plasma bolt launcher system, and the mass of this weapon leaves little room for other armament; a single pulser battery bears only through the three frontal arcs of the ship, leaving the Phuun very vulnerable to attacks from its aft arcs. Phuun class ships have been encountered with all configurations of their pulser battery, but the most commonly it is tuned to M mode.

Dinth class PROTECTOR



TMF: 41
NPV: 150

TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Heavy Destroyer
Displacement:	4100 tonnes (MASS factor 41)
Hull Integrity:	7
Shell Strength:	Layer 1: 4
Crew:	41 [Crew Factor: 3]
Armament:	2 x Pulser batteries, 1 x Class-1 Plasma Bolt launcher
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 1 Fire control system
Drive Systems:	Main Drive Rating 6, FTL (jump) drive

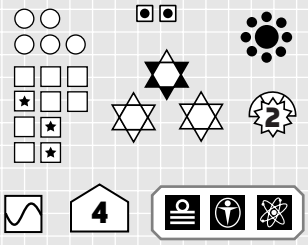
DINTH CLASS PROTECTOR
*(UN codename **PISTOL**)*
HUMAN CLASS EQUIVALENT:
Heavy Destroyer

First encountered: 2192.
The largest of the Protector group of escort classes, the Dinth is equivalent to a heavy destroyer in human naval terms. It is most commonly found accompanying major task forces as a heavy fleet escort, but has also been encountered as a solo commerce raider. The Dinth has a high thrust rating and is protected by a single layer shell of reasonable strength. The most common configuration for its pulser suite is the single-arc battery in M mode, and the all-arc in C mode.

Tsaara class WARRIOR

TMF: 58
NPV: 225

Systems Status Display



TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Light Cruiser
Displacement:	5800 tonnes (MASS factor 58)
Hull Integrity:	10
Shell Strength:	Layer 1: 3, Layer 2: 2
Crew:	58 [Crew Factor: 3]
Armament:	3 x Pulser batteries, 1 x Class-2 Plasma Bolt launcher
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 2 Fire control systems
Drive Systems:	Main Drive Rating 4, FTL (jump) drive

TSAARA CLASS WARRIOR
*(UN codename **PINBACK**)*
HUMAN CLASS EQUIVALENT:
Light Cruiser

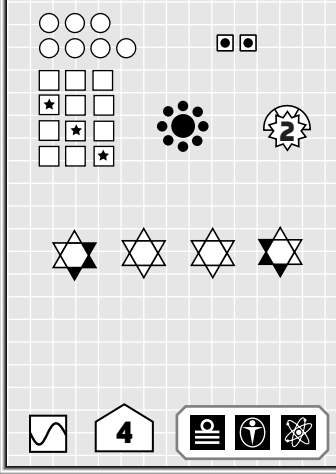
First encountered: 2191.
The Tsaara CL was the first Phalon ship to be encountered by human forces, in mid 2191. The Tsaara class ship "Tojhaa" was attacked by a small FSE task group while engaged in reconnaissance near the outpost station at Rhone III. The Tojhaa began to withdraw under the cover of its vapour shroud after a hectic exchange of fire with the FSE group, but was caught by a final missile barrage from a Trieste DDH and destroyed with no survivors. Only upon examination of the debris did the FSE forces realise that this was a new, third race of alien beings hitherto unknown to humanity.

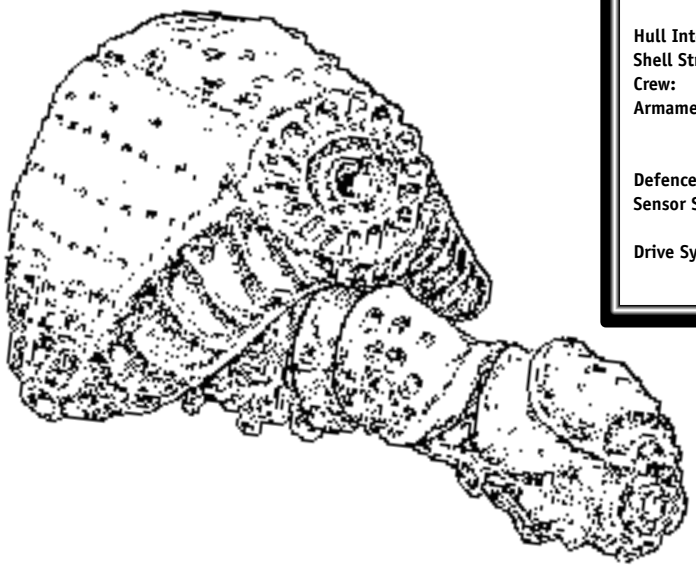
Huulth class WARRIOR

TMF: 70
NPV: 276

HUULTH CLASS WARRIOR
*(UN codename **PACKER**)*
HUMAN CLASS EQUIVALENT:
Medium Cruiser

Systems Status Display





TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Medium Cruiser
Displacement:	7000 tonnes (MASS factor 70)
Hull Integrity:	12
Shell Strength:	Layer 1: 4, Layer 2: 3
Crew:	70 [Crew Factor: 4]
Armament:	4 x Pulser batteries, 1 x Class-2 Plasma Bolt launcher
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 2 Fire control systems
Drive Systems:	Main Drive Rating 4, FTL (jump) drive

First encountered: 2191.
The Huulth is a good all-round warrior (cruiser) design, found in most Phalon battlefleets and independant squadrons. There is a specialised anti-fighter escort version of the Huulth that loses the Plasma Bolt launcher and replaces it with two additional all-arc pulser batteries plus an ADFC (Area Defence Fire Control) system; its mass is the same as the standard Huulth, but its NPV rises to 294. This variant is known to the Phalons as a Klashh-Huulth, and to humans as the PACKER-E.

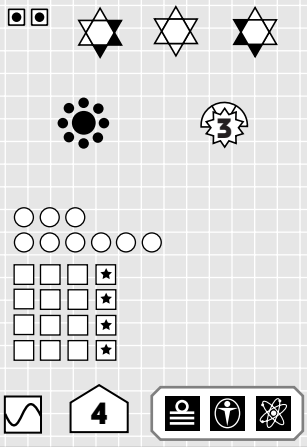
Tuuloth class WARRIOR

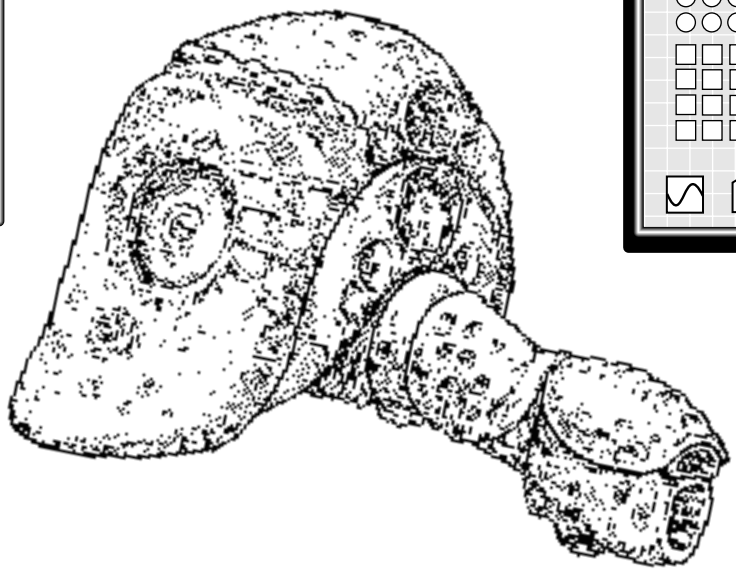
TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Heavy Cruiser
Displacement:	8000 tonnes (MASS factor 80)
Hull Integrity:	16
Shell Strength:	Layer 1: 6, Layer 2: 3
Crew:	80 [Crew Factor: 4]
Armament:	3 x Pulser batteries, 1 x Class-3 Plasma Bolt launcher
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 2 Fire control systems
Drive Systems:	Main Drive Rating 4, FTL (jump) drive

First encountered: 2192.
The Tuuloth is the standard Phalon heavy cruiser design, and is a reasonable all-round compromise of mobility, defence and offensive weaponry. A two-layer shell gives good protection to its relatively weak inner hull, and a class-3 plasma bolt system gives the Tuuloth a significant punch at long range. The pulser fit is not huge, but is adequate, and is normally found configured with the two 3-arc mounts in L or M mode and the single all-arc battery in C mode. The Tuuloth is often used as heavy support to small raiding parties of Protector class ship.

Systems Status Display





TUULOTH CLASS WARRIOR
*(UN codename **PAVANE**)*
HUMAN CLASS EQUIVALENT:
Heavy Cruiser

TMF: 80
NPV: 299

Keraph class WARRIOR

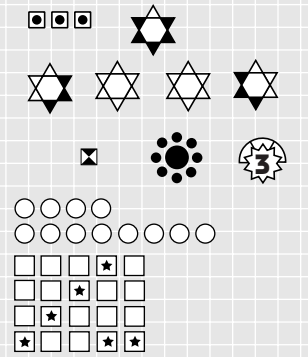
TMF: 104
NPV: 398

KERAPH CLASS WARRIOR
*(UN codename **PAGAN**)*
HUMAN CLASS EQUIVALENT:
Battlecruiser

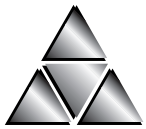
TECHNICAL SPECIFICATIONS:

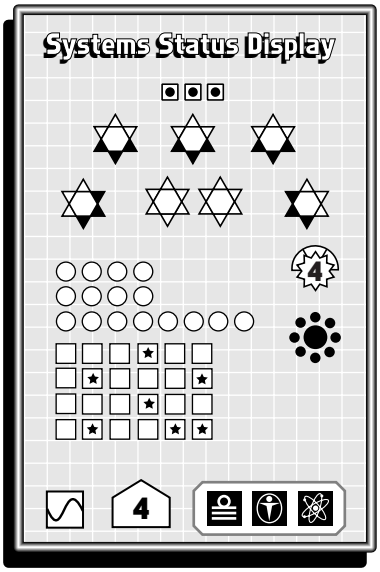
Human Class Equivalent:	Battlecruiser
Displacement:	10400 tonnes (MASS factor 104)
Hull Integrity:	20
Shell Strength:	Layer 1: 8, Layer 2: 4
Crew:	104 [Crew Factor: 6]
Armament:	5 x Pulser batteries, 1 x Class-3 Plasma Bolt launcher
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 3 Fire control systems, 1 ADFC
Drive Systems:	Main Drive Rating 4, FTL (jump) drive

Systems Status Display



First encountered: 2192.
The Keraph is the only Phalon warship class to mount an ADFC (Area-Defence Fire Control) system as a standard fitment; other classes do carry ADFCs, but only as special variants, while all Keraph class ships encountered have been so equipped. As such, the Keraph is most commonly found as a dedicated anti-fighter ship to protect larger fleet units, though it is also used as part of some independant warrior (cruiser) squadrons.

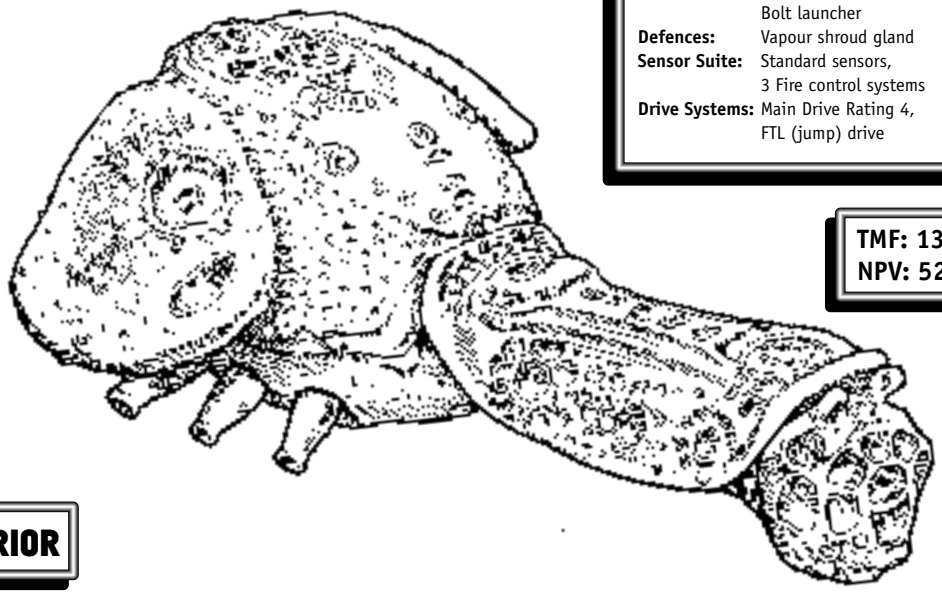




First encountered: 2192.
The Ptath is the smallest of the "Great Warrior" group of capital ship classes, and equates to a Battleship in human naval terms. It is also the smallest common Phalon ship to carry a 3-layer shell, and with a good thrust level and an extensive pulser fit (normally configured to give a mix of long and short range fire, but Ptaths have been encountered with all their pulsers tuned for one extreme or the other) it is an effective all-round combat ship that often forms the core of small task forces.

TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Battleship
Displacement:	13200 tonnes (MASS factor 132)
Hull Integrity:	24
Shell Strength:	Layer 1: 8, Layer 2: 4, Layer 3: 4
Crew:	132 [Crew Factor: 7]
Armament:	7 x Pulser batteries, 1 x Class-4 Plasma Bolt launcher
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 3 Fire control systems
Drive Systems:	Main Drive Rating 4, FTL (jump) drive



TMF: 132
NPV: 522

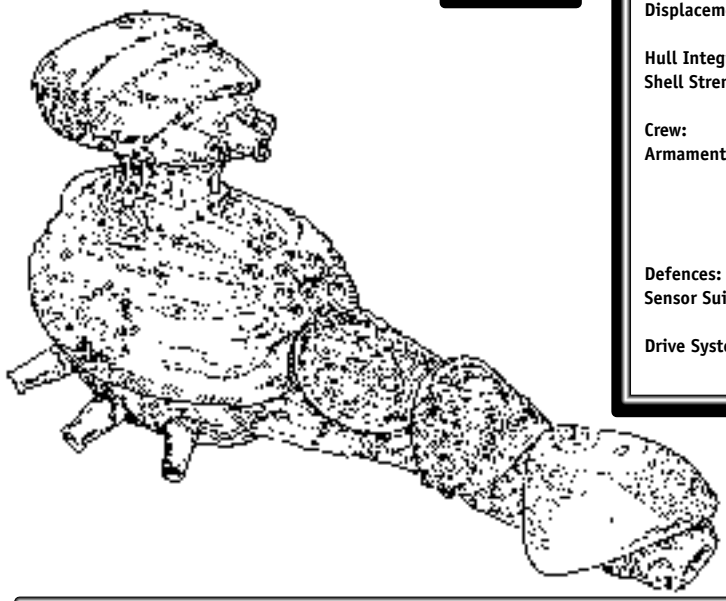
PTATH CLASS
GREAT WARRIOR
*(UN codename **PLONKER**)*
HUMAN CLASS EQUIVALENT:
Battleship

Ptath class GREAT WARRIOR

Saath class GREAT WARRIOR

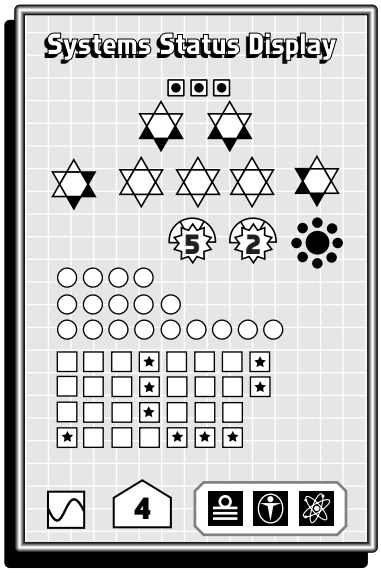
TMF: 170
NPV: 658

SAATH CLASS
GREAT WARRIOR
*(UN codename **PAYCHECK**)*
HUMAN CLASS EQUIVALENT:
Battledreadnought



TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Battledreadnought
Displacement:	17000 tonnes (MASS factor 170)
Hull Integrity:	30
Shell Strength:	Layer 1: 9, Layer 2: 5, Layer 3: 4
Crew:	170 [Crew Factor: 9]
Armament:	7 x Pulser batteries, 1 x Class-5 Plasma Bolt launcher, 1 x Class-2 Plasma Bolt launcher
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 3 Fire control systems
Drive Systems:	Main Drive Rating 4, FTL (jump) drive



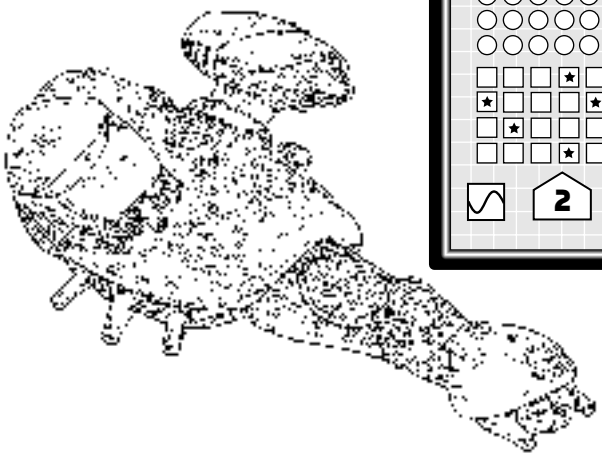
First encountered: 2193.
The Saath differs from its smaller counterparts in that it mounts two Plasma Bolt launchers - a large class-5 in the usual spinal mount, plus a smaller class-2 in a dorsal weapons pod. Because of the amount of mass used by these systems, its pulser fit is no more extensive than that of the much smaller Ptath BB, but is still enough to make the Saath a very capable ship, good for both independant and fleet operations.

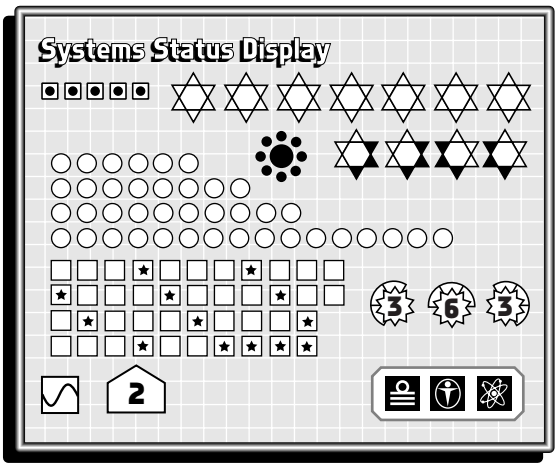
Voth class GREAT WARRIOR

TMF: 250
NPV: 1041

TECHNICAL SPECIFICATIONS:

Human Class Equivalent: Superdreadnought
Displacement: 25000 tonnes (MASS factor 250)
Hull Integrity: 42
Shell Strength: Layer 1: 16, Layer 2: 10, Layer 3: 8, Layer 4: 6
Crew: 250 [Crew Factor: 13]
Armament: 11 x Pulser batteries, 1 x Class-6 Plasma Bolt launcher, 2 x Class-3 Plasma Bolt launchers
Defences: Vapour shroud gland
Sensor Suite: Standard sensors, 5 Fire control systems
Drive Systems: Main Drive Rating 2, FTL (jump) drive





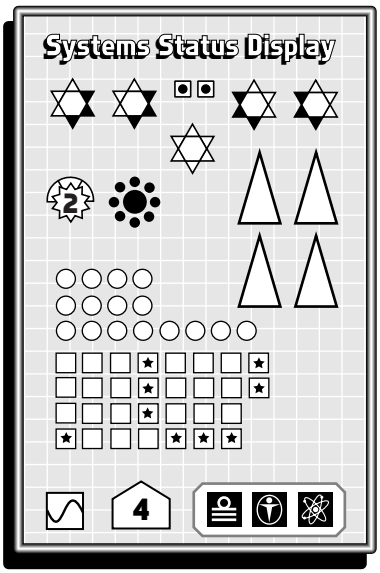
VOTH CLASS GREAT WARRIOR
*(UN codename **PACHYDERM**)*
HUMAN CLASS EQUIVALENT: *Superdreadnought*

First encountered: 2192.
The Voth class (along with their fighter-mothership counterparts, the Draath class) are the largest Phalon warships in common use. Protected by a massive four-layered shell, a Voth can withstand multiple hits from the most powerful of weapons before it takes damage to its soft inner hull. An array of no less than three plasma bolt launchers (a huge spinal class-6 and two smaller class-3s mounted in dorsal weapons pods) and an array of eleven pulser batteries allow the Voth to put out a phenomenal amount of firepower; normally the pulser systems are configured as a mix of C, M and L versions to give optimum coverage at all combat ranges, but Voths have been encountered with almost all their pulsers tuned for close-range combat only - in this mode they can launch a volley that can shred a dreadnought in one pass.
Several variants of the Voth have been noted, including one (PACHYDERM-E) that carries two ADFC systems in place of one of its all-arc pulser batteries.

TMF: 170
NPV: 641

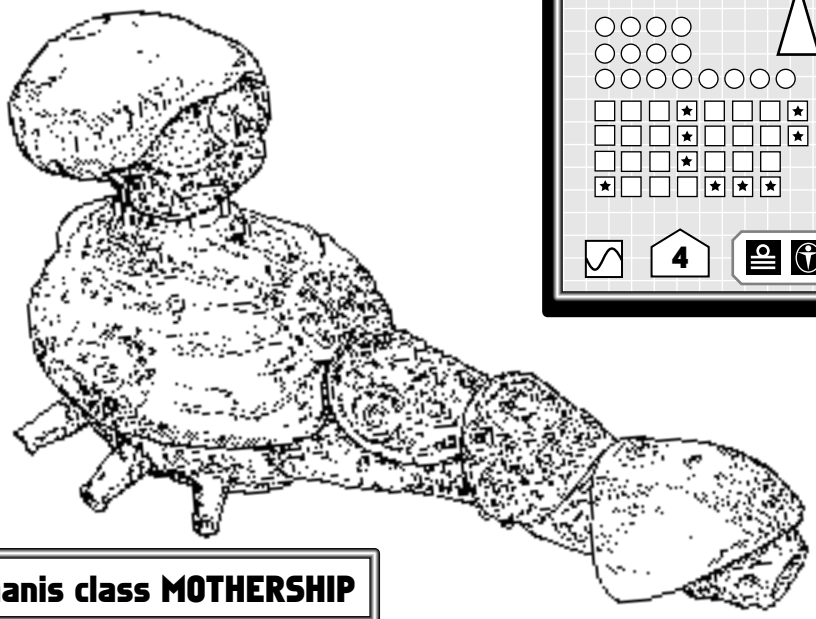
TAANIS CLASS MOTHERSHIP
*(UN codename **PANDORA**)*
HUMAN CLASS EQUIVALENT:
Light Carrier

First encountered: 2193.
The Taanis is based on the same main structure as the Saath battledreadnought, with a fighter hangar/launch pod replacing the dorsal weapons pod of the Saath. It is the smallest Phalon carrier in regular service, and is usually found as a fighter support ship in small and medium sized task force groups. The Taanis retains the standard plasma bolt and pulser armament mix of almost all Phalon ships, but this is significantly downrated from the fit carried by the Saath in order to allow for the mass of the fighter bays.



TECHNICAL SPECIFICATIONS:

Human Class Equivalent: Light Carrier
Displacement: 17000 tonnes (MASS factor 170)
Hull Integrity: 30
Shell Strength: Layer 1: 8, Layer 2: 4, Layer 3: 4
Crew: 170 [Crew Factor: 9] + fighter crews
Armament: 5 x Pulser batteries, 1 x Class-2 Plasma Bolt launcher
Defences: Vapour shroud gland
Sensor Suite: Standard sensors, 2 Fire control systems
Drive Systems: Main Drive Rating 4, FTL (jump) drive
Hangar bays: 4 bays each holding 6 fighters. (fighter cost not included)

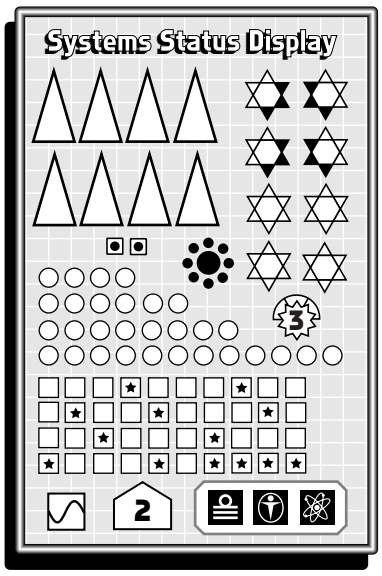


Taanis class MOTHERSHIP

TMF: 250
NPV: 1002

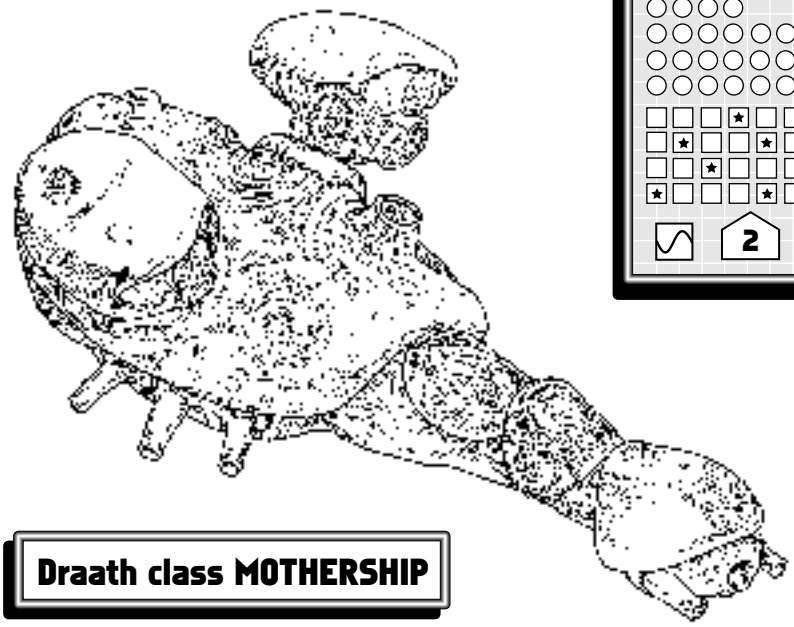
DRAATH CLASS MOTHERSHIP
*(UN codename **PARADOX**)*
HUMAN CLASS EQUIVALENT:
Heavy Carrier

First encountered: 2193.
The Draath is the largest Phalon mothership (carrier) so far encountered; its complement of eight full fighter groups is massive, greater than even the huge FSE Jeanne D'Arc class which outmasses the Draath by some 3000 tonnes. On top of this large fighter force the Draath also mounts an extensive pulser array (normally configured into a mix of M and C modes) and still has room for a class-3 plasma bolt system, making it a versatile combat ship. Its low thrust level is somewhat mitigated by its very powerful 4-layer defensive shell.



TECHNICAL SPECIFICATIONS:

Human Class Equivalent:	Heavy Carrier
Displacement:	25000 tonnes (MASS factor 250)
Hull Integrity:	40
Shell Strength:	Layer 1: 12, Layer 2: 8, Layer 3: 6, Layer 4: 4
Crew:	250 [Crew Factor: 13] + fighter crews
Armament:	8 x Pulser batteries, 1 x Class-3 Plasma Bolt launcher
Defences:	Vapour shroud gland
Sensor Suite:	Standard sensors, 2 Fire control systems
Drive Systems:	Main Drive Rating 2, FTL (jump) drive
Hangar bays:	8 bays each holding 6 fighters. (fighter cost not included)



Draath class MOTHERSHIP

PHALON WEAPONS AND DEFENCES SUMMARY

PULSER BATTERIES

Each pulser must be configured before the game to L, M or C mode.

LONG range mode (pulser-L):	range 0-36mu	1 die per shot
MEDIUM range mode (pulser-M):	range 0-24mu	2 dice per shot
CLOSE range mode (pulser-C):	range 0-12mu	6 dice per shot

Pulser fire dice are read as 1-3 = no effect, 4-5 = 1 Damage Point, 6 = 2DP plus a reroll.

Level-1 screens negate rolls of 4; level-2 screens and vapour shrouds negate rolls of 4 or 5.

Pulser fire is non-penetrating with the exception of damage inflicted by rerolls.

All Pulsers can function as PDS instead of anti-ship fire in any given turn, using the normal PDS rules, ranges and effects (limited-arc pulsers may only fire at targets within their valid fire arcs).

ICONS (examples):

One-arc pulser configured in M mode

Three-arc pulser configured in L mode

All-arc pulser configured in C mode

ADFC (AREA-DEFENCE FIRE CONTROL)

Allows ship to use its pulsers in area-defence mode to protect any other ships within 6 mu. An ADFC is only an enhanced point-defence fire director - it is not a weapon in its own right and cannot function as a regular fire control.

ICON:

PLASMA BOLT LAUNCHERS

Plasma Bolt Launchers (PBLs) are available in sizes from class-1 to class-6 or larger. Launcher is a 3-arc (180 degree) system. Target point marker is placed during ordnance fire phase.
All plasma bolt launchers may only fire once every other turn.
Bolt strength is equal to launcher class; maximum range is 30 mu.
Point-defence fire against plasma bolts reduces strength of bolt - refer to rules for effects of different types of PD fire.

Burst radius of all plasma bolts is normally 6 mu. Each ship in radius takes 1 D6 damage per strength of bolt.

ICONS (examples)

Class-2 plasma bolt launcher

Class-5 plasma bolt launcher

VAPOUR SHROUDS

Use must be noted in orders for that turn; blocks all outgoing fire, and acts as a level-2 screen against incoming fire (no effect against weapons that normally ignore screens).

ICON:

PHALON SHIP RECORD CHART

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

ID: Name:

Ship ID	Turn 1	V	Turn 2	V	Turn 3	V	Turn 4	V	Turn 5	V	Turn 6	V	Turn 7	V	Turn 8	V	Turn 9	V	Turn 10	V

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TIMELINE CONTINUATION

The main timeline in Full Thrust 2nd Edition brought the "official" background history up to 2183, just before the first contact with the Kra'Vak. This continuation shows how things develop from there.....

2183: The UNSC Survey Cruisers McCaffrey and Niven are attacked by unknown forces off Lagos IV on the Pan African Rim; the Niven is completely destroyed, and the McCaffrey disappears without trace.

Later in the year, The PAU Battlecruiser Kinshasa is engaged and destroyed by an unidentified hostile in the New Lusaka system.

2184: Unexplained attacks and incidents increase in frequency, affecting not only PAU space but other nations as well; with the ongoing state of war between the NAC and ESU, much blame is placed by each power on the other. Both blocs, however, begin to realise that something far more important is happening.

Late in 2184, NAC Fleet Intelligence recovers the first identifiable alien debris following an encounter near Angel II in which a Confederation squadron managed to destroy two ships from an attacking alien group. For the first time, Humanity has positive proof that the the attackers are another sentient life-form.

2185: The first co-operative action between the ESU and NAC against the Kra'Vak occurs at the Battle of Sulaxar. Although tensions still run high (especially in diplomatic circles), the militaries of all the major powers - plus several smaller nations - are coming inexorably together in the face of a much greater threat. On 28.07.85, the UN Assembly declares that a state of war now officially exists between all the nations of Humanity and the race known as the Kra'Vak; the First InterSentient War (rapidly christened the Xeno War by the popular media) has truly begun.

2186: Early in the year, the advances towards joint ESU/NAC response to the Kra'Vak aggression falter when a Eurasian naval unit fails to assist a Confederation squadron under attack by alien forces off Caleb. Finally escaping with barely 25% of his force and men, Commodore Farris accuses the ESU of standing off from the action in order to gain control of the Caleb system. The diplomatic repercussions gradually settle, but illustrate the deep distrust that still exists between the major powers.

The Kra'Vak offensive gathers momentum, and very late in the year reports begin to come in of the first surface assaults by Kra'Vak forces.

2187: The first major success against Kra'Vak ground forces is reported on the NSL outworld of Rheinhold, where a combined force of NSL and NAC Marines supporting local Militia units manage to beat off an attempted planetary landing by the alien invaders. Rheinhold then survives five months of protracted siege and repeated landing attempts before the Kra'Vak are driven outsystem by the arrival of a large joint task force of NAC, NSL, Dutch and Free Cal-Tex ships.

Elsewhere, humanity does not fare so well, and the aliens continue to make inroads toward the core systems. Virtually no information is released to the public concerning what is happening on worlds taken by the Kra'Vak, which causes widespread panic as rumours of massacre and genocide spread. Public opinion on Earth, Centaurus and Barnard swings in favour of pulling all forces back from the outworlds to defend the core. Such a defensive concept does not find favour with the Military, nor (naturally) with the colonial population.

2188: Contact is made with a second Xenosentient species; the Sa'Vasku send a message to humanity by returning a survivor of the crew of the UNS McCaffrey, arranging a rendezvous that is attended by a joint NAC/ESU task force accompanied by a UN ambassador and xenospecialist team. After a very strange and inconclusive (to the humans) meeting between the UN delegation and the Sa'Vasku contact constructs, mankind is still not sure if it has found new friends, or new enemies.

Over the following years of the war, Sa'Vasku ships and fleets turn up apparently at random throughout human space, sometimes hostile, sometimes friendly and sometimes just observing; contact with them proves impossible unless they wish to initiate it, and mankind is still no nearer understanding their motives or agenda.

2189: The Kra'Vak push towards the core continues unabated, with mankind scoring only minor successes in space and planetside against the onslaught. Late in the year, a rapid thrust by Kra'Vak forces deep into Human space is only narrowly defeated when they attack Centaurus, a battle which causes heavy losses to the allied human fleets and great damage to the orbital colonies of the Centaurus system. The appearance of such a large enemy fleet deep within the core pushes all the human nations into closer co-operation in the fight to defeat the Kra'Vak.

2190: A brief lull occurs in the fighting while the Kra'Vak, presumably hurting from the defeat at Centaurus, consolidate their gains in human space and regroup for their next push. Towards the start of 2191 the offensive resumes, but with a steadier and more co-ordinated strategy than the piecemeal strikes of the earlier years. The human forces give ground slowly as the Kra'Vak waves strike at system after system.

2191: First contact between Humanity and the Phalon race, when a Phalon ship is fired on and destroyed by an FSE force in the Rhone system. Other encounters with the Phalons follow, including several retaliatory attacks, until proper communication is finally established and the two races begin to understand something of the other. In the event, diplomatic relations with the Phalons appear almost as unpredictable as with the Sa'Vasku, with different factions within the Conglomerate siding with either Humanity or the Kra'Vak seemingly at a whim.

2192: The Kra'Vak continue their pressure on the Hu'man. In July 2192 a small Kra'Vak deep penetration force actually slips through Sol's system defences and reaches as far as Mars orbit, hitting several orbital facilities before the defending fleets can intercept and destroy the invaders. Civilian panic on Earth rises.

2193: It becomes obvious that a major Kra'Vak push into the core, and probably to Sol itself, is very near. In desperation, the UNSC (co-ordinating the defence of the core systems) orders all human forces to withdraw their ships from the colonies to interdict the core worlds. While many units comply, others refuse to abandon their colonial home-systems which are still under attack from Kra'Vak forces. As the New Year approaches, the remnants of the UNSC/allied fleets begin to gather for a last-ditch defence of the core.

2194: While other battles still rage in many of the colonial systems, the Kra'Vak main force arrives at the core. Barnard and the already badly hurt Centaurus are attacked repeatedly by powerful Kra'Vak fleets. In May 2193 the first of the Kra'Vak attacks on the Earth's outer defences begin. The Siege of Sol has started.....

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FT 504	Ehrenhold class FRIGATES (pack of 2)	£1.95
FT 505	Waldburg class DESTROYERS (pack of 2)	£2.25
FT 505A	Waldburg/M class MISSILE DESTROYERS (pack of 2)	£2.25
FT 506	Kronprinz Wilhelm class LIGHT CRUISER	£1.95
FT 507	Radetzky class ESCORT CRUISER	£2.25
FT 508	Markgraf class HEAVY CRUISER	£2.75
FT 509	Maximilian class BATTLECRUISER	£3.95
FT 509A	Richthofen class BATTLECRUISER	£3.95
FT 510	Maria Von Burgund class BATTLESHIP	£4.25
FT 511	Szent Istvan class BATTLEDREADNOUGHT	£4.95
FT 512	Von Tegetthoff class SUPERDREADNOUGHT	£7.95
FT 513	Der Theuerdank class FIGHTER CARRIER (Modified Tegetthoff SDN)	£7.95
FT 514	Kaiser Friedrich class LIGHT CARRIER	£5.95

FEDERAL STATS EUROPA (FSE) ASTROMARINE

FT 601	Mirage IX class FIGHTERS (pack of 6)	£0.95
FT 621	Camerone class HEAVY FIGHTERS (pack of 6)	£0.95
FT 602	Mistral class SCOUTSHIPS (pack of 3)	£1.25
FT 603	Athena class CORVETTES (pack of 3)	£1.95
FT 604	Ibiza class FRIGATES (pack of 2)	£1.95
FT 605	San Miguel II (modified) class DESTROYERS (pack of 2)	£2.25
FT 605A	Trieste class SUPER DESTROYER (pack of 2)	£2.65
FT 606	Suffren class LIGHT CRUISER	£1.95
FT 607	Milan class ESCORT CRUISER	£2.25
FT 608	Jerez class HEAVY CRUISER	£2.75
FT 609	Ypres class BATTLECRUISER	£3.95
FT 610	Roma class BATTLESHIP	£4.25
FT 611	Bonaparte class BATTLEDREADNOUGHT	£5.50
FT 612	Foch class SUPERDREADNOUGHT	£7.95
FT 613	Bologna class LIGHT CARRIER	£5.95
FT 614	Jeanne D'Arc class FLEET CARRIER	£8.95

KRA'VAK DOMINION STAR FORCES

FT 401	Ra'San class FIGHTERS (pack of 6)	£0.95
FT 421	Va'San class HEAVY FIGHTERS (pack of 6)	£0.95
FT 402	Lu'Dak class SCOUTSHIPS(pack of 3)	£1.25
FT 403	Ka'Tak class STRIKERS (pack of 3)	£1.95
FT 404	Da'Kak class FRIGATES (pack of 2)	£1.95
FT 405	Di'Tok class DESTROYERS (pack of 2)	£2.25
FT 406	Vo'Bok class LIGHT CRUISER	£1.95
FT 407	Si'Tek class PATROL CRUISER	£2.25
FT 407A	Ko'Tek class STRIKE CRUISER	£2.25
FT 408	Va'Dok class HEAVY CRUISER	£2.75
FT 409	Ti'Dak class BATTLECRUISER	£3.95
FT 410	Ko'Vol class BATTLESHIP	£4.25
FT 411	Lo'Vok class BATTLEDREADNOUGHT	£4.95
FT 412	Yu'Kas class SUPERDREADNOUGHT	£7.95
FT 413	Ko'San class STRIKE CARRIER	£7.95
FT 414	Do'San class TACTICAL CARRIER	£5.95
FT 415	Sha'Ken class LIGHT TRANSPORT (pack of 2)	£2.25
FT 416	To'Rok class SURVEY/EXPLORER SHIP	£1.95

SA'VASKU SPACE COMBAT CONSTRUCTS

FT 701	Ku'Tho'Ra class DRONE FIGHTERS (pack of 6)	£0.95
FT 702A	Sa'An'Tha class SCOUT SHIPS (pack of 3)	£1.25
FT 702B	Sa'Kess'Tha class SCOUT SHIPS (pack of 3)	£1.25
FT 703	Fo'Kiir'Tha class YOUNGER ATTACK SHIP (Corvette) (pack of 3)	£1.95
FT 704	Fo'Sath'Aan class ATTACK SHIP (Frigate) (pack of 2)	£1.95
FT 705	Fo'Vur'Ath class ELDER ATTACK SHIP (Destroyer) (pack of 2)	£2.25
FT 706	Var'Arr'Sha class YOUNGER STRIKE SHIP (Light cruiser)	£1.95
FT 707A	Var'Kiir'Sha class STRIKE SHIP ((Cruiser)	£2.25
FT 707B	Var'Thee'Sha class STRIKE SHIP (Cruiser)	£2.25
FT 708	Thy'Sa'Teth class YOUNGER BROODSHIP (Escort carrier)	£2.75
FT 709	Shyy'Tha'Var class ELDER STRIKE SHIP (Battlecruiser)	£3.95
FT 710	Ann'Var'Teth class YOUNGER LEADER SHIP (Battleship)	£4.95
FT 711	Sla'Tha'Rosh class LEADER SHIP (Heavy battleship)	£5.95
FT 712	Vas'Sa'Rosh class ELDER LEADER SHIP (Dreadnought)	£7.95
FT 713	Vas'Sa'Teth class ELDER BROODSHIP (Heavy carrier)	£7.95

PHALON CONGLOMERATE GRAND FLEET

FT 801A	Nith class FIGHTERS (pack of 6)	£0.95
FT 801B	Tuus class HEAVY FIGHTERS (pack of 6)	£0.95
FT 801C	Vaan class INTERCEPTORS (pack of 6)	£0.95
FT 802A	Phyaa class RECON SCOUTS (pack of 3)	£1.25
FT 802B	Vlath class BATTLE SCOUTS (pack of 3)	£1.25
FT 803	Dorrth class CORVETTES (pack of 3)	£1.95
FT 804A	Tyaph class FRIGATES (pack of 2)	£1.95
FT 804B	Phuun class FRIGATES (pack of 2)	£1.95
FT 805	Dinth class DESTROYERS (pack of 2)	£2.25
FT 806	Tsaara class LIGHT CRUISER	£1.95
FT 807	Huulth class MEDIUM CRUISER	£2.25
FT 808	Tuuloth class HEAVY CRUISER	£2.75
FT 809	Keraph class BATTLECRUISER	£3.95
FT 810	Ptath class BATTLESHIP	£4.25
FT 811	Saath class LIGHT DREADNOUGHT	£5.95
FT 812	Voth class SUPERDREADNOUGHT	£7.95
FT 813	Taanis class FIGHTER MOTHERSHIP (LIGHT)	£5.95
FT 814	Draath class FIGHTER MOTHERSHIP (HEAVY)	£7.95

OCEANIC UNION DEFENCE FLEET

FT 901	OUDF FIGHTERS (pack of 6)	£0.95
FT 904	OUDF FRIGATE (pack of 2)	£1.95
FT 905	OUDF DESTROYER (pack of 2)	£2.25
FT 906	OUDF LIGHT CRUISER	£1.95
FT 908	OUDF HEAVY CRUISER	£2.75

ISLAMIC FEDERATION STAR NAVY

FT 1001	Djinn class LIGHT FIGHTERS (pack of 6)	£0.95
FT 1021	Ghazi class HEAVY FIGHTERS (pack of 6)	£0.95
FT 1022	Al Shaulah class STRIKESHIPS (pack of 3)	£1.25
FT 1003	Khabar class CORVETTES (pack of 3)	£1.95
FT 1004	Al Hawar class FRIGATES (pack of 2)	£1.95
FT 1005	Saladin class DESTROYERS (pack of 2)	£2.25
FT 1010	Sword of Islam class BATTLESHIP	£4.25

UNITED NATIONS SPACE COMMAND

FT 1101	Dauntless class FIGHTERS (pack of 6)	£0.95
FT 1121	Defender class HEAVY FIGHTERS (pack of 6)	£0.95
FT 1102	Hermes class DIPLOMATIC COURIER (pack of 3)	£1.25
FT 1103	Warrior class BATTLE CORVETTE (pack of 2)	£1.95
FT 1104	Hunter class FRIGATE (pack of 2)	£1.95
FT 1104A	Lawkeeper class PATROL CUTTER (pack of 2)	£1.95
FT 1105	Lake class DESTROYERS (pack of 6)	£2.25
FT 1106	Mountain class LIGHT CRUISER	£1.95
FT 1107	Bay class ESCORT CRUISER	£2.25
FT 1108	River class HEAVY CRUISER	£2.75
FT 1109	Point class BATTLECRUISER	£3.95
FT 1110	Luna class BATTLESHIP	£4.25
FT 1111	Sea class BATTLEDREADNOUGHT	£5.95
FT 1112	Gaia class SUPERDREADNOUGHT	£7.95
FT 1112A	Sol class EXTENDED-RANGE SUPERDREADNOUGHT	£9.95
FT 1113	Star class LIGHT CARRIER	£6.95
FT 1114	Constellation class HEAVY CARRIER	£9.95
FT 1115	Visionary class DEEPRANGE EXPLORER	£4.95
FT 1116	FLEET REPLENISHMENT TENDER	£4.95

MERCHANT, SUPPORT and CIVILIAN SHIPS

FT 302	Clarke class EXPLORATION/SURVEY CRUISER	£4.95
FT 305	Hamburg class HEAVY MODULAR FREIGHTER	£5.95
FT 306	Bustler class DEEP SPACE TUG	£2.45
FT 307	Antares class INNER-SYSTEM SHUTTLE (interface capable)	£1.95
FT 308	MEDIUM FREIGHTER	£2.95
FT 309	MEDIUM FREIGHTER TYPE B	£2.95
FT 311	Bremen class FREIGHTER	£2.95
FT 314	Schwarzwald HEAVY FREIGHTER	£3.95
FT 309A	MEDIUM FREIGHTER (redesigned version of 309)	£2.95
FT 316	SHORT-HAUL LIGHT FREIGHTER	£1.65
FT 317	LIGHT TANKER SHIP	£1.95
FT 318A	MEDIUM FREIGHTER with cargo module (Type A bridge unit)	£2.95
FT 318B	MEDIUM FREIGHTER with cargo module (Type B bridge unit)	£2.95
FT 319	HEAVY MODULAR FREIGHTER (revised version of FT305)	£5.95
FT 320	LIGHT PERSONNEL SHUTTLES (pack of 6)	£0.95

FT FIGHTER GROUP STANDS (metal)

FT 001	Fighter Group Base - metal hexagonal stand with holes for up to 6 wire-mounted FT fighters (mounting wire not supplied), plus space to carry record-keeping die or counter on stand base.	£0.75