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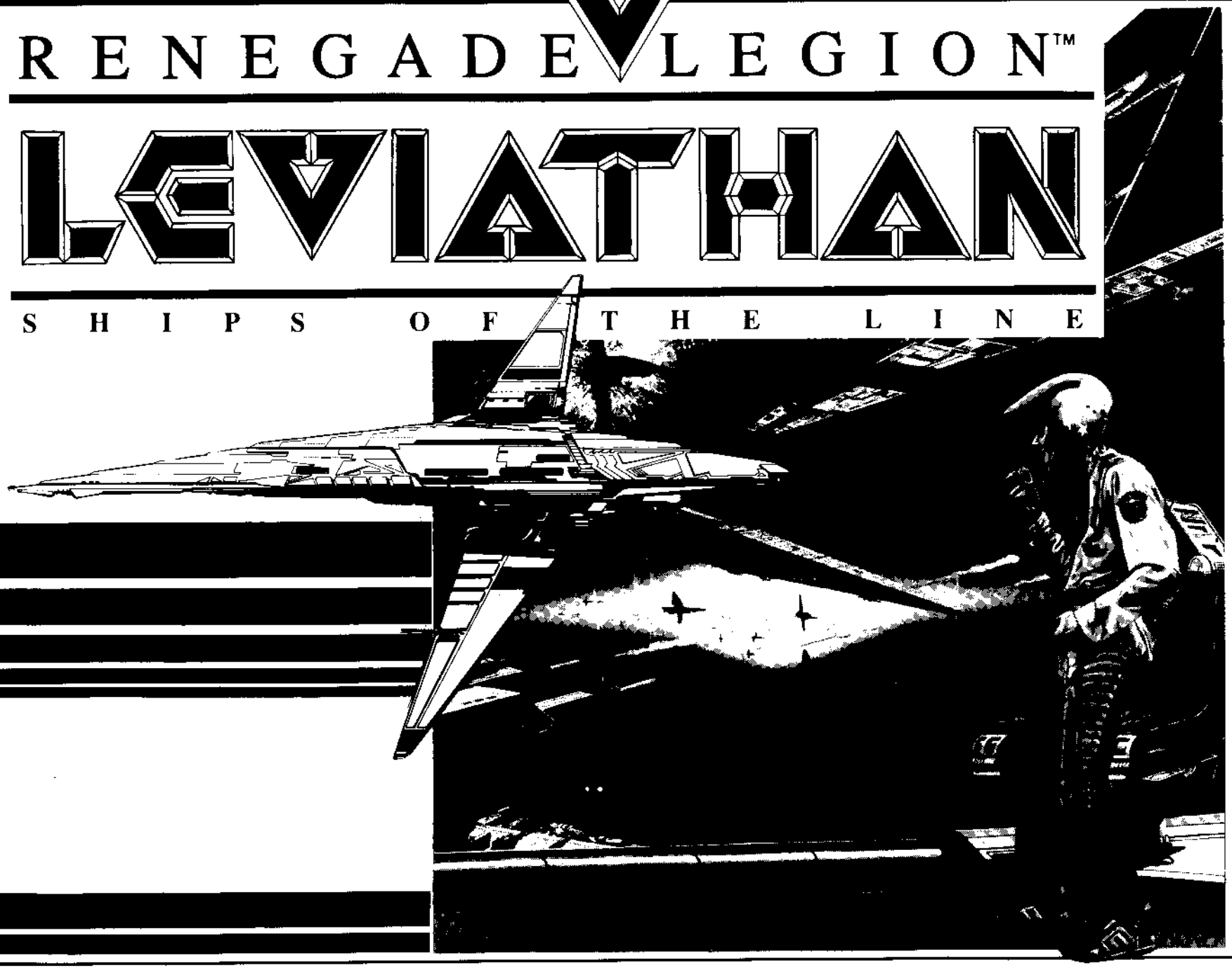
RENEGADE LEGION™

LEVIATHAN

SHIPS OF THE LINE



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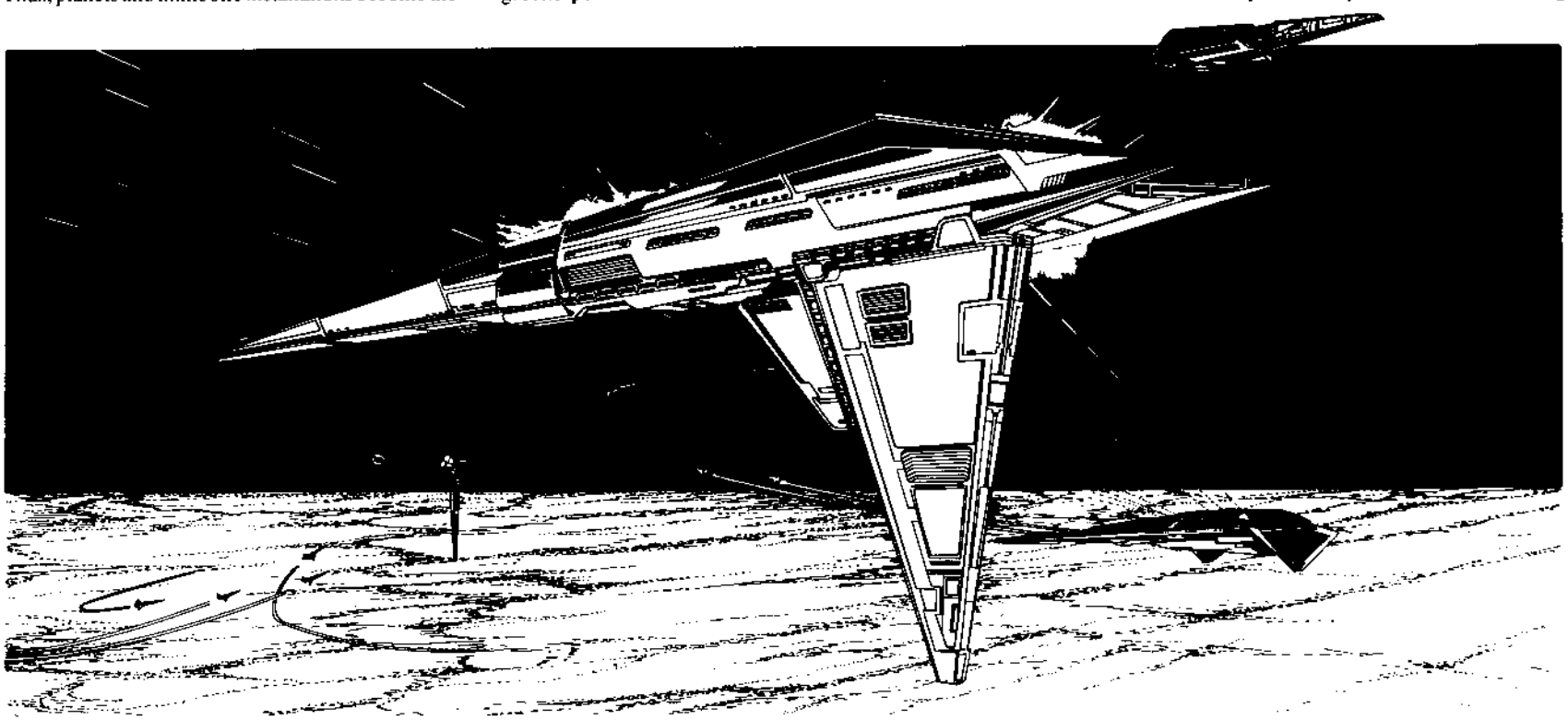
INTRODVCTION

Leviathan is a game that simulates combat between the huge battleships, other capital ships, and the swarms of fighter squadrons that make up the main strength of the interstellar navies of the Terran Overlord Government and the Commonwealth and their Renegade Legion allies.

Combat in space happens only when both sides want it to happen. Most units can quickly escape to T-space in order to avoid battle. Thus, planets and immobile installations become the focal points of most conflicts. Fleets of capital ships, while very powerful, cannot defeat ground installations or space fortresses by themselves. The use of combined arms is the best tactic for assaulting a major target, just as it is for a smaller one. When trying to take a planet, a commander should try to land a strike legion or two to threaten ground-based fortresses, while the big ships engage enemy space units and provide support to the ground-pounders.

Combat between battleship squadrons is different from battles between individual fighters. Instead of the Interceptors' mad scurrying about, like moths around a flame, Leviathans do their dance of death at a slower and more stately pace. All elements of a squadron must act together to prevent one member from being isolated and cut to pieces by the enemy. Squadrons vie for the best broadside shots as they approach, pass through each other, and then ponderously turn around and re-engage.



GAME SET-VP

COMPONENTS

Following are the components needed to play **Renegade Legion: Leviathan**.

COUNTERS

This game includes 22 boxes that represent the large ships found in this game. The boxes are not in scale with the grid used on the map, but the size of the box indicates the relative size of the ship and shows the differences in maneuverability of various ship classes. TOG and the Commonwealth/Renegade Legions each have one 4-hex battleship, two 3-hex cruisers, three 2-hex frigates, four 1-hex destroyers, and one 2-hex carrier.

Also included are many flat counters that represent fighter squadrons, flights, and groups, gunboats, corvettes, escorts, installations, satellites, asteroids, missiles, and space debris.

SHIP RECORD SHEETS

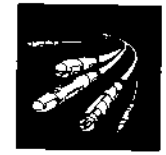
Leviathan uses several different types of record sheets to help keep track of movement, power allocation, and damage for various ship types. There is a different record sheet for each class of capital ship. The Fighter Record Sheet is used for units of fighters. The Installation Sheet is used for VLCAs, crystal-processing plants, and any other type of space facility. The Patrol Class Record Sheet is used for gunboats, corvettes, and escorts.

Ship and Installation sheets contains space for display of the craft's armor status, shield status, armaments, power allocation, and movement orders, as well as the internal component block. The Fighter Record Sheets are much simpler, showing armor boxes and movement capabilities, as well as the unit's offensive capabilities.

MAPSHEETS

Leviathan is played on two or more 22 x 34 inch mapsheets. They show the emptiness of space. To help regulate movement and combat, the map is divided into a grid of six-sided areas called hexes. Hex maps provide more flexibility than square-grid maps, as they offer possibilities for movement in six directions instead of four.

Each hex on the map is roughly 75 kilometers (about 45 miles) across, and each game turn lasts about 5 minutes.

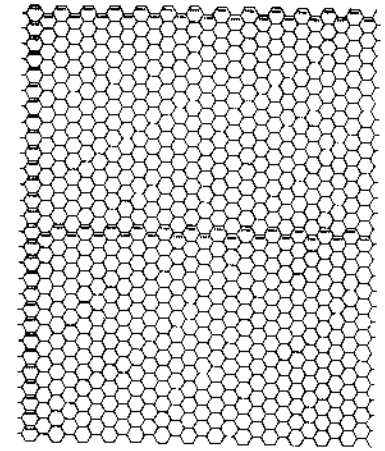


DIE

This game uses one ten-sided die. The sides are numbered from 0 to 9, with 0 representing 10. In this game, a roll of 1 is an automatic success and a roll of 10 means automatic failure.

MAPSHEET LAYOUT

To play the game, simply lay out the mapsheets on a table or on the floor in a way agreeable to all players and so that everyone has easy access to all parts of the map. Next, the players decide which scenario they will play, one of their own design or a published battle. If desired or called for by the scenario, place asteroids and/or installations on the mapsheet. This can be done randomly, or the players can take turns placing the objects on the maps. Players should then fill out record sheets for each ship, fighter unit, or installation to be used in the battle. Some record sheets are supplied already completed and may be photocopied.



PLAYING THE GAME

Playing **Leviathan** is simply a matter of maneuvering playing pieces on the mapsheets and using the die to resolve combat. Skill is required to execute the movements of the larger ships and to allocate power so that the ship can deliver the most damage possible at the most opportune time.

SEQUENCE OF PLAY

The sequence of play regulates the players' actions and gives structure to the game. Its list of events and procedures is repeated until the conflict is resolved. Each turn is divided into an Initiative Phase, Power Allocation Phase, Movement Phase, and Combat Phase.

INITIATIVE PHASE

Each side rolls a single die. The side rolling the lowest number gains the initiative and chooses which side moves first, in most cases forcing the other side to move first. It is usually an advantage to see where an opponent will move so that friendly movement can react and take advantage of enemy maneuvers. In some cases, though, especially where an objective is at stake, moving first may be the best tactic.

An Optional Rule uses the squadron commander's *Leadership* and *Tactics* skills to modify the initiative die roll.

POWER ALLOCATION PHASE

All capital ships allocate power to movement and weapons.

MOVEMENT PHASE

Ships move according to their size, with the largest ships moving first and the smallest fighter unit moving last. Units are moved in the following order:

Battleships
Cruisers
Frigates
Destroyers
Escorts
Corvettes
Gunboats
Fighter Groups
Fighter Flights
Fighter Squadrons
Any individual small craft or fighters

All units of a class must move before the first unit of the next class moves.

Normally, the loser of the initiative will be forced to move one of his battleships first, then the winner of the initiative must move one of his battleships. Play continues in this manner until all battleships have moved. The Movement Phase then continues in a similar manner with the alternating movement of each side's cruisers, and so on, class by class, until all playing pieces have moved.

When one side has no units in a particular class, his opponent must move all of his units before alternating movement begins with the next class, no matter who has the initiative. Likewise, when one side has many more units in a particular class than the other, the movement sequence should be staggered so that the player with the initiative is able to move one of his units within the class last and so that one side does not move a large number of pieces at one time.

For example, a TOG cruiser squadron consisting of one cruiser, one frigate and four destroyers is raiding a Commonwealth planet defended by a Renegade Legion squadron consisting of two frigates, two destroyers, and three fighter groups. In the first turn, the TOG player wins the initiative. Movement would follow this sequence:

TOG cruiser (The RL player has no ship of this class and it is the largest ship in the battle, and so it must always move first.)
Both RL frigates (The player winning the initiative must always be able to move the last unit in any given class. In this case, the TOG player has only one frigate, and so all RL frigates must move first.)
TOG frigate
TOG destroyer (Because the TOG player has a larger number of destroyers than the RL player, movement must be broken up so that the TOG player moves a unit last and so the TOG player does not move a great number of units at one time.)
RL destroyer
2 TOG destroyers
RL destroyer
TOG destroyer (As the winner of Initiative, the TOG player must be able to move the last unit within each class.)
All RL fighters (The RL player is the only one with fighters, and fighters move after all other larger ships.)

In the next turn, the RL player wins initiative, and movement proceeds this way:

TOG cruiser (As the largest ship in the battle, it still moves first.)
RL frigate
TOG frigate
RL frigate
2 TOG destroyers (Again, when one side has many more units in a single class, movement must be broken up so that the winner of the initiative moves the last unit and so movement of the rest of the units is as even as possible.)
RL destroyer
2 TOG destroyers
RL destroyer
All RL fighters

COMBAT PHASE

All non-fighter attacks are carried out and resolved, and damage is applied. Then all fighter attacks are resolved, taking any new damage into account. All damage is considered simultaneous, with the exception of damage to fighter units, which is applied before they make their attacks.

For example, in the raid listed above, all of the capital ships fire their weapons and record damage, including attacks by TOG capital ships against the RL fighters. Damage done to a capital ship that has not yet fired does not take effect until the next turn. Damage is recorded against the fighters and takes effect before they fire. Once this has been done, surviving fighter units may make their attacks. Damage done to capital ships does not take effect until after all fighter attacks. Ship explosion checks are made at this time, after fighter combat but before the next turn.

POWER ALLOCATION

No ship has ever been built with enough power to supply the demands of all the equipment usually installed. This shortfall is especially noticeable in capital ships, which mount numerous weapon systems on such a scale that no ship could generate enough energy to power all of the weapons, all the shields to extremely high levels, and the maneuver drives that allow a battleship to move like a fighter.

Shield power levels are fixed during construction, so the player must allocate the ship's non-shield power between its weapons and maneuver drives. Normal allocation is half of the ship's non-shield power to each system. By using the ship's power shunts, a player can divert all of the non-shield power from one system to the other, thereby doubling one system and leaving the other temporarily powerless.

Damaged power systems supply less energy.

MANEUVER

Power available to maneuver drives can be used to change the ship's velocity or its heading. A ship's Thrust Rating is based solely on its class. The procedures for maneuver are explained in the **Movement** section. The following table shows the power available to maneuver drives of various sizes of capital ships.

Thus a 4-Hex ship (battleship) with a normal allocation of power has 2 thrust points available to change its velocity or heading. If it received a double power allocation, it would have up to 4 thrust points.

If the maneuver power system is damaged, the player may not shunt power out of the maneuver system, but may still shunt power in. Damaged maneuver power systems generate only half their normal thrust points. A ship with damaged maneuver power systems can still make heading changes, it just has fewer thrust points available. Shunting power into the maneuver drives simply doubles the number of available thrust points. A 4-Hex ship with a damaged maneuver power system and a double power allocation has 2 thrust points available.

WEAPONS

The normal allotment of power to the weapon systems allows a ship to fire its spinal mount or one broadside. A broadside includes all of the weapons on one side of the ship, plus those facing forward and aft. Turrets are always powered unless all power is lost because of damage. Power shunted to the weapon system can be used to fire the spinal mount or an additional broadside.

If the weapon power system is damaged, a broadside may still fire as normal. Power may not be shunted out from a damaged weapon system, however, and the spinal mount may be fired only by shunting power from the maneuver drives.

Power is lost if it is not used in the turn it is allocated. Unused power may not be accumulated from turn to turn. Power allocation is shown on the Ship Record Sheet in the series of boxes just below the ship's armor boxes. In the Weapons and Maneuver rows, simply mark an N for normal power allotment, a 2 for a double power allotment, and a dash for no power. This is done for every turn that the ship remains in play. Some types of internal damage dictate certain power allocations. A player does not need to indicate which weapons are powered until the Combat Phase.

	Available Thrust Points			
Ship	Normal Allocation		Double Allocation	
Size	Undamaged	Damaged	Undamaged	Damaged
1-Hex	4	2	8	4
2-Hex	3	1	6	2
3-Hex	2	1	4	2
4-Hex	2	1	4	2

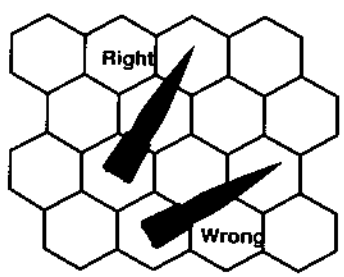
MOVEMENT

Movement in **Leviathan** is much like that in other **Renegade Legion** games. Each ship must keep track of its velocity and use thrust points to change velocity and heading. In addition, larger ships must travel a fixed number of hexes before making a heading change, no matter what velocity they are traveling. As in **Interceptor**, a ship must travel in a straight line until the pilot alters its heading. The ship's velocity remains constant until the pilot changes it by applying thrust. Thus, a ship can remain in the same hex with a velocity of 0 or drift at any constant velocity for as long as it stays on the mapsheet.

Capital ships' movement depends on their class. All frigates move alike, for instance. Because of the great size of these ships, power/mass ratios vary little within a class, and so movement characteristics do not change from ship to ship as with fighters, gunboats, corvettes, and escorts. Each class of capital ship is discussed in the Maneuver Capabilities section.

In **Leviathan**, 1 point of velocity equals one hex of movement, and 1 thrust point can increase or decrease velocity by 1 point.

Every craft must face one of the six hexsides. A ship's facing affects both its movement and its combat, and a ship can change facing only during the Movement Phase. A ship's heading is the direction it is traveling. In this game, a ship's heading and facing are always the same.



Thrust is needed to change a ship's movement. Each ship is designed with a specified Thrust Rating, which is the maximum amount of thrust that may be used to change the ship's velocity. Thrust points also change the ship's heading. Extra thrust points may be shunted into the maneuver drives from the weapon systems. Shunted power may be used only to change a ship's heading, never to change a ship's velocity.

A player may use thrust points to change velocity only at the beginning or the end of movement, but not at both points nor at any time in between. Thrust points used at the beginning of movement change the starting velocity and affect the movement of the ship in the current Movement Phase. Thrust applied at the end of movement affects only the craft's beginning velocity for the next turn.

One thrust point can increase or decrease the ship's velocity by one. A ship's velocity can never drop below 0, but it can increase to as high a level as the ship's commander desires. Of course, a craft's maneuverability at high velocities is severely limited. Thrust spent on changing the ship's velocity does not change its facing or heading. Regardless of how many thrust points are applied during a turn, a ship must move as many hexes as its beginning velocity, which may be modified by thrust spent at the beginning of movement. Unused thrust points are lost and cannot be saved for use in future turns.

The amount of thrust needed to change a ship's heading by one hexside (60 degrees) depends on its velocity. This thrust point cost is shown on the Heading Change Table.

HEADING CHANGE TABLE

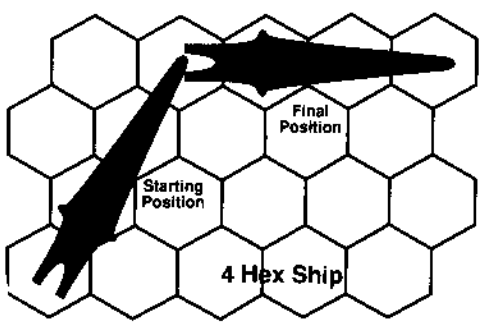
Current Velocity	Thrust Cost
0	1
1	1
2	1
3	2
4	2
5	2
6	3
7	3
8	3
9	4
10	4
11	4
12	5
13	5
14	5
15	6
16	6
17	6
18	7
19	7
20	7
21	8
22	8
23	8
24	9
25	9
26	9
27	10
28	10
29	10
30	11

The Thrust Cost column of the above table shows how many thrust points it takes to change the heading and facing of a ship by one hexside at a given velocity. It is possible for a ship to build up so much velocity that it cannot generate enough thrust in a single turn to change its heading. In this case, the ship may not make heading changes until it has slowed to a speed that allows changes. Once the thrust points have been applied, movement continues in this direction until the player expends more thrust points to change it. Remember that regardless of facing changes, the ship must move as many hexes as its beginning velocity, subject to any thrust applied to change velocity at the beginning of movement. Thrust points to change facing may be applied at any point during movement.

MANEUVER CAPABILITIES

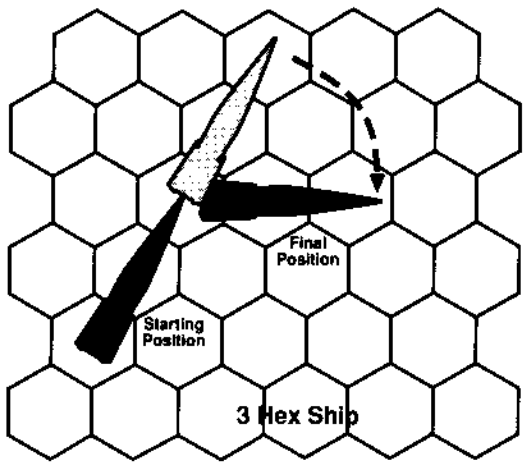
4-HEX SHIPS

With normal power allocation, 4-Hex ships (battleships) have 2 thrust points available for maneuvers, changing either velocity or facing or both. With double power allocation, the ship has 4 thrust points for maneuvers, but only 2 (the basic allotment) may be used to change velocity. Battleships and other 4-Hex ships must travel in a straight line for three hexes after a heading change before they may change their heading again. The simple rule for this and for any other ship is that the aft hex of the ship must reach the hex where the front of the counter started before it swings its bow, pivoting on its stern, 60 degrees or one hexside to its new heading. A player may accumulate hexes of straight movement from turn to turn to meet the requirements for turning. Consult the Drift section of the rules for a detailed explanation.



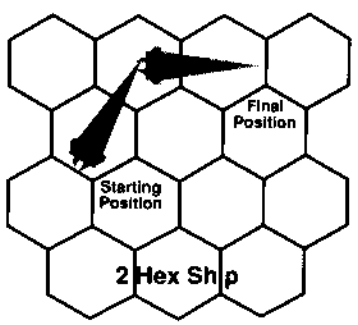
3-HEX SHIPS

Cruisers and other 3-Hex ships move exactly as 4-Hex ships except that they need travel only two hexes in a straight line before making a turn.



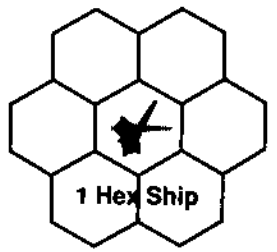
2-HEX SHIPS

With basic power allocation, 2-Hex ships (frigates) generate three thrust points. Power shunted in from the weapon system generates an additional three thrust points. A player may use a maximum of three thrust points to change the ship's velocity. Additional thrust points may be used only for heading changes. Frigates and other 2-Hex ships must travel at least one hex straight before making a heading change.



1-HEX SHIPS

With normal power allocation, 1-Hex ships (destroyers) generate 4 thrust points. Power shunted in from the weapon systems generates an additional 4 thrust points, which may be used only for heading changes. Destroyers and other 1-Hex capital ships may make one heading change per hex.



GUNBOATS, CORVETTES, AND ESCORTS (PATROL CLASS SHIPS)

These flat counters represent vessels smaller than capital ships but larger than fighters. Their thrust is fixed in the construction process and may be used to change either velocity or heading. Power may not be shunted between maneuver drives and weapon systems. These ships may make as many heading changes in a single hex as desired.

FIGHTERS

Fighters are represented in **Leviathan** by flat counters. They can be organized into squadrons (six fighters), flights (four squadrons), or groups (three flights). The larger organizations are more durable and can do more damage, but they are slower and cannot pinpoint their shots as well.

Each fighter unit has a Thrust Rating, determined by the fighter type and modified by its organization. A list of fighters and their Thrust Ratings appears in the **Fighters** section. This rating is the number of hexes the unit may move in a single turn. Fighters have no facing and expend no thrust or movement cost to change their headings. Thus, a fighter unit may move from hex to hex in any manner, up to the limit of its thrust rating. Fighters need not keep track of velocity. Instead, they may move any number up to their thrust rating, regardless of how fast they moved the previous turn.

DRIFT

Moving slowly, large ships sometimes do not move enough hexes in a single turn to make a heading change. Ships are allowed to keep track of the number of hexes that they have drifted from turn to turn. A row on the record sheet is provided for this purpose. If a ship has moved sufficient hexes in a straight line, it may make a heading change as its first movement action.

For example, a battleship with a velocity of 2 cannot move the three hexes in a straight line necessary to make a 60-degree heading change. At the end of the turn, the player writes down in the Drift record box that the battleship moved two hexes in a straight line. The next turn, the ship needs to move only one more hex before making a facing change. Similarly, a cruiser with a speed of 5 could move three hexes straight, make a facing change, and move two more straight to finish the turn. The player records in the Drift box that the ship had moved two straight, and the next turn the cruiser could make a facing change as its first movement.

STACKING

There is no stacking limit in **Leviathan**, though there are reasons why ships should not bunch up in the same hex. Besides the fact that stacked pieces are awkward to handle, especially if the ships have different headings, a group of ships becomes an inviting target for missile attacks.

ROLLING

A maneuver available to all capital ships is called the roll. As all naval personnel know, up is a relative term on a ship with an artificial gravity field. Space battles are three-dimensional dances of death and destruction in which ship commanders try to aim their batteries before the enemy can. After an initial encounter, combat in three dimensions almost invariably becomes conflict with both combatants on the same plane, though it might be far from what was originally thought of as horizontal. Because of this phenomenon and for ease of play, **Leviathan** simulates ship combat on a two-dimensional board.

Thus, in **Leviathan** all ships begin a battle with the same "up" orientation. As the battle progresses and ships begin to take significant damage, a ship may choose to perform a roll maneuver. This maneuver allows a ship to roll over to present an undamaged side to the enemy. This maneuver costs 1 thrust point, regardless of the ship's class or velocity. This reverses the ship's right and left sides, and so players should pay close attention to the R and L markings found on the box playing pieces in order to keep track of which side they are shooting at and from. A roll maneuver does not change a ship's velocity or heading, only which broadside faces which direction.

The roll maneuver allows a ship to present a different side to the enemy much more quickly than it could by turning around. Another benefit of the roll maneuver is that ships with thruster damage can still change their heading in the desired direction by first rolling the ship and then using undamaged thrusters to turn the ship in the direction once controlled by the damaged thrusters.

For example, after sustaining 100 points of damage from a TOG battleship in one turn, a RL cruiser commander chooses to perform a roll. This presents a fresh side of armor to the battleship to prevent internal damage from a new broadside.

OVERLAPPING SHIPS

When ship counters overlap, it does not mean that the ships are in the same hex. For all purposes except calculating range, each ship is in the counter's rear hex. Range is always 1 when firing at an overlapped ship, except that turret weapons firing at a fighter use range 0.

When firing at an overlapping ship, use the rear hexes of the ships to determine firing arcs, defensive shield, and armor arcs.

COLLISIONS

While technically possible, it is a rare occurrence for two ships to collide in space. Space is vast, and most captains stay clear of other ships, even when moving in close formation. There have, however, been hundreds of intentional and unintentional incidents throughout the ages.

In **Leviathan**, collisions are possible only when the aft hex of two counters overlap at the end of movement. Possible collisions are resolved after all movement and combat.

When ship counters occupy the same hex, first determine which sides face each other. Each player chooses a side of the hex. If both players choose the same side, roll a die to determine who gets his choice. Then use the following procedures to resolve the situation.

When neither ship is attempting to ram the other, resolve combat and then roll one die for each ship. If the numbers are the same, there has been a collision. Find the minimum damage for the larger of the two ships on the Collision Damage Table, and assess that amount on each ship on the sides that hit.

COLLISION DAMAGE TABLE

Unit Class	Minimum Damage	Maximum Damage
Fighters	0	0
Patrol Class	10	40
Destroyers	25	100
Frigates	40	160
Cruisers	50	230
Battleships	100	400

If one ship is attempting to ram another, use a slightly different procedure. Ram attempts must be declared after movement but before combat. A ship with damaged maneuver systems may not attempt to ram. Ramming ships are not allowed to fire because the crew is busy bracing for the impact, scrambling for the lifeboats, and praying. Though possible, fighter ram attacks are ineffective. To resolve such an attack, simply remove the fighter counter from play. Non-fighter ships cannot ram a fighter. The target ship may fire all bearing weapons that have been powered, including turrets, before the ram attempt is resolved. Combat is considered to be at a range of 1.

Then each player rolls a die as before, but the result is modified as follows because it is much easier for a smaller ship to hit a larger ship. Subtract the hex size of the attacker from the hex size of the target. If the number is positive (meaning that the attacker is smaller than the target), the attacker may use any or all of the difference to modify his die roll to achieve the collision. If the result is negative (meaning that the attacker is larger than the target), there is no collision. If there is a collision, the attacking captain can make it a glancing blow, a head-on crash, or something in between. He may choose any amount of damage between the minimum and maximum listed for his ship's class on the Collision Damage Table. The die roll modifier used to achieve the collision reduces the chosen amount of damage to the target ship according to the following table. The attacking ship's damage is not reduced.

COLLISION DAMAGE MODIFICATION TABLE

Die Modifier Used	Damage Reduction
0	0
1	25%
2	50%
3	75%

For example, a defecting TOG frigate captain has had his ship severely damaged by the battleship that is trying to prevent his escape. Seeing that he will not get away, the TOG captain attempts to destroy the battleship by ramming it. He maneuvers his ailing frigate so that it approaches the battleship from the rear and ends its turn in the aft hex of the 4-hex battleship. He declares his intention to ram, and the battleship's aft bays and turrets attack. The frigate captain records the damage and then begins the collision procedure for an intentional ram. The frigate captain first subtracts the hex size of his ship from that of his target. This gives the number 2 (4-hex ship minus a 2-hex ship). The frigate captain can now use this number as a plus or minus modifier to his die roll to match the roll of the battleship. The battleship captain rolls a 5, and the frigate captain rolls a 6 and uses a –1 modifier to achieve the collision.

As the attacker, the frigate captain chooses how severe the collision will be. He chooses the maximum allowable for his ship class, 160 points. The amount of damage to the battleship is reduced according to the Collision Damage Modification Table, which shows that with a modifier of 1, damage is reduced by 25 percent. So the damage done to the battleship is 120 points (160 minus 25 percent). The 200 points of armor in the battleship's aft easily absorbs this damage. The frigate absorbs the full 160 points. As the attacker, he takes his damage on the front side, with 160 points enough to remove any remaining armor and damage every internal component box. The frigate is destroyed and must check for a possible explosion.

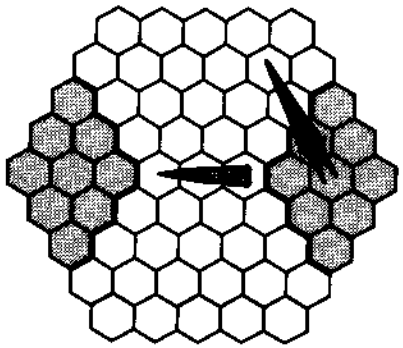
COMBAT

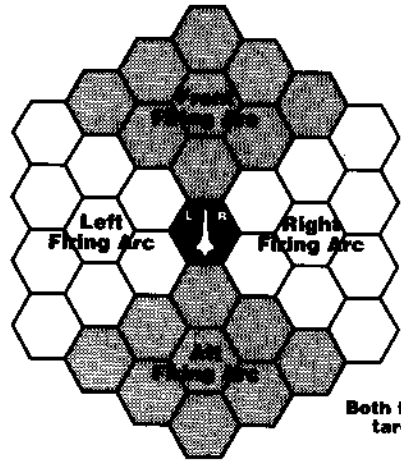
The basic objective in **Leviathan** is to destroy the enemy. To do this, each player maneuvers his ships to their best firing positions and resolves the attack. Important factors involved in making a successful attack are firing arcs and range. Ships can fire at many different targets in a single turn. Each weapon system has its own fire control and tracking system and can operate independently, and each system can fire only once per turn. Detailed rules for combat involving fighters and patrol class ships can be found in those sections of the rules.

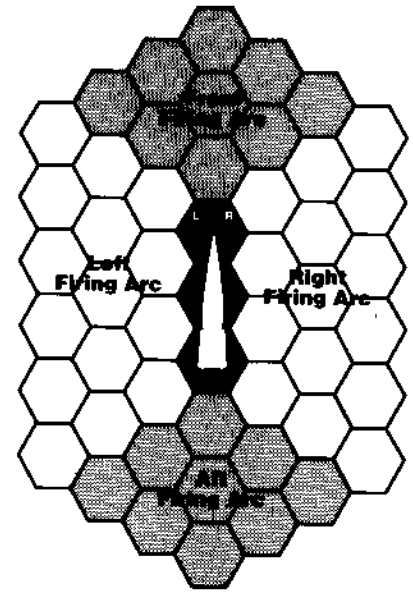
FIRING ARCS

A firing arc is the area of space around a ship where a particular weapon can be aimed. The four basic areas described by such arcs are Forward, Aft, Left, and Right. The size and geometry of these arcs depend on the size of the ship, as shown in the illustrations below. Any object within the lines delimiting the firing arc is a potential target of the weapons mounted within that arc. If a target is in more than one firing arc and the ships do not overlap, the attacker may fire any weapon that bears on the target, but the attacker may shoot only at the part of the target that each particular weapon can actually hit.

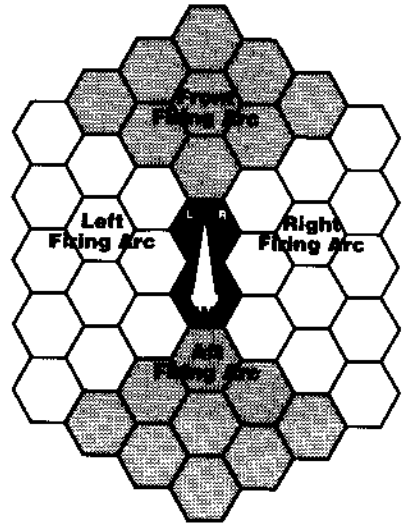
For example, a TOG cruiser has a Commonwealth battleship in both its right and its aft firing arcs, as illustrated. The cruiser may fire its broadside weapons at the front two hexes of the battleship and its aft weapons at the rear two hexes of the battleship.

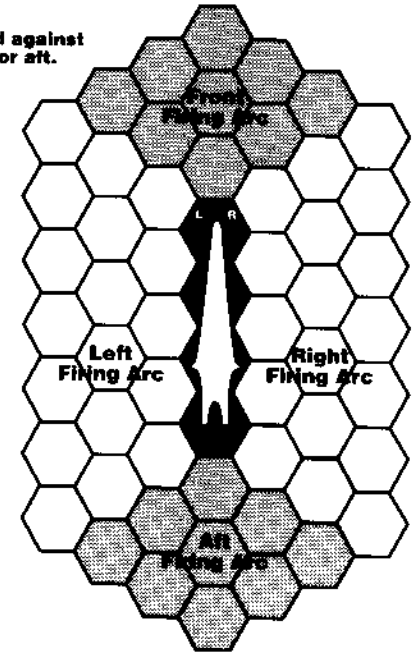






Both turret factors can be used against targets directly to the front or aft.



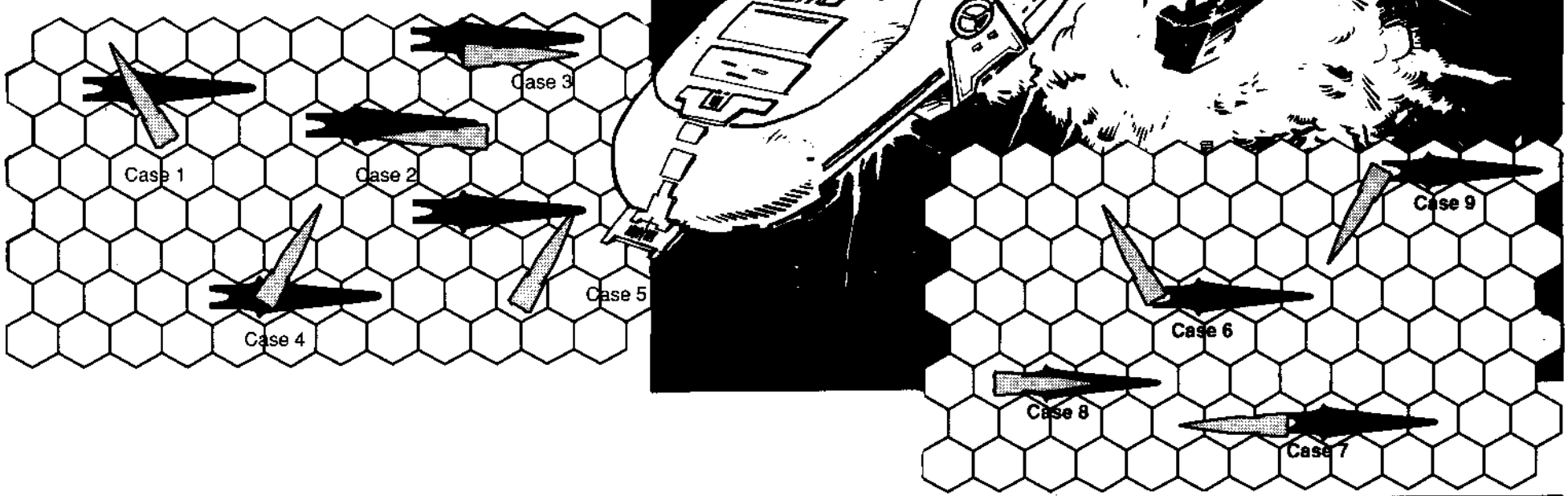


In cases where ships overlap, all fire is considered to be coming from the rear hex of the counter and aimed at the rear hex of the target counter. Use the firing arc from the rear hex of the counter as shown below.

In Case 1 and Case 2, the two ships are considered head-to-head, able to use only their forward arcs against each other. In Case 3, the battleship is behind the cruiser. Thus, the battleship can fire only its forward weapons and the cruiser only its aft. In Case 4, the battleship can again fire only its forward weapons, but the cruiser can fire its left broadside. In Case 5, the forward arc of the battleship faces the left side of the cruiser.

If the rear hexes of two ships occupy the same hex, use the direction from which the ship that moved second entered the hex as the direction it points at the other ship.

For example, in Case 6, the cruiser's front is pointing at the right side of the battleship. In Case 7, the cruiser's front is pointing at the front of the battleship. In Case 8, the cruiser's front points at the aft of the battleship, and in Case 9, the front of the cruiser is pointing at the left side of the battleship.



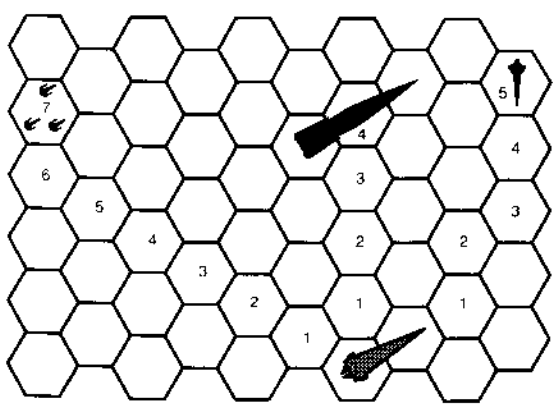
LINE-OF-SIGHT

The scale of the map in **Leviathan** is such that as long as a unit is on the playing area, an enemy can see it and shoot at it. There are no objects that are big enough to hide behind because the ships and formations in this game are very large.

RANGE

Combat Range is the distance from the attacker to his target. When ships overlap, Combat Range is 1. Weapon Range is the maximum distance a particular weapon can fire, as shown on the Weapons Table on the record sheet. The closer the target, the easier it is to hit. Ships may fire at any hex of their target. If there is a question about which side this is or if two sides are the same distance away, the defender decides which part of his ship will be attacked.

For example, a Commonwealth Valiant *Class frigate faces three TOG ships, as illustrated. The Combat Range to its targets are as follows: 7 to the squadron of fighters, 4 to the cruiser, and 5 to the destroyer. The frigate may fire its left broadside 22.5/10 bay at the fighters, as this is the only system on the ship with a Weapon Range of 7 hexes. It may fire all of its left broadside bays at the cruiser, as all broadside weapons have a weapon range of at least 4. The frigate may fire no weapon at the destroyer because the only weapon mounted in the forward firing arc, a 100-gun 7.5/30 laser bay, has a Weapon Range of 3 and the target is 5 hexes away!*



TO-HIT PROCEDURES

Combat can commence when the attacker determines that his intended target is within Weapon Range. The next step is to determine the Base To-Hit Number. This can be found on the Weapons Table or on the Ship Record Sheet. The base number is then modified by the target's shields, the ship's condition, or other factors.

BASE TO-HIT NUMBER

The Base To-Hit Number depends on the Combat Range and can be found on the Base To-Hit Table.

BASE TO-HIT TABLE

Base To-Hit Number Table

Range (in Hexes)	1	2–3	4–6	7–10	11–15	16–20
Base To-Hit Number	10	9	8	7	6	5

Fighter Base To-Hit Number Table

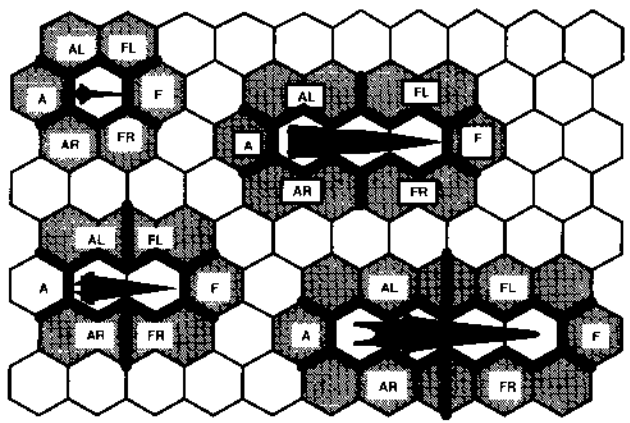
Range (in Hexes)	0	1	2	3
Base To-Hit Number	10	9	8	7

Turret Base To-Hit Number Table

Range (in hexes)	0	1	2	3
To-Hit Number	9	8	7	5

TARGET SHIELD FACTOR MODIFIER

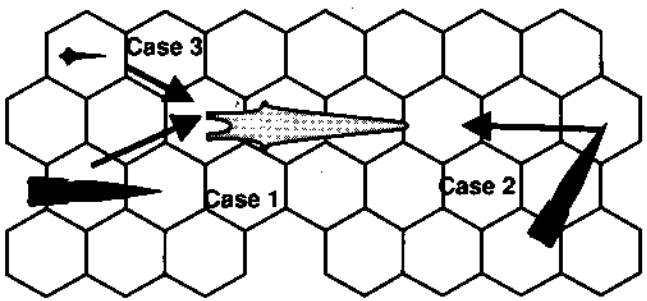
All capital ships mount massive shield generators. These generators cover the huge expanses of the ship with very high flicker ratings. They are high enough to destroy any fighter-carried missile. The shields do not affect a projectile from a spinal mount. For ease of play, a ship's shield settings have been fixed in **Leviathan**. These settings are further abstracted to factors ranging from 0 to 5 to represent their effectiveness against capital ships' weapons.



The illustration above shows the shield and armor facings for each class of capital ship. To determine which shield side to use against an attack, the attacker must declare which hex of his ship is firing. Bay weapon attacks can originate from any hex of the ship. Forward weapons can fire only from the front hex of the ship, and aft weapons can fire only from the rear hex of the ship.

Next, draw a line from the center of the firing hex to the center of the target hex. The hex side this line crosses determines the shield factor under attack. If this line bisects the boundary between two sides, the defender can choose which takes the attack.

In Case 1 below, the cruiser is firing at the battleship. The cruiser can bring its left broadside to bear against the last hex of the battleship, using left weapons against the battleship's aft shield. The cruiser's forward weapons can attack the other three hexes of the battleship. The player elects to have the forward weapons attack the indicated hex, and thus, the aft right shields and armor of the battleship. In Case 2, the player elects to fire his left broadside at the front hex of the battleship and have that fire originate from the cruiser's front hex. Thus, this attack will hit the battleship's forward shields and armor. If the player had elected to have the fire originate from either of the other hexes, it would have hit the battleship's forward right side. In Case 3, the destroyer fires its right side bay at the indicated hex. The line bisects the dividing line between the aft and aft left sides. The battleship player can elect to have the fire hit either arc.



DAMAGE MODIFIERS

Internal damage may affect a ship's ability to hit a target. Damage to the weapons fire-control computers and circuits and the Combat Information Center (CIC) affects the To-Hit Number. Note these modifiers in the data section of the Ship Record Sheet and apply them as negative modifiers to the Base To-Hit Number for each shot from the affected weapon system.

OTHER MODIFIERS

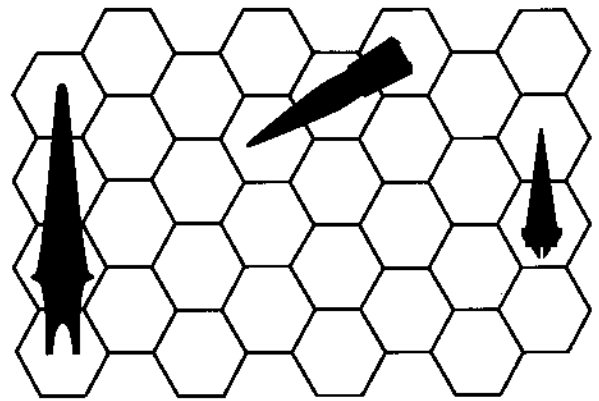
Small groups of fighters, by the nature of their erratic movement, are more difficult targets for the large weapon systems of capital ships. Subtract 1 from the To-Hit Number when shooting at fighter flights or 2 when shooting at fighter squadrons. These modifiers affect bay weapons only.

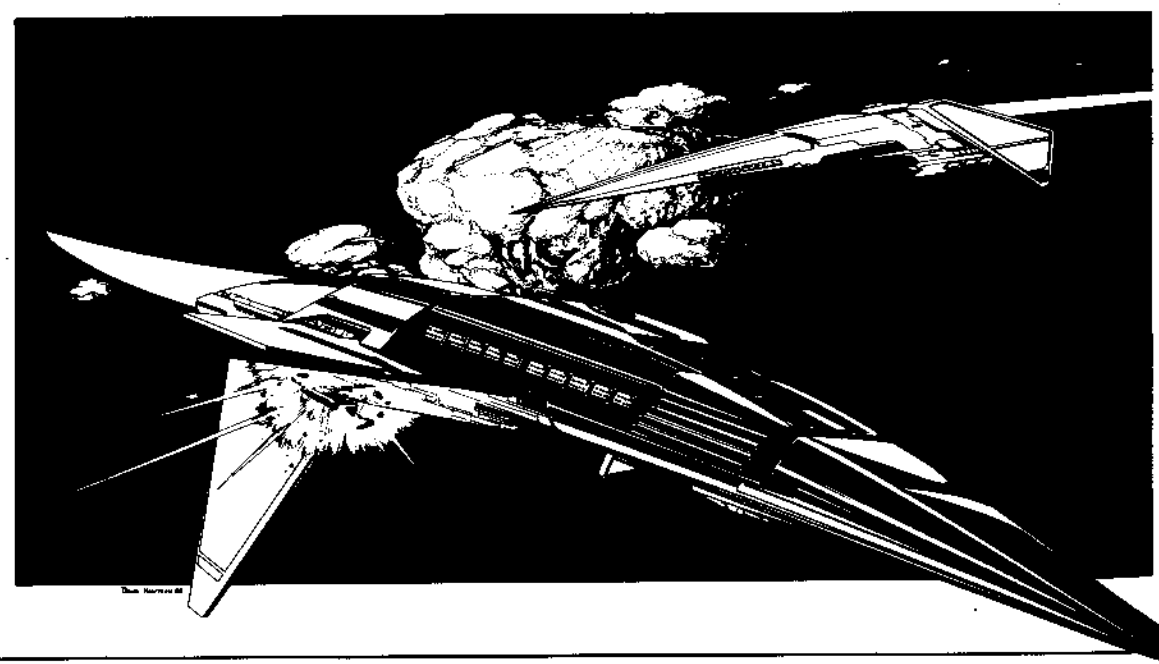
MODIFIED TO-HIT NUMBER

All of the above factors combine to create the Modified To-Hit Number. Roll this number or less on one die to hit the target. As long as the target is within Weapon Range, a roll of 1 will always hit, no matter what the modifiers. Likewise, a roll of 10 will always miss, no matter what the modifiers.

For example, a TOG Shiva *Class battleship is facing a Renegade* Carthage *Class cruiser and a* Valiant *Class frigate. The* Shiva*'s Base To-Hit Number for the cruiser is 9, as the range is 3 hexes. The cruiser's front shields are set at 4. There are no other modifiers in this case, and so the Modified To-Hit Number is 9 minus 4, or 5. The battleship targets the cruiser's forward hex. In the case of the frigate, the Base To-Hit Number is 7, based on a range of 7. The frigate's side shields are set at 3, and so the Modified To-Hit Number would be 7 – 3, or 4. The battleship must now decide which broadside weapons to fire at which target.*

The Renegade's To-Hit Numbers are calculated as follows: The cruiser has a Base To-Hit Number of 9, as the range is 3 hexes. The Shiva*'s side shields are both set at 4, and so the Modified To-Hit Number is 9 – 4, or 5. The frigate's Base To-Hit Number is 7 and the ship has suffered internal damage to its bay's fire control and to its CIC. Thus, its Modified To-Hit Number is 7 – 4 (target shields) –1 (bay fire control) – 1 (CIC hit), or 1.*





DAMAGE

Once a shot has hit its target, damage must be determined. The attacker decides the order in which damage is resolved. Each weapon does a certain amount of damage at a given range, as shown on the Weapons Tables. Each point of damage destroys one armor box, or eventually, one internal component box.

As in other **Renegade Legion** games, the profile of damage varies with the type of weapon. **Leviathan** does not have the great variety of profiles found in **Interceptor** or **Centurion** because capital ships use massed fire that averages out the individual weapon profiles.

Each side of a ship has armor, as shown on the Armor Diagram of the Ship Record Sheet. Each side is configured in ten columns of boxes. The number of boxes in each column depends on the amount of armor carried.

BAYS

Bays are collections of weapons of the same type. They fire together, targeted by the same fire-control system, doing damage by rows. The first hit starts removing boxes with Column 1, Row 1, continuing along the row to the extent of the damage. The next such hit begins in the next column where the last left off, regardless of other damage. Subsequent bay damage is marked off in consecutive columns even though other damage may mean Columns 4, 5, and 6 may be marking damage in Row 2, Columns 7 and 8 in Row 6, and Column 9 in Row 2 again.

SELECTED BAYS
(For full tables see Ship Construction Chapter)

BAY WEAPONS TABLE
(10 WEAPONS)

Range	Power	Tons	1	2-3	4-6	7-10	11-15	16-20	Bay Factor	Cost
37.5/30	3,000	30,000	3	3	2	2	2	2	158	73,125,000
37.5/25	2,200	22,000	3	2	2	2	2	1	139	60,937,500
37.5/20	1,600	16,000	2	2	2	2	1	1	125	48,750,000
37.5/15	1,100	11,000	2	2	2	1	1	1	110	36,562,500
37.5/10	700	7,000	2	2	1	1	1	1	95	24,375,000
37.5/5	400	4,000	2	1	1	1	1	0	79	12,187,500
30/30	2,650	18,550	3	2	2	2	2	0	117	58,500,000
30/25	1,950	13,650	2	2	2	2	1	0	103	48,750,000
30/20	1,400	9,800	2	2	2	1	1	0	93	39,000,000
30/15	950	6,650	2	2	1	1	1	0	81	29,250,000
30/10	600	4,200	2	1	1	1	1	0	70	19,500,000
30/5	350	2,450	1	1	1	1	0	0	59	9,750,000

SPINAL MOUNTS

Spinal mounts are massive weapon systems that hurl chunks of steel at near relativistic speeds. Because the spinal mount fires a single projectile, it cannot be used against fighters. Nicknamed crowbars, these weapons do tremendous amounts of damage, destroying smaller ships and causing internal damage to even the largest ship with a single hit. Ignore the target's shield factor when calculating the Modified To-Hit Number for an attack with the spinal mount.

The damage profile of a spinal mount is three columns of boxes, with the depth determined by the weapon size, as shown on the Weapons Table. Determine the center of the strike on the target's armor by rolling a die. The hit affects the column rolled and the one on each side of it.

It is possible for a spinal mount hit not to inflict its full damage. If Column 1 or 10 of the armor diagram is hit, the damage to the left or right of the column hit is lost since there are no armor blocks in the area. Also, if the left or right column overlays previous damage, that portion of damage is wasted.

SPINAL MOUNTS

	Power	Tons	Penetration at Range 1	2–3	4–6	7–10	11–15
Type A	10,000	250,000	5	3			
Type B	20,000	350,000	8	6	4		
Type C	30,000	400,000	10	8	6	4	
Type D	40,000	500,000	13	11	9	7	
Type E	50,000	750,000	15	13	11	9	7

TURRETS

The Turret factors represent the masses of short-range, point-defense weaponry on all capital ships. Consisting of lasers, mass driver cannons, small missiles, and other fighter-class armaments, the combat effectiveness of these weapons are generalized into a single factor, as shown on the Weapons Table. Each factor represents the turrets on one side of the ship and the damage inflicted by a successful hit. Turrets are effective only against fighters and missiles.

A ship's turret factors can be split up among as many targets as desired as long as it is declared before any attacks have been resolved. When all turret targets are at the same range, simply divide the available turret factor points among the possible targets. If targets are at different ranges, the player must divide up the percentage of turrets allocated to each target and then multiply that percentage of turret factor points for each target's range. Round down to the nearest whole number.

For example, a battleship has two squadrons and one flight of fighters attacking from one side. All possible turret targets are at the range of 1 and the ship's turrets are undamaged, so the battleship captain can divide up his six turret factor points in any manner desired. As each squadron has only one armor block left, the battleship captain decides to fire one of his 6 points at each squadron and the remaining 4 at the flight. In no case may he fire at the same target more than one time per turn with each turret factor.

When firing at range 0, a capital ship can use only turret factors on the same side as the fighter's entry point.

TURRET FACTOR TABLE

Class	Range			
	0	1	2	3
Battleship	6	6	5	4
Cruiser	5	5	4	3
Frigate	4	4	3	2
Destroyer	3	3	2	1
Escorts	2	2	1	1

FIGHTERS

Different types of fighter units do damage differently. Fighter groups inflict damage in the same manner as bay weapons, by rows. Fighter flights do damage as a spinal-mount attack. Fighter squadrons do damage in a column of boxes chosen by the attacking player. This allows fighter squadrons to pick exactly where their damage is done.

Certain designated fighter units can make missile attacks against unshielded targets, either fighter units or capital ships and other installations with damaged shield generators.

MISSILES

Various **Renegade Legion** games describe several types of missiles. **Interceptor** describes anti-fighter types, and **Centurion** describes anti-vehicle missiles. These are not weapons of mass destruction but missiles designed to damage a small target. HELL munitions, first described in **Centurion**, are much more powerful. Those carried by capital ships are even more devastating, capable of inflicting thousands of points of damage. In space, these missiles cause only blast damage, not the shockwave and other types of collateral damage of atmospheric explosions.

Though missiles carried by fighters cannot penetrate a shield, the HELL missiles carried by capital ships are far more powerful—so powerful that a swarm affects all ships within the target hex. A ship carries only one missile system, but it has a 360-degree firing arc. To determine the outcome of a missile attack, use the following procedure.

Missiles are launched in the Combat Phase. Only one salvo may be fired per turn, and the ship captain should mark off the appropriate box on the Ship Record Sheet to keep track of salvos.

MISSILE TABLE

Type	Range	Damage	Salvos
Missile A	8	50	2
Missile B	10	50	1
Missile C	10	100	1
Missile D	15	100	3
Missile E	15	150	3
Missile F	10	100	2
Missile G	10	50	3

Capital ship missiles must be shot at a real target; they cannot be aimed at a hex, and they cannot be aimed at a target in the same hex as the firing ship. The Modified To-Hit Number is simply 10 minus the target's shield rating. If the attack hits, the full strength of the missile attack is applied to each side of the ship that is in the target hex. If the attack misses, that means the shields held and the shield rating times 10 is subtracted from the damage applied against the target.

Any ship that has operable turret factors and that is in range of the path of the missiles, even if it is not the target, may attempt to decrease the strength of the attack. The turrets attack normally, reducing the strength of the missile attack by 10 times the turret factor. Turrets making such an attack may make no other during the turn.

For example, a TOG cruiser shoots a 150-point missile attack against a battleship. The designated target hex also has an RL destroyer and fighter group in it. First, the turrets of the battleship and destroyer attack the missile swarm at 0 range. Each ship needs a roll of 9 or less, and both hit. The battleship does 60 (6 x 10) points of damage and the destroyer 30 (3 x 10). This reduces the strength of the missile attack from 150 to 60. The missiles then make a To-Hit Roll against each target in the hex. A 6 (10 – 4) is required for the battleship, an 8 (10 – 2) for the destroyer, and anything but a 10 for the fighter group. The battleship's shields hold, but the missiles get through the shields of the destroyer and fighters. The battleship suffers 20 points of damage (60 – {4 x 10}) on its forward left and right sides. The destroyer suffers 60 points of damage to each of its 6 sides, enough to destroy the armor and still do 60 points of internal damage (10 points from each of the ship's six sides). The fighter group automatically suffers the full strength of the attack's 60 points, which is almost enough to wipe it out.

When marking off damage by rows, it is recommended that players use a single slash. When marking off damage done by penetrating weapons, spinal mounts, and certain fighter attacks, players should use two slashes or an X. Using this system, a player can more readily tell where the last row damage occurred.

For example, a cruiser suffers a spinal mount attack that penetrates 5 rows deep in Columns 3, 4, and 5. This damage is marked off as shown in Diagram 1. The ship then sustains 13 points of damage from a laser bay, which is marked off as shown in Diagram 2. Next, a fighter squadron hits the cruiser, choosing to hit Column 4 with 4 points of damage. The cruiser next suffers 20 points of damage from a bay. These are marked off, starting with Column 4, which penetrates into the internal components, as shown.

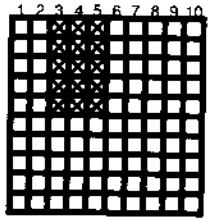


Diagram 1

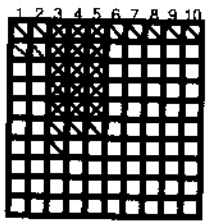


Diagram 2

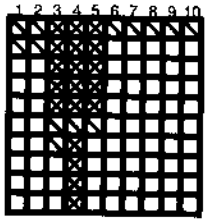


Diagram 3

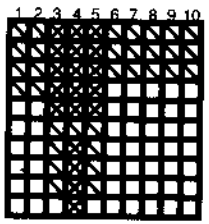
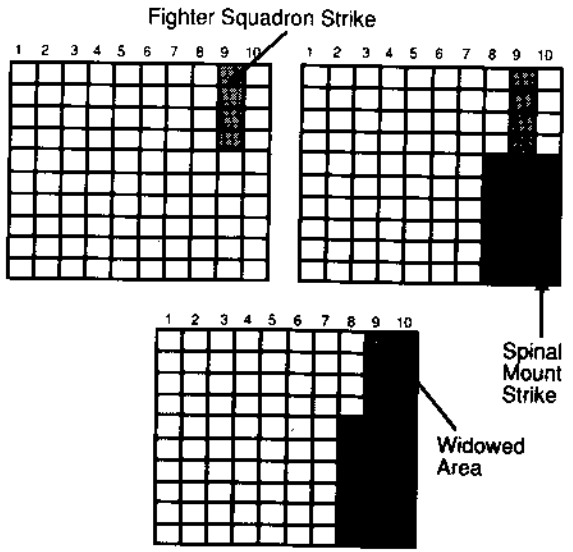


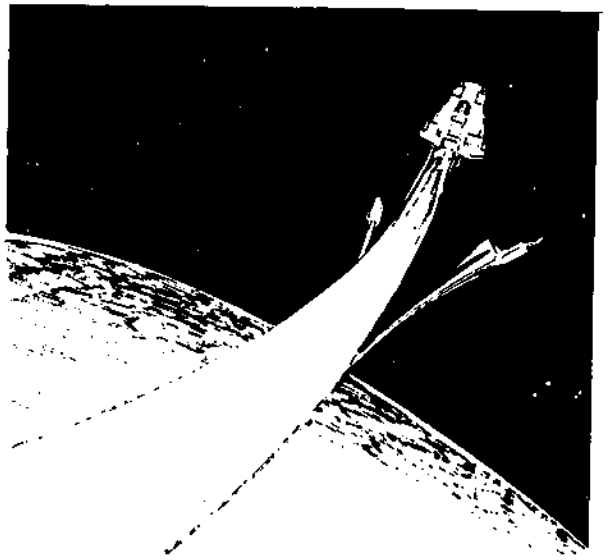
Diagram 4

WIDOWED ARMOR

After all combat is resolved, players should check their ships for widowed armor. Widowed armor is created when upper layers of armor are undercut by penetrating hits, as shown in the diagram below. Such armor is also marked off even though it has not been hit. Armor is defined as widowed when a player cannot trace a continuous path from any block of armor remaining on the Armor Diagram to the bottom row. This path of armor blocks must connect vertically or horizontally, not diagonally.

For example, a ship takes 4 points of damage from a fighter squadron. The attacking player decides to have the attack hit in Column 9. Next, a 6-point spinal mount attack hits the ship, and the attacking player rolls a 9 for location. The damage starts in Row 4 and penetrates down 6 rows by 3 columns wide. At the end of all combat, the armor blocks in the first 4 rows of Column 10 are widowed and marked off.





DAMAGING INTERNAL COMPONENTS

Once damage has destroyed the last row of armor, any further damage in that column penetrates into the internal structure of the ship. The internal structure is represented by the Internal Component Block on the Ship Record Sheet. Each ship class has a different number of internal component boxes. Thus, it is much more difficult to cripple a large ship than a small one. When shots penetrate to the Internal Component Block, divide damage into 4-point groups, except for spinal-mount attacks, which penetrate the internal components just as they do armor.

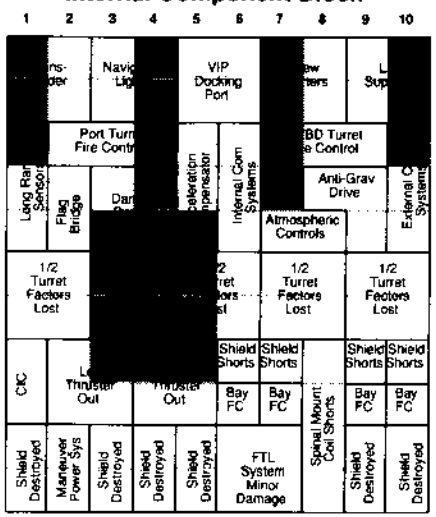
To allocate damage on the Internal Component Block, roll one die to determine the column of the hit. Then simply mark off the 4-point group vertically in the indicated column. Damage for successive hits on the same column start marking off boxes at the first undamaged one. Each time a component box is marked off, its effect is inflicted on the ship as listed below. If damage penetrates to the Ship Destroyed row, the ship is out of the game and will drift at its last heading and velocity.

Each internal component area is made up of one or more boxes. For internal component areas that contain more than one box, the first box marked destroys the component. Further damage to that component has no effect unless noted in the descriptions below, or unless a campaign game is being played. A box remains marked off even if the effect of the hit is only temporary.

For example, a battleship takes 15 points of internal damage. Then a 7-point spinal mount shot hits the exterior armor, which absorbs the first three rows of damage. The remaining four rows of damage pass to the internal structure.

The attacker elects to resolve the 15 points of damage first. It is divided up into three 4-point groups and one 3-point group. The player rolls and gets a 1, 4, 7, and 10. Those areas are blocked off. Then the player rolls for the spinal-mount attack. He rolls a 4, and so the damage starts at the bottom of the damage in Column 4, as shown below.

Internal Component Block



COMMAND SYSTEMS

Transponder

This transmitter broadcasts the ship's IFF (Identify Friend or Foe) signal. Damage to this location has little or no effect on play in **Leviathan**.

Repair Time: 30 minutes, or 6 turns

Navigation Lights

The navigation lights help tell other ships the direction a ship is heading. Even in an age of sophisticated sensors and computer tracking, sometimes a simple glance can prevent a collision. Damage to this system has little or no effect on the game because the lights are off or altered during combat.

Repair Time: 30 minutes, or 6 turns

External Communication System [Ext Com Sys]

The external communication systems allow one ship to talk to another. If they are damaged, the stricken ship may communicate with other ships only with light signals. This should be strictly enforced during multi-player games.

Repair Time: 30 minutes, or 6 turns

Flag Bridge

The Flag Bridge is used by visiting senior commanders, who coordinate the activities of several ships of a squadron or larger group during combat. Though it is possible to control an individual ship from the Flag Bridge, it is neither easy or efficient.

Repair Time: 1 hour

Main Bridge

This is the brain of the ship. The ship's captain directs the actions of all of the ship's weapon systems, movement, tactics, and other functions from this location. If the Main Bridge is damaged, control of the ship automatically shifts to the Flag Bridge. If neither bridge is functional, the ship drifts at its current velocity and heading. If power had been allocated to weapons, those weapons may continue to fire in subsequent turns.

Repair Time: 2 hours

VIP Docking Port

This is the entry port where senior officers and other important visitors are welcomed aboard the ship. It has little or no use in combat.

Repair Time: 1 hour

Internal Communication System [Com Sys]

The internal communication system allows different parts of the ship to talk to one another. Weapon, shield, and movement commands are hard-wired, and so they are not affected by this system's damage. Damage-control parties, however, must be told where to go by runner, and it will take them longer to repair any damage. This damage has no effect on the game unless the Optional Repair Rules are being used. In this case, any declared repairs will take an additional turn to complete.

Repair Time: 30 minutes, or 6 turns

Long-Range Sensors

Long-range sensors allow a ship to detect and track objects just entering or leaving T-space as well as distant objects in normal space. While not strictly necessary for T-space travel, long-range sensors certainly help. Their damage has an effect only in campaign games or scenarios where the emergence of reinforcements or the tracking of fugitives of battle is important.

Repair Time: 1 hour

ENGINEERING

A ship's maneuvering capability depends on the condition of its power plant and its sublight drives. These two major components of the ship work together to move the ship and power the rest of its systems. Damage to one of these systems often affects the performance of the other. The power generated by the ship is dictated by the most damaged of these two components. If the ship has suffered a 1/2 SLD hit and the power plant is undamaged, the ship can generate only half normal power. Damage to the power plant, in this case, has no effect until it is destroyed, thus rendering the ship powerless.

Shield Shorts

The side of the shield that was hit shorts out and is inactive for one turn. A subsequent shield short inflicted during the same round is applied to a different shield side of the defender's choice.

Repair Time: Fixes itself after one turn

Shield Destroyed [Shield Dest]

The shield side is destroyed. A subsequent result destroys an additional shield of the defender's choice.

Repair Time: 6 hours

Plant Shorts

The power plant has taken damage, temporarily cutting power to one of the main subsystems. No power can be generated during the next turn. The plant then returns to normal. Multiple

hits at this location increase the duration of the power loss, one turn for each box damaged. (Thus, two boxes damaged in the same turn will require two turns to repair.)

Repair Time: Fixes one box per turn automatically

Left Thruster Out [Left Thruster]

This is the vector control system that allows the ship to turn left. Damage to the system prevents such maneuvers for one turn. Multiple hits at this location increase the duration of the maneuver loss, one turn for each box damaged.

Repair Time: Fixes one box per turn automatically

Right Thruster Out [Right Thruster]

This is the vector control system that allows the ship to turn right. Damage to the system prevents such maneuvers for one turn. Multiple hits at this location increase the duration of the maneuver loss, one turn for each box damaged.

Repair Time: Fixes one box per turn automatically

Acceleration Compensator [Acc Comp]

The acceleration compensator allows ships to perform their gradual maneuvers with the crew standing perpendicular to the direction of thrust. If the compensator is damaged, crew members must sit at their stations to perform their tasks effectively. In game terms, this affects the damage control parties the most, slowing any repair by one turn.

Repair Time: 2 hours

Plant 1/2 Damaged [Plant 1/2]

The power plant, which distributes power from the engines, is damaged, generating one-half its normal power. This means that the ship has only one block of power to allocate to its operating systems. Ignore this result if the ship was already operating at half-power or was powerless because of damage to Sub-Light Drives. This damage must be repaired in addition to Sub-Light Drive damage for the ship to return to full power.

Repair Time: 6 hours

Plant Destroyed

The power plant will no longer generate power. The crew of the ship can survive on life support until they are rescued or can repair the plant. A destroyed plant can be repaired only to 1/2 damaged level by onboard repair teams. The repair must be completed at an appropriate facility. This result has no effect if the ship was already without power, because its Sub-Light Drives were destroyed. Both systems must be repaired, however, for the ship to regain power.

Repair Time: 48 hours

SUB-LIGHT DRIVE SYSTEMS

A ship's maneuvering capability depends on the condition of its power plant and its Sub-Light Drives. These two major components of the ship work together to move the ship and power the rest of its systems. Damage to one of these systems often affects the performance of the other. The power generated by the ship is dictated by the most damaged of these two components. If the ship has suffered a 1/2 SLD hit and the power plant is undamaged, the ship can generate only half normal power. Damage to the power plant, in this case, has no effect until it is destroyed, rendering the ship powerless.

Atmospheric Controls [Atm Control]

Destroyers and smaller craft can enter and maneuver in a planet's atmosphere. The atmospheric controls help maneuver streamlined ships in an atmosphere. If these controls are damaged, the ship must use some other method of control or it will crash.

Repair Time: 6 hours and EVA required

Anti-Grav Drive [AG Drive]

Most small ships carry an anti-grav drive in addition to streamlining for activities in an atmosphere. If the drive fails and the atmospheric controls are damaged, the ship will crash.

Repair Time: 4 hours

SLD Shorts

The Sub-Light Drive system shorts out and will deliver no thrust during the next turn. The damage is removed after the Movement Phase of the next turn. Multiple hits at this location increase the duration of the maneuver loss, one turn for each box damaged.

Repair Time: One turn per box automatically

Maneuver Power System Damaged [Maneuver Power Sys, Man PS]

This damage does not affect power generation, but it does affect the ship's maneuver. Ships with this damage have their Thrust Rating halved for the purpose of velocity changes. Power may not be shunted out of the maneuver system, but it may be shunted in. Any power shunted in can be used only to change heading.

Repair Time: 1 hour

SLD 1/2 Damaged [SLD 1/2]

The ship can generate only one block of power to allocate to its weapon or maneuver systems. Ignore this result if the ship was already at half-power because of damage to the power plant. Damage to both systems must be repaired for the ship to return to full power.

Repair Time: 6 hours

SLD Destroyed

The Sub-Light Drive will no longer generate thrust or power. The crew of the ship survives on life support until they are rescued or can repair the drives. Onboard repair teams can repair a destroyed drive only to 1/2 damaged level. Repair must be completed at an appropriate facility. This result has no effect if the ship was already without power because its power plant had been destroyed. Both systems must be repaired for the ship to regain power.

Repair Time: 48 hours

WEAPON SYSTEMS

CIC

The Combat Information Center is where the combat assets of the ship are managed. The captain uses information gathered here to make his tactical decisions. When the captain gives the order to fire, the CIC coordinates the various weapon systems. Damage to this center causes all weapons to fire with a +1 To-Hit Modifier. Damage to the second CIC component area causes an additional +1 To-Hit Modifier.

Repair Time: 1 hour per area

CIC Destroyed [CIC Dest]

When the CIC is destroyed, all weapons fire under local control, which is much less efficient, represented as a +3 To-Hit Modifier.

Repair Time: 6 hours

Bay Fire Control [Bay FC]

Local fire control has been damaged. The affected bay has an additional +1 To-Hit Modifier for all future attacks. A bay on the side hit is the first to be affected. If there is more than one, the defender may choose. If no undamaged bays remain, the defender chooses a bay somewhere else on the ship to be affected.

Repair Time: 1 hour

Bay Destroyed [Bay Dest]

The bay has been destroyed so that it may not be repaired by damage control parties. A bay on the side hit is the first to be affected. If there is more than one, the defender may choose. If no undamaged bays remain on the proper side, the defender chooses a bay somewhere else on the ship to be affected.

Repair Time: 24 hours per 10 guns in the bay at a certified facility

Turret Fire Control [Left Turret Fire Control, Right Turret Fire Control]

Local fire control has been damaged. The affected turret side has a +1 To-Hit Modifier for all future attacks. There is an additional +1 To-Hit Modifier for each box hit.

Repair Time: 30 minutes per box

Turret Factor Destroyed [1/2 Turret Factors Lost, 1/2 Turret Lost, 1/2 Turret]

Several of the turrets on the side hit have been damaged, and the turret factor for that side is reduced by half.

Repair Time: 24 hours per turret factor point at a certified facility

Spinal Mount: Coil Shorts [SM Minor]

The spinal mount accelerator coils have shorted out, and the weapon may not fire during the next turn. On carriers, this location represents fighter launching and recovery facilities. This damage on a carrier prevents the launching or recovery of fighters next turn.

Repair Time: This damage lasts only one turn

Spinal Mount: Coil Damaged [SM Major]

The spinal mount has been damaged and may not fire until repaired. On carriers, this damage prevents fighter launching and recovery.

Repair Time: 6 hours

Spinal Mount Destroyed [SM Dest]

The spinal mount has been destroyed, and it may not be repaired by damage control parties. This damage on a carrier prevents the launching or recovery of fighters and destroys any fighters remaining on the ship.

Repair Time: 1 week at a certified facility

Weapon Power System [Weapon Power Sys, Weap PS]

This damage prevents the transfer of power out of the weapon systems. A ship with this damage may not fire its spinal mount except with shunted power. Power may be shunted into weapon systems, but not out.

Repair Time: 1 hour

SUPERSTRUCTURE

Life Support

Sections of the ship's hull have been breached and decompressed. Life support functions require repair before the affected sections can be used by personnel not wearing vacuum suits.

Repair Time: 1 hour

Crew Quarters

Sections of the crew's quarters have been hit. This has no effect on the performance of the ship itself.

Repair Time: 1 hour

Bulkhead Collapse [Blk Clps]

Several adjacent airtight sections of the ship have been breached, causing substantial difficulties in communication and transportation through these areas. This is also the first sign that the ship is starting to break up as a result of accumulated damage.

Repair Time: 6 hours

Spine Cracks

The main structure of the ship has been severely damaged. On most ships, this signals the end of its fighting capability. Among all the consequent effects of this damage is the destruction of the spinal mount weapon.

Repair Time: 12 months in a certified shipyard

Structural Collapse

The ship is no longer structurally intact. It can no longer fight or maneuver, and in most cases, must be abandoned. Damage repair crews and repair teams cannot fix this type of damage.

Repair Time: 1 month to secure for FTL travel

2 years at a certified shipyard

Damage Control

Under the optional repair rules, undamaged damage control parties may repair or attempt to repair internal component boxes and areas. Each hit to this location reduces the amount of damage repair by one box per turn.

Repair Time: Only through reassignment and retraining of personnel

FASTER-THAN-LIGHT SYSTEMS

Minor Damage [FTL Minor]

The FTL drives and subsystems have taken slight damage. Computing times take 10 percent longer, and the chance for scattering exists automatically. There is an additional 10 percent chance added to any other factor of automatic scattering.

Repair Time: 2 hours

Major Damage [FTL Major]

The FTL drives have taken substantial damage, but FTL travel is still possible. Computing time takes 50 percent longer, and there is an additional 50 percent chance of scattering on the FTL success table.

Repair Time: 6 hours

FTL Destroyed

The FTL drives have been damaged to the point that FTL travel is no longer possible. The drives must be repaired before the ship can use T-space. Unless the ship is repaired at a certified shipyard, computing times will take 25 percent longer and there is an additional 25 percent chance to scatter on the FTL Success Table even after repair.

Repair Time: 24 hours

DESTROYING A SHIP

Large ships in **Leviathan** reach millions of tons in mass and carry thousands of crewmembers. With repair and damage control teams intact, the ship could theoretically fight forever. Certain types of damage cannot be fixed without the equipment found in large shipyards, however. This same type of damage often prevents the ship from doing anything but drifting. Given enough time, the crew could make enough repairs to regain control of the ship.

Enemy commanders wishing to prevent this often pump massive amounts of fire into such a hulk in an attempt to blow it up. To do so in game terms, follow the rules below.

Damage that penetrates to the Ship Destroyed row of the Internal Component Block accumulates from turn to turn. At the end of each turn that a ship took damage to this row, roll on the Ship Explosion Table.

SHIP EXPLOSION TABLE

Boxes Hit in Ship Destroyed Row	Roll Needed for Ship Explosion
1–3	1
4–6	3
7–9	5
10–12	7
13+	9

For a ship to explode, the die roll must be less than or equal to the number shown in the second column of the table. Remember that a 10 is always a failure, in this case meaning that the ship did not blow up. The number in the first column is the number of boxes of damage that have penetrated to the Ship Destroyed Row of the Internal Component Block.

The explosion can damage nearby ships. The Collateral Damage Table shows the amount of damage done by each class of exploding ship at different ranges.

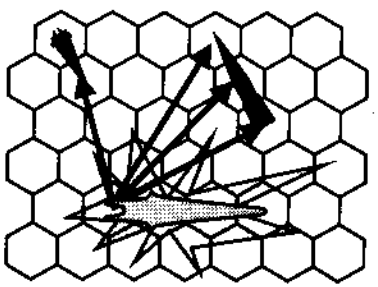
COLLATERAL DAMAGE TABLE

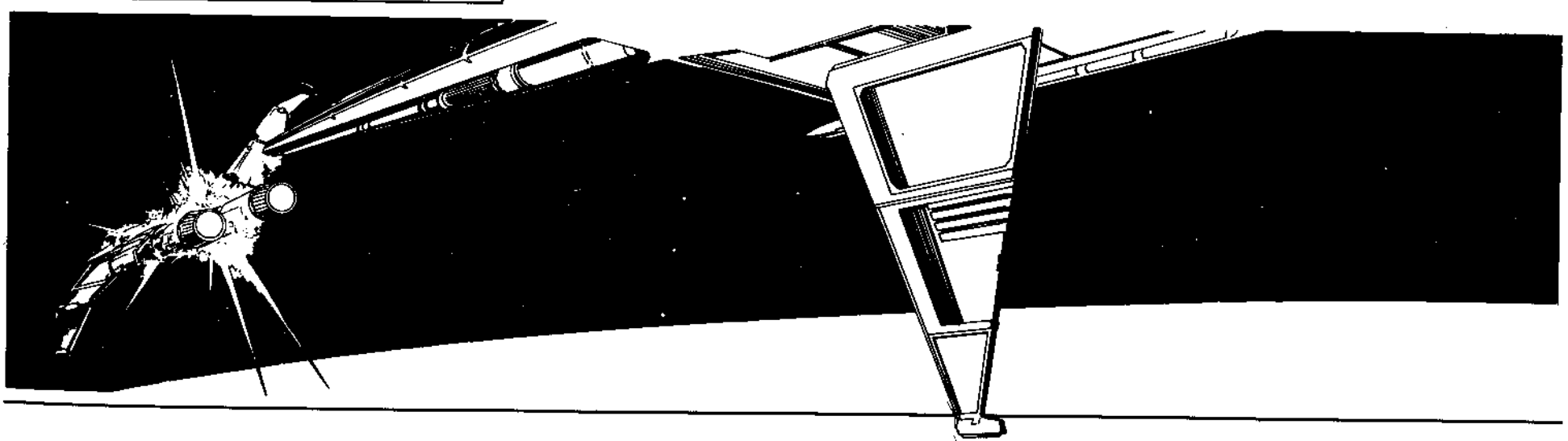
Exploding Ship Class	Damage at Range			
	0	1	2	3
Destroyer	32	16	8	4
Frigate	64	32	16	8
Cruiser	128	64	32	16
Battleship	256	128	64	32

Range is calculated as normal in the Combat section, counting from the closest portion of the exploded ship to each hex of the other ship.

To determine which area of the ship is damaged by such an explosion, draw a line from the rear hex of the exploding ship to each of the hexes of all ships in range. If the line enters the hex through a shield hexside, that section takes damage. If the line passes through another hex of the ship, the explosion is blocked for that section. A section can be damaged only once by each explosion.

For example, the battleship below explodes. There is a cruiser at a range of 2 and a frigate at a range of 3. The cruiser takes 64 points of damage on its aft left side and forward left side. Each section is damaged once. The frigate takes 32 points of damage on its front armor. The other hex of the frigate is protected by the front of the ship and is not damaged.





FIGHTERS

In **Leviathan**, fighters have a special role. They are a very effective weapon in that they can pinpoint their damage, yet they are the most vulnerable pieces on the board. With no effective shields, they tend to die in droves. A kill on the **Leviathan** map does not necessarily mean the fighter has been destroyed and the pilot killed, but it does mean that the fighter unit is no longer an effective fighting force. In campaign games, provisions are made to recover some of these units.

MOVEMENT

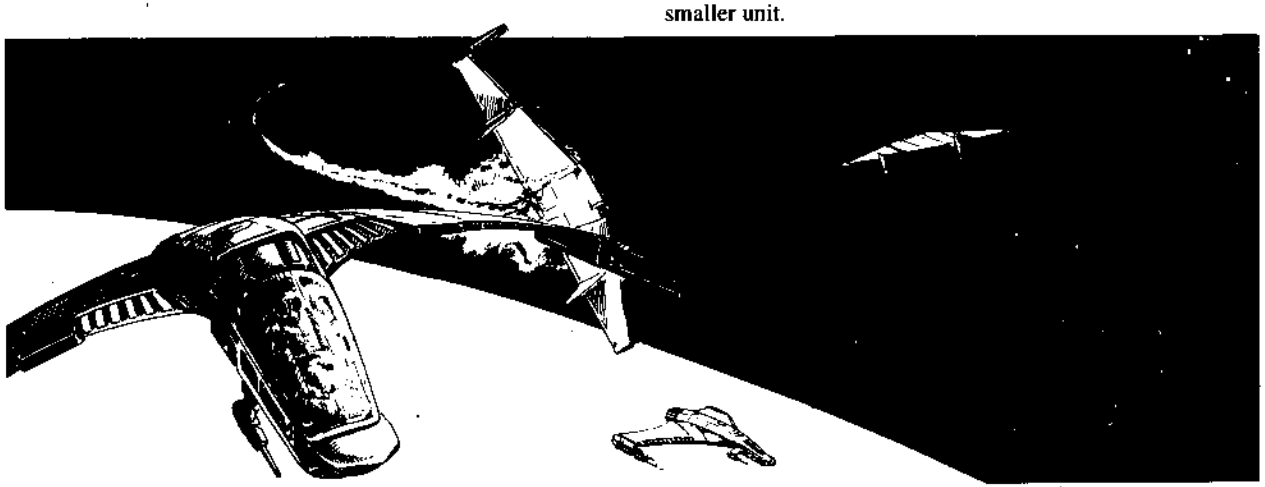
Fighters have no facing. They move up to the number of hexes of their movement rating. They pay no cost for heading changes and may not build velocity from turn to turn. Movement points may not be saved from one turn to the next.

COMBAT

Fighters may shoot in any direction. Their Weapon Range is 3 hexes. At ranges of 0 and 1 hex, fighters use their Close-Range Attack value (CRA). At a range of 2 or 3 hexes, fighters must use their Long-Range Attack value (LRA). They record damage inflicted by capital ships and suffer its effects before they fire. A fighter unit might be destroyed before it can fire. If a fighter unit is in the rear hex of a capital ship, that ship can fire only the turret factors bearing on the fighter's entry hexside. See the **Overlapping Ships** section for applying damage.

Fighters have no effective shields against capital ship weapons. When a fighter unit is hit, the armor boxes are marked off from the top row. When a full row of armor is removed, the CRA and LRA values noted on that line are no longer used, and the next set of values come into play.

Groups and Flights that have been reduced to lower levels do not receive the combat characteristics or the MP bonuses of the smaller unit.



ORGANIZATION

A squadron is a unit of 6 fighters. A flight is a unit of 4 squadrons or 24 fighters. A group is a unit of 3 flights or 12 squadrons or 72 fighters. This is the largest fighter playing piece in the game. A wing is a unit of 5 groups or 15 flights or 60 squadrons or 360 fighters.

In **Leviathan**, a player organizes his fighters in any manner he desires before the start of play. Once he has determined his fighter organization, no changes are allowed.

When there is more than one fighter unit in a hex and an attacking player makes a successful attack that inflicts more than enough damage to destroy the initial target unit, any extra damage is applied to the smallest remaining unit. If this is enough to destroy that unit, the remaining damage passes on to the next unit.

For example a group with 10 boxes left is in the same hex as a 4-box squadron and a 10-box flight. The attacker hits the group with 20 points of damage. The first 10 points are enough to kill the group. The remaining 10 pass on to the squadron. The first 4 destroy the squadron, and the remaining 6 pass onto the flight.

A missile attack, however, affects every target in a hex equally with its full strength.

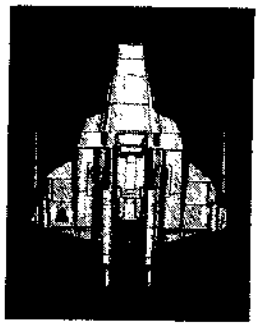
CONVERSION

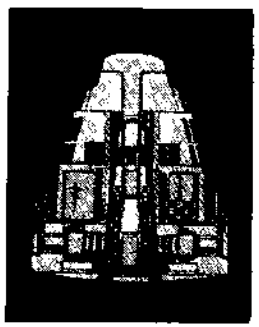
Any types of individual fighters can be combined to form a **Leviathan** unit. First find the values for armor, CRA, and LRA on the Leviathan Fighters Table. Add these values together for all the fighters in the squadron, flight, or group. Round to the nearest whole number.

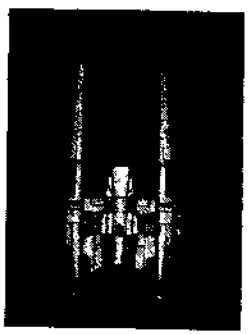
LEVIATHAN FIGHTER VALUES

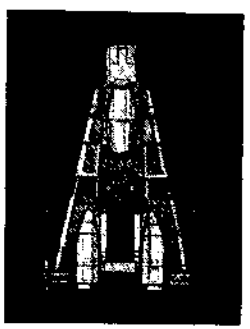
	Thrust	Armor	CRA	LRA	Missiles*
Arcubalista	13	53	10	6	2
Arcus	5	100	50	46	3
Avenger	7	80	48	29	0
Bumblebee	10	40	17	7	1
Cheetah	10	40	26	10	1
Corsair	8	65	48	14	1
Cuspis	7	80	29	22	3
CWTP	6	60	30	18	4
Defender	6	75	34	30	1
Defensor	5	90	31	29	2
Defiant	7	83	54	20	1
Devil	7	60	32	17	1
Falcon	9	35	2	18	1
Fluttering Petal	5	100	64	52	2
Fulman	7	75	22	10	3
Funda	10	40	20	3	2
Gaul	6	75	29	35	1
Gladius	6	85	56	23	6
Guardian	4	90	46	12	1
Hawk	4	73	30	26	2
Ictus	6	100	38	30	1
Idis	7	58	48	14	3
Kata Cator	7	58	44	16	1
Kenderson	6	63	36	28	2
Lancea	10	40	8	4	3
Legati	5	100	66	50	0
Ludicrum Secundus	8	45	17	3	1
Manubalista	9	45	19	7	3
Martiobarbulus	6	55	34	30	1
Onagri	7	88	24	16	6
Peacekeeper	7	90	28	20	2
Penetrator	7	88	30	24	1
Perforator	8	83	32	24	0
Pilum	7	70	30	26	1
Punisher	6	85	67	24	1
Ramrod	9	45	21	8	1
Saxum	9	45	7	11	3
Sercuris	7	90	42	19	2
Shield	10	35	6	4	3
Sica	7	65	28	9	1
Slingshot	7	80	20	16	8
Space Gull	6	70	44	22	1
Spatha	5	100	57	43	2
Spiculum	8	90	16	12	3
Stinger	8	85	40	14	3
Telum	6	60	40	8	3
Tormenta	6	85	25	30	1
Ventura	6	55	16	12	2
Verutum	6	55	23	16	1
Warspite	8	95	34	13	3

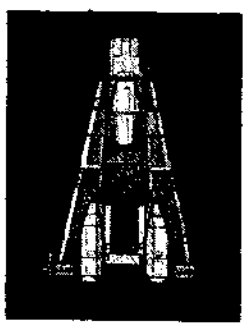
*Note this is the number of hardpoints, not the single fighter's Missile Attack Value











LEVIATHAN SQUADRON VALUES

	Thrust	Armor	CRA	LRA	Missile Attack Value
Arcubalista	17	3	3	2	0
Arcus	9	6	15	14	0
Avenger	11	5	14	9	0
Bumblebee	14	2	5	2	0
Cheetah	14	2	8	3	0
Corsair	12	4	14	4	0
Cuspis	11	5	9	7	0
CWTP	10	4	9	5	0
Defender	10	5	10	9	0
Defensor	9	5	9	9	0
Defiant	11	5	16	6	0
Devil	11	4	10	5	0
Falcon	13	2	1	5	0
Fluttering Petal	9	6	19	16	0
Fulman	11	5	7	3	0
Funda	14	2	6	1	0
Gaul	10	5	9	11	0
Gladius	10	5	17	7	10
Guardian	8	5	14	4	0
Hawk	8	4	9	8	0
Ictus	10	6	11	9	0
Idis	11	3	14	4	0
Kata Cator	11	3	13	5	0
Kenderson	10	4	11	8	0
Lancea	14	2	2	1	0
Legati	9	6	20	15	0
Ludicrum Sec.	12	3	5	1	0
Manubalista	13	3	6	2	0
Martiobarbulus	10	3	10	9	0
Onagri	11	5	7	5	10
Peacekeeper	11	5	8	6	0
Penetrator	11	5	9	7	0
Perforator	12	5	10	7	0
Pilum	11	4	9	8	0
Punisher	10	5	20	7	0
Ramrod	13	3	6	2	0
Saxum	13	3	2	3	0
Sercuris	11	5	13	6	0
Shield	14	2	2	1	0
Sica	11	4	8	3	0
Slingshot	11	5	6	5	10
Space Gull	10	4	13	7	0
Spatha	9	6	17	13	0
Spiculum	12	5	5	4	0
Stinger	12	5	12	4	0
Telum	10	4	12	2	0
Tormenta	10	5	8	9	0
Ventura	10	3	5	4	0
Verutum	10	3	7	5	0
Warspite	12	6	10	4	0

LEVIATHAN FLIGHT VALUES

	Thrust	Armor	CRA	LRA	Missile Attack Value
Arcubalista	15	13	12	7	10
Arcus	7	24	60	55	25
Avenger	9	19	58	35	0
Bumblebee	12	10	20	8	0
Cheetah	12	10	31	12	0
Corsair	10	16	58	17	0
Cuspis	9	19	35	26	25
CWTP	8	14	36	22	50
Defender	8	18	41	36	0
Defensor	7	22	37	35	10
Defiant	9	20	65	24	0
Devil	9	14	38	20	0
Falcon	11	8	2	22	0
Fluttering Petal	7	24	77	62	10
Fulman	9	18	26	12	25
Funda	12	10	24	4	10
Gaul	8	18	35	42	0
Gladius	8	20	67	28	75
Guardian	6	22	55	14	0
Hawk	6	17	36	31	10
Ictus	8	24	46	36	0
Idis	9	14	58	17	25
Kata Cator	9	14	53	19	0
Kenderson	8	15	43	34	10
Lancea	12	10	10	5	25
Legati	7	24	79	60	0
Ludicrum Sec.	10	11	20	4	0
Manubalista	11	11	23	8	25
Martiobarbulus	8	13	41	36	0
Onagri	9	21	29	19	75
Peacekeeper	9	22	34	24	10
Penetrator	9	21	36	29	0
Perforator	10	20	38	29	0
Pilum	9	17	36	31	0
Punisher	8	20	80	29	0
Ramrod	11	11	25	10	0
Saxum	11	11	8	13	25
Sercuris	9	22	50	23	10
Shield	12	8	7	5	25
Sica	9	16	34	11	0
Slingshot	9	19	24	19	75
Space Gull	8	17	53	26	0
Spatha	7	24	68	52	10
Spiculum	10	22	19	14	25
Stinger	10	20	48	17	25
Telum	8	14	48	10	25
Tormenta	8	20	30	36	0
Ventura	8	13	19	14	10
Verutum	8	13	28	19	0
Warspite	10	23	41	16	25

Remember that fighter units are made up of a variety of fighters. It is not unusual for a squadron to contain different types of fighters. There is no flight or group made up solely of a single fighter type.

ARMOR

To find the **Leviathan** armor value for a fighter not on this list, add the **Interceptor** values for each side and divide by 4. To find the armor value of a fighter unit, add the **Leviathan** armor values of all the fighters in the unit and divide by 100. This is the number of armor boxes the unit has on its record sheet.

A squadron can have only one row of armor boxes. A flight must have three rows of armor. If the flight does not have all 24 boxes in the bottom three rows, boxes are removed from the three rows evenly, starting with the uppermost. A group must use all 6 rows of armor. Unneeded boxes are removed from the three rows evenly, starting with the top row.

For example, a flight of TOG fighters is to be made up of 4 Spiculums, 4 Onagris, 6 Ictuses, and 10 Gladii. The flight's armor value would be (4 x 90 + 4 x 87.5 + 6 x 100 + 10 x 85 = 2160/100 = 21.6) 21.6, which rounds to 22. The flight will have an armor value of 22, leaving it the bottom row and all but one box in each of the next two rows up.

CRA

To find the CRA of a fighter not on the list, simply add together the damage all of the fighter's non-missile weapons will do at **Interceptor** Range 1. To find the CRA of a **Leviathan** unit, total the CRA values of all the fighters and divide by 20. To find the intermediate CRA values, divide the total CRA by the number of armor rows the unit uses. This is the increment change for each row and the value of the last row.

In the example cited above, the flight's CRA would be (4 x 16 + 4 x 24 + 6 x 38 + 10 x 56 = 948/20 = 47.4) 47.4, which rounds to 47. Dividing by 3 yields 15.7, and so the CRA damaged values are 31 and 16.

LRA

To find the LRA of a fighter not on the list, add together the fighter's non-missile attack value at a range of 4 – 6. The procedure to find a unit's LRA is the same as finding the CRA.

In our example, the flight's LRA would be (4 x 12 + 4 x 16 + 6 x 30 + 10 x 23 = 522/20 = 26.1) 26.1, which rounds to 26. Dividing by 3 yields 8.7, and so the LRA damaged values are 17 and 9.

MISSILE ATTACK VALUE

A fighter carries one missile per hardpoint. Total the number of missiles carried by the entire unit and consult the table below to find the unit's one-time Missile Attack Value.

Missiles Carried	Missile Attack Value
0 – 10	0
11 – 25	10
26 – 50	25
51 – 75	50
76 – 100	75
100+	100

In our example, the flight carries 102 missiles (4 x 3 + 4 x 6 + 6 x 1 + 10 x 6 = 102). This translates into a one-time Missile Attack Value of 100. Remember that these missiles are effective only against other fighters or unshielded targets. The strength of a fighter unit's missile attack is not affected by damage to the unit. Weapon Range for missiles is 3 hexes. The missiles hit their target in the turn fired.

MOVEMENT

To find the movement rating for a unit, use the thrust of the slowest fighter in the unit, adding 4 if the unit is a squadron or 2 if the unit is a flight.

In our example, the slowest fighter is the Gladius (Thrust 6), plus 2 for a flight, and so the movement rating is 8.

The flight's Record Sheet would be filled in as shown.

PATROL CLASS SHIPS

With the endurance of larger ships and the speed of fighters, patrol class ships serve a variety of roles. They can patrol quiet regions of space with the assurance that they can handle almost any non-military encounter. They are used as couriers and scouts for capital ships. They perform these functions at a fraction of the cost of capital ships. Though they cannot stand up to ships of the line, patrol class ships have an important role in a modern battle squadron.

POWER ALLOCATION

Patrol class ships do not allocate power as other capital ships do in **Leviathan** or as they normally do in **Interceptor**. Their capabilities are fixed during the design of the ship or their conversion from **Interceptor** statistics to **Leviathan** data.

MOVEMENT

Patrol class ships move as capital ships, using their thrust points to change velocity and heading. They drift as capital ships and may perform a roll. Patrol class ships may make as many heading changes in a single hex as their thrust allows.

COMBAT

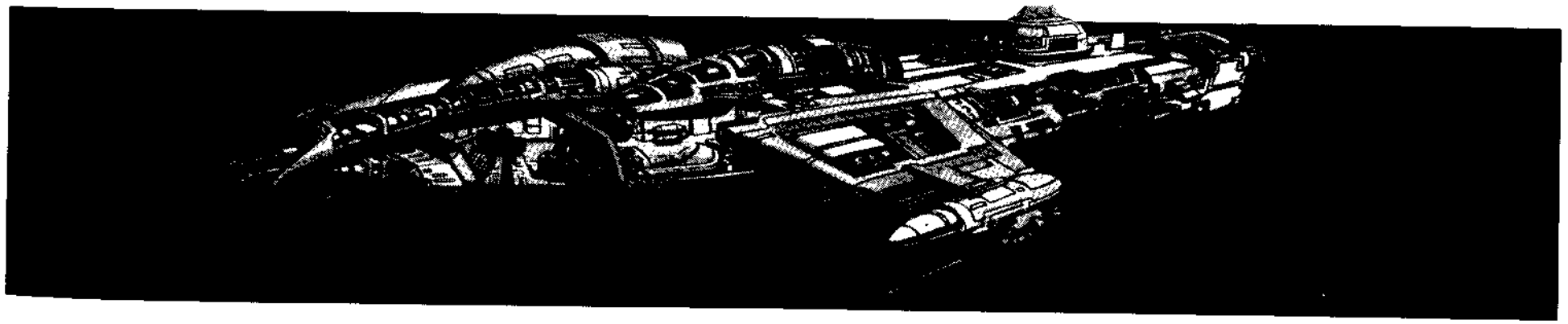
Patrol class ships attack and take damage as capital ships do. Turrets can fire as long as the ship is generating power. If a patrol class ship has bays, it may fire either broadside in a turn. If the craft has a spinal-mount weapon, no other weapon may be used, including turrets, in the same turn.

Patrol craft armor diagrams and Internal Component Blocks are only five columns wide. When rolling for a damage location, re-roll results greater than five.

ORGANIZATION

Patrol class ships have individual record sheets for each craft. A typical battleship squadron has only one or two ships of this size. Patrol class ships are often organized into their own squadrons or groups and are based according to their mission. Virtually every planet has one or two of these units of five to ten ships.

Because patrol class ships are the quickest to accelerate to T-space transition velocities, they are often used as the transportation platform for fighter raids, carry out the raids themselves, or make high-speed passes through enemy systems for reconnaissance.



CONVERSION

Patrol class ships are designed using **Interceptor** Construction Rules. They can be converted for use in **Leviathan** with the following rules.

THRUST

Thrust translates directly. In other words, a patrol class ship's thrust in the **Interceptor** system is also its thrust in **Leviathan**.

SHIELDS

Shields depend on class, not power limitations. In **Leviathan**, gunboats have no shields, corvettes have 4 shield points, and escorts have 8 shield points. The player must distribute these shields among the ship's six facings before the game begins.

ARMOR

Divide the armor value for each side of the ship by 20 and round up to the nearest multiple of 5. This is the **Leviathan** armor value for that side. Thus, if the ship had 150 points of armor on one side, that side's **Leviathan** value would be 10.

WEAPONS

Fixed weapons convert into bays. Turret weapons convert into a Turret Factor. For all fixed weapons in a single location, add together the damage of the ship's nonmissile weapons at **Interceptor** Range 1. Then divide this number by 20. This is the damage all of these weapons will do at **Leviathan** Range 1. Do the same for the values at **Interceptor** Range 4-6, and this will be the bay's damage at **Leviathan** Range 2. Complete the same calculation for **Interceptor** Range 11 – 15 to find **Leviathan** Range 3 value.

Turret factor values are calculated in the same manner. Patrol class turret factors use a 360-degree firing arc and may fire as many times per turn as there are turrets on the ship. Each turret factor may shoot at only one target per turn.

Though most patrol class ships do not carry enough hardpoints to launch fighter missile attacks, it is possible to build a ship with more. Players converting their own "missile boat" designs into **Leviathan** should use the following rules.

Calculate the patrol ship's fighter missile attack value in the same manner as it is done for fighters. Auto-loading hardpoints are the equal to five normal missiles for this purpose.

DAMAGE

Internal damage locations are Shown on the Ship Record Sheet.

Cingulum

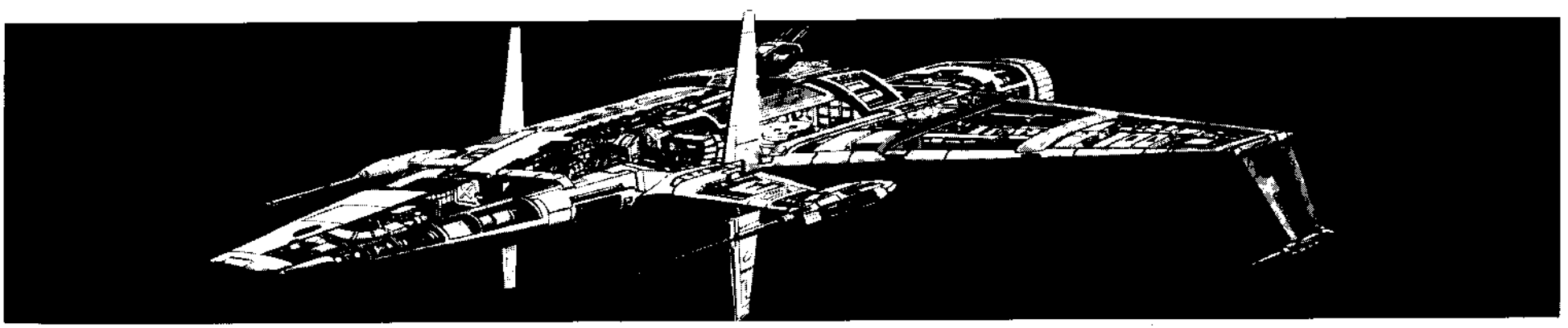
Thrust	4		
Shield Points	4		
Left Front	1	Left Rear	0
Front	1	Rear	1
Right Front	1	Right Rear	0

Range	1	2	3
Fore Bay	3	3	1
Rear Bay	1	1	
Turret	3	3	May not split fire and may fire only once

Pegasus

Thrust	4		
Shield Points	4		
Left Front	1	Left Rear	0
Front	1	Rear	1
Right Front	1	Right Rear	0

Range	1	2	3
Fore Bay	4	4	1
Rear Bay	1	1	1
Turret	2	2	May not split fire and may fire only once



VARIABLE SHIELDS A
POWER ALLOCATION

For ease of play, the power and s
ship's shields have been fixed. Play
performance out of their ships can a

Treat the shields as a compone
procedure. Using this rule, power can
ons, maneuver, and shields. Power c
these systems to any other. It is possi
a triple allotment of power into any o
the weapons will allow the ship to fi
spinal mount in the same turn. Trip
systems generates triple the thrust po
higher velocities.

Normal power to the shield system
number of shield factor points. These
ship as desired as long as no shield
points. Double power to the shield
another block of shield factor points, w
as desired. Triple power triples the ava

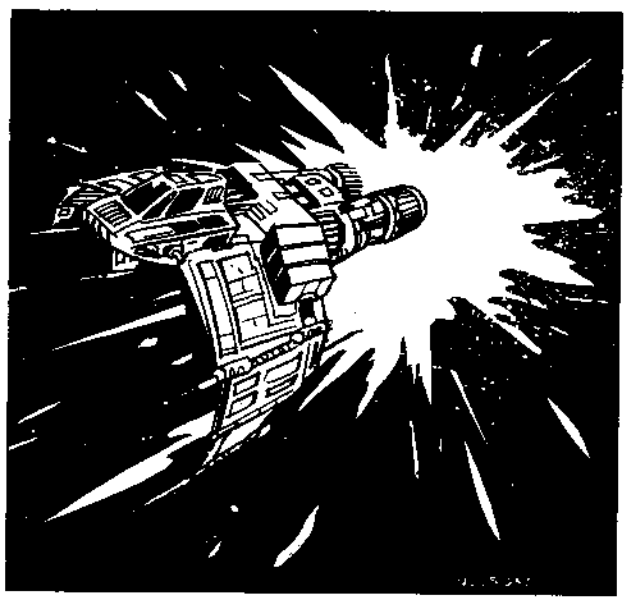
The use of this optional rule will g
of a game because of the extra time re
allocation orders for every turn.

DAMAGE CONTROL PARTIES

Capital ships have crewmembers assigned to repair or contain battle damage as soon as it happens. These repairs are often only temporary, but they are good enough to get the system back into operation. To represent damage control in a game, use the following rules.

For each undamaged box in the Damage Control Internal Component area, a ship may repair one block per turn. Only the deepest box penetrated in each column may be repaired. If the component is described as not being repairable by the ship's crew, no repairs may be made for any box in that column.

Even though destroyers and frigates have no Damage Control Internal Component area, they may repair one box per turn as long as the Main Bridge is undamaged. Damage control parties may not repair Damage Control boxes.



COMMANDER'S SKILL

Each ship captain and other unit leader in **Leviathan** has a certain experience level in the strategy and tactics of interstellar combat. Designate one leader as the squadron commander. Subtract his skill level from any Initiative Roll. If the bridge, either flag or main, where this commander is located is destroyed or loses the ability to communicate with other ships, his skill is lost. His designated successor then takes over.

TRAVELING FASTER THAN THE SPEED OF LIGHT

Ships in **Leviathan** can travel at velocities greater than the speed of light through the manipulation and use of Tachyon Space, or T-space. The normal procedure is as follows: First, the ship must accelerate to the normal space, or N-Space, velocity required for the desired FTL velocity. Secondly, the ship's navigation computers must spend a significant period of time making calculations. During the calculation period, the ship must remain on a constant course. Any deviation from the course will require that the calculations be started from scratch. Most ships try to combine the calculation period with the time required to bring the ship up to the required T-space velocity.

To travel faster than light, an FTL-capable craft must be traveling at a velocity of at least 30 hexes per turn. To travel FTL accurately, the ship must have maintained a straight line course for the five turns previous to translation, with at least three turns being at velocity of 6+ hexes per turn. If the ship has traveled less than five hexes, the chance of a ship's achieving its desired destination is quite small, as seen by the Misdirection Table below.

MISDIRECTION TABLE

Turns Spent on Straight Line	Chance of Misdirection
0	100
1	95
2	90
3	75
4	50
5	10
6	1

If there is a misdirection, roll on the Course Adjustment Table below to determine how long it will take to get to the original, intended destination.

COURSE ADJUSTMENT TABLE

Die Roll	Turns Spent in Straight Course						
	0	1	2	3	4	5	6 or more
1	1 day	20 hrs	16 hrs	12 hrs	8 hrs	4 hrs	1 hour
2	10 days	5 days	1 day	18 hrs	14 hrs	8 hrs	4 hrs
3	20 days	15 days	5 days	1 day	21 hrs	12 hrs	8 hrs
4	30 days	25 days	15 days	5 days	1 day	16 hrs	12 hrs
5	35 days	30 days	25 days	15 days	5 days	20 hrs	16 hrs
6	40 days	35 days	30 days	25 days	10 days	1 day	20 hrs
7	45 days	40 days	35 days	30 days	15 days	2 days	1 day
8	50 days	45 days	40 days	35 days	20 days	3 days	2 days
9	55 days	50 days	45 days	40 days	25 days	5 days	3 days
10	60 days	55 days	50 days	45 days	30 days	10 days	5 days

To make the T-space translation, an FTL-capable ship must have a functioning T-Drive engineer, a functioning T-Drive System, and functioning Tachyon Assembly controls. To translate back to normal space, the reversion controls must also work. If the T-space Dampers are damaged, there can be no repair work done until they are fixed, because the damper counteracts the extreme nausea and even mental debilitation that most lifeforms experience in T-space. If the T-space radiation damper is damaged, the whole crew must undergo detox procedures as soon as they return to normal space to continue a healthy life.

If the repair circuits to these critical controls are damaged, the crewmember engineers may be able to fix or jury-rig repairs to get the ship back to its base.

A ship running for T-space is vulnerable, as its location can be predicted fairly accurately. Pursuing ships will attempt to damage the fleeing ship's FTL system so that it cannot make the translation and escape.

The translation must be declared during the player's Movement Phase. The ship still takes damage during that turn, but at the end of that turn, he removes his ship from the board.

ORBITAL INSTALLATIONS

An Orbital Installation is represented by a single counter. Except where noted, an Orbital Installation should be treated as a normal ship with its own record sheet.

The controlling player should designate one of the counter's hexsides as the forward portion of the installation. This orientation does not change for the course of the game. An Orbital Installation has the same firing and shield arcs as a one-hex ship.

The Orbital Installation has no power to allocate to maneuver and can only fire one broadside at a time. If using the optional rule for Variable Shields, the station may shunt power between the shields and the weapon systems.

The Internal Component Block of an installation is similar to that of a ship, but there are some different components.

Lifeboat System: When functioning, lifeboats can be launched automatically. If damaged, they must be launched manually. For a detailed explanation of this procedure, see the rules for **Abandoning a Station**.

Main Computer: This computer controls the installation's main function, be it manufacturing, communications, or some other activity. Damage to the main and secondary computers puts the installation out of service until they are repaired. The installation can still use its weapons normally.

Secondary Computer: This computer goes on line if the main computer is damaged, but it supports operations at a 50 percent level.

Installation Equipment: This is the machinery that performs the installation's main function. Each point of damage in this area reduces the installation's output by a proportional amount.

Cargo Dock: This docking bay allows ships larger than fighters to dock with the installation.

Fighter Bay: This is where fighters are housed. Damage to this area destroys any landed fighter and prevents any other fighter from landing or reloading.

Facility Half-Damaged: Half of the installation's warehousing and material storage areas have been severely damaged. Half of all raw materials and finished products have been destroyed.

Facility Destroyed: All of the storage areas in the Orbital Installation have been destroyed. All of the installation's raw materials and finished goods have been destroyed.

Artificial Gravity Generator: This equipment generates standard gravity for the installation. Its loss is more of a nuisance than anything else.

ABANDONING AN INSTALLATION

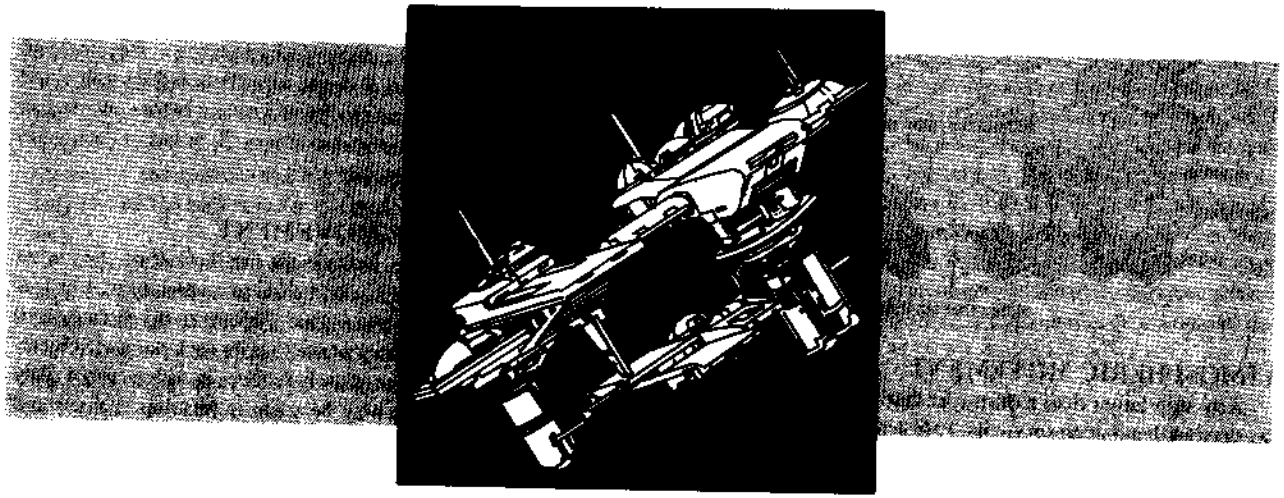
Installations have lifeboats for use in an emergency. An installation normally has ten lifeboats, each large enough to carry 20 percent of the installation's normal population.

The installation commander must declare his intention to abandon the facility during the Movement Phase. If the lifeboat systems are undamaged, all ten lifeboats are placed in the installation's hex at the beginning of the next Movement Phase. If the lifeboat systems are damaged during the turn in which they are launched, roll a die for each boat. If the result is an odd number, the lifeboat launches normally. If the result is an even number, the lifeboat failed to launch but may use its manual systems the next turn. Manual launch takes two turns.

Once launched, lifeboats have an initial velocity of 1 in any direction. They have a reserve of 3 thrust points for maneuvering purposes. Once used, a thrust point cannot be recovered.

Lifeboats may safely enter the atmosphere of a planet and land, even if they have no thrust left, as long as the lifeboat does not have a speed greater than 6 when entering the interface. The higher allowable entry speed reflects the fact that a lifeboat is designed solely to get its passengers safely to the ground.

Once the abandonment order has been given, the installation may perform no further action, including weapons fire or changing the shield values. Note that shields stay at their current level after the order to abandon is issued.



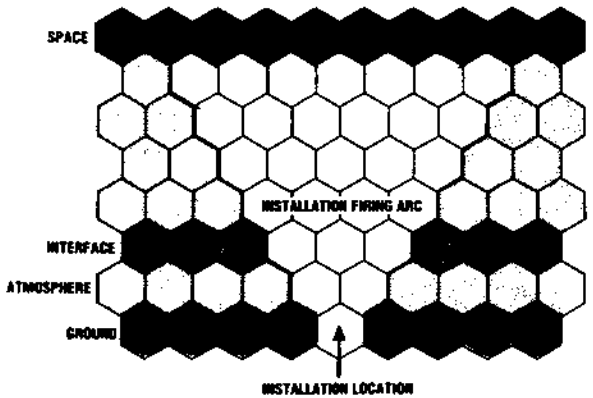
SPACE AND THE GROUND

Frigates and larger ships are simply too big to enter any planet's atmosphere and survive. Their interaction with the ground is done at long range or through intermediaries, shuttles and smaller transports. Destroyers and smaller ships can usually operate effectively in any environment.

When playing a **Leviathan** scenario that takes place near a planet, make the following changes to the map. One hex row, preferably at the edge of the mapsheet, is declared to be the ground. The next hex row is treated as the planet's atmosphere, and the next as the space/atmosphere interface. The next ten hex-rows make up the planet's gravity well. That is the area of space where the planet's gravity has a noticeable effect on the movement of ships and other objects. As in **Interceptor**, movement in these areas is treated differently.

GROUND INSTALLATIONS

Ground Installations are similar to facilities in space. For purposes of this game, they should be treated the same, except that a Ground Installation uses only its forward armor diagram and shield rating, and its bay weapons can fire only in the arc shown below.



ATMOSPHERIC MOVEMENT

Any ship larger than a destroyer that enters an atmospheric hex crashes, leaving no survivors. Patrol class ships and destroyers must pay one thrust point for every hex moved and one thrust point for each heading change. No ship may move more than four hexes per turn in the atmosphere. Ships may move only two hexes per turn if they are using only anti-grav drives. If a ship's anti-grav drives and streamlining are both either damaged or destroyed, the ship crashes. Streamlining is considered lost in **Leviathan** ships when the first Structural Collapse box of the Internal Component Block is marked off. Fighters can combine atmospheric and non-atmospheric flight in any manner desired as long as they move no more than four hexes in a single turn. Patrol class ships and destroyers must slow to a velocity of 4 or less before entering an atmospheric hex. Failure to do so causes 20 points of damage to the front of the offending ship.

INTERFACE ZONE MOVEMENT

Fighters have no restriction in the Interface Zone. Any other ship, including large ships, must slow to a velocity of 4 or less before entering the Interface Zone. Failure to do so causes 10 points of damage to the front of the ship for each point of velocity over 4. The ship also immediately reduces its velocity to 4. Any number of thrust points may be spent in heading changes and velocity changes as long as a ship moves no more than four hexes per turn.

GRAVITY WELL MOVEMENT

The gravity well consists of the atmospheric hexes, interface zone hexes, and the ten hex rows beyond these. For purposes of the game, atmospheric hexes are excluded from the effects of the gravity well. When any part of a ship ends its movement in a gravity well hex, the whole ship is pulled one hex closer to the planet or the hex row designated as the ground. In addition, ships heading directly toward or directly away from the ground change velocity. A ship traveling directly toward the ground increases its velocity by 1. A ship traveling directly away from the ground decreases its velocity by 1 each turn. Gravity's effects on movement and velocity occur at the end of the Movement Phase, before combat. While in the gravity well, a ship moving parallel to the ground may change the height of its orbit (the number of hex rows away from the surface of the planet). This can be done simply by expending thrust without changing heading. A maximum of 2 thrust points per turn can be used to raise orbital height. For each thrust point used, simply move the ship one hex row away from the ground. Remember that gravity pulls the ship one hex row toward the planet. Thrust points spent in this manner do **not** change the ship's velocity.

COMBAT

Ships in space can fire at targets in the Interface Zone, but not at targets in the atmosphere. Ships in the Interface Zone can fire at any target within range. Ships in the atmosphere can fire at targets in the atmosphere or in the interface zone, but not targets in space. Ground targets can be fired at by anyone, but there are severe restrictions based on which area the attacker is in and what type of weapon is being fired. The following rules are for stationary ground targets. If firing at a mobile target, use the Naval Fire Support and Centurion section of the rules.

Atmospheric Attacks: Fighters, Patrol class ships, and destroyers attacking stationary ground targets from the atmosphere must move into the atmospheric hex over the target's ground hex. The craft may then attack the ground target as if it were a **Leviathan** target.

Interface Zone Attacks: An attacker must be in one of the three hexes over the target's ground hex, and the attack has a –2 To-Hit Modifier. Fighters may not make ground attacks from the Interface Zone.

Space Attacks: The attacker must be in the zone above the target's ground hex, firing with a –5 To-Hit Modifier. Fighters may not make ground attacks from space.

Players should note the presence of mobile air defense in any of the ground hexes at the start of the game, keeping the locations secret from the other player. They remain hidden until they fire, though the scenario may call for them to start the game spotted. In the scope of a **Leviathan** game, these units cannot move to another hex.

In **Leviathan** terms, each **Centurion** Air Defense Century has a fighter missile rating of 25 and a Turret Factor of 1 against missile attacks only. A **Centurion** Rocket Century can launch one Type A missile attack, but it has no Turret Factor. Mobile air defense units have the same firing arcs as Ground Installations. An attack by a mobile ground unit reveals its position and exposes it to attack.

When firing at a mobile target, **Leviathan** units have an additional –5 modifier to the To-Hit Number. Any type of hit eliminates the unit from the game.

NAVAL FIRE SUPPORT AND CENTURION

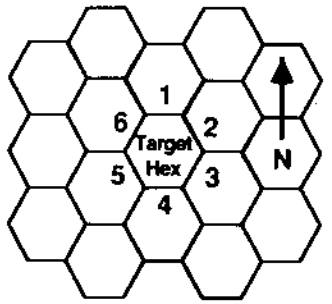
A ground legion's worst nightmare is that of devastating fire raining down from unmolested enemy naval units. In combination with friendly ground units, uncontested capital ships can spell doom for enemy ground forces. Loss of local space superiority quickly puts a planetary commander on the road to defeat.

Fire support from **Leviathan** ships can be used in a **Centurion** game in a manner similar to an artillery fire mission, but with much greater effect. A naval fire support mission is assigned the same way as an artillery fire support mission, but the type of ship (normally a destroyer or smaller class) is specified before the start of the game. A Naval Fire Control Officer might be assigned to the **Centurion** unit, in which case an additional Medium Grav APC is assigned to the Century. This APC has its infantry compartment full of the necessary communications equipment to call down naval fire support. If this vehicle is destroyed, leaves the playing area, has its infantry compartment damaged, has its communications section hit, or has the commander killed or unconscious, the player no longer has the advantages described below.

Naval fire support is called for during the End Phase of the turn and can be targeted on any hex on the playing field. It can only be called for by the unit's Centurion or the attached Naval Fire Control Officer. Only the bays on one side of the ship can provide fire support, but each bay can attack a different hex. If the Naval Fire Control Officer called for the attack, it occurs during the Artillery Resolution Segment of the next turn's Combat Phase. If the unit's Centurion called for the attack, it occurs two turns later. Any hex on the map may be targeted; no line-of-sight is necessary.

During the Artillery Resolution Segment of the appropriate turn, the player should roll to see if the attack hits its target. If a Naval Fire Control Officer called down the attack, the To-Hit Number is 9. If the unit's Centurion called down the attack, the To-Hit Number is 6.

Shots that miss their targets are subject to scattering. Roll 1D10 to determine in which direction the round goes and consult the Scatter Diagram below. A die result of 1 – 6 means that the round lands in the appropriately marked adjacent hex. If the result is 7 – 10, the round will travel one additional hex, which calls for a second roll to determine direction. A second 7 – 10 die result means that the round is another hex off in range. The player must roll again to see where it lands. The round will detonate in the hex where it lands, and will affect all units as normal.



Most fire support from naval units comes from bays filled with scores of lasers. Their attack bathes the target area with coherent light, heating the surrounding air into a column of fire. The net effect is similar to that of a HELL munition, with the target hex and adjacent hexes affected equally.

Bay weapons automatically destroy dismounted infantry and vehicle crews, unshielded buildings and any people inside, minefields, trees, and unoccupied craters.

Damage to vehicles and shielded ground installations and buildings is resolved in the following manner. For each such unit (friendly or enemy) in the impact hex and each adjacent hex, consult the following table to see how many times it was hit. The **Centurion** damage from a single hit by any bay-class weapon is equal to the weapon's **Leviathan** damage times 10.

Multiply this number by the number of hits and apply the damage as per the HELL round rules, on all sides except for the bottom armor. The vehicle's shielding does not reduce damage in this case. There is no gravitic effect from a bay-weapon strike, and so moving vehicles do not need to ground as they would if caught in a HELL blast.

VEHICLE HIT TABLE

	Attacking Bay Size			
Die Roll	**10**	**25**	**50**	**100**
1	–	–	–	–
2	–	–	–	1
3	–	–	1	1
4	–	1	1	2
5	–	1	1	2
6	–	1	1	2
7	–	1	1	2
8	1	1	2	3
9	1	1	2	3
10	1	2	2	3

Roll once on this table for each unit (including grounded infantry) in the target area and then apply damage as described above.

Missile Barrages

Ships may also fire missiles in support of ground troops or against the location of a known target. Because of the devastating effect on the countryside, the authority to launch a missile barrage is normally not delegated to officers below flag or field rank. Even if a Century has a ship with missile capability providing fire support, that does not automatically give the player access to the ship's missiles. The assignment of a missile barrage is separate from the assignment of Naval Fire Support. Unless otherwise noted in the scenario, a player cannot use missiles for fire support. Note that fighters' HELL Missiles cannot be used in this manner.

When allowed, missile attacks are called for in the same manner as artillery and Naval Fire Support. A missile barrage called by a Naval Fire Control Officer lands two turns later during the Artillery Resolution Segment and hits the target hex on a roll of 9 or less. A missile barrage called for by a Centurion lands three turns later during the Artillery Resolution Segment with a To-Hit Number of 6. A missile barrage that misses follows the normal scatter procedure.

A missile barrage affects multiple hexes according to the strength of the attack. Find the normal Missile Damage and compare it to the chart below. Centurion units that are in the impact hex and those within the Destroyed Radius are immediately eliminated. Units within the 100-Point Radius sustain damage as though a HELL round had detonated. Units in the Gravitic-Effect Radius are treated as though they were one hex away from the explosion of a standard artillery HELL round.

The effects on trees, buildings, and craters are the same as described in the Artillery HELL Round rules.

MISSILE BARRAGE DAMAGE TABLE

Missile Damage	Destroyed Radius	100–Point Radius	Gravitic-Effect Radius
10-50	3	4-6	7-8
60-100	6	7-8	9-10
110-140	9	10-12	13-15
150+	12	13-18	19-24

If any portion of a **Leviathan** installation is within the Destroyed Radius, resolve the attack with normal **Leviathan** missile rules.

The strength of a missile barrage can be reduced in a manner similar to the way it is reduced in **Leviathan**. At the start of the scenario, each side should have an Air Defense Value assigned to its area on the map. Use this number in the same manner as a capital ship's Turret Factor to reduce the effects of a missle attack. The Air Defense Value is an abstraction of the fixed and mobile air defense assets protecting a Century. Each Air Defense Century or Centurion installation that can cover the area adds 1 to the Air Defense Value. An installation's Turret Factor also is added to the Air Defense Value.

As in **Leviathan**, the strength of the missile barrage is reduced by 10 points for each point of Air Defense Value.

Return Fire

Most of the equipment described in **Interceptor** and **Centurion** whose main function is air or space defense is not effective against shielded capital ships. The pieces of equipment can combat fighters of any variety and most patrol class ships, and they can be used as described in **Centurion**.

In **Leviathan** terms, each Centurion Air Defense Century has a fighter missile rating of 25. A Rocket Century can launch one Type A missile attack. Air Defense Centuries and the Rocket Century have normal **Leviathan** Installation firing arcs.

FULL LEVIATHAN/CENTURION INTEGRATION

The rules above assume that the players are playing either **Leviathan** or **Centurion** primarily and are using the other game system to add color to the primary game. Players can fully integrate **Leviathan** with an ongoing **Centurion** game if they wish to do so.

Players should set up both the **Leviathan** and **Centurion** maps and designate which **Leviathan** ground hex represents the location of the **Centurion** map sheet. Defensive installations and mobile air defense assets should be set up on the ground hexes of the **Leviathan** map. Normally, the location of a fixed installation is known while mobile air defense units start the game hidden.

The terrain type of each ground hex should also be noted. There are four major ground types: Mountainous/Urban, Wooded, Open, and Water. These terrain types affect spotting of ground targets by **Leviathan** units.

The following turn sequence should be used:

Leviathan Initiative Phase
Leviathan Movement Phase
Spotting Phase
Five Centurion Game Turns
Leviathan Combat Phase

Note that five **Centurion** turns are used for every **Leviathan** turn.

The Spotting Phase is a new phase that reflects the capital ship's ability to locate hidden or mobile ground targets without the help of friendly ground units. The search system below assumes that the ships making the search are normal warships, not specialized recon ships. It also assumes that ground units have taken normal camouflage and emission-suppression measures to hide themselves from space observation.

Any ship can attempt spotting, but fighters cannot do so from the interface or space. Each ship can search one hex in its firing arc for a ground target. The player announces which hex he is searching and makes two percentage rolls, one for mobile units and one for hidden installations. (Roll 2D10, designating one of the dice as the tens digit and one die as the ones. Read the result as a two-digit number. For example, a 3 on the tens die and 7 on the ones die is a 37.) The other player must calculate the Target Number for each unit in the hex. The Base Target Number is 50, and it is modified by the table below. If the roll is equal to or less

than the Target Number, the player should reveal all of his units in the hex. Spotted units can be attacked, using the **Leviathan** ground attack rules, in the Leviathan Combat Phase of the following turn. Any unit on the **Centurion** mapsheet is considered spotted. Attacks against these units are handled per the Naval Fire Support rules.

SPOTTING MODIFIERS TABLE

Mobile Units	
Grounded Unit	–49
Operating at Normal Flight	–45
Operating at Tree-Top Flight	–40
Operating at Low-Altitude Flight	+40
Each Additional Century in Hex	+5
Mountainous/Urban	–20
Wooded	–10
Open	0
Water	+20
Installations	
Mountainous/Urban	–49
Wooded	–40
Open	0
Water	+10
More Than One Installation in Hex	+20
Searcher Location	
Atmosphere	0
Interface	–20
Space	–30

If the Modified Target Number is less than 01, it is impossible for the ship to detect the unit on the ground.

During the Spotting Phase and after all searches, the player should declare which units are attacking the ground forces. Resolve the attacks during the **Leviathan** Combat Phase. Ships attacking units on the **Centurion** mapsheet are designated as Naval Fire Support units, and their fire can be called in during the **Centurion** game turns. These ships cannot fire any bay weapons or missile weapons during the remainder of the **Leviathan** turn, but they may fire turret weapons normally.

Naval Fire Support missions are resolved as normal, but each ship can fire only once during the **Leviathan** turn. The Base To-

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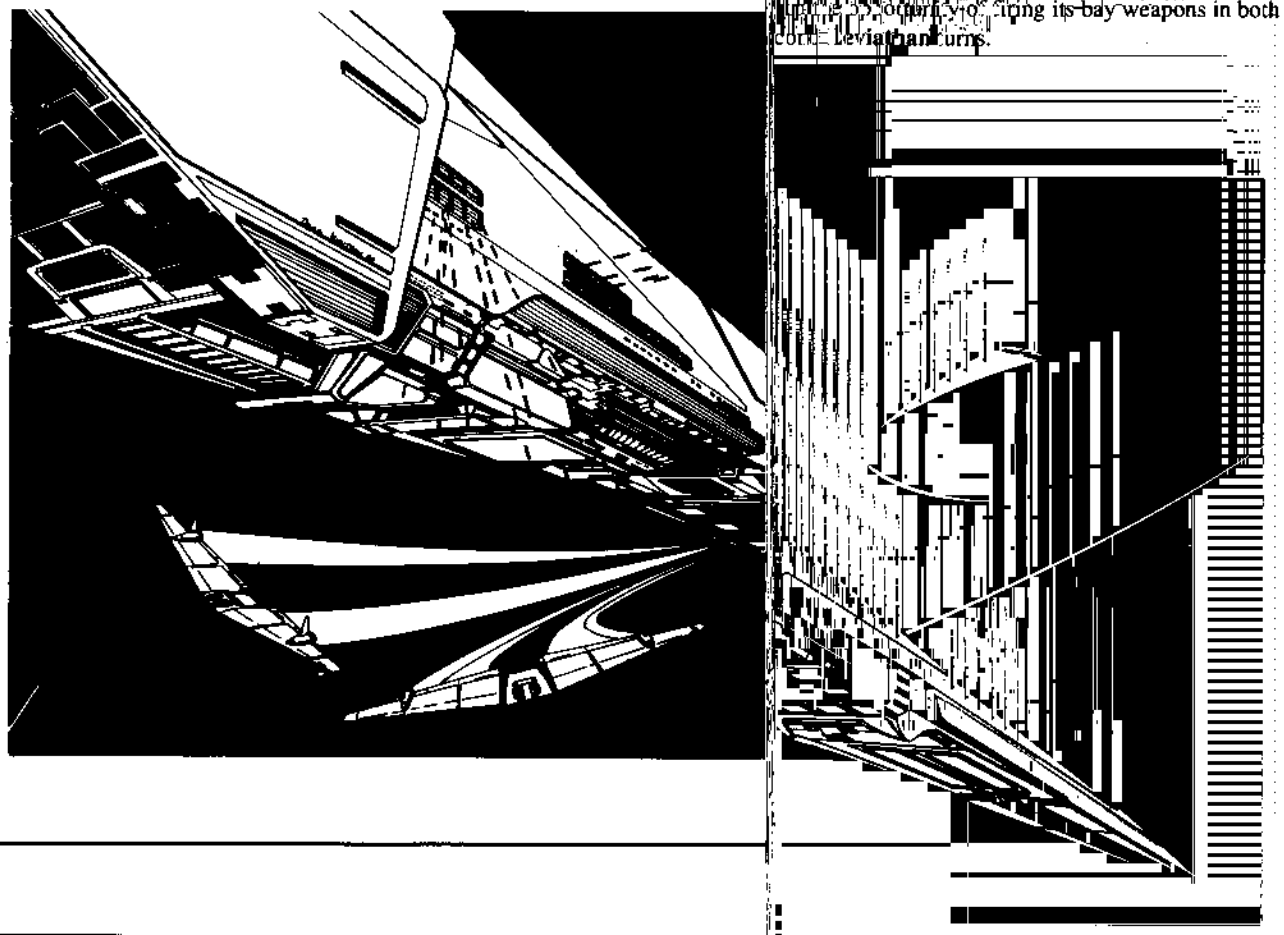
is modified by +2 if the firing ship is in the interface
ring ship is in space.
ng Naval Fire Support must have the target hex
In order to attack the hex. Because of the time lag
ave fire, a ship might have to stay in the firing arc
Leviathan turns. For example, a destroyer in the
receives a Naval Fire Support order during the
se of the first **Leviathan** turn. During the fifth
n, the Naval Fire Control Officer requests a fire
ion. The mission will be fired during the second
ing the destroyer to stay in the firing arc
n turn, forcing its bay weapons in both
Leviathan turns.



SHIP CONSTRVCTION

Leviathan ships are monstrous affairs. They can range in length from the patrol class ships found in **Interceptor** to battleships that can be kilometers long. The limits imposed on each class are based on mass and power requirements. Movement characteristics are not tied directly to mass/power relationships but vary with the class of the ship. Limits spring from the space requirements of various pieces of equipment. The total weapons load is based on the power required to fire the weapons, as well as the structural requirements for bays and spinal mounts. Thus, choices made during construction will determine a ship's final dimensions, mass, and performance.

The procedure for creating a Leviathan is as follows:

1. Choose Ship Class
2. Choose Power Rating
3. Choose Engines
4. Choose Armor
5. Choose Weapons
6. Add Controls
7. Add Cargo Space
8. Add Fighter and Small Craft Facilities
9. Add FTL Drives
10. Calculate Crew Requirements
11. Add Life-Support Facilities
12. Add Acceleration Compensator
13. Add Anti-Grav Drives
14. Add Streamlining
15. Check Ship Limitations
16. Fill Out Ship Record Sheet

SHIP CLASS

Choosing a ship class is simply a matter of deciding how big to make the ship. The construction parameters for fighters and Patrol Class Ships (gunboats, corvettes, and escorts) can be found in **Interceptor**. Larger ships use the system below. A ship falls into one of the following ranges.

POWER RATING TABLE

Ship Class	Power Rating Range
Fighters	0–2,500*
Gunboats	2,501–7,500*
Corvettes	7,501–15,000*
Escorts	15,001–30,000*
Destroyers	30,001–50,000
Frigates	50,001–75,000
Cruisers	75,001–100,000
Battleships	100,000+

Carriers can fall into any class, and their placement depends entirely on their chosen size.

* Design according to **Interceptor** rules.

As an example, we will be designing a TOG battleship, the Shiva *Class, described elsewhere.*

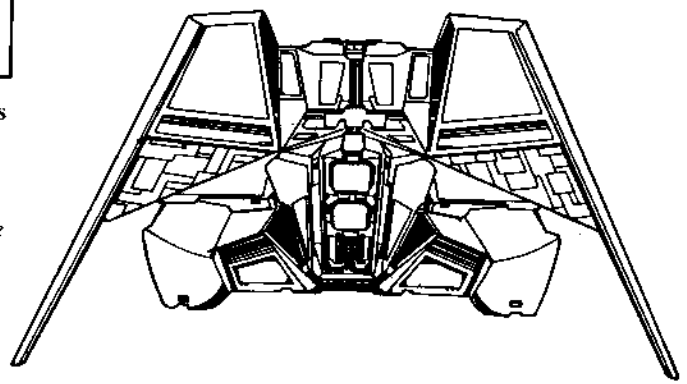
POWER RATING

Once the class has been determined, the player chooses the exact power rating for his ship. Many designs are possible within each ship class. Cost factors and other considerations sometimes make a lower power rating more attractive or necessary.

For the Shiva, *we choose a power rating of 150,000.*

ENGINES

The next step is to pick the combination of engines that generates the chosen amount of power. The Engine Table lists engines with power-generation capabilities from 10,000 to 56,000.



ENGINE TABLE

Power Rating	Mass	Cost
10,000	517	10,000,000
11,000	533	14,840,000
12,000	556	21,520,000
13,000	586	30,280,000
14,000	624	41,360,000
15,000	671	55,000,000
16,000	731	71,440,000
17,000	805	90,920,000
18,000	898	113,680,000
19,000	1,014	139,960,000
20,000	1,161	170,000,000
21,000	1,348	204,040,000
22,000	1,589	242,320,000
23,000	1,902	285,080,000
24,000	2,316	332,560,000
25,000	2,870	385,000,000
26,000	3,217	429,120,000
27,000	3,625	476,560,000
28,000	4,104	527,440,000
29,000	4,671	581,880,000
30,000	5,346	640,000,000
31,000	6,152	701,920,000
32,000	7,121	767,760,000
33,000	8,293	837,640,000
34,000	9,718	911,680,000
35,000	11,463	990,000,000
36,000	13,612	1,072,720,000
37,000	16,277	1,159,960,000
38,000	19,607	1,251,840,000
39,000	23,797	1,348,480,000
40,000	29,110	1,450,000,000
41,000	35,902	1,556,520,000
42,000	44,658	1,668,160,000
43,000	56,044	1,785,040,000
44,000	70,986	1,907,280,000
45,000	90,781	2,035,000,000
46,000	117,267	2,168,320,000
47,000	153,073	2,307,360,000
48,000	202,004	2,452,240,000
49,000	269,631	2,603,080,000
50,000	364,200	2,760,000,000
51,000	498,083	2,923,120,000
52,000	690,071	3,092,560,000
53,000	969,103	3,268,440,000
54,000	1,380,369	3,450,880,000
55,000	1,995,496	3,640,000,000
56,000	2,929,757	3,835,920,000

It should be noted that the larger the engine, the more it costs, the more it weighs, and the less efficient it is. For this reason, the most effective designs use multiple engines. The cost in mass and money of the required linkage controls is usually far less than the savings of using two or three smaller engines in combination rather than a single large engine. The use of multiple engines is also the only way to power the really big ships.

Calculate the cost of linkage controls by using the formulas below:

Double Links (those needed to link two engines together)

Mass: 1 percent of the total engine weight

Cost: 200,000 talents plus 1,000 per ton of mass of the controls

Triple Links (those needed to link three engines together)

Mass: 3 percent of the total engine weight

Cost: 300,000 talents plus 1,000 per ton of mass of the controls

For the Shiva, *we choose three 50,000-rated engines. Each engine has a cost of 2.76 billion talents and a mass of 364,200 tons. The Triple Links cost 33.078 million talents and weigh 32,778 tons.*

Running totals: Mass: 1,125,378 tons; Cost: 6,313,078,000 talents.

ARMOR

The larger the ship, the more armor it can carry. Because the largest ships are so huge, the amount of protection is less for the same amount of armor on smaller ships. The following table shows maximum armor protection and the mass required for each class of ship.

ARMOR TABLE

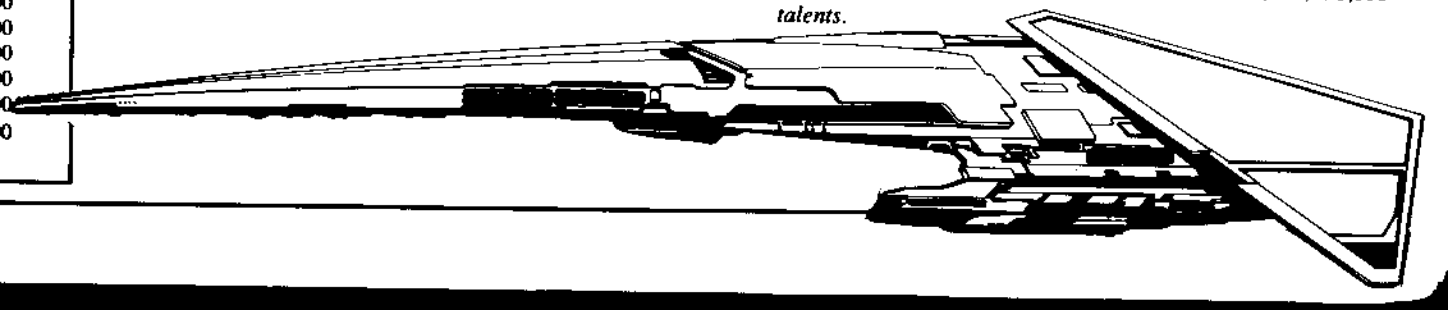
Class	Maximum AP Per Side of Ship	Mass Per AP
Fighter	*	10
Gunboat	10	1
Corvette	20	1
Escort	30	2
Destroyer	50	10
Frigate	80	20
Cruiser	100	40
Battleship	200	80

Carriers have armor limits based on their class. The numbers in the Armor Table tell how many armor boxes each class of ship may have on each of its six sides. The last column tells the mass of each box of armor. All armor costs 50 talents per ton. Armor accounts for a small percentage of a capital ship's total mass, and therefore it is unusual for such a ship to carry less than the maximum amount allowed for its class.

*Armor is calculated per the **Interceptor** rules, but one **Leviathan** armor box is roughly equal to 100 **Interceptor/Centurion** armor boxes.

The Shiva *carries the maximum allowed. Each side of the ship has 200 armor boxes, with each box representing 80 tons and costing 4,000 talents. This makes the total armor mass 96,000 tons and cost 4,800,000 talents.*

Running totals: Mass: 1,221,378 tons; Cost: 8,317,878,000 talents.



WEAPONS

Capital ships mount a vast array of weapons. The main types of weapons are spinal mounts, bays (made up of large numbers of individual weapons), and turrets. No ship can carry more weapons than it has power to fire. This includes spinal mounts and bays. Turrets are fixed by the ship class. The weapons and other major components a ship may carry are limited by Bay Factors (size) and power requirements. The following list shows the limits by ship class.

Battleships have no limits on what types of weaponry they can carry. They may have 12 bays and may carry up to 144 fighters in any combination (720 maximum Bay Factors allocated to fighters).

Cruisers may carry 12 bays, with total Bay Factors of no more than 5,000. They may carry Type A, B, or C spinal mounts and up to 72 fighters in any configuration (up to 360 Bay Factors allocated to fighters).

Frigates may carry 8 bays (3,500 Bay Factors), Type A or B spinal mounts, and up to 48 fighters in any configuration (maximum 240 Bay Factors allocated to fighters).

Destroyers may carry 6 bays, with an individual size limit of 500 Bay Factors and a cumulative limit of 2,000 Bay Factors. They may carry a Type A spinal mount and up to 24 fighters in any configuration (maximum 120 Bay Factors allocated to fighters).

Escorts* may carry 4 bays with an individual size limit of 250 Bay Factors and a cumulative limit of 1,000 Bay Factors. They may carry a Type A spinal mount and up to 24 fighters in any configuration (maximum 120 Bay Factors allocated to fighters).

Corvettes* may not carry any laser larger than a 7.5/6 in a turret and may carry only two turrets. They may carry two bays with an individual size limit of 125 Bay Factors and a cumulative limit of 200 Bay Factors. They may not carry a spinal mount and may carry up to 6 fighters (maximum 30 Bay Factors allocated to fighters).

Gunboats* may not carry any laser larger than a 7.5/6 in a turret and may carry only two turrets. They may not carry any bays, a spinal mount, or fighters.

Fighters* may not carry any laser larger than a 7.5/6 and may carry only two turrets. They may not carry a bay or a spinal mount.

* May be constructed only with the **Interceptor** construction rules. The information for these classes is provided only for comparison purposes.

CLASS WEAPONS LIMITS

	Bay Factors				Maximum	Fighters
	Bays	Single	Total	Spinal Mount	Total	BF
Battleships	12	any	any	E	144	720
Cruisers	12	any	5,000	C	72	360
Frigates	8	any	3,500	B	48	240
Destroyers	6	500	2,000	A	24	120
Escorts	4	250	1,000	A	24	120
Corvettes	2	125	200	No	6	30
Gunboats	No	-	-	No	0	-
Fighters	No	-	-	No	-	-

Carriers are limited to 60 percent of the Bay Factors allocated to weapons for the chosen class.

Carriers have weapon restrictions based on their class size. On carriers of destroyer size or greater, one-third of the ship's power must be devoted to fighter operations and may not be spent on weapons or maneuver drives.

Fighter load limits are based on carrier class as follows:

Destroyer: 2 Groups, 720 Bay Factors.

Frigate: 1 Wing, 1,800 Bay Factors.

Cruiser: 3 Wings, 5,400 Bay Factors. (This exceeds a cruiser's limit, and so a cruiser with more than 5,000 Bay Factors allocated to fighters could carry only turret weapons.)

Battleship: 5 Wings. (Rumors of larger carriers exist.)

Weapon loads are based on the power and the remaining Bay Factors. Carriers may not carry spinal mounts, and the bay size is limited to 50 guns.

Fighter facilities take up space and have their own structural requirements. Therefore, fighters on a carrier adds 5 Bay Factors.

SPINAL MOUNTS

Spinal Mounts are part of the structure of a ship and thus do not affect Bay Factor limits. Built into the keel of the ship, this mass accelerator is mostly shielded from damage. Covers block the opening of the accelerator when the weapon is not being fired. For a ship to carry a given spinal mount, the ship's total power divided by 3 must equal or exceed the power required to fire the spinal mount. This limits spinal mounts to the ship classes as listed.

The mass and cost of each type of spinal mount can be found on the table below. Battleships can carry any type of mount. Cruisers can carry A, B, or C spinal mounts. Frigates can carry A or B mounts. Destroyers and escorts can carry Type A spinal mounts, and smaller ships can carry none.

SPINAL MOUNTS

			Penetration at Range					
	Power	Tons	1	2–3	4–6	7–10	11–15	Cost
Type A	10,000	250,000	5	3				400,000,000
Type B	20,000	350,000	8	6	4			500,000,000
Type C	30,000	400,000	10	8	6	4		600,000,000
Type D	40,000	500,000	13	11	9	7		800,000,000
Type E	50,000	750,000	15	13	11	9	7	1,000,000,000

Damage is given in rows penetrated. Each strike is three columns wide.

BAYS

These structures house from 10 to 100 weapons of the same type. They all use the same fire-control system and all fire at the same target. Bays are very good at hitting slow targets. It is sometimes difficult for them to track quick targets or targets that can change direction easily, such as fighters. The size of a bay and the size of the weapons in the bay are limited by ship class. A gunboat 50 meters long cannot mount a bay with 100 lasers that are each 37.5 meters long and 30 centimeters in diameter. These limits are defined through the use of Bay Factors. This number has been calculated for each possible bay configuration and represents, in part, the physical size and structural requirements of the bay. Each ship class has specific limits on individual bay size and the total number of bays housed. No ship class can exceed its Bay Factor limits as shown on the Class Weapons Limits table. The Bay Factors a ship carries also help determine the ship's final dimensions. The Bay Weapons Table shows the Bay Factors for each configuration and the damage done at each range.

BAY WEAPONS TABLE
(10 WEAPONS)

Range	Power	Tons	1	2–3	4–6	7–10	11–15	16–20	Bay Factor	Cost
37.5/30	3,000	30,000	3	3	2	2	2	2	158	73,125,000
37.5/25	2,200	22,000	3	2	2	2	2	1	139	60,937,500
37.5/20	1,600	16,000	2	2	2	2	1	1	125	48,750,000
37.5/15	1,100	11,000	2	2	2	1	1	1	110	36,562,500
37.5/10	700	7,000	2	2	1	1	1	1	95	24,375,000
37.5/5	400	4,000	2	1	1	1	1	0	79	12,187,500
30/30	2,650	18,550	3	2	2	2	2	0	117	58,500,000
30/25	1,950	13,650	2	2	2	2	1	0	103	48,750,000
30/20	1,400	9,800	2	2	2	1	1	0	93	39,000,000
30/15	950	6,650	2	2	1	1	1	0	81	29,250,000
30/10	600	4,200	2	1	1	1	1	0	70	19,500,000
30/5	350	2,450	1	1	1	1	0	0	59	9,750,000
22.5/30	2,200	8,800	2	2	2	2	0	0	81	46,875,000
22.5/25	1,600	6,400	2	2	2	1	0	0	72	36,562,500
22.5/20	1,150	4,600	2	2	1	1	0	0	64	29,250,000
22.5/15	800	3,200	2	1	1	1	0	0	56	21,937,500
22.5/10	500	2,000	1	1	1	1	0	0	49	14,625,000
22.5/5	300	1,200	1	1	1	0	0	0	41	7,312,500
15/30	1,900	3,800	2	2	2	0	0	0	50	29,250,000
15/25	1,400	2,800	2	2	1	0	0	0	44	24,375,000
15/20	1,000	2,000	2	1	1	0	0	0	39	19,500,000
15/15	700	1,400	1	1	1	0	0	0	34	14,625,000
15/10	450	900	1	1	1	0	0	0	30	9,750,000
15/5	250	500	1	1	0	0	0	0	25	4,875,000
7.5/30	1,500	1,500	2	2	0	0	0	0	23	14,625,000
7.5/25	1,100	1,100	2	1	0	0	0	0	20	12,187,500
7.5/20	800	800	1	1	0	0	0	0	18	9,750,000
7.5/15	550	550	1	1	0	0	0	0	16	7,312,500
7.5/10	350	350	1	1	0	0	0	0	14	4,875,000
7.5/6	230	230	1	0	0	0	0	0	12	2,760,000

BAY WEAPONS TABLE (25 WEAPONS)

Range	Power	Tons	1	2–3	4–6	7–10	11–15	16–20	Bay Factor	Cost
37.5/30	7,500	75,000	7	6	6	5	4	4	394	182,812,500
37.5/25	5,500	55,000	6	6	5	4	4	3	348	152,343,750
37.5/20	4,000	40,000	6	5	4	4	3	3	312	121,875,000
37.5/15	2,750	27,500	5	4	4	3	3	2	274	91,406,250
37.5/10	1,750	17,500	4	4	3	3	2	1	236	60,937,500
37.5/5	1,000	10,000	4	3	3	2	1	1	197	30,468,750
30/30	6,625	46,375	6	6	5	4	4	0	293	146,250,000
30/25	4,875	34,125	6	5	4	4	3	0	258	121,875,000
30/20	3,500	24,500	5	4	4	3	3	0	232	97,500,000
30/15	2,375	16,625	4	4	3	3	2	0	203	73,125,000
30/10	1,500	10,500	4	3	3	2	1	0	176	48,750,000
30/5	875	6,125	3	3	2	1	1	0	146	24,375,000
22.5/30	5,500	22,000	6	5	4	4	0	0	203	117,187,500
22.5/25	4,000	16,000	5	4	4	3	0	0	179	91,406,250
22.5/20	2,875	11,500	4	4	3	3	0	0	161	73,125,000
22.5/15	2,000	8,000	4	3	3	2	0	0	141	54,843,750
22.5/10	1,250	5,000	3	3	2	1	0	0	122	36,562,500
22.5/5	750	3,000	3	2	1	1	0	0	101	18,281,250
15/30	4,750	9,500	5	4	4	0	0	0	124	73,125,000
15/25	3,500	7,000	4	4	3	0	0	0	109	60,937,500
15/20	2,500	5,000	4	3	3	0	0	0	98	48,750,000
15/15	1,750	3,500	3	3	2	0	0	0	86	36,562,500
15/10	1,125	2,250	3	2	1	0	0	0	74	24,375,000
15/5	625	1,250	2	1	1	0	0	0	62	12,187,500
7.5/30	3,750	3,750	4	4	0	0	0	0	56	36,562,500
7.5/25	2,750	2,750	4	3	0	0	0	0	50	30,468,750
7.5/20	2,000	2,000	3	3	0	0	0	0	45	24,375,000
7.5/15	1,375	1,375	3	2	0	0	0	0	39	18,281,250
7.5/10	875	875	2	1	0	0	0	0	34	12,187,500
7.5/6	575	575	1	1	0	0	0	0	29	6,900,000

BAY WEAPONS TABLE (50 WEAPONS)

Range	Power	Tons	1	2–3	4–6	7–10	11–15	16–20	Bay Factor	Cost
37.5/30	15,000	150,000	14	13	11	10	9	8	788	365,625,000
37.5/25	11,000	110,000	13	11	10	9	8	6	696	304,687,500
37.5/20	8,000	80,000	11	10	9	8	6	5	625	243,750,000
37.5/15	5,500	55,000	10	9	8	6	5	4	547	182,812,500
37.5/10	3,500	35,000	9	8	6	5	4	3	473	121,875,000
37.5/5	2,000	20,000	8	6	5	4	3	1	394	60,937,500
30/30	13,250	92,750	13	11	10	9	8	0	585	292,500,000
30/25	9,750	68,250	11	10	9	8	6	0	517	243,750,000
30/20	7,000	49,000	10	9	8	6	5	0	464	195,000,000
30/15	4,750	33,250	9	8	6	5	4	0	407	146,250,000
30/10	3,000	21,000	8	6	5	4	3	0	351	97,500,000
30/5	1,750	12,250	6	5	4	3	1	0	293	48,750,000
22.5/30	11,000	44,000	11	10	9	8	0	0	405	234,375,000
22.5/25	8,000	32,000	10	9	8	6	0	0	358	182,812,500
22.5/20	5,750	23,000	9	8	6	5	0	0	321	146,250,000
22.5/15	4,000	16,000	8	6	5	4	0	0	282	109,687,500
22.5/10	2,500	10,000	6	5	4	3	0	0	243	73,125,000
22.5/5	1,500	6,000	5	4	3	1	0	0	203	36,562,500
15/30	9,500	19,000	10	9	8	0	0	0	248	146,250,000
15/25	7,000	14,000	9	8	6	0	0	0	219	121,875,000
15/20	5,000	10,000	8	6	5	0	0	0	196	97,500,000
15/15	3,500	7,000	6	5	4	0	0	0	172	73,125,000
15/10	2,250	4,500	5	4	3	0	0	0	149	48,750,000
15/5	1,250	2,500	4	3	1	0	0	0	124	24,375,000
7.5/30	7,500	7,500	9	8	0	0	0	0	113	73,125,000
7.5/25	5,500	5,500	8	6	0	0	0	0	99	60,937,500
7.5/20	4,000	4,000	6	5	0	0	0	0	89	48,750,000
7.5/15	2,750	2,750	5	4	0	0	0	0	78	36,562,500
7.5/10	1,750	1,750	4	3	0	0	0	0	68	24,375,000
7.5/6	1,150	1,150	3	2	0	0	0	0	59	13,800,000

BAY WEAPONS TABLE
(100 WEAPONS)

Range	Power	Tons	1	2–3	4–6	7–10	11–15	16–20	Bay Factor	Cost
37.5/30	30,000	300,000	28	25	23	20	18	15	1,575	731,250,000
37.5/25	22,000	220,000	25	23	20	18	15	13	1,391	609,375,000
37.5/20	16,000	160,000	23	20	18	15	13	10	1,250	487,500,000
37.5/15	11,000	110,000	20	18	15	13	10	9	1,095	365,625,000
37.5/10	7,000	70,000	18	15	13	10	8	5	945	243,750,000
37.5/5	4,000	40,000	15	13	10	8	5	4	788	121,875,000
30/30	26,500	185,500	25	23	20	18	15	0	1,170	585,000,000
30/25	19,500	136,500	23	20	18	15	13	0	1,034	487,500,000
30/20	14,000	98,000	20	18	15	13	10	0	928	390,000,000
30/15	9,500	66,500	18	15	13	10	8	0	813	292,500,000
30/10	6,000	42,000	15	13	10	8	5	0	702	195,000,000
30/5	3,500	24,500	13	10	8	5	3	0	585	97,500,000
22.5/30	22,000	88,000	23	20	18	15	0	0	810	468,750,000
22.5/25	16,000	64,000	20	18	15	13	0	0	716	365,625,000
22.5/20	11,500	46,000	18	15	13	10	0	0	643	292,500,000
22.5/15	8,000	32,000	15	13	10	8	0	0	563	219,375,000
22.5/10	5,000	20,000	13	10	8	5	0	0	486	146,250,000
22.5/5	3,000	12,000	10	8	5	3	0	0	405	73,125,000
15/30	19,000	38,000	20	18	15	0	0	0	495	292,500,000
15/25	14,000	28,000	18	15	13	0	0	0	437	243,750,000
15/20	10,000	20,000	15	13	10	0	0	0	393	195,000,000
15/15	7,000	14,000	13	10	8	0	0	0	344	146,250,000
15/10	4,500	9,000	10	8	5	0	0	0	297	97,500,000
15/5	2,500	5,000	8	5	3	0	0	0	248	48,750,000
7.5/30	15,000	15,000	18	15	0	0	0	0	225	146,250,000
7.5/25	11,000	11,000	15	13	0	0	0	0	200	121,875,000
7.5/20	8,000	8,000	13	10	0	0	0	0	179	97,500,000
7.5/15	5,500	5,500	10	8	0	0	0	0	156	73,125,000
7.5/10	3,500	3,500	8	5	0	0	0	0	135	48,750,000
7.5/6	2,300	2,300	5	3	0	0	0	0	117	27,600,000

Bay Geometry

Frigates and larger vessels can mount two bays that fire forward and two that fire aft. The Bay Factor of these bays can be no larger than the smallest bay that fires from the sides. These classes may mount two bays on each side, forward or aft sections of the ship. This means that each side of the ship may house four bays, and each end of the ship may mount two bays.

A destroyer can carry one bay on each end and two on each side. The Bay Factor of the end bays can be no larger than the side bays. Escorts can carry two bays on each side but none on the ends. Corvettes may mount one bay on each side.

The cost of the bay is as listed. The mass of the bay equals mass of the lasers plus 10 percent.

MISSILES

Most capital ships can carry and launch missiles. These weapons are several times the size of missiles carried by fighters and do correspondingly more damage. These weapons can penetrate a Leviathan's shields, something fighters' missiles could never do.

These missiles weigh many tons. Most ships can launch one swarm of such missiles per turn. Each ship may carry only one missile system, each of which has its own tonnage, cost, and Bay Factors, as shown on the Missile Table.

MISSILE TABLE

Type	Range	Damage	Shots	Tonnage	BF	Cost
Missile A	8	50	2	2,000	300	100,000,000
Missile B	10	50	1	1,500	200	50,000,000
Missile C	10	100	1	3,000	400	100,000,000
Missile D	15	100	3	10,000	1,000	300,000,000
Missile E	15	150	3	15,000	1,500	450,000,000
Missile F	10	100	2	7,000	800	200,000,000
Missile G	10	50	3	6,000	600	150,000,000

TURRETS

Turrets are used mainly against fighters and missiles. Each ship class mounts bristling arrays of turrets, all represented by a Turret Factor for each side of the ship. The strength of an individual ship's Turret Factors is simply based on the turret density it can mount. This has been averaged out, so that the value for each ship within a single class is the same and can be found in the Turret Factor Table. The Turret Factor is the total damage that the turrets on one side of the ship can do in one turn.

Smaller ships mounting weapons with a diameter larger than 6 may mount only one weapon in the turret instead of the five normally allowed.

TURRET FACTOR TABLE

Class	Range 0	Range 1	Range 2	Range 3	Mass	Cost
Battleship	6	6	5	4	50,000	100,000,000
Cruiser	5	5	4	3	40,000	80,000,000
Frigate	4	4	3	2	30,000	60,000,000
Destroyer	3	3	2	1	20,000	40,000,000

In our example, the Shiva *mounts the following weaponry:*

Type E Spinal Mount	*750,000 tons*	*1,000,000,000 talents*	
25 gun 37.5/25 laser bay	*60,500 tons*	*152,343,750 talents*	*348 Bay Factors*
25 gun 37.5/25 laser bay	*60,500 tons*	*152,343,750 talents*	*348 Bay Factors*
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25 gun 37.5/25 laser bay	*60,500 tons*	*152,343,750 talents*	*348 Bay Factors*
100 gun 37.5/20 laser bay	*176,000 tons*	*487,500,000 talents*	*1,250 Bay Factors*
100 gun 37.5/20 laser bay	*176,000 tons*	*487,500,000 talents*	*1,250 Bay Factors*
100 gun 37.5/20 laser bay	*176,000 tons*	*487,500,000 talents*	*1,250 Bay Factors*
100 gun 37.5/20 laser bay	*176,000 tons*	*487,500,000 talents*	*1,250 Bay Factors*
50 gun 22.5/5 laser bay	*6,600 tons*	*36,562,500 talents*	*203 Bay Factors*
50 gun 22.5/5 laser bay	*6,600 tons*	*36,562,500 talents*	*203 Bay Factors*
Type E Missile System	*15,000 tons*	*450,000,000 talents*	*1,500 Bay Factors*
Battleship Class Turret System	*50,000 tons*	*100,000,000 talents*	

Weapon System totals: Mass: 1,895,200 tons; Cost: 4,487,187,500 talents; 8,994 Bay Factors.

Running totals: Mass: 3,116,578 tons; Cost:12,805,065,500 talents; 8,994 Bay Factors.

SHIELDS

Shields are a vital part of the defenses of any ship. With their massive power generation, capital ships can achieve awesome shield flicker rates. Even battleships cannot maintain these extreme levels and still maneuver and fire their weapons.

Calculate the mass of the variable shield generators as follows: Shield Mass = (Ship's Power Rating + (Total Mass of Engines, Armor, and Weapon Systems)/6)/100

This is for one side of the ship. Each ship has six sides and must mount a generator for each side. The cost for each generator is 25,000 times the mass, with a minimum price of 100,000 talents each.

For ease of play, shield flicker rates are fixed and must be determined at this time. Each ship class gets a set number of shield factors, which must be divided up among the six sides of the ship. No single side may have a rate greater than 5. Once set, these values may not be changed during the course of the game.

SHIELD POINT TABLE

Class	Shield Factors
Battleship	24
Cruiser	20
Frigate	16
Destroyer	12
Escort*	8
Corvette*	4
Gunboat*	0
Fighter*	0

*Included for comparison purposes only.

In our example, the mass equation for one of the Shiva's shield generators would be as follows:

(150,000 + (3,116,578)/6)/100 = 6,694 tons

In this calculation, 150,000 is the power rating of the ship, and 3,116,578 is the mass of the ship so far, including engines, armor, weapon systems, and linkage controls.

Thus, the mass of one shield generator is 6,694 tons, and the cost is 167,350,000 talents (25,000 x 6,694). The totals for all six shield generators required by the ship would be 40,164 tons and 1,004,100,000 talents.

Running totals: Mass: 3,156,742 tons; Cost: 13,809,165,500 talents.

CONTROLS

Each ship needs a massive amount of controls and other ancillary equipment to make sure that each component does its job. The mass of the required controls is 10 percent of the total engines, armor, weapons, and shield generators mounted on the ship. The cost is 10,000 per ton of controls.

The controls of the Shiva *weigh 315,674 tons and cost 3,156,742,000 talents.*

Running totals: Mass: 3,472,416 tons; Cost: 16,965,907,500 talents.

EXTRAS

Most large ships carry extra or special equipment, with varying mass and cost. A few examples of common equipment are listed below.

CARGO SPACE

Mass: 1.1 times the amount of cargo to be carried.

Cost: 1,000 talents per ton of mass.

FIGHTER BAYS

Mass: Five times the mass of the heaviest fighter carried times the total number of fighters. This number includes launching facilities (1 for every 6 fighters), recovery facilities (1 for every 12 fighters), and storage and repair facilities. Additional launch and recovery facilities can be purchased at the rate of an additional 5 times the mass of the heaviest fighter carried for each launch facility or recovery facility. The number of launchers or recovery stations determines how many fighters may be processed in one turn. Note that this process fixes the tonnage of the largest fighter that the ship can ever carry. Most designs use the fighter weight of 300 tons for their facility calculations. This allows the largest deployed fighter to use the facilities and leaves room for even larger designs.

Bay Factors: 30 BF per squadron carried.

Cost: 1,000 talents per ton of facility.

SMALL SHIP BAYS

Mass: As per fighter bays

Bay Factors: 30 BF for each group of 6, or fraction thereof.

Cost: As fighter bays.

Note that these costs do not include the cost of the fighters and small craft themselves.

The extras carried on the Shiva *Class include 10,000 tons of cargo, a group of fighters, and twelve 1,000-ton small craft. The mass and cost of these facilities are as follows:*

Cargo: Mass: 11,000 tons; Cost: 11,000,000 talents.

Fighters: Mass: 108,000 tons; Cost: 108,000,000 talents, 360 Bay Factors.

Small Craft: Mass: 60,000 tons; Cost: 60,000,000 talents, 60 Bay Factors.

Running totals: Mass: 3,651,416 tons; Cost: 17,144,907,500 talents, 9,414 Bay Factors.

FTL DRIVES

The FTL drives move the ship through T-space. Their mass equals 10 percent of the mass of the ship so far. The cost is 20,000 times the mass of the T-space drives.

The FTL drives of the Shiva *Class are large and expensive. The drives weigh 365,142 tons and cost 7,302,832,400 talents.*

Running totals: Mass: 4,016,558 tons; Cost: 24,447,739,900 talents.

CREW

Large ships usually have huge crews, often numbering in the thousands. Each section and component of the ship requires different staffing. They are listed below.

*Sub-Light Drive Engineer: 1 per 5,000 tons of engine
*FTL Drive Engineer: 1 per 5,000 tons of engine
*Spinal Mount: 1 per 10,000 tons of weapon
*Bays: 1 per 10 weapons in each bay
*Missile Technician: 1 per 500 tons of missile installation
*Turrets: 1 per 100 tons of turrets
*Bridge: 1 per 2,000 tons of Controls, Cargo, Fighters, Small Craft, and FTL Drives
**Fighter Crews: 3.5 per craft, round up
**Small Craft Crew: 5 per vessel
Passengers: As desired
Marines: As desired (the usual rate is 1 per 5 of other crew)

*There must be at least 10 crewmembers in each of these departments if the ship carries this equipment.

**Includes support crew as well as flight crew.

LIFE SUPPORT

Mass: 10 tons per crewmember.

Cost: 1,000 talents per ton.

The crew of any capital ship is large, but those of battleships are among the largest. The breakdown for the Shiva *Class is as follows:*

SLD Engineers	*218*
FTL Engineers	*73*
Spinal Mount Technicians	*75*
Bay Technicians	*1,080*
Missile Bay Technicians	*30*
Turret Technicians	*500*
Bridge Personnel	*429*
Fighter Crews	*252*
Small Craft Crews	*60*
Minimums	*0*
Passengers	*200*
Marines	*500*

These figures include operating and maintenance personnel. The ship has more than 10 people in each department, and so no additional crew is required to meet the minimum staffing levels. The total mass of crew facilities is 34,170 tons, and the cost is 34,170,000 talents.

Running totals: Mass: 4,050,728 tons; Cost: 24,481,909,900 talents.

ACCELERATION COMPENSATOR

Mass: The ship's mass divided by 50 times the ship's normal thrust.

Cost: 10,000 per ton.

The Shiva*'s acceleration compensator weighs 162,029 tons (4,050,728/50x2) and costs 1,620,291,128 talents.*

Running totals: Mass: 4,212,757 tons; Cost: 26,102,201,028 talents.

ANTI-GRAV DRIVES

Used solely for planetary landings, these drives add 1 percent to the ship's mass. The cost is 1,000 talents per ton of drive.

STREAMLINING

Destroyers and smaller ships may be streamlined for atmospheric entry and flight. This modification adds 5 percent to the mass of the ship at a cost of 1,000 talents per ton.

The Shiva *Class, being a battleship, cannot make planetary landings or enter any atmosphere, and so it does not carry anti-grav drives and is not streamlined.*

CHECKING LIMITATIONS

Once the ship is designed, its limitations must be checked. The main factors to be checked are power usage and the limits imposed by the Bay Factors. Each ship class has strict limits imposed on each of these categories. To check the power, simply add up all of the power used by all of the weapons. This number must not exceed the Power Rating of the ship class. To check the Bay Factor limits, simply add together all bay weapons, including missiles, and any fighter or small-craft facilities. If this figure falls within the class limitation, the next check can be made. Smaller ship classes are limited in the size of the largest bay they may carry. These limitations must be double-checked at this time.

The Shiva *Class Battleship has only one real limitation, its power. Battleships are not limited in anything but power. To fire all its weapons, the* Shiva *must generate 150,000 power points, the exact output of its engines.*

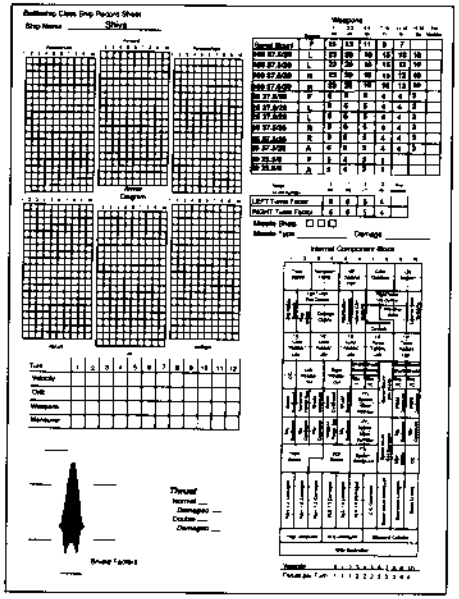
FILL OUT RECORD SHEET

The main thing to do when filling out the record sheet for a newly designed ship is to determine the Shield Factor settings and weapon placements. As each capital ship has six sides and only a limited number of Shield Factor points to allocate, a player should take care when making these assignments. Simply write in the number of points for each side, making sure that the total number of points does not exceed that allowed for the ship class.

Placing the weapons on the ship requires study of the bay geometry limitations. These rules limit the size of bays that may be placed in the forward and aft locations of the ship. The four possible weapon system locations and their normal abbreviations used in the Bearing column of the weapons section of the Record Sheet are as follows:

Forward	F	Right	R
Left	L	Aft	A

The Ship Record Sheet for the Shiva *would be completed as shown:*



OPTIONAL CONSTRUCTION RULES

A ship's thrust is defined by its class. Using the standard construction steps, this cannot change, but players willing to make the sacrifice can change this. A player may devote one-third of his power rating to increase his ship's thrust by one. This power cannot be used for any other purpose and is subtracted from the ship's original power rating before choosing the ship's weapons. Thus a battleship can be given a thrust of 3.

For example, if the designer decided to give the Shiva *Class battleship a thrust of 3 instead of the standard 2, he would have to devote 50,000 power points to that addition. This would mean that there would be only 100,000 power points left for the rest of the ship's functions, mainly the weapons mix. All other construction calculations are based on a Power Rating of 150,000.*

SCALE COMPARISONS

Both **Leviathan** and **Interceptor** are games of combat in space. **Interceptor** focuses on fighters and to a very limited extent, on patrol class ships. **Leviathan** deals with much larger ships and handles fighters in a more abstract manner. Direct translation between the two game systems is not quite possible because the original strict conversions were sacrificed to make **Leviathan** a more enjoyable game, but the following comparisons can be made:

	Leviathan	**Interceptor**
Hex Size	75 km	15 km
Turn Length	5 minutes	1 minute
Armor Comparison	1 box	100 boxes
Weapon Damage		
7.5/6 Laser at 1 Hex	.05	10
37.5/30 Laser at 1 Hex	.275	55
Weapon Range		
7.5/6 Laser	3	15
37.5/30 Laser	20	100

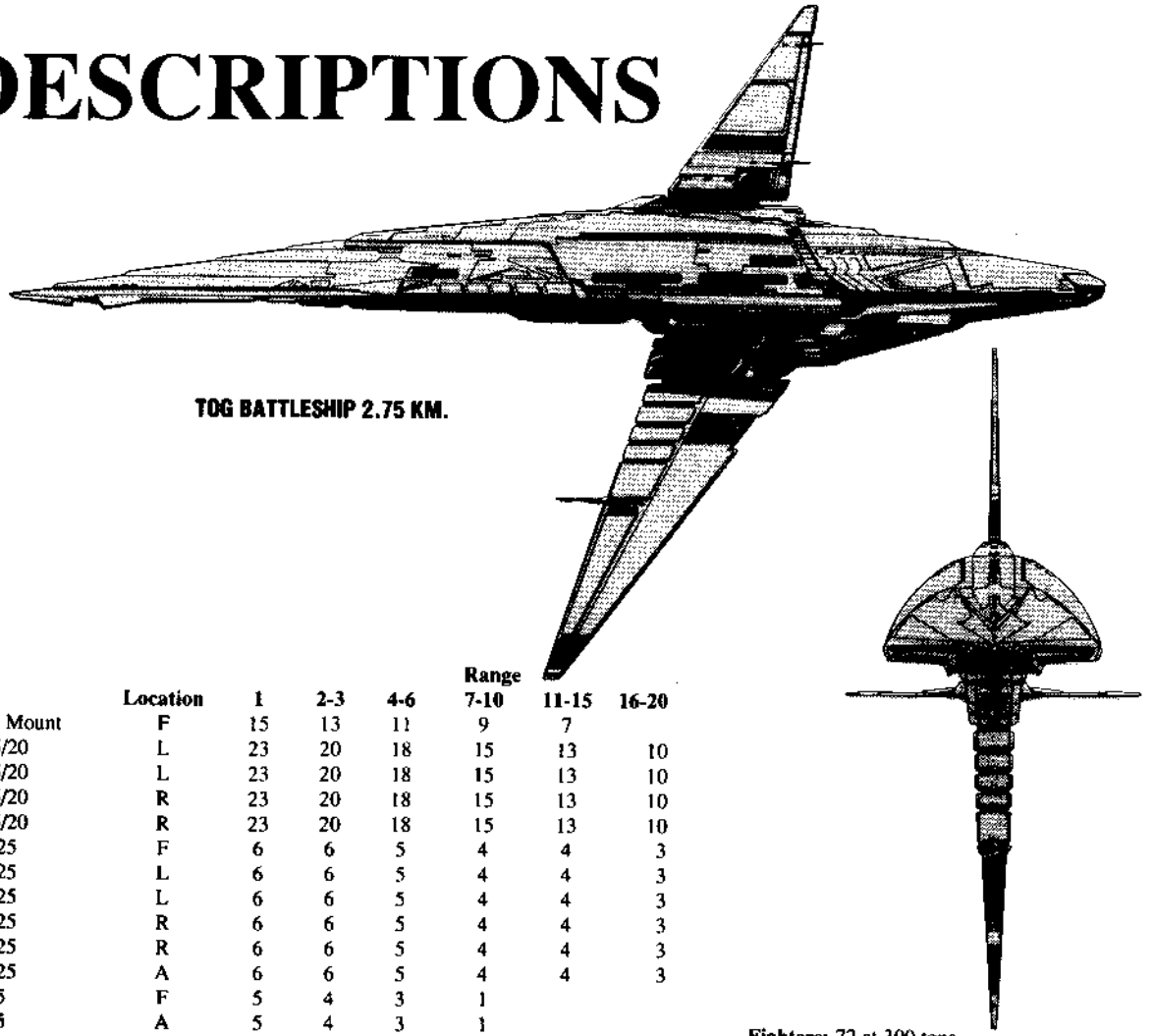
SHIP DESCRIPTIONS

TOG

SHIVA

The *Shiva* is a fine example of the efficient and powerful new designs to come out of TOG naval construction yards in recent years. A large battleship, it combines all of the standard weapon systems found on the most powerful ships in the fleet. Ship designers chose six 25-gun 37.5/25 bays mounted around the ship and 50-gun 22.5/5 bays providing fore and aft protection. The main broadside power comes from the four 100-gun 37.5/20 bays. This array of bays gives excellent broadside range and power but leaves the fore and aft areas relatively weak. The Class E spinal mount throws the largest crowbar in any navy and is a weapon to be truly feared. The Type E missile battery rounds out a massive offensive capability.

The *Shiva* was designed by the TOG Naval Planning Board and is being built at many yards throughout TOG. It is seen as a mainstay ship for many years to come.



TOG BATTLESHIP 2.75 KM.

Class: Battleship
Mass: 4,212,757 tons
Cost: 26,102,205,500 talents

Engines:		
	Right Engine Rating	50,000
	Left Engine Rating	50,000
	Center Engine Rating	50,000

Thrust: 2

Shields:		**Armor:**	
Forward	4	Forward	200
Left Forward	4	Left Forward	200
Left Aft	4	Left Aft	200
Right Forward	4	Right Forward	200
Right Aft	4	Right Aft	200
Aft	4	Aft	200

Weapons:

					Range		
Type	**Location**	**1**	**2-3**	**4-6**	**7-10**	**11-15**	**16-20**
E Spinal Mount	F	15	13	11	9	7	
100 37.5/20	L	23	20	18	15	13	10
100 37.5/20	L	23	20	18	15	13	10
100 37.5/20	R	23	20	18	15	13	10
100 37.5/20	R	23	20	18	15	13	10
25 37.5/25	F	6	6	5	4	4	3
25 37.5/25	L	6	6	5	4	4	3
25 37.5/25	L	6	6	5	4	4	3
25 37.5/25	R	6	6	5	4	4	3
25 37.5/25	R	6	6	5	4	4	3
25 37.5/25	A	6	6	5	4	4	3
50 22.5/5	F	5	4	3	1		
50 22.5/5	A	5	4	3	1		
		0	**1**	**2**	**3**		
Turrets	L	6	6	5	4		
	R	6	6	5	4		

Type E Missile System 3 shots at 150 points

Fighters: 72 at 300 tons
Small Craft: 12 at 1,000 tons
Cargo: 10,000 tons
Crew: 2,717
Passengers: 200
Marines: 500

SYRACUSE

The *Syracuse* was designed to mount the largest bay weapon system on the smallest hull and still have a viable ship. Deemed a failure by most critics, the two 100-gun 37.5/30 laser bays still command respect from any opponent. Though one of the smaller cruiser designs in the fleet, the *Syracuse* is usually in the main line of battle because of its firepower. When it moves in column, the ship's lack of fore and aft bays is not critical. When operating independently or in a small squadron, this omission is often crippling. With only a group of fighters and standard maneuverability, the *Syracuse* needs the protection of a large formation to be effective.

With the unpopularity of this design, TOG naval architects have returned to the "more shots the better" philosophy of ship design. *Syracuse* Class cruisers are found mostly in provincial units, built only by third and fourth rate worlds trying to meet their naval support quotas.

Class: Cruiser
Mass: 1,627,276 tons
Cost: 9,128,136,370 talents
Engines: Right Engine Rating 28,000
Left Engine Rating 28,000
Center Engine Rating 29,000
Thrust: 2

Shields:

Forward	4
Left Forward	3
Left Aft	3
Right Forward	3
Right Aft	3
Aft	4

Armor:

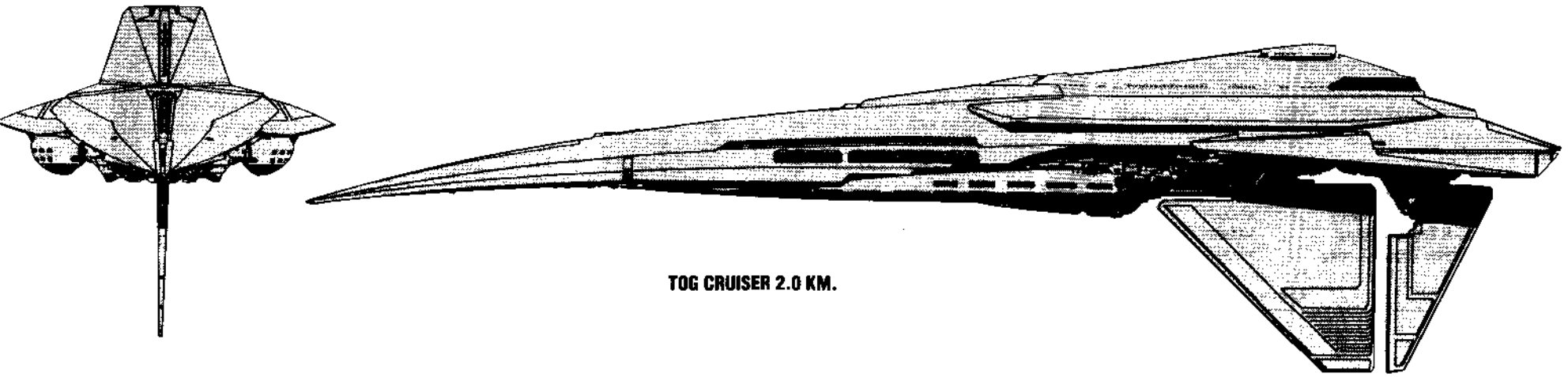
Forward	100
Left Forward	100
Left Aft	100
Right Forward	100
Right Aft	100
Aft	100

Weapons:

		Range					
Type	**Location**	**1**	**2-3**	**4-6**	**7-10**	**11-15**	**16-20**
B Spinal Mount	F	8	6	4			
100 37.5/30	L	28	25	23	20	18	15
100 37.5/30	R	28	25	23	20	18	15
50 22.5/10	L	6	5	4	3		
50 22.5/10	R	6	5	4	3		
		0	**1**	**2**	**3**		
Turrets	L	5	5	4	3		
	R	5	5	4	3		

Type G Missile System 3 shots at 50 points

Fighters: 72 at 300 tons
Small Craft: 8 at 1,000 tons
Cargo: 10,000 tons
Crew: 1,665
Passengers: 200
Marines: 200



TOG CRUISER 2.0 KM.

BANTHA

Named for the persistent hunter found on Naram worlds, the *Bantha* Class frigate is a respected and versatile design. With a well-rounded complement of weapons and capabilities, the ship can provide fleet support or perform independent missions. Best used as an anti-fighter platform, the *Bantha* has four 50-gun 15/30 laser bays that can deliver quite a punch at close range. As a very cost-effective design, *Banthas* enjoy wide deployment in all arms of the fleet. As a fairly inexpensive ship, the *Bantha* is built just about everywhere.

Class: Frigate
Mass: 966,620 tons
Cost: 5,883,678,300 talents

Engines:	Right Engine Rating	25,000
	Left Engine Rating	25,000
	Center Engine Rating	25,000

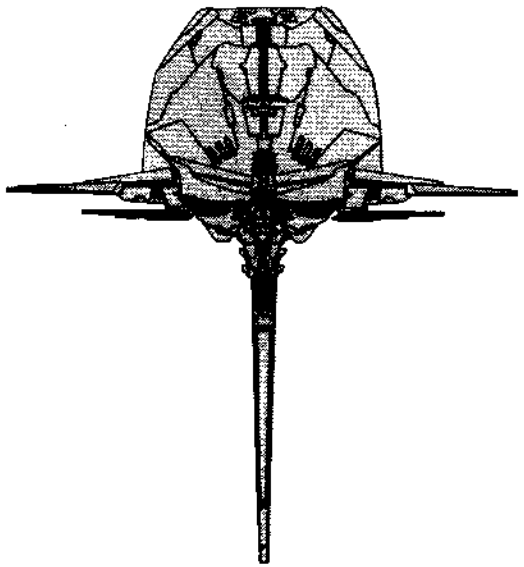
Thrust: 3

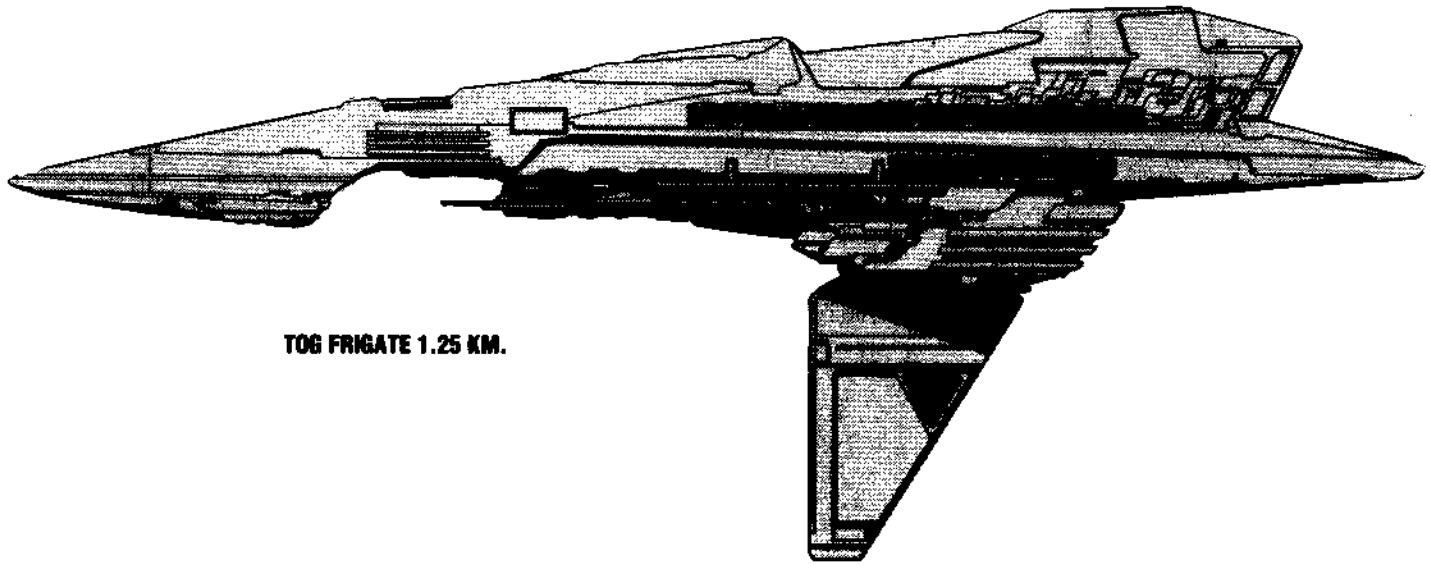
Shields:	
Forward	3
Left Forward	3
Left Aft	2
Right Forward	3
Right Aft	2
Aft	3
Armor:	
Forward	80
Left Forward	80
Left Aft	80
Right Forward	80
Right Aft	80
Aft	80

Weapons:

		Range					
Type	**Location**	**1**	**2-3**	**4-6**	**7-10**	**11-15**	**16-20**
B Spinal Mount	F	8	6	4			
25 37.5/20	F	6	5	4	4	3	3
25 37.5/20	L	6	5	4	4	3	3
25 37.5/20	R	6	5	4	4	3	3
25 37.5/20	A	6	5	4	4	3	3
50 15/30	L	10	9	8			
50 15/30	L	10	9	8			
50 15/30	R	10	9	8			
50 15/30	R	10	9	8			

Fighters: 48 at 300 tons
Small Craft: 4 at 1,000 tons
Cargo: 5,000 tons
Crew: 931
Passengers: 121
Marines: 200





TOG FRIGATE 1.25 KM.

FULGUR

The *Fulgur*, like so many ships, was designed to do many jobs and as a result does none of them well. Armed with two effective 50-gun 30/30 laser bays, the *Fulgur* can inflict significant damage at extended range. To complement this are four 10-gun 37.5/10 bays. These popgun bays are only good for sniping at fighter squadrons, and even then the ship's turret system can do a better job at close range. The ship's designers chose to build in standard maneuverability, so the *Fulgur* cannot easily zip into a battle of larger ships, inflict damage with the 30/30s, and then escape. As a planetary guard vessel though, the ship performs well. Its two big bays can overwhelm any likely raider or pirate.

The *Fulgur* is produced in moderate numbers throughout TOG and enjoys wide deployment.

Class: Destroyer
Mass: 765,033 tons
Cost: 3,685,689,880 talents
Engines: Right Engine Rating 13,000
Left Engine Rating 13,000
Center Engine Rating 14,000
Thrust: 4

Shields:

Forward	2
Left Forward	2
Left Aft	2
Right Forward	2
Right Aft	2
Aft	2

Armor:

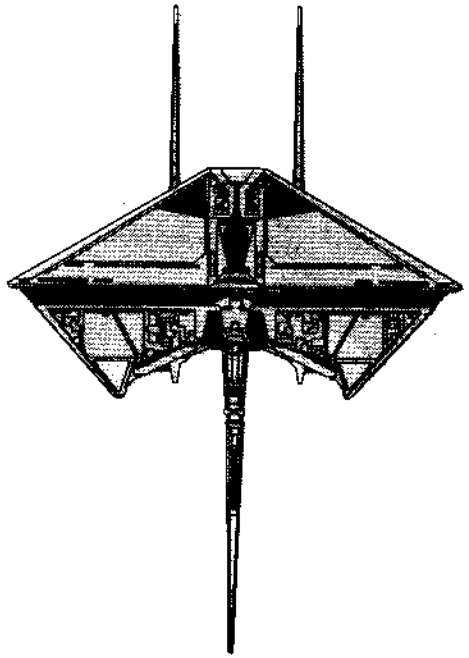
Forward	50
Left Forward	50
Left Aft	50
Right Forward	50
Right Aft	50
Aft	50

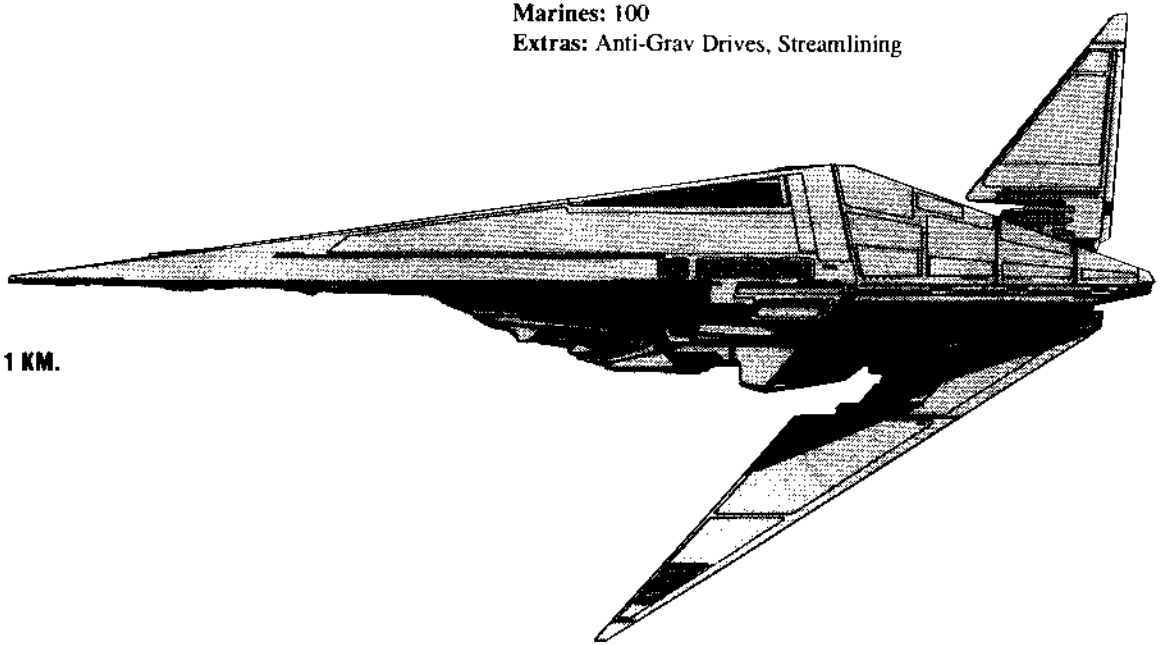
Weapons:

		Range					
Type	**Location**	**1**	**2-3**	**4-6**	**7-10**	**11-15**	**16-20**
A Spinal Mount	F	5	3				
50 30/30	L	13	11	10	9	8	
50 30/30	R	13	11	10	9	8	
10 37.5/10	F	2	2	1	1	1	1
10 37.5/10	L	2	2	1	1	1	1
10 37.5/10	R	2	2	1	1	1	1
10 37.5/10	A	2	2	1	1	1	1
		0	**1**	**2**	**3**		
Turrets	L	3	3	2	1		
	R	3	3	2	1		

Type A Missile System 2 Shots at 50 points

Fighters: 24 at 300 tons
Small Craft: 2 at 1,000 tons
Cargo: 5,000 tons
Crew: 667
Passengers: 100
Marines: 100
Extras: Anti-Grav Drives, Streamlining





TOG DESTROYER 1 KM.

SERPENS

The *Serpens* is a well-armed ship. Able to meet threats from any direction, the *Serpens* is a favorite command and the most sought after by first-time commanders. When assigned to squadron duty, the *Serpens* usually acts as an anti-fighter platform or as a fighter-support vessel. With the limited range of its weapons, a *Serpens* Class destroyer can be best used under the protection of a big ship's guns and attacking enemy fighter formations. When operating in support of friendly fighters or independently, the *Serpens* must get near its target. These dashing high-speed runs at the enemy are part of what endears the ship to its commanders and crew.

As the ship is streamlined and fitted with anti-grav equipment, the *Serpens* often performs atmospheric maneuvers in support of ground troops. This versatility ensures the ship a wide deployment and continued construction in yards throughout TOG.

Class: Destroyer
Mass: 540,775 tons
Cost: 2,941,149,880 talents

Engines:	Right Engine Rating	13,000
	Left Engine Rating	13,000
	Center Engine Rating	14,000

Thrust: 4

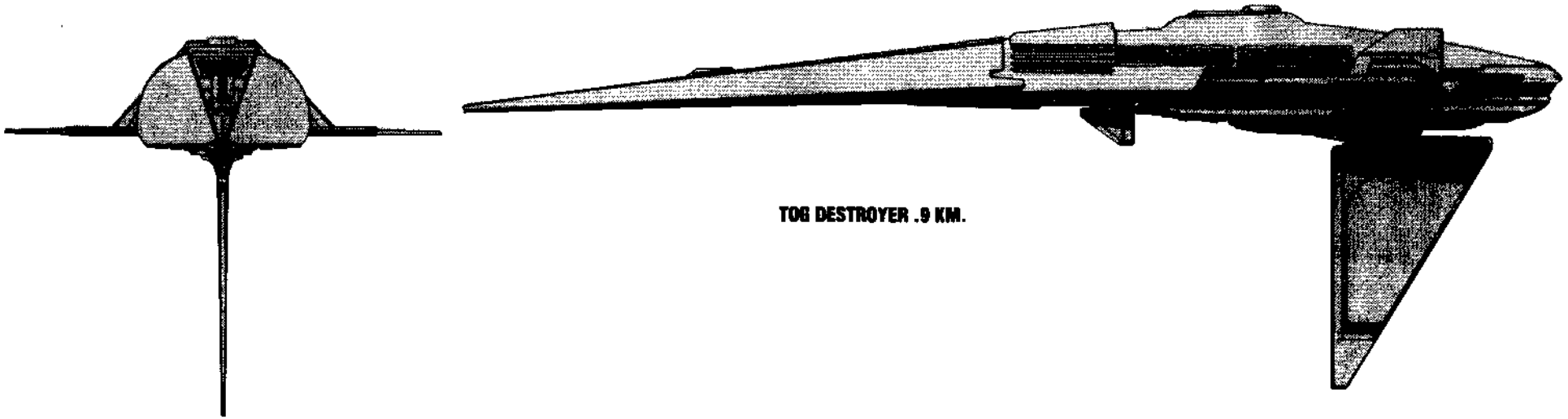
Shields:	
Forward	2
Left Forward	2
Left Aft	2
Right Forward	2
Right Aft	2
Aft	2
Armor:	
Forward	50
Left Forward	50
Left Aft	50
Right Forward	50
Right Aft	50
Aft	50

Weapons:

		Range					
Type	**Location**	**1**	**2-3**	**4-6**	**7-10**	**11-15**	**16-20**
A Spinal Mount	F	8	6	4			
50 15/20	F	8	6	5			
50 15/20	L	8	6	5			
50 15/20	R	8	6	5			
50 15/20	L	8	6	5			
50 15/20	R	8	6	5			
50 15/20	A	8	6	5			
		0	**1**	**2**	**3**		
Turrets	L	3	3	2	1		
	R	3	3	2	1		

Type G Missile System 3 shots at 50 points

Fighters: 24 at 300 tons
Small Craft: 2 at 1,000 tons
Cargo: 5,000 tons
Crew: 482
Passengers: 100
Marines: 100
Extras: Anti-Grav Drives, Streamlining



TOG DESTROYER .9 KM.

XERXES

This frigate-class carrier transports a full wing of fighters into battle. The *Xerxes*, like most small carriers, is a nimble ship and much more maneuverable than most other frigates. It uses its agility to keep out of trouble when deploying and recovering its fighters. Carrying a full wing of fighters and their support personnel and equipment does not leave room for much else. With TOG fighter pilots' feeling of superiority toward their ship and support crews, the *Xerxes* can be a tense ship. It takes a skilled commander to keep the fighter wing and the ship's crew on good terms.

Class: Frigate Class Carrier
Mass: 872,008 tons
Cost: 3,244,470,230 talents
Engines:

Right Engine Rating	17,000
Left Engine Rating	17,000
Center Engine Rating	16,000

Thrust: 4

Shields:

Forward	3
Left Forward	3
Left Aft	2
Right Forward	3
Right Aft	2
Aft	3

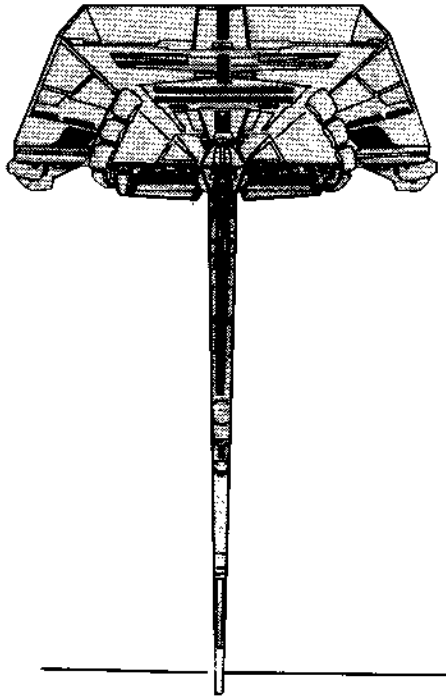
Armor:

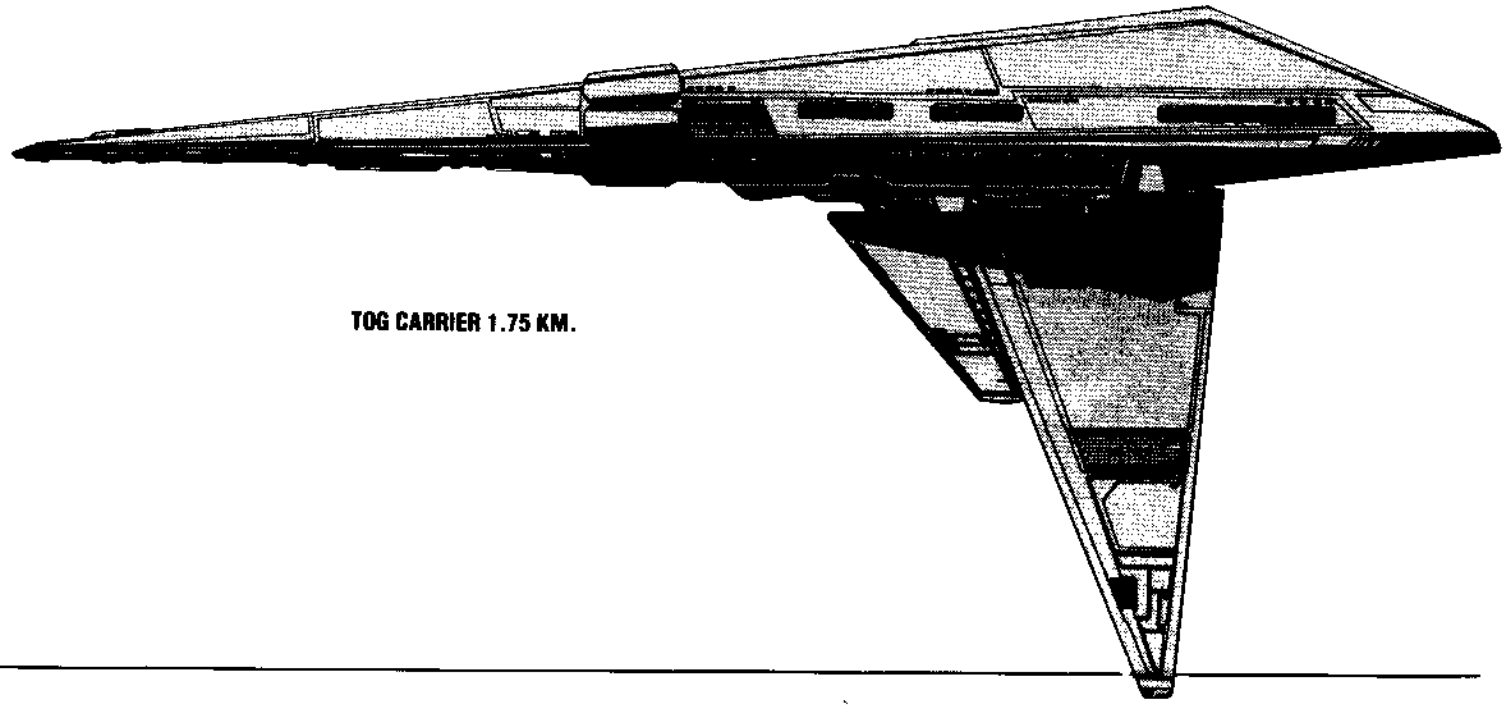
Forward	80
Left Forward	80
Left Aft	80
Right Forward	80
Right Aft	80
Aft	80

Weapons:

		Range					
Type	**Location**	**1**	**2-3**	**4-6**	**7-10**	**11-15**	**16-20**
50 30/5	F	6	5	4	3	1	
50 30/5	L	6	5	4	3	1	
50 30/5	L	6	5	4	3	1	
50 30/5	R	6	5	4	3	1	
50 30/5	R	6	5	4	3	1	
10 30/5	A	1	1	1	1	1	
		0	**1**	**2**	**3**		
Turrets	L	4	3	2	1		
	R	4	3	2	1		

Fighters: 360 at 300 ton
Small Craft: 6 at 1,000 tons
Cargo: 5,000 tons
Crew: 2,016
Passengers: 92
Marines: 300
Extras: Carrier Option, Thrust Option





TOG CARRIER 1.75 KM.

COMMONWEALTH/ RENEGADE LEGIONS

REPULSE

An older design, the *Repulse* is usually the battleship leading a squadron. Its well-rounded design can hurt most attackers at long range, but most captains prefer close combat with this ship because the effectiveness of its 100-gun bays drops off severely with range. Despite its age, the *Repulse* has many advantages and is likely to be around for a long time to come.

Class: Battleship
Mass: 2,393,570 tons
Cost: 15,336, 217,400 talents

Engines:	Right Engine Rating	40,000
	Left Engine Rating	40,000
	Center Engine Rating	40,000

Thrust: 2

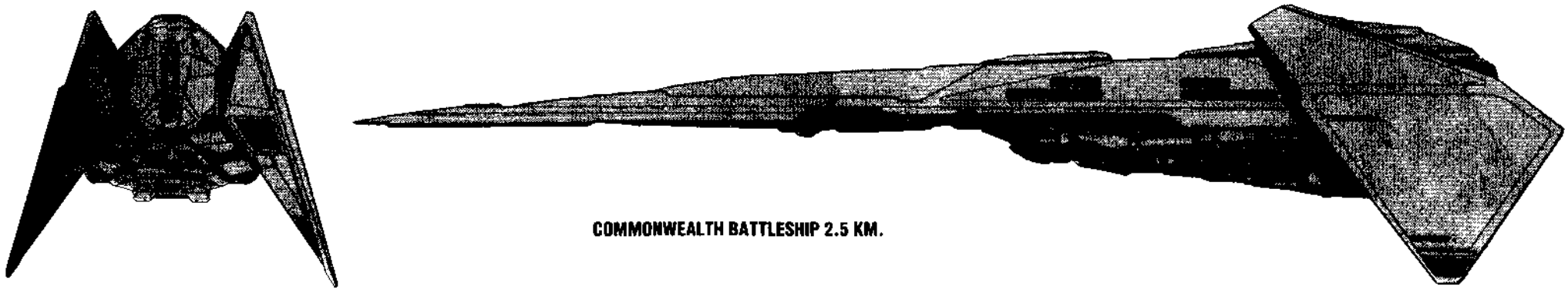
Shields:	
Forward	4
Left Forward	4
Left Aft	4
Right Forward	4
Right Aft	4
Aft	4
Armor:	
Forward	200
Left Forward	200
Left Aft	200
Right Forward	200
Right Aft	200
Aft	200

Weapons:

		Range					
Type	**Location**	**1**	**2-3**	**4-6**	**7-10**	**11-15**	**16-20**
D Spinal Mount	F	13	11	9	7		
100 37.5/5	L	15	13	10	8	5	3
100 37.5/5	L	15	13	10	8	5	3
100 37.5/5	R	15	13	10	8	5	3
100 37.5/5	R	15	13	10	8	5	3
50 37.5/30	F	14	13	11	10	9	8
50 37.5/30	L	14	13	11	10	9	8
50 37.5/30	R	14	13	11	10	9	8
50 37.5/30	A	14	13	11	10	9	8
25 22.5/15	F	4	3	3	2		
25 22.5/15	A	4	3	3	2		
		0	**1**	**2**	**3**		
Turrets	L	6	6	5	4		
	R	6	6	5	4		

Type E Missile System 3 shots at 150 points

Fighters: 144 at 300 tons
Small Craft: 10 at 1,000 tons
Cargo: 10,000 tons
Crew: 2,368
Passengers: 50
Marines: 300



COMMONWEALTH BATTLESHIP 2.5 KM.

CARTHAGE

Named for the most defiant of ancient Rome's enemies, the *Carthage* was designed to be the most powerful cruiser in space. The basic concept was to sacrifice the spinal mount to carry a more powerful array of bay weapons. Original designs mounted considerably more armaments, but field trials showed enormous problems with the power distribution and supply systems as well as with the structural integrity of the ship. Several bays were reduced in size, giving the ship surplus power. Rather than downgrade the engine system, designers channeled the extra power to the maneuver system to give the ship greater thrust. Renegade naval planners decided not to change the outward appearance of the ship. This left bay openings for twelve 100-weapon bays on the ship. At times this has given adversaries pause, but a more important benefit is that mounting 10- and 50-gun systems in bays designed to house 100 guns has made the weapons easy to maintain and repair. *Carthage* Class cruisers have the best weapon readiness records in the Renegade fleet.

Class: Cruiser
Mass: 1,253,365 tons
Cost: 7,522,814,260 talents
Engines:

Right Engine Rating	33,000
Left Engine Rating	33,000
Center Engine Rating	12,000

Thrust: 3

Shields:

Forward	4
Left Forward	3
Left Aft	3
Right Forward	3
Right Aft	3
Aft	4

Armor:

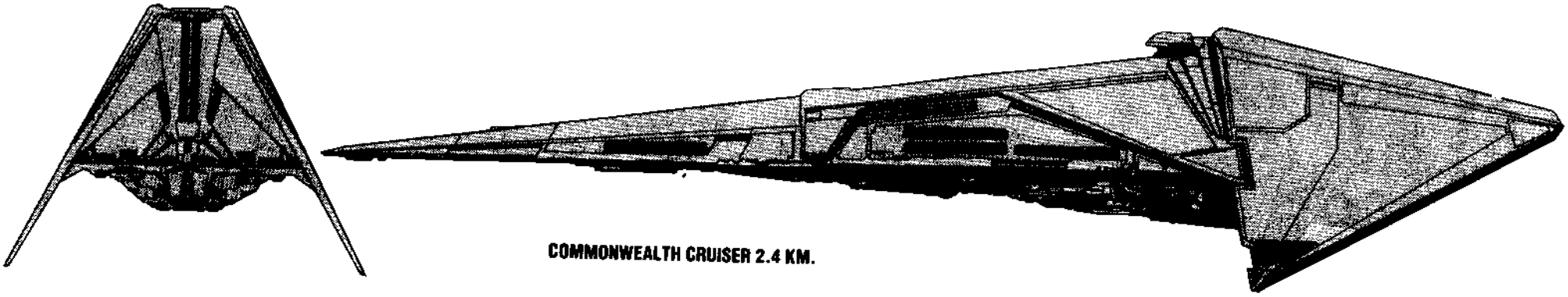
Forward	100
Left Forward	100
Left Aft	100
Right Forward	100
Right Aft	100
Aft	100

Weapons

Type	Location	Range 1	2-3	4-6	7-10	11-15	16-20
A Spinal Mount	F	5	3				
100 37.5/20	L	23	20	18	15	13	10
100 37.5/20	R	23	20	18	15	13	10
50 37.5/5	F	8	6	5	4	3	1
50 37.5/5	L	8	6	5	4	3	1
50 37.5/5	R	8	6	5	4	3	1
50 37.5/5	A	8	6	5	4	3	1
10 37.5/10	F	2	2	1	1	1	1
10 37.5/10	A	2	2	1	1	1	1
		0	**1**	**2**	**3**		
Turrets	L	5	5	4	3		
	R	5	5	4	3		

Type A Missile System

Fighters: 72 at 300 tons
Small Craft: 10 at 1,000 tons
Cargo: 10,000 tons
Crew: 1,552
Passengers: 100
Marines: 100
Extras: Thrust Option



COMMONWEALTH CRUISER 2.4 KM.

VALIANT

Mounting eight 100-gun bays of smaller weapons, the *Valiant* has a deceptive appearance. Though it looks formidable, it has limited striking power at long range. Used mostly as an anti-fighter platform, it is an effective ship in its assigned role. Many young frigate captains, however, try to close with cruisers and battleships, paying the ultimate price for their inexperience.

Class: Frigate
Mass: 341,485 tons
Cost: 2,758,165,670 talents

Engines:	Right Engine Rating	19,000
	Left Engine Rating	19,000
	Center Engine Rating	20,000

Thrust: 3

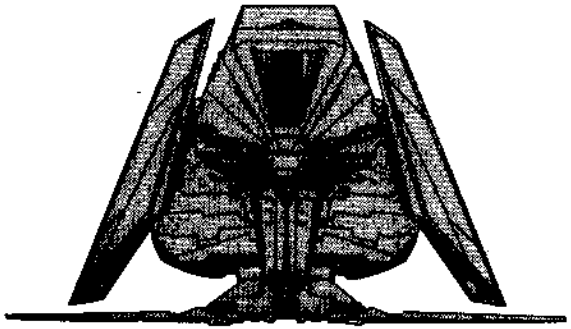
Shields:	
Forward	3
Left Forward	3
Left Aft	2
Right Forward	3
Right Aft	2
Aft	3
Armor:	
Forward	80
Left Forward	80
Left Aft	80
Right Forward	80
Right Aft	80
Aft	80

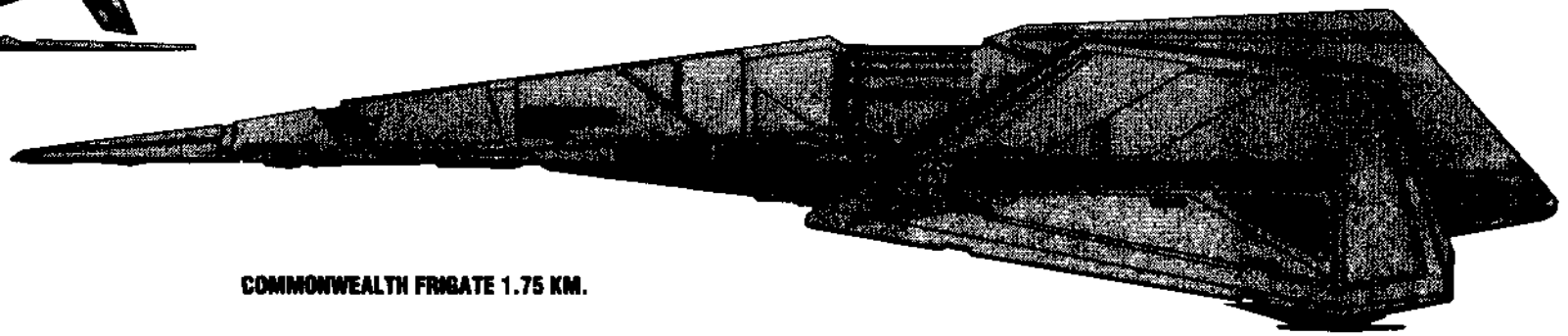
Weapons

		Range					
Type	**Location**	**1**	**2-3**	**4-6**	**7-10**	**11-15**	**16-20**
100 22.5/10	L	13	10	8	5		
100 22.5/10	R	13	10	8	5		
100 15/10	L	10	8	5			
100 15/10	R	10	8	5			
100 15/10	F	10	8	5			
100 15/10	A	10	8	5			
100 7.5/30	F	18	15				
100 7.5/30	A	18	15				
		0	**1**	**2**	**3**		
Turrets	L	4	4	3	2		
	R	4	4	3	2		

Type G Missile System 3 Shots at 50 points

Fighters: 48 at 300 tons
Small Craft: 5 at 1,000 tons
Cargo: 5,000 tons
Crew: 715
Passengers: 100
Marines: 100





COMMONWEALTH FRIGATE 1.75 KM.

EXETER

Renegade and Commonwealth destroyer design philosophy is markedly different from that of TOG. Much more willing to trade offense for maneuverability, Renegade and Commonwealth designers often create destroyers that are much more effective in independent operations and usually able to escape from larger ships. The *Exeter* Class is a typical example. Mounting a respectable array of short-range weapons, the ship uses its superior agility to maneuver into a position to launch its impressive missile attack.

Class: Destroyer
Mass: 606,027 tons
Cost: 3,118,152,890 talents

Engines:	Right Engine Rating	15,000
	Left Engine Rating	15,000
	Center Engine Rating	15,000

Thrust: 5

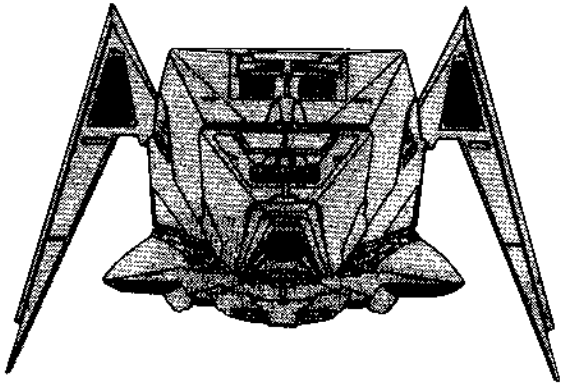
Shields:	
Forward	2
Left Forward	2
Left Aft	2
Right Forward	2
Right Aft	2
Aft	2
Armor:	
Forward	50
Left Forward	50
Left Aft	50
Right Forward	50
Right Aft	50
Aft	50

Weapons:

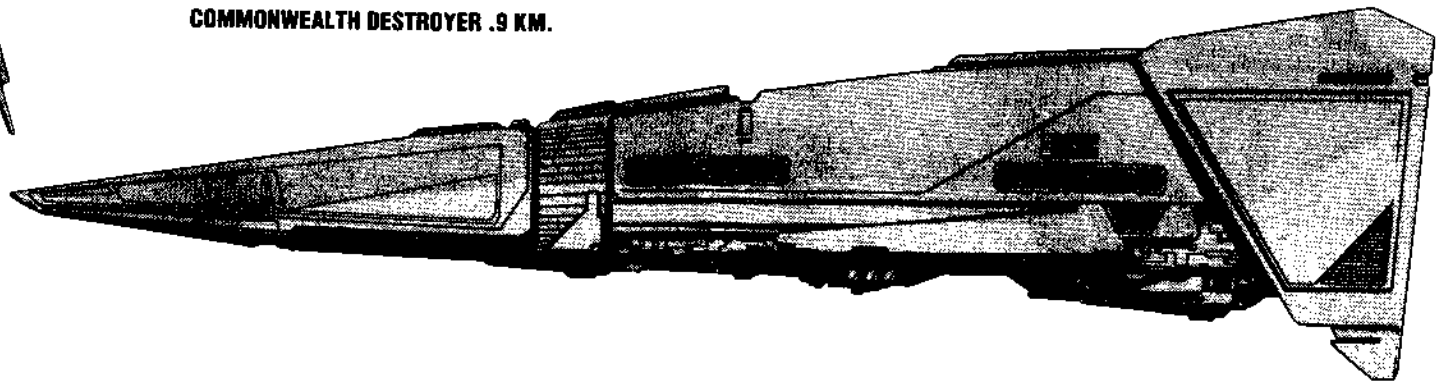
		Range					
Type	**Location**	**1**	**2-3**	**4-6**	**7-10**	**11-15**	**16-20**
A Spinal Mount	F	5	3				
50 22.5/15	L	8	6	5	4		
50 22.5/15	L	8	6	5	4		
50 22.5/15	R	8	6	5	4		
50 22.5/15	R	8	6	5	4		
25 22.5/15	F	4	3	3	2		
25 22.5/15	A	4	3	3	2		
		0	**1**	**2**	**3**		
Turrets	L	3	3	2	1		
	R	3	3	2	1		

Type C Missile System 1 shot at 100 points

Fighters: 24 at 300 tons
Small Craft: 5 at 1,000 tons
Cargo: 5,000 tons
Crew: 529
Passengers: 100
Marines: 100
Extras: Thrust Option, Anti-Grav, Streamlining



COMMONWEALTH DESTROYER .9 KM.



AJAX

Like its cousin the *Exeter*, the *Ajax* is a nimble little destroyer that trades some of its missile power for a set of longer-range weapons. Much more likely to be seen operating independently than as part of a squadron, the *Ajax* has developed a reputation as a ship to build a career on. Because the ship can perform so many different kinds of missions, assignment to an *Ajax* destroyer ensures captain and crew lots of action and the chance to impress the squadron commander and the admirals who control the promotion boards.

Class: Destroyer
Mass: 546,676 tons
Cost: 2,649,578,040 talents

Engines:	Right Engine Rating	12,000
	Left Engine Rating	12,000
	Center Engine Rating	12,000

Thrust: 5

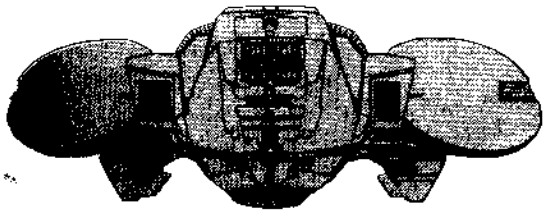
Shields:	
Forward	2
Left Forward	2
Left Aft	2
Right Forward	2
Right Aft	2
Aft	2
Armor:	
Forward	50
Left Forward	50
Left Aft	50
Right Forward	50
Right Aft	50
Aft	50

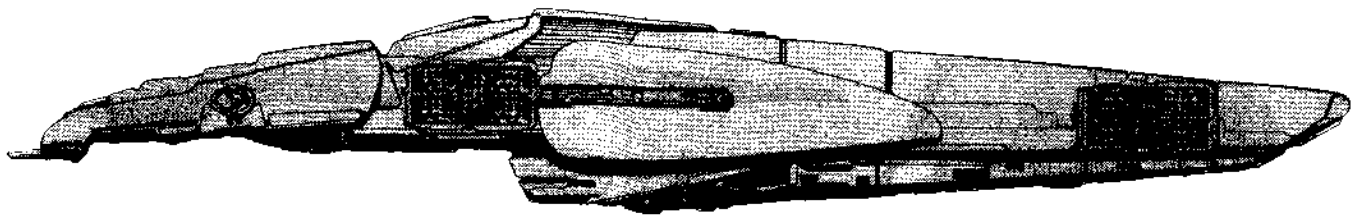
Weapons:

		Range					
Type	**Location**	**1**	**2-3**	**4-6**	**7-10**	**11-15**	**16-20**
A Spinal Mount	F	5	3				
50 37.5/5	L	8	6	5	4	3	1
50 37.5/5	R	8	6	5	4	3	1
50 22.5/10	F	6	5	4	3		
50 22.5/10	L	6	5	4	3		
50 22.5/10	R	6	5	4	3		
50 22.5/10	A	6	5	4	3		
		0	**1**	**2**	**3**		
Turrets	L	3	3	2	1		
	R	3	3	2	1		

Type B Missile System 1 shot at 50 points

Fighters: 6 at 300 tons
Small Craft: 2 at 1,000 tons
Cargo: 5,000 tons
Crew: 427
Passengers: 100
Marines: 100
Extras: Thrust Option, Anti-Grav, Streamlining





COMMONWEALTH DESTROYER .6 KM.

COUNTY

The *County* is fairly typical of small carriers. The ship uses its abundant power to increase its maneuverability. Its fighter facilities are cramped, and weapons have been added almost as an afterthought. Power and structural limitations dictate the choice of weapon system, and many variations have been tried on the *County*. Regardless of these problems, the ship still performs its main function, that of delivering a wing of fighters to the scene of battle.

Class: Frigate Class Carrier
Mass: 910,650 tons
Cost: 3,502,643,320 talents
Engines:

Right Engine Rating	18,000
Left Engine Rating	18,000
Center Engine Rating	18,000

Thrust: 4

Shields:

Forward	3
Left Forward	3
Left Aft	2
Right Forward	3
Right Aft	2
Aft	3

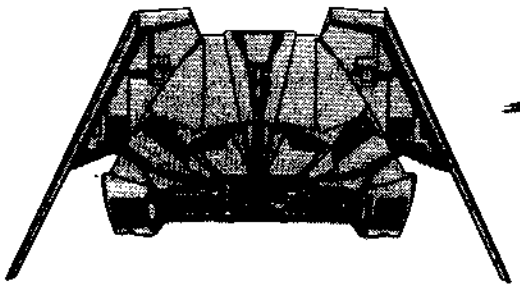
Armor:

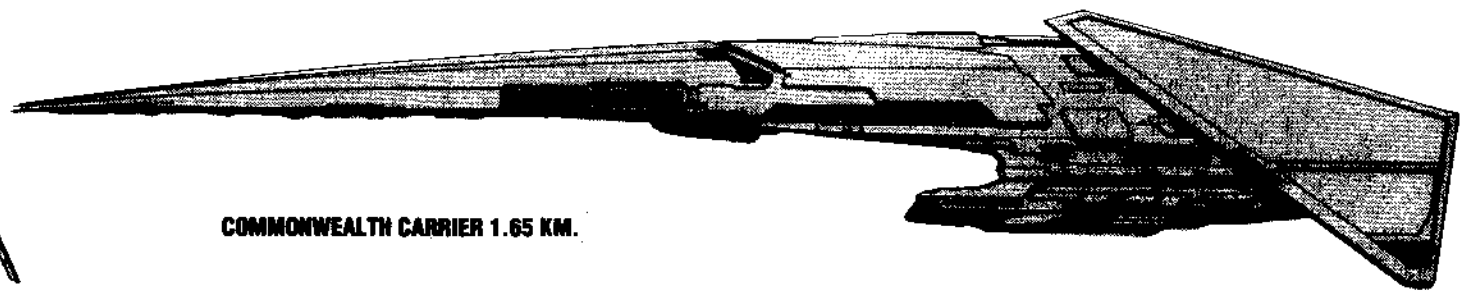
Forward	80
Left Forward	80
Left Aft	80
Right Forward	80
Right Aft	80
Aft	80

Weapons:

		Range					
Type	**Location**	**1**	**2-3**	**4-6**	**7-10**	**11-15**	**16-20**
50 37.5/5	F	8	6	5	4	3	1
50 37.5/5	L	8	6	5	4	3	1
50 37.5/5	R	8	6	5	4	3	1
25 7.5/30	L	4	4				
25 7.5/30	R	4	4				
10 7.5/30	F	2	2				
10 7.5/30	A	2	2				
10 7.5/30	A	2	2				
		0	**1**	**2**	**3**		
Turrets	L	4	4	3	2		
	R	4	4	3	2		

Fighters: 360 at 300 tons
Small Craft: 10 at 1,000 tons
Cargo: 5,000 tons
Crew: 2,058
Passengers: 100
Marines: 250
Extras: Thrust Option, Carrier Option





COMMONWEALTH CARRIER 1.65 KM.

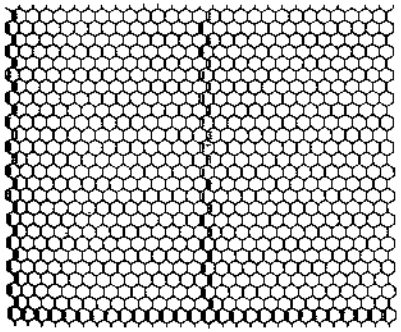
SCENARIOS

MEETING ENGAGEMENT

TOG's 7544th Mochov Battleship Squadron was performing a routine training sweep of an uninhabited star system near the Commonwealth border, not expecting contact with the enemy. After clearing the ecliptic, the Mochov picked up an enemy squadron on its sensors. Seeing that he was facing the enemy on roughly equal terms, the TOG squadron commander made his bid for glory. The Renegade Legion 342nd Squadron was performing a similar mission, and Navarchos Wilbert Lexington chose to join battle.

GAME SET-UP

Lay out the two maps as illustrated. The TOG forces set up anywhere within 5 hexes of the right side of the map. The Commonwealth forces set up anywhere within 5 hexes of the left side of the map. Each player should roll a die, with the lower roll setting up his forces second. Each ship in a squadron should be within two hexes of another ship in the squadron. Both squadrons may begin with any heading and any velocity up to 6. All ships need not have the same velocity. Fighters are considered to have been launched and should be placed with the initial set-up.



TOG Forces

1 *Shiva* Class Battleship
- 1 group of fighters, consisting of 2 squadrons of *Lanceas*, 4 squadrons of *Spiculums*, 4 squadrons of *Pilums*, and 2 squadrons of *Spathas*.

1 *Syracuse* Class Cruiser
- 1 flight of fighters, consisting of 1 squadron of *Lanceas*, 2 squadrons of *Pilums*, and 1 squadron of *Gladii*.

2 *Bantha* Class Frigates
2 *Fulgur* Class Destroyers
2 *Serpens* Class Destroyers

Renegade Legion Forces

1 *Repulse* Class Battleship
- 1 group of fighters, consisting of 2 squadrons of *Cheetahs*, 4 squadrons of *Penetrators*, 4 squadrons of *Space Gulls*, and 2 squadrons of *Avengers*.

1 *Carthage* Class Cruiser
- 1 flight of fighters, consisting of 1 squadron of *Cheetahs*, 2 squadrons of *Space Gulls* and 1 squadron of *Fluttering Petals*.

2 *Valiant* Class Frigates
2 *Exeter* Class Destroyers
2 *Ajax* Class Destroyers

Each battleship squadron may organize its fighters in any manner desired.

GAME LENGTH

Combat continues until all of one side's ships are destroyed or have broken off the engagement. Ships that leave the map are considered to have broken off the engagement.

VICTORY CONDITIONS

Token Victory: Destroy the opponent's battleship. (Both players can gain a Token Victory).

Marginal Victory: Destroy more ship tonnage than the opponent.

Substantial Victory: Gain a Marginal Victory without losing your frigates, cruiser, or battleship.

Decisive Victory: Gain a Marginal Victory without losing any capital ship.

A ship is considered destroyed if the Ship Destroyed section of the Internal Component Block is hit.

tleship, no fighters.

f fighters up to a wing (360). These
ed in any combination of squadrons,
he total tonnage of fighters should be
fighter types, no more than 10 percent
he same type.

GAME LENGTH

The scenario lasts until one side has been destroyed or driven from the board.

VICTORY CONDITIONS

After the scenario, reverse the roles and play again. The player who can destroy the battleship with the smallest tonnage of fighters wins the series.

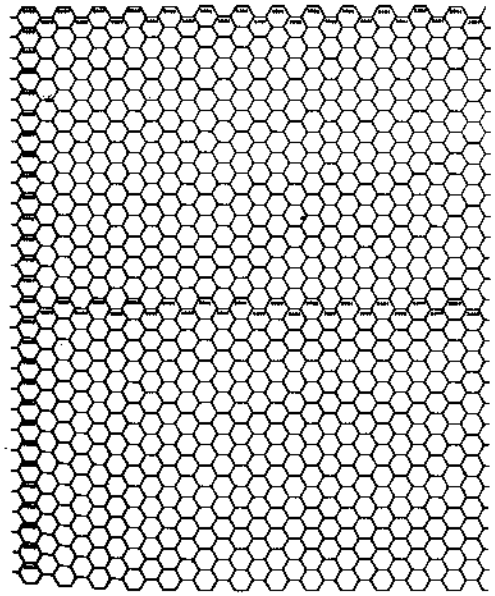
THE CHASE

After TOG's 7544th Mochov Battleship Squadron took a beating at the hands of the Renegade Legion, the survivors limped back to their base at Thapsus for repair and replacements. The new squadron commander pulled some strings to get a *Xerxes* Class carrier attached to the squadron. His new mission was to cruise the front lines and hunt down anything he could find.

Midway through the reformed squadron's patrol, a long-range fighter sweep detected enemy units. When analysis of the Renegade transmissions revealed that elements of the Renegade Legion 342nd Squadron were in the area, the 7544th prepared for revenge.

GAME SET-UP

Lay out the two mapsheets as illustrated. The TOG forces set up anywhere within 5 hexes of the right side of the map. The Commonwealth forces set up anywhere within 15 hexes of the left side of the map. Each player should roll a die, with the lower roll setting up his forces second. Each ship should be within two hexes of another ship in its squadron. Both squadrons may begin with any heading and any velocity up to 6. All ships need not have the same velocity.



FORCES

TOG: 7544th Mochov Battleship Squadron

1 *Shiva* Class Battleship
- 1 group of fighters consisting of 2 squadrons of *Lanceas*, 4 squadrons of *Spiculums*, 4 squadrons of *Pilums*, and 2 squadrons of *Spathas*.

1 *Syracuse* Class Cruiser
- 1 flight of fighters, consisting of 1 squadron of *Lanceas*, 2 squadrons of *Pilums*, and 1 squadron of *Gladii*.

2 *Bantha* Class Frigates
2 *Fulgur* Class Destroyers
2 *Serpens* Class Destroyers
1 *Xerxes* Class Carrier
- 1 wing of fighters, consisting of five groups, each composed as the one on the *Shiva*.

Fighters may be deployed or may be carried and launched during the course of the engagement. The *Xerxes* can launch the entire wing at the end of any Movement Phase, but it can recover only half the wing on one turn.

Renegade Legion: Elements of the 342nd and 451st Battleship Squadrons

Available on Turn 1
- 1 *Valiant* Class Frigate
- 1 *Exeter* Class Destroyer
- 1 *Ajax* Class Destroyer

SPECIAL RULES

Each time all remaining Renegade forces reach a new mapsheet, the Renegade player may roll twice on the following table for reinforcements, once for each side of the map. Any indicated forces enter the map during the next turn from the proper side.

REINFORCEMENT TABLE

Die Roll	Force
1	1 *Repulse* Class Battleship
2	1 *Carthage* Class Cruiser, 1 *Valiant* Class Frigate
3	2 *Valiant* Class Frigates, 2 *Ajax* Class Frigates
4	1 *Carthage* Class Cruiser
5	1 *Valiant* Class Frigate, 1 *Ajax* Class Destroyer
6	1 *Ajax* Class Destroyer
7	1 *Exeter* Class Destroyer
8	1 *Ajax* Class Destroyer
9	1 *Exeter* Class Destroyer
10	Nothing

Once a number has been rolled and the indicated force has entered the game, reroll any subsequent occurrence. A roll of 10 indicates no reinforcements and can be rolled any number of times.

The Renegade player is trying to string the TOG force along until he has enough ships to engage it. This will take him several turns. The TOG player can easily win the engagement by destroying the Renegade units piecemeal as they enter the battle. The engagement ends when the Renegade player leaves the left side of a map before any TOG unit has entered that map.

VICTORY CONDITIONS

The winner of this engagement is the player who destroys the greater strength of enemy units. Strength factors are found on the table below.

STRENGTH FACTORS

Battleship	4
Cruiser	3
Frigate	2
Destroyer	1
Carrier	2
Fighter Group	.6
Fighter Flight	.2
Fighter Squadron	.05

BACKGROVND AND HISTORY

ORGANIZATION

Naval organization is based on the battleship squadron. This force is powerful enough to handle most missions and serves as the basic building block for larger formations. In the navies of the **Renegade Legion** universe, there are hundreds of thousands of these squadrons. Like their counterparts on the ground, the vast majority of these are reserve fleets.

The typical squadron is made up of a single battleship acting as the flagship, a single cruiser, two frigates, four destroyers, and two patrol class ships, usually escorts. The fighter complement for the squadron would be those carried by the ships in the squadron. This normally numbers about a group on the battleship and another group spread among the rest of the capital ships.

A battleship squadron is usually stationed at a major naval base and spends most of its time at a docking facility or in a stabile orbit. Its active duty consists of patrols lasting one or two months. Only rarely are ships reassigned to another squadron. Smaller ships see extensive independent duty as couriers at the orders of the squadron commander.

A reinforced squadron adds a second cruiser or a third frigate or both at the expense of the patrol class ships. Carriers are usually assigned to squadrons on a mission basis, but there are many traditional squadron-carrier combinations.

RANKS

TOG	Renegades	Commonwealth
		Sky Marshal
Grand Admiral	Grand Admiral	Grand Mashal
Admiral	Admiral	Admiral of the Fleet
Vice-Admiral	Vice Admiral	Admiral
Rear-Admiral	Rear Admiral	Vice Admiral
Commodore	Commodore	Rear Admiral
Navarchos	Navarchos	Commodore 1st Class
Pluiarchos	Pluiarchos	Commodore 2nd Class
Pluiarchos Junior Grade	Pluiarchos Junior Grade	Captain
Archikeleustes	Archikeleustes	Commander
Keleustes	Keleustes	Lieutenant-Commander
Keleustes Junior Grade	Keleustes Junior Grade	Lieutenant
Diopos	Diopos	Sub-Lieutenant
Naftis	Naftia	Warrant Officers
Naftis Junior Grade	Naftia Junior Grade	Chief Petty Officer
		Petty Officer
		Leading Rating
		Able Seaman
		Ordinary Seaman

PROCUREMENT

Because of the extremely high cost of capital ships and the ease with which such large contracts can be padded, naval procurement has been viewed as one of the most corrupt bureaucracies in any government.

TOG procurement presents both the best and worst examples of this phenomenon. It is one of TOG's practices to have various planets or groups of planets provide major pieces of equipment. A case in point is the newly discovered Gael Cluster, which was assigned to provide a battleship squadron as a condition for acceptance into the TOG family of worlds. Using established designs and plans approved by the Imperial Navy, the planets in the cluster provided the funds, resources, and manpower to construct the squadron. In this case where a relatively small group of patriotic citizens was responsible, the job was done on time and within budget.

The other side of the coin is when the Navy asks for bids from the major defense contractors for the construction of a large number of similar ships. Such was the case in the recent GDGM scandal. GDGM, a major builder of a variety of military equipment, won the bid to build 100 frigates. The contractor underbid all competitors by as much as 25 percent. After several delivery delays, extreme cost overruns (more than making up the underbid margin), and quality control complaints, a Lictor investigation revealed several facts. Among them was that several officers working in the Procurement Office when the contract was awarded were hired as senior executives of GDGM. A careful examination of the paperwork revealed cases of gross overcharging, such as the 75,000-talent mattresses for the ship's enlisted men's quarters. This 5 cm foam mattress is available to the average citizen for 10 talents. Another deception in this scandal was the charges for equipment not even installed on the ship. The extensive quarters for female senior officers are nowhere to be found on any of the frigates despite the costs listed on the paperwork. Their omission has caused no problems because there are no female senior officers in the TOG Imperial Navy.

As in most cases, the Lictors also found that several Illustrus Senators benefitted from these irregularities and no action was taken.

TECHNOLOGY

Though travel at speeds faster than light was long thought impossible, late in the 20th Century scientists discovered the existence of Tachyons, subatomic particles that seemed to defy all logic by traveling *faster* than the speed of light. Indeed, the speed of light seemed to be a Tachyon's minimum velocity, because it was impossible to slow one down.

By the next century, Professor Hsieh Ho had pioneered a new branch of mathematics called Polydimensional Non-Euclidean Geometry. Though physical reality appeared to be a seamless whole, Ho postulated that it was actually assembled more like the pieces of a jigsaw puzzle. There were "seams," points where dimensions touched, and the Professor theorized that space travel could take advantage of these cracks between dimensions. In 2156, the *UNSS Magellan* proved Ho's theories when it disappeared from the friendly confines of space around the sun and reappeared many light years away.

T-SPACE

What man had discovered was Tachyon Space, or T-space. In this dimension, which lies at right angles to our own, the absolute minimum speed of any particle is the speed of light. When a ship reaches its entry speed for T-space, its drive sends it neither right nor left, up nor down, forward nor backward, nor any combination of these normal directions. Instead, the vessel shoots THAT way at a seemingly impossible right angle through one of Professor Ho's dimensional seams. It instantaneously reaches a velocity above the speed or light in proportion to its speed of entry. The minimum speed for entering T-space is 2.5×10^{-5} C (C=speed of light), which puts the vessel into T-space at a speed of one light year per month (ly/month). Maximum entry speed is 6.25×10^{4}C, which results in the incredible speed of 10,000 ly/month once the vessel enters T-space.

It is the I-K (Ippolito-Kuldunov) Drive that permits vessels to reach these entry speeds. To accelerate the ship forward, the I-K Drive uses an anti-gravity compression chamber that superheats hydrogen and helium atoms to near relativistic energies before they exit the chamber.

In T-space, where stars are black objects radiating streams of Tachyons of all possible colors and speeds, ships could not communicate with other ships or planets, fire their weapons, or maneuver in that alternate reality. Though scientists experimented with a number of solutions, the results were disastrous. The engines either dissolved into puddles of molten metal or whole vessels exploded into Tachyon particles. These failures led to the discovery of a new inviolable universal law: In T-space, it is possible to travel only in a straight line.

To navigate in T-space, a ship *must* aim precisely toward its destination as it accelerates to entry speed. The further the destination, the longer the distance the ship must travel before entering T-space. To put the ship on a precise enough path required the development of highly precise navigational computers. These computers are rated at the acceleration in Gs at which they can calculate an accurate course.

For example, it takes a 5 G navigation computer 150 hours to calculate a course through T-space toward a destination 100,000 light years from the entry point. During these hours spent calculating, the ship must be accelerating up to entry speed and be under the computer's complete control. For a computer rated at 20 G, it would take only 50 hours to navigate a safe course over the same distance of 10,000 light years. (In a crisis, a captain might choose to override the computer and take his ship directly into T-space before the computer calculations are complete. He knows, of course, that he risks becoming permanently lost in doing so.)

Knowing a ship's path and speed is a sure way to infer its destination, especially because T-space vessels leave telltale trails that indicate their direction of movement. When pursued, a ship's captain must often play cat and mouse by making many short hops in zigzag fashion in and out of T-space, hoping to throw his pursuers off the trail.

Because normal matter is slightly out of synchronization with the energies of T-space, when the two come into contact, it creates a kind of disharmony, or friction. The phenomenon is known as Shimmer Heat, and shows as a brilliant flash of light as T-space vessels reenter normal space. The bodies of the passengers also continue to shimmer slightly upon reentry. Over time, this disharmony results in serious overheating. The time limit that vessels or people can remain in T-space is about 30 days. After that time, Tachyon Meltdown—and death—occur. First the ship and its passengers melt into a pool of metals and assorted organic smears, and then the whole mass explodes into a shower of Tachyons, with the atoms of the victims converting into base Tachyon energy.

To disperse the effects of Shimmer Heat, people and things must spend an equal amount of time in normal space as they have just spent in T-space. Someone who has spent 29 days in T-space, for example, must then spend another 29 days in normal space to rid himself of Shimmer Heat.

COMMUNICATIONS AND DETECTION

With the development of faster-than-light travel, the communication sciences had to catch up. T-space vessels could now travel across the galaxy in the same time it would take a radio message to get halfway to the nearest star.

PHASE-POLARIZATION SYSTEM

More than a hundred years after the development of T-space travel, the scientists of Delta Alphecca discovered the Phase-Polarization Communication (P-Comm) System, with help from alien scientists of Huldice.

The basic principle behind the P-Comm system is relatively simple. When an electromagnetic wave is passed through a wave grate generator, polarization occurs. Those portions of the electromagnetic wave not lined up with the wave grate being generated are filtered out. If two wave grates were operating with their wave directions at right angles to one other, they would effectively block the electromagnetic wave from passing beyond the second wave grate. What no one understood was what happened to the energy present in the thwarted wave. It remained a mystery until the scientists of Delta Alphecca passed a Tachyon detector behind two working wave grates and discovered that an extremely energetic system wave of Tachyons was being emitted.

To test their momentous discovery, the scientists set up two identical sets of wave grates and radio sets on two different planets. On July 4, 2257 (Standard Calendar), the scientists on Delta Alphecca huddled around their receiver waiting for some word from the Huldice scientists, who were on Omicron Tau, some 20 light years distant. Through the fuzz and crackle, they suddenly heard a clearly audible message from the jubilant Huldice.

The beauty of the P-Comm system is its simple technology. (Indeed, it is so simple that almost anyone can construct a crude P-Comm system to listen in to what the galaxy is saying.) The P-Comm system also compacts easily onto a group of circuit cubes, and so is suitable for use by even the smallest ship.

The P-Comm system does have its limitations. The easiest to overcome is the static that grows more and more severe as transmitters become more distant. A good filter and leveler system solves the problem, making it possible to send and receive at longer distances. A ship cannot transmit or receive using a P-Comm while traveling in T-space, which could be inconvenient. It was not until Humanity had colonies scattered clear across the galaxy that the P-Comm's most serious limitations became evident: messages sent via P-Comm could travel no faster than 20,000 ly/month. With some empires of Humanity being 70, 80, even 90,000 light years in diameter, it meant that a message would take four months to arrive, and the receiver four months to respond. Such slow, unwieldy communications put an empire at the mercy of any enemy that could move fast enough.

VERY LARGE COMMUNICATIONS ARRAY

One of the scientists involved with the P-Comm discovery had scribbled some notes describing a peculiar, almost imperceptible echo that occurred when a P-Comm transmitter was aimed at a P-Comm receiver. Not even the fabled Huldice scientists had realized the importance of this chance observation at the time, yet it would one day help to create the greatest empire the galaxy had ever seen.

Years later, two scientists investigated casual observations left by their long-dead colleague while they were studying possible improvements in the fidelity of the P-Comm system. Using a high-powered P-Comm system attached to a large, flat array on his lab roof, Professor Neil Stomtra of the University of Washington aimed it at a similar device located on Pluto. Waiting on Pluto to monitor the results was Dr. Jessica Sulta, his assistant.

What the scientists expected from the experiment was that an echo would follow the message at a measurable interval. What the experiment actually did yield left them stunned.

When Stomtra transmitted his message at the appointed time, Dr. Jessica Sulta was startled to hear the Professor's voice over her speakers at the same instant he spoke. A few moments later, the same message came across via the P-Comm. After hurriedly verifying the reliability of the local time devices, the two mulled over their discovery. It seemed impossible, but the "echo" they had been pursuing was not the trailing ghost of a message but the instantaneous transmission of information from Terra to far-off Pluto.

Just as Hsieh Ho had speculated about a multitude of dimensions all lying at right angles to one other, Stomtra and his aide theorized that there must be numerous realities using any combination of dimensions. "Normal" reality uses length, width, height, and time. Those also exist in T-space, but with a slight difference in the boundaries of possibility. What the two soon-to-be rich and famous researchers assumed was that their messages had traveled (if such a word applied) through a previously unknown reality, where time was not a factor! The military was especially quick to react to the implications of this device. The government soon undertook an enormous program to build larger, more powerful versions of what came to be known as the Very Large Communications Array (VLCA) in all the star systems, as well as designing communication ships that could be used as portable VLCAs.

The VLCA changed the course of Human history by freeing Terran Humanity from its prison of ten planets. With astonishing ease, and to the complete surprise of the enemy, fleets under the command of Alexander Trajan were continually able to outflank their opponents, resulting in the eventual creation of the Terran Government.

This is not to say that the VCLA is without disadvantages. The first of these is the sheer size of the system. In order to communicate effectively with the most distant star, an array of ultra-sensitive polarizing transceivers at least a square kilometer in area is required. This requires that each installation must draw enormous power from either solar panels or an harmonic crystal generator. Like its predecessor, the P-Comm, the VLCA is also inoperable in T-space.

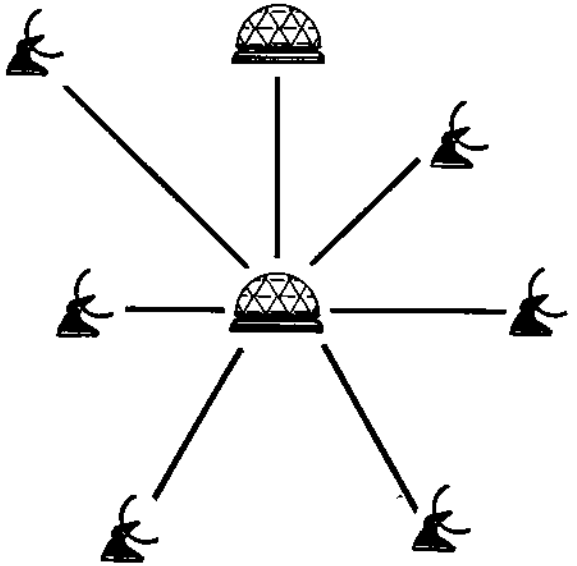
The most serious limitation was that the array must be aimed directly at the recipient of the message, which requires sophisticated computers to accomplish.

As a result, VLCAs are usually huge complexes of arrays, solar collectors, and maneuvering engines orbiting a few select worlds. Some of the larger VLCAs are equipped with several arrays to handle several messages simultaneously. Communication ships, usually reserved for navies, are huge affairs bedecked with enormous, yet fragile, panels that can be lowered and stored for flight.

Given the crucial importance of VLCAs, it is no wonder that they have become the focus of so many battles.

COMMUNICATIONS NETWORKS

Interstellar communications systems are based on a network of omni-directional and uni-directional VLCAs. An omni-directional VLCA can send and receive VCLA signals from and to any part of the sky. Because omni-directional VLCAs are more expensive to build and maintain, they serve as a nexus point for uni-directional VLCAs, as shown in the diagram below. If the switching capabilities are up to it, a single omni-VLCA can service the whole galaxy. However, standard operation procedure calls for one omni-VLCA per county. If a single county's omni-VLCA is lost, it will only disrupt communications in the county until the local uni-VLCAs realign themselves to another omni-VLCA.



P-Comm is used for in-system communications, or to systems not economically or militarily vital enough to have instantaneous communications. P-Comm travels at a speed of .5 light years per minute. The range for sending and receiving is based on the quality of both the sending and receiving set. It is possible for a man-portable P-Comm unit to communicate with a base station light years away.

T-DOPPLER SHIP DETECTION

In 2551, an important spin-off of the P-Comm device was developed. Scientists discovered that by coupling a working P-Comm transceiver system with a doppler radar set, they could detect the movement of ships in T-space. This joining of the two systems became known as the T-Doppler, and allowed operators to see approaching and departing ships as they traveled in T-space.

It is possible to detect a ship that is moving in T-space by monitoring the disruption patterns that it causes there. The same disharmony that causes Shimmer Heat also causes the ship to propagate a spherical disruption pattern around itself as it goes through T-space. (This can be seen two-dimensionally by dropping a steady stream of pebbles into a lake.) This pattern surrounds the ship at all times and is detectable in N-space by special sensors, called T-Dopplers. If the disruption pattern passes over a T-Doppler station, that station has a chance of picking up the ship. The size of this disruption sphere is based solely on the speed that the ship is traveling in T-space, with faster ships generating larger disturbances. The intensity of the disruption pattern varies with the mass of the ship. The radius in light years of such a disruption pattern is based on its T-space speed, as shown in the chart below. If a ship is traveling at one light year/month, it has a disruption pattern with a radius of five light years.

T-SPACE DISRUPTION PATTERN

LY/Month	Diameter(LY)	Radius(LY)
1	10	5
10	11	5.5
100	20	10
1,000	109	54.5
2,000	208	104
3,000	307	153.5
4,000	406	203
5,000	505	252.5
6,000	604	302
7,000	703	351.5
8,000	802	401
9,000	901	450.5
10,000	1,000	500

A T-Doppler station has a chance of detecting a T-space disruption passing over it. This chance is based on the intensity of the disruption, which in turn, is based on the mass of the ship generating the pattern. Small ships (patrol class) are very difficult to detect, while a battleship is relatively easy to detect. Depending on the "quality" of the detection, a station can tell where the ship is heading (always), how fast it is going (relative certainty), and what its mass is (depending on how good is the die roll). If several ships are traveling in a fleet, each wave-form generated by each ship is liable to detection. While a single corvette might be undetectable, when a thousand of them are traveling on the same course, some of the ships will almost always be detected.

T-SPACE DETECTION PROBABILITIES

Patrol	5%
Destroyer	20%
Frigate	35%
Cruiser	65%
Battleship	95%

After a ship has been detected in T-space, it is possible to guess its destination by projecting its current flight path, though it is not possible to say exactly where along that line the ship will exit. In the worst case, a commander will know that the ship should exit in one of eight quadrants. In the best case (a good T-Doppler reading off of a big target), he will be able to estimate the ship's flight path accurately through the system.

SPACE WEAPONRY

LASERS

Lasers are coherent beams of light generated through Gennium-Arsenic crystals. Once up to power, the laser bolt is turned loose and focused through optical lenses or electromagnetic aiming devices. The amount of damage it can do depends on the laser's distance from the target, as its beams tend to disperse and grow weaker over long distances.

Lasers have superb penetrating power. While most weapons cause conical-shaped damage profiles when striking armor plating, the damage profile of a laser hit is a column. It is not uncommon to see armor plate that can easily absorb a Mass-drive hit be drilled right through by a laser hit.

LASER CRYSTALS

Gennium-Arsenic is a dun-colored ore that exists only on violent worlds whose catastrophic forces combine perfectly to create this rare ore. Because the ore is so often associated with poisonous gases or radioactivity, or with volcanos and other unstable land conditions, many realms force slaves or criminals to do the dangerous work of mining Gennium-Arsenic. At the worst TOG mines, the average life expectancy of a "miner" is about two days.

Once mined, the ore is sent to be grown into crystal. This process is so complex that it can be done only in a zero-G environment. First, the crystal is "seeded" by immersing a diamond "bud" attached to a rotating shaft in an electrically charged froth of crushed ore. The charged ore collects on the surface of the diamond and begins to crystallize. Once a sizeable crystal is started, the diamond bud is broken off, to be used again. The crystal is then examined for purity and trueness before being placed back upon the rotating shaft, to be bathed and grown in the ore again. After another interval, the crystal is examined once more. This lengthy process of bathing and then examining the crystal continues for as long as it takes to create one of the right length and diameter.

Crystals range in size from .5 meters long and about a centimeter in diameter for hand weapons to an incredible ten meters long and ten centimeters in diameter for the largest laser cannon on a battleship. Purity is essential. An impure crystal may be good for a few shots, but eventually the impurity will cause a locus of disharmony and literally shake the crystal to pieces, causing a back surge in power that will explode the power pack of the weapon, to the misfortune of the user.

Needless to say, both the mines and the orbiting facilities at which the crystals are grown, often known as "Crystal Gardens," are prime military targets.

SHIELDING

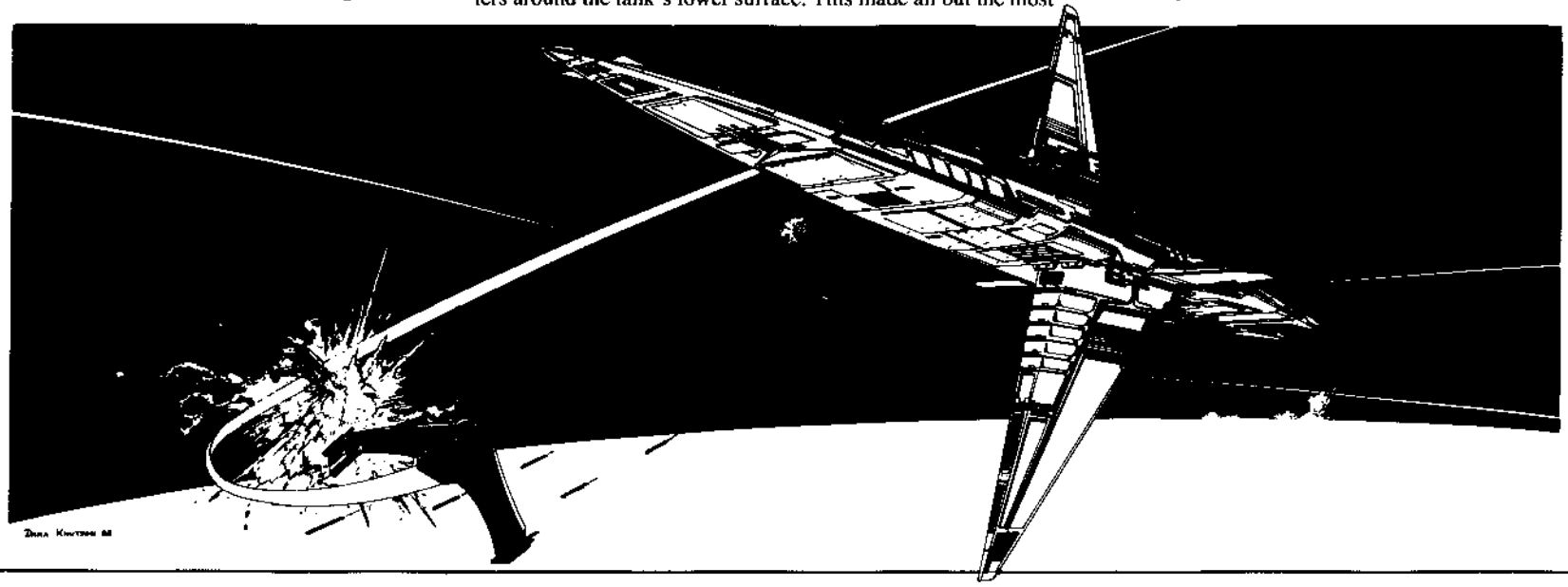
At one time, the thickness of a ship's armor plating was its only defense against a weapons hit. This was slim protection against the dizzying array of powerful weapons available.

In 2289, G. Greerson discovered the shield principle. A professor and technologist with a manufacturer of anti-gravity devices, Greerson had been pondering why anti-gravity tanks rarely took hits on the lower half of their bodies. A little experimentation soon turned up the answer. Planetary gravity reacted with a tank's anti-gravity device to create a wake of pressure-gravity, a fine sheet of extreme gravity extending a few centimeters around the tank's lower surface. This made all but the most powerful weapon veer harmlessly away or detonate prematurely.

Greerson soon had a working model of a device to generate a similar shield around an object without having to interact with a planet's gravity. Placing the device on an assistant, the professor stood back and threw the switch. The results were less than satisfying, for the shield quickly drew more power than the system could supply. In later trials, the professor discovered that when the shield passed the point of no return, the wave of pressure-gravity collapsed upon itself. His unfortunate assistant was literally rippled to death even before the shield detonated.

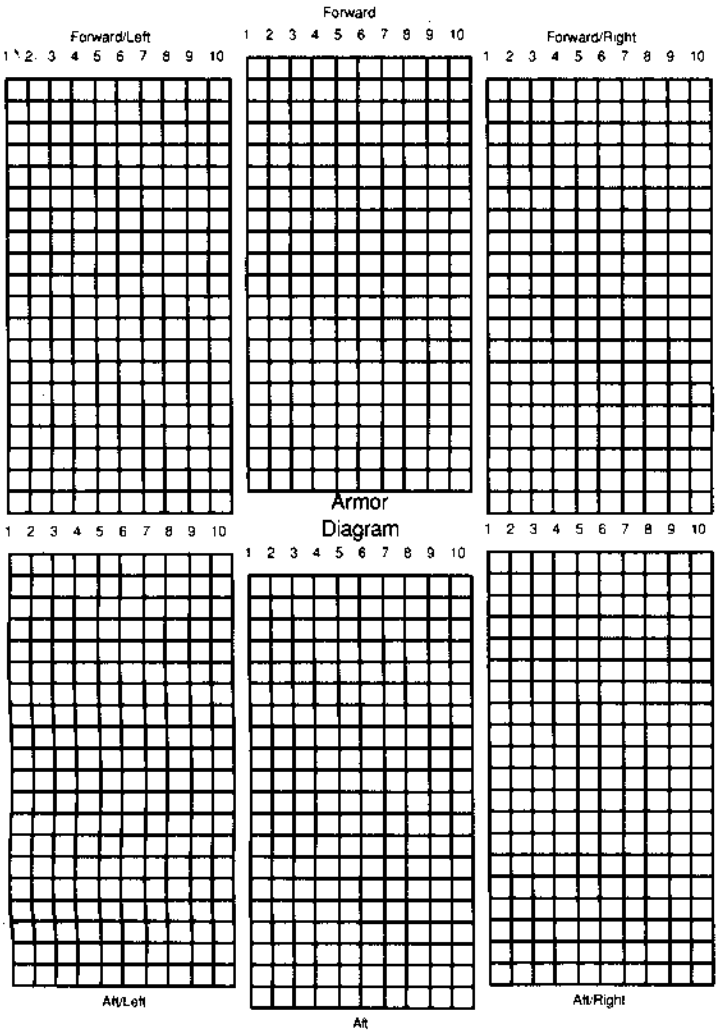
To lessen the shield's power demands, a new version was developed to flicker like a strobe. In the fixed type most used on fighters, the flicker rate was preset and unchanging. In the variable version, the pilot could set the shield to flicker at different rates, according to his needs.

A shield's effectiveness is measured by the number of on-off cycles it goes through in a second (flicker rate). Under combat conditions, a shield rated at 70 would intercept most incoming attacks 50 percent of the time. There is no theoretical limit to a shield's flicker rate. There are two practical limits, however. First, as the flicker rate is increased, the power usage increases geometrically. A flicker rate of 200 would have a power requirement of a small city. Second, there seems to be a limit on battlefield effectiveness. No matter how fast the flicker rate, at least 10 percent of all shots get through.



Battleship Class Ship Record Sheet

Ship Name _____



Weapons

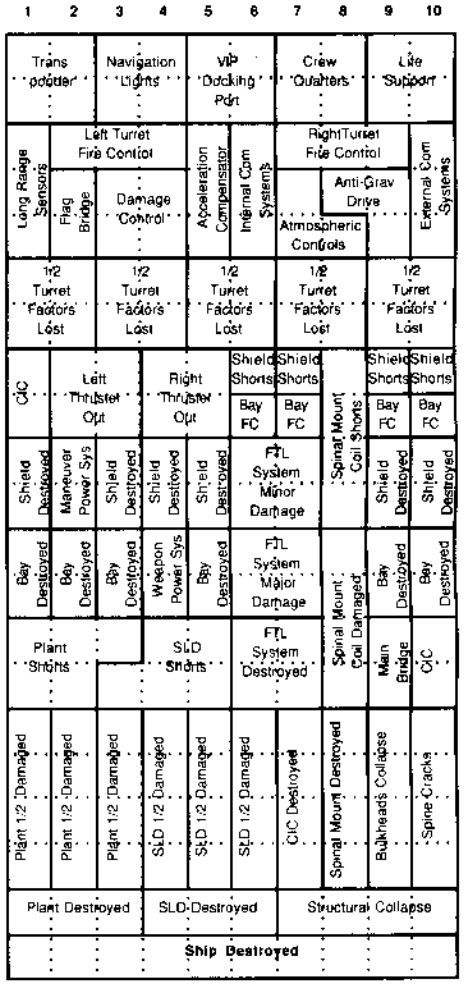
	Bearing	1 (10)	2-3 (9)	4-6 (8)	7-10 (7)	11-15 (6)	16-20 (5)	Fire Modifier
Spinal Mount								
Bays								

Range	0	1	2	3	Fire
To-Hit Number	(9)	(9)	(7)	(5)	Modifier
LEFT Turret Factor	6	6	5	4	
RIGHT Turret Factor	6	6	5	4	

Missile Shots ☐☐☐

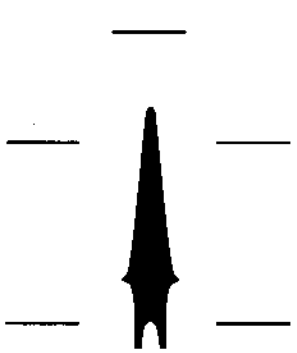
Missile Type _____ Damage _____

Internal Component Block



Turn	1	2	3	4	5	6	7	8	9	10	11	12
Velocity												
Drift												
Weapons												
Maneuver												

Velocity	0	1	2	3	4	5	6	7	8	9	10
Thrust per Turn	1	1	1	2	2	2	3	3	3	4	4



Shield Factors

Thrust

Normal ___

Damaged ___

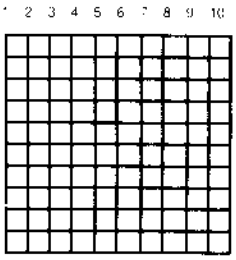
Double ___

Damaged ___

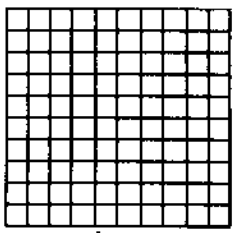
Cruiser Class Ship Record Sheet

Ship Name _____

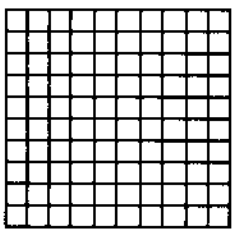
Forward Left



Forward

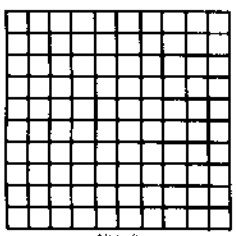


Forward Right

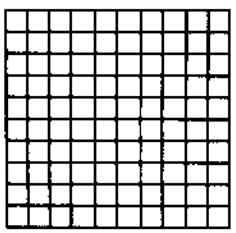


Armor Diagram

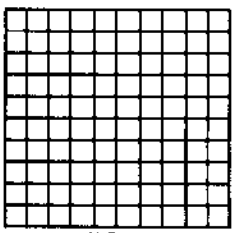
Aft Left



Aft



Aft Right



Weapons

Bearing	1 (10)	2-3 (9)	4-6 (8)	7-10 (7)	11-15 (6)	16-20 (5)	Fire Modifier
Spinal Mount							
Bays							

Range	0	1	2	3	Fire
To-Hit Number	(9)	(9)	(7)	(5)	Modifier
RIGHT Turret Factor	5	5	4	3	
LEFT Turret Factor	5	5	4	3	

Missile Shots ☐☐☐

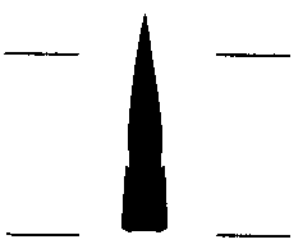
Missile Type _____ Damage _____

Turn	1	2	3	4	5	6	7	8	9	10	11	12
Velocity												
Drift												
Weapons												
Maneuver												

Internal Component Block

1	2	3	4	5	6	7	8	9	10
Transponder		Navigation Lights		VIP/Docking Port		Crew Quarters		Life Support	
Long Range Sensors		Left Turret Fire Control		Attc Comp	Com Systems	Right Turret Fire Control			Ex Com Systems
	Flag Bridge	Damage Control				Atmospheric Controls		AG Drive	
1-2 Turret Lost		1-2 Turret Lost		1-2 Turret Lost		1-2 Turret Lost		1-2 Turret Lost	
CIC		Left Thruster		Right Thruster		Shield Short	Shield Short	Spinal Mount Col Shorts	Shield Short
Bay Dest	Bay Destroyed	Shield Dest	Weapon Power Sys	Shield Dest	Shield Destroyed	Bay FC	Bay FC		Bay FC
Shield Destroyed	Shield Dest	Maneuver Power Sys	Bay Dest	Bay Destroyed	Bay Dest	FTL Minor		Spinal Mount Col Damaged	Shields Destroyed
						FTL Major			
Plant Shorts		SLD Shorts				FTL Destroyed		Spinal Mount Col Damaged	Bay Dest
Plant 1-2 Damaged	Plant 1-2 Damaged	Plant 1-2 Destroyed	SLD 1-2 Damaged	SLD 1-2 Damaged	SLD 1-2 Damaged	CIC Destroyed	Bulkheads Collapse	Spinal Mount Destroyed	Spine Cracks
Plant Destroyed			SLD Destroyed			Structural Collapse			
Ship Destroyed									

Velocity	0	1	2	3	4	5	6	7	8	9	10
Thrust per Turn	1	1	1	2	2	2	3	3	3	4	4



Shield Factors

Thrust

Normal ___

Damaged ___

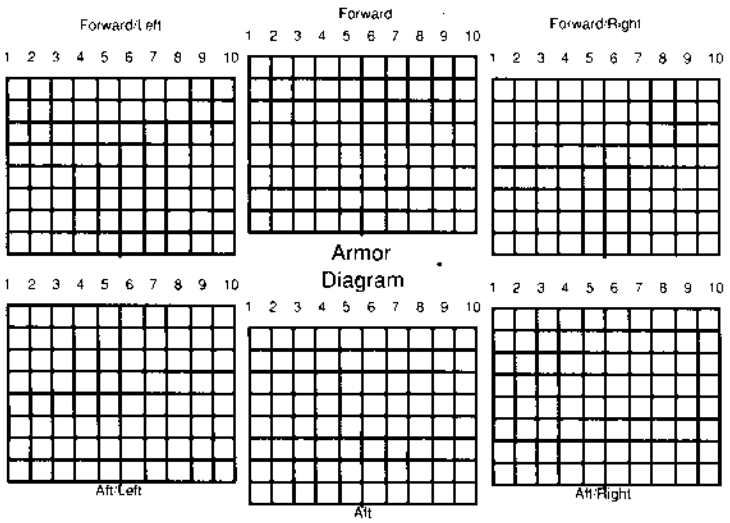
Double ___

Damaged ___

Frigate Class Ship Record Sheet

Ship Name _____

Armor Diagram



Weapons

	Bearing	1 (10)	2-3 (9)	4-6 (8)	7-10 (7)	11-15 (6)	16-20 (5)	Fire Modifier
Spinal Mount								
Bays								

Range To-Hit Number	0 (9)	1 (9)	2 (7)	3 (5)	Fire Modifier
RIGHT Turret Factor	4	4	3	2	
LEFT Turret Factor	4	4	3	2	

Missile Shots ☐☐☐

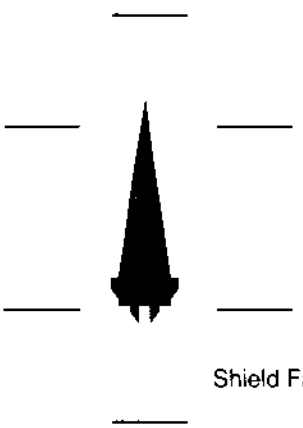
Missile Type _____ Damage _____

Turn	1	2	3	4	5	6	7	8	9	10	11	12
Velocity												
Drift												
Weapons												
Maneuver												

Internal Component Block

1	2	3	4	5	6	7	8	9	10
Trans-ponder		Navigation Lights		VIP Docking Port		Crew Quarters		Life Support	
Com Sys	Left Turret Fire Control			Atm Control		Right Turret Fire Control			Com Sys
1/2 Turret		Acc Comp	1/2 Turret		1/2 Turret		AG Drive	1/2 Turret	
CIC		Left Thruster		Right Thruster		FTL Minor		Shield Short	Bay FC
Shield Dest	Bay Dest	Man PS	Weap PS	Shield Dest	Bay Dest	FTL Major		SM Minor	Main Bridge
Plant Shorts			SLD Shorts			FTL Destroyed		SM Major	CIC
Plant 1/2	Plant 1/2	Plant 1/2	SLD 1/2	SLD 1/2	SLD 1/2	CIC Dest	Blk Clps	SM Dest	Spine Cracks
Plant Destroyed			SLD Destroyed			Structural Collapse			
Ship Destroyed									

Velocity	0	1	2	3	4	5	6	7	8	9	10
Thrust per Turn	1	1	1	2	2	2	3	3	3	4	4



Thrust

Normal ___

Damaged ___

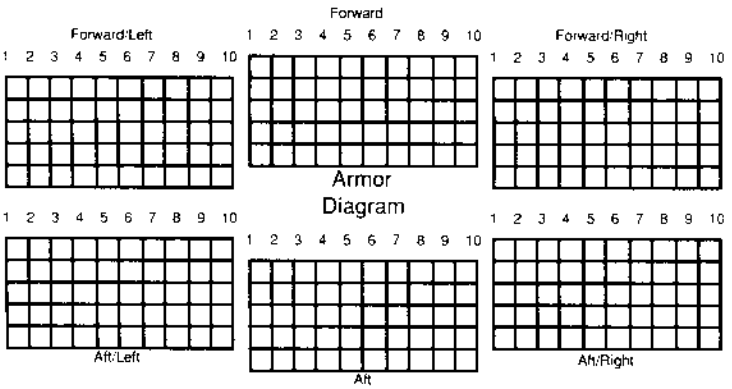
Double ___

Damaged ___

Shield Factors

Destroyer Class Ship Record Sheet

Ship Name _____



Weapons

	Bearing	1 (10)	2-3 (9)	4-6 (8)	7-10 (7)	11-15 (6)	16-20 (5)	Fire Modifier
Spinal Mount								
Bays								

Range To Hit Number	0 (9)	1 (9)	2 (7)	3 (5)	Fire Modifier
RIGHT Turret Factor	3	3	2	1	
LEFT Turret Factor	3	3	2	1	

Missile Shots ☐☐☐

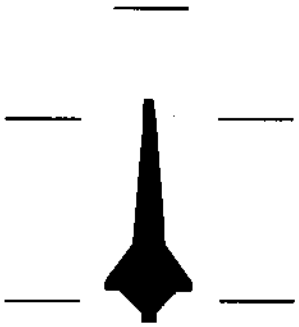
Missile Type _____ Damage _____

Turn	1	2	3	4	5	6	7	8	9	10	11	12
Velocity												
Drift												
Weapons												
Maneuver												

Internal Component Block

1	2	3	4	5	6	7	8	9	10
Trans-poader		Navigation Lights		Vip Docking Port		Crew Quarters		Life Support	
1/2 Turret	AG Drive	Atm Control	Acc Comp	1/2 Turret	Com Sys	FTL Damaged		SM Minor	Main Bridge
Bay Dest	Shield Dest	Man PS	Weap PS	Bay Dest	Shield Dest	FTL Destroyed		SM Major	CIC
Plant 1/2	Plant 1/2	Plant 1/2	SLD 1/2	SLD 1/2	SLD 1/2	CIC Dest	Blk Clps	SM Dest	Spine Cracks
Plant Destroyed			SLD Destroyed			Structural Collapse			
Ship Destroyed									

Velocity	0	1	2	3	4	5	6	7	8	9	10
Thrust per Turn	1	1	1	2	2	2	3	3	3	4	4



Shield Factors

Thrust

Normal ___

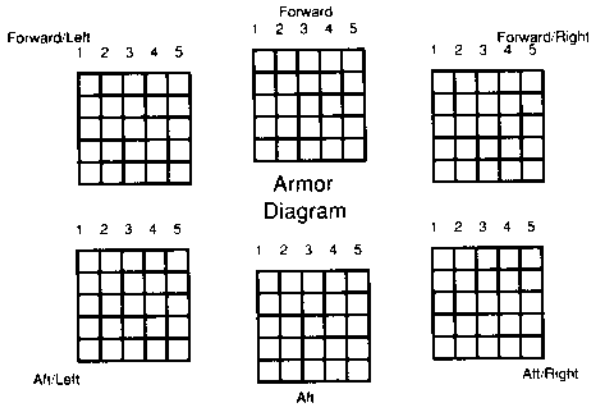
Damaged ___

Double ___

Damaged ___

Patrol Class Ship Record Sheet

Ship Name _____



Weapons

Bearing	1 (10)	2-3 (9)	4-6 (8)	7-10 (7)	11-15 (6)	16-20 (5)		
Spinal Mount								
Bays								

Range To-Hit Number	0 (9)	1 (9)	2 (7)	3 (5)	Fire Modifier
RIGHT Turret Factor	3	3	2	1	
LEFT Turret Factor	3	3	2	1	

Missile Shots ☐☐☐

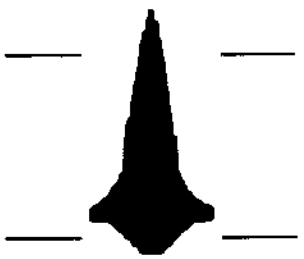
Missile Type _____ Damage _____

Fighter Missle Factor _____

Turn	1	2	3	4	5	6	7	8	9	10	11	12
Velocity												
Drift												
Weapons												
Maneuver												

Internal Component Block

1	2	3	4	5
Trans-ponder	Nav Lights	VIP Port	Crew Quart	Life Sup
1:2 Turret	AG Drive	Atm Control	SM Minor	FTL Dest
Bay Dest	Shield Dest	CIC Dest	SM Major	Main Bridge
Plant 1:2	SLD 1:2	Blk Ctrs	SM Dest	Spine Cracks
Plant Destroyed		SLD Destroyed		Struct Collap
Ship Destroyed				



Shield Factors

Thrust

Normal __

Damaged __

Double __

Damaged __

Velocity	0	1	2	3	4	5	6	7	8	9	10
Thrust per Turn	1	1	1	2	2	2	3	3	3	4	4

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Movement Rate

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Movement Rate

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Movement Rate

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Movement Rate

Orbital Installation Record Sheet

Armor Diagram

Forward:Left

1	2	3	4	5	6	7	8	9	10

Forward

1	2	3	4	5	6	7	8	9	10

Forward:Right

1	2	3	4	5	6	7	8	9	10

Aft:Left

1	2	3	4	5	6	7	8	9	10

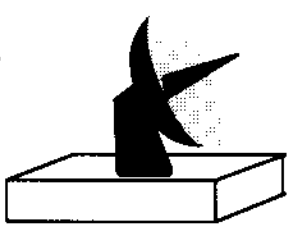
Aft

1	2	3	4	5	6	7	8	9	10

Aft:Right

1	2	3	4	5	6	7	8	9	10

Turn	1	2	3	4	5	6	7	8	9	10	11	12
Weapons												
Shields												



Shield Factors

Weapons

Bearing	1	2-3	4-6	7-10	11-15	16-20	Fire
To Hit Number	(10)	(9)	(8)	(7)	(6)	(5)	Modifier
Bays							

Range	0	1	2	3	Fire
To Hit Number	(9)	(9)	(7)	(5)	Modifier
Right Turret Factor					
Left Turret Factor					

Missile Shots ☐☐☐

Missile Type _____ Damage _____

Internal Component Block

1	2	3	4	5	6	7	8	9	10

Trans-porter		Navigation Lights		VIP Docking Port		Crew Quarters		Life Support	
	Left Turret Fire Control				Internal Com Systems		Right Turret Fire Control		External Com Systems
Flag Bridge		Damage Control				Artifical Gravity Generator			
1/2 Turret Factors Lost		1/2 Turret Factors Lost		1/2 Turret Factors Lost		1/2 Turret Factors Lost		1/2 Turret Factors Lost	
CIC	Facility 1/2 Damaged				Shield Shorts	Shield Shorts	Shield Shorts	Shield Shorts	Shield Shorts
					Bay FC	Bay FC	Bay FC	Bay FC	Bay FC
Shield Destroyed	Maneuver Sys	Shield Destroyed	Shield Destroyed	Shield Destroyed	Cargo Deck		Shield Destroyed	Shield Destroyed	Shield Destroyed
Bay Destroyed	Bay Destroyed	Bay Destroyed	Weapon Power Sys	Bay Destroyed				Bay Destroyed	Bay Destroyed
Plant Shorts			Life Boats		Secondary Computer			Main Bridge	CIC
Plant 1/2 Damaged	Plant 1/2 Damaged	Plant 1/2 Damaged	Installation Equipment			CIC Destroyed		Bulkheads Collapse	Spine Cracks
Plant Destroyed			Facility Destroyed			Structural Collapse			
Installation Destroyed									