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2300™

STAR CRUISER

Frank Chadwic

Starship Construction and Combat in the Year 2300

Game Designers' Workshop

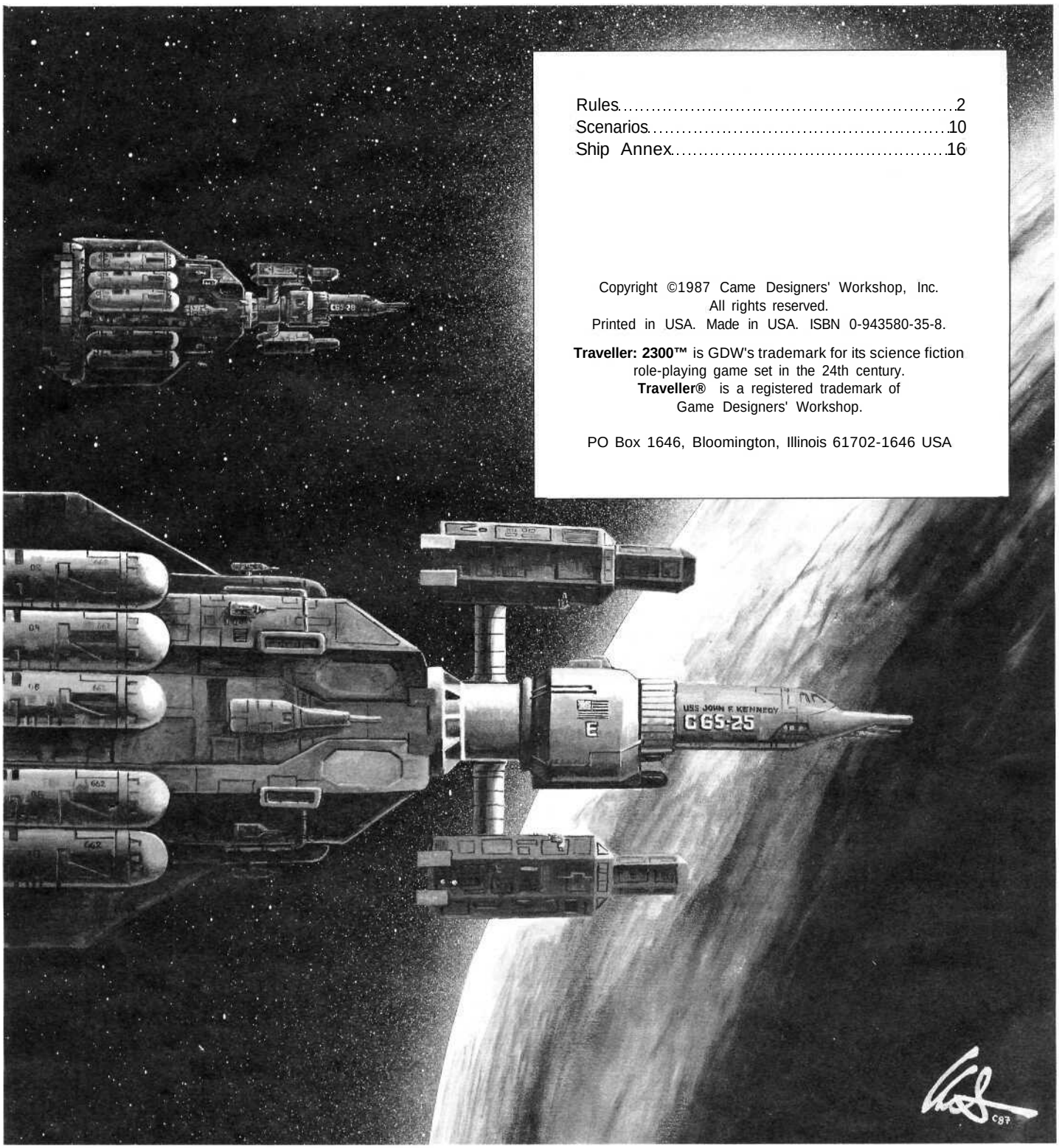
Scan/OCR by aSundAdar 2003

Hunger...

2300™

STAR CRUISER

RULES BOOK



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GAME DESIGNERS' WORKSHOP

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Rules

INTRODUCTION

Star Cruiser is a game of naval combat in the 24th century. However, the navies it represents are those which guard the spaceways rather than the seas. In the 20th century, the naval forces of a state are most often engaged in three missions: coastal defense, commerce protection (or raiding), and force projection. In the 24th century, stellar navies will strive to carry out similar missions. The coasts of a state, however, will be orbital space, and commerce will be with inhabitants of other star systems.

GAME COMPONENTS

The following components are included in *Star Cruiser:*

Two Maps: Each map shows a starfield and has a hexagonal grid superimposed. Each hexagon (hereafter "hex") represents 600,000 km of space from side to side.

One Counter Sheet: Counters representing 60 large ships and 1 20 small vessels, drones, torpedoes and game markers are included.

One Naval Architect's Manual: This manual explains the principles used in the design, construction and use of starships, and gives complete rules enabling you to design and build your own vessels.

One Data Form Booklet: This booklet has the ship data forms necessary for playing the game.

Two Combat Charts: These summarize all relevant combat charts and tables.

One 10-sided Die: The die is used to generate random numbers. Unless otherwise stated, all rolls are made using a 10-sided die for a 1-10 result.

This Rule And Scenario Book.

SEQUENCE OF PLAY

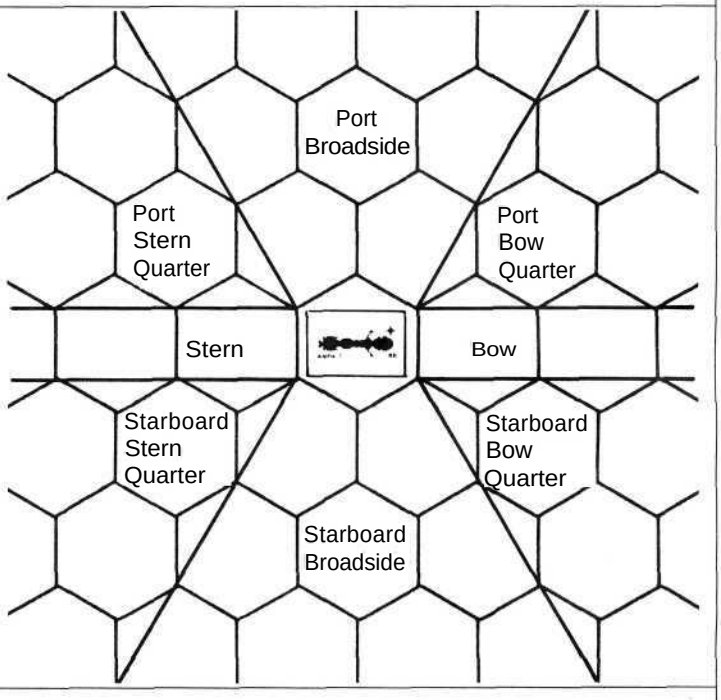
Star Cruiser is played in turns, each representing one minute of real time. All activity in a turn takes place in the following sequence:

Intruder Movement and Fire Phase
Active Sensor Illumination Phase
Detection Phase
Detonation Phase
Intruder Damage Control Phase
Native Movement and Fire Phase
Active Sensor Illumination Phase
Detection Phase
Detonation Phase
Native Damage Control Phase

Only the Native player may move and fire in the Native Movement and Fire Phase or conduct damage control activity in the Native Damage Control Phase. Only the Intruder player may move and fire in the Intruder Movement and Fire Phase or conduct damage control activity in the Intruder Damage Control Phase. In all other phases, both players conduct actions simultaneously. After all phases are complete, a new game turn is started. Play continues until one side or the other fulfills the victory conditions of the battle being fought.

FACING

All ships have a facing, as shown in the diagram below.



Each vessel, missile, and drone in play must be faced toward one of six possible hexsides at all times. Facing may only be changed in the movement phase as a result of the expenditure of movement points. Facing affects movement for all ships and also affects the number of lasers which can bear on a target.

Facing also usually affects the reflective signature of the vessel and its target profile.

MOVEMENT

All ships and missiles, and most sensor drones, have a movement allowance. All ships in this game have their movement allowances printed in the Data Form Booklet. For specially designed ships, movement in *Star Cruiser* is equal to twice the warp efficiency, rounding to the nearest whole number. Note that only vessels with stutterwarps have movement allowances; all other ships and objects have a movement allowance of zero.

A ship's movement allowance is the number of movement points it may expend in a single movement phase. Each movement point may be used either to move the ship forward one hex in the direction it is currently facing or to change its facing by one hexside. Ships with more than one movement point may spend some points on facing changes and some on movement. Facing changes may be done at any point during the movement of the ship, including those at the beginning or end. A ship need not expend all of its movement points, but unused movement points may not be accumulated from turn to turn.

Sequence of Movement: Generally, a player moves one ship at a time, conducting its entire move and all fires, before moving another ship. Ships that begin the phase together and intend to move together for the entire phase may be moved at the same time.

"All Stop": Any ship may declare "All Stop" at the beginning of its movement phase, in which case it expends no movement points that phase. The ship's radiated signature is cut in half (rounding fractions down). Also, the ship may change facing in the hex it occupies (at no movement point cost) to any desired facing. Ships at "All Stop" may not fire submunition launchers.

DETECTION

All vessels in play are initially represented by "bogey" markers. It is impossible to completely mask all emissions from a powered-up starship, and the game assumes that in most cases both sides are aware of at least the presence of "something" out there. At that point, however, there is insufficient information to identify the bogey as a "bandit" (definite hostile craft) or, more importantly, provide any of the ship's weapons with an acceptable target solution. Once detected, however, the bogey is replaced with the correct ship counter and can be fired at.

Each vessel has two signatures and two possible means of detecting similar signatures in other vessels. Signatures may be radiated or reflected. The radiated signature of a ship represents the neutrino and infrared emissions of its power plant. Reflected signature is the extent to which a vessel will produce a recognizable radar "echo" when another vessel attempts to detect it with active radar.

Sensors may be passive or active. Passive sensors include neutrino detectors and infrared sensors, as well as advanced optics (telescopes). They do not emit any detectable energy of their own when in use (hence the name "passive"). Active sensors represent the multiple wavelength high-energy radars used by warships to illuminate small targets many light-seconds away. The chance of detecting another ship with active sensors depends on the range to the target, how good an "echo" the target will produce (its reflective signature), and how good the data processing equipment on the detecting ship is at deciphering the echo.

A. Signatures

Each ship listing gives the radiated and reflected signature values of the ship. Radiated signature is used when a hostile vessel attempts to detect the target vessel with passive sensors. Reflected signature is used when the detection attempt is made with active sensors.

Masking: Some ships have two radiated values, the second and higher one in parentheses. These ships incorporate neutrino shields and IR dissipating radiators on the hull surface to mask the radiated signature of the ship. The lower number is the normal (masked) signature, which is used until the ship's hull suffers enough damage to be breached (either a minor or major breach). When that happens, the signature is no longer masked, and the second (higher) value is used.

Target Aspect: Target aspect refers to the angle of the target vessel in respect to a hostile vessel attempting to detect it. Target aspect does not affect passive detection, but it does affect active detection. Most ships have lower reflective signatures when viewed radially (from the bow or stern) than when viewed laterally (from the side). Lateral values are used when the detecting sensor is in the broadside aspect of the ship, while the radial value is used when the detecting sensor is in the bow or quarter aspect of the ship.

B. Sensors

The ship status sheet gives a value for the active and passive sensors on a ship. In both cases, the number represents the ship's autospot range, the range in hexes at which the ship will automatically detect a vessel with a signature of 1 or greater. Active sensors only detect reflected signatures; passive sensors only detect radiated signatures. Each hex beyond perfect detection range raises the minimum signature detected by 1.

For example, a ship with a passive sensor rating of 5 would be able to detect any ship with a non-negative sensor value at a range of five hexes or less. At six hexes it could only detect ships with a radiated signature of 2 or greater. At seven hexes it could only detect ships with a radiated signature of 3 or better.

Negative Signature Values: Vessels with negative value signatures may not be detected beyond the sensor's autospot range. At the autospot range and less, the detecting player must roll the die and obtain a result greater than the absolute value of the vessel's signature. This die roll is not affected by range (but is only possible if the vessel is at less than autospot range). The player with the negative signature value vessel need not announce the true signature value of his vessel until and unless it is detected. Instead, he need only observe the detecting player's die roll and tell him whether or not it was high enough.

For example, a vessel with a signature of - 1 would be spotted on a roll of greater than 1; one with a signature of - 2 would be spotted on a roll greater than 2, etc.

C. Committing Active Sensors

During each Active Sensor Illumination Phase, both players decide whether they will illuminate their active sensors. During the phase both players place either an "illuminate" marker or some other unused counter or marker face down next to each ship. All are revealed simultaneously; those with "illuminate" markers are using their active sensor suites while all other ships are not.

Using the active sensor suite allows the vessel to use its active sensor rating in the next two detection phases; the one immediately following the Active Sensor Illumination Phase and the next one following that. Ships using their active sensors do so using the reflected signature of the target and their own active sensor value.

Illuminating the active sensors also has consequences. Since the radar is a massive burst of electromagnetic energy, the illuminating vessel is automatically spotted by all vessels of the opposing player. This automatic spot is in effect for the same two detection phases in which the active radar can be used.

D. Detection Procedure

In order to detect a bogey, a ship must make a detection attempt. This is done in several steps. First, the detecting player

counts the range to the bogey he wishes to detect and determines the minimum signature which he can detect at that range. He then asks his opponent, "Is the radiated (or reflective) signature of this bogey N or greater?" (N being the minimum signature he can detect.) The opponent then answers either "yes" or "no"—"yes" resulting in the bogey being replaced with a marker or model. If the answer is "no," the bogey remains undetected.

A ship may attempt to detect a single target only once per turn. It may attempt to detect any number of different targets in a turn.

E. Effects of Detection

Once detected, a bogey is replaced with the correct ship counter. The detecting ship at that point usually has sufficient information to determine the ship type and can determine its characteristics. (The computer calls up the appropriate information including displacement, drives, crew complement, etc.) More importantly, the detecting ship now has a solution to the target problem, and its gun directors are locked onto the target.

F. Maintain Target Lock-On

Once a bogey is detected, maintaining that detection is somewhat easier. Roll 7+ on the die to maintain the target lock, using the crew quality modifier (listed for each scenario) as a die roll modifier. However, subtract 1 from the die for each attempt in excess of 1 made during the turn. For example, if a sensor operator attempted to maintain a target lock on three targets, each attempt would suffer a die roll modification of -2.

Of course, if the target remains within the range at which the ship's sensors can detect it, no additional roll to maintain the lock-on is necessary. The roll is only used to maintain a lock on vessels that normally could no longer be detected.

Redundant Sensors: If a ship has multiple passive sensors and operators, each passive sensor must be considered when tracking multiple targets. For example, a ship with two passive sensors could maintain a lock on two separate vessels without suffering a negative modification. The sensors could track four vessels, each sensor maintaining a lock on two vessels and each with a modification of - 1, etc.

FIRING

All weapons in the game are directed-energy beam weapons, either lasers or particle accelerators. Missiles in the game are remotely piloted spacecraft carrying one or more directed energy weapons and intended to carry them "in harm's way" without endangering the mother ship or its crew. Also, missiles are smaller targets (smaller target profile) and are, thus, more difficult to hit. Submunitions are small detonation lasers dropped by a ship and almost immediately detonated and fired. For game purposes they are treated as regular lasers.

A. Firing Procedure

Both sides may fire their weapons at any point desired during the Intruder Movement and Fire Phase. Any weapons not fired during the Intruder Movement and Fire Phase may be fired during the Native Movement and Fire Phase. Thus, each ship can fire each weapon once per turn. Both sides may fire all of their weapons at hostile missiles in the same hex as the one they occupy during the detonation phase. This does not count against their normally allowed one shot per turn.

The moving player moves ships one at a time and specifies when he will fire during the phase. If the enemy fires at a moving ship, he must so announce while that ship is moving, and fire is then resolved. If a moving ship fires from a hex, and an enemy ship fires at it while it is in the same hex, the fire is resolved as if it were simultaneous. That is, the damage from one ship's fire does not take effect until the other ship resolves its own fire.

B. Target Engagement Limits

A ship has a limited number of fire directors, termed Target Tracking Arrays (TTA). Each TTA can engage only one target per phase but may direct more than one weapon to fire on that target. A TTA may only direct the fire of weapons mounted on the same ship as the TTA. For example, a ship with five lasers and two TTA mounts could engage two targets in a phase. It could fire one laser at one target and four at the other, two at one and three at the other, etc.

Ships equipped with UTES (Unified Target Engagement System) have one TTA per UTES, in addition to the laser or particle accelerator there. This mount can direct the fire of conventional turrets on the ship as well. Thus, a ship with two UTES and three lasers functions the same as a ship with two TTA and five lasers.

C. Weapon Description

The ship rating section lists the fire characteristics of all energy weapons carried by vessels in the game. Four characteristics are listed: targeting, mounting, hits and damage. Submunition launchers also include number of rounds carried.

Targeting: Lasers rely on several high-energy bursts to blanket several possible course endpoints for the target. Modern high-efficiency lasers can put out more energy bolts in a given time and, thus, have a greater chance of scoring a hit. By the same token, particle accelerators generally have a lower rate of fire and suffer accordingly. The targeting value of the weapon itself is expressed as a die roll modifier to the chance of hitting.

Mounting: Most weapons are single mounts, but some vessels employ double mounts to get the effect of a more modern (high rate of fire) laser. A double mount still makes only one attempt at a hit, but enjoys a + 1 modification to the hit die roll.

Strikes: Normally a weapon will inflict one target strike per successful shot. Certain weapons (mostly so-called "detonation lasers") pump out a tremendous volume of energy in a very short time in the form of numerous attacks on each given target location. If these weapons achieve a hit, they inflict strikes (rolls on the Hit Location Table) equal to the number shown. Thus a detonation laser with a strike value of 10 would, if it actually hit its target, inflict ten separate strikes.

Example: The owning player may, if he desires, divide these strikes up among several enemy ships. If so, he must specify how many strikes are directed at each ship before making any hit determination rolls. One roll is made per target ship and, if successful, all the strikes directed at the ship hit it.

Damage: Most weapons have a damage value of x1, meaning they do one point of damage per actual strike. Some exceptionally powerful weapons have a damage value of x 2 or x 3, indicating that they do two or three points of damage per strike. (See Damage below.)

Rounds Carried: Each submunition launcher is a canister containing several small submunitions. A submunition does not have a stutterwarp drive. It has only a small number of attitude control jets with two or three seconds of fuel, a nuclear warhead, a laser, and a tight beam communication receiver. The submunition is dropped and, since it has no stutterwarp, remains in place. The ship that dropped it, however, continues to move away. While it does so, the gunner on the ship directs the submunition at the target, using the tight beam commo link. He does this using his TTA as if the submunition were a hull-mount laser. The short-range tight beam transmitter is included in the submunition dispenser rack. When the ship is a safe distance away, the submunition warhead detonates and pumps a *grazer* (gamma ray laser), which fires at the target an instant before it is destroyed by the explosion. Thus, each submunition launcher fires like a laser. It can fire once

per turn. Unlike a laser, it has a limited ammunition supply, that being the number of submunitions carried in the launcher. Once these are exhausted, the mount may not fire any more. The "rounds carried" listing is the total number of times the launcher can fire per scenario.

D. Targets in Atmosphere

No weapon may engage a target that is still in an atmosphere. One-third of the time a ship spends entering or leaving a planet's surface is spent in the atmosphere. During the remaining time, it is still escaping the gravitational pull of the world but is out of the atmosphere and is, therefore, an eligible target.

RANGE

Weapons may only fire at targets in adjacent hexes or in the same hex as the firing ship. To determine whether a weapon hits, roll the die. The weapon hits on a roll of 7 or greater. However, the die roll is modified as follows:

+ Crew Quality (see scenario) (does not apply to missiles).
+ or - Target's Target Profile.
+ or - Weapon Targeting Rating.
-2 at 1 hex range.
+ 1 if double-mount turret.
+ or - Ship's Targeting Computer Rating.

Note: All ships actually equipped with a targeting computer have a positive die roll modification. Certain older ships in some of the earlier historical scenarios have particularly primitive tracking means which are reflected by rating them with a negative die roll modification re-coded in the targeting computer entry line of the ship rating.

SCREENS

The ship status sheets list screen values for those ships that have them. Screen values range from 1 to 6 and represent the effectiveness of the screen at the beginning of each turn in which they are energized. Their effective value may decline as they absorb hits during the turn.

Once a hit has been achieved on a ship with screens, it must be confirmed against the screens. For each hit, roll the die once. The hit penetrates through the screens if the die roll is greater than the current screen value; otherwise, the screen absorbs the hit.

Each hit absorbed by the screen reduces the effective value of the screen by the damage multiplier of the weapon. This reduced effective value is in effect from the end of the phase in which the hits were made, and remains in effect until either reduced further or until the owning player's next Damage Control Phase. During a player's Damage Control Phase, all screens automatically reset to their original value.

If a ship's power plant is inoperative due to battle damage or the ship is executing an "All Stop," the screens may not be used.

Players may energize (turn on) or de-energize (turn off) their screens during any Friendly Movement Phase but must announce any change in screen status when they do so. While in use, the current value of the screens is added to the radiated signature of the ship. However, a screen need not be run at full power and instead may be "tuned" to any value up to the original screen rating.

HIT LOCATION

Once a hit has been achieved on a ship and it has been confirmed against the ship's screens, the hit location must be determined. Roll on the General Hit Location Table. If the result is "surface fixture," immediately roll again on the Surface Fixture Hit Location Table. If the result is "critical," immediately roll on the Critical Hit Table.

ARMOR

Some ships have an armored hull. If so, this is noted on the ship status sheet. Armor protects the ship's internal components from damage but provides no protection for surface fixtures. Thus, a hit on a surface fixture of an armored ship is resolved normally.

Any hit other than on a surface fixture is affected by armor and must be confirmed. In order to confirm a hit on an armored ship, roll the die. If the result is higher that the ship's current armor level, the hit normally penetrates and causes damage. Otherwise, it is ignored.

Once the hull has taken enough hits to suffer a minor breach, its armor value is cut in half (rounding fractions up). Once the hull has taken enough hits to suffer a major breach, its armor value is reduced to zero.

Jack Turrets: Jack turrets are flat-topped, retractable turrets with limited arcs of fire. However, jack turrets have the advantage of being armored. Each jack turret has the same armor value as the hull, and, thus, hits on them must be confirmed as if they were an internal component rather than a surface feature. Jack turrets keep their full armor value regardless of how seriously the hull has been breached.

DAMAGE

For each strike on a vessel, roll the die once on the General Hit Table. Each strike does damage points equal to its damage multiplier, and these damage the indicated location.

A. General Hits

Hull: The ship rating for a vessel will list three different hull hit values. The first (lowest) number is the number of cumulative hull hits required to open a minor breach. A minor breach reduces the ship's armor value (if any) by half and renders masking equipment inoperative. The vessel uses its unmasked radiated signature and adds 1 to its reflected signature. If the vessel does not employ masking, then this hit level affects only the reflected signature. The second (higher) number is the number of cumulative hull hits required to open a major breach in the hull. A major breach in the hull doubles the radiated and reflected signature of the vessel and reduces its armor value to zero. The third (highest) number is the number of hits required to completely destroy the structural integrity of the hull. Once the hull fails, the ship is completely destroyed.

Power Plant: The ship rating for a vessel will give two different power plant hit values. The first (smaller) value is the number is the number of hits required to render the power plant inoperable. The second (higher) number of hits are those required to damage the plant beyond repair. Once the power plant is inoperable, the ship goes to an "All Stop" situation. Additionally, the ship may not make any active sensor detection attempts or fire any energy weapons. Battery power is sufficient to maintain communications, life support, and the passive sensor array for the duration of the battle.

Crew: One damage control crewman is killed.

Surface Fixture: Roll again on the Surface Fixture Hit Table.

Critical: Roll again on the Critical Hit Table.

B. Surface Fixtures

Active Sensors: One or more damage points to the ship's active sensor array renders it inoperable until repaired. If the ship is equipped with more than one active sensor array, randomly determine (with a die roll) which array was hit. A ship that has no undamaged active sensor array may not conduct active detection

attempts.

Passive Sensors: One or more damage points to the ship's passive sensor array renders it inoperable until repaired. If the ship is equipped with more than one passive sensor array, randomly determine (with a die roll) which array was hit. A ship that has no undamaged passive sensor array may not conduct passive detection attempts.

Weapons Mount: One weapons mount (turret, missile pack, submunition dispenser) is hit. If the vessel has more than one weapons mount, randomly determine (with a die roll) which was hit. One damage point to a weapons mount renders it inoperable, and two points damages it beyond repair for purposes of the game. A damaged weapons mount may not fire until repaired, nor may a damaged UTES direct the fire of another weapons mount.

Target Tracking Array (TTA): One damage point to a TTA renders it inoperable, and two points damages it beyond repair. A damaged TTA may not direct fire while inoperable.

Communicator: One damage point to a communicator renders it inoperable, and two points damages it beyond *repair.* If more than one communicator is present, determine randomly (with a die roll) which is damaged. A damaged communicator for a remote station may not control a missile. If no other remote station is available to take control of the missile, it goes to "All Stop" until communication is reestablished with it.

Screen Generator: One damage point to the screen generator reduces the screen value by one until repaired. Multiple damage points cause multiple reductions in screen value. If a ship does not have screens, this counts as a weapons mount hit.

C. Critical Hits

Computer: One or more damage points cause major electronic disruption, causing most data processing equipment to fail. The ship may not fire, move, control remote objects or make detection attempts until the system is repaired.

TAC: One TAC work station is destroyed and the operator killed. That station may not be remanned, but any vacant computer station may be manned and substitute for the work station.

Bridge: One member of the bridge crew is killed and the work station destroyed. That station may not be remanned, but any vacant computer station may be manned and substituted for the computer station.

Life Support: The ship's life support system is damaged. Reduce all crew quality modifiers by 2 until it is repaired.

Drive: The ship's stutterwarp is damaged. The ship may not move until it is repaired.

Hangar Deck: One hangar launch door is rendered inoperative and the deck extensively damaged. If a fighter or other vessel is in the hangar at the time, it is damaged as well. No craft may be launched from, or recovered to, the deck until it is repaired. The damage to the small craft is a hull hit.

Missile Bay: One missile bay is damaged. If the bay has one or more missiles in it at the time, one missile is damaged as well. No missile may be launched until the bay is repaired. The damage to the missile is a hull hit. If the missile can sustain only one hull hit, it is destroyed. This does no additional damage; it merely turns the missile into junk.

Continuing Damage: Continuing explosions and fire cause additional damage until the continuing damage is brought under control (repaired). Each unrepaired continuing damage result inflicts one damage point at the end of each Friendly Damage Control Phase. Roll on the General Hit Table to determine the nature of the damage. (This may trigger a critical hit roll, which in turn may trigger another continuing damage result).

DAMAGE CONTROL

Damage can be repaired during the Friendly Damage Control Phase of a turn. The ship rating lists the number of extra engineer personnel available for damage control. Each group of three engineers (or fraction thereof) forms a single damage control party. Thus, a ship with nine extra engineers has three damage control parties. A ship with 10 extra engineers has four damage control parties.

Each damage control party may attempt to repair one point of damage. To succeed, it must roll an 11 or higher on the die, but it receives the crew quality modifier as an addition. Also, since the bulk of the engineering crew is stationed near the power plant, as are most of the engineering tools and spare parts, attempts to repair power plant damage receive a die roll modifier of +4.

The owning player must declare what all of his damage control parties are doing during the phase before rolling any of the repair attempts.

REMOTE OBJECTS

Remote objects are all those unmanned vessels that are controlled from another ship. Missiles and sensor drones are typical remote objects. Fighters and other manned objects are not.

Remote objects are launched at the beginning of the Friendly Movement and Fire Phase before any movement or fire takes place. If the remote object is powered, it may move during that phase. Controlling the remote object is the job of a remote operator on the mother ship. While in control, the remote object can do anything that any other ship can do, providing it has the equipment necessary to do so. If equipped with sensors, it can detect other ships; if armed, it can attack; if it has a drive, it can maneuver.

Detonation Missiles: Detonation missiles are slightly different from other missiles in that they "fire" by setting off a small nuclear explosion. The explosion destroys the missile, but (momentarily before it does) it pumps a very powerful X-ray or gamma-ray laser which takes multiple shots at nearby targets. The detonation missile is a means of including considerable directed-energy firepower in a small package, although admittedly a one-way package at that.

During the Detonation Phase, any detonation missile on either side may detonate and discharge its weapon. Commitment to detonate is done simultaneously and secretly by the same means (and using the same counters) as for active sensor illumination. Those missiles which detonate must fire and are then removed from play.

Once a missile commits to detonate, all vessels in the same hex as the missile have an opportunity to fire at it with their lasers and particle accelerators. All hits on the missile are hull hits. If sufficient hull hits are achieved to destroy the missile, it detonates but does not fire its laser. If the missile sustains hull hits, but not enough to destroy the missile, the total number of hull hits is applied as a negative die roll modifier to the missile's own fire.

PLANETS

One planet counter is included in the game. This represents a planet and its entire complex of natural satellites, if any are present. In scenarios which call for the presence of a planet, the hex in which the planet is placed is referred to as the "planetary hex." Only one planet is included as, given the scale of the game, two planets will never be on the same map at the same time. Planets affect both movement and detection.

Movement: Vessels pay one additional movement point to enter a planetary hex and one additional movement point to leave a planetary hex. A vessel may enter and leave a planetary hex in

the same turn provided it has sufficient movement points to do so. Ships stationary in the planetary hex (at "All Stop") are in orbit.

Take-offs and Landings: The scenario will list the time it takes a ship to descend from or climb to orbit from a planet surface. When using the *Star Cruiser* rules to fight out battles from a **Traveller: 2300** campaign, the Thrusters section of the Naval Architect's Manual will enable you to calculate the time to or from orbit for any craft from any planet. A part of the time to or from orbit will be spent in the atmosphere. This is specified in the scenario and can be calculated using those rules.

Detection: A planetary hex counts as two hexes for purposes of determining detection range. This is also true when attempting to detect ships in the planetary hex.

Ships landed on the planet are not placed on the playing surface until they take off. Landed ships may not be detected.

Ships in the atmosphere of the planet may not be detected except by other ships either in orbit, or transitioning to or from orbit.

STARS

One star counter is included in the game. In scenarios that call for the presence of a star, the hex in which the star is placed is referred to as the "stellar hex." The six adjacent hexes are referred to as "near stellar hexes." Stars affect both movement and detection.

Movement: All vessels pay two movement points to enter or exit a near stellar hex. No vessel may ever enter a stellar hex.

Detection: A near stellar hex counts as two hexes for purposes of determining detection range. This is also true when attempting to detect ships in the near stellar hex. No detection attempt may be made through a stellar hex.

GIANT EMITTERS

Nuclear explosions and illuminated vessels are giant emitters. Giant emitters produce such giant amounts of energy that detection through the hex becomes difficult. Each vessel which illuminates counts as a giant emitter for as long as it retains its illuminated status. Once a detonation missile or submunition is detonated in a hex, that hex becomes a giant emitter hex (due to radioactive debris) for the rest of the game. Mark this with an inverted unused counter.

Giant emitter hexes are identical to near stellar hexes in their effects on detection. Giant emitter hexes have no effect on movement.

KAFERS

The later scenarios include several actions against the Kafers, a violent and hostile alien race with which several Earth nations are at war in 2300. Kafer crew quality is universally low, but improves once the crew becomes aroused. Once a Kafer ship is fired at, its crew has a progressively greater chance each turn of becoming aroused. Roll the die once each turn thereafter. On the first turn, the Kafer player must roll a 1 or less. On the second turn he must roll a 2 or less, etc. Once the crew becomes aroused, increase its crew quality level by 3 for the remainder of the scenario.

THE SHIP STATUS SHEET

A ship status sheet must be filled out for each ship to be used in a *Star Cruiser* game. For the ships in the scenarios, status sheets are provided for each in the Data Form Booklet. For those ships built using the Naval Architect's Manual, fill out a blank ship status sheet in the following manner.

Silhouette: The box in the upper left corner of the ship status sheet is provided for a rough sketch of the ship. This can be ignored, if desired.

Ship Name, Ship Type, Owning Nation or World: These are fairly self-explanatory. Fill them in as necessary.

Movement: Insert the movement rating of the ship, in hexes. If the ship has no stutterwarp drive, its movement is 0.

Screens: Insert the screen rating of the ship. If the ship has no screens, insert 0.

Radiated Signature: Insert the ship's radiated signature. If the ship has a hull which masks the signature, insert the masked value followed by the unmasked value in parentheses.

Radial Reflected: Insert the ship's radial reflected signature.

Lateral Reflected: Insert the ship's lateral reflected signature.

Targeting Computer: Insert the ship's targeting computer modifier. If the ship has no targeting computer, insert 0.

Radial Profile: Insert the ship's radial profile modifier.

Lateral Profile: Insert the ship's lateral profile modifier.

Armor: Insert the ship's armor rating. If the ship has no armor, insert 0.

Hull Hits: Boxes equal to the total hull hit capacity need to be left blank in this box; the rest need to be filled in. Counting from the upper left box of the first column down, continuing to the top of the second column, etc., leave boxes equal to the hull hit capacity untouched. Fill in the remainder.

As hits are accumulated, block out boxes from left to right, starting with the top row. When the first row is completely blocked out, the ship has suffered a minor breach. When the second row is also blocked out, the ship has suffered a major breach. If all the boxes have been blocked out, the ship has suffered a major structural failure and is destroyed.

Power Plant Hits: Fill in excess boxes here as described for hull hits above.

When the first row of boxes is blocked out from battle damage, the drive is inoperable. When all the boxes are blocked out, the power plant is destroyed and cannot be repaired. The ship cannot move, fire, or operate screens or sensors which require power.

Surface Fixture Hits: Various surface fixtures must be recorded here.

Weapons: Space is allowed for eighteen weapons mounts. Each mount is numbered, has space for the damage, targeting, and number of weapons in the mount, has two hit boxes, and has a display of the facing attitudes into which the mount may fire.

The blank line should be filled out with the damage, targeting, and number of weapons in the mount. For example, a double-mount Hyde Dynamics EAA 1000 laser mount should read " x 2, +1, dbl." Single-mounts need not be noted—mounts not designated as double are assumed to be single.

The two hit boxes are left blank. Mark these off if the two possible hits are achieved on the mount. Around these boxes is a representation of the eight facing aspects. For each weapons mount, block out those facing aspects into which the mount *cannot* fire. As with the counters, the bow is to the left on the display.

TTA, Communicators, Submunitions, Missile Packs: List TTAs as necessary. One communicator exists for every remote station on the ship. Submunitions missile packs are listed as necessary. The two hit boxes are provided to record battle damage for each item.

Sensors: Fill in the range of each sensor in the large boxes. A range of zero hexes is noted as "0," and having no sensor at all is noted as "—." Hit boxes are provided with each type of sensor. The primary boxes are used if there is one sensor of that type on the ship. If a redundant sensor is provided, boxes are also provided for it. If the redundant boxes are unnecessary, fill them in.

Critical Hits: There are several possible critical hits.

Computer: The ship's overall computer (not its targeting computer) can sustain damage. Boxes are provided to record hits.

Tactical Action Center: Two stations are almost always present in the TAC—the active and passive sensor operators. These are already printed on the form (if one or both are unnecessary, mark them out). The remaining 1 8 blank spaces are to be filled out with all other sensor, fire control, flight controller, or remote stations to reflect the TAC of the ship. Each hit kills the crewman at the station and renders the station inoperable. A hit box is provided for each.

Bridge: The required bridge personnel are already printed on the blank status sheet. Any additional stations must be filled in on the 1 0 blank spaces.

Life Support, Drive, Hangar Deck, Missile Bay, Continuous: Hit boxes are provided for multiple damage to each of these areas of the ship.

Damage Control: Each damage control section consists of three individuals. Starting from the left, allow space for each engineer who is available for damage control and fill in all remaining spaces. For instance, a ship with eight damage control engineers would have two complete sections and one with only two men (the last is unable to repair things, but will absorb battle injuries).

Ordnance: Keep track here of all missiles and ordnance carried by the ship, their types, and how many are actually carried.

Crew: Fill in the comfort level of the ship. Also, determine the crew quality of the ship from the scenarios and note it here.

Enormous Ships: For ships which simply cannot fit on a single status sheet, use multiple status sheets. Note which sheet represents which components and mark hits off of each as necessary.

DESIGNER'S NOTES

As you play *Star Cruiser,* you will quickly find that it is considerably different from any space combat game you have played before. Our approach to designing *Star Cruiser* was first to try to pin down what space combat between starships was likely to be like and then to design a game that reflected it. The first step was to identify the science upon which starships were based.

THE SCIENCE OF *STAR CRUISER*

I've heard it said that a science-fiction author is allowed one major change in the laws of physics. I'm not certain how true that is for authors, but it's a good rule of thumb for game designers. The one major departure from current physical laws in *Star Cruiser* (and in **Traveller: 2300)** is the Jerome Drive, more commonly referred to as the stutterwarp. The Jerome Drive relies on the principle of "tunneling" to move particles from one location to another without passing through the intervening space. Each tunnel is relatively short, but the drive cycles at a rate of millions of warps per second and thus gives the illusion of considerable speed.

The apparent speed of a starship is affected by the sheer power of its drive, the warp frequency of the drive, the mass of the ship, and the presence of a gravity well. The sheer power of the drive, when compared to the mass of the ship, determines the average length of the warp tunnel. Gravity severely truncates the length of the warp tunnel. Warp frequency indicates how many times the ship will tunnel per second. All of these combine to produce an apparent speed. The activity of the drive itself at high cyclic rates produces a gyroscopic effect that is referred to as pseudo-momentum. It is not true momentum in the Newtonian sense, but limits the magnitude of immediate changes in direction and velocity.

Aside from the star drives themselves, the science of starships is a relatively conservative linear projection of current technology. Power plants are based on refinements of existing designs. Weapons are directed energy beam weapons, either lasers or particle accelerators. Detonation lasers and particle accelerators are currently under development for the U.S. Strategic Defense Initiative ("Star Wars") program, and the game's submunition dispensers are an economical and logical outgrowth of this. Detection in the game is by means of neutrino detectors, infrared sensors, enhanced optics, or reflection of radar or laser radiation. In all cases these are currently available, at least in theoretical form, and require only better data processing to produce the results suggested by the game.

THE NATURE OF TACTICAL COMBAT

You can make an argument (and I am now doing so) that developments in tactical combat can largely be viewed as attempts at better solutions to the targeting problem. That is, the problem in tactical combat is seldom one of developing a weapon that will deliver sufficient damage in the event of a hit; the problem is, instead, finding a weapon that can be relied upon to achieve a hit. For example, the smoothbore musket is a perfectly acceptable man-killer, provided you can manage to hit someone with it. To increase the chances of a hit, battalions in the 17th and 18th centuries formed up in tightly packed lines and discharged their muskets in simultaneous volleys all at the same target. That enabled them to achieve a fair number of hits. To increase the individual infantryman's chance of a hit, rifling was added to the musket's barrel, and this increased the accuracy sufficiently so that a more dispersed formation could achieve the same number of hits. Massed formations could then be shot to pieces in short order, and so by the American Civil War, armies tended to fight in loose skirmish lines. The development of the machinegun combined the rifle's accuracy with the massed battalion's volley effect and did so without requiring large numbers of men to expose themselves to enemy fire. The result was more dispersion of the infantry and the need to put more firepower in the soldier's own hands—hence, the automatic rifle, grenade launcher, etc.

Naval warfare has seen a similar evolution. The 1 7th century's ships of the line, with twenty or thirty guns per broadside, quickly gave way to warships with rifled shell guns. Each rifled shell gun had a much higher chance of scoring a hit, and each shell did much more damage. As a result, a ship carried fewer guns but could do much more damage and do so at greater range. To counteract the effects of better guns, ships added armor. The answer to armor was larger guns, but the greater weight of large guns meant ships could carry fewer of them. To give them the same chance of scoring hits and more numerous small guns, more work was done with ballistics. Larger ships were built to provide more stable firing platforms. Rangefinders and fire directors improved gunnery accuracy. By the 1 980s, many warships carried only a single gun or missile launcher.

Where is all this leading? The central problem in any tactical situation is hitting the target. There are two possible ways to increase your chances of hitting a target: Increase the per-shot chances of a hit (precision of fire) or keep the same per-shot chance of a hit but increase the number of shots fired at the target (volume of fire). Examples of both solutions can be found throughout history, but, of the two, precision of fire is clearly preferable. Why? Because the other fellow is firing at you as well, and a precision weapon is usually a smaller target than a volume weapon, all other things being equal. Consider the example of a handful of riflemen versus a massed battalion of musketeers; or the large three-decker ship of the line versus the steam frigate with a few rifled shell guns;

or the rapid-fire large caliber naval guns of a light cruiser versus the missile launcher of a Soviet Osa-class missile boat.

After thinking this through, I decided that the *Star Cruiser* system should concentrate on the solution of the target problem. This entails efforts of the attacker to achieve a good target solution and efforts of the target to frustrate that solution.

THE TARGET SOLUTION IN *STAR CRUISER*

There are three main elements to the target solution: enemy position, weapon performance, and weapon control. By enemy position we mean the location of the enemy when your shot arrives. By weapon performance we mean the actual flight path of your shot as affected by the physical characteristics of the weapon itself and the environment through which the shot passes. By weapon control we mean the degree to which you can precisely control the aiming of the weapon (quite well in a spacecraft, for example, but much less so with a rifle). As data processing improves, our ability to measure and control for each of these variables has improved, and that enables engagement of targets at successively greater ranges.

While the attacker attempts to increase his chance of a hit, the target can take measures to decrease it. Just as the two means of increasing the likelihood of a successful shot are increases in precision of fire and in volume of fire, the target's two defensive options involve decreasing the precision of fire and decreasing its effective volume. To decrease the precision of fire, the target must interfere in one of the three variables above. The easiest to control for the target is target position, and most defensive measures based on reduction of precision concern themselves with disguising target position. Simple examples of this are camouflage paint and electronic jamming of radar. In *Star Cruiser* the main component in this type of defense is basic ship design. Most ships are designed to minimize their "signature," the extent to which enemy sensors can detect them. Contemporary stealth technology is a good example of this. Stealth is hardly super-science; its basic principles were outlined before World War II. In the future, considerations of radar cross section and reflectivity of materials will be basic to any military ship design.

Reducing a ship's normal emission level is important as well, as passive sensors will become much more important. Active sensors, once illuminated, are like beacons for enemy missiles and fire control equipment, and thus will often be mounted on remote sensor drones.

The second means of frustrating a target solution is to reduce the effective volume of enemy fire. Volume is reduced if rounds are rendered harmless even if they hit, and this is usually accomplished by means of armor. In *Star Cruiser* armor is used, but so are screens. Screens are not mysterious force fields that prevent enemy weapons from penetrating. Instead they are electromagnetic fields which hold reflective particles in suspension. When a laser hits the screen, the particles reflect a portion of the laser light and then vaporize, absorbing the rest of the laser's energy. Although some energy will penetrate the screen, often the screen absorbs or reflects enough energy that the remainder is insufficient to damage the ship.

HIDE-AND-SEEK WITH BAZOOKAS

The result of all this is that *Star Cruiser* sometimes resembles a very lethal game of hide-and-seek. This is certainly true of battles between smaller ships. A good analogy is to compare this to modern antisubmarine warfare. One good shot can end the battle, but that doesn't mean that the game comes down to one die roll. The true strategy and drama lies in the efforts to pinpoint the enemy and set up your shot without getting hit in return.

The most effective means of getting in your shot without being hit in return is a missile, and that is why all modern warships in the game rely heavily on missiles for their offensive ability. No matter how well a ship is constructed, it is an inherently larger target than a missile. Thus, a missile can be fired from a safe distance and has a better chance of penetrating to effective range than does a ship. By the same token, use of a remote sensor drone can enable you to detect your enemy while remaining at a safe distance. A second solution is the use of a number of small fighters. Although a larger target than a missile, a fighter is still harder to hit than most ships and is capable of delivering a quick hard punch with either a conventional beam weapon or submunitions dispensers.

In general, human fleets tend to rely more on stealth and its related technologies to avoid destruction. The Kafers, on the other hand, tend to rely more on armor and screens. This is so because the average level of intelligence and initiative is much lower among Kafers than humans, with the result that qualified pilots are much rarer. To compensate for this, Kafer fleets tend to rely on fewer very large ships, each heavily armed and protected, but virtually impossible to conceal. If human tactical battles can be likened to hide-and-seek, Kafer tactics are closer to a barroom brawl. Kafer ships close as rapidly with the enemy as possible, trusting their armor and screens to minimize damage on the approach run, and then trade broadsides until one or the other ship is crippled or destroyed. The limited number of fire directors on a Kafer ship make it fairly easy to overload its antimissile defenses and land hits, but the sheer amount of punishment a Kafer ship can take can be very demoralizing.

NAVAL MISSIONS AND SHIP DESIGN

Star Cruiser concentrates on pure ship-to-ship combat. However, that is not all there is to the mission of star fleets in the 24th century. The most common naval mission is the landing party, and that is why most naval ships in the game carry troop complements. For the most part, naval vessels are called upon to enforce the peace, and this rarely involves more than chasing down blockade runners or privateers, putting shots across the bows of merchant vessels, and landing a platoon or so of combat troops. A platoon of marines or legionnaires can do wonders to restore order oh low-population frontier worlds. When designing warships of your own, remember that their main mission is to show the flag and be able to project national power into a variety of environments.

THE SCENARIOS

The scenarios included in the game are drawn from every war fought with armed spacecraft by man up to 2300 AD, with one exception. The so-called Slaver War (2252-2255 AD) is not included, since starships were used only by the human fleets (Manchuria and Canada), while the Sung used only ion-drive slow boats. The battles of the Slaver War are of historical interest only and are too hopelessly one-sided to make decent scenarios. While the scenarios are representative of the types of actions fought and the types of ships used, they are not exhaustive. Many battles were fought which are not represented in the game, and a number of warship classes built are not shown in the countermix. In many cases one particular ship is used to represent a different ship of the same class in a particular scenario. This was necessary due to the limitations of the countermix. Players should feel free to use the counters provided to make up additional scenarios from the wars presented or even to test different ships in hypothetical scenarios.

COLONIAL WARS IN SPACE

The Alpha Centauri War (2162 AD): Argentina versus the European Space Agency (France, Bavaria, Great Britain, and Azania). Azania did not provide combatant ships or troops. First use of purpose-built interstellar warships.

The First Rio Plata War (2203 to 2207 AD): Brazil versus Argentina. First use of missile-armed warships.

The Second Rio Plata War (2235 to 2237 AD): Brazil versus Argentina.

The Third Rio Plata War (2275 to 2279): Brazil versus Argentina, Mexico and the Inca Republic.

The Central Asian War (2282 to 2287): Manchuria versus Russia, France, Bavaria and later Japan.

The Joian Revolt (2285 to 2291): Joi versus France.

The War Of German Reunification (2292 to 2293): France versus Germany.

The Kafer War (2297 to present): Kafers versus France, Germany, Ukraine, America and Tanstaafl, with a growing number of other human governments preparing for cobelligerency.

The Scenarios

The scenarios that follow are listed in chronological order, from the first clashes of the Alpha Centauri War to the most recent fleet actions against the Kafers. As fleets have become larger and weapons more sophisticated, naval combat has grown in complexity. Thus, the earlier scenarios tend to be simpler, and we suggest that players start with the first scenario. After that, players can sample scenarios that appeal to them. The very large fleet actions of the Kafer War are recommended only for multi-player play, as they can become extremely complex.

The information required to play the scenarios is included in the specific scenario listings. The information is presented in the following format:

Scenario Name: The name of the historic battle.

Year: The year in which the battle was fought.

System: The star system in which the battle was fought.

Conflict: The war in which the battle took place.

Background: A brief description of the historic events leading up to the actual battle.

Set-Up: Where ships set up. In general, one player will set up in the "middle" of one map while the other will enter from a map edge. Exact hex placement of the "middle" is unimportant, so long as the counters are placed close to the center of the map.

Victory: The conditions each side must meet to win.

Intruder: A description of the vessels of the Intruder player, including ordnance carried and any battle damage sustained prior to the start of the scenario. If battle damage was sustained, it will be specified as "four turrets destroyed." The owning player then randomly distributes the damage over the available turrets before the scenario begins.

Native: A description of the vessels of the Native player, as above.

Special Notes: Some scenarios have special notes pertaining to that scenario alone. Often, these relate to vessels taking off from planetary surfaces.

Using The Maps: The scenario description may specify that one map is used at start or that both are. Regardless of how many maps are used to begin with, both maps may later be used in the scenario. If ships are about to move off the edge of one map, the other map can be re-positioned to enable continued movement. In other words, the edge of the map should not be considered a barrier to movement.

Breaking Contact: Some scenarios allow one or both sides to break contact as a condition of victory. A player may not attempt to break contact until he has detected at least one enemy ship or missile. Once ships of one side have detected enemy ships or missiles, they may attempt to break contact. If any ship remains undetected for three consecutive game turns after an enemy ship or missile was detected, it has broken contact and is removed from play.

COLONIAL WAR SCENARIOS

The First Battle of Alpha Centauri

Year: 2162

System: Alpha Centauri

Conflict: The Alpha Centauri War

Background: Following the discovery of the garden planet Tirane orbiting Alpha Centauri, international tensions mounted. The ESA prepared to colonize the world and pressed its claim to the entire planet. Numerous nations protested, but only Argentina took action. With a two-ship squadron of armored cruisers, the first purpose-built interstellar warships, the colony ships were intercepted at Tirane and captured without loss of life. The ESA member nations hastily assembled a small force of colonial transports armed with lasers and dispatched them to Alpha Centauri to challenge the Argentinian squadron.

Set-up: The planet representing Tirane is placed in the middle of one map. The two Argentinian cruisers are in orbit in the planetary hex. The ESA ships enter from the far edge of the other map. The Argentinian ships may not leave orbit until at least one ESA ship has been detected.

Victory: The player with the last surviving vessel wins.

Intruder: ESA

M-1 (French *Aries-dass* auxiliary cruiser) (CQ: -1)
M-2 (French *Aries-class* auxiliary cruiser) (CQ: -1)
M-3 (British Wombat-class auxiliary cruiser) (CQ: -1)
M-5 (Bavarian *Helmut Korell-class* auxiliary cruiser) (CQ: 0)

Native: Argentina

CA *Santisima Trinidad* (CQ: 0)
CA *25 de Mayo (Santisima Trinidad-class)* (CQ: 0)

The Second Battle of Alpha Centauri

Year: 2205

System: Alpha Centauri

Conflict: First Rio Plata War

Background: When war broke out between Argentina and Brazil over the Rio Plata boundary regions, the main body of Argentina's star fleet was in orbit over Tirane. Brazil's small fleet of missile frigates hit them there and ushered in a new age in stellar warfare.

Set-up: The planet representing Tirane is placed in the middle of one map. The three Argentinian ships are in orbit in the planetary hex. The Brazilian ships enter from the far edge of the other map. The Argentinian ships may not leave orbit until at least one Brazilian ship has been detected.

Victory: The player with the last surviving vessel wins.

Intruder: Argentina

CA *25 De* Mayo *(Santisima Trinidad-class)* (CQ: +1)
DD *Almirante Brown* (CQ: +1)
DD *Crl. Belgrano (Almirante* Brown-class) (CQ: +1)

Native: Brazil

FF *Ipiranga* (CQ: + 1)
Ordnance Carried: 4xAAS-2 missiles
FF *Mearim (Ipiranga-class)* (CQ: 0)
Ordnance Carried: 4xAAS-2 missiles
FF *Caboclo (Ipiranga-class)* (CQ: -1)
Ordnance Carried: 4xAAS-2 missiles

The Raid on 791 Remote

Year: 2236
System: DM-26 12026
Conflict: Second Rio Plata War

Background: Although not prepared to directly contest the powerful Brazilian fleet during the Second Rio Plata War, the Argentinians nevertheless conducted several raids on Brazilian outposts, research stations and remote bases. Several of these raids resulted in spirited naval actions, the most famous of which occurred off DM-26 12026.

Set-up: The planet counter is placed in the middle of one map, representing the asteroid-based remote station. The two Brazilian ships begin in orbit over the remote station, but can move away immediately. The Argentinian ships enter from the far edge of the other map.

Victory: The Argentinians win if they destroy the Brazilian remote station and escape with at least one ship intact. The Brazilians win if the base is not destroyed. If the base is destroyed, but both Argentinian ships are destroyed as well, the scenario is a draw. To escape, an Argentinian ship must break contact.

Intruder: Brazil

FF *Mearim (Ipiranga-class)* (CQ: + 1)
Ordnance Carried: 3xAAS-2B missiles, 1 xVue drone
DD *Mato Crosso (Espirito* Santo-class) (CQ: +1)
Ordnance Carried: 30xAAS-4 missiles

Native: Argentina

DD *Almirante Brown* (refitted) (CQ: + 1)
Ordnance Carried: 2xEM-1 missiles
DD *Grl. Belgrano (Almirante* Brown-class, refitted) (CQ: +2)
Ordnance Carried: 2xEM-1 missiles

Ambush at DM-21 1377

Year: 2264
System: DM-21 1377
Conflict: Third Rio Plata War

Background: Early victories in the Third Rio Plata War gave Argentina a decisive advantage over Brazil, and Argentina's cautious naval strategy never allowed Brazil a chance to redress the balance. At DM - 21 1 377, however, the Brazilians managed to spring an ambush that came close to making good their earlier losses.

Set-up: The star counter, representing DM-21 1377, is placed in the center of one map. The Argentinian ships enter stacked together from any board edge. After the Argentinians indicate the edge they enter from, the Brazilian player may place his ships in any near stellar hex. The Argentinian ships must move in a straight line to exit the opposite map edge and cannot deviate from that course until a Brazilian ship or missile is detected.

Victory: The player with the last surviving ship wins.

Intruder: Argentina

DD *Grl. Belgrano* (refitted *AlmiranteBrown-class)* (CQ: +2)
Ordnance Carried: 2xEM-1 missiles
FF *Piedrabuena* (CQ: +3)
Ordnance Carried: 8xEM-5D missiles
FF *Bouchard (Piedrabuena-class)* (CQ: +2)
Ordnance Carried: 5xEM-5D missiles

Native: Brazil

DD *Espirito Santo* (CQ: +2)
Ordnance Carried: 30xAAS-4 missiles
FF *Caboclo (Ipiranga-class)* (CQ: +2)
Ordnance Carried: 2xAAS-5 missiles

The Neubayern Raid

Year: 2283
System: Neubayern
Conflict: Central Asian War

Background: As ground fighting on Earth heated up, Manchuria launched a deep, bold raid up the French Arm. At Neubayern the Manchurian raiding force caught a small convoy escorted by the Bavarian frigate, *Kassel.*

Set-up: The Bavarian ships set up in the center of one map. The Manchurians enter from any edge of that map. The Bavarian ships are stacked together and may not split up until at least one Manchurian ship or missile is detected.

Victory: If one Bavarian ship escapes, the scenario is a draw; if two escape, the Bavarians win. To escape, a ship must break contact.

Intruder: Manchuria

FF *Tunghu* (CQ: +1)
Ordnance carried: 6 x Glowworm missiles
FF *llu (Tunghu-class)* (CQ: +1)
Ordnance carried: 6 x Glowworm missiles

Native: Bavaria

FF *Kassel (Aconite-class)* (CQ: +2)
Ordnance carried: 2xRitage-1 missiles
M1 *(Anjou-class* freighter) (CQ: +1)
M4 (Coerhe-class liner) (CQ: +1)

The Battle of Barnard's Star

Year: 2284
System: Barnard's Star
Conflict: Central Asian War

Background: In one of the few major actions involving Russian naval elements under Russian command, a squadron of Russian license-built *Aconite-Bass* frigates engaged two of the powerful new Manchurian missile destroyers.

Set-up: The Manchurians set up in the center of one map. The Russians enter from the far edge of the other.

Victory: The player with the last surviving ship wins.

Intruder: Russia

FF *Zhdanov (Aconite-class)* (CQ: +1)
Ordnance carried: 2xSilka missiles
FF *Dzerzhynskiy (Aconite-class)* (CQ: 0)
Ordnance carried: 2xSilka missiles
FF *Suvorov (Aconite-class*) (CQ: 0)
Ordnance carried: 2xSilka missiles

Native: Manchuria

DD *Chien-lung* (CQ: +1)
Ordnance carried: 8 x Fantan missiles
DD *K'ang-hsi (Chien-lung-class)* (CQ: +1)

Ordnance carried: 8 x Fantan missiles

The First Battle of Joi

Year: 2286
System: 61 Ursae Majoris-3
Conflict: Central Asian War/Joi Revolt

Background: With the tide of war running against Manchuria, they seized upon the idea of joining forces with the Joian rebels. The first step to assisting the rebels, however, was to temporarily break the French blockade and land badly needed military supplies.

Set-up: The planet counter represents the planet Joi and is placed in the middle of one map. Both French vessels are in orbit around Joi. The Manchurian and Joian squadrons enter from the far edge of the other map.

Victory: The Manchu/Joian player wins if the *Anjou-class* freighter can be maintained in orbit for 1 5 consecutive turns without being destroyed or having a power plant failure. If the French squadron is completely destroyed, but the *Anjou-class* freighter (due to battle damage) is unable to reach orbit, the scenario is a draw. Under any other circumstances the French win.

Intruder: Manchuria and Joi
FF *Ilu (Tung-class)* (CQ: + 1)
Ordnance carried: 6 x Glowworm missiles
FF *Jurchen (Tung-class)* (CQ: +1)
Ordnance carried: 6 x Glowworm missiles
M-1 (Necessite-class auxiliary cruiser) (CQ: 0)
Ordnance carried: 5 x Glowworm missiles
M-2 *(Anjou-class* cargo vessel) (CQ: 0)

Native: France
CG *De Grasse (Suffren-class)* (CQ: +1)
Ordnance carried: 18xRitage-1 missiles
FF *Vauquelin (Aconit-class)* (CQ: +1)
Ordnance carried: 2 x Ritage-1 missiles

Special Notes: Due to ground-based Joian sensor stations, all French ships in orbit are automatically detected.

The Relief of the Xiuning Station

Year: 2287
System: Xiuning
Conflict: Central Asian War

Background: In an attempt to cut Manchurian communications to colonies and outposts up the Chinese Arm, the *Suffren* warped to Xiuning and landed three platoons of combat walkers. The Manchurian defenses proved too strong to overwhelm in one quick rush, however, and the difficulty of maintaining the ground assault force by means of the *Suffren's* landers slowed the tempo of operations. Bombardment from orbit had little effect on the honeycomb of subterranean tunnels that housed the outpost, as it was difficult to pinpoint targets or assess fire effectiveness. Two weeks later, as the struggle flagged on, a small Manchurian relief force warped into system.

Set-up: The planet counter is placed in the center of the map. The *Suffren* is in the planetary hex in orbit. The *Suffren's* three landers are grounded on the planet. (Use USN fighter counters for the landers.) The Manchurian squadron enters from any map edge.

Victory: If the *Suffren* is destroyed, or if it withdraws before recovering its landing party, the Manchurians win. If the Manchurian ships are destroyed, but the landing party is destroyed as well, the scenario is a draw. If both the *Suffren* and its landing party survive, the French win.

Intruder: Manchuria
FF *Ilu (Tung-class)* (CQ: +1)
Ordnance Carried: 6 x Glowworm missiles
FF *Jurchen (Tung-class)* (CQ: +1)
Ordnance Carried: 6 x Glowworm missiles

Native: France
CG *Suffren* (CQ: +2)
Ordnance Carried: 9 x Ritage-1 missiles

Special Notes: The landers take 8 minutes to reach orbit, and none of the time is through atmosphere. However, the landers may not take off until 1 5 turns after the start of the scenario. If a Manchurian ship is in orbit, and the landers are still grounded, the ship may fire at them. Each shot at a grounded lander hits. Once all three landers are destroyed, the landing party is destroyed as well. (Without any means of resupply, the survivors will surrender.)

"Between Two Fires"
The Second Battle of Joi

Year: 2291
System: 61 Ursae Majoris
Conflict: Joi Revolt

Background: The temporary alliance between the "Front Populare Joian" and Manchuria had resulted in a temporary lifting of the siege in 2286. However, it also lost the FPJ all support among the other ESA nations, as European sympathy ran strongly in favor of the French and their allies in the Central Asian War. With the eventual defeat of Manchuria by the Allies, the FPJ was completely isolated diplomatically, and a small French squadron soon arrived and landed more combat troops. However, the FPJ had used its period of grace to good ends, and France was exhausted after the long and costly war in Asia. If the fledgling Joian fleet could inflict a reverse on the French squadron, Paris might be forced to begin serious negotiations for independence.

Set-up: The planet counter represents the planet Joi and is placed in the middle of one map. Both French vessels are in orbit around Joi. The two Joian fighters are landed on the planet surface. The Joian frigate enters from the far edge of the other map.

Victory: If the *Suffren* is destroyed, the Joian player wins. If the *Suffren* survives, the French player wins. The *Suffren* may not break contact.

Intruder: Joi
FF *Liberte (Tung-class* frigate purchased from Manchuria) (use Manchurian *Tunghu* counter) (CQ: +1)
Ordnance Carried: 3 x Glowworm missiles
2 *FS- / 7A* fighters (use USN counters F1, F2) (CQ: + 1 each)

Native: France
CG Suffren (CQ: +2)
Ordnance Carried: 13xRitage-1 missiles

Special Notes: Time to and from orbit for the FS- / *7As* is 1 2 minutes, three minutes of which are spent in atmosphere. Due to ground-based Joian sensor stations, all French ships in orbit are automatically detected.

The Kimanjano Raid

Year: 2292
System: Kimanjano
Conflict: The War of German Reunification
Background: As French and German ground forces fought in France, Germany made a bid to sever trade and communication through the French Arm. With French naval assets heavily committed elsewhere, a hastily assembled scratch force massed to defend the vital system of Kimanjano.
Set-up: The French ships set up in the center of one map. The Germans enter from the far side of the other.
Victory: The player with the last surviving ship wins.

Intruder: Germany
FF *Sachsen* (CQ: +1)
Ordnance Carried: 12 x SR-9 missiles
FF *Braunschweig (Sachses-Bass)* (CQ: +1)
Ordnance Carried: 12 x SR-9 missiles

Native: France
S1 (L'Orient-class armed survey ship) (CQ: +1)
FF *Vauquelin (Aconit-class)* (CQ: +3)
Ordnance Carried: 2 x Ritage-1 missiles
M1 *(Necessite-class* auxiliary cruiser) (CQ: +1)
Ordnance Carried: 2 x Ritage-1 missiles

The Third Battle of Alpha Centauri

Year: 2293
System: Alpha Centauri
Conflict: The War of German Reunification
Background: After several successful German commerce raids up the French Arm, French naval forces up-arm were considerably reinforced. When French naval strength in the Alpha Centauri system was at its lowest, the Germans struck with both of their new Hamburg-class cruisers.
Set-up: The planet counter is placed in the center of one map. Both French ships are in orbit in the planetary hex and may not move until a German ship or missile is detected. The Germans enter from any map edge.
Victory: The first player to have a cruiser destroyed loses. (The other ships in the squadron will break contact at that point.)

Intruder: Germany
CG *Hamburg(CQ:* +1)
Ordnance Carried: 24xSR-10 missiles
CG *Koln* (Hamburg-class) (CQ: +1)
Ordnance Carried: 24xSR-10 missiles
FF *Thuringen (Sachses-Bass)* (CQ: +1)
Ordnance Carried: 12xSR-9 missiles

Native: France
CG *De Grasse* (CQ: +2)
Ordnance Carried: 18xRitage-1 missiles
FF Aconit (CQ: +2)
Ordnance Carried: 2 x Ritage-1 missiles

KAFER WAR SCENARIOS

The Death of DC-2

Year: 2298
System: Eta Bootis
Conflict: The Kafer War
Background: Although human naval forces had been reinforced in the Eta Bootis system, no attempt at serious reconnaissance toward Arcturus was attempted, and thus there was no warning of the approach of the Kafer invasion force. The human defenders were badly scattered. The French 2nd Cruiser Division (DC-2) first realized that a state of hostilities existed when a squadron of Kafer warships cut it off from the inner stellar system and engaged it.
Set-Up: Both maps are used. The French squadron sets up in the middle of one map, the Kafers in the middle of the other. No planets are present.
Victory: The French player must exit the map with one or both warships along the far side of the Kafer set-up map and then break contact. If both ships exit and break contact, the French win. If one ship exits and breaks contact, the game is a draw. If no French ships exit and break contact, the Kafers win. The level of victory is shifted one level toward the French for each Kafer ship destroyed.

Intruder: Kafer
BC *Beta-1* (CQ: -2)
Ordnance Carried: 20 x Whiskey-type missiles
BC *Beta-2* (CQ: -2)
Ordnance Carried: 20 x Whiskey-type missiles

Native: French
CG Suffren (CQ: +2)
Ordnance Carried: 18xRitage-1 missiles
CG *DeGrasse (Suffren-class)* (CQ: +1)
Ordnance Carried: 12 x Ritage-1 missiles

"Like a Wolf in the Fold"

Year: 2298
System: Eta Bootis
Conflict: The Kafer War
Background: Following the destruction of the French 2nd Cruiser Squadron, the French and Ukrainians made a desperate effort to collect their forces and gather in the scattered civilian shipping in the system. Two old Ukrainian destroyers, escorting a group of slow merchants, found themselves cut off by a Kafer raider.
Set-up: Both boards are used. The Ukrainians enter on the far edge of one board. The Kafers set up in the middle of the other board.
Victory: The Ukrainians must get the civilian vessels off the far edge of the Kafer map and break contact. The Ukrainians win if all three merchants escape. The scenario is a draw if either both freighters or the one liner escapes. If none of the above conditions are met, the Kafers win. Add one to the level of victory if the Kafer ship is destroyed.

Intruder: Kafer
BC *Beta-1* (CQ: -2)
Ordnance Carried: 1 4 x Whiskey-type missiles
Battle Damage: three gun towers destroyed; four jack turrets destroyed

Native: Ukraine
DD *Sevastopol (Kiev-class)* (CQ: +1)
Ordnance Carried: 15 x Glowworm missiles
DD *Rostov (Kiev-class) (CQ:* + 1)
Ordnance Carried: 15 x Glowworm missiles
Freighter *M-5* (Cargomax-class) (CQ: O)
Freighter *M-6* (Cargomax-class) (CQ: 0)
Liner *M-3 (Electra* 917-class) (CQ: 0)

Last Stand at Tithonus
The First Battle of Tithonus

Year: 2298

System: Eta Bootis

Conflict: The Kafer War

Background: The Kafer armada now approached the only colony world in the Eta Bootis system—Aurore, a satellite of the brown dwarf gas giant Tithonus. Admirals DuBoise and Borodin gathered the remnants of their fighting ships near Tithonus. The size of the Kafer armada and the mauling already received reduced the chances of a successful defense considerably. Both admirals however, determined to make one last attempt at a stand to keep the Kafers out of Auroran orbital space as long as possible. The ace up their sleeve was the as-yet uncommitted French flagship, the *Ste. Jeanne d'Arc* and its powerful complement of *Mistral* fighters.

Set-up: The Kafers enter from the edge of one board. The planet counter (representing both the gas giant Tithonus and its companion Aurore) is placed in the center of the other board. All French and Ukrainian vessels are placed within three hexes of Tithonus.

Victory: The French and Ukrainians gain one victory point for each ship (excluding fighters) that escapes, two victory points for each Kafer battlecruiser destroyed and three victory points for each Kafer battleship destroyed. If the French and Ukrainians end the scenario with eight or more victory points, they win; otherwise, the Kafers win.

Intruder: Kafer

BB Alpha-1 (CQ: -1)
Ordnance Carried: 30 x Whiskey-type missiles
BB *Alpha-2* (CQ: -2)
Ordnance Carried: 30 x Whiskey-type missiles
BC *Beta-1* (CQ: -2)
Ordnance Carried: 7 x Whiskey-type missiles
Battle Damage: four gun towers destroyed; five jack turrets destroyed
BC *Beta-2* (CQ: -2)
Ordnance Carried: 4 x Whiskey-type missiles
Battle Damage: all six gun towers destroyed; nine jack turrets destroyed
BC *Beta-3* (CQ: -3)
Ordnance Carried: 20 x Whiskey-type missiles
BC *Beta-4* (CQ: -1)
Ordnance Carried: 18 x Whiskey-type missiles
4 Foxtrot-class fighters (A-1, A-2, A-3, A-4) (two carried by each *Alpha-class* BB) (CQ: - 1 each)

Native: France and Ukraine

BB *Ste. Jeanne d'Arc (Tallyrand-class)* (CQ: +1)
Ordnance Carried: 16xRitage-1 missiles
6 *Mistral-class* fighters (11-16) (Carried on Ste. *Jeanne d'Arc)* (CQ: +1 each)
FF *Aconit* (CQ: +3)
Ordnance Carried: 2 x Ritage-1 missiles
FF *Duperre (Aconit-class)* (CQ: +2)
Ordnance Carried: 2 x Ritage-1 missiles
FF *Vauqueiin (Aconite-class)* (CQ: +2)
Ordnance Carried: 2 x Ritage-1 missiles
FF *Kersaint (Aconit-class)* (CQ: +2)
Ordnance Carried: 2 x Ritage-1 missiles
CG *Konstantine* (CQ: +1)
Ordnance Carried: 9 x Glowworm missiles
DD *Kiev* (CQ: +1)
Ordnance Carried: 15 x Glowworm missiles

"The Glorious First of July"
The Second Battle of Tithonus

Year: 2298

System: Eta Bootis

Conflict: The Kafer War

Background: For three months after their crushing defeat at First Tithonus, the human fleets had licked their wounds at Hochbaden under the command of Kontr-admiral Borodin (DuBoise having perished with the loss of the Ste. *Jeanne d'Arc).* Reinforced with additional ships from Earth and joined by a powerful German squadron, the fleet finally made its move on the Eta Bootis system. The Kafer fleet had not been reinforced and fell easy prey to the human riposte.

Set-up: Tithonus is placed in the middle of one board. All Kafer ships are in orbit around Aurore, which places them in the Tithonus planetary hex at "All Stop." The human fleet enters from the far side of the second map.

Victory: The human fleet must destroy or drive off every Kafer ship and end up with a ship in orbit in the Tithonus planetary hex.

Intruder: France, Ukraine, and Germany

BB *Tallyrand* (CQ: +1)
Ordnance Carried: 16 x Ritage-2 missiles
FF *Duperre (Aconit-class)* (CQ: +2)
Ordnance Carried: 2 x Ritage-2 missiles
FF *Kersaint (Aconit-class)* (CQ: +2)
Ordnance Carried: 2 x Ritage-2 missiles
8 *Mistral* fighters (21-28) (on *Tallyrand)* (CQ: +1 each)
CG *Konstantine* (CQ: +1)
Ordnance Carried: 9 x Glowworm missiles
FF *Kirovograd (Aconite-class)* (CQ: 0)
Ordnance Carried: 1 x Ritage-1 missile; 1 x Ritage-2 missile
FF *Azov (Aconite-class)* (CQ: 0)
Ordnance Carried: 1 x Ritage-1 missile; 1 xRitage-2 missile
BC *Bismark* (CQ: + 1)
Ordnance Carried: 48xSR-10 missiles
FF *Sachsen* (CQ: +2)
Ordnance Carried: 12 x SR-9 missiles
4 *Gustov* fighters (J-1, J-2, J-3, J-4) (Carried by Bismark)

Native: Kafer

BB Alpha-1 (CQ: -1)
Ordnance Carried: 12 x Whiskey-type missiles
Battle Damage: three gun towers destroyed; one jack turret destroyed; one remote station destroyed
BB *Alpha-2* (CQ: -2)
Ordnance Carried: 17 x Whiskey-type missiles
Battle Damage: two gun towers destroyed; one jack turret destroyed
BC *Beta-1* (CQ: -2)
Ordnance Carried: 4 x Whiskey-type missiles
Battle Damage: all six gun towers destroyed; eight jack turrets destroyed; one remote station destroyed
BC *Beta-3* (CQ: -3)
Ordnance Carried: 1 2 x Whiskey-type missiles
Battle Damage: four gun towers destroyed; five jack turrets destroyed
BC *Beta-4* (CQ: - 1)
Ordnance Carried: 4 x Whiskey-type missiles
Battle Damage: two gun towers destroyed; five jack turrets

destroyed; one remote station destroyed
2 Foxtrot-class fighters (A-1, A-3) (CQ: -1 each)

Battle of Laodemon

Year: 2298
System: Eta Bootis
Conflict: The Kafer War

Background: Following the human victory at Second Tithonus, the survivors of the Kafer fleet scattered, most of them retreating to Arcturus to regroup. One battleship, however, apparently low on fuel, lingered in the vicinity of Laodemon to take on water from one of the gas giant's moons and crack it to fuel. The human squadron had broken up to hunt down fugitives, and it fell to the German battlecruiser *Bismark* to engage the enemy.

Set-up: The planet counter, representing Laodemon and its moons, is placed in the center on one map. The Kafer battleship *Alpha-2* is in orbit in the planetary hex. The *Bismark* enters from any map edge. *Alpha-2* may not move until it detects a hostile vessel. The Germans may not launch ordnance until they detect the *Alpha-2.*

Victory: Either side may attempt to break contact. If either player breaks contact, the scenario is a draw. Otherwise, the winner is the survivor.

Intruder: Germany
BC *Bismark* (CQ: +1)
Ordnance carried: 24 x SR-10 missiles
Battle Damage: three PA turrets destroyed; two dbl UTES turrets destroyed; one missile pod destroyed; three remote stations destroyed
2 *Gustov* fighters (J-1, J-4) carried by *Bismark* (CQ: +2)

Native: Kafer
BB *Alpha-2* (CQ: -2)
Ordnance Carried: 6 x Whiskey-type missiles
Battle Damage: four gun towers destroyed; four jack turrets destroyed; one remote station destroyed

The First Battle of Arcturus

Year: 2299
System: Eta Bootis
Conflict: The Kafer War

Background: By January of 2299, an American cruiser division had joined the human fleet at Eta Bootis. While repairs continued on several of the larger ships in the fleet, the American CruDiv was instructed to conduct a reconnaissance in force of the Arcturus system. Convinced that the two Kennedy-class cruisers could outrun anything too big to deal with, Rear Admiral Parker undertook the mission without protest. What he encountered at Arcturus was only a rearguard, but a particularly formidable one.

Set-up: The star counter is used to represent Arcturus. It is placed in the center of one map. The Kafer vessels are placed in any hex of that map except for solar or near solar hexes. The American ships enter from the far edge of the other map.

Victory: If the Kafer player destroys both Kennedy-class ships, the Kafers win. If the Kafer *Alpha-4* is destroyed, and at least one American ship survives, the American player wins. In any other result the game is a draw.

Intruder: America
CG *Jefferson* (Kennedy-class) (CQ: +2)
Ordnance Carried: 20 x SIM-14 missiles; 2xHD-5 drones
CG *Sanchez* (Kennedy-class) (CQ: +2)
Ordnance Carried: 20 x SIM-14 missiles; 2 x HD-5 drones

Native: Kafer
BB *Alpha-4* (improved *Alpha-class)* (CQ: -3)
Ordnance Carried: 20 x X-ray-type missiles
4 Golf-class fighters (B1-B4) (Carried in *Alpha-4)* (CQ: - 2)

Ship Annex

SANTISIMA TRINIDAD-CLASS ARMORED CRUISER

Warp Efficiency: 1.34, *Power Plant:* 1 5 MW Fission, *Fuel:* none, *Range:* 7.7, Mass: 6000 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 60, *Price:* unavailable

ALMIRANTE BROWN-CLASS DESTROYER

Warp Efficiency: 1.99, *Power Plant:* 15 MW Fission, *Fuel:* none, *Range:* 7.7, Mass: 4000 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 40, *Price:* unavailable

ALMIRANTE BROWN-CLASS UPDATED DESTROYER

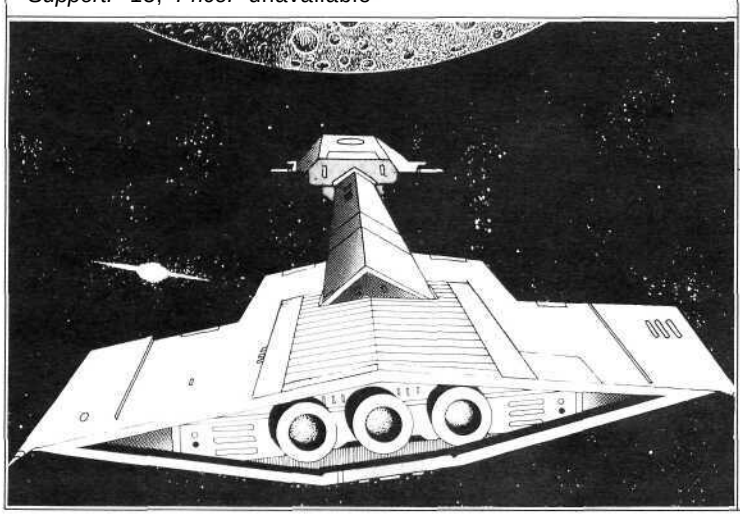
Warp Efficiency: 1.99, *Power Plant:* 15 MW Fission, *Fuel:* none, *Range:* 7.7, Mass: 4000 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 40, *Price:* unavailable

PIEDRABUENA-CLASS FRIGATE

Warp Efficiency: 0.84, *Power Plant:* 10 MW MHD Turbine, *Fuel:* 8000 tons, sufficient for eight weeks of operation, *Range:* 7.7, Mass: 10,148.9 tons, *Cargo Capacity:* 1885.38 m^3, *Comfort:* 0, *Total Life Support:* 56, *Price:* Lv10,855,000

WOMBAT-CLASS AUXILIARY CRUISER

Warp Efficiency: 0.79, *Power Plant:* one 1 MW Fuel Cell plus one 5 MW MHD Turbine, *Fuel:* 250 tons, sufficient for two weeks of maneuvers and up to five hours of weapons use, *Range: 7.7, Mass:* 2700 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 15, *Price:* unavailable



ESPIRITO SANTO-CLASS DESTROYER

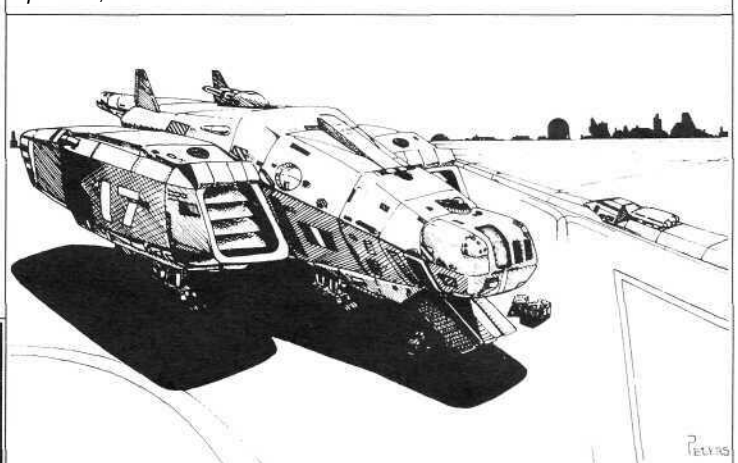
Warp Efficiency: 0.981, *Power Plant:* 20 MW MHD Turbine, *Fuel:* 12,000 tons, sufficient for six weeks of operation, *Range: 7.7, Mass:* 1 6,128 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 40, *Price:* Lv10,908,000

IPIRANGA-CLASS FRIGATE

Warp Efficiency: 1.78, *Power Plant: 1* MW MHD Turbine, *Fuel:* 1400 tons, sufficient for two weeks of operation, *Range:* 7.7, Mass: 3000 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 12, *Price:* unavailable

HELMUT KORELL-CLASS AUXILIARY CRUISER

Warp Efficiency: 1.11, *Power Plant:* 1 MW MHD Turbine, *Fuel:* 200 tons, sufficient for two weeks of operation, *Range: 7.7, Mass:* 2100 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 8, *Price:* unavailable



ACONIT-CLASS FRIGATE

Warp Efficiency: 1.49, *Power Plant: 7* MW MHD Turbine, *Fuel:* 1400 tons, sufficient for two weeks of operation, *Range: 7.7, Mass:* 2587.69 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 34, *Price:* Lv19,428,000

TUNGHU-CLASS FRIGATE

Warp Efficiency: 2.063, *Power Plant:* 4 MW MHD Turbine, *Fuel:* 800 tons, sufficient for two weeks of operation, *Range:* 7.7, Mass: 1411.87 tons, *Cargo Capacity:* 468.03 m^3, *Comfort:* 0,

Total Life Support: 32, *Price:* Lv1 6,390,500

CHIEN-LUNG-CLASS DESTROYER

Warp Efficiency: 1.24, Power *Plant:* 15 MW MHD Turbine, *Fuel:* 9000 tons, sufficient for six weeks of operation, *Range: 7.7, Mass:* 10,932.05 tons, *Cargo Capacity:* 171.27 m^3, *Comfort:* 0, *Total Life Support:* 51, *Price:* Lv24,286,000

NECESSITE-CLASS AUXILIARY CRUISER

Warp Efficiency: 1.615, *Power Plant:* 3 MW MHD Turbine, *Fuel:* 300 tons, *Range:* 7.7, Mass: 21 69 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* various, *Price:* unavailable

FS-17A-CLASS FIGHTER

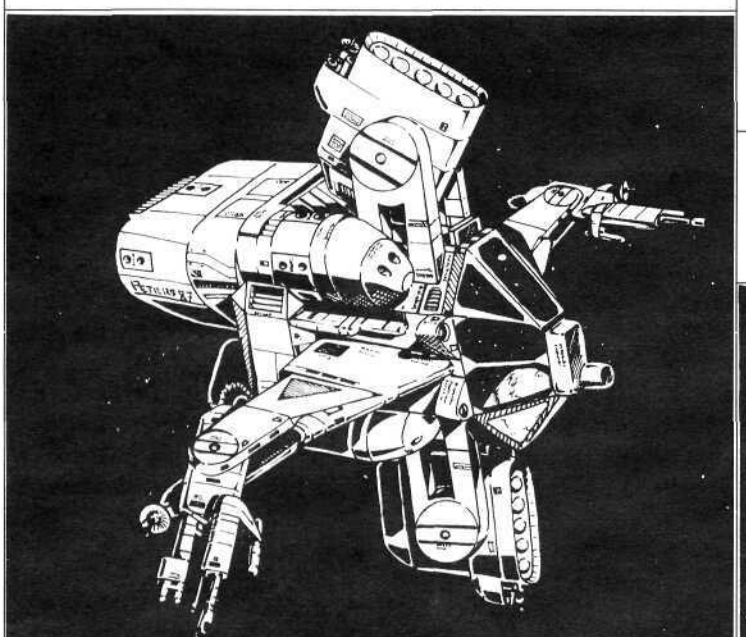
Warp Efficiency: 3.32, *Power Plant:* 5 MW MHD Turbine, *Fuel:* 36 tons, sufficient for 12 hours of operation, *Range: 7.7, Mass:* 338 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support: 2, Price:* Lv23,744,000

ARIES-CLASS AUXILIARY CRUISER

Warp Efficiency: 1.28, *Power Plant:* 4 MW MHD Turbine, *Fuel:* 800 tons, sufficient for two weeks of operation, *Range: 7.7, Mass:* 4500 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 1 2, *Price:* unavailable

L'ORIENT-CLASS SURVEY SHIP

Warp Efficiency: 1.898, *Power Plant:* 4 MW MHD Turbine, *Fuel:* 1800 tons, sufficient for six weeks of operation, *Range: 7.7*, *Mass:* 2465.6 tons, *Cargo Capacity:* 1121.57 m^3, *Comfort:* 0, *Total Life Support:* 145, *Price:* Lv17,965,000

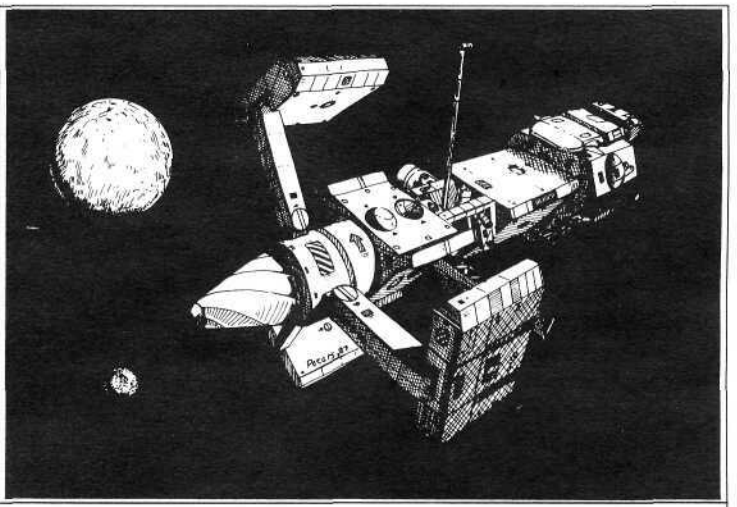


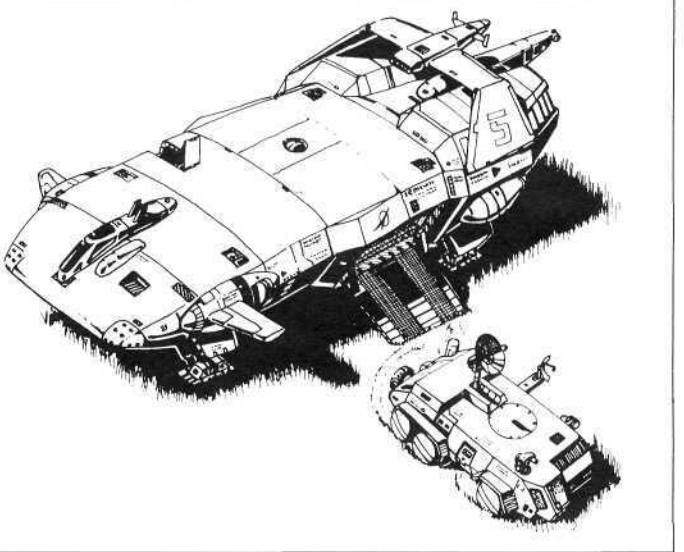
MARTEL-CLASS FIGHTER

Warp Efficiency: 3.177, Power *Plant:* 3 MW MHD Turbine, *Fuel:* 28.8 tons, sufficient for 1 6 hours of operation, *Range:* NA, Mass: 1 67.2 tons, *Cargo Capacity:* none, *Comfort:* 0, Total Life Support: 3, *Price:* Lv31,800,400

TALLYRAND-CLASS BATTLESHIP

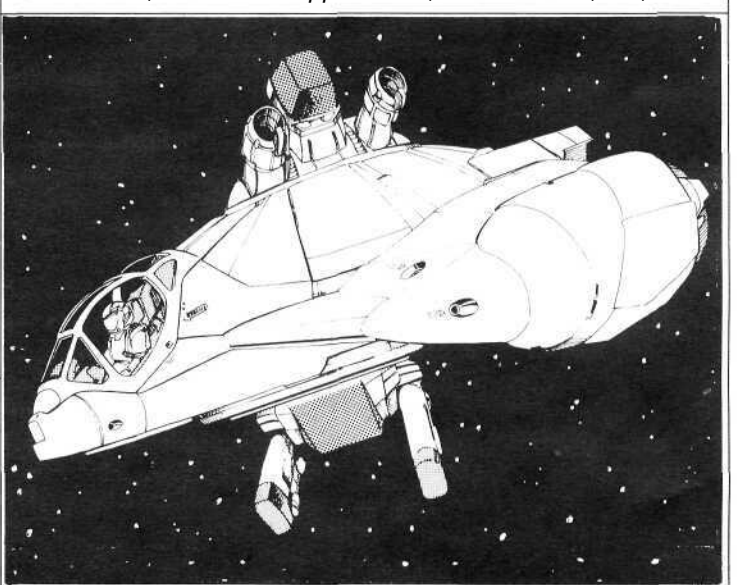
Warp Efficiency: 2.97, Power Plant: 415 MW Fusion, *Fuel:* none, *Range:* 8.7, *Mass:* 61,262.24 tons, *Cargo Capacity:* 21,728.8 m^3, *Comfort:* 0, Total Life Support: 3200, Price: Lv523,770,000; approximately Lv1,000,000,000 with vehicles.





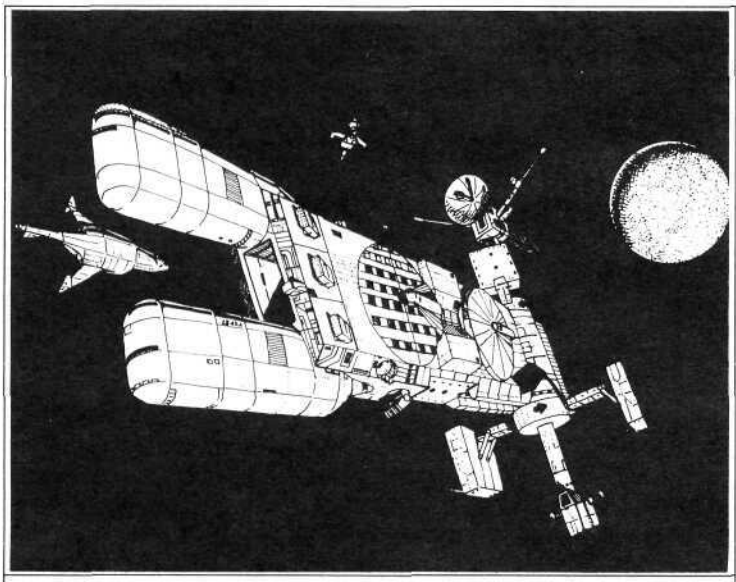
SUFFREN-CLASS CRUISER

Warp Efficiency: 3.34, *Power Plant:* 300 MW Fusion, *Fuel:* none, *Range:* 7.7, Mass: 22,050.11 tons, *Cargo Capacity:* none, *Comfort:* 0, Total Life *Support:* 500, Price: Lv381,500,000



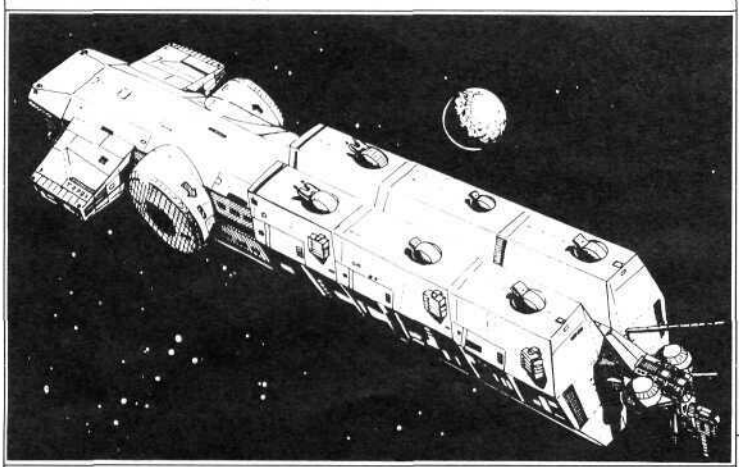
GUSTAV-CLASS FIGHTER

Warp Efficiency: 4.58, *Power Plant:* classified, *Fuel:* classified, *Range:* NA, *Mass:* 112 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support: 2, Price:* unavailable



BISMARK-CLASS BATTLESHIP

Warp Efficiency: 2.75, *Power Plant:* classified, *Fuel:* classified, *Range:* 7.7, Mass: 25,720 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 516, *Price:* unavailable



HAMBURG-CLASS MISSILE CRUISER

Warp Efficiency: 1.89, *Power Plant:* classified, *Fuel:* classified, *Range:* 7.7, *Mass:* 12,223 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* classified, *Price:* unavailable

SACHSEN-CLASS FRIGATE

Warp Efficiency: 1.53, *Power Plant:* classified, *Fuel:* classified, *Range:* 7.7, Mass: 2563 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* classified, *Price:* unavailable

KONSTANTINE-CLASS CRUISER

Warp Efficiency: 3.02, *Power Plant:* 200 MW Fusion, *Fuel:* none, *Range:* 7.7, *Mass:* 15,442 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 181, *Price:* Lv150,370,000

KIEV-CLASS DESTROYER

Warp Efficiency: 2.55, *Power Plant:* 50 MW Fusion, *Fuel:* none, *Range: 7.7, Mass:* 5512 tons, *Cargo Capacity:* none, *Comfort:* 0, *Total Life Support:* 72, *Price:* Lv48,635,000

KENNEDY-CLASS CRUISER

Warp Efficiency: 4.81, *Power Plant:* 150 MW Fusion, *Fuel:* none, *Range:* 8.7, Mass: 7213 tons, *Cargo Capacity:* 3694 m^3, *Comfort:* 0, *Total Life Support:* 100, *Price:* Lv154,120,000

ANJOU-CLASS FREIGHTER

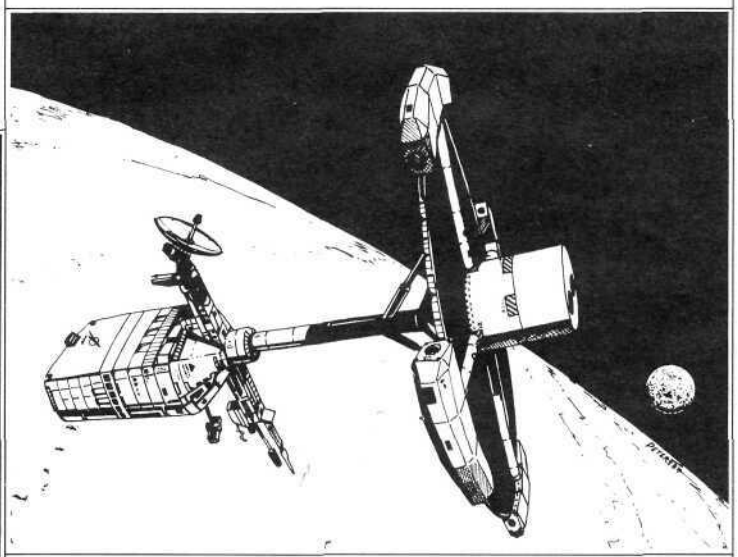
Warp Efficiency: 1.615, *Power Plant: 3* MW MHD Turbine, *Fuel:* 300 tons, sufficient for one week of operations, *Range: 7.7, Mass:* 2169.296 tons (unloaded), *Cargo Capacity:* 25,066 m^3, *Comfort:* + 1, *Emergency Power:* Battery, 1 50 hours, *Total Life Support:* 24, *Price:* Lv6,360,000

GOETHE-CLASS LINER

Warp Efficiency: 1.238, *Power Plant:* 5 MW MHD Turbine, *Fuel:* 5000 tons, sufficient for ten weeks of operation, *Range:* 7.7, Mass: 8027 tons, *Cargo Capacity:* 150 m^3, *Comfort: +2, Total Life Support:* 140, *Price:* Lv6,965,000

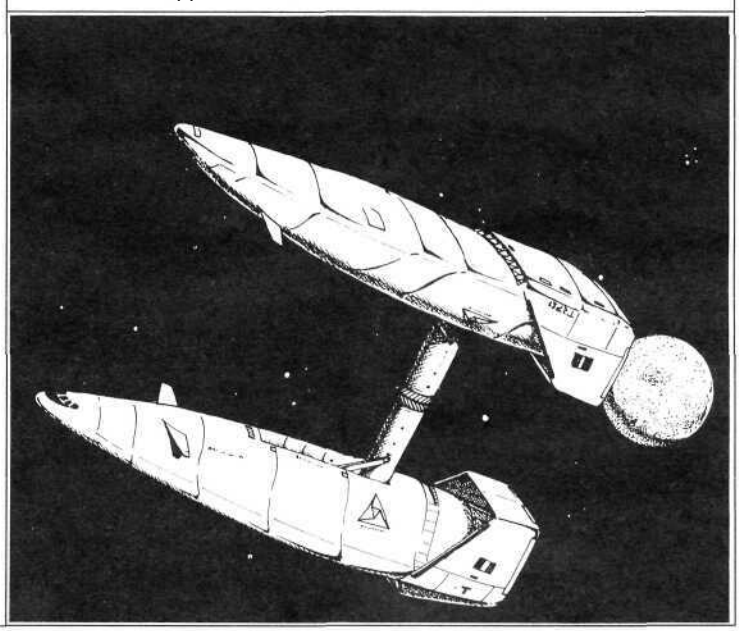
CARGOMAX-CLASS FREIGHTER

Warp Efficiency: 1.155, *Power Plant:* 5 MW MHD Turbine, *Fuel:* 5000 tons, sufficient for ten weeks of operation, *Range: 7.7, Mass:* 10,725 tons (unloaded), *Cargo Capacity:* 25,000 m^3, *Comfort:* + 1, *Total Life Support:* 55, *Price:* Lv17,100,000



NAFASI-CLASS SURVEY SHIP

Warp Efficiency: 1.31, *Power Plant: 2* MW MHD Turbine, *Fuel:* 800 tons, sufficient for four weeks of operation, *Range: 7.7, Mass:* 2737.315 tons, *Cargo Capacity:* 1764.48 m^3, *Comfort:* +1, *Total Life Support:* 150, *Price:* Lv5,092,000



ELECTRA 917-CLASS CIVILIAN LINER

Warp Efficiency: 1.574, *Power Plant:* 2 MW MHD Turbine, *Fuel:* 800 tons, sufficient for four weeks of operation, *Range:* 7.7, *Mass:* 2147.45 tons, *Cargo Capacity:* 46.921 m^3, *Comfort:* +3, *Total Life Support:* 75, *Price:* Lv13,831,200

KAFER *ALPHA-CLASS* BATTLESHIP

Warp Efficiency: 1.8, *Power Plant:* unknown, *Fuel:* unknown, *Range:* unknown, but at least equal to human technology, Mass: 70,000 tons, *Cargo Capacity:* unknown, *Comfort:* unknown, *Total Life Support:* unknown, *Price:* unavailable

KAFER *IMPROVED ALPHA-CLASS* BATTLESHIP

Warp Efficiency: 1.8, *Power Plant:* unknown, *Fuel:* unknown, *Range:* unknown, Mass: 70,000 tons, *Cargo Capacity:* unknown, *Comfort:* unknown, *Total Life Support:* unknown, *Price:* unavailable

KAFER BETA-CLASS BATTLESHIP

Warp Efficiency: 2.8, *Power Plant:* unknown, *Fuel:* unknown, *Range:* unknown, Mass: 47,000 tons, *Cargo Capacity:* unknown, *Comfort:* unknown, *Total Life Support:* unknown, *Price:* unavailable

KAFER FOXTROT-CLASS FIGHTER

Warp Efficiency: 3.168, *Power Plant:* unknown megawattage MHD plant, *Fuel:* 30 tons, *Range:* unknown, *Mass:* 180 tons, *Cargo Capacity:* none, *Comfort:* unlivable by human standards, *Total Life Support:* 3 Kafers, *Price:* unavailable

KAFER GOLF-CLASS FIGHTER

Warp Efficiency: 3.28, *Power Plant:* unknown megawattage MHD plant, *Fuel:* 25 tons, *Range:* unknown, Mass: 230 tons, *Cargo Capacity:* none, *Comfort:* unlivable by human standards, *Total Life Support: 3* Kafers, *Price:* unavailable

Credits

Design: Frank Chadwick
Development: Timothy B. Brown
Assistance and Playtesting: Lester W. Smith, Loren K. Wiseman, Matt Renner, Brad Hay
Art Director: Barbie Pratt
Art Assistants: Lauretta Oblinger, Dana Reischauer
Cover Illustration: Steve Venters
Interior Illustrations: Steve Crompton (p. 16), Bryan Gibson (p. 17), Tom Peters (pp. 16, 17, 18)

Rules Book

Page 2: The *Sequence of Play* explanation in the **Rules Book** seems to indicate that only the intruder can fire during the intruder Movement and Fire Phase, and only the Native may fire during the Native Movement and Fire Phase—this is not true. As is explained under *Firing Procedure* on page 4, each weapon may fire *either* during the Intruder Movement and Fire Phase *or* during the Native Movement and Fire Phase.

Page 3: Under *Facing,* add the following:

Same Hex: Oftentimes both a firing ship and its target will be in the same hex. When both the firing ship and target are in the same hex, the firing ship may declare itself to have any facing with respect to that target ship. Also, the ship with the higher movement factor decides which facing of the target ship is being fired upon, which also determines which target profile modifier is to be used, lateral or radial.

Page 5: Under *Armor,* second paragraph, add: Armor values of 10 or higher are penetrated on a roll of 10.

Page 5: Under *Damage,* add to the introductory paragraph: (If the ship does not have the indicated location, the hit is a hull hit instead.)

Page 6: Under *Screen Generator,* omit the last sentence.

Page 6: Under *Damage Control,* add: When a Bridge or TAC work station has been destroyed and a vacant station is to be substituted for it, the substitution is performed during the Friendly Damage Control Phase.

Page 7: In *The Ship Status Sheet, Surface Fixture Hits,* third paragraph, this information is blatantly wrong. The bow on both the weapon displays and the counters is to the right, not the left.

Also, on each status sheet, those weapons positions which can fire into three aspects are jack turrets. Those which can fire into five aspects are gun towers.

Page 13: Under *The Death of DC-2, add to Set Up:* Each Kafer ship may have fired up to two of its missiles on the turn before play begins. They begin the game within one turn's movement from the firing ship.

For the intruder, add the following:

BC *Beta-3* (CQ: -2)

Ordnance Carried: 20 x Whiskey-type missiles

BC Beta-4 (CQ: -2)

Ordnance Carried: 20 x Whiskey-type missiles

Also for *The Death of DC-2* scenario, add the following note to the *Victory* section: If both French ships escape, the result is a draw. If the French destroy at least one Beta-class ship before breaking contact, the result is a French victory. If either French ship is destroyed, the result is a Kafer victory.

Page 13: Under *Like a Wolf in the Fold,* for the intruder, substitute:

Intruder: Kafer

BB Alpha-1 (CQ: -2)

Ordnance Carried: 30 x Whiskey-type missiles.

2 Foxtrot-class fighters (A-1, A-2). (CQ: -1 each)

Page 16: In the *Ship Annex,* add the following:

Bays: All ships which carry missiles are assumed to have one bay. The following are the only exceptions: Kafer *Alpha-class:* two bays, Kafer *Improved Alpha-class:* two bays, Kafer *Beta-class:* two bays, Bismark-class: two bays, *Espirito Santo-class:* five bays, *Hamburg-class:* four bays, Kennedy-class: four bays, *Kiev-class:* three bays, *Konstantine-class:* three bays, Sachsen-class: two bays. Write bays into the Ordnance box of the ship status sheet.

Naval Architect's Manual

Page 3: In the *Power Plant* section, omit the references to MHD turbine blade diameters.

Page 6: Under *Fixed Weapons,* add: Fixed weapons require power equal to their damage multiplier, in MW.

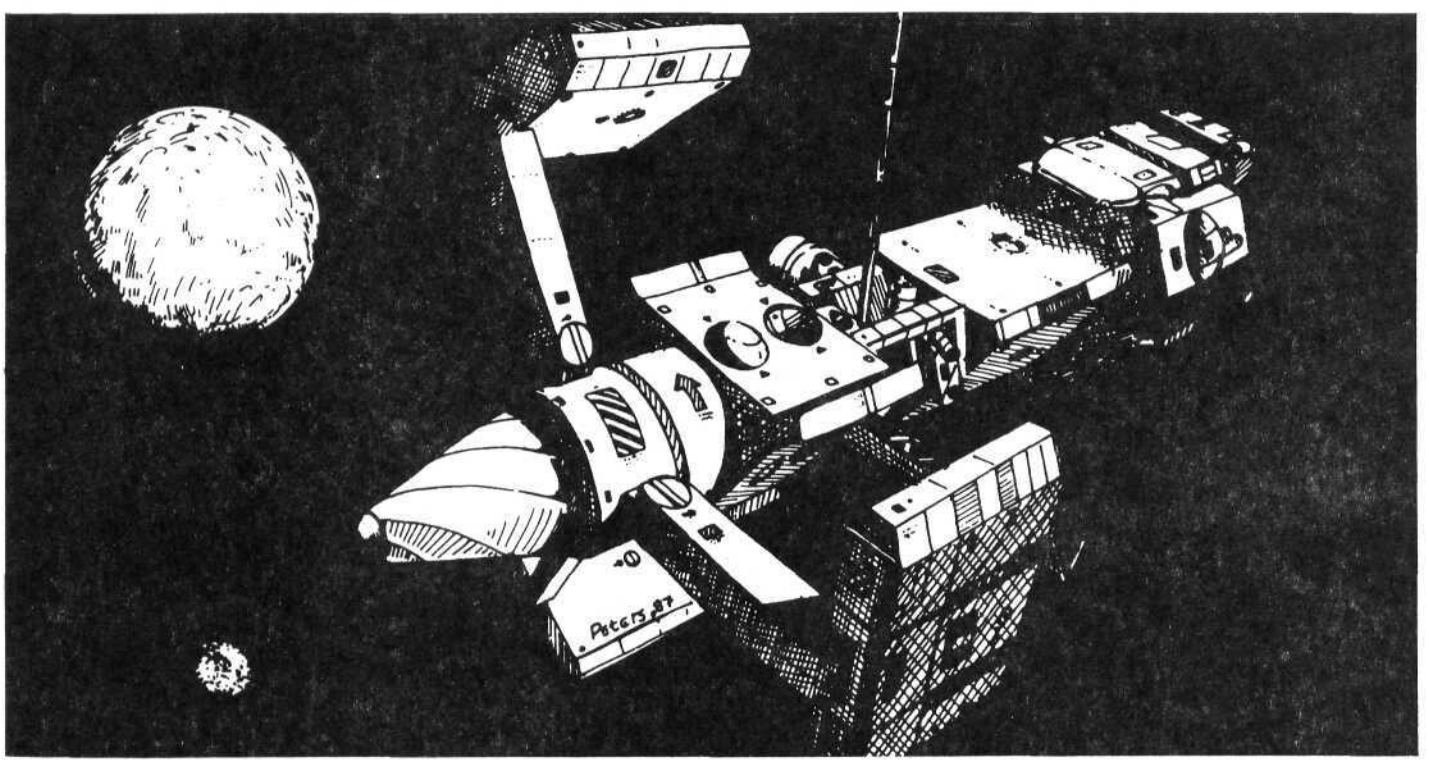
Page 14: The masses of the American submunition dispensers were omitted. The "Grape-shot" masses 25 tons, the "Big Clip," 15 tons.

Ship Status Sheets

Note: If a ship has no TTAs listed, it has UTES on all fixed weapons.

Star Cruiser Combat Charts

Step 1: Add the following: + or - to target's target profile (see page 5 of **Rules Book).**



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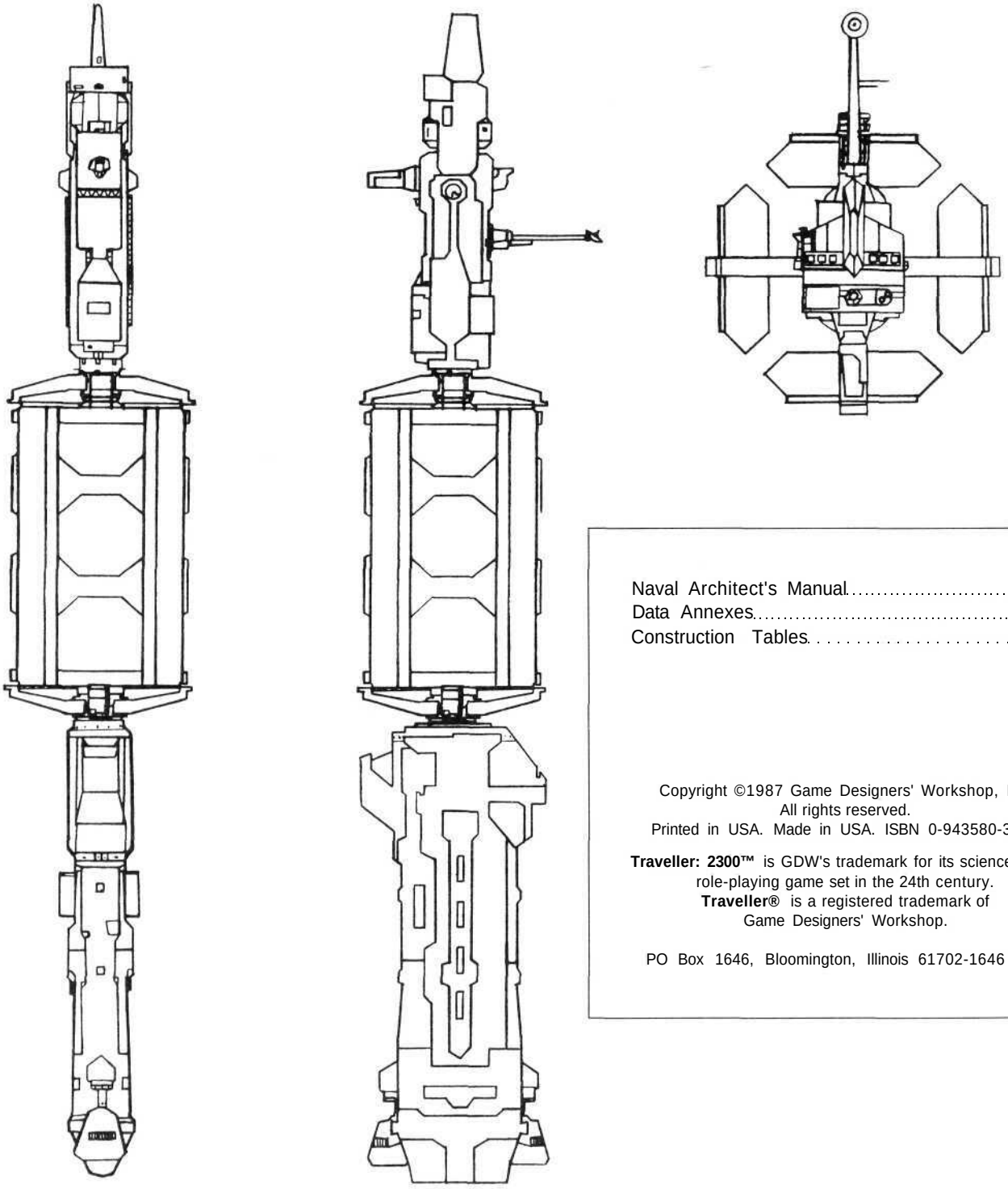
STAR CRUISER

NAVAL ARCHITECT'S MANUAL



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GAME DESIGNERS' WORKSHOP

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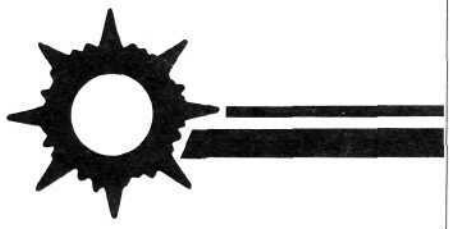


Naval Architect's Manual

INTRODUCTION

Starship construction in the 24th century is a tremendously complex and sophisticated industry. Ships are assembled in large, orbital facilities from subcomponents either built in orbital factories or shipped up from the planet surface. Some shipyards on the frontiers of human space have to transport some of the more complex components all the way from Earth.

Ship construction has been considerably simplified for purposes of the game, and only the most important elements in defining a ship's characteristics are covered. Two general procedures are followed when constructing a ship: design and evaluation. Often a ship will be redesigned several times, based on its evaluation, to fine-tune the design. Thus, these two procedures will, to a certain extent, be ongoing and simultaneous. For ease of explanation, however, we will deal with them separately.

Units: Throughout these construction rules the following units apply: Volume is measured in cubic meters (m^3). Surface area is measured in square meters (m^2). Mass is measured in tons, which are equal to 1,000 kilograms. Money is in livres (Lv) or mega-livres (MLv). A MLv is equal to one million livres. Distances are measured in meters. Time is measured in various standard units — weeks, days, hours, and minutes.

The Examples: Two separate examples are provided throughout these design rules. First is the Kennedy-class cruiser, a large ship design. Second is the Punyuang fighter, a small ship design. These will be referred to as the Large Ship Example and the Small Ship Example.

Overview: Ships are designed by assembling various components (power plant, drive, quarters, work stations, etc.) and building a hull around them. As the design precedes, two critical quantities will be constantly updated: interior volume used and hull surface area used. Although the size of the hull is up to the builder, each hull configuration has its own interior volume and surface area. You cannot cram more inside a hull than its interior volume will allow, nor can you plaster the outside of the hull with more surface installations (sensor arrays, air locks, docking bays, turrets, etc.) than there is surface area to attach them to.

1. CONCEPTUALIZATION:

Decide what the ship is supposed to do. That will enable you to determine which areas of design you want to emphasize. Although design proceeds in an orderly sequence, if you know that this is a cargo carrier, you will know to leave plenty of room for cargo.

Ship Classification: For purposes of design, each ship must fall within three broad classifications determined by the designer during conceptualization. A ship is considered a *remote object* if it has no crew whatsoever. If the ship has a crew but is intended for missions of 12 hours or less duration (such as fighters or landers), it is considered a *small ship.* If the ship has a crew, and is intended for missions of indefinite duration, the ship is considered a *large ship.*

These classifications will dictate certain procedures to be used throughout the design sequence. After design, when in use, special rules will apply to the use and capabilities of small ships and remote objects.

Large Ship Example: The Kennedy-class guided missile cruiser is intended to be a relatively small, but sophisticated, warship with a powerful self-defense capability, which relies primarily on remote ordnance for its offensive punch. Since it will have a crew and be capable of long-lasting missions, it is considered a large ship.

Small Ship Example: The Punyuang-class fighter is designed to be a stutterwarp-capable system defense fighter which is cheap to produce but light on defensive capabilities. Since it has a crew, but is only intended for short missions, the Punyuang is considered a small ship.

2. POWER PLANT

In general, power plants provide power to run the ship's electrical systems, life support, sensors, weapons, and drives. For simplicity the basic housekeeping functions of a power plant (interior heat, light, etc.) are assumed to be provided by the installation of the plant, and its rated capacity is what is left over for sensors, weapons, screens, and the drive. The main function of the power plant is to power the ship's drives, and, thus, the size of the power plant is the basic limitation on drive size. However, military ships require power for their energy weapons and shields, and ships with active sensors require energy to power them. Players need not make allowances for these separately from the energy needs of the drive; however, if no such provision is made, then the drive cannot function at full efficiency at the same time that the active sensors or energy weapons are being used.

The unit of energy used for power plants in *Star Cruiser* is the megawatt. Active sensors require at least one megawatt in order to function. Many energy weapons will require one or more megawatts to fire. Screens may require up to six megawatts in order to function. Therefore, in order to supply all ship's functions at

one time, the power plant must produce megawatts equal to the sum total of the drive's requirement, the screens' requirements, the weapons' requirements, and the active sensor's requirement.

The Power Plants Table lists a variety of standard power plants. The four general types are fuel cells, MHD (Magneto-Hydro-Dynamic) turbines, fission (nuclear) reactors, and fusion (thermonuclear) reactors. Note that three different levels of quality are available. In general, "old commercial" are available anywhere starships are built. "Modern commercial and old military" are available at better shipyards. "Modern military" are not available to the general public, and in most cases their exact internal components and means of construction are classified.

In addition to listing the various power outputs (in megawatts) available, the table has the volume and price of each power plant. Volume is the number of cubic meters of space inside the hull taken up by the plant and will strongly influence the size of the hull of your starship. Price is the normal cost of the drive in livres. MHD turbines also include a listing for rotor diameter. Because turbines of different outputs have different minimum diameter rotor blades, there are certain minimum diameters of hulls into which they can fit. When you choose a hull, it will have to be at least as large as the minimum diameter shown.

Mass is not shown on the table, as all power plants mass one ton per cubic meter.

Multiple Power Plants: If more than one power plant is installed, add 10 percent to total volume of power plants per additional power plant. For example, if two 20 MW MHD turbines were installed, multiply total power plant volume by 110 percent. If three 20 MW MHD turbines were installed, multiply total power plant volume by 1 20 percent. In combat, power plant hits against vessels with multiple power plants will affect only one of the installed plants, determined at random. Thus, installing multiple drives can help to ensure some power output after battle damage is sustained, but at a cost in additional volume within the ship. If a ship with three 20 MW MHD turbines suffers a total loss of one plant, it will still have 40 MW of output with which to operate.

All ships must have a power plant of at least 0.01 MW output.

Large Ship Example: The *Kennedy-class* cruiser uses a 150-megawatt fusion power plant. It masses 5,000 tons and takes up 5,000 m^3 of interior volume. The 1 50 megawatts of output will be used for a large drive and a variety of weapons. The drive costs MLv50.

Small Ship Example: The *Punyuang* fighter anticipates needing one megawatt for its drive, one for active sensors, and one for a laser. The most space-efficient three-megawatt plant is an Old Military MHD turbine displacing 40 m^3 and massing 40 tons. It costs MLv0.5.

3. FUEL

All ships with MHD turbines or fuel cells for power plants will require fuel and fuel tankage. Fission and fusion plants have their fuel built into the drive, and that fuel will last the life of the drive.

Using the Fuel Table, decide upon a desired maximum time duration for the ship's mission. This may be hours or weeks, possibly months or years. Calculate how much fuel it will take to operate the drive for that time, and allow sufficient interior space for the fuel.

Fuel Processing Plants: In order to process raw hydrogen into usable fuel, a ship will require a fuel processing plant. The basic plant masses 2 tons, occupies 5 m^3, and costs Lv1 00,000. It requires 10 standard solar arrays to function and produces one ton of fuel in 10 hours.

Small ships may have durations of less than 12 hours, but additional fuel might be desired for emergency situations.

Large Ship Example: The *Kennedy* has a fusion plant, and therefore needs no fuel.

Small Ship Example: The *Punyuang* has a 3 MW MHD plant. If we provide enough fuel for 12.11 hours of use, we will need 0.60 ton of fuel per hour per megawatt, or 21.8 tons of fuel. This will take up 35.97 m^3 of interior space.

4. THRUSTERS

All starships have small utility thrusters which use compressed oxygen jets to maneuver the craft into and out of orbit. These are subsumed in the basic cost of the hull and power plant, and no special allowance need be made for them. However, a few ships are also configured for atmospheric re-entry and landing. These ships require large thrusters if they are to take off again and reach orbit or make interplanetary journeys without benefit of a stutterwarp drive.

Thrusters may only be added to ships which have MHD turbine power plants. The addition actually consists of adding a large reinforced re-ignition chamber to the power plant and thrust nozzles at the rear of the hull. The MHD turbine is thus modified to function as a thruster. When in thrust mode, large volumes of additional fuel are added to the re-ignition chamber, burned, and ejected as reaction mass.

This conversion adds 10 percent to the volume and mass of the power plant and adds 20 percent to its cost.

If thrusters are added for the purpose of atmospheric landings, the ship's hull must be streamlined. The decision to streamline the hull is made at this time, but the actual calculations are not made until the hull is designed later in this design sequence. Simply note for now the fact that the ship will be streamlined for reference at that time. Similarly, the fuel requirements for the thrusters will also be calculated at that time.

Only streamlined ships with thrusters may make planetary landings. Only ships with thrusters, regardless of streamlining, may make interplanetary journeys without a stutterwarp. However, most interplanetary travel is accomplished with a stutterwarp.

Large Ship Example: The *Kennedy* is not intended for planetary landings of its own, nor is it intended for interplanetary travel without its stutterwarp. Therefore, no additional thrusters are installed.

Small Ship Example: The *Punyuang* fighter is intended for planetary landings and so must have both thrusters and streamlining. Therefore, the *Punyuang's* power plant will instead mass 44 m^3 and mass 44 tons, and it will cost MLv0.6. The hull for the *Punyuang* will also be 10 percent more expensive and will lose 10 percent of its interior volume to waste space—these must be noted for later in the design sequence.

5. DRIVE

Jerome Effect stutterwarp drives are the main means of transportation between worlds and effectively the only means between star systems. The Stutterwarp Drives Table lists a variety of stutterwarp drives available. As with power plants, three levels of quality are listed, and these have the same restrictions on availability as do power plants. Note that each quality level of drive has a different *drive variable* listed. This will be used later to calculate the ship's drive efficiency.

The table lists the power requirement of the drive, its volume, mass, and price. (Note that, unlike power plants, drives mass a bit more than a ton per cubic meter.) The drive selected may not have a power requirement in excess of the ship's power plant.

Large Ship Example: The *Kennedy* uses a new military 1 50 MW drive. It masses 85 tons and occupies 72 m^3 of internal

volume. It costs MLv90.

Small Ship Example: The *Punyuang* uses an old military 1 megawatt drive. It masses 15 tons, displaces 13 m^3 of interior volume, and costs MLv9.75.

6. CREW AND WORK STATIONS

A variety of tasks are required of a starship crew, depending on the size and function of the ship. The section below discusses the standard job descriptions of crewmen on a starship and indicates how many work stations are required. Each work station (usually a seat and computer/control console) requires 8 cubic meters of volume and masses 5 tons.

Small ships, which are normally carried in larger ships (such as fighters and landers), have different crew and work station requirements and are treated separately below.

6A. Large Ships

Bridge: For large ships, there are seven separate crew sections that must be addressed—the bridge section, the tactical action center (TAC) section, the engineering section, the shipboard vessel section, the ship's security section, the ship's troops sections, and, finally, the medical section. There are two additional sections that are optional—the steward section and the scientific section.

Captain: Each large ship requires a captain. The captain's only function is to command, but military command personnel are also qualified pilots (and can also fill in on a variety of other work stations if required by battle casualties). (SKILL: Pilot)

Navigation: Each large ship requires a navigator. This is actually a sensor station which mans the navigation radar and deep system scanners. (SKILL: Sensor)

Communications: Each large ship needs one communications work station to monitor broadcast communications from planets and other vessels. Tight beam link (as opposed to broadcast) communication uses a coherent light (laser) or microwave (maser) energy beam between two ships to provide secure communications that the enemy can neither intercept nor jam. However, each ship must keep its directional transmitter/receiver antennae aimed at the other ship in the "comlink." One communications work station has one tight beam link communicator attached to it at no extra cost or mass to the work station. (SKILL: Communications)

Engineering: Usually referred to as the "helm," one engineering station on the bridge is always required. This station controls the drives and is manned by a qualified pilot. (SKILL: Pilot)

An additional engineering work station on the bridge is required for ships with large power plants to monitor power plant status. The number of additional monitoring stations required is equal to the output of the power plant in megawatts divided by 50, rounding fractions down. For example, a 75 MW power plant would require two bridge stations: the helm and one monitoring station. A ship with a 7 MW power plant would only require one station, the helm. (SKILL: Engineering)

Computer: "Computer" stations are flexible work stations with the ability to reconfigure into other bridge work stations, usually in case of battle damage. No more than half of the total bridge work stations may be computer work stations.

Once the total number of captain, navigation, communications, engineering, and computer positions have been determined for the bridge, one work station must be provided for each. Bridge work stations are continuously manned and require two crew members each.

Large Ship Example: The bridge of the *Kennedy* has the following work stations: 1 captain, 1 navigation, 2 communications, 3 engineering (1 helm, 2 monitoring stations), 3 computer. Therefore, the *Kennedy's* bridge has 10 total work stations and requires 20 crew members.

Tactical Action Center (TAC):

Sensors: Each ship requires one sensor operator for its passive array (if it has one) and one for its active array (if it has one). Beyond those required, redundant stations may be installed in case of battle damage. (SKILL: Sensors)

Flight Controllers: Military ships generally maintain one flight controller per fighter or other small combatant in flight at any time. The flight controller maintains continuous tight beam communication with the craft. For both civilian and military ships one flight controller is necessary if a smaller vessel is to dock with the ship. (SKILL: Communications)

Fire Control Station: Each fire control station is a crew work station which must be manned by a crewman with gunnery skill. Each fire control station can control as many weapons as desired, but can only "service" (engage) one target per turn. (SKILL: Gunnery)

Remote Pilot Stations: Each remote station can control one and only one missile or other remote vehicle. (SKILL: Remote Pilot)

Once the total number of sensor, flight controller, fire controller, and remote pilot positions have been determined for the TAC, one work station must be provided for each. TAC work stations are not continuously manned and require one crew member each.

Large Ship Example: The *Kennedy-class* cruiser has a TAC consisting of two sensor work stations, one for the active array and one for the passive array. No flight control stations are present, as the ship has no small craft. There are 10 fire control stations and 5 remote pilot stations. The TAC has a total of 1 7 crew and 1 7 work stations.

Engineering:

The engineering crew of a ship is dictated by the maintenance requirements of its power plant. Power plant maintenance requires the skills of electricians, general mechanics, and specialist starship engineers. Maintenance requirements vary with the type of power plant used and its output in megawatts, as shown on the following table:

Type	*Mechanical*	*Electrical*	*Engineer*
Fuel Cell	1	1	1
MHD Turb.	1+/50	1 +/40	1 +/40
Fission	1+/5	1 +/4	1+/4
Fusion	1+/30	1+/20	1+/20

Explanation: Each of the three maintenance areas (mechanical, electrical, and engineering) always requires one crewman for maintenance. (The appropriate skill is necessary to fill the position; thereafter, every crewman is considered an "engineer.") MHD turbines, fission reactors, and fusion reactors require additional maintenance crewmen based upon the power output of the plant divided by the number shown, rounding all fractions down.

If more than one crewman is required, one is designated the "senior mechanical engineer" (or electrical engineer or drive engineer).

The total number of crew members required in the engineering section is equal to the sum total of the mechanical, electrical, and engineering personnel as determined above. At battle stations the entire engineering crew is on duty. Half man fixed work stations for drive control and monitoring, while the other half form damage control parties, formed in groups of at least three. Thus the total

number of work stations required is equal to the engineering crew divided by 2, rounding fractions up.

Large Ship Example: The *Kennedy,* with a 150 MW fusion reactor, requires (1 + 1 50/30 =) 6 mechanics, (1 + 1 50/20 =) 8 electricians, and (1 + 150/20 =) 8 engineers, for a total of 22 men in the engineering section. A total of 1 1 actual work stations are installed in the engineering section.

Shipboard vessels:

If the ship carries manned shipboard vessels (such as fighters, landers, etc.), special maintenance personnel for them will be required on board the mother ship. Allow one maintenance work station and crew member for each such vessel carried. Note that unmanned vessels (such as missiles and remote sensor drones) do not necessitate maintenance personnel in this crew section.

Large Ship Example: The *Kennedy* does not carry any small craft.

Ship's Security:

At the designer's option, the ship may have security personnel. For every 20 crew members (or fraction thereof) in this crew section, there must also be one work station.

Large Ship Example: The Kennedy has no security section.

Ship's Troops:

Also at the designer's option, the ship may carry any number of military personnel generally not charged with the security of the ship itself. For every 20 troops (or fraction thereof) in this crew section, there must be one work station.

Large Ship Example: The *Kennedy* has 10 ship's troops. These require one work station.

Steward Section:

At the designer's option, the ship may carry passengers. For every 10 passengers, there must be one steward crew member, and each of these requires one work station.

Large Ship Example: The *Kennedy* has no passengers; no steward section is required.

Scientific Section:

An optional section of scientists may be included on any ship. (Their make-up can be determined at a later time; only their numbers need be addressed here.) Each scientist is a crew member who requires one work station.

Large Ship Example: The *Kennedy* has no scientific section.

Medical Section:

Total all of the crew members from each of the previous eight sections. Add to this the total number of passengers. For every 30 people there must be one medic in the medical section. Each medic requires one work station.

Large Ship Example: The *Kennedy* has a bridge crew of 20, TAC crew of 17, engineering crew of 22, ship's troops crew of 10, totalling 69. Therefore, the ship requires 3 medics, each with one work station.

Total Crew and Work Stations:

The total crew is equal to the total number of crew members in each of the above nine sections. The total number of work stations is equal to the cumulative total of work stations in each of the above nine sections. Total the mass and internal volume required for the work stations at this time.

Large Ship Example: The *Kennedy* has a total bridge crew of 20, TAC crew of 17, engineering crew of 22, ship's troops section of 10, and a medical section of 3. Its total crew is 72, and it carries no passengers. There are 1 0 bridge work stations, 1 7 TAC work stations, 1 1 engineering work stations, 1 ship's troops work station, and 3 medical work stations, for a total of 42 work stations on the ship. These take up 336 m^3 and mass 210 tons.

6B. Small Ships

Small ships are those designed specifically for limited endurance (12 hours or less) missions. They have considerably reduced crew requirements, as all maintenance is provided by the mother ship. Tight beam communication is controlled by the mother ship as well. Since the mission is of limited duration, there is no requirement for the crew to move about in the craft, and, thus, the work stations are much smaller and have no access to each other or the interior of the craft. To differentiate them from normal work stations, they are instead called cockpits.

Each crewman on a small craft requires a cockpit. A small craft requires one command pilot (SKILL: Pilot). If armed, the craft must also have one TAC officer who both operates the sensors and serves as gunner. (SKILL: Gunner and Sensor). If more than one gunner is required, only one need be cross-trained as a sensor operator.

If the ship has only one fixed forward firing weapon, the ship may dispense with the weapons officer and instead have only a command pilot. However, the weapon may only fire at targets in the same hex as the ship or in its bow aspect.

Each cockpit uses 3 cubic meters of interior volume, masses 2 tons, and uses 2 square meters of hull surface for the access hatch.

Small Ship Example: The *Punyuang* will have one pilot and one gunner. Each requires a cockpit for a total of 6 m^3 and 4 tons, plus 4 square meters of the hull, which are dedicated for the access hatches (make note for later hull design).

7. ACCOMMODATIONS AND LIFE SUPPORT

Only large ships have accommodations and life support.

Accommodations:

Once you know how many people you have in your crew and how many passengers are to be carried, you need to provide them accommodations. The chart below shows how much volume is required to reach certain comfort levels. (As a general rule, military vessels should strive for a comfort level of 0 to avoid adverse effects during combat.)

ACCOMMODATIONS CHART

Volume	*Comfort*
25 m^3	-2
50 m^3	-1
75 m^3	0
100 m^3	+1
150 m^3	+2

The mass of these accommodations is 10 tons plus 0.1 tons per m^3.

Spin Habitat: There are several varieties of spin habitats, broken into the following general categories. The several designs of spin habitats are differentiated more for purposes of deck plans than of design—the requirements of volume and area for each actually vary very little. Their descriptions should help you visualize your ship during design.

Spun *Hull:* This is the simplest, but usually largest, spin habitat. In it the hull is a large cylinder that spins around its axis, thus providing centrifugal gravity in the outer part of the cylinder. Due to coriolis effects, the central part of the cylinder (within a radius of 6 meters) is unusable for quarters or work stations, and, thus, is usually used for fuel, cargo, and low-maintenance machinery. More often the hull is built like a doughnut, and the central core is occupied by a nonspinning drive/power plant module.

Double Hull: In this design, the outer hull spins but surrounds an enclosed inner hull which does not. Again, this design is most useful for very large ships as the enclosed central hull is at least 9 meters in radius.

Hamster Cage: The hamster cage consists of a cylindrical module that is at least 9 meters in radius, and that spins to create an artificial habitat. Unlike other designs, the hamster cage is usually set at right angles to the main axis of the ship and generally installed in counter-rotating pairs (to eliminate torque effects on the ship's attitude).

Spin Capsule: The most common spin habitat in use is the spin capsule. In this configuration two or more habitats of the desired size and configuration are placed at the ends of pylons that rotate around a common axis. (Usually, but not always, this is also the axis of the ship.) The spin capsules have a rotational radius of at least 9 meters.

Two Body: Two ships can attach themselves together using a pylon and spin about a central point in space to provide spin gravity. The chief disadvantage to this design is that both ships need be present in order to spin.

In all cases, except those of the spin capsule and two-body spin, the machinery required to maintain the spin habitat has a volume equal to 1 percent of the enclosed spin volume beyond the 10 meter radius, and a mass of 1 ton per m^3. In the case of the spin capsule, the machinery has a volume equal to 2 percent of the spin capsule volume and a mass of 1 ton per m^3. For the two-body spin system there is no additional volume or mass lost to machinery. However, a pylon that is at least 5 percent of the combined mass of the ships must be constructed between the vessels involved, and the pylon must be carried by one or both of the ships involved. Construction of pylons is covered later in this design sequence.

If the crew accommodations have spin simulated gravity, their comfort level is automatically raised by two. For instance, if a ship provides 75 m^3 per person in a spin habitat, the overall comfort of the ship is raised to +2. Crew comfort will affect overall crew performance.

Large Ship Example: The *Kennedy* has a crew of 72, but is outfitted with quarters for 100. The ship allows 25 m^3 per crewman (comfort -2) for a total of 2500 m^3. The accommodations are placed in two spin capsules, raising comfort to 0. An additional 50 m^3 of volume is required for machinery, massing another 50 tons. The accommodations themselves mass 260 tons.

Life Support:

Only large ships need deal with life support. All small ships are assumed to have 24 hours of basic life support and an additional 48 hours of emergency life support.

For large ships one m^3 of supplies (food, water, oxygen) mass 200 kg and provide 200 man-days of life support. Therefore, one man-day of life support will mass one kg and occupy 0.005 m^3 of space.

Life support must be provided for both crew and passengers, referred to here as *total people.* The designer must conclude a maximum number of days of life support, referred to here as *duration.* Duration should be at least as long as that of the fuel for the power plant.

Therefore, multiply the total people by the duration and then by 0.005 to determine the volume that the life support takes up. Divide this volume in m^3 by 5 to determine the total mass of the life support.

Large Ship Example: The *Kennedy* carries supplies for a crew of 100 for six months (1 80 days), or 1 8,000 man-days. This requires 90 m^3 and masses 18 tons.

8. SENSORS

Decide which sensors the ship will be equipped with. All sensors are listed on the Sensors Table. After sensors are chosen, subtract the hull surface area and interior volume they use.

All ships require some sort of navigational sensor. Survey, passive, and active detection sensors are optional.

Active and passive detection arrays also have listed a cross section modifier which must be noted upon purchase. This modifier will affect how well other ships can detect the ship design while those sensors are in use.

Some remote objects have no sensors—they must rely upon the sensors of their ship of origin. As long as there is a communication link between the remote object and the owning ship, the remote object can benefit from all sensor data available to the owning ship. (Remote objects can and often do mount a variety of sensors, however.)

Large Ship Example: The *Kennedy* has a deep-system scanner which takes up 30 m^2 of surface area, 1 5 m^2 of volume, and 20 tons of mass, costing Lv100,000. It has a navigational radar which takes up 20 m^2 of surface area, 5 m^3 of volume, and 1 ton of mass, costing Lv20,000. The *Kennedy* has a passive detection array with a range of 10 and cross section modifier of 1 which takes up 30 m^2 of surface area, 10 m^3 of volume, and 1 ton of mass, costing Lv1,200,000. Finally, it has an active detection array with a range of 1 5 and a cross section modifier of 0 which takes up 10m^2 of surface area, 1 0 m^3 of volume, and one ton of mass, costing Lv2,000,000.

Small Ship Example: The *Punyuang* has navigational radar, which takes up 20 m^2 of surface area, 5 m^3 of volume, and 1 ton of mass, costing Lv20,000. It has a passive detection array with a range of 6 and cross section of 36, which takes up 30 m^2 of surface area, 10 m^3 of volume, and one ton of mass, costing Lv400,000. It also has an active detection array with a range of 10 and cross section modifier of 33, which takes up 10m^2 of surface area, 10 m^3 of volume, and one ton of mass, costing Lv400,000. The *Punyuang* has no survey sensors.

9. WEAPONS

There are two broad classifications of weapons: fixed weapons and launched ordnance.

Fixed Weapons:

Fixed weapons include all energy and particle beam weapons. They are characterized by some sort of turret attachment to the hull of the ship which can hold one or more fixed weapons.

The Weapon: The Weapons Table shows all of the available fixed weapons. Fixed weapons are not designed; they are purchased "off the rack." For each weapon is listed its price, volume, and mass, which apply when the weapon is mounted on the ship. The other values provided (damage multiplier and targeting modifier) come into play only during combat.

The Mount: There are four types of fixed weapons mount, each with different characteristics. Each has an entry on the Weapons Mounts Table. The number of facing aspects reflects the arc of

the weapon's fire—that is, how wide an arc in which the weapon may engage targets.

External Mount: A basic turret without any special masking or armoring. External mount weapons can fire into four facing aspects.

Masked Turret: The masked turret has less of a radar signature inherent to its design (this is determined later when calculating the overall signature of the ship). Masked turrets may also fire into four facing aspects.

Jack Turret: These are limited traverse armored mounts that may fire into only three facing aspects.

Gun Towers: These are turrets mounted on pylons away from the ship. This gives them a much greater arc of fire (they may fire into five facing aspects), but at the cost of greatly increased radar signature (determined later).

Fire Control: Each fire control station (as determined when making up the Tactical Action Center of the ship) may control any number of turrets. It is important to note that fire control stations engage targets, and that these, and not turrets themselves, are fired one at a time.

Target Tracking: Each fire control station must have either its own Target Tracking Array (TTA) or be in command of a turret which has a Unified Target Engagement System (UTES). Each TTA is assumed to have two sensor clusters on the hull, each of which scans a full hemisphere of space (4 aspects). Thus, each TTA can engage any target in any aspect, but only with weapons which bear against that aspect. UTES have the same bearing as the mount in which they are emplaced.

A TTA provides all the fire control data for one fire control station. If either the TTA or its fire control station are out of commission during combat, all the weapons controlled by that station cannot fire until repairs are made.

In order to save surface area and decrease vulnerability, American and French naval forces have begun using the UTES system on some of their weapons. As stated on the Weapons Mounts Table, there are additions to the mass and cost of mounts using a UTES. The additions are per mount, not per weapon in the mount. The advantage is that the fire control station controlling a UTES-capable mount does not need a TTA, and, thus, does not have an additional external feature which takes up exterior surface area and is vulnerable to enemy damage.

Arranging Fixed Weapons: The fixed weapons on a ship are a combination of the weapon, its mount, and the organization of the fire control stations. A single mount can hold up to two identical weapons. Note that double mounted turrets get a modifier to hit the target, but do not do twice the damage. The mass of the weapons and the mounts are totalled and added to that of the ship. The volume of the weapons and mounts are ignored—they are considered to be housed outside the ship and therefore do not take away from its internal volume. (Exception: Jack turrets are housed internally and do add to the ship's internal volume.)

See *Evaluation* step 1 1 for details on determining the facing aspects of each individual weapons mount.

Targeting Computers: There are two types of targeting computers available. The first is available only to the military and is rated +2. The older design is now generally available to everyone, and it is rated + 1. A targeting computer is not necessary to fire weapons, and each computer installed can lend its aid to any number of weapons firing from a ship.

Both targeting computers mass one ton and displace 1 m^3.

Large Ship Example: The Kennedy-class cruiser already has ten fire control stations in its Tactical Action Center. Each of these controls one Hyde Dynamics EA 122 Laser mounted in a masked turret. Each of these has a UTES, so no TTA are required. However, the UTES systems do add to the cost and mass of the mounts, making each weapon/mount/UTES combination mass 9 tons and cost Lv340,000. Since these are masked turrets, their volume does not count against the internal volume of the ship. The turrets take up 300m^2.

Each of these has four facing aspects to choose from. Four bear toward the bow, bow port quarter, port broadside, and stern port quarter. Four more have the same bearing, but to starboard. One bears to the port broadside, stern, and both stern quarters, while the remaining one bears to the starboard broadside, stern, and both stern quarters.

The *Kennedy* has a +2 targeting computer.

Small Ship Example: The *Punyuang* mounts one Guiscard LL-98 laser in a jack turret. The TTA takes up 30 m^2 of hull surface area, masses 2 tons, and costs Lv40,000. The mount and weapon take up another 30 m^2, mass 5 tons and cost Lv217,000. With a jack turret mount, the volume of 5 m^3 does count against the ship, and the weapon has only three facing aspects to choose from. For the *Punyuang,* the weapon bears to the bow, bow port quarter, and bow starboard quarter. The *Punyuang* has a + 1 targeting computer.

Launched Ordnance:

There are two types of launched ordnance: missiles and sensor drones. Both are launched from a ship and then remotely piloted. Missiles contain weapons, while sensor drones do not; they are otherwise identical in function. Missiles and Sensor Drones list all operational information on missiles and drones. The Missile Data Annex lists the design requirements of all missiles currently available for ship mounting.

Missiles and drones may be mounted in one of four ways: internally in bays, internally as cargo, externally, or in missile packs.

Ordnance Bays: A ship can have internal ordnance bays of varying capacities. The Missile Data Annex lists the hull surface area used for the ordnance's exit port and also lists the volume consumed per missile or drone carried in the magazine. Thus, the ship can be designed with as large or small a magazine per bay as desired. Each bay can launch one drone or missile per turn.

Cargo Hold: A ship can carry ordnance in its cargo space, but must have a team of crewmen in the cargo hold to launch it. The vessel must be at "All Stop" to launch ordnance from its cargo bay. The actual crew in the cargo hold should be equal to the mass of the missile or drone in tons. Thus a 4-ton missile should have a launch crew of 4 men. For each man short of the optimal crew, add one turn to the time required to prepare the missile for launch and add one turn to the time required at "All Stop" to launch it.

External Sling: Missiles and drones can be carried externally in magnetic slings. All ordnance carried externally can be released simultaneously if desired. The data annexes list the mass and reflected signature points of an externally slung missile or drone. The sling has effectively no mass and consumes no interior volume.

Missile Pack: Missile packs are prepackaged canisters of missiles that can be mounted on the outside of the hull. The Missile Data Annex lists the missile packs available for each type of missile, along with their mass and reflected signature points.

The mass of either a missile pack or bay is added to the total mass of the ship. The volume of a missile bay is counted against the internal volume of the ship. Bays mass 2 tons per m^3.

Large Ship Example: The *Kennedy* uses Hyde Dynamics One-Mission Definite-Kill Missiles as its main offensive punch. Four bays are built into the ship, each holding five such missiles. Therefore, each bay must provide 4 m^3 for each missile or 20 m^3 total. Each bay masses 40 tons, and each has a 2 m^2 exit port on the surface of the ship.

10. SCREENS

Screens are used to provide ships with a measure of protection from laser and particle beam weapons. A ship's screen consists of an electromagnetic field surrounding the ship and holding a high density of extremely reflective particles. When a laser encounters the screen, the particles reflect and dissipate a significant fraction of the light. However, the particles are not perfectly reflective, and absorbing even a small percentage of the energy from a laser weapon is sufficient to destroy the reflectivity of a particle. At that point, the particle stops reflecting and begins absorbing energy until (minute fractions of a second later) it vaporizes. Burning through the dense layers of particles of a shield is possible, but it considerably reduces the effectiveness of the weapon used to do so.

Screens have an internal volume cost, a surface area cost, price, and power requirement, as listed on the Screens Table. All screen equipment has a mass of 1 ton per cubic meter.

11. HANGAR DECKS

If small craft (such as fighters) are to be carried, they may either be carried internally or externally. If carried externally, their various signatures add to the overall signature of the mother ship. All externally mounted craft may be launched at once. For each such craft, the mother ship must have surface area equal to twice the two largest dimensions of the craft.

Alternatively, ships may be stored internally on a hangar deck. The volume of a hangar deck is equal to three times the volume of the craft carried, if cramped, and six times the volume of the craft, if spacious. Intermediate volumes are possible as well. Each launch door uses hull surface area equal to twice the product of the two smallest dimensions of the craft. One ship may be launched per turn per launch door from a spacious hangar deck. If only five times the volume is committed to the hangar, one ship may be launched every other turn. If only four times the volume is committed, one ship may be launched every third turn. If only three times the volume is committed, one ship may be launched every fifth turn. In all cases where several turns are required between launches, that number of turns must be spent preparing for the first launch.

Hangar decks have a mass of 0.2 tons per m^3.

12. HULL MASKING

If the ship is to have masking of its radiated signature, it is installed at this time. Decide which level of masking is desired (basic, extensive, advanced) and consult Hull Masking Table to determine how much surface area of the hull is used by the radiator panels. Hull volume used is equal to the surface area used divided by 4. Mass is 2 tons per m^3.

Large Ship Example: The *Kennedy* has advanced hull masking. For a ship with a 150 MW power plant, this requires 1800 square meters of hull radiators and 450 cubic meters of internal equipment, masses 900 tons and costs MLv1.5.

13. HULL

When designing the hull for the ship, the designer must consider the total interior volume and exterior surface area of all the components thus far designed. Refer back through your design and total these quantities before designing the hull.

Also, streamlining, thruster fuel, and cargo capacity should be addressed at this time; estimates as to their volume requirements should be made before you design the hull. Refer to those sections now in order to make an educated estimate; the actual figures will be calculated later.

There are two methods of creating the hull—using standard hull sections and customizing.

Standard Hull Sections: The Standard Hull Sections Table shows the interior volume, exterior surface area, and material volume of several standard hull sections. Assemble any number of these to make a hull of the required size.

Customizing: Using the formulas provided under the Standard Hull Sections Table, you can determine the interior volume and exterior surface area for hull cylinders of other dimensions. Pi is equal to 3.1416 for these purposes. Determining the material volume of a customized hull section is done through estimating by using the material volumes of the standard hull sections. To do this, divide the internal volume of the customized hull by the internal volume of a standard hull section of approximately equal size. Then multiply the result by the material volume of the standard hull section; the result is the material volume of the customized hull section. Round fractions down.

Assembly of many hull sections into a single hull unit requires no additional considerations; it is assumed to take up no additional space or tonnage. Add the material volumes of each hull section together to determine the total material volume of the hull.

Material Selection: Consult the Hull Materials Table and pick a material from which the hull is to be constructed. Different materials have different characteristics, as shown on the table.

Ships Without Armor: Multiply the total material volume of the hull by the mass per m^3 of its material to determine the total mass of the hull. Multiply the total material volume of the hull by the price of the material to determine the total cost of the hull.

Ships With Armor: If the designer chooses to armor the ship, the total material volume of the hull will change. Armor is applied in levels, starting with 1. Each level of armor requires material equal to the originally calculated material volume of the hull multiplied by the material's armor multiplier. Thus, if that amount (in m^3) of material is allowed for the hull, the ship will have an armor rating of 1. If twice that amount is allowed, the ship will have an armor rating of 2, etc.

The mass of the hull is added to the ship's total mass. The volume of the hull is not taken away from the interior volume of the hull, regardless of the amount of material involved. It is added to the exterior of the vessel and takes up no interior space.

Material volumes of less than two m^3 may be ignored. Objects of that size have effectively no hull material volume.

Large Ship Example: Kennedy-class cruisers are constructed from three 21 -meter diameter standard hull sections, three 6-meter diameter standard hull sections, and a tapered hull section (with an average diameter of 12).

The total surface area of the hull is 2,919 square meters, with an interior volume of 1 2,350 cubic meters. The material volume of the structural components of the hull is 59 cubic meters. It is constructed of advanced composites, and, therefore, the hull weighs 118 tons.

Small Ship Example: At this point, the *Punyuang* requires a hull with at least 1 40.52 m^3 of volume and 1 24 m^2 of surface area. Instead of using one of the standard hull sections from the table, one will be customized for the ship. The hull will be a 5-meter diameter cylinder 10 meters long. Using the internal volume formula provided below the Standard Hull Sections Table, the hull has 196.35 m^3. Using the surface area formula, we get 196.35 m^2, coincidentally the same number as internal volume.

To determine the material volume, we will divide the 196.35 figure by the 280 standard hull section internal volume figure. The result, multiplied by 4 (the material volume of the standard hull

section with 280 m^3) is 2,805 of a 3 m^3 material volume for our custom hull. The material for the *Punyuang* is synthetic.

We will give the *Punyuang* an armor value of 2. Each level of armor will require 3 (material volume) x4 (synthetic armor multiplier) = 12 m^3 of material. Armor level 2 will require twice that, or 24 m^3, which makes the hull cost Lv360,000 and mass 96 tons.

14. STREAMLINING AND THRUSTER FUEL

Streamlining: As previously determined, a ship may be streamlined. There are two degrees of streamlining. The first requires that 5 percent of the hull be set aside as waste space and gives the ship a lift value of 0.5. The second requires that 10 percent of the hull be set aside as waste space and gives the ship a lift value of 1.0.

No ship of greater than 10,000 tons total mass may be streamlined.

Thruster Fuel: Total the mass of the ship, including all components and the hull thus far. The fuel required, in tons, for a streamlined ship to make one trip down to a planet's surface and back to orbit through an atmosphere is as follows: Tonnage/6 X g, where g is the gravity of the planet in Earth gravities.

When calculating the fuel requirement, the fuel itself does not count as mass. The standard volume assigned to g for calculations during design is 1.

Twice this amount may be set aside to make two trips, etc. Remember that the internal volume is 1.65 m^3 per ton of fuel.

Time to Orbit: The time required to make orbit is a function of the gravity of the world, the MW of the power plant, and the lift volume of the streamlined ship. Use the following formula to determine time in minutes to achieve orbit: (g x MW x 1 2)/lift value.

One-third of this time is spent within the planet's atmosphere. The remaining two-thirds of it is outside of the atmosphere.

15. CARGO

Any remaining interior volume may be devoted to cargo space. One percent of this volume is taken up by interior bracing, massing 5 tons per m^3. Only the remaining 99 percent can be used for cargo.

Large Ship Example: The *Kennedy* has a cargo hold of 3694.68 m^3. This is braced by 37.32 m^3 of material massing 186.6 tons.

Small Ship Example: The *Punyuang* is filled with equipment; there is no room for any cargo.

16. PYLONS:

After constructing the hull, the designer may find that his volume needs result in a hull with insufficient surface area for all of the external fixtures specified. In this case many fixtures can be mounted on pylons instead.

All sensors, TTAs, missile packs, communicators, and hull masking radiators may be mounted on pylons. Pylons mass 10 percent of the total mass of all fixtures mounted on them, in addition to the mass of the fixtures themselves. Fixtures mounted on pylons do not count against hull surface area used. Pylons cost Lv1,000 per ton.

EVALUATION

After completing design, the starship must be evaluated to determine its performance characteristics.

1. Mass

Total the mass of all components, carried vessels, and the full fuel tankage to find the normal average cruising mass of the ship. If the ship includes extensive cargo volume, the mass may be altered considerably from voyage to voyage and needs to be recomputed each time.

Large Ship Example: The *Kennedy* has a total of 7213 tons of components.

Small Ship Example: The *Punyuang* masses 223.1 tons.

2. Drive Efficiency

Divide the drive output of the power plant (that part devoted to running the stutterwarp drive) in megawatts by the mass of the ship in tons. Take the cube root of the result and multiply it by the drive variable of the particular type of drive in use. The result is the drive efficiency of the ship. Many calculators can determine cube roots, or cube root tables exist in some mathematics texts.

For ships that have power plant output less than the total of their energy requirements (for drive, sensors, weapons, and screens), two drive efficiencies must be calculated: one for full power to drives and one for full power to weapons, sensors and screens, and remaining power to drives.

Large Ship Example: The *Kennedy* has a 150 MW stutterwarp drive with a drive variable of 17.5 (new military). 150/7213 = 0.02239. The cube root of that is 0.275. Multiplied by 17.5, the drive efficiency of the *Kennedy* is 4.812.

Since the *Kennedy* has a 1 50 MW plant and 1 50 MW drive, the drive will function at a lower efficiency when weapons and sensors are powered. The *Kennedy* has an active array requiring 6 megawatts of power and ten lasers, each requiring 1 megawatt of power, or a total of 1 6 megawatts. This reduces the drive power in combat mode to 134 MW. 134/7213 = 0.186. The cube root of that is 0.265. Multiplied by 17.5, the drive efficiency of the *Kennedy* in combat mode is 4.635.

Small Ship Example: The *Punyuang* has a 1 MW drive with a drive variable of 16.05 (old military). 1 /223.1 = 0.00448. The cube root of this is 0.1649. Multiplied by 16.05, the drive efficiency of the *Punyuang* is 2.646.

3. Fire Statistics

Record the targeting modifiers and damage multipliers for each of the weapons carried. In addition, the modifier for the ships targetting computer (if any) should be noted.

Large Ship Example: The *Kennedy* has a +2 targeting computer. Each of its lasers hits at + 1 and does double damage.

Small Ship Example: The *Punyuang* has no targeting computer. Its lasers are +0 to hit and do one point of damage.

4. Comfort

Note the comfort value of the ship given normal loading procedures. Be certain to take into account the effects of any spin habitats. If the comfort value is a negative modifier, it will be used as a negative die roll modifier on all task rolls. If playing a *Star Cruiser scenario* with a custom-designed ship, a negative comfort rating is subtracted from the crew quality. Comfort ratings of 0 or higher have no effect on combat. (Better comfort ratings are necessary only to attract passengers. Negative comfort ratings, however, result in physical deterioration of the crew over time and significantly impair crew efficiency.

Large Ship Example: The *Kennedy* allows 25 m^3 per person (-2) in spin (+ 2), for net comfort of 0.

Small Ship Example: All small ships have comfort of 0.

5. Expense

Add the cost of all components together to find the total cost of the ship.

Large Ship Example: The *Kennedy* costs MLv154.12.
Small Ship Example: The *Punyuang* costs MLv11.787.

6. Reflected Signature

A ship will have two reflected signature ratings: radial and lateral. Radial is the rating of the ship when viewed from fore or aft, or from the fore or aft quarter. Lateral is the rating used when the ship is viewed from broadside. Two main components determine the reflected signature rating of the ship: hull reflection and fixture reflection. Follow the three steps below.

6A. Hull Reflection: Hull reflection is a function of the viewed area of the hull and the material from which it is constructed.

The radial viewed area of the hull is determined by squaring the radius of the hull and multiplying it by 3.1 41 6. If the hull is constructed of several segments of differing radii, use the greatest radius for this calculation. If a spin habitat rotates around the hull, the rotational radius of the habitat is used unless the radius of the largest hull section is *greater.* (All spin habitats have a rotational radius of 9 meters or more.) Note that the Standard Hull Sections Table lists the diameter of various hull sections; the radius of the hull section is half the diameter.

The lateral viewed area of the hull is determined by multiplying the length of the hull by its diameter. If the hull is constructed of several segments of differing diameters, break the ship up into several segments each of the same diameter and determine the lateral viewed area of each. Then add them together to find the lateral viewed area of the whole. If a spin habitat rotates separately from the hull, the rotational diameter of the spin habitat is used as the effective diameter of the hull at that point.

The material types are metallic, synthetic, low-profile synthetic, advanced synthetic, composite, and advanced composite. The material from which the hull is constructed provides the signature multiplier for the viewed area of the hull, as shown on the Hull Materials Table.

Once you have determined the lateral and radial viewed areas, multiply them by the construction material multiplier to determine the radial and lateral hull reflection points, rounding up. Record these for later use.

Large Ship Example: The *Kennedy* has greatest dimensions of 21 meters in diameter and 100 meters in length. Its radial viewed area is (10.5x 10.5x3.1416 =) 346.36. Its lateral viewed area is 2100. Modified for materials, in this case advanced composites with a signature multiplier of 0.2, these become 69.27 and 420, respectively.

Small Ship Example: The *Punyuang* is constructed from a single hull cylinder. Its radial viewed area is (2.5x2.5x3.1416 =) 19.63. Its lateral viewed area is (10x5 =) 50. The hull is made of synthetics, which have a material modifier of .6, giving the ship a radial reflection of 11.78 and a lateral reflection of 30.

6B. Fixture Reflection: The table below lists the point cost of various external hull fixtures. Add the total points of the external hull fixtures to the hull reflection.

FIXTURE POINTS

External Weapon Mount	10
Masked Turret	4
Gun Tower	100
Active Sensor	note 1
Target Tracking Array	10
Missile Pack	note 3
Slung Ordnance	note 3
(UTES Modification	+4
Passive Sensor	note 2
Vehicle Berth	50
Vehicle in Berth	(vehicle's lateral points)
Deep System Sensor	25 note 1
Jack Turret	10
Cartographic Sensor	25 note 1
Life Sensor	25 note 1

Note 1: Only if currently in use.

Note 2: Passive and active sensor suites have reflection modifiers based on their effectiveness and price, as determined when purchased.

Note 3: As listed for the missile or drone used. See Data Annexes.

Pylons: All equipment on pylons adds drastically to the fixture signature. Add the mass of the equipment to the mass of the pylons, and multiply this result by 10. This is the number added to the fixture signature of the ship.

Large Ship Example: The *Kennedy* has 10 masked turrets, each modified as a UTES, for a total of 80 points. Its passive array has 1 reflection point, and its active array has none. Its deep system scanner adds 25 more points when in use.

Small Ship Example: The *Punyuang* has a jack turret worth 10 points, a TTA worth 10 points, passive sensors worth 36 points, and active sensors worth 33.

6C. Total Reflection: Add the ship's radial hull reflection points to its fixture points and consult the table below to determine its radial reflected signature. Add the ship's lateral hull reflection points to its fixture points and consult the table below to determine its lateral reflected signature. If the reflection points are equal to or less than the first number shown, the reflected signature number is the second number.

REFLECTED SIGNATURE

Points	*Signature*
7	1
23	2
63	3
124	4
215	5
342	6
511	7
728	8
999	9
1330	10
1727	11
2196	12
2743	13
3374	14
4095	15

Large Ship Example: The *Kennedy* has 70 radial reflection points to which are added 81 fixture points for a total of 151. This will go up to 1 76 when the deep system scanner is in use. In both cases this is a reflected signature of 5, so that becomes the ship's radial reflected signature in all cases. The ship has 420 lateral hull points, which becomes 501 points with the fixture points, giving a lateral reflected signature of 7. With the deep system sensor, the ship has 526 points or a value of 8.

7. Radiated Signature:

This is the signature given off by the ship's power plant and detected by *a* hostile ship's passive sensors. The base radiated signature is shown below:

RADIATED SIGNATURE

MW	*Signature*
1	1
2	2
3	3
10	4
30	5
100	6
300	7
1000	8
3000	9
10000	10

This can be modified if hull masks are used. Basic masking reduces radiated signature level by 1. Extensive masking reduces the signature by 2. Advanced hull masking reduces the signature by 3. Negative numbers are possible. Record both the unmasked result and the masked result for the ship.

Large Ship Example: The *Kennedy* has a 1 50 MW power plant, giving it a base value of 7. However, it also has advanced hull masking, which reduces this number by three, giving the ship an emission signature of 4.

Small Ship Example: The *Punyuang* has a 1 MW plant and no hull masking, giving it an emission signature of 1.

8. Hull Hit Value:

Take the material volume of the structure of the hull and divide it by the armor multiplier of the material used to construct it. The result is the total number of hull hits before structural failure. 25 percent of this (round up) is the number of hits before the hull suffers a minor breach; 50 percent of the total number of hull hits (round up) is the number of hits before the hull suffers a major breach. Record all of these numbers.

Large Ship Example: The *Kennedy* has 59 m^3 of material volume in the hull. The armor divisor of advanced composites is 1. A minor breach occurs after 1 5 hull hits, a serious breach after 30 hull hits, and structural failure after 59 hull hits.

Small Ship Example: The *Punyuang* has 24 m^3 of material volume. The armor divisor of synthetic is 4. Therefore, the *Punyuang* will suffer structural failure after 6 hull hits, major breach after 3 and minor breach after 1.

9. Power Plant Hit Capacity:

If the ship has a fuel cell of MHD turbine, divide the volume of the power plant by 5. If the ship has a fission or fusion power plant, divide the volume of the power plant by 50. The result is the total number of hits required to damage the power plant beyond hope of repair. 20 percent of this number (round up) is the number of hits required to disable the power plant.

Large Ship Example: The *Kennedy* has a 1 50 MW fusion power plant, which displaces 5000 m^3 of interior volume. Dividing this by 50 indicates that the power plant will be damaged beyond repair after 100 hits. It will be disabled after 20 hits.

Small Ship Example: The *Punyuang* has a plant volume of 40 m^3. Therefore, it can take eight hits and becomes inoperable after one.

10. Target Profile:

Target profile refers to the size of the target and the consequent ease or difficulty associated with hitting it. Ships have a radial and lateral target profile. The lateral target profile is used when the ship is fired on from its broadside aspect. The radial target profile is used when the ship is fired on from any other aspect.

To determine target profile, consult the Target Profile Table. Compare the ship's radial viewed area to the table to determine its radial target profile. Compare the ship's lateral viewed area to the table to determine its lateral target profile.

Large Ship Example: The *Kennedy* has a radial viewed area of 346.35, which gives it a radial target profile of + 0. It has a lateral viewed area of 2100, which gives it a lateral target profile of +2.

Small Ship Example: For the *Punyuang,* the radial viewed area is 19.635, giving a radial target profile of -3. its lateral viewed area is 50 for a lateral profile of -2.

11. Firing Aspect of Weapons Mounts:

Space is three-dimensional, but for the sake of simplicity, *Star Cruiser* is played on a two-dimensional surface. Nevertheless, some three-dimensional effects cannot be ignored, and primary among these is the inability of a single weapons mount to cover a full sphere without at some point shooting through the ship it is mounted on. Therefore, it is necessary to know the directions in which each turret and TTS bears.

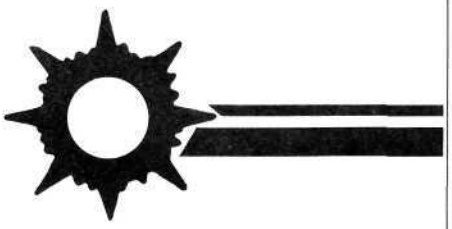
Firing aspect of each weapons mount is selected when the mount is installed. The facing diagram in the *Star Cruiser* rules illustrates the eight aspects of a vessel in the game. Each weapons mount may engage targets in any four adjacent aspects. Thus, a weapons mount could be sighted to engage targets in the port bow quarter, bow, starboard bow quarter, and starboard broadside, for example. Each jack turret may only engage targets in three adjacent aspects. A gun tower may fire into five adjacent aspects.

12. Armor Value:

Note the level of armor acquired for the ship when constructed and record it.

Large Ship Example: The *Kennedy* has an armor value of 0.

Small Ship Example: The *Punyuang* has an armor value of 2.



Data Annexes

Missile Data Annex

FRENCH RITAGE-1 MISSILE

Combat Performance Data:

Movement: 7, Radiated Signature: 1, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* - 4, *Lateral Target Profile:* ~ 4, *Hull Hits:* 1/1/1, *Power Plant Hits:* 1 /1, *Armament:* One five-shot limited 1 x 1 laser, *Active Sensors:* none, *Passive Sensors:* 5

Design Characteristics:

Warp Efficiency: 3.34, *Power Plant:* 0.1 MW Fuel Cell, *Fuel:* 0.27 tons, sufficient for 6 hours of operation, Mass: 11.07 tons, *Length:* 5 meters, *Diameter:* 1 meter, *Price:* Lv210,000

Standard Missile Pack for the Ritage-1:

Missiles per Pack: 8, Mass *of Pack:* 4.4 tons, *Volume of Pack:* 83 m^3, *Surface Area Cost of Pack:* 35 m^2, *Reflective Signature Points:* 15, *Price of Pack:* Lv150,000

Bays for the Ritage-1:

Mass *per Missile:* 10 tons, *Volume per Missile:* 10 m^3, *Exit Port for Missile: 2* m^2

FRENCH RITAGE-2 MISSILE

Combat Performance Data:

Movement: 8, *Radiated Signature:* 1, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* - 4, *Lateral Target Profile:* - 4, *Hull Hits:* 1/1/1, *Power Plant Hits:* 1/1, *Armament:* one 10x2 detonation laser, *Active Sensors:* none, *Passive Sensors:* none

Design Characteristics:

Warp Efficiency: 4.22, *Power Plant:* 0.2 MW Fuel Cell, *Fuel:* 0.27 tons, sufficient for three hours of operation, *Mass:* 1 4.27 tons, *Length:* 4.22 meters, *Diameter: 2* meters, *Price:* Lv244,000

Standard Missile Pack for the Ritage-2:

Missiles per Pack: 4, Mass *of Pack:* 13.5 tons, *Volume of Pack:* 144 m^3, *Surface Area Cost of Pack:* 50 m^2, *Reflective Signature Points:* 25, *Price of Pack:* Lv203,000

Bays for the Ritage-2:

Mass *per Missile:* 33.76 tons, *Volume per Missile:* 33.76 m^3, *Exit Port for Missile: 8* m^2

ARGENTINIAN EM-1 MISSILE

Combat Performance Data:

Movement: 4, *Radiated Signature: 2, Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* - 4, *Lateral Target Profile:* -3, *Hull Hits:* 2/1/1, *Power Plant Hits:* 8/2, *Armament:* one unlimited shot 1 x 1 laser, *Active Sensors:* none, *Passive Sensors:* 0,

Design Characteristics

Warp Efficiency: 1.91, *Power Plant:* 1.1 MW Fuel Cell, *Fuel:* 2.475 tons, sufficient for five hours of operation, Mass: 43.5 tons, *Length: 8* meters, *Diameter: 2* meters, *Price:* Lv540,000

Standard Missile Pack for the EM-1:

Missiles per Pack: 2, Mass of Pack: 1 6 tons, *Volume of Pack:* 1 33 m^3, *Surface Area Cost of Pack:* 50 m^2, *Reflective Signature Points:* 25, *Price of Pack:* Lv420,000

Bays for the EM-1:

Mass *per Missile:* 64 tons, *Volume per Missile:* 64 m^3, *Exit Port for Missile:* 4 m^2

ARGENTINIAN EM-5D MISSILE

Combat Performance Data:

Movement: 6, *Radiated Signature:* 1, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* - 4, *Lateral Target Profile:* - 4, *Hull Hits:* 1/1/1, *Power Plant Hits:* 1/1, *Armament:* one 1 x 5 detonation laser, *Active Sensors:* none, *Passive Sensors:* 0

Design Characteristics:

Warp Efficiency: 3.25, *Power Plant:* 0.05 MW Fuel Cell, *Fuel:* 0.045 tons, sufficient for two hours of operation, Mass: 6.045 tons, *Length:* 8.4 meters, *Diameter:* 1 meter, *Price:* Lv430,000

Standard Missile Pack for the EM-5D:

Missiles per Pack: 4, Mass *of Pack:* 10 tons, *Volume of Pack:* 75 m^3, *Surface Area Cost of Pack:* 30 m^2, *Reflective Signature Points:* 1 5, *Price of Pack:* Lv376,000

Bays for the EM-5D:

Mass *per Missile:* 16.8 tons, *Volume per Missile:* 16.8m^3, *Exit Port for Missile: 2* m^2

BRAZILIAN AAS-2 MISSILE

Combat Performance Data:

Movement: 3, *Radiated Signature: 2, Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* - 4, *Lateral Target Profile:* -3, *Hull Hits:* 3/1/1, *Power Plant Hits:* 12/3, *Armament:* one unlimited shot 1 x 1 laser, targeting modifier -2, *Active Sensors:* none, *Passive Sensors:* 1

Design Characteristics:

Warp Efficiency: 1.48, *Power Plant:* 1.5 MW Fuel Cell, *Fuel:*

5.4 tons, sufficient for eight hours of operation, *Mass:* 60 tons, *Length:* 10 meters, *Diameter:* 3 meters, *Price:* Lv865,000

Standard Missile Pack for the AAS-2:

A missile pack was never designed for this missile.

Bays for the AAS-2:

Mass *per Missile:* 180 tons, *Volume per Missile:* 1 80 m^3, *Exit Port for Missile:* 18 m^2

BRAZILIAN AAS-2B MISSILE

The AAS-2B is identical to the original AAS-2 model in all respects except one. The AAS-2B has been refitted with a passive sensor with a range of 2. Otherwise all information is the same.

BRAZILIAN AAS-4 MISSILE

Combat Performance Data:

Movement: 4, *Radiated Signature:* 1, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* - 4, *Lateral Target Profile:* -4, *Hull Hits:* 1/1/1, *Power Plant Hits:* 1/1, *Armament:* one 2x2 detonation laser, *Active Sensors:* none, *Passive Sensors:* none

Design Characteristics:

Warp Efficiency: 2.37, *Power Plant:* 0.075 MW Fuel Cell, *Fuel:* 0.27 tons, sufficient for eight hours of operation, *Mass:* 1 7 tons, *Length:* 6 meters, *Diameter:* 1.5 meters, *Price:* Lv355,000

Standard Missile Pack for the AAS-4:

Missiles per Pack: 4, Mass *of Pack: 7* tons, *Volume of Pack: 62* m^3, *Surface Area Cost of Pack:* 30 m^2, *Reflective Signature Points:* 10, *Price of Pack:* Lv236,000

Bays for the AAS-4:

Mass *per Missile:* 27 tons, *Volume per Missile:* 27 m^3, *Exit Port for Missile:* 4.5 m^2

BRAZILIAN AAS-5 MISSILE

The AAS-5 missile is practically identical to its predecessor, the AAS-4. There are only a few differences. First, a drive with slightly better efficiency was installed, giving the AAS-5 a warp efficiency of 2.65 and a movement of 5. Second, a different weapon has been installed, a 5x2 detonation laser.

GERMAN SR-9 MISSILE

Combat Performance Data:

Movement: 6, *Radiated Signature:* 1, *Radial Reflected Signature: 1, Lateral Reflected Signature:* 1, *Radial Target Profile:* - 4, *Lateral Target Profile:* - 4, *Hull Hits:* 1 /1 /1, *Power Plant Hits:* 1/1, *Armament:* one 5 x 1 detonation laser, *Active Sensors:* none, *Passive Sensors:* none

Design Characteristics:

Warp Efficiency: 2.77, *Power Plant:* 0.1 MW Fuel Cell, *Fuel:* 0.09 tons, sufficient for two hours of operation, Mass: 10.8 tons, *Length:* 4 meters, *Diameter:* 1 meter, *Price:* Lv189,000

Standard Missile Pack for the SR-9:

Missiles per Pack: 1 2, Mass *of Pack: 8* tons, *Volume of Pack:* 48 m^3, *Surface Area Cost of Pack:* 25 m^2, *Reflective Signature Points:* 20, *Price of Pack:* Lv200,000

Bays for the SR-9:

Mass *per Missile: 8* tons, *Volume per Missile: 8* m^3, *Exit Port for Missile: 2* m^2

GERMAN SR-10 MISSILE

Combat Performance Data:

Movement: 7, Radiated Signature: 1, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* -4, *Lateral Target Profile:* - 4, *Hull Hits:* 1/1/1, *Power Plant Hits:* 1/1, *Armament:* one 4x3 detonation laser, *Active Sensors:* none, *Passive Sensors:* 0

Design Characteristics:

Warp Efficiency: 3.48, *Power Plant:* 0.1 MW Fuel Cell, *Fuel:* 0.09 tons, sufficient for two hours of operation, *Mass:* 10.4 tons, *Length:* 4 meters, *Diameter:* 1 meter, *Price:* Lv233,000

Packs and Bays for the SR-10:

The SR-10 uses the same bays and packs as the SR-9.

MANCHURIAN FANTAN MISSILE

Combat Performance Data:

Movement: 7, *Radiated Signature:* 1, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* - 4, *Lateral Target Profile:* - 4, *Hull Hits:* 1/1/1, *Power Plant Hits:* 1/1, *Armament:* one 5x2 detonation laser, *Active Sensors:* none, *Passive Sensors:* none

Design Characteristics:

Warp Efficiency: 3.56, *Power Plant:* 0.2 MW Fuel Cell, *Fuel:* 0.45 tons, sufficient for five hours of operation, Mass: 1 4.3 tons, *Length: 7* meters, *Diameter:* 1.5 meters, *Price:* Lv530,000

Standard Missile Pack for the Fantan:

Missiles per Pack: 4, Mass *of Pack: 7* tons, *Volume of Pack:* 70 m^3, *Surface Area Cost of Pack:* 25 m^2, *Reflective Signature Points: 25, Price of Pack:* Lv159,000

Bays for the Fantan:

Mass *per Missile:* 31.5 tons, *Volume per Missile:* 31.5m^3, *Exit Port for Missile:* 4.5 m^2

MANCHURIAN GLOWWORM MISSILE

Combat Performance Data:

Movement: 6, Radiated Signature: 1, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* - 4, *Lateral Target Profile:* - 4, *Hull Hits:* 1/1/1, *Power Plant Hits:* 1/1, *Armament:* one four shot 1 x 1 laser, *Active Sensors:* none, *Passive Sensors:* 3

Design Characteristics:

Warp Efficiency: 2.86, *Power Plant:* 0.1 MW Fuel Cell, *Fuel:* 0.45 tons, sufficient for ten hours of operation, Mass: 9.7 tons, *Length:* 5 meters, *Diameter:* 1 meter, *Price:* Lv320,000

Standard Missile Pack for the Glowworm:

Missiles per Pack: 5, Mass *of Pack:* 1 2 tons, *Volume of Pack:* 30 m^3, *Surface Area Cost of Pack:* 20 m^2, *Reflective Signature Points:* 15, *Price of Pack:* Lv120,000

Bays for the Glowworm:

Mass *per Missile:* 10 tons, *Volume per Missile:* 10 m^3, *Exit Port for Missile:* 2m^2

AMERICAN SIM-14 MISSILE

Combat Performance Data:

Movement: 7, Radiated Signature: 1, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* - 4, *Lateral Target Profile:* - 4, *Hull Hits:* 1/1/1, *Power Plant Hits:* 1/1, *Armament:* one 10x2 detonation laser, *Active Sensors:* none, *Passive Sensors:* 8

Design Characteristics:

Warp Efficiency: 3.304, *Power Plant:* 0.07 MW Fuel Cell, *Fuel:* 0.189 tons, sufficient for eight hours of operation, Mass: 5.62 tons, *Length: 7* meters, *Diameter:* 1 meter, *Price:* Lv840,000

Standard Missile Pack for the SIM-14:

Missiles per Pack: 3, Mass of Pack: 8 tons, *Volume of Pack:* 25 m^3, *Surface Area Cost of Pack:* 1 5 m^2, *Reflective Signature Points:* 1 5, *Price of Pack:* Lv400,000

Bays for the SIM-14:

Mass *per Missile:* 14 tons, *Volume per Missile:* 14 m^3, *Exit Port for Missile: 2* m^2

RUSSIAN SILKA MISSILE

Combat Performance Data:

Movement: 6, *Radiated Signature:* 1, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* -4, *Lateral Target Profile:* -4, *Hull Hits:* 1/1/1, *Power Plant Hits: 1/1, Armament:* one 5x2 detonation laser, *Active Sensors:* none, *Passive Sensors:* none

Design Characteristics:

Warp Efficiency: 2.99, *Power Plant:* 0.1 MW Fuel Cell, *Fuel:* 0.045 tons, sufficient for one hour of operation, Mass: 12.3 tons, *Length: 6* meters, *Diameter:* 1 meter, *Price:* Lv300,000

Standard Missile Pack for the Silka:

Missiles per Pack: 4, Mass *of Pack:* 1 2 tons, *Volume of Pack:* 28 m^3, *Surface Area Cost of Pack:* 1 5 m^2, *Reflective Signature Points:* 15, *Price of Pack:* Lv120,000

Bays for the Silka:

Mass *per Missile:* 12 tons, *Volume per Missile:* 12 m^3, *Exit Port for Missile: 2* m^2

KAFER WHISKEY MISSILE

Combat Performance Data:

Movement: 5, *Radiated Signature:* 1, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* -4, *Lateral Target Profile:* -3, *Hull Hits:* 1/1/1, *Power Plant Hits:* 2/1, *Armament:* one 7x2 detonation laser, *Active Sensors:* none, *Passive Sensors:* none

KAFER X-RAY MISSILE

Combat Performance Data:

Movement: 6, *Radiated Signature:* 0, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* -4, *Lateral Target Profile:* -4, *Hull Hits:* 1/1/1, *Power Plant Hits:* 2/1, *Armament:* one 14x2 detonation laser, *Active Sensors:* none, *Passive Sensors: 2*

Sensor Drones

FRENCH VOIR SENSOR DRONE

Combat Performance Data:

Movement: 11, *Radiated Signature:* 1, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* -2, *Lateral Target Profile:* -3, *Hull Hits:* 1/1/1, *Power Plant Hits:* 10/2, *Armament:* none, *Active Sensors:* 10, *Passive Sensors:* 10

Design Characteristics:

Warp Efficiency: 5.85, *Power Plant:* 5 MW MHD Turbine, *Fuel:* 60 tons, Mass: 1 34 tons, *Length:* 1 0 meters, *Diameter: 6* meters, *Price:* Lv 25,320,000

FRENCH VUE SENSOR DRONE

Combat Performance Data:

Movement: 10, *Radiated Signature: 3, Radial Reflected Signature:* 3, *Lateral Reflected Signature:* 3, *Radial Target Profile:* -2, *Lateral Target Profile: -2, Hull Hits:* 1/1/1, *Power Plant Hits:* 11/2, *Armament:* none, *Active Sensors: 1. Passive Sensors:* 10

Design Characteristics:

Warp Efficiency: 4.935, *Power Plant:* 4 MW MHD Turbine, *Fuel:* 32 tons, Mass: 103 tons, *Length:* 8.3 meters, *Diameter:* 4 meters, Price: Lv15,500,000

AMERICAN HD-5 "SCOUT" SENSOR DRONE

Combat Performance Data:

Movement: 9, *Radiated Signature: 2, Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* -3, *Lateral Target Profile:* -3, *Hull Hits:* 1 /1 /1, *Power Plant Hits:* 10/2, *Armament:* none, *Active Sensors:* 13, *Passive Sensors:* 10

Design Characteristics:

Warp Efficiency: 4.636, *Power Plant:* 10 MW MHD Turbine, *Fuel:* 60 tons, Mass: 249 tons, *Length:* 1 0 meters, *Diameter: 6* meters, *Price:* Lv37,000,000

GERMAN LH-22 SENSOR DRONE

Combat Performance Data:

Movement: 7, *Radiated Signature:* 1, *Radial Reflected Signature: 1, Lateral Reflected Signature:* 1, *Radial Target Profile:* -3, *Lateral Target Profile:* -3, *Hull Hits:* 1/1/1, *Power Plant Hits:* 5/1, *Armament:* none, *Active Sensors:* 10, *Passive Sensors:* 5

Design Characteristics:

Warp Efficiency: 3.228, *Power Plant:* 3 MW MHD Turbine, *Fuel:* 15 tons, Mass: 95 tons, *Length: 8.2* meters, *Diameter:* 4 meters, *Price:* Lv5,020,000

Submunition Dispensers

All submunitions have the following characteristics for combat.

Movement: 0, *Radiated Signature:* 0, *Radial Reflected Signature:* 1, *Lateral Reflected Signature:* 1, *Radial Target Profile:* -4, *Lateral Target Profile:* -4, *Hull Hits:* 1/1/1, *Power Plant Hits:* 1/1, *Active Sensors:* none, *Passive Sensors:* none

The exact armament of the submunition and its dispenser vary from design to design.

GERMAN LHH-637 SUBMUNITION DISPENSER

Submunitions per Dispenser: 4, *Armament per Submunition:* one 2x4 detonation laser, Mass *of Full Dispenser: 22* tons, *Reflected Signature Points of Dispenser:* 25, *Surface Area Cost of Dispenser:* 35 m^2, *Price of Dispenser:* Lv100,000, *Price per Submunition:* Lv97,000.

FRENCH LL-2 SUBMUNITION DISPENSER

Submunitions per Dispenser: 5, *Armament per Submunition:* one 3x1 detonation laser, Mass *of Full Dispenser:* 12 tons, *Reflected Signature Points of Dispenser:* 15, *Surface Area Cost of Dispenser:* 15 m^2, *Price of Dispenser:* Lv120,000, *Price per Submunition:* Lv55,000.

AMERICAN "GRAPE-SHOT" DISPENSER

Submunitions per Dispenser: 24, *Armament per Submunition:* one one-shot 1 x1 laser, *Reflected Signature Points of Dispenser:* 30, *Surface Area Cost of Dispenser:* 35 m^2, *Price of Dispenser:* Lv230,000, *Price per Submunition:* Lv35,000

AMERICAN "BIG CLIP" DISPENSER

Submunitions per Dispenser: 3, *Armament per Submunition:* one 5x2 detonation laser, *Reflected Signature Points of Dispenser:* 20, *Surface Area Cost of Dispenser:* 25 m^2, *Price of Dispenser:* Lv175,000, *Price of Submunition:* Lv210,000

POWER PLANTS TABLE

MHD TURBINES

	Old Commercial		Old Military New Commercial		New Military	
MW	m^3	*MLv*	m^3	*MLv*	m^3	*MLv*
0.5	10	.1	—	—	—	—
0.6	12	.15			-	—
0.7	14	.175	10	.30	—	—
0.8	16	.2	—	—	—	—
0.9	18	.225	—	—	—	—
1.0	20	.25	15	.40	10	.8
2.0	40	.275	30	.45	20	.9
3.0	60	.3	40	.5	30	1.0
4.0	80	.35	55	.55	40	1.1
5.0	100	.4	70	.6	50	1.2
10.0	200	.7	135	1.2	100	2.4
15.0	300	1.1	200	1.9	150	3.8
20.0	400	1.4	250	2.6	200	5.2
25.0	500	1.6	340	3.4	250	6.8
50.0	1000	3.5	650	7.1	500	14.2
75.0			1000	10.5	750	20.5
100.0					1000	40.0

FUEL CELLS

	Old Commercial		Old Military New Commercial		New Military	
MW	m^3	*MLv*	m^3	*MLv*	m^3	*MLv*
0.01	.3	.05	.2	.1	.2	.2
0.02	.7	.1	.4	.2	.3	.3
0.03	1.0	.15	.6	.3	.4	.4
0.04	1.3	.2	.8	.4	.6	.6
0.05	1.7	.25	1.0	.5	.7	.7
0.06	2.0	.3	1.2	.6	.9	.9
0.07	2.3	.35	1.4	.7	1.0	1.0
0.08	2.7	.4	1.6	.8	1.1	1.2
0.09	3.0	.45	1.8	.9	1.3	1.3
0.1	3.3	.5	2.0	1.0	1.4	1.5
0.2	6.7	1.0	4.0	2.0	2.8	3.0
0.3	10.0	2.0	6.0	4.0	4.3	4.5
0.4	13.0	3.0	8.0	6.0	5.7	6.0
0.5	17.0	4.0	10.0	8.0	7.1	7.5
0.6	20.0	5.0	12.0	10.0	8.6	9.0
0.7	23.0	6.0	14.0	12.0	10.0	10.5
0.8	27.0	7.0	16.0	14.0	11.0	12.0
0.9	30.0	8.0	18.0	16.0	13.0	13.5
1.0	35.0	10.0	20.0	20.0	14.0	15.0
2.0	70.0	20.0	40.0	40.0	30.0	30.0
3.0	100.0	30.0	60.0	60.0	40.0	45.0
4.0			80.0	80.0	55.0	60.0

FISSION

MW	m^3	*MLv*
15	1000	4
20	1300	6
25	1500	8
50	3000	16
75	5000	20
100	6500	24
120	8000	30
140	9000	35
160	10000	39
180	12000	42
200	13000	45
250	16000	51
300	20000	70

FUSION

MW	m^3	*MLv*
150	5000	50
180	6000	90
200	6500	100
250	8000	150
300	10000	200

FUEL TABLE

Long-term Operations		Short-term Operations	
MHD	*Fuel Cell*	*MHD*	*Fuel Cell*
100	75	0.60	0.45

Fuel per MW per week, in tons. Fuel per MW per hour, in tons. Fuel occupies 1.65 m^3 per ton, always.

STUTTERWARP DRIVES TABLE

	Old Commercial (Var: 14.5)			Old Military New Commercial (Var: 16.05)			New Military (Var: 17.5)		
Power	m^3	*tons*	*MLv*	m^3	*tons*	*MLv*	m^3	*tons*	*MLv*
0.01	3	3	0.6	33		2.0	3	3	3.6
0.02	3	4	0.8	44		2.5	4	4	4.6
0.03	3	4	0.9	45		2.9	5	5	5.2
0.04	4	5	1.0	5	5	3.2	5	5	5.7
0.05	4	5	1.1	5	5	3.4	5	6	6.2
0.06	4	5	1.2	5	6	3.7	6	6	6.6
0.07	5	5	1.2	6	6	3.9	6	7	7.0
0.08	5	6	1.3	6	6	4.0	6	7	7.2
0.09	5	6	1.4	6	7	4.2	7	7	7.6
0.1	5	6	1.5	6	7	4.3	7	7	7.9
0.2	6	8	1.7	8	9	5.5	8	9	9.9
0.3	7	9	2.0	9	10	6.3	10	11	11.4
0.4	8	10	2.2	10	11	7.0	10	12	12.5
0.5	8	11	2.4	10	12	7.5	11	13	13.5
0.6	9	11	2.5	11	12	7.9	12	13	14.2
0.7	9	12	2.7	12	13	8.4	12	14	14.7
0.8	10	12	2.8	12	14	8.8	13	15	15.7
0.9	10	13	2.9	13	14	9.1	14	15	16.4
1	10	14	3.0	13	15	9.7	14	16	17.5
2	13	17	3.9	16	19	12.0	17	20	21.2
3	14	19	4.2	18	21	13.5	20	24	25.0
4	16	21	4.8	20	24	15.0	22	26	27.5
5	17	23	5.1	22	26	16.5	24	28	30.0
10	22	30	6.6	27	32	20.2	29	34	36.2
15	25	33	7.5	31	36	23.2	33	39	41.2
20	27	36	8.1	34	40	25.5	37	44	46.2
25	29	39	8.7	37	44	27.7	40	47	50.0
50	37	49	11.1	46	54	34.5	50	59	62.5
75	42	56	12.6	53	62	39.7	57	67	71.2
100	46	61	13.8	58	68	43.5	63	74	78.7
120	49	65	14.7	62	73	46.5	67	79	83.7
140	52	69	15.6	65	76	48.7	70	82	87.5
150	53	71	15.9	67	79	50.2	72	85	90.0
160	54	72	16.2	68	80	51.0	73	86	91.2
180	56	75	16.8	71	83	53.2	77	91	96.2
200	58	77	17.4	74	87	55.5	79	93	98.7
250	63	84	18.9	79	93	59.2	85	100	106.2
300	67	68	20.1	84	99	63.0	91	107	113.7

STANDARD HULL SECTIONS TABLE

(10-meter-long cylindrical sections)

Diam	m^2	m^3	*Mat*	*Diam*	m^2	m^3	*Mat*
3	94	70	2	18	565	2550	12
6	188	280	4	21	660	3460	13
9	280	635	6	24	750	4525	15
12	375	1130	8	27	850	5725	17
15	471	1770	10	30	950	7050	19

Diam = diameter of hull section, m^3 — interior volume of hull section, m^2 = surface area of hull section, *Mat* = material volume of hull section.

Custom Hull Formulas: The internal volume of a cylinder is $(pi)r^2h$. The surface area is $2(pi)rh+2(pi)r^2$.

HULL MATERIALS TABLE

Material	*Signature Multiplier*	*MLv per* m^3	*Tons per* m^3	*Armor Multiplier*
Metallic	1.0	1.000	8	x4
Synthetic	0.6	15,000	4	x4
L.P. Synthetic	0.3	35,000	3	x4
Advanced Synthetic	0.1	75,000	2	x3
Composite	0.6	50,000	3	x2
Advanced Composite	0.2	100,000	2	x1

HULL MASKING TABLE

Type	*Area per MW*	*Price per MW*
Basic	5	1,000
Extensive	10	5,000
Advanced	12	10.000

For all types of masking, volume in m^3 is equal to surface area/4. Mass in tons is equal to $2 \times m^3$.

SENSORS TABLE

NAVIGATIONAL SENSORS

Navigation Radar: Takes 20 m^2 of hull surface area, has a volume of 5 m^3, a mass of 1 ton and costs Lv20,000.

Deep System Scanner: Takes 30 m^2 of hull surface area, has a volume of 15 m^3, a mass of 20 tons and costs Lv100,000.

Gravitational Scanner: Takes 50 m^2 of hull surface area, has a volume of 20 m^3, a mass of 40 tons and costs Lv130,000.

SURVEY SENSORS

Cartographic Sensors: Take 10 m^2 of hull surface area, and they mass 1 ton per m^3 of volume.

Life Sensors: Take 30 m^3 of hull surface area and mass 1 ton per m^2 of volume.

Type	*Volume*	*Price*
Minimal	5 m^3	20,000
Standard	8 m^3	30,000
Advanced	10 m^3	60,000

Type	*Volume*	*Price*
Minimal	10 m^3	100,000
Standard	15 m^3	300,000
Advanced	15 m^3	800,000

ACTIVE SENSORS

All use 10 m^2 of hull surface area for the antennae. Additional antennae may be mounted for 10 percent of the base cost of the system. (This adds redundancy for purposes of absorbing battle damage. It has no other effect.) All use 10 m^3 of hull volume and mass 1 ton.

Range	*CS*	*Lv*	*MW*
5	35	200.000	1
7	41	300,000	1
10	33	400,000	3
10	0	600,000	2
13	53	1,000,000	5
13	0	1,500,000	4
15	66	1,600,000	8
15	0	2,000,000	7
16	31	2,000,000	7
16	0	2,300,000	6

PASSIVE SENSORS

All use 30 m^2 of hull surface area for the array. Additional antennae arrays may be mounted for 10 percent of the base cost of the system. (This adds redundancy for purposes of absorbing battle damage. It has no other effect.) All use 10 m^3 of volume and mass 1 ton.

Range	*CS*	*Lv*
0	10	100,000
1	34	100,000
3	18	400,000
3	4	500,000
5	10	600,000
5	0	800,000
6	36	400,000
6	6	700,000
10	38	900,000
10	1	1,200,000
12	41	3,000,000
12	10	5,000,000

WEAPONS TABLE

LASERS

Guiscard LL-98: *Type:* Laser, *Damage:* x 1 , *Targeting:* none integral, *Price:* Lv97,000, *Volume/Mass:* 1

Guiscard LL-88: *Type:* Laser, *Damage:* x 1 , *Targeting:* - 1 , *Price:* Lv58,000, *Volume/Mass:* 1

Hyde Dynamics EA 122: *Type:* Laser, *Damage:* x 1 , *Targeting:* + 1 , *Price:* Lv1 05,000, *Volume/Mass:* 3

Hyde Dynamics EAA 1000: *Type:* Laser, *Damage:* x2, *Targeting:* +1, *Price:* Lv174,000, *Volume/Mass:* 4

PARTICLE ACCELERATORS

Allen BMZ 150MW PBWS: *Type:* Particle Accelerator, *Damage:* x3, *Targetting:* -2, *Price:* Lv212,000, *Volume/Mass:* 8

DunArmCo ALS-22: *Type:* Particle Accelerator, *Damage:* x2, *Targeting:* -3, *Price:* Lv146,000, *Volume/Mass:* 8

WEAPONS MOUNTS TABLE

External Mount: *Hull Area:* 30 m^2, *Mass/Volume:* 1, *Price:* Lv10,000, *Aspects:* 4

Masked Turret: *Hull Area:* 30 m^2. *Mass/Volume:* 1 x weapon m/v, *Price:* Lv35,000, *Aspects:* 4

Jack Turret: *Hull Area:* 30 m^2, *Mass/Volume:* 3 x weapon m/v, *Price:* Lv120,000, *Aspects:* 3

Target Tracking Array (TTA): *Hull Area:* 30 m^2, *Mass:* 2 tons, *Price:* Lv40,000, *Aspects:* All

To add Unified Target Engagement System (UTES): *Mass/Volume:* +2, *Price:* + Lv200,000

TARGET PROFILE TABLE

Viewed Target Area at most	*Target Profile*	*Viewed Target Area at most*	*Target Profile*
5	-4	6400	+4
30	-3	9500	+5
115	-2	13700	+6
315	-1	19000	+7
710	+0	26000	+8
1400	+1	35000	+ 9
2500	+2	45000	+10
4100	+3	>4500	+11

SCREENS TABLE

Old Military

Rating	m^3	m^2	*MW*	*Lv*
1	20	40	1	1,500,000
2	30	40	8	3,000,000
3	40	40	18	5,000,000
4	50	40	32	7,000,000

Current Military

Rating	m^3	m^2	*MW*	*Lv*
1	10	30	1	2,000,000
2	20	30	4	3,500,000
3	30	30	9	6,000,000
4	40	30	16	8,000,000
5	50	30	25	12,000,000
6	60	30	36	15,000,000

DESIGN CHECKLIST

1. Conceptualization.
   Decide the approximate size and purpose of the ship being designed.
2. Power Plant.
   Using the Power Plant Table, choose a power plant for the ship.
3. Fuel.
   Based on the megawattage of the power plant, determine necessary fuel.
4. Thrusters.
   Decide if the ship needs thrusters. Also, decide if the ship will be streamlined.
5. Drive.
   Using the Stutterwarp Drive Table, pick a stutterwarp for the ship.
6. Crew and Workstations.
   6A. Large Ships. Determine the number of personnel and workstations required for the bridge, tactical action center, engineering, shipboard vessels, security, troops, steward, scientific, and medical sections.
   66. *Small Ships.* Determine the number of crew members and provide a cockpit for each.
7. Accommodations and Life Support (large ships only).
   Provide accommodations for all crew and passengers. Decide if a spin habitat will be installed. Finally, provide life support for all personnel.
8. Sensors.
   Using the Sensors Table, pick any number of navigational, survey, active, and passivesensors.
9. Weapons.
   Using the Weapons Table, pick and assemble weapons and mounts. Decide whether UTES or TTA systems required. Also, if missile bays or packs and submunition dispensers should be considered.
10. Screens.
    Using the Screens Table, pick a screen generator for the ship.
11. Hangar Decks.
    If the ship is to house other vessels, provide hangar decks at this time.
12. Hull Masking.
    Using the Hull Masking Table, provide the ship with a level of masking, if desired.
13. Hull.
    Using the Standard Hull Sections Table, construct a hull for the ship. Make certain all components fit into or on the hull. If armoring is desired, adjust the hull accordingly.
14. Streamlining and Thruster Fuel.
    Take into account the effects of streamlining on the hull at this time. Also, provide interior fuel tankage for thrusters.
15. Cargo.
    Any excess area can be devoted to cargo space, provided bracing is installed.
16. Pylons.
    Exterior fixtures in excess of the total exterior surface area of the hull must be placed on pylons.

I really tried to OCR these pages. I really did. But in the end, they're just forms, it's not like you're going to import them into Word, or anything.

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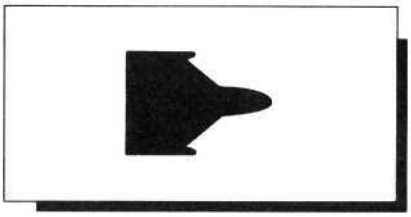
Ship Status Sheet



Santísima Trinidad
Ship Name

Armored Cruiser
Ship Type

Argentina
Owning Nation or World

Movement	3	Radial Reflected	6	Radial Profile	−1
Screens	0	Lateral Reflected	11	Lateral Profile	+2
Radiated Signature	6	Targetting Computer	−2	Armor	3

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1
2. ×1
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—TTAs and Submunitions—

1. TTA
2. TTA
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

—Active Sensors— 5

Primary
Redundant

—Passive Sensors— 0

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator
Fire Control
Fire Control

—Bridge—

Captain
Navigator
Communications
Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Almirante Brown
Ship Name

Destroyer
Ship Type

Argentina
Owning Nation or World

Movement	4	Radial Reflected	7	Radial Profile	−1
Screens	0	Lateral Reflected	10	Lateral Profile	+1
Radiated Signature	6	Targetting Computer	−1	Armor	2

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1 +1 dbl
2. ×1 +1 dbl
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____

—TTAs and Submunitions—

1. TTA
2. TTA
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____

—Active Sensors— 7

Primary
Redundant

—Passive Sensors— 3

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator		Fire Control			
Passive Operator					
Passive					
Fire Control					

—Bridge—

Captain		Engineer			
Navigator		Computer			
Communications		Engineer			

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Almirante Brown
Ship Name

Updated Destroyer
Ship Type

Argentina
Owning Nation or World

Movement	4	Radial Reflected	7	Radial Profile	−1
Screens	0	Lateral Reflected	10	Lateral Profile	+1
Radiated Signature	6	Targetting Computer	0	Armor	2

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1 +1 dbl
2. ×1 +1 dbl
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____

—TTAs and Submunitions—

1. TTA
2. TTA
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____

—Active Sensors— 8

Primary
Redundant

—Passive Sensors— 5

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator		Fire Control			
Passive Operator		Fire Control			
Passive					
Remote					

—Bridge—

Captain		Engineer			
Navigator		Computer			
Communications		Engineer			

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Piedrabuena
Ship Name

Frigate
Ship Type

Argentina
Owning Nation or World

Movement	2	Radial Reflected	6	Radial Profile	0
Screens	0	Lateral Reflected	6	Lateral Profile	0
Radiated Signature	3(4)	Targetting Computer	0	Armor	1

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1 +0 dbl
2. ×1 +0 dbl
3. ×3 +0
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____

—TTAs and Submunitions—

1. TTA
2. TTA
3. TTA
4. Communicator
5. Communicator
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____

—Active Sensors— 7

Primary
Redundant

—Passive Sensors— 3

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator		Fire Control					
Passive Operator		Remote					
Fire Control		Remote					
Fire Control							

—Bridge—

Captain		Engineer		Engineer			
Navigator		Computer		Engineer			
Communications		Engineer		Engineer			

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Wombat
Ship Name

Auxiliary Cruiser
Ship Type

Great Britain
Owning Nation or World

Movement	2	Radial Reflected	8	Radial Profile	0
Screens	0	Lateral Reflected	11	Lateral Profile	+1
Radiated Signature	4	Targetting Computer	−3	Armor	0

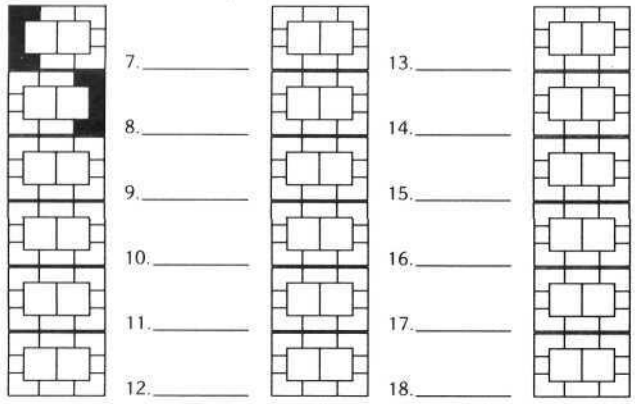
Hull Hits

Power Plant Hits

Surface Fixture Hits

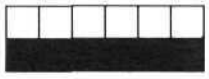
—Weapons—

1. ×1 dbl
2. ×1 dbl
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.



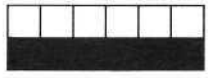
—Active Sensors— 2

Primary
Redundant



—Passive Sensors— 0

Primary
Redundant



—TTAs and Submunitions—

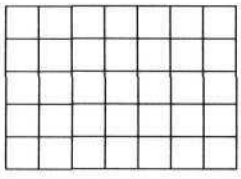
1. TTA		12.	
2. TTA		13.	
3.		14.	
4.		15.	
5.		16.	
6.		17.	
7.		18.	
8.		19.	
9.		20.	
10.		21.	
11.		22.	

Critical Hits

—Computer—

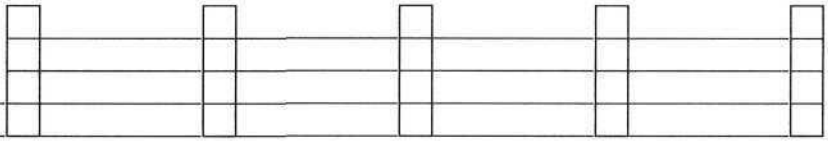
Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—



—Tactical Action Center—

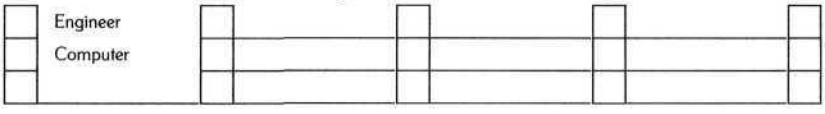
Active Operator
Passive Operator
Fire Control
Fire Control



—Bridge—

Captain
Navigator
Communications

Engineer
Computer



Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

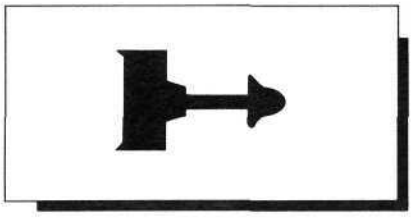
Ordnance

(record ordnance load and type)

Crew

Comfort	0
Crew Quality	

Ship Status Sheet



Espírito Santo
Ship Name

Destroyer
Ship Type

Brazil
Owning Nation or World

Movement	2	Radial Reflected	9	Radial Profile	+1
Screens	1	Lateral Reflected	15	Lateral Profile	+5
Radiated Signature	4(5)	Targetting Computer	+1	Armor	4

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×2 −3
2. ×2 −3
3. ×2 −3
4. ×2 −3
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—Active Sensors— 10

Primary
Redundant

—Passive Sensors— 5

Primary
Redundant

—TTAs and Submunitions—

1. TTA
2. TTA
3. TTA
4. TTA
5. Communicator
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator		Fire Control				
Passive Operator		Fire Control				
Remote		Fire Control				
Fire Control						

—Bridge—

Captain		Engineer				
Navigator		Computer				
Communications		Computer				

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

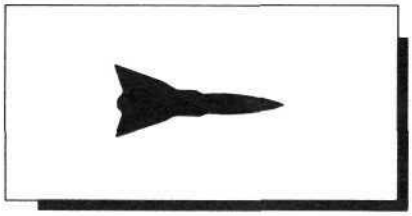
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



Ipirange
Ship Name

Frigate
Ship Type

Brazil
Owning Nation or World

Movement	4	Radial Reflected	4	Radial Profile	−2
Screens	0	Lateral Reflected	8	Lateral Profile	+1
Radiated Signature	3	Targetting Computer	−1	Armor	2

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1 +1
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____

—TTAs and Submunitions—

1. TTA
2. Communicator
3. Communicator
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____

—Active Sensors— 8

Primary
Redundant

—Passive Sensors— 5

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator
Fire Control
Remote

Remote

—Bridge—

Captain
Navigator
Communications

Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

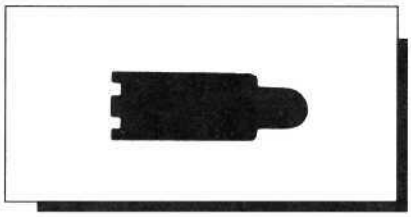
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



Helmut Korell
Ship Name

Auxiliary Cruiser
Ship Type

Bavaria
Owning Nation or World

Movement	2	Radial Reflected	6	Radial Profile	−1
Screens	0	Lateral Reflected	12	Lateral Profile	+2
Radiated Signature	3	Targetting Computer	−3	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1 +1 dbl
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—TTAs and Submunitions—

1. TTA
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

—Active Sensors— 5

Primary
Redundant

—Passive Sensors— 0

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator
Fire Control

—Bridge—

Captain
Navigator
Communications
Engineer
Computer
Engineer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Aconit
Ship Name

Frigate
Ship Type

France
Owning Nation or World

Movement	3	Radial Reflected	4	Radial Profile	−1
Screens	0	Lateral Reflected	4	Lateral Profile	−1
Radiated Signature	4	Targetting Computer	+1	Armor	2

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1 dbl
2. ×1 dbl
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—TTAs and Submunitions—

1. TTA
2. TTA
3. Communicator
4. Communicator
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

—Active Sensors— 7

Primary
Redundant

—Passive Sensors— 5

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator		Remote	
Passive Operator		Remote	
Fire Control			
Fire Control			

—Bridge—

Captain		Engineer	
Navigator		Computer	
Communications			

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Tunghu
Ship Name

Missile Frigate
Ship Type

Manchuria
Owning Nation or World

Movement	4	Radial Reflected	6	Radial Profile	−2
Screens	0	Lateral Reflected	7	Lateral Profile	−1
Radiated Signature	1 (4)	Targetting Computer	0	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1
2. ×1
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—TTAs and Submunitions—

1. TTA
2. TTA
3. Communicator
4. Communicator
5. Communicator
6. Communicator
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

—Active Sensors— 13

Primary
Redundant

—Passive Sensors— 10

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator	Remote				
Passive Operator	Remote				
Fire Control	Remote				
Fire Control	Remote				

—Bridge—

Captain	Engineer	Engineer			
Navigator	Computer				
Communications	Engineer				

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

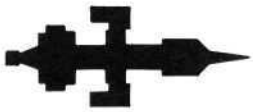
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



Chien-lung
Ship Name

Destroyer
Ship Type

Manchuria
Owning Nation or World

Movement	2	Radial Reflected	6	Radial Profile	−1
Screens	0	Lateral Reflected	8	Lateral Profile	0
Radiated Signature	2(5)	Targetting Computer	+1	Armor	4

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1
2. ×1
3. ×1
4. ×1
5. ×1
6. ×1
7. ×1
8. ×1
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—Active Sensors— 10

Primary
Redundant

—Passive Sensors— 6

Primary
Redundant

—TTAs and Submunitions—

1. TTA
2. TTA
3. TTA
4. TTA
5. TTA
6. TTA
7. TTA
8. TTA
9. Communicator
10. Communicator
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator		Fire Control		Fire Control				
Passive Operator		Fire Control		Fire Control				
Fire Control		Fire Control		Remote				
Fire Control		Fire Control		Remote				

—Bridge—

Captain		Engineer		Engineer				
Navigator		Computer		Engineer				
Communications		Engineer						

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

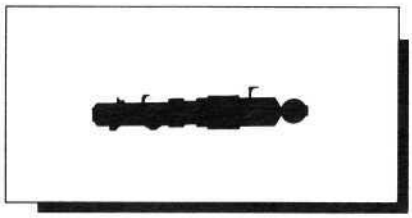
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



Necessite
Ship Name

Auxiliary Cruiser
Ship Type

France
Owning Nation or World

Movement	3	Radial Reflected	5	Radial Profile	−1
Screens	0	Lateral Reflected	10	Lateral Profile	+2
Radiated Signature	3	Targetting Computer	0	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1 +1 dbl
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—Active Sensors— 5

Primary
Redundant

—Passive Sensors— 0

Primary
Redundant

—TTAs and Submunitions—

1. TTA
2. Communicator
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator
Fire Control
Remote

—Bridge—

Captain
Navigator
Communications
Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

FS-17A
Ship Name

Fighter
Ship Type

America
Owning Nation or World

Movement	7	Radial Reflected	5	Radial Profile	−2
Screens	0	Lateral Reflected	3	Lateral Profile	−1
Radiated Signature	1 (4)	Targetting Computer	0	Armor	8

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×2 +1
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____

—TTAs and Submunitions—

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____

—Active Sensors— 5

Primary
Redundant

—Passive Sensors— 5

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator

—Bridge—

Captain
Navigator
Communications
Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

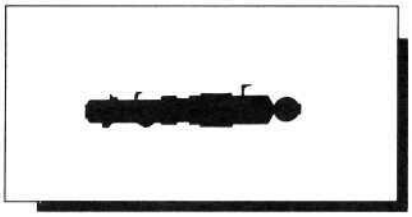
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



Aries
Ship Name

Auxiliary Cruiser
Ship Type

France
Owning Nation or World

Movement	3	Radial Reflected	7	Radial Profile	−1
Screens	0	Lateral Reflected	13	Lateral Profile	+3
Radiated Signature	4	Targetting Computer	−3	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1
2. ×1
3. ×1
4. ×1
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—TTAs and Submunitions—

1. TTA
2. TTA
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

—Active Sensors— 1

Primary
Redundant

—Passive Sensors— 0

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator
Fire Control
Fire Control

—Bridge—

Captain
Navigator
Communications
Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

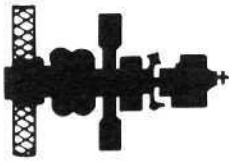
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



L'Orient
Ship Name

Survey Ship
Ship Type

France
Owning Nation or World

Movement	4	Radial Reflected	5	Radial Profile	−1
Screens	0	Lateral Reflected	6	Lateral Profile	+1
Radiated Signature	4	Targetting Computer	0	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1 +1
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—TTAs and Submunitions—

1. TTA
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

—Active Sensors— 5

Primary
Redundant

—Passive Sensors— 1

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator
Fire Control

—Bridge—

Captain
Navigator
Communications
Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

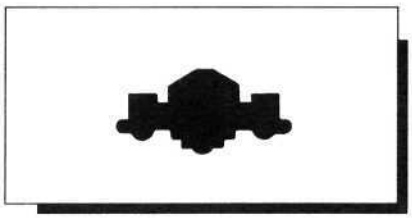
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



Martel
Ship Name

Fighter
Ship Type

France
Owning Nation or World

Movement	6	Radial Reflected	3	Radial Profile	−2
Screens	0	Lateral Reflected	3	Lateral Profile	−2
Radiated Signature	1	Targetting Computer	+2	Armor	10

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1
2. ×1
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—TTAs and Submunitions—

1. LL-2 Disp
2. LL-2 Disp
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

—Active Sensors— 10

Primary
Redundant

—Passive Sensors— 5

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator

—Bridge—

Captain
Navigator
Communications
Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

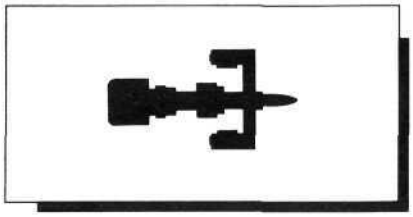
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



Suffren
Ship Name

Cruiser
Ship Type

France
Owning Nation or World

Movement	7	Radial Reflected	4	Radial Profile	−2
Screens	4	Lateral Reflected	11	Lateral Profile	+3
Radiated Signature	4(7)	Targetting Computer	+2	Armor	5

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1.	×1 dbl	7.	×1 dbl	13.	×1 dbl		
2.	×1 dbl	8.	×1 dbl	14.	×1 dbl		
3.	×1 dbl	9.	×1 dbl	15.	×1 dbl		
4.	×1 dbl	10.	×1 dbl	16.	×1 dbl		
5.	×1 dbl	11.	×1 dbl	17.	×1 dbl		
6.	×1 dbl	12.	×1 dbl	18.	×1 dbl		

—TTAs and Submunitions—

1.	Ritage-2 Pack	12.	
2.	Ritage-1 Pack	13.	
3.	Communicator	14.	
4.	Communicator	15.	
5.	Communicator	16.	
6.		17.	
7.		18.	
8.		19.	
9.		20.	
10.		21.	
11.		22.	

—Active Sensors— 13

Primary
Redundant

—Passive Sensors— 10

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator		Flight Control		Fire Control		Fire Control		Fire Control	
Passive Operator		Remote		Fire Control		Fire Control		Fire Control	
Flight Control		Remote		Fire Control		Fire Control		Fire Control	
Flight Control		Remote		Fire Control		Fire Control		+7 FC	

—Bridge—

Captain		Engineer		Engineer		Engineer		Computer	
Navigator		Computer		Engineer		Engineer		Computer	
Communications		Engineer		Engineer		Engineer		Computer	

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Tallyrand (Page 1 of 2)
Ship Name

Battleship
Ship Type

France
Owning Nation or World

Movement	6	Radial Reflected	6	Radial Profile	0
Screens	6	Lateral Reflected	11	Lateral Profile	+5
Radiated Signature	7	Targetting Computer	+2	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1 +1 dbl		7. ×1 +1 dbl		13. ×1 +1 dbl	
2. ×1 +1 dbl		8. ×1 +1 dbl		14. ×1 +1 dbl	
3. ×1 +1 dbl		9. ×1 +1 dbl		15. ×1 +1 dbl	
4. ×1 +1 dbl		10. ×1 +1 dbl		16. ×1 +1 dbl	
5. ×1 +1 dbl		11. ×1 +1 dbl		17. ×1 +1 dbl	
6. ×1 +1 dbl		12. ×1 +1 dbl		18. ×1 +1 dbl	

—TTAs and Submunitions—

1. Communicator		12.	
2. Communicator		13.	
3. Communicator		14.	
4. Communicator		15.	
5. Communicator		16.	
6. Communicator		17.	
7. Communicator		18.	
8. Communicator		19.	
9.		20.	
10.		21.	
11.		22.	

—Active Sensors— 16

Primary
Redundant

—Passive Sensors— 12

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator		Flight Control		Fire Control		Fire Control		Fire Control
Passive Operator		Flight Control		Fire Control		Fire Control		Fire Control
Flight Control		Flight Control		Fire Control		Fire Control		Fire Control
Flight Control		Flight Control		Fire Control		Fire Control		Fire Control

—Bridge—

Captain		Engineer		Computer		Computer		Engineer
Navigator		Computer		Computer		Engineer		Engineer
Communications		Computer		Computer		Engineer		Engineer

Damage Control

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

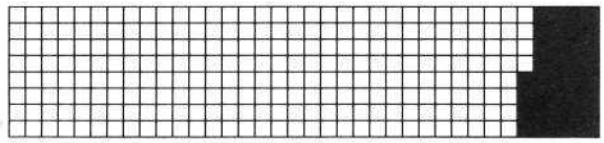
Tallyrand (Page 2 of 2)
Ship Name

Battleship
Ship Type

France
Owning Nation or World

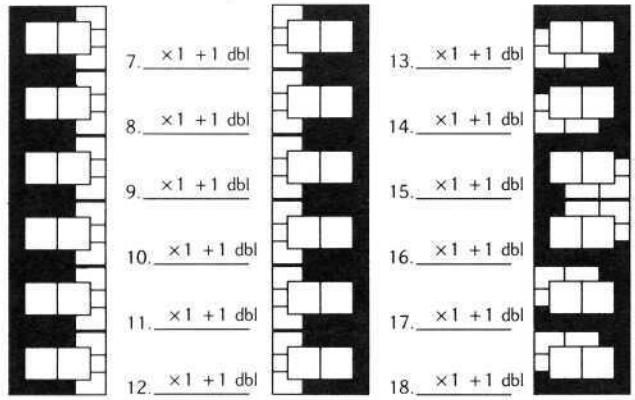
Movement		Radial Reflected		Radial Profile	
Screens		Lateral Reflected		Lateral Profile	
Radiated Signature		Targetting Computer		Armor	

Hull Hits



Power Plant Hits

Surface Fixture Hits



—Weapons—

1. ×1 +1 dbl		7. ×1 +1 dbl		13. ×1 +1 dbl	
2. ×1 +1 dbl		8. ×1 +1 dbl		14. ×1 +1 dbl	
3. ×1 +1 dbl		9. ×1 +1 dbl		15. ×1 +1 dbl	
4. ×1 +1 dbl		10. ×1 +1 dbl		16. ×1 +1 dbl	
5. ×1 +1 dbl		11. ×1 +1 dbl		17. ×1 +1 dbl	
6. ×1 +1 dbl		12. ×1 +1 dbl		18. ×1 +1 dbl	

—TTAs and Submunitions—

1.		12.	
2.		13.	
3.		14.	
4.		15.	
5.		16.	
6.		17.	
7.		18.	
8.		19.	
9.		20.	
10.		21.	
11.		22.	

—Active Sensors—

Primary
Redundant

—Passive Sensors—

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator		Fire Control		Fire Control		Remote		Remote
Passive Operator		Fire Control		Fire Control		Remote		Remote
Fire Control		Fire Control		Fire Control		Remote		Remote
Fire Control		Fire Control		+15 FC		Remote		Remote

—Bridge—

Captain		Engineer		Engineer				
Navigator		Computer		Engineer				
Communications		Engineer		Engineer				

Damage Control

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Ordnance

(record ordnance load and type)

Crew

Comfort

Crew Quality

Ship Status Sheet

Konstantine
Ship Name

Cruiser
Ship Type

Ukraine
Owning Nation or World

Movement	6	Radial Reflected	7	Radial Profile	0
Screens	3	Lateral Reflected	9	Lateral Profile	+1
Radiated Signature	5(6)	Targetting Computer	+1	Armor	4

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1.	×2 +1		7.	×2 +1		13.	×2 +1				
2.	×2 +1		8.	×2 +1		14.	×2 +1				
3.	×2 +1		9.	×2 +1		15.	×2 +1				
4.	×2 +1		10.	×2 +1		16.	×2 +1				
5.	×2 +1		11.	×2 +1		17.	×2 +1				
6.	×2 +1		12.	×2 +1		18.	×2 +1				

—Active Sensors— 10

Primary
Redundant

—Passive Sensors— 5

Primary
Redundant

—TTAs and Submunitions—

1.	TTA			12.	TTA		
2.	TTA			13.	TTA		
3.	TTA			14.	TTA		
4.	TTA			15.	TTA		
5.	TTA			16.	TTA		
6.	TTA			17.	TTA		
7.	TTA			18.	TTA		
8.	TTA			19.	TTA		
9.	TTA			20.	TTA		
10.	TTA			21.	Communicator		
11.	TTA			22.	Communicator		

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator		Fire Control		Fire Control		Fire Control		Fire Control	
Passive Operator		Fire Control		Fire Control		Fire Control		Fire Control	
Fire Control		Fire Control		Fire Control		Fire Control		Fire Control	
Fire Control		Fire Control		Fire Control		Fire Control		Fire Control	

—Bridge—

Captain		Engineer		Engineer		Computer			
Navigator		Computer		Engineer		Computer			
Communications		Engineer		Engineer		Computer			

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Kiev
Ship Name

Destroyer
Ship Type

Ukraine
Owning Nation or World

Movement	5	Radial Reflected	5	Radial Profile	−1
Screens	2	Lateral Reflected	6	Lateral Profile	−1
Radiated Signature	2(4)	Targetting Computer	+1	Armor	4

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×2 +1
2. ×2 +1
3. ×2 +1
4. ×2 +1
5. ×2 +1
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—Active Sensors— 10

Primary
Redundant

—Passive Sensors— 5

Primary
Redundant

—TTAs and Submunitions—

1. TTA
2. TTA
3. TTA
4. TTA
5. TTA
6. Communicator
7. Communicator
8. Communicator
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator		Fire Control		Remote				
Passive Operator		Fire Control		Remote				
Fire Control		Fire Control						
Fire Control		Remote						

—Bridge—

Captain		Engineer		Computer				
Navigator		Computer						
Communications		Engineer						

Damage Control:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Gustav
Ship Name

Fighter
Ship Type

Germany
Owning Nation or World

Movement	9	Radial Reflected	4	Radial Profile	−3
Screens	0	Lateral Reflected	4	Lateral Profile	−2
Radiated Signature	3(4)	Targetting Computer	0	Armor	1

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×2 +1 dbl
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—TTAs and Submunitions—

1. LHH-637 Disp
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

—Active Sensors— 7

Primary
Redundant

—Passive Sensors— 12

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator

—Bridge—

Captain
Navigator
Communications
Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

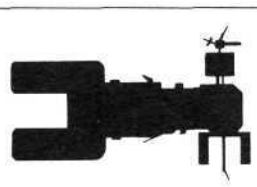
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



Bismark
Ship Name

Battlecruiser
Ship Type

Germany
Owning Nation or World

Movement	6	Radial Reflected	8	Radial Profile	+2
Screens	5	Lateral Reflected	7	Lateral Profile	+2
Radiated Signature	4(7)	Targetting Computer	+2	Armor	6

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×3 −2		7. ×2 +1 dbl		13.	
2. ×3 −2		8. ×2 +1 dbl		14.	
3. ×3 −2		9. ×2 +1 dbl		15.	
4. ×3 −2		10. ×2 +1 dbl		16.	
5. ×3 −2		11.		17.	
6. ×3 −2		12.		18.	

—Active Sensors— 10

Primary
Redundant

—Passive Sensors— 6

Primary
Redundant

—TTAs and Submunitions—

1. TTA		12.	
2. TTA		13.	
3. TTA		14.	
4. TTA		15.	
5. TTA		16.	
6. TTA		17.	
7. Communicator		18.	
8. Communicator		19.	
9.		20.	
10.		21.	
11.		22.	

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator	Fire Control	Fire Control	Fire Control				
Passive Operator	Fire Control	Fire Control	Fire Control				
Remote	Fire Control	Fire Control					
Remote	Fire Control	Fire Control					

—Bridge—

Captain	Engineer	Engineer	Computer				
Navigator	Computer	Engineer					
Communications	Engineer	Computer					

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Hamburg
Ship Name

Missile Cruiser
Ship Type

Germany
Owning Nation or World

Movement	3	Radial Reflected	6	Radial Profile	+0
Screens	2	Lateral Reflected	7	Lateral Profile	+2
Radiated Signature	6	Targetting Computer	+2	Armor	3

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1.	×3 −2	7.	×3 −2	13.			
2.	×3 −2	8.	×3 −2	14.			
3.	×3 −2	9.	×3 −2	15.			
4.	×3 −2	10.	×3 −2	16.			
5.	×3 −2	11.	×3 −2	17.			
6.	×3 −2	12.	×3 −2	18.			

—Active Sensors— 3

Primary
Redundant

—Passive Sensors— 7

Primary
Redundant

—TTAs and Submunitions—

1.	TTA	12.	TTA
2.	TTA	13.	Communicator
3.	TTA	14.	Communicator
4.	TTA	15.	Communicator
5.	TTA	16.	Communicator
6.	TTA	17.	Communicator
7.	TTA	18.	Communicator
8.	TTA	19.	
9.	TTA	20.	
10.	TTA	21.	
11.	TTA	22.	

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator	Remote	Fire Control	Fire Control	Fire Control
Passive Operator	Remote	Fire Control	Fire Control	Fire Control
Remote	Remote	Fire Control	Fire Control	Fire Control
Remote	Remote	Fire Control	Fire Control	Fire Control

—Bridge—

Captain	Engineer	Engineer	Computer	
Navigator	Computer	Engineer		
Communications	Engineer	Computer		

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

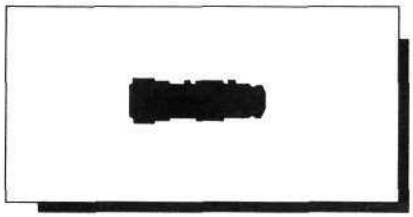
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



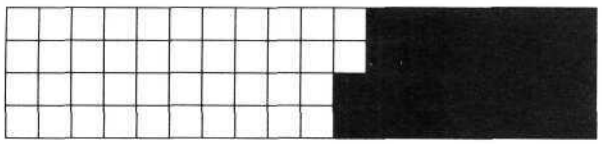
Sachsen
Ship Name

Frigate
Ship Type

Germany
Owning Nation or World

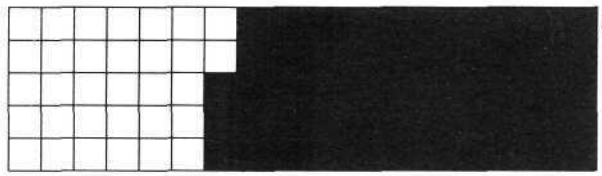
Movement	3	Radial Reflected	6	Radial Profile	−1
Screens	1	Lateral Reflected	7	Lateral Profile	0
Radiated Signature	6	Targetting Computer	+1	Armor	4

Hull Hits



Minor
Major

Power Plant Hits



Inoperable

Surface Fixture Hits

—Weapons—

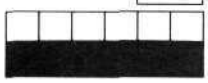
1. ×2 +1 dbl
2. ×2 +1 dbl
3. ×2 +1 dbl
4. ×2 +1 dbl
5. ×2 +1 dbl
6. ×2 +1 dbl
7. ×2 +1 dbl
8. ×2 +1 dbl
9. ×2 +1 dbl
10. ×2 +1 dbl
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____

—TTAs and Submunitions—

1. Communicator
2. Communicator
3. Communicator
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____

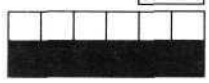
—Active Sensors— 7

Primary
Redundant



—Passive Sensors— 3

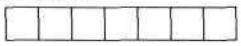
Primary
Redundant



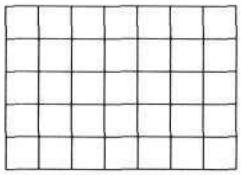
Critical Hits

—Computer—

Primary



—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—



—Tactical Action Center—

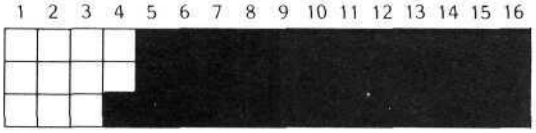
Active Operator		Remote		Fire Control		Fire Control	
Passive Operator		Fire Control		Fire Control		Fire Control	
Remote		Fire Control		Fire Control		Fire Control	
Remote		Fire Control		Fire Control			

—Bridge—

Captain		Engineer		Engineer		Computer	
Navigator		Computer		Engineer		Computer	
Communications		Engineer		Engineer			

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16



Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Kennedy
Ship Name

Missile Carrier
Ship Type

America
Owning Nation or World

Movement	9	Radial Reflected	5	Radial Profile	0
Screens	0	Lateral Reflected	7	Lateral Profile	+2
Radiated Signature	4(7)	Targetting Computer	+2	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1.	×1 +1	7.	×1 +1	13.			
2.	×1 +1	8.	×1 +1	14.			
3.	×1 +1	9.	×1 +1	15.			
4.	×1 +1	10.	×1 +1	16.			
5.	×1 +1	11.		17.			
6.	×1 +1	12.		18.			

—TTAs and Submunitions—

1.	Communicator	12.	
2.	Communicator	13.	
3.	Communicator	14.	
4.	Communicator	15.	
5.	Communicator	16.	
6.		17.	
7.		18.	
8.		19.	
9.		20.	
10.		21.	
11.		22.	

—Active Sensors— 15

Primary
Redundant

—Passive Sensors— 10

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator	Fire Control	Fire Control	Remote	Remote
Passive Operator	Fire Control	Fire Control	Remote	
Fire Control	Fire Control	Fire Control	Remote	
Fire Control	Fire Control	Fire Control	Remote	

—Bridge—

Captain	Engineer	Engineer	Computer	
Navigator	Computer	Engineer		
Communications	Communications	Computer		

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Cargomax
Ship Name

Freighter
Ship Type

America
Owning Nation or World

Movement	2	Radial Reflected	7	Radial Profile	0
Screens	0	Lateral Reflected	13	Lateral Profile	+2
Radiated Signature	4	Targetting Computer	0	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. 2. 3. 4. 5. 6.

7. 8. 9. 10. 11. 12.

13. 14. 15. 16. 17. 18.

—TTAs and Submunitions—

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.

12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22.

—Active Sensors— 7

Primary
Redundant

—Passive Sensors— 5

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator

—Bridge—

Captain
Navigator
Communications

Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Electra 917
Ship Name

Passenger Liner
Ship Type

Civilian
Owning Nation or World

Movement	3	Radial Reflected	10	Radial Profile	−1
Screens	0	Lateral Reflected	11	Lateral Profile	+1
Radiated Signature	2	Targetting Computer	0	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. 2. 3. 4. 5. 6.

7. 8. 9. 10. 11. 12.

13. 14. 15. 16. 17. 18.

—TTAs and Submunitions—

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.

12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22.

—Active Sensors— —

Primary
Redundant

—Passive Sensors— 5

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator

—Bridge—

Captain
Navigator
Communications

Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort +1

Crew Quality

Ship Status Sheet

Goethe
Ship Name

Passenger Liner
Ship Type

Civilian
Owning Nation or World

Movement	3	Radial Reflected	10	Radial Profile	−1
Screens	0	Lateral Reflected	11	Lateral Profile	+1
Radiated Signature	2	Targetting Computer	0	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. 2. 3. 4. 5. 6.

7. 8. 9. 10. 11. 12.

13. 14. 15. 16. 17. 18.

—TTAs and Submunitions—

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.

12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22.

—Active Sensors— —

Primary
Redundant

—Passive Sensors— 5

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator

—Bridge—

Captain
Navigator
Communications
Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort +1

Crew Quality

Ship Status Sheet

Anjou
Ship Name

Freighter
Ship Type

Civilian
Owning Nation or World

Movement	3	Radial Reflected	5	Radial Profile	−1
Screens	0	Lateral Reflected	10	Lateral Profile	+2
Radiated Signature	3	Targetting Computer	0	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. 2. 3. 4. 5. 6.
7. 8. 9. 10. 11. 12.
13. 14. 15. 16. 17. 18.

—TTAs and Submunitions—

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.
12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22.

—Active Sensors— 5

Primary
Redundant

—Passive Sensors— —

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator

—Bridge—

Captain
Navigator
Communications
Engineer
Computer
Engineer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

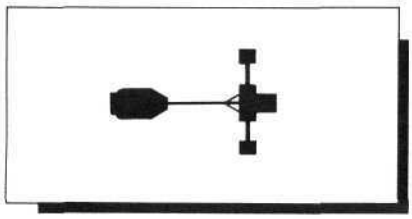
(record ordnance load and type)

Crew

Comfort +1

Crew Quality

Ship Status Sheet



Nafasi
Ship Name

Survey Ship
Ship Type

Azania
Owning Nation or World

Movement	3	Radial Reflected	15	Radial Profile	+5
Screens	0	Lateral Reflected	15	Lateral Profile	+7
Radiated Signature	2	Targetting Computer	0	Armor	0

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____

7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____

13. _____ 14. _____ 15. _____ 16. _____ 17. _____ 18. _____

—TTAs and Submunitions—

1. Communicator
2. Communicator
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____

—Active Sensors— —

Primary
Redundant

—Passive Sensors— 3

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator
Remote
Remote

—Bridge—

Captain
Navigator
Communications
Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

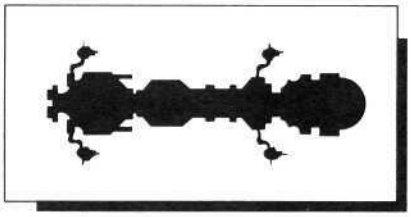
(record ordnance load and type)

Crew

Comfort −1

Crew Quality

Ship Status Sheet



Alpha
Ship Name

Battleship
Ship Type

Kafer
Owning Nation or World

Movement	4	Radial Reflected	11	Radial Profile	+2
Screens	7	Lateral Reflected	15	Lateral Profile	+4
Radiated Signature	7	Targetting Computer	+3	Armor	9

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×3
2. ×3
3. ×3
4. ×3
5. ×1 +1
6. ×1 +1
7. ×1 +1
8. ×1 +1
9. ×1 +1
10. ×1 +1
11. ×1 +1
12. ×1 +1
13. ×1 +1
14. ×1 +1
15. ×1 +1
16. ×1 +1
17. ×1 +1
18. ×1 +1

—TTAs and Submunitions—

1. Communicator
2. Communicator
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

—Active Sensors— 16

Primary
Redundant

—Passive Sensors— 8

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator	Fire Control	Fire Control	Fire Control	Fire Control
Passive Operator	Fire Control	Fire Control	Fire Control	Fire Control
Remote	Fire Control	Fire Control	Fire Control	Fire Control
Remote	Fire Control	Fire Control	Fire Control	+3 FC

—Bridge—

Captain	Engineer	Engineer	Computer	
Navigator	Computer	Engineer	Computer	
Communications	Engineer	Engineer	Computer	

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

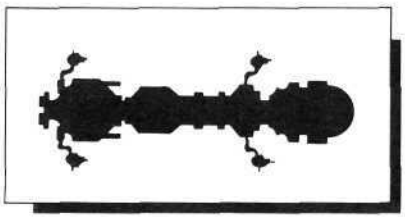
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



Alpha
Ship Name

Improved Battleship
Ship Type

Kafer
Owning Nation or World

Movement	4	Radial Reflected	11	Radial Profile	+2
Screens	9	Lateral Reflected	15	Lateral Profile	+4
Radiated Signature	7	Targetting Computer	+3	Armor	9

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×3		7. ×1 +1		13. ×1 +1	
2. ×3		8. ×1 +1		14. ×1 +1	
3. ×3		9. ×1 +1		15. ×1 +1	
4. ×3		10. ×1 +1		16. ×1 +1	
5. ×1 +1		11. ×1 +1		17. ×1 +1	
6. ×1 +1		12. ×1 +1		18. ×1 +1	

—Active Sensors— 16

Primary
Redundant

—Passive Sensors— 12

Primary
Redundant

—TTAs and Submunitions—

1. Communicator		12.	
2. Communicator		13.	
3.		14.	
4.		15.	
5.		16.	
6.		17.	
7.		18.	
8.		19.	
9.		20.	
10.		21.	
11.		22.	

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator	Fire Control	Fire Control	Fire Control	Fire Control
Passive Operator	Fire Control	Fire Control	Fire Control	Fire Control
Remote	Fire Control	Fire Control	Fire Control	Fire Control
Remote	Fire Control	Fire Control	Fire Control	+3 FC

—Bridge—

Captain	Engineer	Engineer	Computer	
Navigator	Computer	Engineer	Computer	
Communications	Engineer	Engineer	Computer	

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

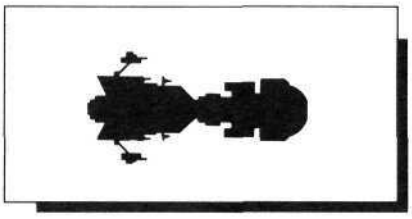
(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet



Beta
Ship Name

Battlecruiser
Ship Type

Kafer
Owning Nation or World

Movement	6	Radial Reflected	10	Radial Profile	+2
Screens	6	Lateral Reflected	13	Lateral Profile	+3
Radiated Signature	7	Targetting Computer	+2	Armor	7

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×4
2. ×4
3. ×4
4. ×4
5. ×1 +1
6. ×1 +1
7. ×1 +1
8. ×1 +1
9. ×1 +1
10. ×1 +1
11.
12.
13.
14.
15.
16.
17.
18.

—TTAs and Submunitions—

1. Communicator
2. Communicator
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

—Active Sensors— 16

Primary
Redundant

—Passive Sensors— 8

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator	Fire Control	Fire Control	Fire Control	
Passive Operator	Fire Control	Fire Control	Fire Control	
Remote	Fire Control	Fire Control		
Remote	Fire Control	Fire Control		

—Bridge—

Captain	Engineer	Engineer	Computer	
Navigator	Computer	Engineer		
Communications	Engineer	Computer		

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Foxtrot
Ship Name

Fighter
Ship Type

Kafer
Owning Nation or World

Movement	6	Radial Reflected	2	Radial Profile	−3
Screens	0	Lateral Reflected	4	Lateral Profile	−2
Radiated Signature	4	Targetting Computer	+2	Armor	6

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×1 +1 dbl
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____

—Active Sensors— 8

Primary
Redundant

—Passive Sensors— 10

Primary
Redundant

—TTAs and Submunitions—

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator

—Bridge—

Captain
Navigator
Communications
Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Golf
Ship Name

Fighter
Ship Type

Kafer
Owning Nation or World

Movement	7	Radial Reflected	2	Radial Profile	−3
Screens	0	Lateral Reflected	4	Lateral Profile	−2
Radiated Signature	3	Targetting Computer	+3	Armor	8

Hull Hits

Minor
Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. ×2
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.

—TTAs and Submunitions—

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

—Active Sensors— 10

Primary
Redundant

—Passive Sensors— 10

Primary
Redundant

Critical Hits

—Computer—

Primary

—Life Support—
—Drive—
—Hangar Deck—
—Missile Bay—
—Continuous—

—Tactical Action Center—

Active Operator
Passive Operator

—Bridge—

Captain
Navigator
Communications
Engineer
Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort 0

Crew Quality

Ship Status Sheet

Ship Name

Ship Type

Owning Nation or World

Movement

Screens

Radiated Signature

Radial Reflected

Lateral Reflected

Targetting Computer

Radial Profile

Lateral Profile

Armor

Hull Hits

Minor

Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. 2. 3. 4. 5. 6.

7. 8. 9. 10. 11. 12.

13. 14. 15. 16. 17. 18.

—TTAs and Submunitions—

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.

12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22.

—Active Sensors—

Primary

Redundant

—Passive Sensors—

Primary

Redundant

Critical Hits

—Computer—

Primary

—Life Support—

—Drive—

—Hangar Deck—

—Missile Bay—

—Continuous—

—Tactical Action Center—

Active Operator

Passive Operator

—Bridge—

Captain

Navigator

Communications

Engineer

Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort

Crew Quality

Ship Status Sheet

Ship Name

Ship Type

Owning Nation or World

Movement

Screens

Radiated Signature

Radial Reflected

Lateral Reflected

Targetting Computer

Radial Profile

Lateral Profile

Armor

Hull Hits

Minor

Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. 2. 3. 4. 5. 6.

7. 8. 9. 10. 11. 12.

13. 14. 15. 16. 17. 18.

—TTAs and Submunitions—

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.

12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22.

—Active Sensors—

Primary

Redundant

—Passive Sensors—

Primary

Redundant

Critical Hits

—Computer—

Primary

—Life Support—

—Drive—

—Hangar Deck—

—Missile Bay—

—Continuous—

—Tactical Action Center—

Active Operator

Passive Operator

—Bridge—

Captain

Navigator

Communications

Engineer

Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort

Crew Quality

Ship Status Sheet

Ship Name

Ship Type

Owning Nation or World

Movement

Screens

Radiated Signature

Radial Reflected

Lateral Reflected

Targetting Computer

Radial Profile

Lateral Profile

Armor

Hull Hits

Minor

Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. 2. 3. 4. 5. 6.

7. 8. 9. 10. 11. 12.

13. 14. 15. 16. 17. 18.

—TTAs and Submunitions—

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.

12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22.

—Active Sensors—

Primary

Redundant

—Passive Sensors—

Primary

Redundant

Critical Hits

—Computer—

Primary

—Life Support—

—Drive—

—Hangar Deck—

—Missile Bay—

—Continuous—

—Tactical Action Center—

Active Operator

Passive Operator

—Bridge—

Captain

Navigator

Communications

Engineer

Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort

Crew Quality

Ship Status Sheet

Ship Name

Ship Type

Owning Nation or World

Movement

Screens

Radiated Signature

Radial Reflected

Lateral Reflected

Targetting Computer

Radial Profile

Lateral Profile

Armor

Hull Hits

Minor

Major

Power Plant Hits

Inoperable

Surface Fixture Hits

—Weapons—

1. 2. 3. 4. 5. 6.

7. 8. 9. 10. 11. 12.

13. 14. 15. 16. 17. 18.

—TTAs and Submunitions—

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.

12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22.

—Active Sensors—

Primary

Redundant

—Passive Sensors—

Primary

Redundant

Critical Hits

—Computer—

Primary

—Life Support—

—Drive—

—Hangar Deck—

—Missile Bay—

—Continuous—

—Tactical Action Center—

Active Operator

Passive Operator

—Bridge—

Captain

Navigator

Communications

Engineer

Computer

Damage Control

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Ordnance

(record ordnance load and type)

Crew

Comfort

Crew Quality

STAR CRUISER COMBAT CHARTS

1

Roll to hit. Roll 7+ on one die, applying the following modifiers

+ crew quality
+ ship's targeting computer rating
+ or — weapons targeting rating
—2 at one hex range
+ 1 if firing a double mount

2

Screens. Confirm any hits scored against the target's screens by rolling greater than the current screen value. Each hit absorbed by the screens reduces the screen's effectiveness. See Screens.

3

Hit Location. Determine hit location for all hits.

General Hit Table

Roll	*Result*
1-4	Hull
5-6	Power Plant
7	Damage Control
8	Surface Fixture
9-10	Critical

Surface Fixture Hits

Roll	*Result*
1	Active Sensors
2	Passive Sensors
3	Communicator
4-8	Weapons Mount
9-10	TTA

Critical Hit Table

Roll	*Result*
1	Computer
2	TAC
3	Bridge
4	Life Support
5	Drive
6	Hangar Deck
7	Missile Bay
8-10	Continuing Dmg

Damage Control. Roll 11 + on one die, applying the following modifiers.

+ crew quality
+ 4 if attempting to repair power plant hits

4

Armor. All hits other than surface fixture hits (except hits on jack turrets) must be confirmed against the target ship's armor by rolling greater than the current armor value.

5

Apply Damage. Consult the rules booklet for specific effects of damage. Mark damage on the ship status sheet.

CC-1050/T3

STAR CRUISER COMBAT CHARTS

1 Roll to hit. Roll 7+ on one die, applying the following modifiers
+ crew quality
+ ship's targeting computer rating
+ or — weapons targeting rating
-2 at one hex range
+ 1 if firing a double mount

2 Screens. Confirm any hits scored against the target's screens by rolling greater than the current screen value. Each hit absorbed by the screens reduces the screen's effectiveness. See Screens.

3 Hit Location. Determine hit location for all hits.

General Hit Table

Roll	Result
1-4	Hull
5-6	Power Plant
7	Damage Control
8	Surface Fixture
9-10	Critical

Surface Fixture Hits

Roll	Result
1	Active Sensors
2	Passive Sensors
3	Communicator
4-8	Weapons Mount
9-10	TTA

Critical Hit Table

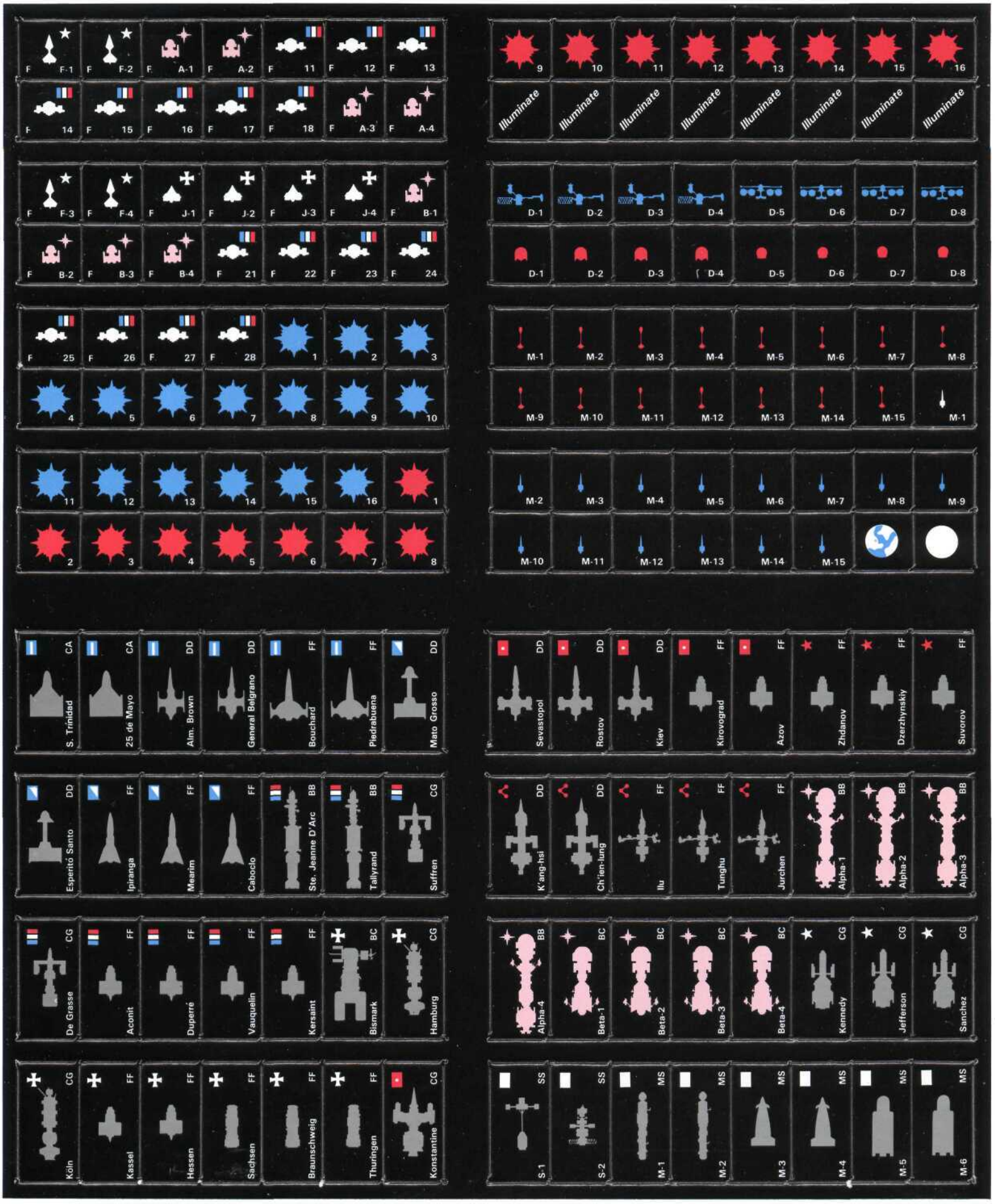
Roll	Result
1	Computer
2	TAC
3	Bridge
4	Life Support
5	Drive
6	Hangar Deck
7	Missile Bay
8-10	Continuing Dmg

Damage Control. Roll 11 + on one die, applying the following modifiers.
+ crew quality
+ 4 if attempting to repair power plant hits

4 Armor. All hits other than surface fixture hits (except hits on jack turrets) must be confirmed against the target ship's armor by rolling greater than the current armor value.

5 Apply Damage. Consult the rules booklet for specific effects of damage. Mark damage on the ship status sheet.

CC-1050/T3



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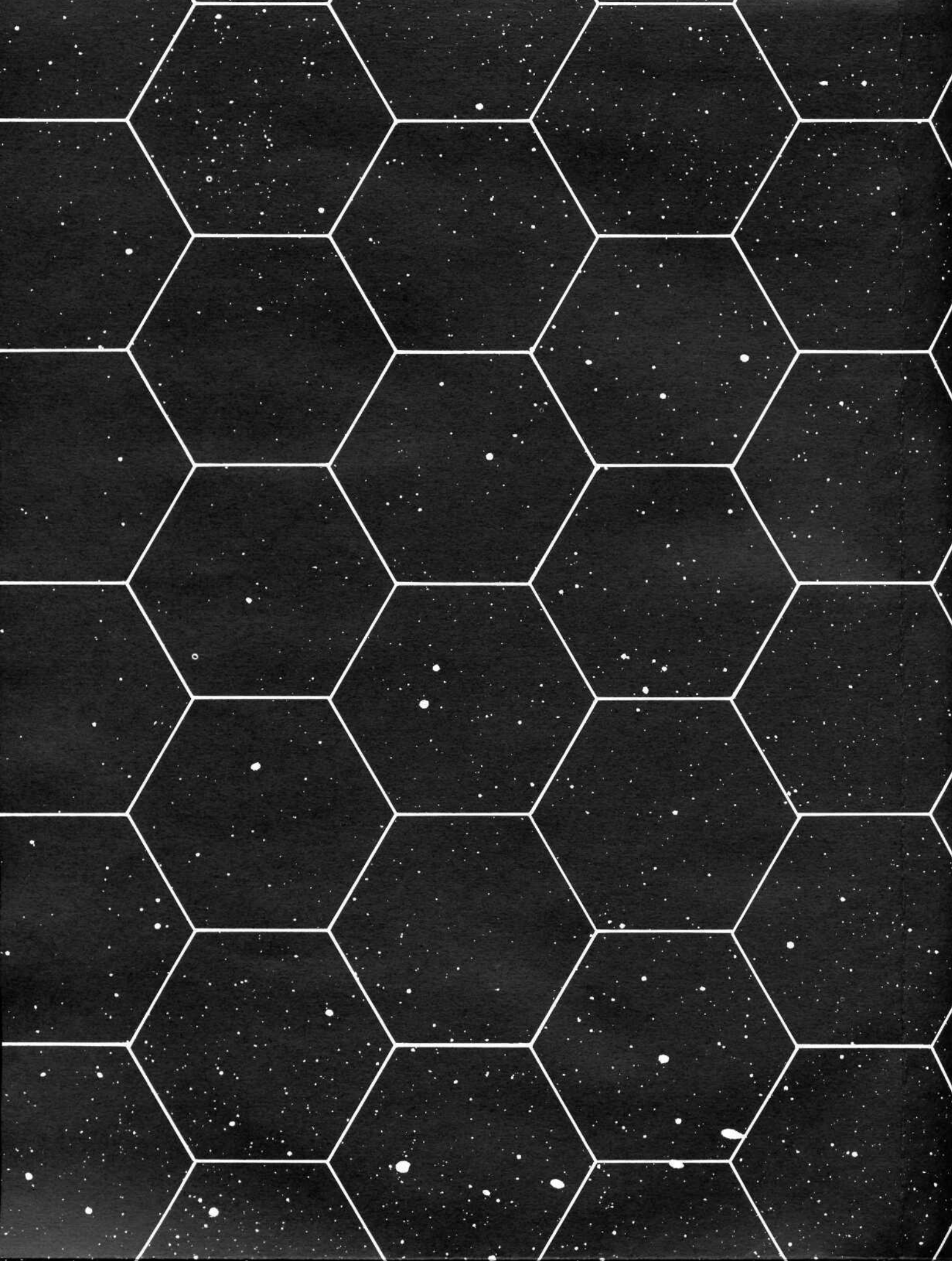
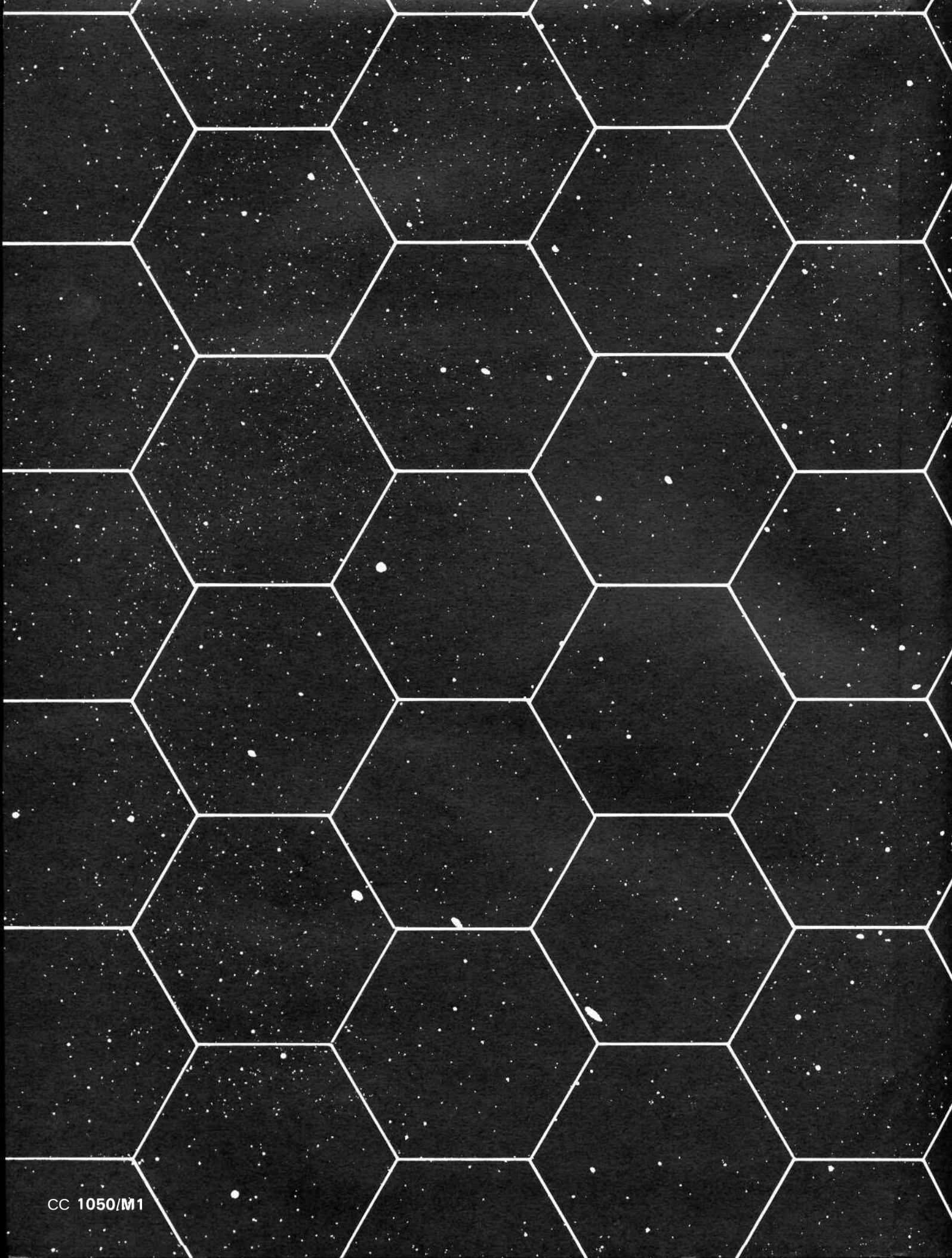
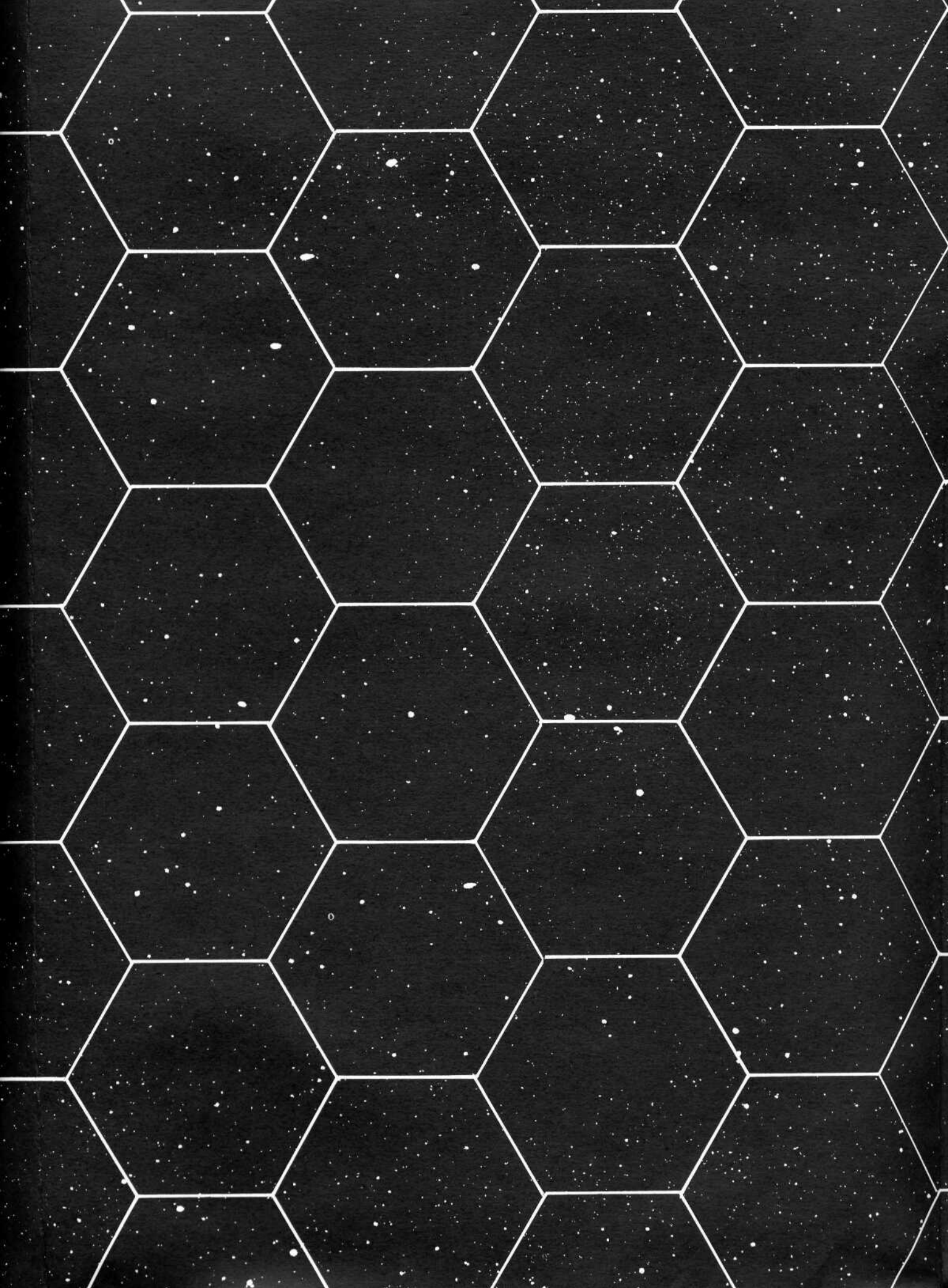
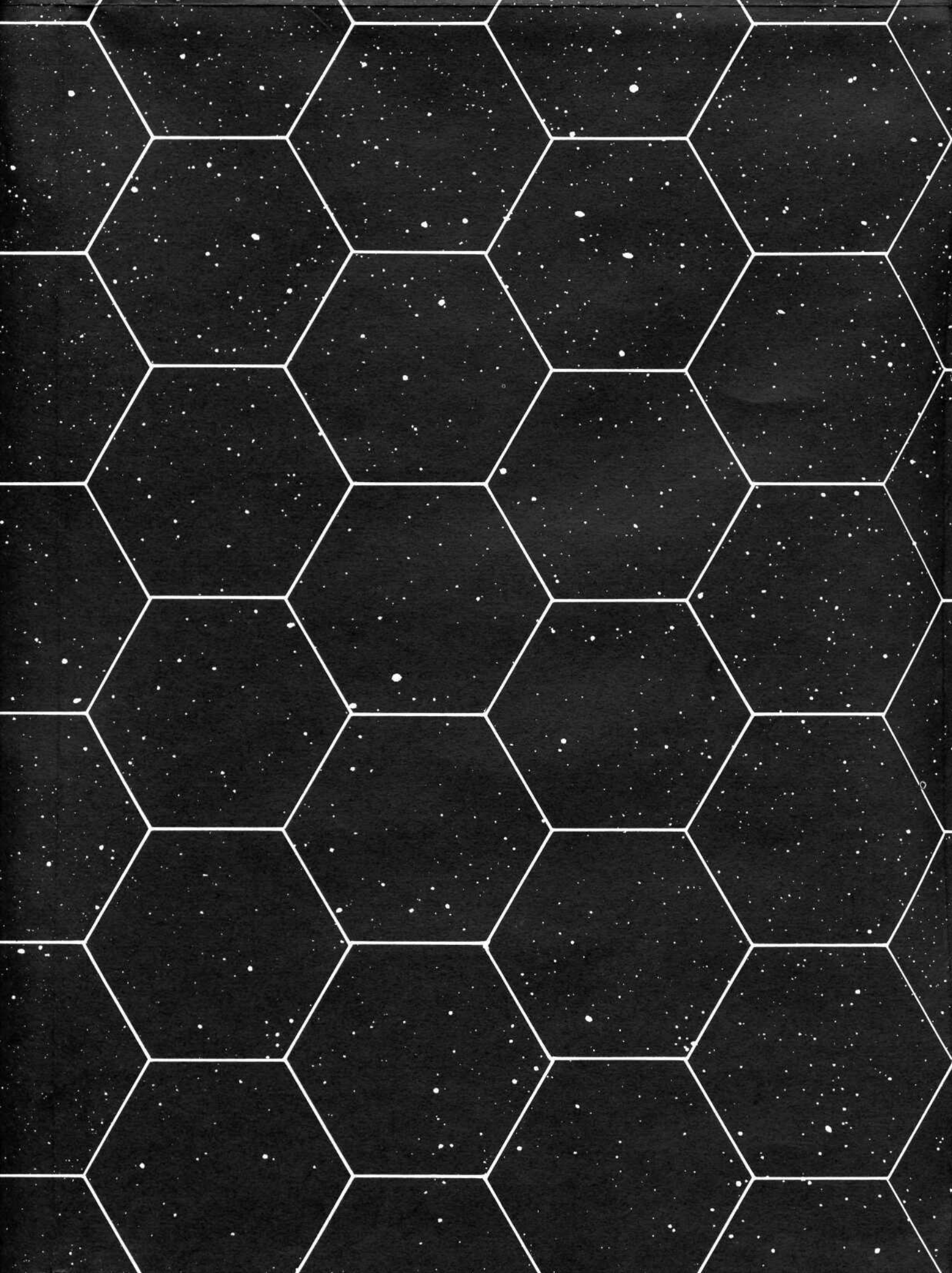
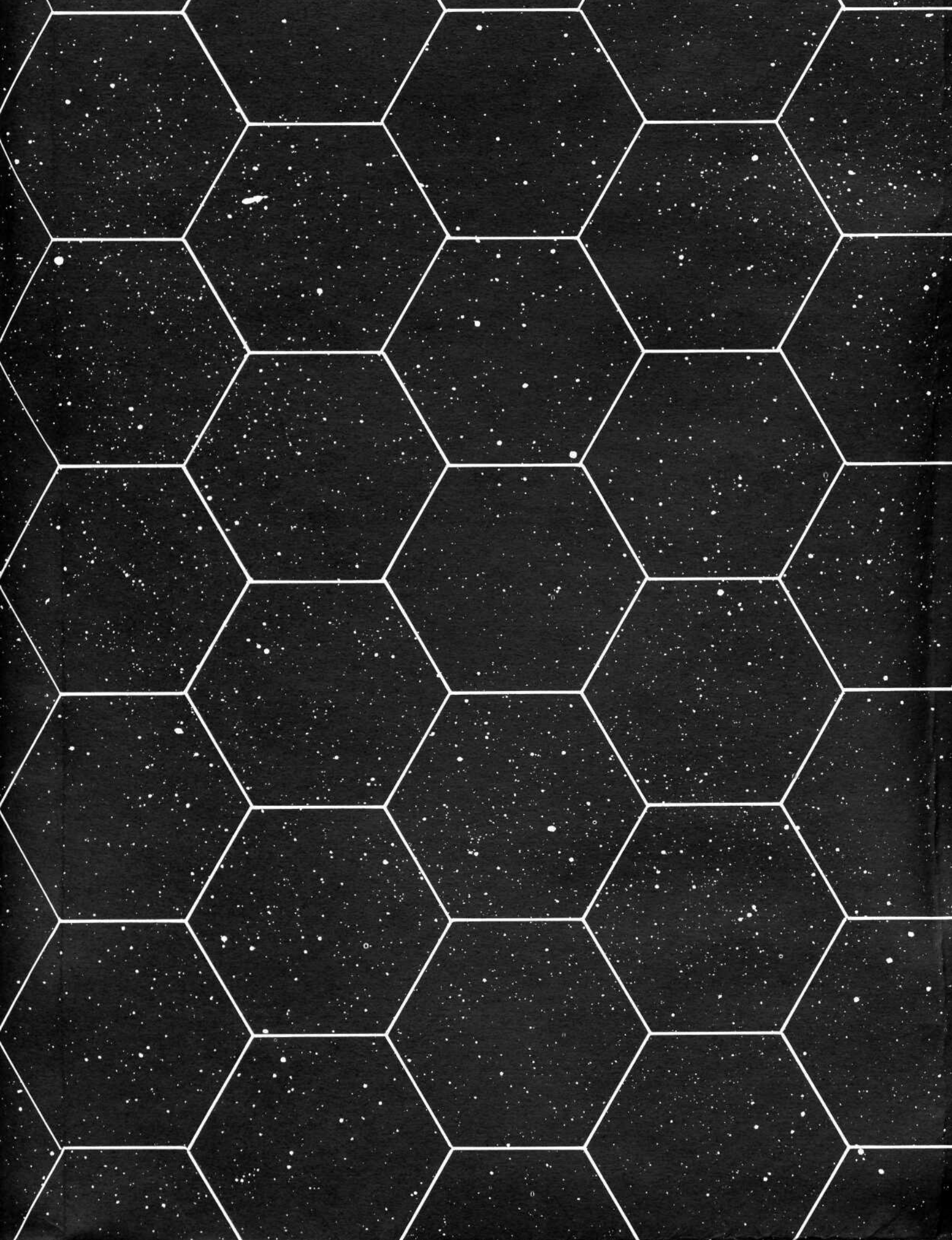
2	4	6	8

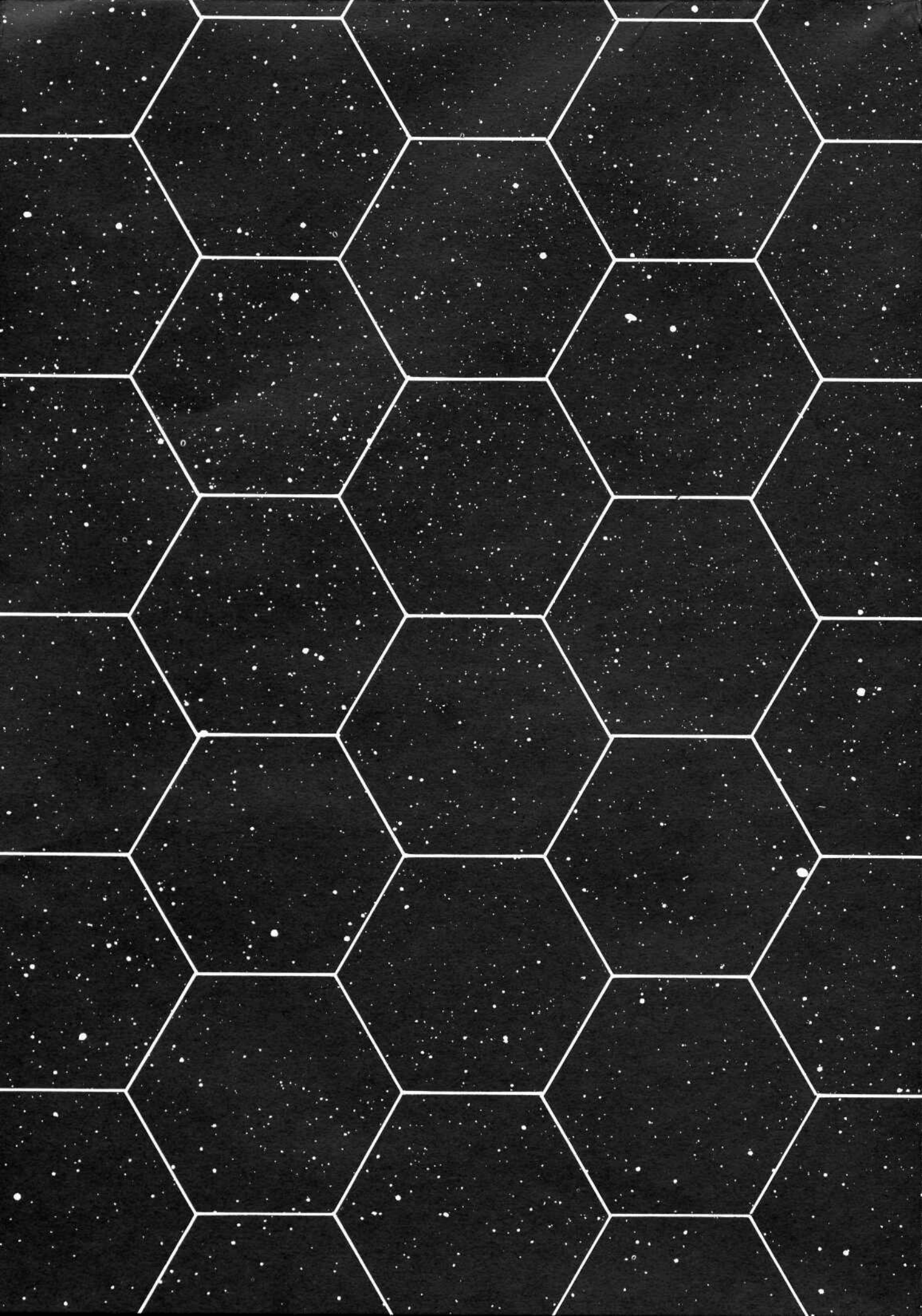


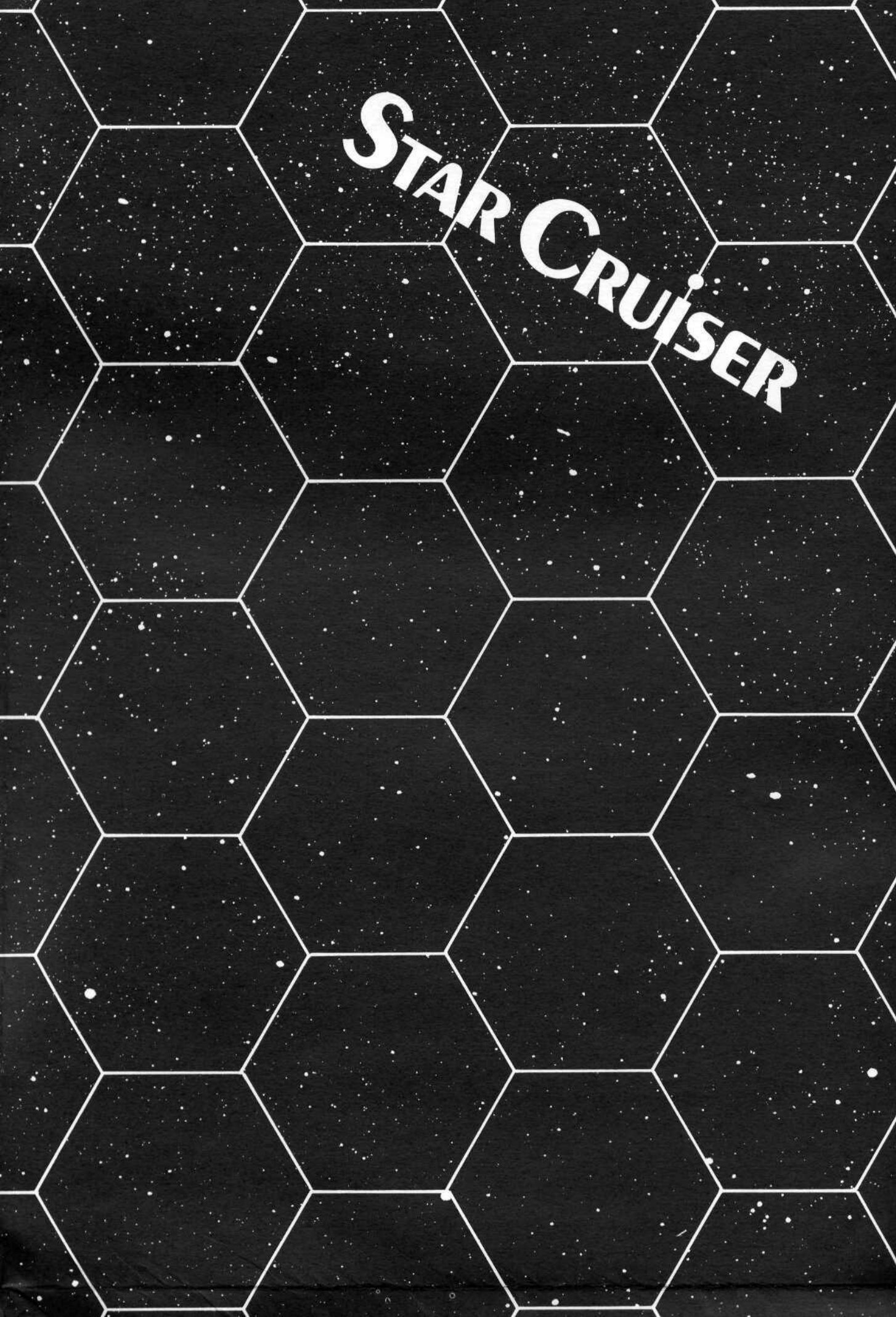

CC 1050/M1

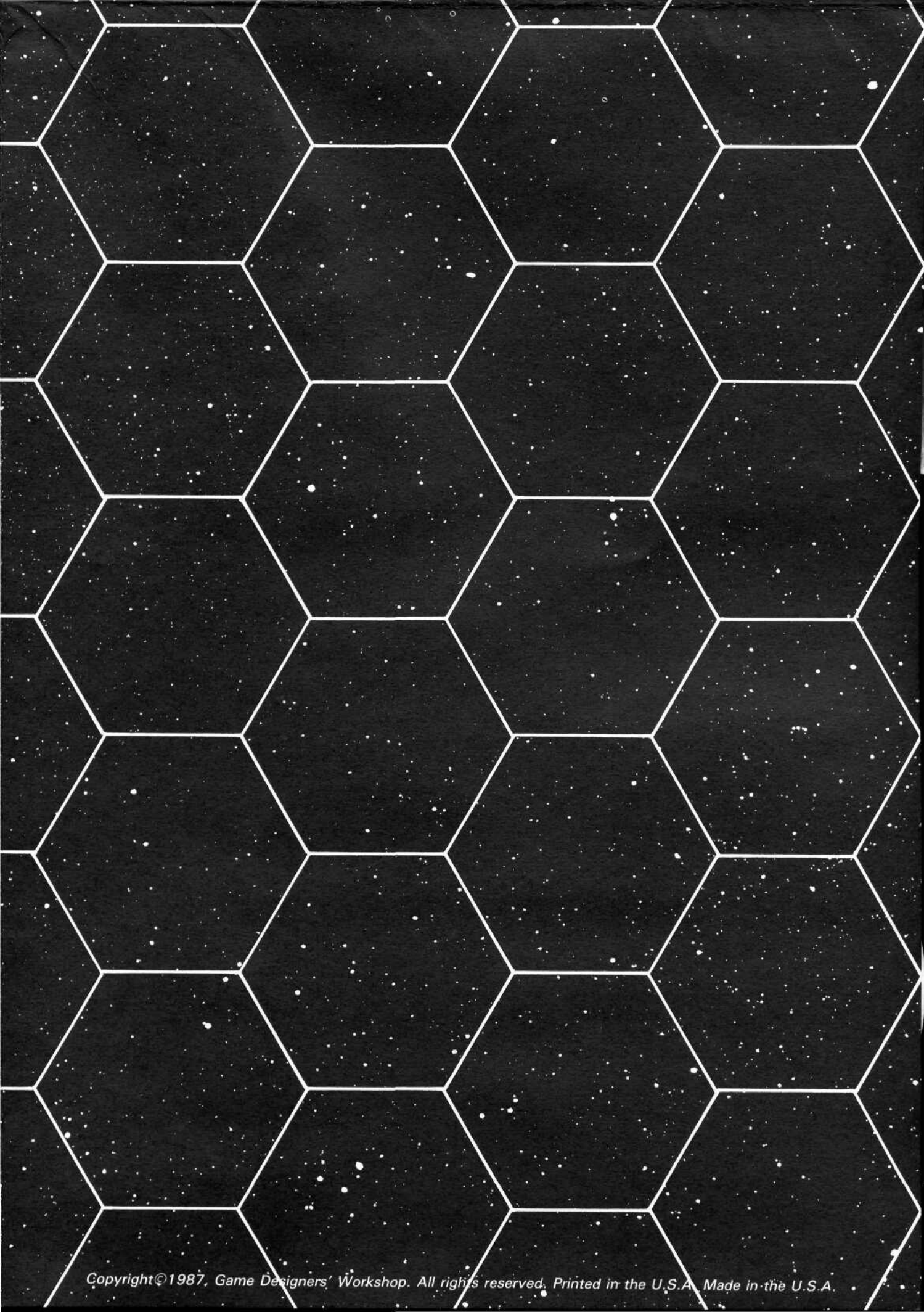









STAR CRUISER



2300™

STAR CRUISER

The definitive source of information for the starships of the year 2300 has arrived! *Star Cruiser* is both a complete addition to the *Traveller: 2300* rules and an exciting boardgame of futuristic space combat.

The Rules

Inside you'll find the complete guide to starship construction. Rules cover the power plant and stutterwarp drives, the advanced weaponry of the age, and the defensive countermeasures which will keep your ship alive in a hostile environment. The crew must be distributed between the bridge and the engine gang, many of whom will be assigned to damage control parties, free to move about the ship repairing battle damage. But the technology of the day is advancing rapidly—ships constructed now are much more efficient than even those constructed a few years in the past.

The Game

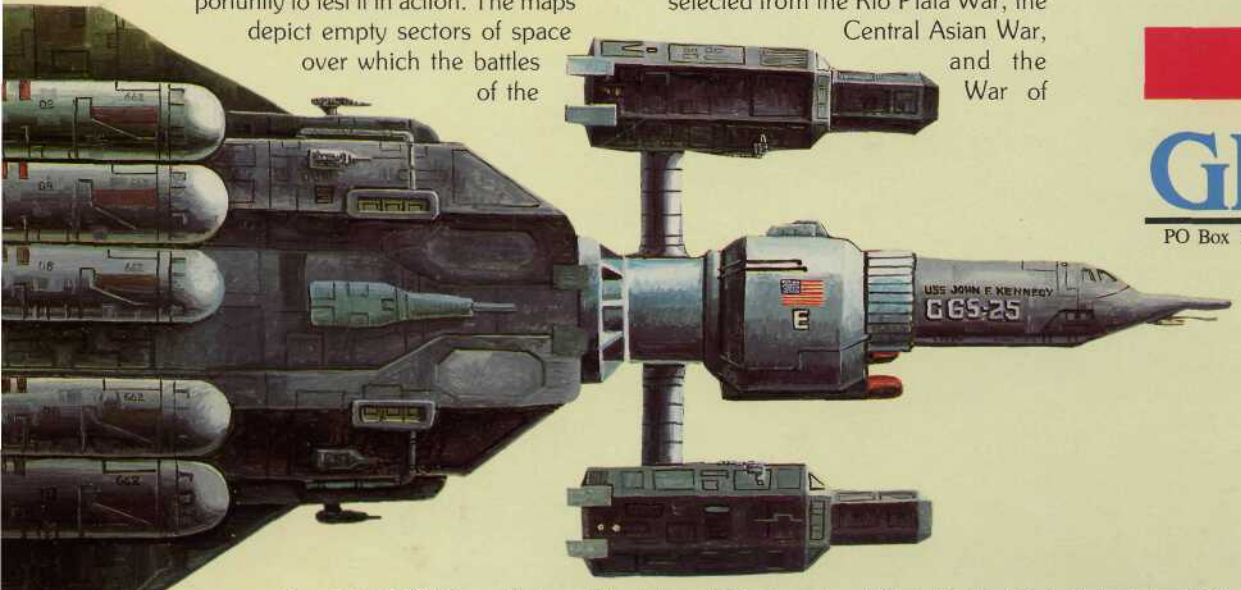
Once you've constructed your starship, *Star Cruiser* gives you the opportunity to test it in action. The maps depict empty sectors of space over which the battles of the future will be fought. The 180 counters represent the battleships, fighters, remote sensor objects, missiles, and game markers (such as "illumination" for when you activate your advanced radar systems).

The space battles of the future are characterized by the vast distances involved and the superior technologies devised to overcome them. Detecting your enemy may be quite difficult, especially if his drive emissions are shielded from view. Once detected, however, your weapons will be pitted against his defenses, and the outcome will be determined by his ability to make you miss.

Star Cruiser also includes several historical scenarios, drawn from the *2300* timeline. Battles have been selected from the Rio Plata War, the Central Asian War, and the War of German Reunification. There are also scenarios placed in man's first battle against aliens—the implacable Kafer ships use different tactics and designs, and have presented some unique problems to human ships forced to engage them.

Star Cruiser is a must for the serious *Traveller: 2300* gamer. Fight out the battles generated by your role-playing game or set up for an evening of other exciting space battles—let *Star Cruiser* take you throughout the sphere of human space and beyond!

Design.....Frank Chadwick and Timothy B. Brown
Art Director.....Barbie Pratt
Cover Illustration.....Steve Venters



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