STARFIRE

3rd EDITION   REVISED

Original Game Designed by David M. Weber

STARFIRE DESIGNS

Foreword

STARFIRE is a gaming system that simulates both tactical combat and strategic-level campaigns in space. The game is set in a "future history" in which such interstellar super powers as the relatively peaceful Terran Federation and war-like Khanate of Orion clash in huge and bloody wars or war upon or ally with such smaller empires as the Empire of Gormus, the Ophiuchi Association, and the Rigelian Protectorate.

The *STARFIRE* system has been around for many years, progressing through a series of modifications and revisions as designers sought to expand the outstanding potential of the original, purely tactical game into a more comprehensive system. Some of the revisions were good ideas; some weren't. Too often, they resulted in patches and new rules that superseded those already in print and required continual cross-referencing between several sets of "official" rules.

STARFIRE comes of age in this edition. Old *STARFIRE* hands will find it does many of the things the older games did in different ways, but they will still recognize the clean "feel" of the system.

Reorganizing and revising the previous rules turned out to be a bigger project than first expected (doesn't it always?), and the final product is too extensive to fit into a single release. Accordingly, it has been released in three stages: *STARFIRE* (which combines the revised and updated tactical rules from all previous releases, plus an upgraded list of tech systems and weapons); *IMPERIAL STARFIRE* (which does the same thing for the strategic system); and THE STARS AT WAR (*STARFIRE* scenarios).

These products are designed as a single set of sequentially numbered rules, with the rule booklets laid out to allow players to hole punch them for easy insertion in a loose-leaf binder. Because of this, players will find cross-references to later rules they do not yet have. Don't worry. You won't need them to play out *STARFIRE*'s internal scenarios, and all will become clear as you work with the other products. In the end, you will have one comprehensive set of rules, more closely interfaced and reorganized into hopefully groupings that are more comfortable. (Promise!)

— David M. Weber {minor editing by the SDS}

This is the 3rd printing of the 3rd edition of *STARFIRE*. This printing includes all changes from Sky Marshal #1 and #2 and any errata from either Communique or Electronic Communique pertaining to Starfire's tactical rules. This printing includes references to material presented in *IMPERIAL STARFIRE*, Crusade, Alkelda Dawn, and ISW-4. For the most part, you can ignore these references until you get those products.

NOTE TO PREVIOUS *CLASSIC STARFIRE PLAYERS*: The 3rd edition of *STARFIRE* is now collectively known as *CLASSIC STARFIRE*. The rules are available through our website at http://www.starfiredesign.com/starfire. About 10 years ago the decision was made to move into digital distribution and only the newest versions of *STARFIRE* were made available. Technology is making it possible to publish materials for a lower cost, over more types of media, and available to the entire world... so we've decided to make all of *STARFIRE* 's versions available while we continue to publish new versions and new materials.

Submissions and Support

The Starfire Design Studio provides support for our products and the opportunity for players to submit new material through our public forum at http://www.starfiredesign.com/forum or through email. Join the forum! Not only do we have player-led discussions, requests for games to join, and answer questions about the game; but we also provide news on future materials, ask for player input on concepts and ideas, and even information on the *STARFIRE* novels from David Weber, Steve White, and Charles Gannon.

Publisher's Information

Designer's Information

Players should direct all comments, suggestions, submissions, and any expansion material for *STARFIRE* to the SDS by joining the Starfire Forum at http://www.starfiredesign.com/forum, or emailing cralis@starfiredesign.com or marvin@ starfiredesign.com.

Snail Mail Inquiries

All correspondence through postal mail must include a stamped self-addressed envelope if you wish to receive an answer or evaluation of your submission. Your return envelope *must* bear enough postage to cover the return of your questions (about four pages to one first class stamp). Foreign customers should enclose three International Reply Coupons, not foreign stamps or money. It is imperative that you place your name and address on *every* page of your correspondence. Please do not put questions and expansion material on the same sheet.

When sending questions, phrase each one so that it can be answered with a yes or no, a brief answer, or by circling one of several choices. Leave several blank lines after each question (not each group of questions). Please attempt to look up the answer yourself first. We will cheerfully answer questions about how the rules work, but cannot answer questions as to "WHY?" various things work the way that they do.

Please allow 8-12 weeks turn-around on postal requests. Because of this limitation, it is far better to use email or the Starfire forum. In addition, the limitations above do not apply to those methods of support, and turn around can be as quick as several hours.

Design Credits

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1998 Revision by the Starfire Design Studio

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01.00 Overview of the Game System

New Players should read 01.05 first and especially 01.05.05.

01.01 Game Scale

01.01.01 Time Scale

STARFIRE is played on four-interfaced time scales: strategic, system, interception, and tactical scales, divided as follows (information in the same row is equivalent):

1 Strategic Turn	= 1 month	= 30 System Turns
1 System Turn	= 24 hours	= 48 Interception Turns
1 Interception Turn	= 30 minutes	= 60 Tactical Turns
1 Tactical Turn	= 30 seconds	

The strategic level is used primarily for interstellar movement, economic transactions, political negotiations, etc. Non-movement strategic activities are covered under the appropriate rules section in the strategic rules, as is interstellar movement.

The system level is used for movement within star systems when maneuvering units or groups of units well beyond weapon range.

The interception level is used to maneuver spacecraft from system level movement into combat range of one another and for planetary combat.

The tactical level is used to resolve ship-to-ship combat.

Each level of play above the tactical is divided into 6 pulses, each consisting of a varying number of complete turns at the next lower scale (see chart below).

01.01.02 How the Game Scales Interface (General)

The following explanation is general, intended only to set the groundwork for the rules needed to engage in combat within a given star system. See 03.00 for detailed rules on system, interception, and tactical movement. See 18.00 for detailed rules on strategic movement.

01.01.02.1 The Strategic Scale:
Most campaign game decision-making and record-keeping activities are conducted at this level, as is interstellar movement, so long as spacecraft pass only through known systems without encountering hostile races or unknown spacecraft. When an unknown star system is entered or unknown spacecraft are encountered, play shifts to the system scale.

01.01.02.2 The System Scale:
When the system level is triggered, events are frozen at the strategic level until all system-level events are resolved or for a minimum of 4 hours (1 system level pulse). After each system level pulse, players check their Fleet Movement Orders. If additional starships have arrived in the star system, they are placed on the appropriate warp point and play resumes at the system level unless hostile units are close enough to the warp point to trigger the interception or tactical scales (see below).

01.01.02.3 The Interception Scale:
This scale is triggered when spacecraft enter the same system hex as other spacecraft or planets. Time is frozen at the system level while 8 interception turns (4 hours or one system-level pulse) are played out. After every 8 interception turns, one more pulse is played at the system level, after which play resumes at the interception level.

Spacecraft moving from system scale to interception scale are placed in the middle interception hex of the system hex side through which they entered the system hex (see 01.04.02).

01.01.02.4 The Tactical Scale:
Space-to-space combat can occur only if opposing forces close to within theoretical maximum weapons range, which is defined as 60 tactical hexes, or 15 light-seconds (the diameter of one interception hex), the maximum distance a light-speed beam or object can travel in one tactical turn.

Whenever more than one player's spacecraft enter the same interception hex, they are in theoretical weapons range and trigger the tactical level of play.

Time is frozen at the interception level for 10 tactical turns (5 minutes, or one interception-scale pulse) or until one force is destroyed or withdraws beyond 60 tactical hexes from its opponent. After every 10 tactical turns, one pulse is played at the interception level before play resumes at the tactical level.

Spacecraft moving simultaneously from the interception scale to the tactical scale in the same interception hex are normally placed in the middle tactical hex of the interception hex side through which they entered the tactical map. (Remember that each interception hex [see 01.04.01] represents the entire area of the tactical map.) If, however, units approach an interception hex containing other units which are already engaged in tactical movement and/or combat, the approaching units are placed in the center of the adjacent interception hex on their approach bearings using the extra tactical map halves provided (see 01.04.02).

If one player's units open the range beyond that of any weapon carried by his opponent's units and have the speed to prevent hostile units from reentering weapon range, but cannot open the range to greater than 60 tactical hexes, play still reverts to the interception scale. In this instance, both players' units move in the same interception hex until one player elects to break off and move into an interception hex not occupied by opposing units.

Scale	Diameter of Hex	Time of Full Move At This Scale	Next Lower Scale	Number of Lower Scale Turns in 1 Pulse
Strategic	NA	30 days	System	5*
System	12 Light-Min	24 hours	Interception	8
Interception	15 Light-Sec	30 minutes	Tactical	10
Tactical	1/4 Light-Sec	30 seconds	None	NA

*Strategic Scale pulses are used to time movement and non-movement events. Movement at this scale is carried out as described in 18.00 in the strategic rules, and may use these pulses for movement purposes.

01.01.02.5 Putting it All Together: This means, for example, that after every 10 tactical turns, all units moving at the tactical level freeze in place while all units moving at the interception level move 1 pulse in the current interception turn. After 60 turns of tactical combat, all ships moving at the interception level will have completed six interception scale pulses (or one interception scale turn). After every eight interception scale turns (480 tactical level turns), all ships moving at the interception level will have completed one pulse of system level movement. All movement at the tactical and interception scales freezes while all units moving at the system level move 1 pulse in the current system scale turn and the Fleet Orders are checked for new arrivals moving on the strategic scale. After six system scale pulses (1,440 tactical turns, 48 interception turns), 1 complete system scale turn would have been completed. After 5 complete system scale turns (5 days), 1 pulse worth of strategic level movement would have been completed for political and economic transactions.

01.01.02.6 Multiple Resolutions at Lower Scales: It is possible for tactical engagements to rage in several different interception or system hexes simultaneously. When this occurs, players must prioritize the order in which engagements will be gamed out.

To do this absolutely correctly, players should game out 10 tactical turns (1 interception pulse) of the battle which began first; then freeze that battle and game out 10 tactical turns of the battle which began second; then game out 10 tactical hexes of the battle which began third, etc. If multiple engagements occur in the same system hex, this may prove necessary.

If, however, movement above the interception scale would be required for fresh participants to enter any other engagement, players should feel free to fight each engagement out to a conclusion in any order they prefer. *STARFIRE* battles rarely last longer than 480 tactical turns; thus, system-scale movement is usually not a factor.

01.01.02.7 Keeping Track of Time: Obviously, it is important to keep track of time when interfacing between levels of play.

Time keeping is necessary only to the extent required by play. That is, if no activities require resolution at less than the strategic scale, only the passage of complete days need be recorded. When events occur at lower scales, however, the players (or Space Master) must keep track at the requisite level.

When called for, as in strategic movement orders, time is noted in the following format:

DD/IntTurn:TacTurn:Impulse is an alternative players may choose. It represents game time better, but it is harder to translate into real time.

Example: *12/43:30:6 indicates the 12th day (system turn), 43rd interception turn, 30th tactical turn, and the 6th (last) pulse of that tactical turn.*

01.02 Star Systems (General)

Star systems consist of stars, their system bodies, and any artificial space constructs that orbit them. A detailed description of system bodies and how they are generated and surveyed is contained in Strategic Rules 13.00 and 19.00.

01.03 Warp Points (Definition)

Warp points (abbreviated WP) are anomalies in space/time that allow starships to make instantaneous transits over interstellar distances. There are many sub-types of warp points (described under 13.06), but all are formed by the interaction of stellar gravity wells and share certain common traits:

1. Stars that are more massive generally have higher numbers of WP than less massive stars. "Nomad" warp points (warp points in deep space not associated with any star) do occur, but are uncommon and are seldom associated with more than one other warp point.
2. Only physical objects may pass through warp points without being destroyed by the gravitic stresses.
3. Objects that pass through a WP simultaneously can interpenetrate or "overlap" on their return to normal space, in which case, since no two objects can exist in the same space, they are destroyed by a spectacular explosion.
4. Warp points may be thought of as "gravity whirlpools" whose "grav surge" will destroy most small objects (such as missiles, fighters, etc.) Sensitive electronics on larger starships will also suffer temporary incapacitation or degradation, and the ships themselves will be thrown violently off course in transit. Once a warp point has been surveyed, starships may compensate for its surge patterns and emerge from the warp point on the heading of their choice; otherwise, their emergence headings will be randomized.

5. Warp points are very hard to detect, and some are, in fact, not detectable at all. Called "closed warp points," they can be located only by units that have passed through them from the "open" warp point at the far end of the warp link.

6. Warp transits do not produce any readily detectable radiation. Units making transit can be detected only by other units in sensor range of the warp point used at the moment of transit.

7. Open warp points exert a minute gravitational attraction and will gradually "suck in" immobile objects. For this reason, no spacecraft (including satellites of any type) may be deployed in the same tactical hex as an open WP unless the spacecraft has a speed of at least one.

01.04 Game Maps

01.04.01 The Tactical Map

The tactical map is the playing surface on which combat is gamed out. Any map with hexes can be used and each hex represents an area approximately one quarter light second (46,500 miles or 75,000 kilometers) across.

Each hex is numbered for easy identification for scenario set up. In addition, the large numbers printed around the hex in the map's lower left corner are referred to as the "scattergram". The scattergram is used when the optional simultaneous written movement rules are used, to indicate the initial facings of units in some "historical" scenarios, and to determine the facing of any unit making transit through an unsurveyed warp point. Players can choose to make the scattergram go in any direction they choice as long as all player agree ahead of time.

Imperial Starfire contains an additional map to provide a larger tactical combat area and room to display entire star systems, as well as for movement above the tactical scale.

01.04.02 The Extra Map

There are no map edges in outer space, and players should acquire additional maps to extend the normal map in the appropriate direction(s) if combat spreads beyond its confines.

01.05 Terminology

The playing pieces for Starfire are the cardboard counters on the die-cut counter sheets. Some non-unit counters represent stars, planets, warp points, etc., and some are task force or fighter strike counters. For the most part, however, each counter represents an individual starship, fighter squadron, orbital base, space station, etc.

The silhouette on the counter and the letter code in the counter's top left corner indicates each starship's specific type. The number in the corner of the counter is used to identify individual units. The counters are color-coded by "historical" empire.
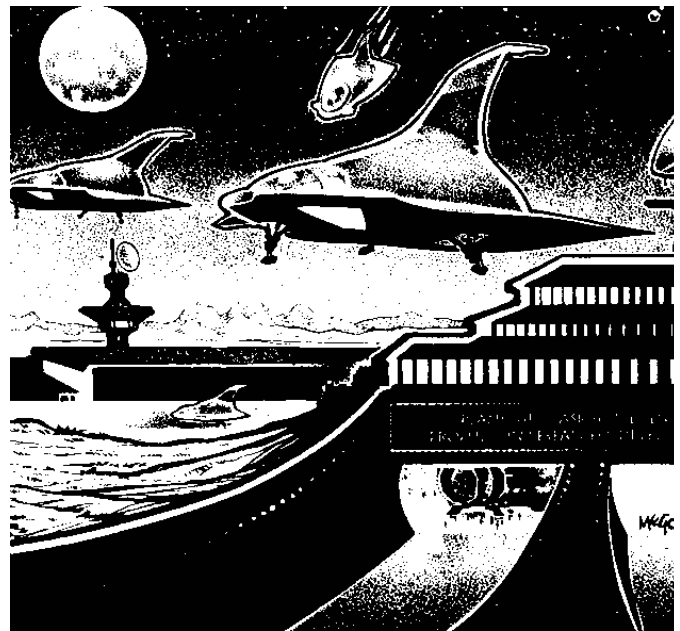
Empire	Counter Colors
Terran	Black-on-Blue
Orion	Black-on-Red
Ophiuchi	White-on-Black
Rigelian	Black-on-Green
Gorm	Black-on-Tan

Counters with white backgrounds are "neutral" units, such as freighters, bases, SBM pods, courier drones, etc., and system bodies, such as stars, planets, moons, asteroids, etc.

01.05.01 Type Codes On Playing Pieces

Unit Type	Code	Unit Type	Code
Juggernaut	JG	Space Station	SS
Leviathan	LN	Base	BS
Super Monitor	SM	Freighter	FT
Heavy Monitor	HM	Assault Carrier	CVA
Monitor	MT	Battle Carrier	CVB
Light Monitor	SDH	Fleet Carrier	CV
Superdreadnought	SD	Light Carrier	CVL
Battleship	BB	Small Carrier	CVS
Battlecruiser	BC	Escort Carrier	CVE
Heavy Cruiser	CA	Fighter Squadron	F
Light Cruiser	CL	Gunboat	GB
Destroyer	DD	Pinnace	pn
Frigate	FG	Assault Shuttle	ast
Corvette	CT	Shuttle	st
Escort	ES	Cutter	ct
Explorer	EX	SBMHAWK Pod	sbm

01.05.02 Spacecraft Terminology

Type is the information about a unit that is normally available to sensors. When referring to small spacecraft, each generation and type of unit is a separate "type" for sensor information purposes. That is, st, ast, pn, F1, F3, etc., are all separate types. The weapons these units carry are not revealed as part
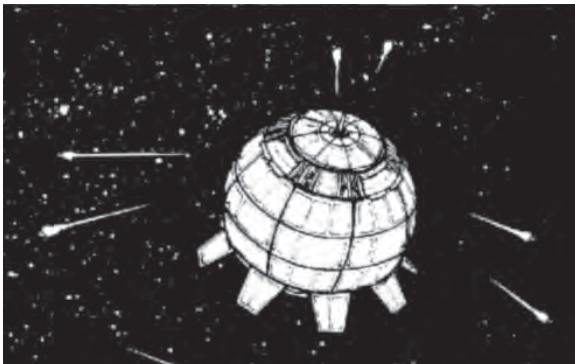
of the type information. Fighters of different generations fall into one type per generation. Fighters are generally represented by a generic fighter (F) counter; however, if an opponent asks, and is at a range at which type and generation must be revealed, the owner must always give the exact fighter type information.

When referring to large units, "type" is the category of unit and, for Starships and bases, the size category it falls into (CA, CL, DD, FG, CV, CVL, FT4, FT5, BS1, BS2, etc). Note that Warships, Carriers, and Freighters are different types for the purpose of this definition.

Class refers to large units of the same type and design. A large unit's class is not generally revealed by sensors, except by observation of the technology it uses, or a close scan with shields down (04.08) with a tractor attached.

Asteroid Forts (AF) are covered in 04.09.08, but are a type of large spacecraft, not a PDC, despite having some relationship to PDCs. They are built as spacecraft.

Bases (also called OWPs or "Orbital Weapons Platforms") are space installations designed specifically for military use. Bases are not capable of warp transit but have station-keeping drives and need not orbit a specific system body. They may be placed at any point within a star system, relying on their station-keeping drives to maintain their positions, which suits them to cover warp points, although they may not be placed directly "on top of" an open WP.

Carriers are starships used to transport fighters or other starships. Warships and Freighters may also perform this function, but only Carriers have a hull specifically designed for such a mission.

Deep Space Buoys (DSB) are small, unmanned, immobile spacecraft built for a variety of purposes, such as sensor, sensor, communications, or weapons platforms. One special sub-category is Independently Deployed Energy Weapons (IDEW), which include DSB-L and IDEW-x.

Drones are small, unmanned units that are self-mobile and can carry or transmit information. Most are warp capable.

Freighters are commercial hulled Starships, generally used for transport missions.

Gunboat is a type of small craft. It is targeted differently from a small craft and has its own rule section in ISW4.

Large Spacecraft include Starships, Warships, Freighters, Carriers, Bases, Space Stations, and Asteroid Forts.

Large units are any large spacecraft, plus PDCs (see 04.02).

Planetary Defense Centers (PDC) are large units installed on planets, and operate in a manner similar to spacecraft (see 04.09).

Pods are small, unmanned units which are self-mobile, and usually warp capable, which can carry weapons. The SBMHAWK pod is one commonly used type.

Sleds are a specially designed small craft unit that can move as a missile, in order to land on and board a hostile spacecraft. See Crusade for details.

Small Craft are small auxiliary spacecraft. Some are unarmed, and while they are larger than fighters, they are always destroyed by a single point of damage. Like fighters, most Small Craft cannot make independent warp transits and must be carried through warp points aboard starships, but Pinnaces (the largest and most powerful small craft sub-type) have a limited warp capability.

Small Spacecraft include all units which aren't Large Spacecraft or Vessels, and which are attacked under 04.03, using (usually) the 28.03 Fighter Kill Table. These include, at this time, Gunboats, Strikefighters, Small Craft, Drones, Pods, Deep Space Buoys (DSB), and Sleds.

Space Stations are extremely large installations orbiting specific natural system bodies within star systems. Space stations are normally placed in geosynchronous orbits and may contain shipyard facilities. They are bigger (and more fragile) than bases, but may contain military (armed) components. Their station-keeping drives are weaker than those of bases, being used mainly for attitude maintenance.

Starships include any large spacecraft that can have engines installed and is capable of making a warp transit on their own. They include Warships, Freighters, and Carriers.

Strikefighters (or, more often, simply "fighters") are small, fast, lightly armed spacecraft. Fighters have limited endurance and are too fragile to survive warp transit on their own. They must be carried through warp points aboard Starships. (See Fighter Capabilities Table on the 28.00 Player Information tables.)

Vessels are Starships which use Tactical Engines (J) but are not capable of warp travel on their own, and thus are not technically starships. The term Vessel is more accurate for self-mobile large spacecraft, and is used in Alkelda Dawn. However, within the rules, "Vessel" and "Starship" are generally synonymous.

Warships are military hulled Starships, generally used for purely combat oriented missions.

Weapon Systems are systems, other than Dk#, that are capable of damaging a large unit.

01.05.03 Missile Type Designators

Missiles fall into two broad categories of operation, regular (long-range) and sprint mode. Each missile has a "body" or "basic" type that defines, in general, the size of the missile and its basic function (SM, CM, etc) and a warhead type (nuclear, laser, etc). Additionally, a missile may have a number of modifiers.
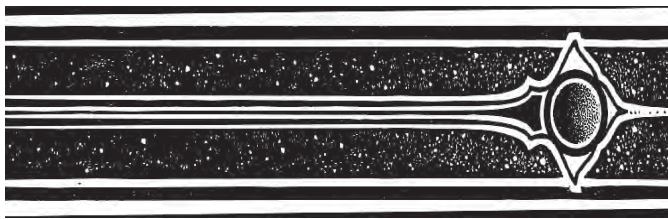
Missile modifiers fall into two categories, warhead modifiers and seeking/electronics modifiers. Some missile modifiers perform both functions; these are in the warhead modifier category. Some types of modifiers are incompatible with other modifier, warheads, or with certain types of missile bodies (especially smaller ones), and these restrictions are covered in the individual rules for the appropriate items. However, if not otherwise specified, all modifiers may be combined.

Warhead Types:

Missiles may mount only one type of warhead. The standard warhead is a nuclear fusion warhead, and uses no code. The codes a, b, L1, L2, and L3 are additional warhead types. Warhead sizes are based on the missile body type, with the base damage being equal to the damage done by a fusion warhead with no modifiers: size 1 for SM, size 2 for CM, etc. Warhead types other than fusion change the damage done by the missile. For example, a CM-b has a 3x damage multiplier for AAM, giving it a total damage of 2 x 3 = 6. Zero damage warheads are possible, and have no effect, but may be fired and intercepted by point defense normally.

Warhead Modifiers:

Warhead modifiers, such as "s" and "p1", change the amount of damage caused by warhead type. All such damage modifiers (from both warhead type and warhead modifiers) are cumulative, and normal rounding of fractions (FRN) is applied to the result, unless otherwise specified in the appropriate warhead or modifier rules.

> **For example, a SM-b:**s has a 3x damage multiplier for AAM that would be applied before rounding for 1 x 3 x 1.5 = 4.5, rounds up to 5 points. A SBM-sp1 has a base damage of 2 points, a 50% damage increase (1.5x damage) for SCW, and a 10% damage reduction (0.9x damage) for AMP-1, with the final result rounded down (even though the SCW specifies rounding up, the AMP-1 rule specifies rounding down, and that this rounding down takes precedence over all other methods of rounding), for a total of 2 points of damage (2 x 1.5 x 0.9 = 2.7, rounded down).

Seeking/Electronics Modifiers:

Seeking and electronic modifiers change the way that a missile performs in combat, in ways other than the damage that it does (other modifiers may have effects similar to seeking/electronics modifiers, but any modifier that affects damage is considered a warhead modifier). Seeking and electronic modifier codes, such as HAWK and HARM, follow the warhead modifier code(s).

Missile Code Format:

Each missile is symbolized by a missile type designator in the form W-x:y:z, where W is the missile's body type, "x" is the warhead type, "y" are the warhead modifiers, and "z" are any additional modifiers. A colon ":" separates the three types of missile modifiers. The various warhead types and modifiers are presented below:

a: AM = Antimatter warhead increases base damage to 2x (27.11.01).

b: AAM = Advanced Antimatter warhead increases base damage to 3x (27.13.01).

L1: LT1 = Laser Torpedo 1 warhead, changes base damage to 1/2x (FRD) as laser damage (27.09.08).

L2: LT2 = Laser Torpedo 2 warhead, changes base damage to 1x laser damage (27.12.12).

L3: LT3 = Laser Torpedo 3 warhead, changes base damage to 1.5x laser damage (FRD) (27.15.18).

s: SCW = Shaped Charge Weapon, increases damage 50% (round up), only usable on missiles of base size 2 or larger, nuclear or antimatter warhead only. (27.15.13).

p1: AMP1 = Advanced Missile Penetration Aid 1, reduces warhead strength to 90% (FRD). The AMP1 rounding always takes supercedes any other rounding. AMP1 can not be fitted to Laser Torpedo warheads. (27.15.02).

h: HK = HAWK seeking missile, regular fire mode only, starship launched anti-ship missiles only. (27.10.09).

j: HARM = ?2 seeking missile, regular fire mode only (27.14.21).
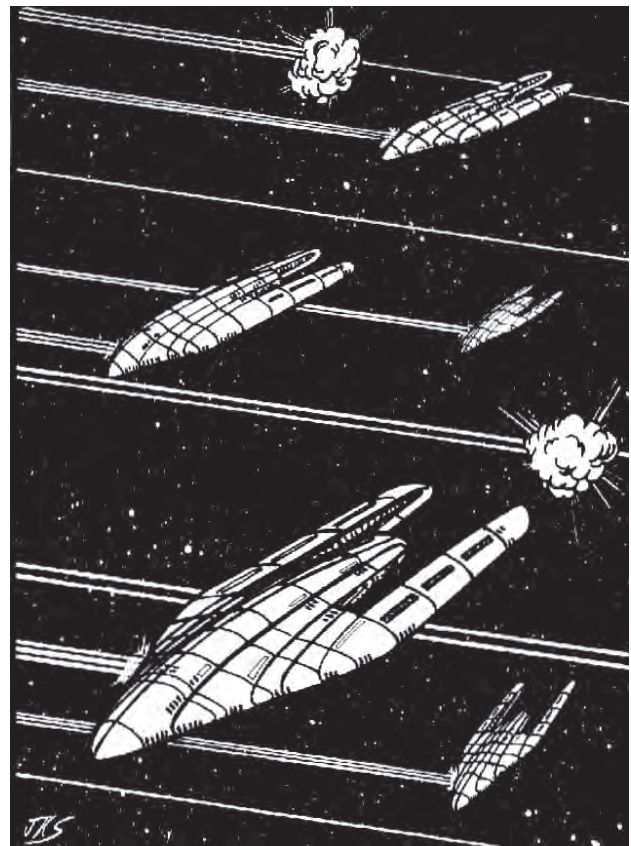
Fighter missiles can only use some of the warhead types or modifiers (see individual rules to determine which ones).

ADM, AMBAM, and AMBAM2 are special missile types, not just warhead modifiers, and no warhead modifiers of any type may be used with these missiles. Guidance systems, such as HAWK, may be fitted to these missiles.

Sled-1 and Sled-2 boarding sleds are special missiles that can not be fitted with warheads or warhead modifiers. Guidance systems may be fitted to them.

EDM, though called missiles, are an expendable defensive system, and can not use missile modifiers.

01.05.04 Missile Type Identification

Missile warheads and warhead modifiers cannot be detected before the missile hits its target. The missile body can be detected, but some types look similar to each other and cannot be distinguished by observation. A unit can not distinguish between different generations of the same missile type (e.g., SM and SM2; fM1, fM2, and fM3; CAM and CAM2, etc.) except by the accuracy of hits (the number rolled on the dice, if it would miss for one but not another). Standard missiles fired in sprint mode cannot be distinguished from GM.

BM and SM of all generations look similar, differing in accuracy and maximum range. CM and SBM also look similar, and cannot be distinguished from each other.

When a volley of missiles strikes a target, available point defense must be allocated to intercept the missiles based on the information known. When missiles that look identical but have different characteristics hit, the firing player may write down the types in order, and the defender may intercept them in any order desired.

Antimatter warheads are revealed when intercepted, as they detonate. Other missile warheads are simply destroyed, and do not reveal the warhead type to the opponent.

01.05.04.1   As an optional rule, players may reveal the types of warheads and missiles fired. This gives up some of the advantage of secrecy in mixing warhead and missile types.

01.05.05 Definitions

MAJOR POINT: The Starfire rules system is written in a specific manner. In order to eliminate most disagreements over what the rules do allow, the following is the standard guideline. If a rule does NOT say something can be done, then that something can NOT be done. For instance, the rules do not specify that you can tractor planets but neither do they say that you can not tractor planets. Therefore, you can NOT tractor planets.

Some rules refer to technological systems that are present in Imperial Starfire, Crusade, Alkelda Dawn, and ISW-4 Arachnids. If the rule referred to does not seem to be located in its proper place in this rulebook, assume that it's in one of those products.

HS: Abbreviation for "Hull Spaces"

IntHex: Interception Hex (1 IntHex = 15 LS)

"MAXIMUM SPEED": Throughout the rules, the term maximum speed has a specific meaning that is sometimes hard to understand. In the towing rules and the engine rules, maximum speed can refer to both the maximum speed of the ship's hull and/or the current maximum speed the ship is capable of.

"Maximum Speed" is defined as using all currently operable engine rooms, of the active type, without exceeding a hull's maximum speed for that type of engine.

For Example: *A CA's maximum speed with I and no engine modification is 6 (from 28.07). Now if this ship mounted 8 engine rooms of (II) without any being designated as a tug room, the maximum speed is still 6. If 3 of the 8 engine rooms had failed, then the maximum speed is 5. Exceeding 1/2 the maximum speed (three) for an extended period of time puts great strain on the engines that are being operated (see 03.11)."*

MF: "minefield"; refers one or more patterns in a single hex. (see 27.08.05)

MFs: "minefields"; refers to multiple hexes of MF.

Pattern: A pattern is made up of a number of mines.

Mine: A single individual mine.

PT: Perceived Threat

"Regular" mode or "Sprint" mode missiles: (see 01.05.01).

Scanner: In many cases throughout Starfire the word Scanner should be changed to "sensor". Starfire sensor have active scanner mode but it is rarely used since most critical data can be determined by listening (Sensing). Active scanner use would allow the enemy to get a much better targeting solution. It is not feasible to go back and correct all the misuses of the word "scanner" but we have tried.

SDS: Abbreviation for "Starfire Design Studio"

StMP: Strategic Movement Point

SysHex or sH: System Hexes (1 SysHex = 12 LM)

TacHex: Tactical Hexes (4 TacHex = 1 LS)

TRPT: Threat Reaction Perceived Threat - To counter a specific threat, this allows early development of critical defensive systems.

01.05.05.1   Rounding Terms, notations, and effects

(FRU): Fractions Round Up -- All fractions round up to the next highest whole number (integer).

(FRD): Fractions Round Down -- Throw away all fractions.

(FRN): Factions Round Normally -- Fractions of 0.5 or greater round up and less than 0.5 rounds down.

02.00 Intro To Tactical Combat

One may become a competent *STARFIRE* tactical player by reading Rules 01.00-08.00, examining the technical system descriptions (Rule 27.00), and playing one or two scenarios. The most important rule concepts are the tactical turn sequence (02.03); initiative determination (02.04); tactical movement (03.00); use of the unit control sheet (02.02); and the way in which weapons are actually fired (04.00). A grasp of these main concepts will make combat possible, and the scenarios are designed to familiarize players with the details of rules and technology as they progress through the engagements.

02.01 The Tactical Combat Scale

The tactical scale and how it interfaces with other game scales is described in 01.01.01 and 01.01.02, above. For combat purposes, remember that each tactical hex is 1/4 light second (or approximately 75,000 kilometers) across and that each turn represents 30 seconds of time. Although space is obviously a three-dimensional combat environment, elevation is ignored.

02.02 Spacecraft Control Sheets

The spacecraft control sheet is a very important element in the game. There are three types of control sheets: one for fighter squadrons, one for individual small craft, and one for individual larger units.

Rule section 29.00 lists master control sheets for all warship classes appearing in the historical scenarios. Each scenario lists the units of each class engaged in the scenario. Before play begins, the players create a control sheet for each unit by copying the appropriate master control sheet onto a sheet of paper. Players are permitted to make photocopies for their own use of ship control sheets from published Starfire products.

02.02.01 Large Unit Control Sheets

A large unit's control sheet lists its internal systems in order from left to right. A single capital letter, or a capital followed by lower case letter(s) and/or numeral(s), is used to designate each system. Some systems are enclosed in parentheses.

In combat, damage is recorded by crossing off a system on the control sheet for each damage point inflicted by a hit. The control sheet then reflects the actual capability of the unit (the systems that are still functional) for the next round of combat. See 09.03.for an example of a Starship Control Sheet.

02.02.02 Fighter Squadron Control Sheets

Fighter squadrons consist of a maximum of 6 fighters each, although squadrons of less than 6 fighters may exist. In any case, each fighter in a squadron is listed individually (along with the external ordnance--if any--with which it is armed with) on the squadron control sheet. Since each fighter is destroyed by a single hit, a fighter squadron control sheet, unlike a large unit control sheet which lists intact systems, shows which complete fighters are still in existence for the next round of combat.

02.02.02.1 Fighter Squadron Control Sheet Example

Blue Squadron (F1)

| #1 | R | R | #3 | L | L | #5 | L | G |
| #2 | R | R | #4 | G | G | #6 | L | G |

Explanation:

"Blue Squadron": Squadron Designation

(F1): The type (generation) of fighters in the squadron.

#1: Fighter #1

R, L, G: Weapon designations indicating that fighters #1 and #2 are each equipped with 2 close attack missiles; fighter #3 is armed with 2 laser packs; fighter #4 is armed with 2 gun packs; and fighters #5 and #6 are armed with 1 gun pack and 1 laser pack each.

02.02.03 Small Craft Control Sheet Example

CA 32 pn 1: Personnel = 0; Cargo = 150 SM

Explanation:

"CA 32 pn 1": unit designation for the 1st pinnace carried by CA 32. Small craft may also be assigned individual ID numbers.

"Personnel = 0": indicates the pn carries no passengers.

"Cargo = 150 SM": indicates the pn carries 150 Standard Missiles (as cargo, not as weapons).

02.03 Tactical Turn Sequence of Play

SIMPLIFIED VERSION: This is what you need to know about the turn sequence in order to play basic Starfire games.

Before play begins: Determining locations of units at tactical scale and movement prior to tactical combat.

1. Initiative Determination Phase: In some scenarios, initiative may be specified as belonging to one player. Otherwise, players must determine who has the initiative for each turn as per 02.04, below.
2. Movement Phase: The players move their units according to the provisions of 03.00.
3. Combat Phase: Players fire the weapons of their units in accordance with the rules governing combat (see 04.00).
4. Tractor Beam Phase: Players with tractor beams may attempt to attach their beams to other units and to load/unload cargo as described under rule 08.00.
5. Record Keeping Phase: Any required record keeping is done and the turn marker is advanced to indicate the start of another turn.

After: Interception scale movement, strategic movement pulse, system turn movement, etc.

COMPLETE VERSION: This version of the Turn Sequence specifies the appropriate phase and sub-phase for any event that could occur in a Starfire battle using all current rules. It is meant as a reference for experienced players; so don't worry if it mentions things you haven't read about yet.

Note: Something termed like "(De)activate" means that you may either activate or deactivate but not both. All items must be performed in the order shown.

  I. Before entering into combat
    A. When continuously cloaking, Roll for inoperable or destroyed ECM3 (27.13.08.3.8) (opt)
    B. Determine unit locations at tactical scale, if not defined by scenario.
  II. Initiative Phase
    First Turn: For a warp point assault, select forces to make transit and order of entry to use for first turn of combat (attacker only).
    A. For a warp point assault, determine the order of entry for the following turn (attacker only).
    B. Make any system activation rolls 06.02.03
    C. Assign new flagships 02.04.03
    D. Reorganize fighters on CVs 07.00(opt)
    E. Roll for Initiative (02.04)
      1. Attacker always wins first turn initiative during warp assault.
      2. Pods always lose initiative (treat them as an extra player who always moves first).
      3. Scenario specific modifiers may apply.
    F. Deactivate Engines (03.11.08)
  III. Movement Phase

The players move their units according to the rules in 03.00. Within this phase, the player who lost the initiative acts first followed by the winner of the initiative.

A. J'Rill Command SubPhase (SM#2: 27-B)
    1. (CMc) may change their controlled EAVs' targets or "cut loose" controlled EAVs (SM#2).
    2. Write movement and firing orders for (SMo) or (SMc) equipped ships 31-60 hexes away from controller module (SM#2: 27-B.02 & 27-D.01).
B. Before each unit's first movement point is expended:
    1. Declare amount of EM to be used (03.03.01) and if using De-tuning (03.01.03).
    2. Announce Ramming Attempts (03.07).
C. During each unit's Impulse Movement Phase (see 03.01 pt 5)
    1. (De)activate "Shear planes" (08.01.03)
    2. Expend 1 movement point (03.01)
    3. Declare "movement done" and fix speed for turn (03.01 pt 3)
    4. Move other units:
      a. Launch/recover fighters/small craft (03.04)
      b. Units that may be rammed may use Opportunity Fire (03.07.05 and 03.07.06)
      c. Attempt Ramming (see 03.07)
      d. Minefields attack after all units have moved for this impulse (After a unit suffers all mine attacks in any movement impulse, the owning player may declare that that unit is ceasing movement.)
    5. Sensor information is updated for any range changes that have occurred. If a unit has entered or left a sensor range bracket from a given unit, the change in known information is made at this time. ECM3 cloak mode provides an exception.
  Repeat III.C until all Movement Impulses are complete.
D. Recover fighters (03.04.03) if facing is same as the carrier's facing.
    Tractor/Presser Movement Pulse.
    SS take damage from tractors (08.04).
    Tractored/Pressored ships move closer/farther (08.02 + 08.03).
    Ships linked to largest ships move first (08.02.04).
F. Make any specific scan rolls.
    1. Attempt to detect cloaked ships (27.13.08.3.3) or attempt to maintain contact with cloaked ships detected last turn (27.13.08.3.7)
    2. Attempt to break through deception mode ECM3 (27.13.08.4).
G. Hidden mines and buoys that were detected any time during the turn are announced.
H. EDM expiration (27.10.04).
IV. Combat Phase
  A. Suppressed datalinks reactivated

B. Determine order of Mode 5 Unjamming (27.13.08.5 SM#1).
C. During each individual/groups turn Combat Impulse:
  1. Roll for surrender (04.13 [optional]).
  2. (De)activate "Shear Planes" (08.01.03).
  3. Launch CDs (27.04.01.2).
  4. (MCS)-equipped units issue orders to minefields (04.18.03.3).
  5. (DCS)-equipped unit issue orders to IDEW/DSB (04.18.03.2).
  6. Perform pinpoint scans (27.13.08.3.4) and assign new "Lead Units" (04.15.01).
  7. Allocate the target(s) of ALL weapons firing and the sequence of fire (excluding towed pods).
  8. Fire weapon(s) and record damage in the sequence determined in "IV C7".
    a. Weapons failures (Dec) are resolved after each use of the systems in question.
    b. The effects of damage are immediate and resolved as it is done. Exception: Interceptable weapons do damage only after all interception attempts are completed for that volley.
  9. Activate Mg CRAM 27.02.09.5.
  End of individual/groups Combat Impulse:
D. Automated Weapons Fire SubPhase (04.18)
  1. DSB-L and IDEW fire.
  2. Pods fire.
E. Post Combat Recordkeeping SubPhase:
  1. Activate Engines (03.11.06).
  2. Remove double-inverted Counters (27.13.08.3.6).
F. Hull Breach Phase (Crusade, optional) (see 03.10.03 & 04.14.01)
  Boarding Combat Phase (Crusade, optional) (Once every 4th tactical turn; see 03.10.04).
  Complete activation of spare drive rooms (03.01.02).
V. Tractor Beam Phase
A. Both sides alternate ships attempting tractor/presser links (08.01), per initiative impulse procedure (04.01).
B. (Un)load cargo, mines, buoys, etc. from all types of units (08.06) and fighters may jettison ordnance (04.16.02).
  1. Issue programming instructions to pods being deployed.
  2. Units may activate any deployed pods.
  3. Pods towed by tractor beams may be reissued orders.
C. Determine loadout and begin rearming of fighters/small craft/GB (03.04.04).
D. Reform disrupted Zl and command datalinks (one turn delay) AD pg. 25
E. Release Tractor Lock (08.01.01).
F. Activate Mg CRAM (27.02.09.5).
G. Conduct all communications
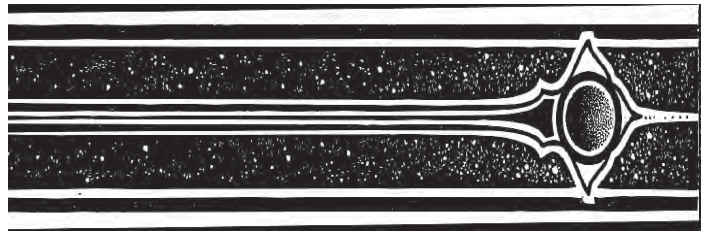
VI. Record Keeping Phase
A. Advance turn marker.
B. Roll for Break-off (04.13 [optional])
C. Units may attempt to scuttle and destroy records. (04.13.04).
  1. Systems selected in the Initiative/Declarations phase are activated (06.02).
D. Shields reset (damage control 05.01).
E. Check for failure of system(s) fixed with emergency repairs.
F. (-It) radiation kills crew (27.09.04).
G. (Dec) disables systems (27.10.13).
H. ECM3 options (choose only one):
  1. If ECM3 off, turn on and choose mode
  2. If ECM3 on, turn off.
I. Check scenario victory conditions.
VII. Larger-scale Happenings
A. If end of Interception Impulse (10 tactical turns, 5 minutes),
  1. Move at interception scale using impulse chart (03.01.01.3).
B. If end of Interception Turn (30 minutes)
  Attempt to "threat detect" cloaked ships (27.13.08.3.3 SM#2).
  Attempt to maintain contact with cloaked ships detected last turn (27.13.08.3.7 SM#2).
  Attempt emergency repairs.
  Conduct Planetary combat.
C. If end of System Pulse (2 hours).
  1. Move strategic scale using impulse chart 03.01.01.3
  2. Any other results?
D. If end of System Turn (12 hours)
  Attempt to "threat detect" cloaked ships (27.13.08.3.3 SM#2).
  Attempt to maintain contact with cloaked ships detected last turn (27.13.08.3.7 SM#2).
E. If end of Strategic Turn(Month)
  Attempt to "threat detect" cloaked ships (27.13.08.3.3 SM#2).
  Attempt to maintain contact with cloaked ships detected last turn (27.13.08.3.7 SM#2).
  Roll for destroyed ECM3 when continuously cloaking (27.13.08.3.8 [optional])
Note: Cloaking is resolved on the scale at which the ships in question are moving. Units within 60 tactical hexes are resolved at tactical scale, even if not in same interception hex.

02.04 Initiative In Movement and Combat

"Initiative" refers to the order in which players move their units and fire their weapons. The player who has the initiative at the beginning of each turn, as determined below, will move his units last and begin the combat phase by firing one of his units first.

When one side and not the other achieves surprise, the side that is surprised loses initiative on the first turn.

02.04.01 Determining Initiative in 2-Player Games

Each player rolls 1D10, and the player with the higher die-roll wins the initiative. If a tie occurs, the winner is the side who lost initiative on the previous turn (otherwise reroll). The winner will move last in each impulse of the movement phase and begin the combat phase by firing one of his units first. In some circumstances, the die roll will be modified (see 02.04.03) or one side's superior technology or crew quality.

02.04.02 Determining Initiative in Multi-Player Games

In games with three or more players, each player rolls 1D10 as in 02.04.01, and the player with the highest die roll wins the initiative. Movement begins with the player with the lowest initiative roll and proceeds in ascending order to the highest roll. In combat, the player with the highest initiative roll fires one of his units first, followed in descending order to the player with the lowest roll.

02.04.03 Tactical Command Control (Flagships)

Command and control are critical to combat efficiency. Tactical command is exercised from the command unit (flagship) carrying the CO of a given force. If the flagship is lost, so is command control (until a new flagship assumes control), which is represented by a -1 modifier to the initiative die roll before all other modifications, if any.

02.04.03.1 Each player must assign a flagship for each of his forces. In a pinch, any units larger than a small craft can exercise tactical command, but units with specially designed command facilities are more efficient. If a flagship mounts a combat information center system (abbreviated as (CIC)-- see 27.03.04), it receives a "+1" modifier to its initiative rolls. The initiative for a force of units as a whole is rolled using the grade (see 07.00) of the flagship. If a graded admiral commands a force, his grade is used for initiative roll modification if it is higher than the grade of his flagship.

02.04.03.2 Any group of units larger than small craft (including BS and SS) assigned to move, fight, or function in any way as a group must have a "flagship," and all units in the same interception hex must come under the command of a single flagship. Fighters and small craft operating more than one interception hex away from the nearest flagship always suffer the -1 "no flagship" penalty; if operating in the same interception hex as any friendly flagship, they come under its control and use its initiative roll.

Single units or single fighter squadrons operating independently are never penalized for lack of a flagship. The CO's command chain is short enough to operate without impairment.

If groups of units combine in the course of movement, strategic or otherwise, one flagship must be designated as the flagship of the combined group. Normally, the new flagship will be the one that had been serving as the flagship of the largest sub-group, but a player may specify differently if he so desires.

Most navies divide their fleets into task forces, assigning each task force a separate flagship that automatically assumes
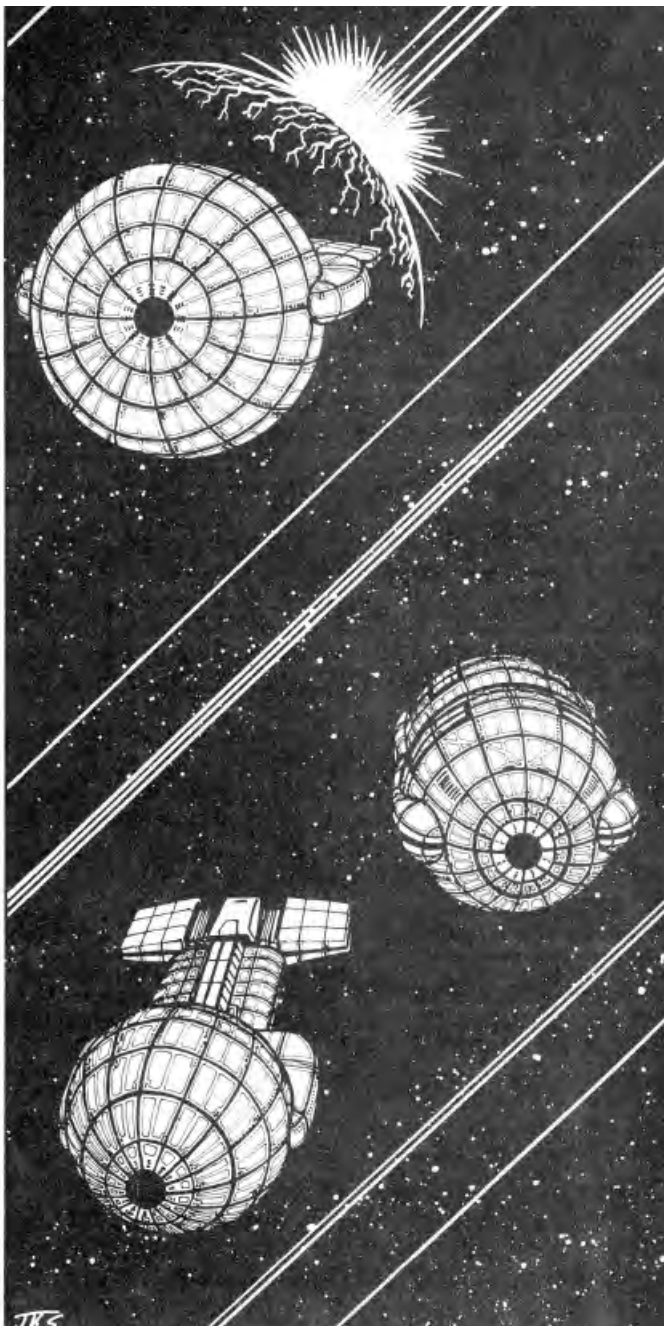
command if that task force moves out of command range of the fleet flagship. Obviously, units engaged in a warp point assault transit (see 03.06) are moving out of command range of their fleet flagship.

WP assault flagships need not be in the first wave to make transit, but until they do make transit, their units operate at the -1 "no flagship" penalty. An attacker will generally want to keep his opponent ignorant of which wave contains his flagship, and he may do this by choosing not to assert command control for one or more turns after his flagship arrives. (This represents a special case in which protecting the flagship from identification and destruction over-rides normal tactical requirements.)

02.04.03.3 Light-speed communication delays are a problem for command control at longer ranges. To reflect this, players are required to designate flagships for each interception hex in which their units are deployed. Flagship assignments may be changed in any turn on any scale in which the force is not engaged in combat. Once combat begins, they may be changed only when a flagship is destroyed.

02.04.03.4 If a flagship is destroyed, the units under its command are penalized as in 02.04.03, above, until a new flagship assumes command. The player who lost his flagship selects and secretly records a new flagship, then rolls 1D10. The result is the number of tactical turns that will elapse before the new flagship assumes command. The "flagship grade" (07.00) used for initiative determination during the waiting period is that of the flagship that last exercised command, modified for loss of intervening flagships as per 02.04.03.5, below.

If replacement flagships are destroyed before assuming command, an additional 1D10 is rolled for each new flagship, and the number of turns required for the new flagship to assume command is equal to the number rolled plus whatever time remained before activation of all previously selected replacement flagship(s).

A flagship equipped with a (CIC) may transfer command to a new flagship if its own (CIC) is destroyed. In this case, the time requirement for the replacement flagship to assume command is calculated from the tactical turn in which the order to transfer command was issued, not the one in which the original flagship was destroyed. If the required time elapses without the original flagship's having been destroyed, there is no interruption in command control and no penalty for command transfer is suffered.

02.04.03.5 Should a player lose multiple flagships, he receives a cumulative -1 initiative modifier per replacement flagship lost until a replacement survives long enough to assume command. Once a replacement survives to assume command, all flagship penalties are erased, however many flagships have been lost.

Example: *A player who loses his original flagship and also 3 designated replacements in a row without any of them surviving to assume command has an initiative penalty of*

-4: -1 for not having a flagship at all plus an additional -1 for each of the three "follow-on" replacement flagships. If replacement number four survives to assume command, all initiative penalties cease to apply, but if he loses number four before it takes over, the penalty goes to -5 until number five assumes command, and so on.

02.04.03.6 Unused rule.

02.04.03.7 As the initiative penalty described above reflects, loss of successive flagships in a short period creates confusion. It also has a demoralizing effect, and the grade (see 07.00) of each and every ship in a force is reduced by one level for every three flagships lost before assuming control. In the example above in which three designated replacement flagships were lost before assuming command, all units under those flagships' nominal control would drop one grade levels. This grade penalty is erased along with the initiative penalty.

02.04.03.8 A player is never required to identify his flagship(s) during combat, though it will be evident from the modification of the initiative roll when a flagship is lost. At the end of any engagement, however, his opponent may request and must be given a written record specifying which was the flagship of any given group of units at any given time during the battle.

When the graded unit rules are used (see 07.00), unit grade is ignored for purposes of determining initiative unless the graded unit is also the flagship rolling for initiative for the force as a whole. This reflects the fact that even a superbly crewed and manned ship will not know what it's supposed to do in a given turn until it receives its orders from the flagship.

02.04.04 Determining Initiative during Warp Point Assaults

During the first turn of a warp point assault, the attacker always wins initiative. This is due to having tactical surprise. However, pods always lose initiative.

02.04.04.1 The forces that are to make transit in the following turn are determined before the initiative is rolled. That is, the forces that are to make transit on the first and second turn of a warp point assault are determined in the initiative phase of the first turn of combat.

No unit may decline to make transit except on the basis of orders or information carried by a returning CD or unit. If any unit declines to make transit, no other unit can make transit that turn in its place.

03.00 Movement

(NOTE: For the purposes of actual combat, only the tactical movement rules are required, but this rules section combines rules to cover movement at all levels of play below the strategic. Rules covering only tactical movement are indicated by parenthetical notation. See Rule 03.09 for examples of tactical movement.)

At any scale below the strategic, movement takes place in each turn only after initiative has been determined. Starships and small craft move as individual units; each fighter squadron moves as a single unit. Units are moved one impulse at a time. (An impulse is a division of the movement phase at any scale that consists of expending one movement point for each unit of each player.) A unit may remain in place (though it must still expend one movement point) or move into the adjoining hex into which it is faced.

At the interception and system scales, players use the pulsed movement chart (03.01.01) to determine the impulses on which their units' speeds permit them to expend movement points. At the tactical level, units move in each impulse until they expend all movement points, then remain motionless while units with unexpended movement points complete their moves.

The player with the lowest initiative roll expends one movement point each for all of his units (by moving or staying in place). The player with the next lowest roll then does the same for all of his units. The process continues until all players have expended one movement point for all of their units, thus ending one movement impulse. These impulses are repeated until all units have expended their full movement point allowance.

The number or combination of units that may be in the same hex, during or after movement, is unlimited.

03.01 Movement Allowances

The movement allowance of a starship is determined by the number of operational engine rooms (see 09.05) the ship has at the beginning of the movement phase. Each type or generation of fighter or small craft has a set movement allowance. A
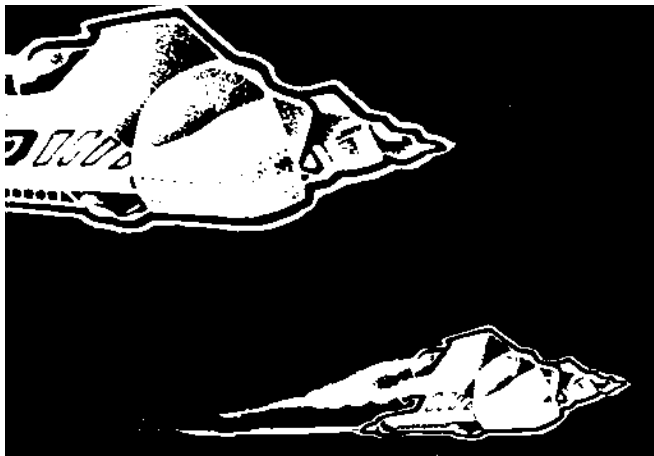
fighter's movement allowance is reduced by ½ MP for every point of external ordnance it carries (FRU). Example: A fighter with 3 loaded fXO reduces speed by 2 MP.

Movement allowance is defined in terms of movement points. A movement point may be used to perform any one of the following actions:

1. Move from one hex to an adjoining hex in the direction that the unit is facing while keeping that facing.
2. Move to an adjoining hex and change facing (see 03.02).
3. Remain in place, expending one movement point and keeping the same facing.
4. Remain in place, expending one movement point and change facing (See 03.02)
5. Perform evasive maneuvers (see 03.03).

03.01.00 After executing its movement for a movement impulse (and suffering any minefield attacks on that impulse), any unit can declare that it is stopping and give up all remaining movement points (use the statement "stopping this unit"). Its speed for that turn is the number of MP it expended before stopping. Mines will not attack a unit that has stopped during the rest of the tactical turn. This method cannot protect against ADM, since the unit did expend movement -- but engines that would have provided the unexpended movement points cannot take damage from ADM. Just stopping in place is not enough to say that the extra engines were not used. Engines not used, and safe from ADM, do not provide a drive field if the used engines are destroyed during the turn.

03.01.01 Events taking place on one level of play may directly affect those at another level, as when units in the same system hex as an engagement (but outside the interception hex in which the engagement is being fought) move to intervene in the combat. When this happens, play must be sequenced on a proportionate basis to provide for their arrival in an order that reflects their speed and proximity.

When moving units on the system or interception scale, consult the table below. It will indicate which of the six pulses of any given turn a unit moving at the indicated speed is eligible to expend a movement point at its current level of play.

03.01.01.1 Find the speed of the moving unit across the top line and cross-index with the current movement pulse of the turn. The numbers where speed and pulse cross lists the number(s) of the movement point(s) that unit is entitled to use on that pulse. (That is, on pulse 4, a unit with a movement allowance of 6 would be entitled to use its 4th movement point, a unit moving at 7 would be entitled to use its 5th movement point, and a unit moving at 12 would be entitled to use its 7th and 8th movement points.)

03.01.01.2 Remember that all units moving on any given scale complete their current movement pulse on that scale even if other units moving in the same pulse have already theoretically activated the next-lower scale. That is, units never "lose" their movement simply because other units move into a lower scale activation level before they have moved in the current pulse at the current scale.

03.01.01.3 Players who wish to do so may adopt an optional rule and use the same pulsed movement chart for tactical movement. This slows play and deprives faster units of much of their maneuvering advantage but may generate a more realistic combat environment.

03.01.02 Spare Drive Rooms:

A ship may contain more drive rooms than its listed speed allows. However, "spare" drive rooms cannot be activated while the main rooms are active; the drive field has to be deactivated for one turn to "integrate" the spare drives into the system. It takes one tactical turn to activate the "spare" drive rooms, starting the activation before initiative is rolled in the turn, and becoming activated at the end of the combat phase in the turn in which they are brought online. Spare drive rooms are propulsion capable drive rooms, which are used as a backup to the starship's normal drive complement. The same procedure is used when a ship equipped with more than one type of engine changes from one type of drive to another.

When active, spare engine rooms work like normal engine rooms. A starship cannot activate more engine rooms than the maximum speed allowed for that engine system on that hull type; similarly, it cannot activate engines of different types simultaneously. For purposes of maximum speed calculations, only active, operable engine rooms are counted.

03.01.02.1 Fractional Space Spare Engine Rooms:

Only one half-engine sized system is allowed on any unit for each type of engine. Any engine room with a half-engine system can be inactive only if the starship isn't currently using that type of drive. Example: A ship with both I and Ic engines may have up to two half-engines: one "i" and one "ic". If the ship uses its I drive, the engine room containing the "i" engine must be active, even if the ship has spare I engine rooms.

03.01.03 De-Tuning Military Engines

Only I type engines may use "de-tuning". A ship using de-tuning increases its number of movement points available by one.
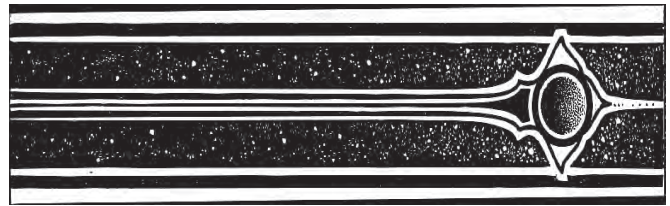
Damaged but operating engine rooms may not operate while de-tuning is in use. The use of "de-tuning" must be declared at the same time that the use of evasive maneuvering is declared.

a. Turn Mode: Turn mode is increased by two for any ship using "de-tuning". This increase of two is applied after any Advanced Maneuvering modifiers. I.e. an AM2 CT normally has a turn mode of 1 but while using "de-tuning", the turn mode is THREE not two.

b. Blind Spot: The blind spot of a ship using "de-tuning" is increased to 120 degrees of arc. On the system scale map, place a ship on the large #3 (hex 7317) pointing north (toward 7316). The hexes 7318, 7119, and 7619 are IN the blind spot. The hexes 7618, 6819, and 7317 are OUTSIDE the blind spot. Extend the blind spot down these hex rows instead of the hex spines.

c. Scanning (sensing): All scanner (sensing) ranges are normal while "de-tuned" engines are operating.

d. Targeting: Add "-3" to the hit probability of any non-missile fire from a ship using "de-tuning". This includes point defense type systems vs. fighters/small craft and Dk vs. ships (I.E., Defensive systems firing in an offensive mode). Add "-6" to the hit probability of any missile fire from a ship using "de-tuning" (This includes AFM fire). This does not impact "defensive modes" such as Point Defense vs. missiles or Dk# vs. K rounds.

e. Engine Burnout: The use of "de-tuning" requires a burn out roll every interception movement impulse. Roll a 1d10, and if the roll is 1 or 2, one entire engine room is burns out (roll randomly among operating engine rooms). Damage control may temporarily fix this burnout unless it happens a second time to the same engine room.

f. Engine Tuners: De-tuning operates opposite of "Engine Tuners" and therefore, while engine tuners are in operation, de-tuning may not be used at the same time as Engine Tuners. NOTE: Engine Tuners are still valuable because they can be used without the loss of combat capability.

IMPULSE MOVED	SPEED OF UNIT															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	–	–	–	1	1	1	1	1	1	1,2	1,2	1,2	1,2	1,2	1,2	1,2,3
2	–	1	1	2	2	2	2	2,3	2,3	3,4	3,4	3,4	3,4	3,4,5	3,4,5	4,5,6
3	–	–	–	–	–	3	3	4	4	5	5	5,6	5,6	6,7	6,7	7,8
4	1	2	2	3	3	4	4,5	5,6	5,6	6,7	6,7	7,8	7,8,9	8,9,10	8,9,10	9,10,11
5	–	–	–	–	4	5	6	7	7	8	8,9	9,10	10,11	11,12	11,12	12,13
6	–	–	3	4	5	6	7	8	8,9	9,10	10,11	11,12	12,13	13,14	13,14,15	14,15,16

03.02 Facing

Each unit must have a specific facing at all times. That is, its counter must be pointed toward a specific adjacent hex. A number from "1" to "6" from the scattergram is used to denote this facing when using simultaneous written movement. Whenever a counter is moved, it must be replaced on the map with a clear, unambiguous facing.

In order to change its facing at the tactical level, a unit must satisfy the requirements of its turn mode by expending a total number of movement points equal to its turn mode on a single facing, whether by moving or remaining still, before it is eligible to turn (change its facing).

At any play level above the tactical, all units have an effective turn mode of "0" due to the longer time spans these levels represent.

03.02.01 Changing Facing During Movement

A unit that has satisfied its turn mode may change facing. There is no movement point cost for actually executing a change in facing, but units moving at the tactical scale may change heading by no more than 60° (one hex side) per impulse. Units moving at levels above the tactical level may change facing by up to 180°, but all facing changes at any level of play are always made at the end of a movement impulse. In other words, a player could move a unit into a new hex and change facing but could not change facing and then move forward in the same movement impulse.

03.02.02   A unit's turn mode must be satisfied for each change in facing. Movement points expended in previous turns "carry over" for this purpose, as do movement points expended in place while retaining the same facing.

Although a unit "earns" the right to change facing by satisfying its turn mode, it need not turn immediately upon doing so, but the turn mode must be satisfied after each facing change before changing it again and transiting a warp point counts as a facing change.

03.02.03   A unit may change facing more than once in a given game turn as long as its movement points suffice to satisfy its turn mode each time.

03.02.04   A unit that expends all of its movement points in place for one full tactical movement turn may change its facing to any hex side of its choice if its current total movement points are at least equal to its turn mode. (That is, a ship with a turn mode of "3" and only 2 remaining movement points could not alter facing in this fashion.) This facing change must be made in the last impulse in which the unit has unexpended movement points. Since the unit has then expended all movement points, no further movement or facing change is allowed.

If a unit's total movement points are less than its turn mode, the unit may still change facing as above, but the process takes more than one tactical turn. The unit must remain motionless, expending all movement points in place, for a number of tactical movement phases equal to its turn mode and may then turn on the last impulse of the final movement phase in which it retains movement points. (Thus a BB with a turn mode of 4 but a speed of only 2 would be required to remain motionless for 4 movement phases, expending a total of 8 movement points in place, and could then turn up to 180° on the 2nd movement pulse of the 4th movement phase. While this may seem like a long time, reflect that this represents a total of 3 facing changes, which would normally require a total of 12 movement points to satisfy turn requirements and would thus take 6 movement phases of normal movement.)

03.02.05   Fighter squadrons move as a single unit and that all fighters have a turn mode of 1.

03.02.05.1   There is one exception to the rule requiring fighter squadrons to move as single units. Fighters of a single squadron used in the reconnaissance role in more than a single interception-scale hex may be operated as individual units rather than as a complete squadron. Under any circumstances, however, all fighters of a single squadron in a single interception hex must move and operate as a single unit (but see optional rule 03.02.05.2).

03.02.05.2   Players who so agree may, as an optional rule, allow a fighter squadron's members to be operated as individual units even in the same interception hex.

03.03 Evasive Maneuvering (Tactical Level Only)

Ships may use Evasive Maneuvers ("Engine Modulation") to decrease the hit probability of weapons targeted upon them.

03.03.01   If a unit desires to use EM, the owning player must so declare before expending that unit's first movement point in the current movement turn. He announces how many points he will use in evasion, and the unit's movement allowance is reduced by that number. (That is, if the ship had 6 movement points and chose to use 2 of them in evasive maneuvers, its effective movement would be only 4.) The first point of EM (-1) costs an amount of movement points equal to the ships turn mode. After the first point, for every two points of movement spent on evasive maneuvers (FRD), the hit probability of all weapons (including tractors and/or presser beams) fired at the evading unit is reduced by an additional -1.

A ship must move into a new hex during a turn to use EM. Expending the MP sitting in place is NOT enough; you must move to a new hex sometime during the movement phase.

> **Example:** *A ship with Turn Mode 3, Speed 6 wants to use EM. As 1 MP must be used to move to a new hex, the ship's options are -1 to be hit with 3 MP for movement or -2 and 1 MP for movement.*

03.03.02   Movement points used in evasive maneuvering may not be used to satisfy a unit's turn mode or to move from hex to hex.

03.03.03   Fighters and small craft may also use evasive maneuvers. The hit probability against an evading fighter is reduced by -1 for every 2 points used on evasive maneuvers (FRD). NOTE: The first point of EM for a fighter costs 2 MP.

03.03.04   A starship may receive a maximum benefit of -3 from evasive maneuvers. A small craft or fighter may receive a maximum benefit of -2 from evasive maneuvers.

EM cannot be used in atmosphere.

Only manned spacecraft (small craft, fighters, starships, etc.) can use this rule. CD, SBMHAWKs, and any other un-manned mobile units cannot use EM.

EM and any form of ECM do not add together. They must be canceled separately however.

Penalties from EM and ECM of any type are not cumulative. However, ECM3 or similar systems must cancel each instance of penalty separately. Example: Suppressing EM and two operating ? would require 2 ECM3 systems.

03.04 Special Small Craft and Strikefighter Movement Rules (Tactical Level Only)

03.04.01   Fighters are carried in the hangar bays (V) of their carriers at the rate of 1 fighter per V. Small craft are carried in boat bays (Bb) in varying numbers, so long as the Bb stowage point total is not exceeded. If a V or Bb is destroyed, any spacecraft in it are lost, but the rules assume unoccupied bays are destroyed first. (That is, any fighters aboard are in the last V's to be destroyed.) In addition, the owning player determines which fighters or small craft are in which bays when occupied bays are destroyed. (If, for example, two fighter squadrons were aboard, one ready to launch and the other just recovered with no weapons, he could choose to lose fighters from the just-recovered squadron before taking losses from the one ready for fresh combat.)

03.04.02   Fighters and small craft are launched on any impulse of a movement phase after the unit they are on has expended its movement point. All V and Bb aboard a starship may launch simultaneously. Both launching and landing are allowed in the same impulse, and a single bay may do both in the same impulse, as long as the bay's capacity is never exceeded at any time.

Each fighter or small craft expends one movement point to launch, and its total movement allowance is reduced by 1 for each movement point it could have expended if it had started the turn in space. Thus, a speed 8 fighter launching on impulse 4 can only move in impulses 5, 6, and 7 (note that it cannot

move on the 8th impulse due to the loses of 1 MP for launching. Another way of saying this is that the fighter cannot save movement points while on its carrier.

When a fighter or small craft launches, it ends movement for the impulse of launch in the same hex as its carrier, stacked on top of the carrier's counter but on any heading the launching player chooses. On the impulse after launch, fighters and small craft move normally and may attack (or be attacked) in the combat phase of the turn in which they launch. Because warp transit temporarily disables their electromagnetic catapults, V and Bb may not launch in the tactical turn in which their starship makes transit.

03.04.03   Any carrier of the same navy may recover fighters during the movement phase of a turn. Fighters also may be recovered to and relaunched from carriers of any military ally or partner (see 17.02), but may be rearmed aboard them only if the allied or partner race comes from a home world of the same type as and with a habitability index (see 13.04.05.2) within 3 of that of the race crewing the fighters.

To be recovered, fighters must be in the same hex and same facing as the recovering carrier at the any point of the movement phase and the carrier must have sufficient undamaged V to accommodate any fighters it intends to recover plus any other fighters already aboard. Carriers may launch on-board fighters in one impulse to clear V to recover other fighters on the next impulse.

Small craft are recovered in precisely the same fashion by units with Bb. Like V for fighters, there must be sufficient Bb for all small craft already aboard and about to be recovered.

BS and SS with V or Bb recover fighters or small craft exactly as carriers do.

03.04.04   Fighters must be in friendly V to arm/rearm. Arming/rearming requires five tactical turns (2.5 minutes), beginning on the tactical turn after recovery. Thus a fighter squadron recovered in the movement phase of Turn 10 could spend Turns 11-15 rearming and be relaunched in the movement phase of Turn 16.

Most small craft are unarmed but require five turns to load/unload passengers or cargo. Second generation small craft that can be armed (pinnaces and assault shuttles) require 5 turns to load/unload passengers and/or cargo, or 5 turns to arm or rearm. Thus a 2nd generation assault shuttle that came aboard with passengers embarked, unloaded them, loaded its cargo bays with cargo, and armed its external ordnance racks would require a total of 15 tactical turns: 5 to unload its passengers, 5 to load its new cargo, and 5 more to arm its external ordnance racks.

03.04.05 Strikefighter Squadron Organization
See 07.02 for complete fighter organization rules.

03.04.05.1   Fighters are smaller than small craft and may be recovered in Bb. Fighters cannot be rearmed nor launched from boat bays. It requires one interception turn with the drive

field off to unload the fighter as cargo, using 08.06. CHS and tractor/presser beams cannot accelerate this process. The fighter can be transferred to a fighter bay on the same or different unit. Small craft may never be recovered in V. For the purposes of this rule, each fighter expends one boat bay stowage point. Fighter squadrons may be divided in order to allow one or more members of the squadron to land in Bb.

Note: This allows a squadron or part of a squadron to be recovered by multiple ships even if a single recovering ship lacks 6 free boat bay points.

DESIGNERS NOTE: It is important for players to remember that *STARFIRE* fighters are not F-18s operating from USS Nimitz. Aircraft operate in a different medium from wet-navy ships, using a propulsive system very different from that of their carriers. Strikefighters operate in precisely the same medium (space) as *STARFIRE* starships, and their propulsive system is essentially a downsized, "souped up" version of the same drive starships use. For this reason, a strikefighter squadron is best envisioned as a single fast, maneuverable, short-ranged spacecraft made up of six independently powered components.

03.05 Spacecraft/Planet Movement Interface (Tactical Level Only)

Note: See 06.00 for the effects of warp point transits on combat.

Only spacecraft configured for atmosphere (see 27.03.01) may land on and/or take off from planets and/or moons. "Atmosphere capable" means more than simple streamlining; it also implies that the spacecraft has been stressed to survive

planetary and lunar gravity fields. Thus, ships must be "atmosphere capable" to land even on airless planets or moons.

No strikefighter may land or take off unless there is a functional V available to receive and/or launch it groundside, but small craft do not require Bb to land. In fact, all small craft are specifically designed to land with minimal facilities or even with none at all. Strikefighters may land in Bb in PDCs but must be crated and moved to a V to be usable again.

Strikefighters in atmosphere cannot engage in fighter-to-fighter combat or employ evasive maneuvers but may attack starships and ground bases with missiles (only). In vacuum, they may also employ fighter energy weapons against ground targets and large spacecraft, and may maneuver and engage other fighters and small craft normally.

03.05.01   In order to land on a planet or moon, a starship must begin the movement phase in the same tactical hex as the planet or moon, and the landing requires the starship's full movement allowance for the phase.

Fighters and small craft use 4 movement points to land and may use any additional movement points to move into the planet/moon's tactical hex.

03.05.02   Taking off from a planet with atmosphere costs any spacecraft 5 movement points. If the spacecraft's speed is greater than 5, any additional movement points may be used to move normally in space in the same movement phase it departed in. If its maximum speed is less than 5, it will require more than one movement phase to take off. If a starship is in the process of taking off during a combat phase, it may engage or be engaged by spacecraft in space but faces the same shield and weapon restrictions as a planetary defense base (see 04.09).

Any unit that takes off from an airless moon or planet uses only 2 movement points to do so, regardless of unit type.

03.05.03   When a spacecraft of any type lands on a moon or planet, the owning player simply declares the landing site, as any point on a system body can be reached from any point within its tactical hex.

Similarly, a spacecraft that takes off from a moon or planet simply declares its facing on take off and then moves normally in space.

03.06 Warp Point Transits (Tactical Level)

One of *STARFIRE* 's most difficult (and common) tactical problems is an assault on a defended warp point. There are several reasons for this, the most important of which are the uncertainties of grav surge (on unsurveyed warp points) and the limited numbers of starships that can safely pass through a warp point in the same direction in a single turn.

It costs 1 movement point to transit a warp point, even if starting in the hex of the WP, and that MP may also be the MP

used to enter the WP's hex. After transit, a vessel must either leave the WP hex in order to re-enter the WP, or execute a 180-degree turn within the hex. Since Starfire vessels cannot go in reverse, this is a required limitation. No unit may make two transits in the same turn.

No physical object can survive transit through a warp point unless a drive field operating at greater than station-keeping levels protects it. Objects that are not protected in this manner are torn apart and destroyed by the WP's tidal stresses.

03.06.01   If a player has not surveyed a warp point or gained detailed survey information from some other source, he cannot compensate for the WP grav surge and his units will be thrown randomly off course. Any player passing through a warp point on which he does not possess detailed survey data rolls 1D6 against the scattergram for each starship. The number rolled is the facing on which the starship emerges from the warp point.

03.06.02 Simultaneous Transit (Optional)

Theoretically, any number of starships may transit a warp point simultaneously as long as none of them exceed the point's maximum hull space capacity (see 13.06.03). In practice, only one starship per movement impulse can make transit safely in the same direction per turn (that is, up to 6 speed 6 starships; or 5 speed 5 and 1 speed 6, etc. can transit in one turn). Any object that makes transit simultaneously with another object can interpenetrate and destroy one another (in which case there are never any survivors). Units moving in opposite directions never interpenetrate. Also note that each "non-allied" player moves in his own portion of the movement phase and cannot interact with an enemy ship (or other object) transiting the WP during the same movement phase as his own ship (or other object).

03.06.02.1   When objects or ships make simultaneous transits, divide the total number of units transiting in the same direction on any single impulse into pairs, grouping units of the same size and general type together wherever possible. When it is impossible to group identical sized units, group the largest unmatched unit to the next largest unmatched unit. Unit sizes in order are Ships, GB, Pods, Small Craft by Bb points, drones, then by cargo space points (items larger than 150 csp equal a number of boat bay points equal to x/150 FRD). If there is an odd number of ships, the smallest unit rolls at half the chance to see if it interpenetrates with the smallest unit that survived.

03.06.02.2   After pairing your starships for 03.06.02.1, roll percentage dice for each pair. A roll of 01-30 indicates that the pair of ships was destroyed.

Because 30% of all ships (on average) making simultaneous transit will be lost without firing a shot, no player may make transit in this fashion in any scenario unless the scenario notes specifically allow it.

In campaign games, each empire may make one roll VS RM to transit a specific warp point once per 6 months. If the roll is successful, then the simultaneous transit must occur within the next 3 days.

NOTE: The interpenetration number is only 01-15 if only non-ship units are involved.

03.06.02.3   As an optional rule, players in campaign games with Space Masters may agree that a player can plead special circumstances with the SM before any battle. If he can convince the SM his situation is so desperate a 30% loss rate constitutes "acceptable casualties" the SM can allow him to do so, but the SM should be very hard to convince.

03.06.03 Warp Transit and Pinnace Detection

Detection of warp transit, and therefore warp points, by observation of units making transit depends upon the detection radius of the observing unit and the type of unit which is observed making transit. No detectable radiation is caused by the transit itself, but the appearance or disappearance of a unit via warp transit causes the energy signature of the unit to exhibit "warp transit" effects (as noted in 06.02) which may be detected by other units.

Starships making transit will reveal the warp point at a range of 60 tactical hexes from units equipped with Xr, 45 hexes from units with fXr, or the inherent sensor range of a unit if it lacks long range sensors. If the starship leaving a system cannot be detected at the time it makes transit, usually because it was cloaked and not pinpoint detected on the turn before transit, then the warp transit will not be detected. Should the starship be observed to disappear at a range greater than 60 tactical hexes, the observing unit will not know if the unit has made transit, nor will it be able to determine the precise tactical hex in which it has disappeared, since this is at interception scale. A closed WP may only be located (19.02) if a unit is observed making transit through it, as above, or by making transit through it from the WP at the other end.

Pods and small craft will reveal the warp point if they are detected as individual units at the time that they make transit. RD2 and other drones are detected in a similar fashion, but it is possible that they will not be detected at the time of transit.

03.06.03.1 Pinnace Scouting:

This rule applies to any generation of pinnace, and the RD2. The RD2 has the added advantage that even when units are eligible to scan for them, they often fail to detect them.

Even at GQ status, these units do not appear to be obviously hostile, and unlike ships, are not readily detected making transit. Thus, an activation roll must be made at ANY readiness state (roll at the end of the movement phase), on a 1d10 roll, with the number indicating the turn the unit is recognized. Grade modifiers do apply, and each unit, with squadrons counting as one unit, rolls separately, if it is within the close detection range (10 tactical hexes with Xr or fXr, 5 without either of these). A roll of 1 indicates that the units may fire on

the turn that the transit occurred. Units further out double the 1d10 roll to determine the time required.

The unit cannot be detected or engaged until this time period is up, unless it powers its weapon systems (i.e.. it must declare "no fire" in order to be undetectable). If it powers its weapons – thus intending to fire – it is detected immediately, normally.

GB cannot avoid detection in this manner, and are detected in all ways as starships.

If more than one unit appears, a separate roll is made for each one. If any unit in a group of units is detected, then all units are detected as the sensors are powered in "active" mode to sweep the area. Thus, packs of drones or pn will be readily detected, and unless players wish to be obstinately optimistic (optional rule), these things are automatically detected.

Starships cannot make transit without being detected.

03.07 Ramming (Tactical Level Only; Optional)

It is difficult for one starship to ram another, as ships with re-actionless drives capable of radical maneuvers at up to 10% of light speed are elusive targets. It is not impossible, however, and a successful ramming attack is devastating.

Due to the surprise, and the need to prepare for a ramming attack at the start of the movement phase, no unit may ram a ship that has made a warp transit in the same movement phase. Likewise, no unit may ram, during the same turn, after it makes a warp transit.

No unit may ram a spacecraft on an impulse that occurs after that unit expended its full movement allowance (it may be rammed during the same impulse). Moreover, a spacecraft cannot ram any ship unless it announces its intention to ram (though not necessarily its specific target) on the first impulse in which the ramming ship actually moves. Starships may not ram small craft or fighters. Opportunity fire under 03.07.05 and 03.07.06 may be conducted.

03.07.01   Any ramming attempt between starships succeeds if both sides want it to.

03.07.02   On the movement pulse that a unit intent on ramming enters the tactical hex of a target that chooses to dodge, each player rolls 1D10. The ramming player's die roll is modified by +1 for each point by which his turn mode is lower than his adversary's and by -1 for each point by which his maximum movement allowance is lower than his adversary's, even if one unit has already completed its movement for the turn. If the target ship is employing evasive maneuvering or ECM during the movement phase, the ramming player's die roll is reduced by a further 1/2 point (fractions round up) for each reduction of -1 in weapon hit probability.

The ramming player succeeds only if his modified die roll exceeds that of his opponent by at least 3.

Any ramming attack on a ground target always succeeds, unless the ramming unit is destroyed by opportunity fire (see 03.07.06) before impact. Any unit that rams a ground target is automatically destroyed.

03.07.02.1   BS have some ability to dodge, but it is extremely limited, and an SS or asteroid fortress cannot dodge at all. Any mobile ramming unit, regardless of speed or turn mode, adds +5 to its die roll against a BS and +7 against an SS or asteroid fortress.

> **Example:** *A badly damaged BC is cornered by a hostile SD and attempts to ram. The BC's turn mode is 4, but its speed has been reduced to 3 by battle damage. The SD's turn mode is 5, but her engines are unhurt and her maximum speed is 5. Both players roll 1D10, and both roll a 5. The ramming player's die roll is modified, however. The BC's turn mode is one lower than the SD's, so the ramming player adds "+1," but the BC's speed is 2 lower than the SD's, which reduces the die roll by "-2," so his final die roll is 5+1-2=4. Since the modified totals are now 4 for the BC and 5 for the SD, the ramming attempt fails. In fact, the BC's roll would have had to be at least a 9 before modification to succeed.*

Had the same BC attempted to ram a BS with the same base die roll, it would have added "+5," which would have given it a 5+5=10. If the BS had rolled a 7 or less, the BC's roll would have exceeded its roll by at least 3, and the ramming attempt would have succeeded.

03.07.02.2   Any unit which attempts to ram and fails ends its movement in the hex and on the impulse of the movement turn in which the ramming attempt was made regardless of any unexpended movement points remaining to it.

03.07.03   Any successful ramming attack results in severe damage to all concerned, but some attacks are even more damaging than others are. If the ramming ship entered the hex containing its victim from astern (that is, from any of the target's three rearward hex sides) the units' closing speed is lower and both ships suffer damage points equal to the total hull spaces of the smaller ship divided by two (FRU). That is, a ram of a BC from astern by a 40-hull space CL would inflict 20 points of damage on each ship. If the ramming ship entered its victim's hex from ahead (i.e., from any of the target's three forward hex sides) each ship inflicts damage upon the other equal to its own hull spaces. (That is, if a 10-hull space ES rammed a 200-hull space monitor head-on, the ES would inflict 10 points of damage but the MT would inflict 200. While the monitor might be badly hurt, the ES would obviously be totally destroyed and then some!)

BS, SS, asteroid forts, and ground targets have no "rearward" hexes. Treat all ramming attacks on them as attacks from ahead.

Ships mounting Tactical Engines (J) that ram do ¼ normal damage unless the engines are upgraded with Drive Field Enhancers (Je) of any generation (see 04.04.02). If the vessel

has Je1, damage is 1/2 of the normal, with Je2 it is 3/4 and with Je3 it is the same as for I or Ic equipped ships. This applies to both the ship attempting to ram and the unit being rammed.

03.07.04   Ramming damage is inflicted in the usual pattern, as defined in 04.04.02. Operable shields absorb ramming damage normally.

03.07.05 Kamikazes

Ramming (kamikaze) fighters and small craft use the same process as starships. Kamikaze attacks, like all ramming attacks, take place in the movement phase, not the combat phase. A kamikaze attack makes up a type of salvo across an entire impulse; all kamikazes attacking in a movement impulse are treated as one missile salvo for point defense purposes. Kamikazes can only be readily intercepted just before impact (as kamikazes maneuver) and all point-defense types fire using a SINGLE shot per point defense system with a -5 modifier for any point defense types except Dk types (which receive a +1) and Di (which receives only -2). The single shot uses up all of the shots that a D system possesses because small craft and fighters are tougher than missiles. Up to two extra point defense systems (Di and Dk types can only combine with Di and Dks respectively) may join in firing against a single Kamikaze (triple fire) and each extra one adds +1. Obviously, if kamikazes attack from within the unit's blind spot (see 04.06.01.1), point defense cannot engage them. Use of point defense against kamikaze attacks has no effect on the later use of the same point defense installation during the following combat phase.

Any kamikaze fighter, regardless of generation, inflicts a total of one damage point for the mass of its fuselage plus one point per item of external ordnance regardless of the angle from which it enters the target hex. [That is, a fighter with 2 points of external ordnance would inflict (1+2)=3 points of damage.] AFTER the point defenses engage a kamikaze, the kamikaze may fire its weapons in an attempt to increase the amount of damage it would do. This is a range zero attack with a +1 to hit.

A kamikaze small craft inflicts 1 point of damage per boat bay stowage point (see 27.03.02 & 28.05) plus 1 point per point of external ordnance, regardless of attack angle. A GB inflicts 8 pts plus 1 point per point of external ordnance.

Each fighter in a kamikaze squadron rolls individually against the target of its attack, but no damage is applied to the target until all kamikazes in a single movement impulse have attacked.

Fighters and/or small craft are not allowed to ram one another. Bloodthirsty players whose races are allowed to ram may adopt an optional rule giving fighters a chance of 1 on 1D10 of ramming if both pilots agree to do so.

03.07.06 Anti-Starship Opportunity Fire

While only point defense has the targeting capability to engage such elusive targets as ramming small craft and fighters, other weapons have the ability to engage starships that attempt to ram, though not at the best of odds.

The target of a ramming attempt may take "opportunity fire" against starships attempting to ram it. This fire is in addition to the fire normally permitted during the combat phase (see 04.00). Any unit using opportunity fire against a ramming starship fires as an individual; it may fire only at starships attempting to ram it and datalink (27.05.02) may not be used to "gang" fire against the rammer.

Remember that point defense fire against kamikaze fighters and small craft is handled as per 03.07.05.

Opportunity fire is always taken at a range of 1, just before the starship attempting to ram enters the firing unit's tactical hex. Weapons may be used for opportunity fire in each impulse in which a starship attempts to ram that unit, but no weapon (including Wa [27.08.01]) may fire at more than one starship in a single impulse. Targeting restriction penalties for multiple targets (04.05) and fields of fire (04.06) do apply. Note that Wa can fire twice at the same ship in the same impulse.

Weapons that are limited by reloading or recharging times, such as all missile weapons, X-ray lasers (Lx), Plasma Guns (Pg) or Primary Beams (P) of any generation, may only fire their normal number of shots in one tactical turn (e.g., a Wa may only fire two missiles per turn regardless of whether it fires in opportunity fire in the movement phase or in the normally in the combat phase). Weapons that are not limited in this way (currently all beams except Primaries and X-ray lasers) can fire in each impulse in which the unit is rammed, as well as in the combat phase.

In addition, opportunity fire reflects desperate, close-in fire with rushed firing solutions, and the hit probability declines as greater numbers of ramming starships are engaged. To reflect this, opportunity fire hit probabilities are reduced by -1 for all weapons for each movement impulse of the current tactical turn in which a unit has already used opportunity fire. (That is, if a unit underwent ramming attacks in 4 movement impulses and used opportunity fire against them all, it would fire normally in the 1st impulse, at -1 in the 2nd impulse, at -2 in the 3rd, and at -3 in the 4th.)

Finally, units that use opportunity fire find it more difficult to maintain running fire solutions against other enemies, so the hit probability of all fire in the normal combat phase is reduced by -2 below that of its last "opportunity fire" shot of the current turn. (So, the unit in the above example would fire at a -5 in regular combat.)

If a starship that attempts to ram suffers engine damage from opportunity fire, it may not retain sufficient speed to carry through and reach its target even if it survives the fire. If the movement allowance of a ramming starship is reduced by opportunity fire to a value less than that required to reach its target, it ends movement immediately.

03.07.07   Like simultaneous warp transits, ramming (whether with starships or kamikazes) requires a high level of ferocity and/or desperation and is allowed only if the scenario

notes specifically permit it. In campaign games, players make a checking roll against militancy. The die roll must be at least 20% less than the checking player's militancy for the race to ram during that battle. A given force that fails a ramming check may NOT attempt to ram in that engagement, nor in any engagement in the same star system for SIX months unless it is defending one of its imperial or partner populated system.

A player defending one of his imperial or partner populated star systems (or that of a partner) adds 10% to his militancy for each population level above "outpost" (see 15.01) of the largest population enclave of his own or a partnered race in the system. Players defending sector capitals add for population plus 25% for the system's importance. Spacecraft defending imperial capitals or the home world of the race crewing the spacecraft may always attempt to ram, regardless of their militancy. (Moral: There is no tomorrow when your home world is about to be nuked till it glows.)

03.08 Simultaneous Written Movement (Optional)

As an optional rule, players may use simultaneous written movement instead of pulsed movement. When using written movement, each unit's heading at the start of any movement turn is recorded, using the scattergram for reference and writing the rest of the move after that notation, set off by a colon. Each movement point used to move straight ahead is recorded as a simple numeral. Any point expended in place is recorded in brackets. Any turn is indicated by the notation (T:x), where "x" is the new facing from the scattergram. Fighter squadrons and small craft use the notation (L:x), where "x" is a number from the scattergram indicating facing at launch, to record a launch, and the notation (R) to record recovery.

> **Example:** *A starship's move written 2:2(T:3)[2](T:4)2 indicates that the unit began movement on facing 2 from the scattergram, moved 2 hexes straight ahead, turned to facing 3, expended 2 movement points in place to satisfy its turn mode, turned to facing 4 from the scattergram, and expended its last 2 movement points moving 2 hexes straight ahead.*

A fighter squadron's move written (L:3)5(T:2)1(T:1)1 indicates that its carrier launched it on an initial scattergram facing of 3, after which it moved 5 hexes straight ahead, turned to facing 2, moved one more hex, turned to facing 1, and then moved one hex straight ahead.

03.09 Tactical Level Movement Examples

03.09.01 Starship-vs.-Starship Movement

The Terran player begins the turn with three starships on the map: DD Wellington in hex 2031 (facing hex 2130); DD Lin Bao in hex 1832 (facing hex 1931) and SD Gorbachev in hex 2032 (facing hex 2131). Both DDs are speed 6 ships with a turn mode of 2; Gorbachev has a speed of 5 and a turn mode of 4. The Orion player also has three starships: BC Kalachav in hex 1223 (facing hex 1323), BC Hysertok in hex 1122 (facing hex 1223), and CA Talphon in hex 1022 (facing hex 1122). All have a speed of 6 and a turn mode of 3.

The Terran player has the initiative, so the Orion player begins movement by moving each starship straight ahead one hex (Kalachav to 1323; Hysertok to 1223; Talphon to 1122). The Terran player then expends the first movement point for each of his ships, moving Lin Bao to 1931 and Gorbachev to 2131 but leaving Wellington motionless (that is, expending one movement point in place).

The Orion player begins the second movement impulse by expending a second movement point for each ship. He moves straight ahead once more: Kalachav to 1424, Hysertok to 1323, and Talphon to 1223. The Terran player then moves his second impulse. This time, both Gorbachev and Wellington remain motionless (expending one movement point each in place) while Lin Bao moves to join Wellington in hex 2031. Both Terran DDs have now satisfied their turn modes by expending 2 movement points on the same facing, and the Terran player elects to turn them 60°, into hex 1230, completing the second impulse of the turn.

In impulse 3, the Orion player continues to move straight ahead: Kalachav to 1524, Hysertok to 1424, and Talphon to 1323. The Terran player responds by moving Wellington and Lin Bao forward into 2030 and expending a third movement point in place for Gorbachev.

The Orion player begins impulse 4 by moving his ships forward (Kalachav to 1625, Hysertok to 1524, and Talphon to 1424). All three of them have now more than satisfied their turn mode of 3, and Kalachav alters facing 60° to head into hex 1724. The other ships do not turn. The Terran player moves Wellington and Lin Bao forward to 2029, satisfying their turn mode a second time, and alters facing once more, this time toward hex 1928. Gorbachev expends a fourth movement point in place, satisfying her turn mode of 4, and alters facing into hex 2130.

The Orion player begins impulse 5 by moving all three ships straight-ahead 1 hex (Kalachav to 1724, Hysertok to 1625, and Talphon to 1524). The Terran player holds Wellington and Lin Bao motionless in hex 2029, expending one movement point each in place, and moves Gorbachev to hex 2130, expending her fifth and final movement point.

The Orion player now expends the sixth and final movement point of each of his ships, moving Kalachav to 1824, Hysertok to 1725, and Talphon to 1625. The Terran player cannot move Gorbachev (she expended her last movement point in the preceding impulse), but Wellington and Lin Bao move 1 point forward to hex 1928. As this is their sixth movement point, they have satisfied their turn mode yet again, and the Terran player alters their facing into hex 1927.

Movement is now complete, and the combat phase begins. Since the Terran player has the initiative, he chooses his first unit to fire and probably begins with either Wellington or Lin

Bao to take advantage of the destructiveness and high hit probability of their short-range force beam fire before Hysertok and Talphon blow them apart.

03.09.02 Fighter Launch/Recovery Example

The Terran CV Implacable, with 4 squadrons of prototype fighters, begins the movement phase in hex 1729 headed into hex 1728 and accompanied by 18 fighters from the carrier Argus that Implacable wishes to recover and rearm. Implacable has Advanced Maneuvering Two (27.10.01), which reduces her turn mode to 1.

On the first movement impulse, Implacable moves one hex straight ahead into 1728, followed by Argus's fighters. The movement point Implacable has expended satisfies her turn mode, and on impulse 2 she and Argus's fighters alter heading into hex 1627. On impulse 3, Implacable moves into hex 1627 and simultaneously launches her fighters, each with two items of external ordnance, facing into hex 1728. Implacable has expended a total of 3 movement points to get into hex 1628, "using up" 3 points of her fighters' movement, and the act of launching uses up an additional point. F0s with two items of external ordnance have a movement of 8, so Implacable's fighters have a total movement allowance of 8-3-1=4 movement points which they may begin expending in impulse 4 of the current movement turn.

On impulse 4, Implacable's fighters move into hex 1728 while Implacable continues her movement into hex 1527, still accompanied by Argus's fighters. Since she launched her own fighters on impulse 3, she may recover Argus's fighters on impulse 4 (and begin rearming them in the following movement phase). On impulse 5, Implacable's fighters move straight ahead into hex 1828 while Implacable moves straight ahead into hex 1426. On impulse 6, Implacable moves straight ahead into hex 1326 and her fighters continue straight ahead into hex 1929. On impulse 7, only Implacable's fighters move, continuing their course into hex 2029 and so ending their movement.

03.10 Boarding Movement

(See CRUSADE, boarding rules not recommended for use).

03.11 Military Drive Burnout (I Or J)

Military Drive systems are capable of burning out when run for extended periods during either tactical or strategic movement. Under normal circumstances, this will not be a factor in a tactical situation, since combat tends to be relatively brief. In ISW-4, the Alliance encountered a race that engined its heavy units with commercial engines in order to gain superior sustained strategic speed at the expense of maximum tactical speed. It is thus necessary to provide some additional explanation of just how I and J operate in sustained high-speed movement and to provide some somewhat more detailed mechanics to cover instances in which military engined ships find themselves in sustained movement against commercial engined

ones. For non-historical player campaigns, the 03.11.03.2 rules section must be considered OPTIONAL.

03.11.01   Military engines may be operated at either of two levels of output, tactical (full military power) or strategic (cruising speed). A given engine room generates its full listed speed when operating in tactical mode, but it is reduced when operating in strategic mode. The amount of reduction when operating in strategic mode depends on the type of engine in use. Military engines (I) generate one-half their nominal speed, while tactical engines (J) generate one-third. Fractions greater than 0.5 are rounded up (but not 0.5 itself). Any engine rooms that operate in Tactical Mode for extended periods are subject to overloads and "burnout".

A military engine, running in strategic mode, is still operating its engines at full power output, and is diverting most of the energy into maintaining a stable drive field rather than into propulsion. In effect, they are operating in a manner similar to commercial engines in this mode.

03.11.02   Military drives are subject to engine burnout if operated at "full military power" at the system or strategic scale (spare engine rooms can provide tow power). Commercial engines and Jump engines are designed for continuous cruising at maximum speed and may be run indefinitely at full power without damage.

03.11.03   Whenever a starship using military drives has exceeded its "cruising speed" at the system or strategic levels, it must make a checking roll on one d10 die for each movement point exceeding the "cruising speed" it has used during the period in question. Any roll less than or equal to the number of movement points that safe speed has been exceeded by indicates that a single engine system has failed under the strain demanded from it. Each engine system that fails must be marked off a different engine room, and may only be applied to active engine rooms.

03.11.03.1   A checking roll must be made once each 5 days (5 system turns, or one strategic pulse) in which the safe speed is exceeded for any length of time (tactical combats shorter than one interception turn are exempt). That is, once every 5 days in strategic movement, at the end of each such pulse of movement. The loss of an engine system in a drive room causes the strategic movement rate of the starship to be reduced, as damaged engine rooms may not be operated above the interception level.

Example: *A speed 6 CA with 12 I in 6 engine rooms is moving at full speed on the strategic scale (see 18.00). Half speed for the CA is only 3, so it is exceeding its maximum safe sustained speed by 6-3=3. Accordingly, at the end of the first week (7.5 days) of strategic movement, the owning player rolls 3D10 (1 for each excessive movement point), and any result of "1-3" indicates an engine has failed. He rolls 1,5, and 7, so one engine has failed and must be marked off the*

engine room of his choice. His maximum possible strategic speed has now dropped to 5, so his maximum safe sustained speed has become 5/2=2.5, which rounds down to 2, and he must now decide the new speed at which he will move. He may slow to 2 and make no additional checks, or he may continue moving at up to 5 (his new maximum possible speed) and continue checking for additional engine failures.

Whatever speed he chooses, he must immediately recalculate the strategic movement of his unit (since it can no longer move at the 6 his original calculations assumed) from the point it had reached when the system failed. He has completed one pulse of movement at speed 6 and notes that in one pulse moving at speed 6 on the strategic scale, he would have moved 5X24=120 hours at 5% of light speed, so he had covered 120X.05=6 light-hours and subtracts 6 LH from the original distance, then recalculates the time required to cover the remaining distance at his new speed, adjusting the times of his remaining warp transits, as well. (See 18.00 STRATEGIC MOVEMENT RULES.)

Using the strategic movement system from Sky Marshal #2, burnouts occur at the end of strategic pulses. Units that are forced to reduce speed simply change to the column on the pulse movement chart for their new speed for the next pulse of movement.

Units which are moving using the pulse movement chart do count pulses where no movement occurs on the chart for engine burnout, if they are moving at a speed which risks engine burnout. Note: It is specifically not allowable for units to change speed in mid-turn at the strategic level of play in strategic movement orders, for purposes of avoiding burnout rolls.

For example, if the speed 6 unit above was slowed to speed 5 after moving for one pulse, it will change speed at the start of the 2nd impulse. Speed 5 and 6 both move 1 StMP in the 2nd impulse, so there is no change yet. In the 3rd impulse, however, speed 5 does not move. A burnout check is needed at the end of the 3rd impulse, as the CA is still moving faster than its safe speed

03.11.03.2 OPTIONAL: During maneuvers in the vicinity of the enemy, it may become important to roll for engine failure more often than once per 7.5 days. Under this rule, a checking roll(s) must be made once each system turn in which safe speed is exceeded for any length of time. Roll d100 for EACH movement point that the safe speed is exceeded by. Any roll on a d100 less than or equal to the number of movement points by that its safe speed has been exceeded indicates that a single engine system has failed under the strain demanded from it. This method causes a 40% higher cumulative burnout rate than the per week method.

However, if this method is used, then the roll per 7.5 days need not be made, and therefore, the overall chance of engine failure will be lower for shorter operating times.

03.11.03.3 Small craft engines are down-sized I, not Ic, which limits small craft to a safe maximum speed of 1/2 their

maximum tactical speed when moving at any scale above the interception. (See 28.05: SMALL CRAFT CAPABILITIES TABLE.) Small craft may move at more than 1/2 speed above the interception scale, but must check for engine burnout after every 6 system turns. Any engine failure result on the checking roll indicates total, irreparable failure of the small craft's drive.

Note that GB drives are more robust than other small craft drives, which is why their cruising speed is 2/3 of their maximum speed rather than 1/2.

03.11.03.4 OPTIONAL: If using 03.11.03.2 to resolve engine burnout each system turn, you may wish to do so for small craft as well. Using the same procedure for starship engines, burn out occurs when any roll on a d100 is less than or equal to twice the number of movement points that the safe speed has been exceeded by. Any burnout indicates a complete failure of the small craft drive, irreparably.

03.11.04 Crew grade affects all engine failure rolls but any unmodified roll of 1 always indicates that an engine system has failed.

03.11.05 Units with military engines are sometimes run at strategic speeds greater than 1/2 but less than full, with one or more engine rooms inactive to offer some protection from lost time. For example, had the BC above been moving at speed 4, it would have been using only 4 of its 6 engine rooms and traveling only 1 MP above half speed. Only one die roll per week would have been required, and had an I been lost, the owning player could have marked it off one of the engine rooms he had been using, activated one of his two "reserve" engine rooms, and continued moving at speed 4.

03.11.05.1 Engine systems that burn out after being overstrained cannot be repaired using the emergency repair rules (05.02). Only a shipyard or machine shop module using the shipyard repair costs and time schedules may repair a burned out engine system.

03.11.06 Any ship can mount any set of engines including all four types at the same time. Unless surprised, a starship may activate any number of engine rooms at the end of the combat phase (not movement phase). Engines are shut down after initiative is determined, before warp transit. All active engine rooms must be of the same type, or the ship will be torn apart by the interaction between the different drive fields. This means that to transit and activate a different set of engines will take quite a while and is likely to get the ship killed by missiles."

03.11.07 A starship which shuts down (deactivates) all of its engines has a 360° degree field of fire but loses the missile interdiction of its drive. All fire directed against the starship is at normal to-hit probabilities.

04.00 Combat

The combat phase of a tactical turn occurs after all movement is complete. During the combat phase, each player may fire any or all of the weapons aboard his starships, bases, space stations, planetary fortresses, etc., at targets of his choice.

The combat phase is made up of combat impulses (or "pulses"). Each combat impulse is a single exchange of fire made up of all fire from a single unit or datalinked group of units by each player.

All of the weapons of a given unit are fired at the same time, although they may be fired at different targets. Remember that each fighter squadron is considered "one unit" for fire sequencing as well as movement and when datalink (04.15 and 27.05.02) is used, datalinked groups of units may fire as single units. A datalinked ship may fire as a single unit in a separate combat impulse without dropping the datalink (or losing the datalink effects of Dxz, and so on.) It does not matter whether a single ship fires first or the remainder of the datagroup. See 04.15.01 for information about the "lead ship".

04.01 Order of Fire

The player with the highest initiative chooses one unit and fires its weapons, followed by all other players in order of initiative. When all players have fired one unit each, the first player fires his second unit's weapons. This process continues until all players have had the opportunity to fire all of their units.

A unit or datagroup may choose to be designated as having fired without firing. Units without the chance to at least damage a legal target may not be so designated (For example, Freighter with no weapons, D with no targets, or D already used in interception mode, etc).

04.02 How To Engage Large Units

A unit's weapons may be fired in any desired sequence. Since damage is immediate, this may mean defensive systems can be knocked out before the weapons they might affect arrive. The firing player must declare all fire directed upon a given target by a given unit (or datagroup) in a single combat impulse and the order in which he will fire his weapons before firing any weapons at it.

The range of a shot is determined by counting the hexes between the units, including the hex containing the target but not that containing the firing unit. (That is, if both units were in the same hex, the range would be "0," not 1). Next, cross-index the weapon type and range on the PROBABILITY OF HIT table (see 28.00 PLAYER INFORMATION TABLES), and the number at the intersection of these columns is the "to hit" number of the weapon. Roll one 10-sided die (1D10); if the result is equal to or less than the "to hit" number, a hit is scored. The probability of hit may be modified by tactical considerations

(such as evasive maneuvering or defensive ECM), and all such modifications must be made before the die is rolled.

When a hit is scored (see 04.02.01), consult the WEAPONS DAMAGE table (see 28.00 PLAYER INFORMATION TABLES) and cross-index weapon and range a second time to determine the weapon's damage value at that range.

Fighter squadrons fire in exactly the same fashion. Each squadron is treated as one unit for purposes of firing initiative, but the fighters within the squadron may fire at separate targets without accuracy penalty. All missiles fired by a fighter squadron at a single target in a single firing impulse are considered one salvo for purposes of point defense (see 04.19).

04.02.01 Open Dice System

When rolling against "to hit" or "interception" numbers, Starfire uses an "Open Dice System".

The following applies to both "to-hit" number and interception numbers of all types (even base unmodified 10s on the to-hit table, like beams at range 0, can miss).

If the adjusted number is 10 or more and you rolled a 10 then, you have to make another roll to see if you actually hit or intercept.

Method:

Subtract 5 from the adjusted number to determine the reroll number. An adjusted 11 would mean that, after rolling a 10 on the die, that you have to roll 11-5 = 6 or less on the reroll. This reroll is limited to a maximum of 9, a 10 cannot intercept/hit on the reroll.

If an adjusted number is less than 1 and a 1 is rolled, then you have to make another roll to see if you actually hit or intercept.

Method:

Add 5 to the adjusted number to determine the reroll number. An adjusted -1 would mean that, after rolling a 1 on the die, that you have to roll -1+5 = 4 or less on the reroll. This reroll is limited to a minimum of 1.

04.02.02 Weapons fire allocation

Each group of interceptable weapons fired in a sequence is resolved as a single salvo for point defense purposes (or O overload); UNLESS that sequence is interrupted by weapon fire that can NOT be intercepted. When a volley of interceptable weapons is fired, resolve all hits and then resolve all interception attempts (or O overload) before any damage is allocated from the weapons. This always applies to weapons that are interceptable (by any means) even if the target lacks such means.

Weapons which create more than one volley for purposes of point defense resolution have their fire resolved in a separate step, but it is treated as above for purposes of allocation. All

point defense resolution (including Dk) against a volley must be resolved before any damage is allocated from the volley. Uninterceptable weapons may be timed to hit before or after each interceptable volley and damage is done as each weapon hits at the attacker choice.

All point-defense rolls for a single volley must take place one after another. This means that while point defense for that volley is being resolved, no other fire (whether from a second volley or from weapons not interceptable by point defense) may be resolved. Fire from non-interceptable weapons may be resolved before or after all point-defense rolls, for each interceptable volley, as the firing player had allocated his fire (In effect, this rule prevents the attacking player from firing non-interceptable weapons in the middle of a missile volley.)

04.02.03 Optional rule Some hits do more damage than others because they come in just right (or just wrong, depending on whether you're the shooter or the shootee). To reflect this, roll a second D10 for any hit which scores its first point of damage inside the target's shields and armor. On a roll of 1, it is a "critical hit" and its damage value is doubled.

Primary beam and needle beam critical hits inflict their additional damage on the next system to the right; if this system has already been destroyed or the hit "walks" off the end of the control sheet, the extra damage is ignored (see 27.07.05).

There is no "wrong" way to hit shields or armor. These defensive systems are intended solely to absorb damage, and they do it quite well. If shields or armor absorb, even one point of damage from a hit, that hit cannot be a critical hit and none of its damage points can inflict double damage. On the other hand, the sequence in which hits come in may mean that one shot in a salvo takes out the last remaining shields or intact armor, permitting shots scored after it to inflict critical hits.

When critical damage is allocated, it still counts as damage from the type of weapon which fired (i.e. If an energy beam is fired, then the additional damage still skips H, Q, Mg, etc). The same is true for primaries and any other weapons.

There is no such thing as a critical hit on small craft or fighters, since any hit automatically kills them.

04.02.04 Destruction of Large Units

A starship, BS, SS, PDC, or asteroid fort is destroyed when all of its systems are destroyed. So long as a single system remains intact, the unit is not destroyed. Remember, however, that the S code on the control sheets of large spacecraft represents bubbles of immaterial force around the unit, not part of its physical structure. Certain weapons can inflict damage without first knocking down the shields, which may result in a control sheet consisting solely of S codes and marked off systems. In this instance, the unit is considered destroyed, even though the shield generators (not indicated on the control sheet) have not been specifically destroyed.

Unit destruction is announced when it occurs. Remember that each firing unit/group must allocate all weapons fire before resolving any weapons fire.

04.03 How To Engage Fighters and Small Craft

Whenever any weapon is fired at a small craft or fighter, consult the Fighter Kill Table (see 28.00 PLAYER INFORMATION TABLES). Cross-index the weapon and range as for any other weapon and roll 1D10 against the indicated "to hit" value (See 04.02.01). Any hit destroys any small craft or fighter. Note that each fighter squadron counts as one target for targeting restriction purposes (see 04.05) but that each fighter must be killed individually. If multiple weapons fire at a squadron and score more than a single hit, each hit destroys a separate fighter within that squadron.

Small craft, on the other hand, move as individual units, and each small craft is a separate target for fire control purposes.

04.03.01 Strikewave Targeting

Fighters (and GB) squadrons are treated as one target each, but in most battles, the following procedure must be used, to reduce the bookkeeping needed to track large numbers of fighter/GB squadrons. Normally a separate line is needed for each squadron; however, most squadrons are usually armed identically. Under this procedure, you only need a line for each type of squadron. The squadrons may differ by generation, grade, or weapons (though within squadrons, individual fighters may carry different weapons, so long as the distribution of weapons within each squadron is identical for all squadrons of a given type). A "strikewave" is all fighter squadrons or all GB squadrons facing a given direction in a single hex.

The following is example of a strikewave record sheet that allows for some different types of fighters and loads in the same squadron. The number at the end gives the number of squadrons and their grade:

Fighter Quantity and Type	Load	Fighter Quantity and Type	Load	(Squadrons & Grade)
#1 F2R	3 fM2	#2-6 F3(2L)	4 fM2	(12 average)
#1-6 F3(G/L)	4 fRAM			(3 crack)
#1-2 F4(G/L2)	f?, 5 fM3	#3-6 F4(3G)	f?, 5 fM3	(6 green)

04.03.01.1 If a unit selects squadrons as targets, all of the squadrons that make up a given strikewave are treated as one entity for the purpose of engagement. For this purpose, each increment of targeting (Mx) allows up to 6 fighters to be attacked until killed, although they need not be organized into squadrons of 6 fighters. GB are treated in a similar manner with 4 GB per "target". The usual penalties apply (04.05.02) if targeting limits are exceeded. For example, if the attacker only designates 4 targeting increments to an attack on fighters, then he is limited to no more than 24 hits, and this is before Survival Rolls (04.03.03) are made. Individual targeting modifiers, such as evasive maneuvering, are not used when squadrons are engaged under this rule; instead, the individual unit's Survival Roll is modified.

04.03.01.2 When a strikewave is engaged, the attacker fires all weapons designated against the strikewave and determines the total number of hits. All "to-hit" modifiers EXCEPT the targets' ECM and evasive maneuvering are applied to these rolls. EM and ECM are handled in 04.03.03 instead. Each hit scored kills one unit, with the following restrictions:

1. The defender randomly selects the type of the attacked squadron from among the strikewave. For the example above, a deck of cards with 12 diamonds, 3 spades, and 6 clubs would be a good method of selecting the squadron, but players may use any method they find convenient.
2. A squadron of the type selected which has not fired that turn must be attacked before a squadron that has fired, unless the attacker specifically indicates otherwise. Unfired squadrons with less than the full complement of units must be selected before full squadrons may take losses.
3. Losses, within a squadron, must be taken from units loaded with expendable ordnance (missiles) before units that do not have such loads, unless the attacker specifically indicates otherwise. The defender selects the individual unit within the squadron and then applies 04.03.03 to see if the unit is "saved". Losses are taken from the same selected squadron until all units within that squadron are destroyed. If more hits remain, another squadron is selected using the procedure above.
4. If a strikewave has more than one type of fighter (I.e. F1 and F2), the attacker may choose to attack specific types of fighters before other types. Even if squadrons have multiple types in them, all fighters of the chosen type would be attacked first. Once all fighters, in all squadrons of the strikewave, of the selected type are destroyed, then the next selected type of fighter will be lost. As a general rule, if the attacker can detect the difference between fighters (type, ordnance fired/not fired, type of ordnance firing, higher speed USED in a previous turn [this indicates unloaded XO racks]), he can target that type of fighter. The attack may choose only a SINGLE specific item to target per attack.

04.03.02 Engaging Squadrons with Point Defense (i.e. GBs).

Squadrons with point defense pose a problem for strikewave targeting, because you must score guaranteed kills on all of the GB in a squadron. This means either using a lot of extra shots, in order to ensure hits, or using average point defense results. This rule, for average point defense results, must be used when using strikewave targeting against GB and similar units with point defense systems. As it is generally a good policy for the attacker to spread out the missile attacks as much as possible, these rules assume that is happening.

The attacker groups all missiles into one large mass and chooses the number of squadrons to fire at. Modifiers for EM and ECM are handled in 04.03.03 instead unless all GB have the same modifier. The attacks are rolled or averaged to determine the total number of kills on all "targeted" GB squadrons from the firing unit/datagroup.

As all GB carry the same point defense system, we will be concerned with that system only. Determine the level of saturation against the entire group by dividing the number of missiles by the number of GB.

Exceptions: If the number level of saturation is below 1, use the 1 missile line from the table and use the fraction as the "number of missiles" below. If the number is 6 or above, all GB are automatically destroyed. If the number is between 5 and 6, use the 5 missile line on the table and save the fraction.

Now multiply the Amount of GB, for each Grade, by the number of missiles and by the percentage on the table below. Now take the first digit after the decimal point and roll 1d10 against it. If the die roll is equal to or less than that number, round the number up to the next whole number. If the roll is greater than the number, then drop the fraction. This is the number of GB destroyed of that grade. Now make any applicable Save Rolls. Do this for each Grade.

If the number of hits per GB was between 5 and 6, take the fraction saved above and multiply it by the number of surviving GB in each grade (rounding up or down with a die roll, as above); this is the number of additional GB in that grade that are destroyed.

PERCENTAGE OF GB KILLS AVERAGED BY MISSILE BASED ON SQUADRON GRADE					
PER GB	GREEN	POOR	AVERAGE	CRACK	ELITE
1 missile	30%	20%	10%	5%	4%
2 missiles	29%	22%	14%	7%	5%
3 missiles	27%	24%	18%	12%	6%
4 missiles	23%	21%	18%	13%	8%
5 missiles	19%	18%	17%	13%	8%

Example 1: *The Strikewave has 24 Poor GB (6 Squadrons), 60 Average GB, and 20 Crack GB. The attacker has fired 100 missiles of which 59 hit. 59 / (24+60+30) = .517 hits per GB. For the 24 Poor GB, the formula is 20%*.517*24 = 2.4816 GBs destroyed. To determine the rounding we roll 1d10 vs 4 (digit after the decimal) and a roll of 4 or less means that we round up for 3 poor grade GB killed. For Average, 10%*.517*60 = 3.102 for either 3 or 4 GB kill depending on a 1d10 roll vs 1. For Crack, 5%*.517*20=0.517 which is either 0 or 1 GB killed. . Now make any applicable Saving Rolls.*

Example 2: *The Strikewave has 12 Green GB, 16 Average GB, 12 Elite GB. The attacker has fired 250 missiles of which 212 hit. Average saturation is 212/ (12+16+12) = 5.3 hits per GB. So, we use 5 as the number of hits and save .3 to use later. For the Green GBs, we get 19%*5*12 = 11.4 kills (which means a die roll of 4 or less will kill all the Green GB). For Average, 17%*5*16 = 13.6 for 13 or 14 kills. For Elite GB, 8%*5*12 = 4.8 or 4 or 5 GB killed. Clearly, grade makes a big difference, as it should. HOWEVER, we have 0.3*
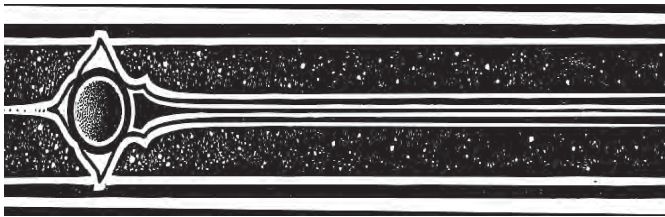
missiles per GB that exceeded the point defense. Therefore, make 1 roll for each remaining GB vs 3 (number after the decimal). Each roll of 3 or less destroys a GB. Now make any applicable Saving Rolls.

04.03.03 Individual Survival Roll

Fighters and Small Craft only take one hit to destroy, but it is possible to evade a hit and survive. When these units operate as individuals, it is easy enough to apply this survival chance as a "to hit" probability modifier, but when engaging squadrons of units under 04.03.01 this is not possible, since the individual units may have very different modifiers.

The base individual survival roll for any current fighter or small craft is "0", requiring a roll of this or less on a d10 in order to survive. Without modifiers, no survival roll is possible. Each -1 of Evasive Maneuvers (03.03) and f? (27.14.03) allows this roll to be reduced by 2. For example, a fighter spending 2 MP to evade for -1 which mounts an f? system has a -4 modifier on the individual survival roll, which will allow it to survive if it rolls a 4 or less.

GB only get the survival roll when attacked on the Fighter Kill Table (28.03). When attacked as starships, the squadron attacked is first selected, and the modifiers applied to the to-hit roll of the weapons used against them, rather than allowing a survival roll.

04.04 Recording Damage Points

When a unit larger than a fighter or small craft takes damage, the damage must be marked off the unit's control sheet. Damage is marked off immediately, and any system that is destroyed before it is employed in the current combat phase may not be used. This has the following effects: ECM systems destroyed immediately cease to have effect. Tractors and pressers links are broken when the involved systems are destroyed. Point defense systems cease firing, even if additional missiles are attacking. Drive field interdiction, and evasive maneuvering, is lost when the last engine room fails. "Shields down" allows special weapon effects', including needle and primary/tractor precision attacks. Life support failure (loss of last Q or Lh system) causes a temporary loss of two grades. "Shields down", "streaming atmosphere", and "drive field down" are announced. Detailed scans of shields-down units, using long-range sensors (04.08), may be performed. Destroyed units are announced, and their counters removed.

Damage points are scored by marking off systems (each damage point destroys one system), skipping any previously destroyed and marked off systems. Different weapons score damage points differently, and these differences are noted under the weapon's description in section 27.00. When a rule refers to a system being skipped (or ignored, etc), the rule applies to all future types of that system unless the new system or a weapon rule specifically mentions that it doesn't apply. The most common weapon systems score damage as follows:

1. Weapons with warheads (guns, missiles, and mines) destroy systems from left to right, starting with "shields" (if any) and skipping none.
   a. It should be noted that the damage values assigned to *STARFIRE* missiles are far lower than they should inflict with a direct hit. This is because they don't score direct hits, since starship drive fields (or the station-keeping drive of a BS or SS) interdict physical objects, causing the warhead to explode some distance from the hull.
   b. If, however, a starship, BS, or SS loses its drive field, it also loses the drive's interdiction effect. Thus any missile, gun hit, or mine that inflicts non-shield damage on a unit without a drive field inflicts five times normal damage. (That is, a standard missile would inflict 5 points and a capital missile would inflict 10.)
   c. Kamikazes and ramming starships multiply non-shield damage points by 5 if their victim has no drive field.
   d. Ships mounting Tactical Engines (J) have a 3x damage multiplier from warheads and ramming even with the drive field active, which is reduced if active Drive Enhancers (Je-series) are present. This damage multiplier applies to non-shield damage only (see 31.00).
2. Force beams inflict damage in the same pattern as warheads, but their damage value is never increased by the loss of a drive field.
3. Energy beams inflict damage from left to right, destroying systems in order, but ignore (skip over) armor, bulkheads, cargo holds, crew quarters (Q not Qs), magazines, and hangar bays.
4. Laser beams cause systems to be marked off from left to right, destroying the systems in order, but ignore shields.
5. Primary beams hit systems from left to right skipping shields, armor, bulkheads, cargo holds, and previously destroyed systems, even those destroyed in the current volley. Each damage point inflicted destroys one system of the next five intact eligible systems after the shields and armor. Roll 1D10 and divide by 2, rounding fractions over 1 down, for each primary hit to determine which of these systems is hit and mark off the indicated system. If the die-roll indicates a hit "off the end" of the control sheet (that is, the die-roll is higher than the

number of intact and eligible systems), the primary beam is considered to have missed or struck an already-destroyed system and the "hit" is ignored.

04.04.00 Weak Hulls

Freighters (28.07 note (1)) and space stations are not able to take internal damage nearly as well as military hulled units. Any internal damage (damage scored inside shields or armor) is doubled, unless the weapon does precision damage (primaries, needle beams, or ADMs). Bulkheads, as internal armor, require 2 points of this doubled damage to be destroyed, with any odd point scored against them ignored at the end of a combat impulse. Halve all collapsible damage (04.04.04) rolls (FRU) when using doubled damage.

04.04.01 Engine Room Damage

Each engine system absorbs one point of damage, including those in engine rooms that require more than one engine system. If some but not all of the engine systems in an engine room are destroyed, it always becomes useless for movement above interception scale, but may remain usable for "bursts" of tactical speed in combat (see 03.11). Loss of a half-engine does not affect the operation of a full-sized engine in the same engine room at tactical scale.

04.04.01.1   At the end of each combat impulse in which an engine room on a starship has been damaged but not destroyed, the owning player rolls percentile dice to determine if that engine room remains operational. The chance of remaining operational is equal to the percentage of the original full-sized engine systems that remain undamaged in that engine room. If the dice roll is greater than this percentage, the engine room must be immediately shut down, but the inactive engines will still absorb damage normally.

 If the roll indicates that the engine room has failed to remain operational, it cannot be activated again until at least one engine system in it has been repaired. A new roll is needed to activate it after damage is repaired. If a roll has been made which indicates that the engine room remains operable for tactical movement, no further checking rolls are needed for it to remain operable unless it takes additional damage.

> **Example:** *A CA engine room with two I has a 50% chance of remaining operational if a single I is destroyed. A SD engine room with 4 I has a 75% chance of remaining operable with the same damage, or a 25% chance of remaining operable if 3 of its 4 I were destroyed. If a starship with 1 destroyed I in an engine room used the engine room for a full turn worth of interception-scale movement (60 tactical turns), a second I would be destroyed by the strain to which the engine room was subjected.*

04.04.01.2   Damaged engine rooms which are run at tactical or interception scale will lose one additional engine system per 60 tactical turns (per interception turn) in each damaged

engine room that is used. As each additional engine system fails, another roll must be made to determine if the engine room remains operational.

04.04.02 Ramming Damage

Should either participant in a ramming attack survive, damage is marked as follows.

1. Any BS, or AF rammed by a starship suffers twice the total damage points indicated in rule 03.07.03. Any SS rammed by a starship suffers four times the total damage points. Damage is treated as if a warhead had inflicted it. BS, SS, and AF never lose drive field interdiction due to ramming.
2. In addition to normal damage (see 03.07.03), a starship rammed/ramming by another starship loses a single engine system per operable engine room including operating tug engine rooms, up to the total number of operable engine rooms aboard the other vessel. A ship with only an operable tug engine room may not use that engine and therefore has no drive field. Engine rooms losing an engine must roll for shutdown under 04.02.04.1.

Example: *An ES with only 3 engine systems rammed a CA with 6 engine rooms, each of 2 engine systems, only the first 3 operable engine rooms aboard the CA would lose an I while the ES would lose 6 engine systems (it probably only has 3 such systems). If rammed by an DD with 7 engine rooms of 1 I each, the CA's would lose 1 engine in each of its engine rooms. Note that it would not lose 2 engines in the first engine room. If rammed by any starship with 6 or more operable I or Ic, the CA would lose 1 I in each engine room. The DD would lose its first 6 engine rooms. Engine rooms losing an engine must roll for shutdown under 03.11.*

   a. Each engine hit reduces the total ramming damage by one point; the remainder are inflicted normally from left to right, starting with the shields.
   b. The total amount of damage done to the engines on any single ship may not exceed 1/2 of the total damage done in the ramming (FRD).
3. Fighter and small craft drive fields are less powerful than those of starships are. In effect, a kamikaze is simply a very powerful missile. The target unit's drive
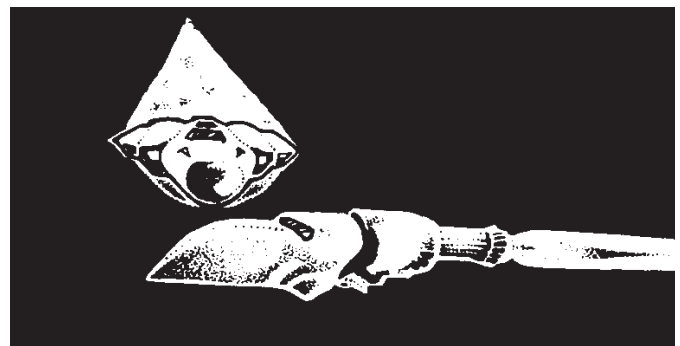
field does not go down, and all damage points are marked off normally from left to right on the control sheet.

4. Rammed units without drive fields take 5 times normal damage but inflict only 1/2 normal ramming damage. (If there is no opposing drive field to burn it out, the ramming ship's drive field gives it some protection ... though probably not enough.)

04.04.03 Large Explosions

When a starship or other unit is destroyed while carrying antimatter warheads, all of the warheads will detonate. If the unit was a large unit destroyed as a result of a ramming action, the other unit involved in the ramming will suffer some effect from the detonation of the warheads. The damage will be considerably reduced in power, for several reasons, including the lack of directional focus in the explosions causing much of the energy to miss the target, and the dispersion of the warheads away from the target as the exploding vessel is ripped apart. If the unit is a small craft, it must detonate the carried warheads just outside the enemy's drive field for the warheads to work properly, meaning that a small craft that makes a successful ramming roll must choose between detonating its warheads and actually ramming the target. Therefore, the ramming player may choose to use this rule for large explosions or may choose to inflict 1 point of damage per boat bay point of the small craft. A small craft that fails its ramming roll may still detonate its warheads, with a reduced effect (see below).

04.04.03.1 Large Explosions Table

Number of Warheads Exploding	Damage Multiplier
1	x1
2-6	x2
7-18	x3
19-50	x4
51-136	x5
137-372	x6
373-1014	x7
1015-2758	x8
2759-7500	x9
7501 and up	x10

NOTE: When ramming, all small craft warheads are pointed toward the front of the craft so that the shaped charge is toward the target. If they attempt to detonate without a successful ramming roll, then the damage is only 10% of the above (FRN). The same reduction of 10% also applies to any Mg or H explosions of antimatter warheads.

An ast filled with 400 fRAAM causes 6x7=42 points of damage when it rams. If exploded without a successful ramming roll, the ast will only cause 4 points of damage.

When missiles of differing strength explode, the damage per warhead is averaged (FRN). I.e. 75 SM-b and 130 CM-b explode. Average strength is (75*3+130*6)/(75+130)=4.9 or 5. From the table, 205 warheads have a 6 multiplier and the total damage is 5*6 or 30 points damage but if exploded in an H or Mg the damage to an enemy rammed would be an additional 3 points damage.

04.04.04 Collapsible Systems

Certain types of systems are fragile and if they are mounted in a continuous chain, damage will collapse them in succession. Whenever a point of damage is inflicted on an unbroken chain of collapsible systems, roll 1D10, the result is the total number of "collapse points" inflicted. Collapse damage is applied starting at the first collapsible system, and will always destroy at least one system no matter what is rolled. Certain types of systems require more than one collapse point to destroy. Any non-collapsible system, like B, or any systems that receives less than the required number of collapse points to destroy it (unless it is the first system in the chain) is unaffected and absorbs those collapse points striking it.

Cargo Holds H require 1 collapse point to destroy, Magazines Mg, Hanger Bays V, and Quarters Q are tougher than H and require 2 collapse points to destroy. Collapse points can not damage any other systems.

> **Example:** *If a starship mounted 30 H in two unbroken chains of 15 each, separated by a single B, and took a range 2 force beam hit on its 1st H, it would suffer a total of 3 points of damage. The firing player, informed that he has hit an H, rolls 1D10 for the first damage point, and rolls a 6, so the defending player marks off the first 6 H. The firing player rolls a 7 for 7 more destroyed H. He then rolls a 9 for the 3rd damage point, but since there are only 2 H left in the contiguous chain, only those 2 H are destroyed, and no damage is applied against the next system in line, despite 7 remaining collapse points.*

04.04.05 Damaging Large Systems

Some systems require more than 1 damage point to destroy; however, the 1st hit always prevents a system from functioning. SYx take 10 hits and SYM and MS take 3 hits to destroy.

The cost to repair a partly damaged system is equal to the percentage of the system that was damaged. The percentage of hull spaces that were damaged also must be repaired using repair capacity to do so.

04.04.05.1 Each point of damage to a system causes damage equal to percentage of the system destroyed. This percentage is multiplied by the system cost to determine the cost to repair the system, by the HS of the system to determine the amount of hull spaces that need repairing. For SYx, SYMx, and MSx, it also determines the damage done to all units/systems under construction, refit, or repair in the damaged system. Compute damage to large units (i.e., ships, bases, etc.) under construction in a SYx as a percentage of construction cost completed to date (rather than in hits, as in the normal combat system). The construction cost to date of any unit is

figured as the total construction cost multiplied by the percentage of the unit that would have been completed by the end of the month. Repairing and refitting large units both use the full construction cost of the unit after the completed refit/repair.

Example 1: *Repairs (by another SYx) to a SYx that had taken 3 hits (30%) of damage would cost 30% x 1/3 x 400 = 40 MC for the system itself, plus 30% x 80 HS x 1/3 x 2.5 = 20 MC for the hull.*

Example 2: *If a DD of 30 HS and costing 450 MC, has had 18 HS completed. Then each hit destroys 10% of the completed HS or 18*10% = 1.8 HS (FRU after totaling). The amount completed is 18/30 = 60% of the 450 MC or 270 MC. The 2 hits cost 1/3 (repaired by SYx) of the 20% of 270 MC damaged or 18 MC to repair. It would also take 18*20% (FRU) = 3.6 or 4 HS of SYx capacity to "re-build". Since repairs are at normal rates, 4 HS of capacity would be used the next turn repairing the DD and then the construction could continue. If the 30 HS DD above was being refitted from costing 450 MC to 600 MC and the refit cost was 190 MC, the DD would use the 600 MC figure to determine the amount of damage needing repair, not the 190 MC nor the 450 MC.*

04.05 Targeting Restrictions

The targeting ability of a spacecraft depends upon three major considerations: sensor range (you cannot shoot targets invisible to you); numbers of weapons (you cannot engage more targets than you have the physical ability to shoot at); and the sophistication of your fire control (specifically, of its ability to track multiple targets).

04.05.01 Detection

You cannot shoot what you cannot see. The fields of fire defined in 04.06, below, reflect this fact, but the range of a unit's on-board sensors also restricts its targeting ability. Spacecraft larger than fighters or small craft have an inherent detection range of 20 tactical hexes; across that range, they can identify targets as to type, size, engine power, etc., and provide fire control data to their weapons. However, the presence, but not numbers of, starships, bases, SS and gunboats may be detected at 30 hexes. To see (and so engage) targets at ranges greater than 20 hexes, a spacecraft must mount long-range sensors (Xr; 27.05.05).

04.05.01.1   Units larger than a gunboat without Xr cannot engage fighters or other units on the Fighter Kill Table (28.03) with any energy weapons (except lasers) unless datalinked to a unit which does mount Xr. Small Craft sensor ranges (28.05) and Fighter sensor ranges (28.04) are generally shorter than those of larger starships as their onboard systems are less capable. The unmanned SBMHAWK pod (27.11.10) and IDEW have a detection range of 20 tactical hexes.

04.05.01.2   Any unit may use the sensor capabilities of any other unit to which it is datalinked. A unit that is datalinked to another unit that mounts long-range sensors of any type not only has the full sensor range they provide, but is considered to "mount long range sensors" for purposes of weapons and other systems which require them. Exceptions are Needle Beams (27.10.10) and Minesweeping (27.08.05). Fields of fire (04.06) apply to sensor information transferred through datalink; that is, if a ship wishes to use the long range sensors on a 2nd ship to target a unit that is in the blind spot of the 2nd ship, it cannot do so because the sensor information doesn't include the intended target. Nor can the 1st ship use the sensors of the 2nd ship to target units in the 1st ship's blind spot (this includes datalinked point defense).

04.05.01.3 Long Range Sensor Capabilities Table

DETECTION OF	PRESENCE	QUANTITY	ENGINE #S AND TYPE	SIZE AND CLASS	DETECTION WITHOUT XR
Ships (F1,CV)	6 SysHex	1 SysHex	60 TacHex	40 TacHex	30 TacHex
GunBoats	6 SysHex	1 SysHex	--	40 TacHex	30 TacHex
Bases, SS, AF	1 SysHex	60 TacHex	60 TacHex	40 TacHex	30 TacHex
Small Craft	24 IntHex	40 TacHex	--	30 TacHex	20 TacHex
Courier Drones	in SysHex	40 TacHex	--	--	Never
Fighters	24 IntHex	40 TacHex	--	30 TacHex	20 TacHex
Pods $$	24 IntHex	40 TacHex	--	30 TacHex	20 TacHex
Inactive or Engineless Objects**					
Ship, SS, BS, AF	60 TacHex	60 TacHex	--	30 TacHex	20 TacHex
PDCs	60 TacHex	60 TacHex	--	30 TacHex	0 TacHex
GunBoat	40 TacHex	40 TacHex	--	20 TacHex	15 TacHex
Small Craft	30 TacHex	30 TacHex	--	20 TacHex	15 TacHex
DSB-L, IDEW	10 TacHex	10 TacHex	--	**	1 TacHex
Mines	1 TacHex		--	N/A	0 TacHex
Mine Explosion	20 TacHex	--	--	--	20 TacHex

Shields up, tractor usage, or streaming atmosphere: detect at 60 hexes with Xr, 20 hexes without.

* This replaces 19.01 detection of PDCs.

** Only DSB-n and active DSB-?2 can be identified by type/generation determined. All other DSBs look exactly the same.

SysHex: System Hexes

TacHex: Tactical Hexes (4 TacHex = 1 light second)

IntHex: Interception Hex (1 IntHex = 15 light second)

Inactive ships large units with their drive fields off. Inactive SC are small craft with the drive field off.

Asteroid Forts are detected like BS.

Active DSB-n and DSB-ncd are detected at 48 LM (4 SysHexes) with Xr and 12 LM (1 SysHex) without. Active DSB-?2 are detected at 15 TacHex. All DSB can be deactivated, and when not active, are detected as DSB-L. Any friendly unit can deactivate or activate most types of DSB, via communications. DSB-L, IDEW, and DSB-?2 can only receive commands from a DCS.

1. SBMHAWK3, SBMHAWK4, and DPODs are identical in outward appearance.
2. This applies to pods with active drives, and to pods which are being towed on tractor beams. Inactive pods, including those that have already fired, are detected as inactive small craft.

General rule: If an object has no drive field, then quantity can be determined at the same time as detection.

04.05.02 Tracking Abilities

All units have an inherent tracking ability of one and may fire all of its weapons at a single target without penalty. NOTE: Firing at a hex (like when using AMBAMs) does not count against targeting limits because these attacks have little targeting involved. Hex type attacks do not receive the 04.05.02.2 penalties.

04.05.02.1   A single fighter may target only a single unit of any type, but each fighter of a squadron may engage a single separate target. A small craft's (including GB) external ordnance may target only a single unit of any type, but its internal weapons may simultaneously fire on as many targets as they wish. Additionally, all small craft equipped with point defense may use that against other target(s).

04.05.02.2   Large units may fire on as many target as they wish. However, if the unit exceeds its targeting ability including any bonus due to Multiplex Tracking of any type [Mx (27.04.05), Mi-x (27.11.06)], it suffers a penalty of -4 to the hit probability for all targets engaged simultaneously. Against targets that are engaged on the Fighter Kill Table, the penalty is only -2. Any datalinked group of large units uses the fire control from one unit in the group, selected at the time of firing, using the multiplex tracking capability of that unit.

04.05.02.2.1   Multiplex tracking systems of any type provide the ability to engage targets in addition to the one unit that may normally be attacked without penalty. Each such system adds a specific number of targets which may be tracked, and all of the multiplex tracking systems of any type mounted on the same unit are cumulative and may be combined into a single total for target selection purposes. For example, a HT10 space station may have 6 installations of M6, 8 installations of M3, and one of Mi-1, which provides (6x6) + (8x3) + (8) = 68 additional targets, allowing 69 units to be fired on without penalty. Note that if the SS fires at 70 units, it suffers the penalties in 04.05.2.2 to all 70 targets it fires at, not just the 70th target.

04.05.02.2.2   All Courier Drones, Small Craft, SBMHAWKs (pods), Buoys, etc., are INDIVIDUAL units for purposes of multiple target selection. Only SQUADRONS (both fighter and gunboat) are targeted as a single unit among all of the small craft/fighter units (see 04.03 and 04.05).

04.05.02.3   Ground bases on any planet with a high-tech population larger than a colony (see 15.01) may draw on sufficient scanning capability from the planetary tech base to track and engage any number of targets without hit probability penalties.

04.05.03 Identifying the Nationality of a Unit

IDENTIFICATION, FRIEND OR FOE (IFF): A coded transponder system that identifies a unit as "friendly" in response to a coded interrogation signal. All drive fields are basically the same and since that is how ships are detected, tracked, and targeted by, a method was needed by navies to prevent fire upon one's own ships. The IFF of airborne craft was adapted to space use. The IFF signal can be detected of at range of 60 tactical hexes. To a race with the proper electronic codebook, the signal can tell what ship is approaching. Military allies and partners will share "friendly" IFF codes, usually somewhat different for each empire, to allow them to pass through automated defenses, while Trade Intercourse and lesser relationships (see 17.02) do not and will not be identified as "friendly".

To prevent the enemy from gaining use of codebooks, the codes are changed frequently and are one of the priority items destroyed when a ship is being captured. Under 22.01.02.4; a roll of 96 or better gets the enemy the IFF codebook for the rest of the month if the ship failed to destroy its records (though of course the enemy's codes will be changed immediately if their capture is learned of--or even suspected).

There are four methods of determining the race and/or class of an approaching ship. IFF, which will determine the race of any same or allied race's ship; capture, which gives all information; scanning with shields down at 10 hexes or less, which gives race information; and direct communications, which gives whatever information that the broadcaster wishes to send. Encryption is impossible to break without capturing an intact ship (see 22.01.02.4). Tight beam communications are possible but only within 20 hexes and only limited information can be provided. Transmissions beyond that range use wide-angle beams to make sure the receiver gets the message and these transmissions may be detected. When the receiving unit can be detected on the sensors, the transmission power is usually turned down to only carry that distance.
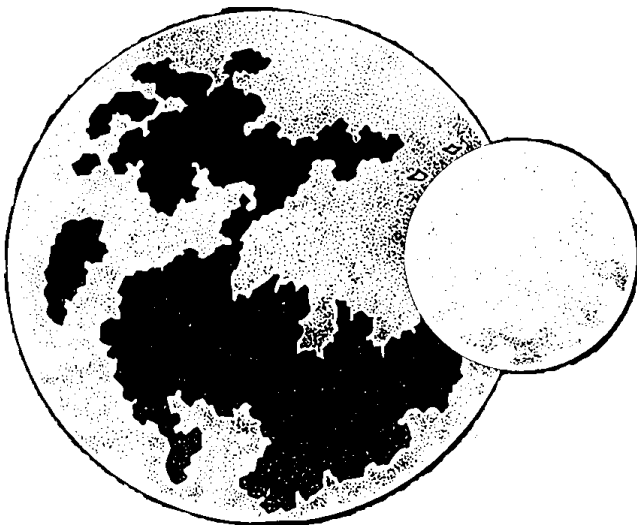
Still broadcasting who you are to an unknown ship has gotten many captains in trouble, so the IFF is relied upon.

It isn't possible to send a fake signal that will ever be recognized as genuine by any race, or its allies; a transmission could be recorded and rebroadcast, but two-way communications use encoded ID signals. It might be possible to capture a unit intact with communications gear, but unlike IFF systems, the codes are changed on a regular monthly basis.

04.05.04 Planet Scanning Table

Pop Size	Inherent	X	Xr	X and Xr
Outpost	1 TacHex	10 IntHex	1 SysHex	2 SysHex
Colony	1 TacHex	20 IntHex	2 SysHex	4 SysHex
Settlement	30 TacHex	1 SysHex	3 SysHex	5 SysHex
Small	2 IntHex	1.5 SysHex	5 SysHex	8 SysHex
Medium	4 IntHex	2 SysHex	8 SysHex	10 SysHex
Large	6 IntHex	3 SysHex	10 SysHex	20 SysHex
Very Large	8 IntHex	4 SysHex	15 SysHex	25 SysHex

P-IND populations can be detected at 1 TacHex with any type of sensor. A population can be distinguished as being Pre-Industrial, Industrial, or High-Tech from the moment it is detected. Scanning from space cannot distinguish IND1 from IND2, nor the exact HT level of an HT population. Overt detection of specific technologies can provide hints, but those do not reveal the actual Economic Level directly.

Silent Running: A population can shut down active emissions for short periods of time (up to 3 system turns per month), which will halve the detection ranges above, but will not reduce range after halving to less than 30 TacHexes (ranges of below 30 TacHexes are not affected).

Going Bush: This is a purely desperation measure intended to improve the survival chances of non-indigenous level populations. Any population may "go bush" on any planet that is habitable for its race, and deactivate all advanced technology. In so doing, it will produce income as though it was a Pre-Ind population, and will be detected as such. It may maintain PCFs of its own actual TL, but cannot maintain any spacecraft

or other equipment (they may be mothballed and hidden). This option is only available for populations of size Small or below. Larger populations cannot shut down their advanced technology and continue to survive. It takes 3 system turns to "go bush" once the order is given to do so.

Detection of Planetary Units: PU, IU, EVM, (SP), SEC, and PCFs can only be detected and counted at relatively short distances. All of them are detected and counted in the same fashion. You must be able to detect the presence of a population before you can determine the values of its units, as above. For PCFs or (SP) emplaced on planet without populations, treat it as an outpost for purposes of detection.

- Using inherent sensors (of a spaceship or a small craft), it requires a close orbit at a range of 0 tactical hexes to detect, count, and identify these units.
- Using X, this range increases to 1 tactical hex.
- Using Xr, the presence of (SP) can be detected at 20 tactical hexes. PCFs and all planetary units can be counted and identified at 10 tactical hexes when using Xr.
- Using X and Xr, the presence of (SP) can be detected at 40 tactical hexes. PCFs and all planetary units may be counted and identified at 15 tactical hexes.
- The exact TL of planetary units cannot be identified from space, but will be identified as Pre-Industrial, Industrial, or High Tech.
- PCFs housed in PDCs can not be detected.
- Any spacecraft landed on a planet with the drive field off is detected as a planetary unit. If it is landed in an (SP), this information is also given but only at the planetary unit range. Should a spacecraft landed on a planet fire without activating its drive field, it may be detected at the full Xr sensor range for units without drive fields.

Once detected, any planetary unit (or PDC) can be fired on by any ship knowing its location, even if the enemy force has no ships currently able to detect it. However, a planetary unit that moves while out of detection range must be detected again before it can be fired on. A landed ship must activate its drive field, take off, and land again in order to change its location. It may land in the same planetary area, but so long as it does not take off from and land at the same (SP), it is considered to have moved (unless the controlling player wishes otherwise) and must be detected again (a planetary hexside is a big place). PCFs are so slow as to be effectively immobile at the tactical scale, but during any interception impulse, in which a PCF would be entitled to move to a different planetary area, it may move to a new location within its current area, and must be detected again.
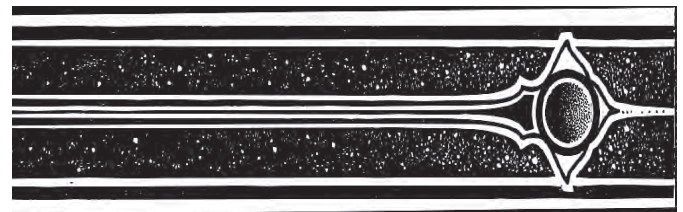
04.06 Fields of Fire

04.06.01   Fields of fire are determined largely by sensor capability. While things in the "blind spot" may not be targeted, they can be detected normally. Spacecraft in the same tactical hex may always engage one another unless fire is blocked (see 04.07)

04.06.01.1   The reactionless drive field of a starship creates a wedge-shaped "blind spot" astern of it, as shown in the diagram. The shaded hexes may not be targeted by the starship because interference from its drive blinds its fire control sensors. A starship which shuts down all of its engine rooms has no drive field and thus has a 360° field of fire but loses the missile interdiction effect of its drive.
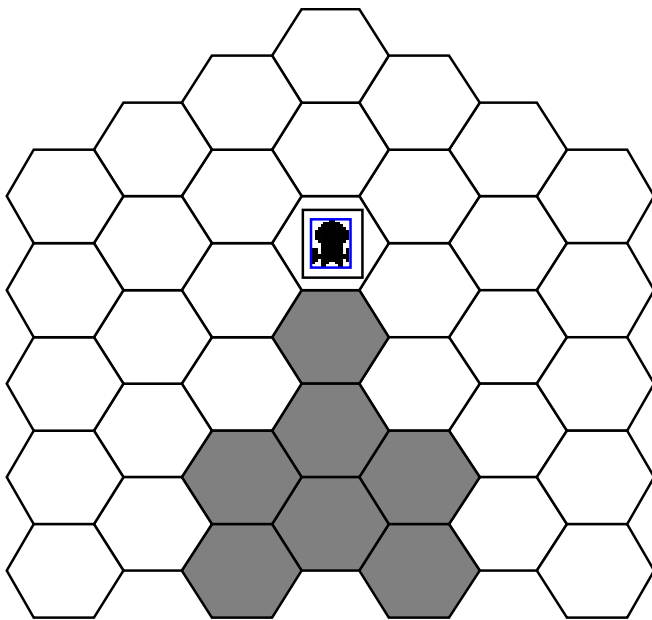
Note that point defense is an active defense system whose fire control requires sensor data, which means a missile fired from within a starship's blind spot cannot be stopped by the target's point defense.

04.06.01.2   Small craft have the same firing arc as starships.

04.06.01.3   AF, SS, and bases have the equivalent of starship fire control and their station keeping drive fields are less powerful than a starship's drive field. Consequently, they have no blind spots and enjoy a 360° field of fire for all weapons.

Planetary defense centers face special field-of-fire restrictions. These are described in the PDC rules (see 04.09).

04.06.01.4 Fighter Arcs

Fighter weapons (except missiles) have a more limited field of fire. The limitation of a fighter's fire control effectively restricts them to the field of fire of 60 degrees, not counting half hexes. This is the same as the lightly shaded hexes in the

diagram at the front of the fighter. Fighter missiles (except fR types) have a slightly wider firing arc and include the half hexes (blackened hexes).
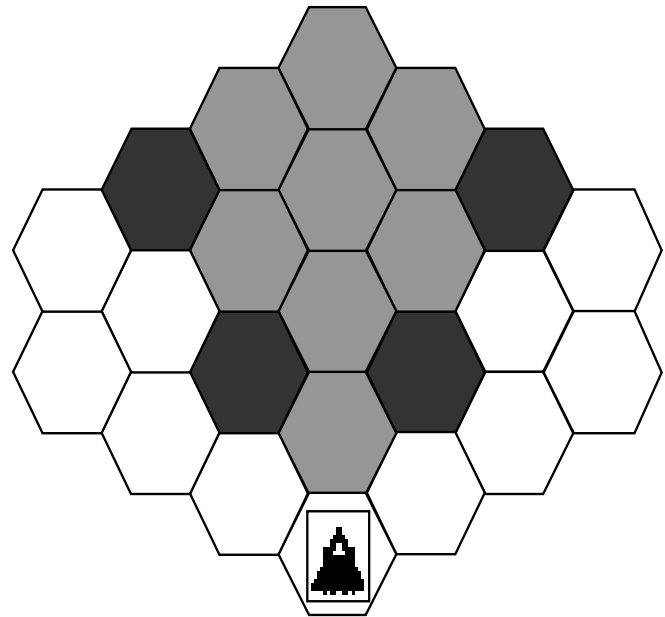
04.06.02   Note that a starship's "blind spot" (unlike a fighter's) results not from any inability of her weapons to fire astern but from the fact that her fire-control sensors are blinded. She can generally "see" well enough to know something is back there, but not well enough to isolate and engage targets.

04.07 Blocked Fire

Each *STARFIRE* hex represents an enormous volume of space; for game purposes, no unit ever blocks another unit's fire but system bodies can block fire. (It isn't that they're so huge compared to a tactical hex as that they are huge compared to the units, which means that mobile units that choose to do so may "hide" behind them.)

04.07.01   Stars are huge, even compared to a *STARFIRE* hex (our own sun, for example, is 840,000 miles--or just over eighteen tactical hexes--in diameter), and any star always blocks fire. No unit may fire at another unit if any hex occupied by the system primary lies directly between them or if both firing and target units are within 1 tactical hex of the primary but not in directly adjacent hexes.

04.07.01.1   A Gas Giant planet (Type G) is large enough that units may not enter its hex without using atmospheric capability (AC) to do so. They always block fire, except for weapons able to penetrate atmosphere.

04.07.02   System bodies smaller than stars block fire only if one player "hides" behind them. Planets and moons may be used to block fire when:

1. Both firing and target units are within 1 tactical hex of the planet or moon and not in the same or directly adjacent hexes;
2. The target unit is in the same tactical hex as the planet or moon and the firing unit is not.
3. The target is within one tactical hex of the planet or moon and the planet or moon lies between it and the firing unit.
4. One unit is a PDC and the other is a spacecraft in the same tactical hex that declares that it is hiding on the far side of the planet from the PDC.

Spacecraft within the planet's hex must declare, when firing or being fired upon, what planetary area it is above, and it may engage and be engaged by PDCs in that area and the two adjacent areas.

Planetary bombardment attacks with regular mode missiles at range 0 are possible and do not require any to-hit rolls. PDCs may fire regular missiles at ranges of 2 or less with the hit probability as if the range was 3 hexes.

5. It is possible for a unit within the same hex as a planet to hide from any non-mobile unit in the same hex if the controlling player wishes. Mobile units may hide from each other when in the same hex as the planet, if they declare themselves to be on opposite sides of the planet. This requires mutual agreement to do so, and is usually done when one of these forces also wishes to hide from spacecraft away from the planet, or from PDCs or other immobile units in the same hex as the planet, or in the hex adjacent to it.

04.07.03   In any of the above cases, the player whose unit is first announced as a target declares whether or not he is hiding. If he chooses to hide, his opponent loses the shot (which still counts as a "fired" unit for him), but the "hiding" unit may not return fire against its attacker or any unit in the same tactical hex as its attacker. (Moral: if he can't see you, then you can't see him.)

If fire is not blocked from one unit, then fire is not blocked from any unit in the same tactical hex, and any unit which fires at a target is exposed to return fire from any other unit in its target's hex.

04.07.04   Planets and moons may both be used for cover, and any number of units can hide behind a given moon and/or planet.

04.07.05   Any unit hidden from the fire of a hostile unit by any system body is also hidden from that hostile unit's sensors and cannot be detected at all by that hostile unit.

04.07.06   Asteroids are smaller than moons or planets and may not be used to block fire but can be used to hide from sensors.

Any tactical hex in an asteroid belt may contain asteroids large enough to interfere with enemy sensors from any range

above one interception hex. Fighters and other non-GB small craft can always find asteroids large enough to hide any number of units of their size. Roll 1D10 to determine the number of starships that can hide behind asteroids located in that hex.

Once a unit with long-range sensors enters an interception hex in which hostile units are hiding behind asteroids, it can detect hidden starships and GB at a range of 40 tactical hexes and hidden fighters or small craft at a range of 20 tactical hexes. Units without Xr can detect hidden starships and GB at a range of 15 tactical hexes and hidden fighters at 10 tactical hexes.

Starships of less than 50 hull spaces and small craft that shut down their engines completely (that is, have no drive field and thus no missile interdiction) when hiding behind an asteroid may not be detected at ranges above 2 tactical hexes by any type of sensors. Fighters (which cannot survive without an active drive field) may not use this rule. Units hiding with their drives off can launch fighters and small craft without revealing their positions.

Hidden units that have been detected may be engaged by the detecting unit with any weapon with sufficient range to reach them.

Any hidden unit that fires reveals its position at that point and is no longer considered hidden. Spacecraft cannot hide from any unit that has already detected them. Hidden units may launch non-GB small craft and fighter while remaining hidden.

04.07.07   Immobile units cannot hide behind system bodies (except stars, as per 04.07.01) because they cannot move to do so. If, however, an immobile unit is within 1 tactical hex of a planet or moon and the planet or moon lies directly between it and another unit, fire between the two units is automatically blocked for both. Note however that a mobile unit can hide from an immobile unit (see above).

04.08 "Shields Down"

Unless a unit is tractored to a target (see 08.00), it is impossible for its sensors to determine the exact status of that target, but certain indications of damage are observable and must be announced as they occur.

When a unit no longer has active shields, the owning player must immediately inform his opponent(s) that the unit is "shields down." Note that a unit's undamaged shields may be switched off at any time and/or switched on in the combat impulse in which it fires. Devious skippers have been known to take advantage of this, switching their shields off and pretending to be more heavily damaged than they actually are (to draw opponents in closer or divert their fire to less important units), only to switch their shields back on as the enemy closes in.

When a unit's first non-shield, non-armor system is destroyed, the owning player must announce that his unit is "streaming atmosphere." As with "shields down," cunning

skippers have been known to deliberately vent atmosphere and announce they are "streaming atmosphere" when their hulls are actually still unbreached.

When a "shields down" unit is within 10 tactical hexes of a hostile unit equipped with long-range sensors, the owning player must, upon demand, announce how many of what systems remain operable, but need not reveal their order on the control sheet.

When a "shields down" unit is tractored by an opponent with or without long-range sensors, the tractoring player may demand to see that unit's control sheet. At such close range and with such a tight lock, the tractoring unit can tell exactly what shape its target is in.

04.09 Planetary Defense Centers and Asteroid Fortresses

Planetary Defense Centers (also referred to as ground bases or PDCs) are planet-side installations designed to defend against attacks from space. Asteroid Fortresses are, effectively, small PDCs built on (and into) asteroids. PDCs are cheaper than starships, BS, or SS, and any PDC on a planet with a high-tech population above "Colony" has unlimited targeting capability without penalty for "over-targeting." PDCs may be built on habitable planets, hostile-environment planets, or moons, though those built in hostile environments cost more to build and maintain. PDCs have both advantages and disadvantages compared to spacecraft.

04.09.01   No PDC in atmosphere can engage targets in space with any energy weapon other than primary beams. (By the same token, ships in space may not engage atmospheric PDCs with non-primary energy weapons, either.) PDCs on airless moons or planets do not face this restriction.

04.09.01.1   PDCs are unaffected by EM or ECM used by spacecraft as their computers are powerful enough to resolve the exact location of the spacecraft regardless of range. However, any non-PDC units datalinked to PDCs are affected by EM and ECM. ECM2 is also ineffective against PDCs datalinks, but would disrupt the datalink to any other types of units.

04.09.02   PDC on planetary bodies larger than an asteroid may NOT mount shields due to the interference of planetary and lunar gravity and magnetic fields.

A PDC on an asteroid large enough to accept a population is built and operated exactly as a PDC on an O2 body without atmosphere; any asteroid this large is also too large for the PDC to mount shields.

04.09.03   PDCs have a 180-degree arc of fire, including half hexes, though this arc will change as the planet rotates. This field of fire limitation applies to non-HAWK/HARM missiles and energy weapons but for purposes of firing

missiles in anything but sprint mode, a PDC's field of fire is that of a starship, with the bulk of the planet or moon providing the "blind spot."

04.09.03.1   All point defense systems in a given planetary area, the adjacent planetary areas, and on any unit linked to a PDC in/above the planetary area under attack, can be used to defend the planetary area and all units within the area. A spacecraft in orbit above the planet can be protected by any point defense (even D) of a PDC it is datalinked to, and from all PDCs in the same area as that PDC, and in the two adjacent areas.

PDCs may intercept sprint mode missiles with point defense at a -3 penalty.

If missiles are fired at a PDC, from outside the PDC's own firing arc, the PDC gets a +1 to the intercept the missiles with point defense.

04.09.04   A PDC that opens fire will reveal itself to any spacecraft within its weapons range and firing arc, even if the spacecraft does not have the sensor range to detect the PDC.

Once located, a PDC may always be attacked by a force knowing its location, even if the units do not have the sensor range to see the PDC themselves.

Spacecraft attacking a PDC whose location is known but out of sensor range may fire regular mode missiles at the PDC from any point within range of the PDC at a +2 to hit. HAWK missiles have no penalty when fired out of arc by PDCs.

04.09.05   PDCs do not have drive fields, so every missile hit on a PDC in vacuum inflicts 5 times the damage it would inflict on a spacecraft protected by a drive field, or 6 times the damage if the PDC is located in atmosphere (because of atmospheric compressibility).

04.09.06   One major advantage of PDCs is that they can be of any desired size and can be enlarged during campaign games without closing down to refit. Altering the weapons in a ground base does require shutting down a portion of the base to refit, which is handled exactly as for space stations, but systems can be added without shutting down. Armor on a PDC costs 2 MC less than normal.

04.09.07   One major disadvantage of PDCs on populated worlds is that missiles which miss the PDC still go somewhere and often inflict casualties on the local population (see Strategic Rule 21.03). To offset this to some extent, PDC point defense can engage all missiles that are directed at its planetary area including those that miss their original target(s) (the PDC itself and/or other planetary units). With enough point defenses, a PDC can substantially reduce collateral civilian casualties.

04.09.08   Asteroid fortresses are a special case. Any player can find an asteroid of any size up to 1,000 hull spaces in any

asteroid belt hex which may be used as a fortress in place or towed with tractor beams (see 08.02). For towing purposes, any asteroid is considered twice as massive as its hull space capacity (that is, a 500 "hull space" asteroid would count as 1,000 hull spaces). This reflects the fact that they are dense bodies that have not yet been hollowed out to contain their tech systems. Once they have been hollowed out, their original mass is reduced by 25% (i.e., to 1.5 times their maximum hull space capacity).

Asteroid fortresses are hostile environment ground bases for purposes of maintenance and construction but are treated in all other ways as BS. They may mount shields, station-keeping drives, and have no blind spot.

04.09.09 PDCs and Datalink

PDCs linked to other PDCs, aren't datalinked in the classical sense. All PDCs on a planet are linked together, regardless of the tech level of the population, the constructing race, or the tech systems within the PDCs. However, only three PDCs, one in a central area and two in the adjacent areas, or two PDCs in adjacent areas, can work together in an offensive/defensive support pattern, due to firing-arc limits. Different 3-PDC groups can be "created" and reorganized during each combat impulse (once declared, a group lasts for the remainder of the impulse), depending upon the controlling player's needs. Up to three adjacent PDCs and one other unit (non-PDC) may be datalinked at a given time (the other unit must have a normal datalink system, have a preset link to the "planetary PDC network", and be within 1 tactical hex of the planet).

Such a unit may be tied into the datanet of the planetary area directly below at the moment it attacks or comes under attack. I.e. It may be "handed off" from one planetary area to another (with no degradation of datalink) as its orbit carries it about the planet. (This will not be the case if the unit moves under its own power - such movement is too unpredictable for the planetary datanet to handle.) A PDC may not be linked to more than one non-PDC unit in any given turn. A PDC linked to an overhead unit may be linked normally to other PDCs on the planet, and the orbiting unit may be included in any such links, except that two orbiting units may never be included in the same link. If necessary, a PDC may temporarily "suspend" the link with its orbiting unit, in order to link with other PDCs; there is no penalty for doing so, and the link with the orbiting unit may be used normally later in the combat phase.

04.10 The Effects of Atmosphere

Since primary beams are the only energy weapons that function in atmosphere, fighters may attack targets in atmosphere only with missiles. In vacuum, they may attack ground targets with energy weapons as well as missiles and may use guns against systems not protected by armor. Fighters may not engage fighters or small craft in atmosphere and will break up if they attempt combat maneuvers there.

Starships landed on, taking off from, and/or landing on planets and moons are treated as PDCs. Their shields may not be raised (though drive fields may be active, if not landed, to interdict incoming missiles), and if in atmosphere, they may not fire any energy weapon other than primaries. In addition, starship point defense relies more heavily than planetary point defense on small lasers and is -2 to stop all incoming missiles in an atmosphere.

04.10.01 Weapon Operations In Atmosphere

Energy weapons, including beam weapons (other than primaries), plasma guns, and kinetic guns and Dk-series, are not operational in or through atmosphere. Tractors and pressers, which are not weapons, are operational in atmosphere.

Fighter guns (fG) are not usable in atmosphere.

Point defense uses lasers, which are restricted in operations in atmosphere. Spacecraft mounted point defense operates with a -2 modifier to all rolls in atmosphere. PDC point defense systems do not have this modifier, as they are designed for operation in atmosphere.

Missiles of all types are operational in atmosphere.

04.11 Combat Example: Starship-vs.-Starship

The undamaged heavy cruiser Alsace is in a particularly exposed position at the end of the movement phase, so the Terran player (who has the initiative) fires Alsace's weapons before those of any of his other starships. He virtually destroys an Orion DD, but then it is the Orion player's turn, and he fires one of his own (damaged) CAs at Alsace, which has the following Control Sheet:

CA 7 Alsace   AM   60 Hull
[2] SSSSSSSSSSAAAAZHW(II)OPW(II)M2OWFOMg(II)(II)
    DQ(BbS)FDLhQ(II)(II) [6]
    60 RCP; 40 MCP Trg: 3 PV = ? Cost = 890 / 133.5
    45 HTK Sx9 Ax4 Dx2 Ox3 Wx3 Mgx1 Px1 Fx2

The Orion CA's remaining weapons include 2 force beams and 1 primary. Firing at a range of four hexes, the Orion player rolls a 3 and a 10 on 1D10 for each of his force beams, so one hits. At four hexes, an F inflicts two points of damage, both of which are scored against Alsace's intact shields. The Orion then rolls a 7 for his primary beam, and hits. He then rolls a D10 to locate the exact system hit, and rolls a 6, which, divided by 2, becomes a 3, indicating the 3rd system inside the armor, skipping systems which it can't damage (H and B). On Alsace, this is an I from her forward engine room, and she now looks like this:

[2] xxSSSSSSSSAAAAZHW(xI)OPW(II)M2OWFOMg(II)(II)
    DQ(BbS)FDLhQ(II)(II) [6]

Since Alsace has now taken a hit inside her armor, the Terran player immediately announces to his opponent that she is "streaming air."

On the next firing impulse, the Terran player fires a unit on the far side of the battle, but the Orion chooses to continue pounding Alsace. An Orion BB two hexes away opens fire with 2 F, 2 E, 2 P, and 2 W.

The Orion player decides to fire his primaries first in hopes of knocking out internal defensive systems and rolls two hits. He then rolls 1D10 for each hit to determine hit location, and obtains a 3 (which divides to 1.5 and rounds to 1) and a 10 (which becomes a 5). The 1 hits the first system inside the armor, which is the datalink. The 5 hits the fifth system, skipping the Z which is already destroyed, and the H, so it destroys Alsace's second W.

Using his F next, the Orion player again rolls two hits. (At this range, only a 10 could miss.) At two hexes, each force beam inflicts 3 points of damage, so 6 points are scored against Alsace's shields.

Next, the BB fires its W in sprint mode (at this range, a sprint-mode missile has a better chance to hit than a regular missile and, in addition, is not vulnerable to point defense) and rolls a 6 and a 3. Both are hits and score one damage point each, knocking out Alsace's last shield and first armor system.

As required, the Terran announces "Shields Down," and the Orion (probably) grins. Without shields, his energy beams should inflict significant damage to Alsace's internal systems, and he rolls a 6 and an 8, both of which are hits. At two hexes, each E inflicts 3 damage points (total 6), but the Terran player has three overload dampeners (O, see 27.09.06) and uses each of them to absorb one point of damage, thus completely negating one E hit. The Orion player stops grinning, but all 3 remaining points ignore both armor and holds, and the Terran player is a bit put out himself when he realizes he could have "burned out" his forward O (which he has now lost anyway) and saved his first W and the last I in engine room number one.

The combat phase now ends. Alsace has lost the movement generated by his totally destroyed engine room number one and the Advanced Maneuvering bonus to turn mode, and now looks like this:

[3] xxxxxxxxxxAAAxHx(xx)xPx(II)M2OWFOMg(II)(II)
    DQ(BbS)FDLhQ(II)(II) [5]

The players now roll for initiative and move their units, but, slowed by her engine damage, Alsace is unable to keep the Orion BB which last fired on her from closing to one-hex range and, unfortunately, the Orion has the initiative.

He would prefer to fire his P and knock out internal systems (like those pesky O), but he fired them last turn and so may not fire them again this turn. Instead, he decides to use his F and W, then follow with his E. This will not let him use the E's "armor-skipping" ability but does give him a chance to destroy some of Alsace's O and prevent them from degrading the effect of his E.

He hits with both F and one W, scoring 1 point for the W and 4 points each (total 8) for the F. The Terran player marks off 9 intact systems, losing everything forward of his gun/

missile launcher, including one O. The Orion then fires both E and hits, inflicting (at this range) 4 points with each (total 8).

The Terran player could use his remaining O to absorb one E damage point, but that would still leave 7 points, so he chooses to use the "burn-out" option and absorb 4 points. He marks the O as destroyed but reduces the E damage to 4 points, once more negating one entire hit.

After recording his damage, the Terran player rolls percentage dice for engine room three as per 04.02.01 to determine if it remains operational. Since he has lost exactly 50% of the engine room's I, it has a 50% chance of remaining operational, and his percentage dice roll of 43% thus indicates that his engine room has not been forced to shut down, and Alsace looks like this:

CA 7 Alsace   AM   60 Hull
[3] xxxxxxxxxxxxxxxx(xx)xxx(xx)xxxxxx(xI)(II)DQ(BbS)
    FDLhQ(II)(II) [5]

04.12 Combat Example: Fighters-vs.-Starship

The Terran BB Victory has become separated from the rest of her task force and is under attack by two squadrons of Rigelian 1st generation fighters. As F1 have no internal weapons, the Rigelian player has armed one squadron solely with close-attack missiles (R) and one squadron solely with laser packs (L). Victory's control sheet looks like this:

BB 9 Victory   AM(2) 20 XO   100 Hull
[2] SSSSSSSSSSSAAAAAAAAAAAAAZH(Bbs)(III)RcFD(III)
    FDiRcRcRcQ(III)RcRcMgMgM3DF(III)LhQFDi(III) [5]
    100 RCP; 0 MCP Trg: 4 PV = ? Cost = 1808 / 271.2
    60 HTK Sx10 Ax11 Dx2 Dix2 Rcx6 Mgx2 Fx4

The Rigelian fighter squadrons' control sheets look like this:

Squadron 1 (F1)		Squadron 2 (F1)	
#1 fR fR fR	#4 fR fR fR	#1 fL fL fL	#4 fL fL fL
#2 fR fR fR	#5 fR fR fR	#2 fL fL fL	#5 fL fL fL
#3 fR fR fR	#6 fR fR fR	#3 fL fL fL	#6 fL fL fL

First generation fighters carry 3 points of external ordnance, and their loaded speed is 8 (see 28.04). As always, fighters have a turn mode of 1.

At the end of the first movement phase, both Rigelian squadrons are at 6 hex range, too distant from Victory for either side to attack. The Rigelian wins the initiative for the next turn, however, and attempts to maneuver Squadron One into Victory's blind spot. The BB's high turn mode compared to the fighters means she can keep one but not both squadrons out of her blind spot, and she maneuvers to keep Squadron Two in the play of her weapons. (Had the Terran player had any way to know what the squadrons were armed with, he would probably have chosen to maneuver to keep Squadron One in the play of his weapons.)

At the end of the movement phase, the Rigelian has moved Squadron One to within one hex of Victory, directly astern of her. Squadron Two is three hexes from the BB but in Victory's field of fire. The Rigelian player has the initiative and Squadron Two is exposed to Victory's fire, but one of his own capital ships is in trouble on the other side of the map, so he chooses to fire its weapons as his first unit. Consequently, Victory is able to fire on Squadron Two before the squadron fires.

The Terran is more worried about fighters than starship missiles and targets both D and both Di on Squadron Two, in addition, since the ship has long range sensors Xr he is able to use his F to target the fighters. He rolls 1D10 for each F first, and rolls 1, 3, 4, and 8. Since an F requires a 1 for a kill at a range of 3 hexes, the squadron loses one fighter.

Next Victory fires both D. At range 3, D requires a 2 for a kill, and the Terran rolls a 3 and a 9, missing with both.

Last, Victory fires his Di, which also requires a 2 for a kill. This time the Terran player rolls a 1 and a 2, both of which are hits.

The Rigelian fighter squadrons now look like this:

Squadron 1 (F1)		Squadron 2 (F1)	
#1 fR fR fR	#4 fR fR fR	#1 fL fL fL	#4 fL fL fL
#2 fR fR fR	#5 fR fR fR	#2 fL fL fL	#5 fL fL fL
#3 fR fR fR	#6 fR fR fR	#3 fL fL fL	#6 fL fL fL

The Rigelian could fire one of these squadrons as his next unit, but no other Terran unit is in range to attack either squadron, so he is in no hurry to fire them. Instead, he completes the firing pulses for all of his other units before turning back to Victory.

First, he fires Squadron Two's lasers at the BB. He has only 3 fighters left, but each mounts 3 laser packs for a total of 9. At a range of 3, a fighter laser requires a 4 or less to hit, so the Rigelian player rolls 9 10-sided dice, rolling 1, 2, 2, 4, 5, 6, 6, 8, and 10 and scoring a total of 4 hits. Since lasers ignore shields, the Terran player marks off 4 points of damage on his armor, and destroying 4 XO racks. The Terran player must destroy loaded XO racks before empty XO racks, but they are all empty (having been fired earlier in the battle).

Then it's Squadron One's turn with 3 fR per fighter (total of 18) and a hit probability at 1 hex of 5. The Rigelian player rolls 18D10, and obtains 8 hits. Each fR inflicts 2 points of damage (total 16), and, since fR are expendable ordnance, the Rigelian player marks each fR off Squadron One's record sheet as it is fired.

The Terran marks off all 10 of Victory's shields (announcing "shields down") and 6 of her remaining 7 A, and 6 XO racks. Since no damage penetrated to an internal system, Victory is not "streaming atmosphere". . . but the Rigelian has a pretty shrewd notion her skipper is not a happy camper. In fact, Victory looks like this:

BB 9 Victory   AM(2) 10 XO   100 Hull
[2] xxxxxxxxxxxxxxxxxxxxxAZH(Bbs)(III)RcFD(III)FDiR-
    cRcRcQ(III)RcRcMgMgM3DF(III)LhQFDi(III) [5]

And the Rigelian fighter squadrons look like this:

Squadron 1 (F1)		Squadron 2 (F1)	
#1 fR fR fR	#4 fR fR fR	#1 fL fL fL	#4 fL fL fL
#2 fR fR fR	#5 fR fR fR	#2 fL fL fL	#5 fL fL fL
#3 fR fR fR	#6 fR fR fR	#3 fL fL fL	#6 fL fL fL

In the following movement phase, Squadron One (now without weapons) turns to race back for its carrier at speed 10 to rearm, and Squadron Two winds up in Victory's blind spot at a range of 1. The Terran moves a DD into position to engage the squadron, but a Rigelian CA manages to close to within 4 hexes of the DD and places itself in Victory's blind spot. Since the BB cannot engage the CA and the CA can join Squadron

Two in firing on Victory, the DD fires at the CA instead of the half-strength fighters.

Since only the DD could have fired on Squadron Two, the Rigelian player again chooses to fire it as his last firing unit. At range 1, fighter lasers hit on a 9, and this time he rolls 9d10, hitting with 8 and inflicting 8 more damage points (which destroy 8 more XO racks). The first damage points takes out Victory's last armor, and the Terran player announces that his ship is streaming atmosphere. The next hit destroys the Z, leaving 6 more damage points, which destroys the first engine room dropping the ship's speed to 4, and increasing it's turn mode to 3 (see Advanced Maneuvering Two 27.10.01). After marking off all her damage, Victory now looks like this:

BB 9 Victory　　　　　　AM(2) 2 XO　　　　　　100 Hull
[3] xxxxxxxxxxxxxxxxxxxxxxxx(x)(xxx)xFD(III)FDiRcRcRc-
　　Q(III)RcRcMgMgM3DF(III)LhQFDi(III) [4]

Given the difference in speed and maneuverability between the BB and her tormentors, the Rigelian can probably stay in Victory's blind spot. Victory might choose to expend all of her movement points in place and then change her facing by up to three hex sides, but the fighters would have 4 movement points left when Victory turned (5, if the Rigelian had the initiative), and could easily maneuver back into her blind spot--in which case she will lose more engines and fall further behind her consorts to be picked apart (in about 4 turns) by three wretched fighters.

A better maneuver (assuming no Terran fighters can intervene) would be for Victory to continue towards the rest of her formation while another starship attempts to maneuver into a position to engage Squadron Two.

04.13 Break-Off and Surrender (Optional)

A badly outnumbered force of spacecraft may attempt to break off and run (regardless of orders) or surrender. Units defending their home system or home world are never compelled to do so; in non-campaign games, they will always fight to the death.

The definition of a "badly outnumbered force" is not necessary how many ships and sizes but rather the weapon types and Tech Level also play a part. A force cannot determine what the enemy has on any one ship and always uses a base of the total number of hull spaces modified by the highest Tech Level observed on ANY ship (the crew always assumes the worst).

Observed Tech Levels: Many systems only count as their full HTL when performing a function that is different from a lower Tech Level system. I.E. Di uses different to hit numbers. An enemy force is always assumed to be of equal tech level until after the evidence shows that it is lower or higher (this usually means a couple of turns of combat).

Key observables: Kind of weapon can be determined when fire occurs but without a hit occurring. Force, Energy, Primary, Laser, Needle, Kinetic, Missile, and Capital Missile can all be determined. Damage done determines the exact type; Rate of fire - Some weapons fire twice or more per turn; Above normal performance - High ship speed (It), Low turn mode (AM or AM2); Special damage reduction (Ok) can all be determined when their functions are used; and so on.

Special cases: Missiles count as the missile's Tech Level, no matter what weapon fired them (you can't tell). Anti-matter missiles count only when they do damage: AM(9) or AAM(11). Fighter HTL can be determined when type is determined. Anti-Laser armor only counts when laser damage is reduced. Improved shields never count. Ti is either a T or a PB. Without direct scanning (i.e. no shields and range 10 or less) (CIC2), (DCS), (MCS), (It2) can never be detected.

04.13.01　Both numbers and perceived quality count when calculating how badly one force outnumbers another. Comparative strength is defined in "force points." To determine a force's base "force points," total hull spaces of all ships counting each fighter or armed small craft of any TL as half a hull space and each GB as 1 HS. This base number, for the Higher TL fleet, is modified by 20% times the difference in the Observed Tech Level. If you have 1500 hull spaces @ HTL 7 and your opponent has 2000 hull spaces @ perceived HTL 5, the difference is 40% and you are treated as having 1500 FP * 140% = 2100 FP vs 2000 FP. However, your enemy may see 1500 FP @ HTL 7 and 2000 FP @ real HTL 8 (hasn't launched his fighters yet) for 2000 * 120% = 2400 vs 1500, counting each fighter or armed small craft of any TL as half a hull space. (That is, a 120-hull space HT4 SD is worth 120*4=480 force points; and an 85-hull space HT9 CV with 30 fighters would be worth (85+[30/2])*9=900 force points.) Units without offensive weapons are not counted, but all armed units on either side in the same interception hex are added to the calculation even if they are not yet in range to participate in the engagement.

04.13.02　No force worries about the odds unless it is outnumbered at least two-to-one in force points. At that point, troops tend to get a mite anxious. Fighters/GB in interception hexes other than that of their carrier do not make separate Break Off Rolls; they use the value of their carrier and its consorts even if they are in range of enemy weapons and their carrier is not.

The base probability that a force will not attempt to disengage despite orders equals Racial Militancy (RM), minus half the percentage by which the opposing force exceeds twice its own force points (FRD). A roll must exceed this amount

in order to "fail" (Break-off). The percentage can not be less than 10% after all modifications.

> **Example:** *A force of BCs, 6400 force points and RM of 72% is facing an opponent with SDs, 21600 force points. Twice the force points of the smaller force are 6400x2 = 12800, and the opposing force exceeds this amount by 21600-12800 = 8800. 8800/12800 = 68.75%, and half of this is 34, after dropping all fractions. For the RM of 72%, the break-off number is 72-34 = 38%. This force will attempt to break off on any roll of 39% or more.*

A quick way to figure out that the force point ratio modifier is to take (Larger Force Points) divided by (Smaller Force Points), subtract 2, and divide this result by four. (21600/6400) = 3.375; 3.375-2 = 1.375; 1.375/4 = 0.34375, which rounds to 34%. (A negative modifier would indicate that the larger force is not at least twice as big as the smaller force, and therefore there is no need to check for break-off.)

Both Break-off and Surrender are rolled for the entire force present, with one roll used for the entire force. If any units are present with different racial statistics, they apply the result of the roll to their values, and may decide to act differently from the main body of the force.

04.13.02.1   In the above example, the BCs have the speed to escape if they fail their Break-Off Roll. If, however, they possessed a weapon which out-ranged any the SDs mounted (capital missiles versus standard missiles, for example), they would simply open the range to one at which they could engage and the SDs could not. In other words, a force will not run away from a nominally stronger force if it can hurt the stronger force without being hurt itself.

OPTIONAL: Individual units may roll for surrender. After the rolls have been made in one turn, the forces remaining may face higher odds as units that have surrendered or disengaged can not be counted for force point value. Thus, the chance for breakoff would be higher.

Note: Scuttling and destruction of records (04.13.04) is always rolled for each individual unit.

04.13.03   If a force fails its Break-Off Roll but cannot break off within one interception pulse (10 tactical turns) because it is too slow or unable to open the range beyond that of its opponents' weapons, it may, instead, surrender.

The base probability that a force will not surrender equals average of Racial Militancy and Racial Determination (RD), minus half the percentage by which the opposing force exceeds twice its own force points (FRD). A roll must exceed this amount in order to "fail" (surrender). The percentage can not be less than 10% after all modifications.

If additional friendly units enter the interception hex during the intervening interception-scale pulse, the Break Off/Surrender Roll must be recalculated and rerolled since relieving units are now at hand. This could result in a force breaking off, to turn around and attack with reinforcements.

04.13.03.1   A force defending its home world or home system is never compelled to breakoff or surrender. In campaign games, the Breakoff/Surrender roll is modified by +1% for each 10 PU in the star system.

> **Example:** *A force of carriers opposes the BCs in the above example with the same total force points as the SDs. The BCs' crews have a Racial Determination of 25% to go with their Militancy of 72%, so the average is (25%+72%)/2=48.5 or 48%. The same negative modifier (34%) is applied and 48%-34%=14%, so the BCs will surrender on a roll of 14% or more. If the BCs' crews had a Racial Determination of 90%, the average would be (90%+72%)/2=81%. Since 100-81%-34%=47%, they would surrender only on a roll of 47% or more.*

04.13.04   If a force surrenders, it will usually try to scuttle (blow up) its units and to destroy sensitive data (astrogation records, Fleet orders, etc.) aboard units that do not scuttle successfully. For a unit to scuttle, it must possess at least one operable engine room (see 09.05), or at least one nuclear or anti-matter warhead aboard the ship or in an XO rack. The probability that a unit so equipped will scuttle successfully is equal to its Militancy. If a unit fails to scuttle, the chance that it will successfully destroy its records before surrendering is equal to its Racial Determination. (That is, the BCs in our example would scuttle themselves on any percentage roll of 72% or less and, failing or unable to scuttle, would destroy all useful records on any percentage roll of 25% or less.) Each surrendering unit is checked individually. These percentages can never be less than 10% nor greater than 90%. Each surrendering unit is checked individually.

04.13.05   The weaker force checks for a break-off or surrender result only when required to do so by the odds AND the player controlling the stronger force, and the player with the stronger force may require a check only once per interception-scale turn.

If a non-player race controlled through political ties by a player in a campaign game (partnership) is ordered to break off (it will never surrender), it makes a roll against 1/2 its break-off Roll. If it rolls equal to or less than 1/2 its Break-off Roll, it refuses the order and fights to the death.

04.13.06   Player races in campaign games and any player in a tactical game may attempt to scuttle damaged units even if the odds do not require a surrender or break-off roll. A unit that fails its scuttle attempt is out of action during the rest of the battle and will surrender to the winning side. The scuttled ship may roll to erase its records.

04.13.07   Captured spacecraft larger than the capturing empire can currently build can be used but only if refitted. Captured small craft can also be used if refitted.

04.14 See CRUSADE for optional boarding rules.

04.15 Datalink

Despite the relative sophistication of datalink systems, even in their advanced forms, they tended to suffer from information overload when subjected to too high a bandwidth of intership traffic. Fire-control information was one of the worst problems, since firing solutions had to be much more complex than other forms of data, and, at least in Z and Z2, the designers traded away precision for the ability to carry general information, on the presumption that a datalink group would, in general, only want to actually fire on a relatively small number of targets anyway.

04.15.01 Lead Ship

For purposes of targeting and fire control, when firing, a datagroup must pick a single unit, the "Lead Ship", and use that unit's fire control computers to enact firing solutions for the whole group. This means that a group of 6 datalinked ships, all with M7, would only be able to fire, as a group at eight targets without penalty, although the aggregate targeting ability of that group is 48 targets. This effectively represents the loss in number of targets caused by the need to coordinate fire more carefully. Datalinked ships may fire individually (See 04.00.)

The "lead unit" may be any ship in the formation, and in Z2 groups, need not be the Z2c command ship. A new lead ship may be designated each time the group fires.

04.15.02 Abilities

Weapons fire is calculated at the true range between each firing ship and the target, not at the range between the lead ship and the target. In addition, any crew grade penalty or bonus of an individual ship applies to that ship's fire only.

All sensor data is carried across datalink, including information gathered through Xr, or systems that function as Xr (like (2Mix)), about types and generations of enemy ships. The only exceptions are that Xr "specific scanning" data for targeting Needle beams and minesweeping are not carried over datalink (NOTE: AFM2 data is carried over datalink, for all generations of AFM).

04.15.03 Linkage Range

All datalink systems have a maximum "linkage range" that defines the maximum range at which they can datalink with other ships as a part of the datagroup or as a dataleader. When a datagroup is using different datalink generations, the system aboard a unit is its maximum linking range.

In order for a Z datagroup to fire together, all units must be within 2 hexes of the lead ship. Any units outside the linkage range remain a part of the datagroup, but can not fire with the

group. In a case where a unit is in range of some, but not the lead ship of the group, the owning player may choose which units to consider datalinked during that fire impulse.

After a lead ship is chosen, determine the units within datalink range at that time. If more units are present than can be commanded by the lead ship and any command unit, the player may choose any units from the datagroup, so long as all chosen units are within linkage range of the lead unit.

04.15.03.1   Point defense range for protecting other units in a datagroup is limited, see 04.19, generally to a range of 2 tactical hexes from the unit mounting the datalinked point defense system. No limit applies as to which point defense can defend which ships as long as a unit is within two hexes of each defended unit; and, of course, no point defense unit can fire more than one series of shot per salvo. There are limits on the number of units that can defend a single unit and this is based on the individual datalink system being used.

04.15.04 Command Unit

When forming a datagroup with a "command system", such as Zl or Z2c, that command system must within linkage range of all units wishing to fire with the lead unit including the lead unit. NOTE: that the unit with the command unit does not have to be the same unit as the lead ship.

Example: *A datagroup with Z2c must have the Z2c present as a firing unit in order to fire more than three ships as a datagroup.*

04.15.05 Resetting Datalinks

Datalink systems require 5 tactical turns to reset (organize new datagroups). Drive fields, shields, weapons, and all datalinked point defense systems must be deactivated during this period. Normally, this is done outside of combat, and units that have a full interception turn outside of combat may be assumed to have had time to perform this operation. Crew grade modifies this time. Fighter squadron datalink, and gunboat datalink, requires that the units be landed in hangars, XOg, or on planets.

04.16 Fighter Ordnance

Fighters use specialized ordnance (see 28.06) which is smaller than starship missile weaponry. This ordnance includes non-weapon systems and is used on small craft as well as fighters but not on other units. Fighters, and some small craft, have fighter XO points to carry this ordnance; fighter XO points should not be confused with ship XO racks, which are designed to carry much larger weapons. Neither sort of XO may carry weapons designed for the other.

04.16.01   All fighter ordnance is designed to fire from fighter XO racks, or internal mounting, and may not be fired in any other way. Unless otherwise specified, all XO points on

a fighter or small craft may be used without restriction to hold ordnance whose total XO points do not exceed that of the craft they are mounted on. Fighter ordnance may be stored in cargo holds or magazines, but only that in magazines may be loaded aboard fighters or small craft XO as combat ordnance.

04.16.02   Fighter ordnance falls into two general categories: Expendable and Reusable systems. Expendable ordnance is 'fired' from the unit when it is used and is consumed in the process; this includes all fighter missiles. Reusable systems include both weapon systems and other types of systems, which are not consumed by use but may be reused indefinitely or after a recharge (like fLs).

Carrying external fighter ordnance slows fighters, losing 1/2 movement point (FRU) for every XO point of ordnance carried (one or two fXO points slow the fighter by one movement point). Small craft are not slowed by ordnance carried. Carried ordnance may be jettisoned in the firing impulse of the unit mounting it, or in the tractor beam phase, to allow the fighter to move faster, with the new, higher speed applying in the next movement phase.

04.16.03   Some types of fighters and small craft have internal fighter ordnance, usually weapons. Unless specified otherwise, this ordnance must be purchased in addition to the cost of the unit (including fXr on pn2) and may never be changed. Only Reusable systems (not Expendable Ordnance) may be installed as internal ordnance, and restrictions may apply as to what type of ordnance may be installed. For example, 2nd generation fighters may only mount weapons internally.

Internal weapons are indicated as a code in parentheses following the unit type designation; for example, an F2 with an internal fighter laser is an F2(L). In general, the code is the fighter weapon code without the fighter ("f") prefix. The following internal ordnance codes are used:

- L: Fighter Laser fL.
- G: Fighter Gun fG.
- L2: Fighter Internal Hetlaser fL2.
- P: Fighter Primary beam fP.
- Xr: Fighter Long-Range Sensor fXr.
- ?: Fighter ECM f?.
- Ls: Fighter Life Support fLs.

NOTE: Internally mounted fLs gives two extra hours of life support, as opposed to one extra hour when mounted on external fighter XO points.

04.16.03.1   If a given fighter has more than one of a given type of internal ordnance, the multiple is indicated by a number preceding the ordnance code; if a fighter mount different types of internal ordnance, a slash ("/") is used to separate the codes. For example: A F4 with one fL and two fG is designated F4(2G/L). Fighter long-range sensors (fXr) are always treated as 2 XO points when mounted as an internal system.
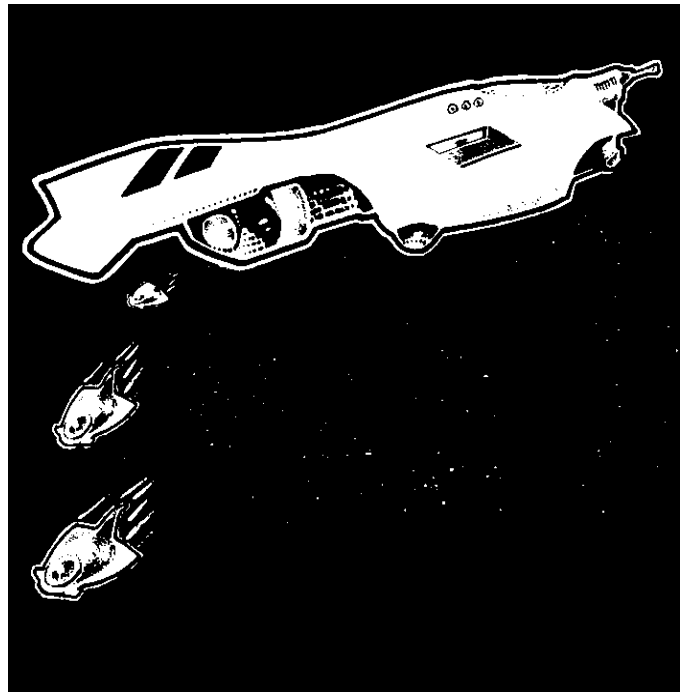
04.16.04   Fighter firing arcs apply, unless otherwise specified, for all fighter ordnance fired from fighters or small craft. See 04.06.01.4.

04.16.05 Fighter Missile Weapons

There are two basic types of fighter missile weapons, the fighter close attack missile (fR), which is a type of sprint-mode missile with an oversized warhead and very short range, and the fighter missile, "stand-off" regular mode missiles. Each has special characteristics, covered within the individual weapon rules.

04.16.05.1   A fighter may fire any number of missiles (such as fM1) in a single combat phase. All fighter missiles fired from a single squadron of fighters or small craft at a single target in a single combat impulse are considered a single salvo for point defense purposes.

04.16.05.2   Fighter close attack missiles (fR) cannot be sequenced closely enough to be considered part of the same salvo for fR fired from different fighters. Each individual unit's fR fire within a squadron is treated as a single salvo for point defense purposes.

04.17 Fighter Squadrons

Strikefighters are small, agile, one and two-man craft capable of operating up to several light minutes from their carriers or base. They are organized into squadrons of up to six fighters each and all fighters in a squadron are datalinked (as with Z). All fighters within a squadron must maneuver as a single unit, using a single counter, and the squadron fires as a single unit in a single combat impulse, although each individual fighter may attack a different target. Fighter datalink may be jammed

by ECM2 (27.11.03), in which case the squadron must continue to move as a single unit but each fighter counts as a separate unit for fire sequencing. If a given carrier (which includes any unit that has fighter bays and fighters) has a number of fighters that are not evenly divisible into squadrons of six, the controlling player must form as many full squadrons of six as possible, and the remainder may be organized into a single under-strength squadron, or reserved as replacements (not assigned to combat) for combat losses.

04.17.01   In addition, fighters may operate as individuals in the reconnaissance role, so long as they are all moved to separate interception hexes for this mission. In this role, the fighters cannot form into squadrons in space, and cannot use their datalink ability. 03.02.05.2 allows for an optional rule to operate fighters as individuals at all times, but in combat, this will prevent them from operating in datalinked squadrons.

04.17.02 Strikegroups

A strikegroup is composed of fighters operating from the same unit (starship, SS, BS, PDC). (See 07.02 for combining or switching strikegroups).

04.17.03   Gunboats (27.14.06) operate as fighters for purposes of squadron organization. Strikegroups are assigned and operate in the same manner, with XOg taking the place of fighter bays. If GB operate from a planet, those assigned to the same PDC are treated as members of a single strikegroup. GBs and fighters can not operate together in the same strikegroup.

04.18 Automated Weapons (AW)

Unmanned weapon systems are controlled by automatic firing systems, and select their targets by means of their programming. Three basic types of automated weapons are currently used in the Starfire system: IDEW (27.05.04 and 27.08.03), Minefields (27.08.05), and weapon pods (SBMHAWKs, 27.11.10).

04.18.01   AWs identify their targets by means of their limited sensors, and/or the IFF (04.05.03). AWs will attack any unit of the proper type within range if it is not identified as "friendly". However, minefields have less sophisticated IFF gear and make mistakes on occasion.

   AWs are deployed in an inactive state, and must be activated before they may attack. IDEW and minefields have specialized control systems (DCS and MCS), while weapon pods (SBMHAWKs) can be controlled by any unit that deploys them. The maximum range of deployment or recovery of IDEW, DSB, and minefields is 0 hexes using pressers or tractors. Units may use tractors to "sweep" individual enemy mines but only from the same hex, as the pattern and after undergoing any attacks for entering the hex.

   AWs groups are treated as a single unit when determining the order of fire. Minefields fire in the movement phase, unlike other AW systems.

04.18.02 AW Target Selection Procedure

Spreading Fire (applies to all AW): If the ratio of AW to targets makes an even spread of fire impossible, odd numbers of weapons are assigned working downward from the largest targeted unit. Among targets of the same size, odd numbers of weapons are assigned using random die rolls. If there are fewer weapons than targets, random die rolls are used to determine which targets are not fired on.

04.18.02.1 Target Selection, IDEW:

IDEW are programmed to engage non-friendly units within a programmed range, firing if units are at that range or less. IDEW are also programmed to fire in pre-designated groups of IDEW present in a single tactical hex. Each group will fire in simultaneous salvo, all firing in the AW fire Subphase (see Sequence of Play [02.03]), and spread their fire per 04.18.02. IDEW of the laser buoy (DSB-L, see 27.05.04) and IDEW (27.08.03) types may fire only at large units, and cannot engage fighters or small craft.

> **Example of IDEW target selection:** *75 IDEW are present in a single tactical hex, and are programmed to fire in a single group at a range of 4. If 3 hostile units have moved within 4 hexes, all 75 IDEW will fire during the AW Fire SubPhase with 25 IDEW assigned to target each of them. Alternatively, they might be programmed to fire in groups of 25, in which case the total would be 25/3=8.33 per target, or 8 each with a remainder of 1. If the 3 targets were a BC, a CA, and a CL, each would have received the fire of 8 IDEW, with the odd one targeting the largest unit, the BC. Had the ships all been CAs, a random roll would have selected the one that received the extra IDEW attack. In the following tactical turn, the next group of 25 IDEW would fire at any of the survivors that remained within range, plus any additional units that had moved into range. If only friendly units were in range in the following tactical turn, the next group would not fire, but would wait for the next opportunity.*

04.18.02.2 Target Selection, Minefield:

Active minefields will attack any large spacecraft that move into their range, which is 0 (the same hex as the MF) for all current MF types. Unlike other weapons, minefields execute their attacks in the movement phase of the turn, at the end of the movement impulse in which their target(s) entered, exited, or spent a movement point in place in their hex. If a non-friendly unit enters the range of an active unknown minefield, the owning player does not announce the presence of the mines until all movement has been completed for that impulse. As soon as all movement is completed, the minefield immediately attacks. A non-moving unit, such as a base that has been towed into range or a starship that has lost its drive, will be attacked by the minefields once on the first movement impulse of each turn that they are in range. (See 27.08.05 for minefield rules.)

04.18.02.2.1   Minefields ignore fighters, DSB, RD2, and most small craft. SBMHAWK carrier pods (see 27.11.10) may be attacked (see 27.08.05 for details.)

04.18.02.3 Target Selection, Weapon Pod (SBMHAWK): All pods fire in the AW Fire SubPhase. Each pod must be pre-programmed to fire at a specific unit type (such as DD, BC, CVL, SS, BS1, etc.) and on a specific turn. It cannot be programmed to fire at a specific class of unit or any individual unit. Pods can not receive orders once detached from tractor/presser beams, or once ordered to move (for those deployed "inert" in space, they can receive orders when activated by the deploying unit, which can simultaneously activate all of the pods it deployed itself, in its tactical hex). Hit probabilities of SBMHAWK are per the missile type used, at the range indicated.

04.18.02.3.1 All units, of the designated type fired upon, are attacked simultaneously; and all missiles fired at a single unit from the same tactical hex, comprise one salvo for point defense purposes. NOTE: SBMHAWKs do targeting by pods so that all missiles of a single pod always go to the same target. I.e. If you have one pod and two ships, all missiles of the pod will fire at a single ship.

04.18.02.3.2 Pods will only fire at units, of the selected type, within their detection range. Pods may be programmed to withhold fire for a number of tactical turns, in which case they will not fire until the programmed turn even if targets are within range.

04.18.02.3.3 Pods can also operate under the control of a unit that is towing the pod with tractors (one pod per tractor). Towed pods must be towed from the moment of deployment, do not slow the towing unit, and are pulled closer to the tractoring unit per 08.02.04. The towing unit can designate the target type in the declarations phase of the combat turn BEFORE the combat impulse on which they will fire. This may be in the same impulse as other pods fire, in which case all pods designated to fire at the same target type will fire in a single salvo, resolved as above. The unit towing the pod provides no other control than the selection of target type and the impulse of firing, but it will transmit any long-range sensor information to the pod, allowing the pod to fire using the sensor range of the towing unit rather than its own range.

04.18.02.4 Software Upgrades: At times, new software will be created that allows AWs to have additional targeting features. All software upgrades may be uploaded by a special control system into any AW no matter what tech level the AW was built at. It takes one tactical turn to upload the upgrade to all AW within range of the control systems.

04.18.02.4.1 Target selection, by hull type, IDEW: When the (DCS2) becomes available, a software upgrade allows IDEW to target hull types like pods do (BB, SS, BS1, BS2, etc).

04.18.03 Automated Weapon Control Systems:
These control systems normally do not control the weapons directly, but instead send programmed instructions directing them to activate or deactivate, and providing target selection information. In combat, these systems transmit fairly simple but secure orders to activate or deactivate the controlled weapon systems, and can selectively activate or deactivate each individual weapon system of the type controlled within its range. A single control system can control all friendly AWs of the proper type that are in the same system hex. All control systems issue activation/deactivation orders during the combat phase of any tactical turn on the combat impulse in which the unit mounting the system is designated as a firing unit by the owning player.

At a range of 30 tactical hexes or less, the control signal takes effect immediately, activating IDEWs in the same combat impulse (meaning they can attack later in the combat phase) and minefields at the start of the next tactical turn (as they attack in the movement phase). If the controlling unit is in a different interception hex from the automated weapons, but is within 30 tactical hexes, it may send its control signals in the same tactical turn. If more than 30 tactical hexes away in the same interception hex, or in an adjacent interception hex, there is a one tactical turn delay. For any distance greater than one interception hex, a delay of one tactical turn per interception hex of distance will be required for the signal to arrive.

04.18.03.1 Pods do not use specialized control systems. Any unit that deploys them is able to give them programmed instruction (before deployment), and order them to activate after being deployed, but has no further control over their actions.

04.18.03.2 IDEW require some generation of Deep Space Buoy Control System (DCS, 27.05.03). A single (DCS) can only control a maximum of 100 buoys each turn.

Any type of DSB-L (or IDEW) is prone to system failure if left activated for long periods. 10% (FRU) of each type of AW, in the same tactical hex, left activated for more than 10 system turns (10 days) in any month (1 strategic turn) will fail in each system turn after the 10th. (That is, if 100 DSB-L were activated and left activated, 10 would become inoperable in the 11th system turn of activation, 9 more on the 12th, etc.)

04.18.03.3 Minefields require some generation of Mine Control System (MCS, 27.08.04) to give the MF orders. A single (MCS) can only control a maximum of 100 patterns of mines per turn. Each pattern that is activated or deactivated counts toward this limit; also a (MCS) using direct control, no delay, can control the rate that mines attack enemy ships" (See 27.08.05.2.1 double rate fire).

04.18.04 Target Designation by Control Systems
If some type of crewed control unit controls an automated weapon, it is possible to give more precise target selection orders than the normal automatic selection procedures allow (04.18.02). Such control is limited by the capabilities of the AW to detect and identify targets.

A control system may order an automated weapon to engage targets in a given tactical hex, or a range of tactical hexes,

while ignoring valid targets in other locations. The AW may have the ability to discriminate between types of non-friendly units in the same hex but cannot distinguish between different individual units of a given type. Such control is limited by the range and time delay required for the control signals to reach the weapons.

04.18.05   No SBMHAWK pod may fire on the turn of transit. DPODs may however fire. When an SBMHAWK pod transits an unknown warp point, it does not have the equipment to find its way back to the just transited warp point. SBMHAWKs are only slightly bigger than cutters after being deployed.

04.19 Point Defense

These rules apply to all point defense type systems unless specifically noted in the rules of those point defense systems.

The version of point-defense mounted by PDCs uses more counter-missiles and fewer laser clusters than that used by starships, but the costs and hull space requirements are the same and there is no significant difference in how they work.

When "regular mode" missiles are fired at a target with point defense, roll hit probabilities normally and determine which (if any) hit. Point defense can differentiate hits from misses and normally ignores misses to concentrate on "hits" (i.e., the ones that will hit if not stopped), but PDC point defense may be used to engage misses as well, in order to decrease civilian casualties on inhabited planets.

"Sprint mode" missiles can only be engaged by PDC mounted point defense systems, at a -3 to intercept (see 04.09.03.1), and Kinetic Projectile Interceptors, all types.

Point defense is a weapon system, albeit a defensive one. Crew grade firing bonuses (07.00) apply to point defense interception rolls, but not even an elite point-defense crew may engage more missiles, in a single salvo, than a point defense system has shots. No unit's point defense may engage missiles fired from within its blind spot (but see Dz 27.09.12).

04.19.01 Salvo

All incoming missiles from a single unit or datagroup are usually considered a single "salvo," and large salvos can overwhelm point defense systems by saturating their targeting systems or simply providing too many targets to engage before impact. However, up to the saturation point, point defense tracking abilities are very good. To reflect this, each missile in a salvo has a equal chance to be intercepted by the point defense's countermeasures. Each salvo of missiles starts the entire point defense cycle over again.

If missiles of different types are fired in a single salvo at a unit that mounts point defense, the intercepting player determines the order in which they are engaged.

04.19.02 Combining Shots

Later versions of point defense may use combined shots at incoming missiles or mines to improve the chances of

interception (called a "targeting bonus") but the interception value added by each extra shot is not very great, and the to-intercept number is only 1 higher. In addition, the number of shots that can be fired at a single missile is limited by the type of point defense system (e.g., While Db can only engage each missile with a single shot, Dxz can engage each missile with up to three shots.) Extra shots must come from a point defense system with the same basic interception number and the number of extra shots used may not exceed either of the point-defense systems maximum number of shots. All missiles do not have to be engaged in order to use the targeting bonus (that is, the defending player can allow some missiles to slip through in order to concentrate on more dangerous missiles).

04.19.03 Multiple Point Defense

If a unit has more than one point defense system, the systems engage one after the other with each one using all its shots before the next system starts using shots. The one exception is when the next point defense system has the same base chance of interception as the currently firing system (e.g., D, Dz, and Dxz all have a basic interception chance of 7). No missile may be engaged more than once.

04.19.04 Blindspot

Missiles fired from within a targeted unit's blindspot may never be engaged by that unit's point defense; however, other units of the same datagroup may engage such missiles, but at -2 to the interception number. This is due to a lack of intercept data that would have been provided by the target unit itself.

04.19.05 Datalink Point Defense

Versions of point defense with datalink may protect other units in the same datalink group as long as the protected unit is within 2 hexes of the protecting unit AND the protected unit is not in the protecting unit's blind spot. Units whose datalink is not functioning, even due to ?2 jamming, are not able to protect or be protected by other units in the datagroup.

A datalinked unit is limited in the number of other units that may protect it, based on the type of datalinked point defense system. The defending unit must always be one of the protecting units (that is, it counts against the limit on the number of eligible units), even if it has no point defense or is being attacked from its blind spot. A datalinked unit is always protected by it's own point-defense systems (regardless of point-defense type).

When a single salvo is split between different units of the same datagroup, the defending player may choose to defend against the salvo however he wishes including sacrificing one member of the datagroup in order to have a better chance to protect the other members. Remember that each point-defense system fires only once because it is a single salvo.

04.19.06 Engaging Fighters

Point defense may also be used to engage fighters, small craft, and/or courier drones, but each point defense system so used is

considered an offensive weapon; it may engage only one such unit per combat phase and cannot be used to intercept missiles in the same turn. (See 28.03: Fighter Kill Table)

04.19.07 Interception Die Roll Modifiers

- CM is engaged by point defense at -1 to intercept.
- ADM is engaged at -3.
- Pg packets are engaged at -5 (see ISW-4 for how Pg works).
- LT (laser torpedoes) are engaged at -3.
- E.g. CM-LT are engaged at total of -4.
- All Dc type point defense systems engage mines at -1.
- PDC point defense may intercept sprint mode missiles at -3.
- Mines are intercepted like missiles, but many modifiers are different. See 27.08.05.5 for full details on mine interception.
- Non-minesweeping units engage mines at -2.
- AMMF are an additional -1 to be intercepted.

Example 1: *Four ADMs and nine SMs are hitting a ship with FOUR D. The defender has a total of 16 shots available, and chooses to maximize his chances of stopping the ADMs, doubling against them. There are only eight more shots available, so one SM is allowed through without interception. The basic intercept number vs the ADMs is 7. Missile modifier is -3 and doubling adds +1 for final intercept number of 5. The player rolls 2,5,6, and 9, resulting in two engine hits. The basic intercept number vs the SMs is 7 and there are no modifications. For the SMs, the rolls are 1,2,3,6,7,7,8,9 resulting in two additional SMs slipping past the point defense. The result: target ship loses two engine systems and its three left-most systems.*

Example 2: *A ship with two D and one Dc is being hit by five CM. The defender has eight 'D' shots and five 'Dc' shots available, and distributes them as follows: Two CM*

are doubled against by 'Dc' (4 'Dc' shots used); intercept number is 8 - 1 (CM) + 1 (doubling) = 8. One CM is taken by the last available 'Dc' shot; intercept number is 8 - 1 (CM) = 7. Two CM are doubled against by 'D' (4 'D' shots used); intercept number is 7 - 1 (CM) + 1 (doubling) = 7

So, there will be two rolls against '8' and three rolls against '7'. One D will remain available for use against fighters or small craft, since only four 'D' shots could be used against this small a volley. (Remember that 'D' and 'Dc' shots cannot be combined as they have different base interception numbers.)

The interception rolls needing 8 are 2,8 and the rolls needing 7 are 4,7,8, resulting in just one hit.

Example 3: *A CL datalink leader group is in serious trouble. The opponent has deemed it worthy of a SD battlegroup's attention, resulting in the four ships of the datagroup receiving 16, 22, 24 and 25 SM-b hits respectively. Each ship has three Dz available, for 4(Dz)*3(ships)*4(shot per Dz) = 48 shots to defend the datagroup. Seeing that they cannot possibly defend against all hits, they write off the two heaviest hit units in their attempt to save at least something. Trying to intercept all missiles aimed in the first two vessels once requires 16+22 = 38 shots, meaning that they can double against 48-38 = 10 missiles. Trying to get two ships away from this mess, they assign all double shots to the defense of the second ship. Thus, the 16 SMs hitting the first ship are not doubled against, and are stopped on 7 or less (no modifiers). 12 SM hitting the second ship are not doubled against, and are stopped on 7 or less (no modifiers) while the last 10 SM hitting the second ship are doubled against, and are stopped on 7 + 1 (doubling) = 8 or less.*

The dice are rolled, resulting in five hits against CL#1 and six against CL#2, leaving both bleeding but still alive. Their partners were blown to rather tiny pieces, each receiving at least 48 points of damage.

04.19.08 Point Defense Abilities Table

Tech Level	D Type	Hull Space	System Cost	Intercept numbers	Max. # of shots	Special Abilities
2	Db	2	15	3 on 5	Single	None
3	D	2	25	4 on 7	Double	none (Vs fighters 3,3,2,2,1)
4	EDM1	3 XO	---	---	---	30-50% kills vs. inbound
6	Dc	3	35	5 on 8	Double	none (Vs fighters 1,1,2,2,3,3)
7	Dz	2	50	4 on 7	Double	Datalink
9	Di	2	35	5 on 6	Double	Anti-fighter (Vs fighters 5,4,3,2,1,1)
10	Dx	2	75	5 on 7	Triple	Datalink (Vs fighters 8,6,5,4,3,2)
10	Dcx	3	100	6 on 8	Triple	Datalink (Vs fighters 2,3,4,5,6,7,8)
11	Dxz	2	120	5 on 7	Triple	Cmd Datalink (Vs fighters 8,6,5,4,3,2)
12	Dcz	3	160	6 on 8	Triple	Cmd Datalink (Vs fighters 2,3,4,5,6,7,8)
3	Dk5	3	15	3 on 4	Single	+1 per 10 full hexes of range, Datalink
6	Dk4	3	30	4 on 4	Double	+1 per 7 full hexes of range, Datalink
9	Dk3	3	50	5 on 4	Double	+1 per 5 full hexes of range, Datalink
12	Dk3z	3	75	6 on 4	Triple	+1 per 5 full hexes of range, Cmd Datalink

05.00 Damage Control and Emergency Repairs

05.01 Damage Control

STARFIRE combat turns are too short for most damaged systems to be restored to usefulness, but shields are a special case. Because shields go down when their circuit breakers pop, it is possible to reset them under certain conditions.

If a unit takes no damage of any type for three consecutive tactical turns, one HS of shields is restored to function. (Erasing the mark placed over the last destroyed S or 3 S1 on the control sheet indicates this.)

For each additional tactical turn that passes without damage to the unit's shields, one additional S is restored to function. Note that this means a ship could take laser or primary fire and continue to restore shields, as neither of these weapons inflicts shield damage.

[As an optional rule, players may agree that units can restore one HS of shields after any turn in which the unit takes no shield damage on the rationale that damage inflicted elsewhere in the ship has no effect on damage control parties working in the shield generator compartments.]

05.02 Emergency Repairs.

Emergency repairs are not the same as damage control. Damage control covers the restoration of systems during combat; emergency repairs are made after the unit is no longer engaged in a fight for survival.

Any unit may attempt to repair damaged non-armor systems once an engagement is over. Note that even if these repairs are successful, they are "jury rigged" and will require complete repair by a shipyard or machine shop module (see 15.09.04, "Repairs to Damaged Units") before they can be fully relied upon. Only a shipyard or a machine shop module can repair armor (which, for this purpose, includes bulkheads).

To make emergency repairs, the owning player rolls 1D10 for one damaged system per interception turn. If he rolls a 3 or less, the damaged system is restored to function; if he rolls a 4 or higher, the damage is too severe to be made good out of shipboard resources, and he may not attempt to repair any system more than once. Fighters and small craft destroyed with their V or Bb cannot be repaired.

Any system that has been restored by emergency repairs is circled on the control sheet and functions normally as long as it is not subjected to extraordinary strain (like combat). In the Record Keeping Phase of each tactical turn in which a unit with repaired systems takes damage inside its shields, the owning player rolls 1D10. On any roll of 5 or less, one repaired system of the owning player's choice goes down from vibration, power surge, etc. This system must be in addition to any system(s) destroyed by newly inflicted combat damage. Note

that crew grade (see 07.00) may improve or worsen a crew's chances to make repairs.

05.03 Self-Repair

Units which mount (SYx) (shipyard modules, 27.03.10) or (Msx) (machine shop modules, 27.05.06) and are currently in maintenance may effect complete repair of their own systems (including armor) as if they had been returned to a shipyard (see 15.09.04) within the build limits of the on-board MS or SYx. They may not repair systems aboard other units unless sufficient repair resources are available from their own or additional cargo holds, but their own repairs may be made and added to the cost of maintenance. The advantage a unit capable of self-repair has is that it can continue to operate, rather than shutting down, during the repair process including movement.

In an emergency (as, for instance, when new combat is expected within hours or days rather than weeks) a ship mounting (SYx) or (Ms) can use it to assist in making emergency repairs to that unit only. Success is not assured and armor and bulkheads may not be repaired, but the player subtracts 3 from any repair roll made in accordance with 05.02, above.
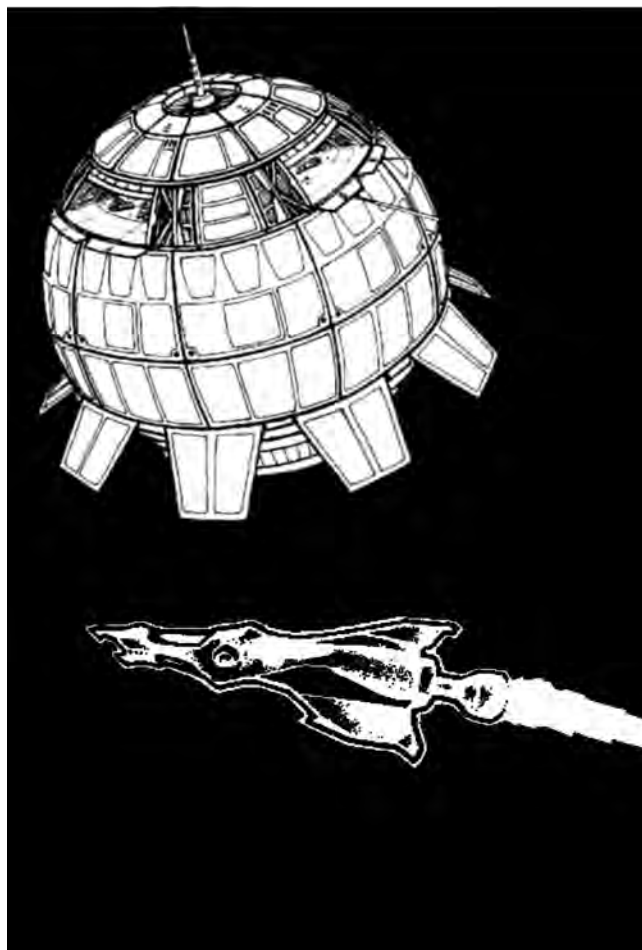
06.00 Readiness States

One major change of Sky Marshal #2 is addition of an optional rule eliminating of many readiness states. With the printing of this rulebook, the old readiness states become optional; for players who wish to use them and they may be downloaded from the SDS Web Site.

06.01 Definition of Readiness States

Mothballed units are completely inoperative and may not be made operative in less than one complete strategic turn. As they have no operable drive fields, they are highly susceptible to missile damage, and a raid on units mothballed in orbit can be devastating.

Normal readiness is a combination of alert and General Quarters (GQ). All defensives are fully manned and active. Weapons are mostly unmanned. Dk# may not fire at ships (offensive action). D may fire at fighters (defensive action). A CSP of ¼ of small craft and/or fighters may be maintained (This is 25% of the entire amount of fighters available to the fleet.) Starships holding station around a warp point cannot exceed SAFE strategic cruising speed (03.11.01) on the first turn of surprise combat. A ship may increase speed by 1 MP each turn after the first turn of surprise until full tactical speed is reached. The speed increase limit actually applies any time a ship is surprised and cruising at any strategic speed (might happen with cloaking or surprise attack from an asteroid field). NOTE: Engine deactivation and reactivation will remove the speed limit.

All of the above restrictions are lifted when the unit makes a successful activation roll (see 06.02.04).

Active or Activated units have all systems fully manned and functioning.

06.02 Warp Point Assaults, Combat, and Readiness States

Readiness states will not normally have much impact in deep space, as an incoming enemy will usually be detected in time for any unit not in mothballs to be activated.

In the case of warp point assaults, however, the attackers will usually achieve tactical surprise.

06.02.01   An attacking starship suffers some loss in efficiency on the tactical turn it makes transit due to the effect of the warp point's grav surge on its electronics. Specifically, in the combat phase of the turn that a unit transits, all of its offensive fire is at a -3 hit probability before all other modifiers. In addition, point defense is at -1; long-range sensors, datalink, multiplex tracking, and ECM of any generation are inoperable

(including EM); and fighters, small craft, and jump rack ships may not be launched; however, gunboats can launch on the turn of transit.

06.02.02   Severe as the combat degradation of a transiting starship may seem, the defenders' problems are worse. Bases, starships, fighters (even CSP), and IDEW (27.05.04 & 27.08.03) must all be activated before they may engage the suddenly appearing enemy. Minefields (27.08.05) are active and attack normally if an (MCS) is present. If an (MCS) is not present and the mines have not been specifically activated, the minefields are not active and must be activated by an (MCS).

06.02.03 Activation of Surprised Units

Engaging an enemy that has transited a warp point is a matter of reacting to surprise. Each unit has a chance to be fully active. The activation roll is made during the combat phase. When it is the defender's turn to fire a ship/group, he may choose from among the following options:

Activation options

A. Pick active unit/group to fire or,
B. Attempt to activate a unit/group via an activation roll. Only a unit/group that has not tried to activate this turn may attempt activation.
 B1. If attempt to activate fails, those ships remain at normal readiness for the rest of the turn and the defender may choose A or B again (for different unit(s), of course).
 B2. If attempt to activate is successful, then the unit/group is fully active (see 06.02.04). Just activated units may conduct offensive fire and may emergency launch all fighters, gunboats, small craft, or ships on jump carrier racks. An emergency launch puts the launched vessels in the same hex, same facing as the carrier. None of the launched units may fire this turn. Note: the ships in jump racks may activate before the carrier is able to launch them. A successful activation roll always counts as the defender's combat impulse even if the ship does not fire.

06.02.04 Activation Roll

During the first tactical turn of surprise, each surprised ship, base, datagroup, etc., has a 3 in 10 chance (roll 3 or less) of becoming fully active. The defender may choose to roll for activation by datagroup or by ship but may only make 1 roll per turn affecting a unit). For each additional turn after the first turn of surprise, each unit receives a cumulative bonus to the activation number of +1 (i.e. the chance of activation on turn 7 is a 9 in 10 chance).
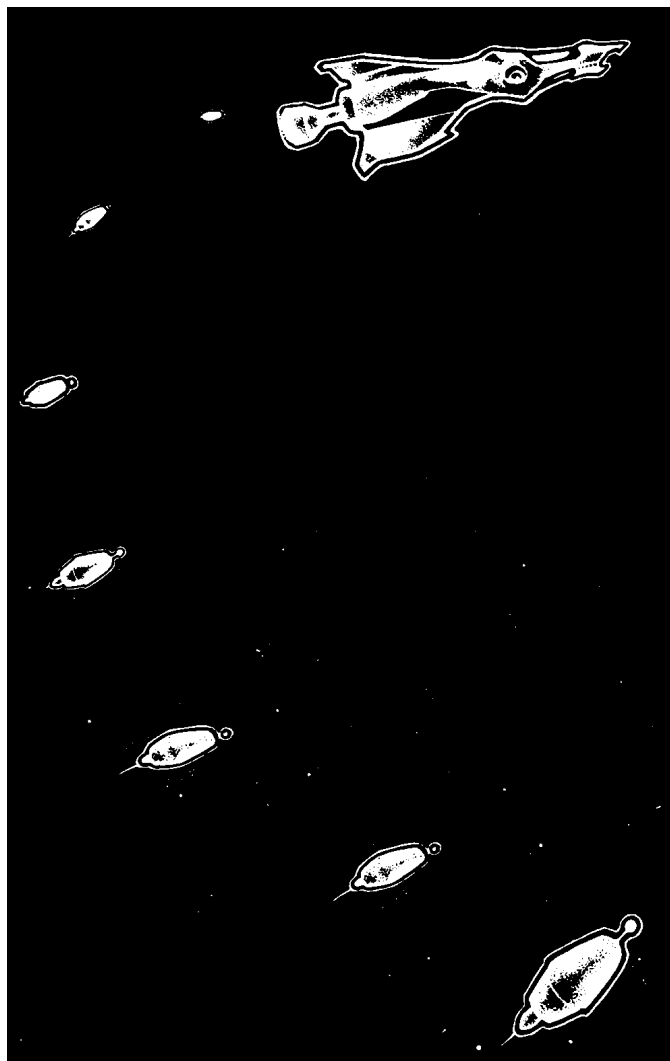
BS, SS, AF, and PDC add a +1 bonus to the activation number.

Ships with FT hulls subtract 1 from the activation number.

Crew grade: Elite crews add +1, green crews add -1, and poor crews add -2 to activation number.

CSP units (Fighters, GB squadrons, and small craft) receive a +2 to their activation rolls. Any such craft launched after the beginning of the battle is fully active on the turn of launch. Ordnance loads must be determined prior to battle.

MCS or DCS systems activate MF and IDEW; these control systems are activated when the spacecraft mounting them are. If a MF was activated prior to combat, no additional activation is needed. See MF rules.

EFFECTS: During the first turn of transit, the attack would only face, on average, 30% of the defending force; on the 2nd, 58%; on the 3rd , 79%; and so on. The attackers' initial ships should survive unless they are overwhelmingly outnumbered; meanwhile, the defenders also get "reinforcements" every turn.

06.02.04.1 If the defenders have been warned of the attack by a picket, they add +1 to the activation number for each turn or warning after the picket vessel or its warning courier drone (27.04.01) comes through. The maximum warning bonus is +4.

Note, however, that no unit may remain active for more than 36 hours (3 system turns) at a stretch. If no attack comes in during that time, it will revert to normal readiness in the fourth system turn following the picket's return.

06.03 Surprise Attacks

A surprise attack occurs when an opponent is detected, without warning, at a range of 1 system hex or less.

Some of the more common occasions when surprise attacks may occur; a warp point assault, fleets without Xr, an attack from an asteroid belt, or an attack from behind a moon or planet, detection of ships with engines off, or attack by/detection of a cloaked unit.

The defender cannot use EM on the first turn of a surprise attack. A warp transit cancels all EM for the rest of the turn.

06.04 Maintenance Levels

Tracking maintenance levels, costs, and transportation can be a huge pain. Thus, there are just two levels of maintenance (see 06.01): Mothballed and Normal (15% per turn).

NOTE: Because maintenance costs are usually the same from turn to turn, maintenance can be tracked as a running total. On the turn after a unit is built, demothballed, or purchased (including unit given to you), add its maintenance cost to the maintenance total before paying maintenance for that turn. On the turn, after a unit is destroyed, captured, sold, or given away, subtract its maintenance from the running total. On the SAME turn a unit is mothballed or scrapped, subtract its maintenance from the running total. Refitted ships add/subtract the difference on the turn after the refit is completed. Mothballed ships maybe refitted but such ships must pay maintenance while being refitted.

06.04.01 Starfire assumes that a service contract for the maintenance of DSB, MF, and IDEW is included in the purchase price of those systems. Therefore, the player pays no maintenance on these systems after purchasing them.

06.04.02 Missile Cost and Usage

In Imperial Starfire, a major paperwork problem was buying, building, and shipping missile replacements to every unit in the game that used missiles. This system provides a relatively easy method to track missile loadouts without eliminating most of the costs involved; this system also provides a better balance between ships that rely on missiles and those that rely on beam weapons. Regardless of which system is chosen, all players should use the same system.

Every time a new unit enters service (from a shipyard, or being bought, etc) add the adjusted number of Mg aboard the unit to the total number of Mg in the assigned fund.

Every time a unit leaves service (scrapped, sold, destroyed, mothballed, etc), subtract the adjusted number of Mg aboard the unit from the total number of Mg in the assigned fund. Exception: Damaged Mgs are not subtracted until they start repairs.

06.04.02.1 The Missile Fund

Each empire maintains a "missile fund" (referred to hereafter simply as "fund"). This fund represents the total amount of money the empire has in missiles stored either in Mg or on planets (if there is extra money in the fund). Missiles from this fund may never be sold but may be scrapped for 30% of their value. This fund may be increased at the beginning of any turn and the added money (missiles) is available during that turn.

Each turn, an empire must pay 15% of the fund as operating costs to replace practice missiles fired, war missiles fired, etc. Reduce the amount of the fund by any unpaid amount.

Every time a new unit enters service (at the beginning of the game, from a shipyard, or on being bought, etc) add the adjusted number of Mg aboard the unit (see below) to the total number of Mg in the fund.

Every time a unit leaves service (whether scrapped, sold, destroyed, mothballed, etc), subtract the adjusted number of Mg aboard the unit from the total number of Mg in the assigned fund. NOTE: Damaged Mg are not subtracted from the fund unless the ship carrying them leaves service.

06.04.02.2 Loadout Cost

Prior to a battle, a player must determine the amount of "cash" (loadout cost) available for loading each Mg and then determine what the Mg loadout of the unit is. Divide the missile fund total by the number of Mg in the entire empire to get the average value of missiles per Mg in the empire. This is the maximum cost of the missiles in each magazine on all units during that entire turn and is called the "loadout cost".

The "loadout cost" includes all types of specialized missiles that are used in Mgs except CDs. The XO rack maintenance cost covers XO missile loads of all types (except CDs). Thus, you don't pay to load missiles on ship XO racks.

Internal CD costs are included in the building and maintenance cost of the ship. However, CDs are normally replaced only at the beginning of each month. Populations are limited to 1 CD per combination of 15 PU and/or IU per turn (FRD). Internal CDs may never be transferred. Every time a player fires CD in excess of these limits, reduce the missile fund by 2 MC. During a turn, units must follow the reload procedure (06.04.02.4) to be able to fire extra CDs.

06.04.02.2.1 Average Loadout Cost per Unit:

Units with multiple magazines may exceed (or fall below) the loadout cost in some Mg as long as the total amount available for the entire unit is not exceeded.

06.04.02.2.2 You do not have to use the full loadout cost or space of the Mg (any excess MC are NOT available to any other units unless using 06.04.02.6). When a unit is destroyed, remove the amount loaded aboard the unit at the beginning of battle from the missile fund; unless the player transferred or reassigned the missiles for that unit elsewhere prior to destruction. NOTE: Damaged Mg are not subtracted from the fund, or from the total Mg in the empire.

06.04.02.2.3 Loading the Unit with Missiles

You must choose the loadout before the enemy is detected, or before making transit in a WP attack. In cases where one
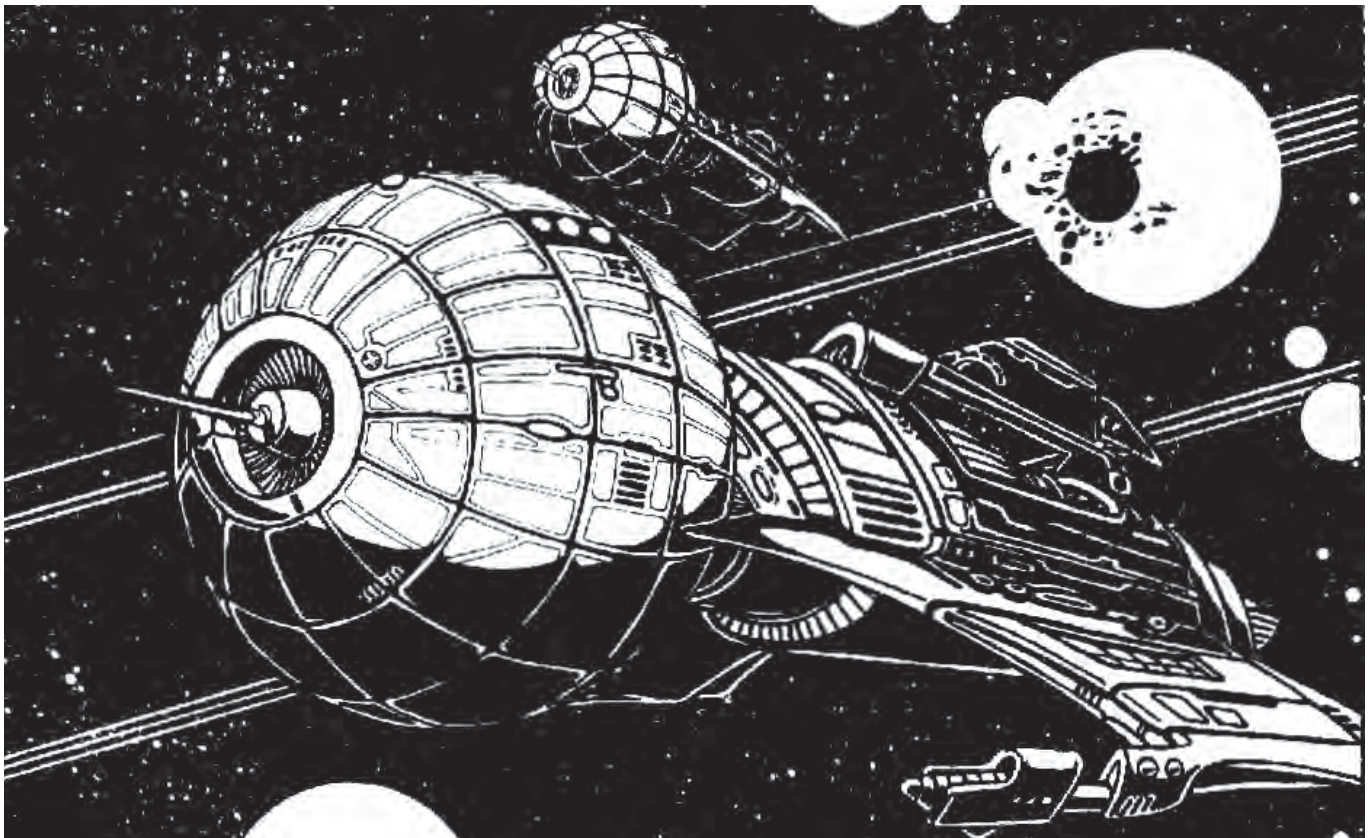
player has a greater detection range than the other or otherwise has a chance to gather information before the battle (such as pinnace scouting a WP), that player will be able to change his load-out using the reload rules, providing he has enough time before the battle begins.

> **Example:** *Player X is advancing toward a new planet after transiting a warp point. SM says, "Stop! Please loadout your fleet magazines." The player has 53 Mg in his fleet (including ships that are not in this system and therefore have no chance of being involved in the coming battle) and 9350 in the missile fund. Loadout cost per Mg is 176.41. If a ship has 3 Mg on board, then that ship will have 176.4x3 = 529.23 MC of missiles aboard the ship (less if the player chooses). The amounts and types of missiles in each Mg may be different. After the player finishes the loadout, the SM says "Player X, you detect a drive field at a range of 6 sH. What do you wish to do?"*

06.04.02.3 Specialized Unit Mg Cost:

Certain units tend to have a need for low or high ammo costs. A player may assign these units a higher or lower loadout cost, expressed as a percentage value of the normal Mg loadout cost. Adjust the number of Mg added to or removed from a fund by the number of Mg aboard the unit times the percentage. Changes to the percentage may be made either after a refit is completed or at the beginning of any turn. The player must adjust the number of Mg in a fund by the difference between the old percentage and the new percentage. The percentage is multiplied by the number of Mg aboard the unit and that amount is always used whenever the number of Mg for a unit is required (determining loadout value, the total number of Mg in the fleet, etc).

06.04.02.4 Reloading During a Turn:

During any single strategic movement impulse, a unit may spend one MP with an ammunition carrier, which must remain stationary, re-supplying its magazines (or use 08.06). An ammunition carrier is any CFN FT, Imperial FT, Warship, which either has Mg or has cargo H and is designated as an ammo carrier.

If the re-supply comes from other units with Mg, there is no cost (though those units may not re-supply other units nor go into combat during the same turn without paying to refill their Mgs). However, if the re-supply comes anywhere other than Mg (for example, from a CFN ship or from the holds of another unit), AND the reloaded unit is subsequently engaged in another battle during the same turn, then the amount of re-supply added to the unit MUST be paid on the next turn OR subtracted from the missile fund. The re-supply cost is always equal to the loadout cost for that unit that turn (in other words, you spend the "time" to reload and IF you go into battle during the same turn, you make a note about paying for the extra missiles the next turn).

06.04.02.4.1 Overloading:

The above rules assume that an empire will not be expecting a battle. At times, a player knows a battle will occur during the turn. In such a case, he may wish to fully fill his Mg with missiles.

At the beginning of a turn or at any time during a turn when a unit spends the required amount of time to re-supply its Mg (see 06.04.02.6), the unit may overload for the remainder of the turn. Track the amount of overloading, in MC, next to the unit and deduct it plus 20% from the next turn's income or from the missile fund. If using 06.04.02.4, re-supply costs may also apply. This rule may also be used to underload the Mg prior to battles, such as deadly warp point battles, but there is no refund (leave all funds totals alone and note the amount not aboard the unit).

Transferring Between Units: If the overload comes from another unit's Mg, there is no deduction from the next turn's income, and the unit supplying the missiles is marked as underloaded by the amount transferred.

06.04.02.4.2 Dumping
The dumping of missiles or fighter packs prior to combat, and the CRAMming of the Mg in combat costs the missile (or fighter pack, see below) fund an amount equal to the amount of missiles/packs dumped or CRAMmed. Any other method of getting rid of missiles without loading them on to another ship is considered included in this rule. Examples would be: firing missiles at empty space, firing at empty asteroids, firing at ships with no chance to hit, selling/giving the missiles to another race, etc. In all of these cases, the player is not using the missiles as they were intended and should not have them replaced for just the maintenance fee.

06.04.02.5 Fighter Pack Fund

Once fighters are developed, a second fund is created, the "fighter pack fund". This fund works just like the missile fund, but all Mg on a ship must be placed in either one or the other fund. Moving a ship from one fund to the other can only be done at the time of a refit (06.04.02.3).

06.04.02.6 Average Fleet Loadout Cost (Optional)

Since some ships use different standard loadouts that are cheaper than the average amount, other ships in the same battle fleet should be able to use the amount not used. However, some restrictions are required to prevent odd manipulations that amount to cheating:

- A unit's magazines must be at least 90% full (in csp) to transfer any extra amount to another unit.
- Only ships traveling together in a group may use this method. Ships not in the same system hex do not qualify as a "group".

DESIGNER'S NOTE: Why no increased cost for combat? War maintenance costs more for the whole empire. The increased maintenance and missile building costs are assumed to be offset equally by wartime increases in production rates. We assume that both increase but at the same rate (simplified but effective). The increased war maintenance includes the cost of all replacement missiles. Hence no tracking and no trouble.

07.00 Crew Grade

Definitions:

Squadron: a group of up to six fighters who work as a team in combat. Each fighter has the same crew grade, and adding replacements to a well-coordinated team can cause grade loss.

Flight Crew: all pilots who are assigned to the same carrier unit, both those assigned to a fighter (i.e. strikegroup) and those resting on the unit. Flight Crew is the same as SG + RP.

Strikegroup (abbreviated "SG" in this section): all fighters and their current pilots operating from the same unit (starship, SS, BS, or PDC). The rules refer to the grade of the strikegroup although crew grade is actually a function of the strikegroup's pilots and not its fighters.

Crews with greater experience, training, and esprit de corps become better fighters, reflected by assigning "earned grade" to veterans. Units may earn grade up to the level of "average" without facing combat, but grades above average can be earned only through actual combat experience or, if the Graded Admiral rules (see 07.04) are used, by intensive drill under a crack or elite admiral.

Carriers and their strikegroups always have the same grade unless the optional rules for strikegroup grades (07.02) are being used.

For a unit to gain experience, the unit must be a part of a force that participates in an engagement, whether or not it is fired upon or fires itself. A carrier earns grade both for engagements the carrier fights in and for engagements in which only its SG fights. If both a carrier and her SG fight in the same engagement, it counts only as a single battle for experience and grade.

In order to earn grade, a unit must face at least some challenge. For this purpose, therefore, an "engagement" is defined as a battle in which the opposing side's force point total is at least 25% of the total for the side of the unit in question, calculated as for 04.13.01. This means that the weaker side might be able to count a battle for grade purposes while the stronger could not. (Which is only fair; 17 SDs that polish off a single ES haven't been very challenged, but should the crew of the ES manage to escape, they certainly have been!) [As an optional rule, players agree that each side in any battle divides its total force points by the total force points of its opponent and awards its units a number of engagements equal to the result. Note that this means that units may fight "fractional" engagements for morale proposes.]

A crew transferring to a different unit can not maintain a grade above poor.

There are 5 normal grade levels: poor, green, average, crack, and elite. Initial or original units are average grade unless NPR governments are in use (See 16.10b in Sky Marshal #2). Small craft, except GB, may not a grade above average.

Grade	Inept	Poor	Green	Avg.	Crack	Elite
Initiative	-3	-2	-1	0	+1	+2
To Hit	-3	-2	-1	0	+1	+2
Crew Function	-3	-2	-1	0	+1	+2
Activation	-2	-1	0	0	0	+1
Breakoff	-30	-20	-10	0	+10	+20
Surrender	-30	-20	-10	0	+10	+20
Pilot Rolls						
Anti-shipping	-2	-1	-1	0	+1	+2
Anti-fighter	-2	-2	-1	0	0	+1
Rearming	+3	+2	+1	0	-1	-2

NOTE: The initiative roll modifiers listed above apply only when a graded unit is operating independently or when the graded unit is the flagship of a larger formation. When operating as part of a formation, a graded unit uses the initiative roll of the formation.

Crew Function includes emergency repairs and engine malfunction rolls.

Anti-shipping is for fighter and GB pilots vs Large Units.

Anti-fighter is for fighter and GB pilots vs Small Units.

Rearming is the modifier to the amount of turns required to rearm fighters. This modifier also applies to the time needed to reset datalinks (04.15).

07.00.01 Only NPR governments can have "Inept" crews. When NPR governments, who start with a crew grade of Green or Poor (see 16.11b in SM#2), build new ships they start at inept instead of poor. In all ways other than the different penalties, treat inept crews as poor.

07.00.02 "Poor" crews are crews which have suffered heavy casualties in a prior engagement or been disorganized by loss of command control. Newly commissioned ships also have a crew grade of poor. Poor crews become green after surviving one engagement or remaining continuously in commission for 6 strategic turns without combat.

Note: "Continuously in commission" includes refits and repairs, but not mothballing.

07.00.03 "Green" crews have limited experience and are still learning to work together. Green crews become average by surviving one engagement or remaining continuously in commission for 18 strategic turns.

07.00.04 "Average" crews have seen some combat (if not a lot) or lots of peacetime experience. Average crews who survive 5 engagements become crack.

07.00.05 "Crack" crews are confident, experienced teams. Crack crews who survive another 5 engagements become elite.

07.00.06 "Elite" crews are the cream of the crop, with extensive combat experience and well-oiled teamwork.

07.00.07 Each level of grade above average adds 10% to the crew's Racial Militancy and Determination for Break-Off or Surrender Rolls. Each grade level below average subtracts 10% from Militancy and Determination.

07.00.08 Even the best crews cannot do the impossible; thus, crew hit bonuses may not be used to fire weapons at ranges beyond the maximum effective range shown on the PROBABILITY OF HIT and WEAPON DAMAGE tables, and grade does not change the damage a weapon inflicts.

07.00.09 Just as the best crews cannot do the impossible, unit grade is ignored for purposes of determining initiative unless the graded unit is operating independently or is also the flagship rolling for initiative for the force of which it is a part. This reflects the fact that even a superbly crewed and manned ship will not know what it's supposed to do in a given turn until it receives its orders from the flagship.

07.01 Losing Grade

The grade of any unit that surrenders automatically becomes poor. Units which suffer the loss of more than 1/2 their non-armor systems lose one increment of grade due to the casualties such damage reflects.

In addition, any graded unit returned to the yard for refit or repair is temporarily reduced to poor status until it completes its one-month "shake-down cruise," per 15.09.08. At the end of its shake-down cruise, a unit reverts to whatever grade it had previously earned unless the damage repaired was sufficient to permanently reduce its grade as above.

Units of a task force or fleet which suffers the loss of multiple flagships suffer an effective temporary loss in grade during the battle (see 02.04.03.7) but will revert to their normal grade after the engagement even if they do not regain it during the battle.

Crews of units that are scrapped or mothballed lose all grade. That is, the crew is dispersed and its personnel assigned to other units. If a mothballed unit is later returned to service, it has a new crew, and is treated as a new unit (with an initial grade of poor).

Units of a fleet that abandons personnel from destroyed units may suffer a loss of grade. (See 07.03).

If the players are not using the Strikegroup Grade rules (07.02), a carrier loses one grade level if all of its original (at the start of the battle) fighters are lost in combat. (A carrier is usually able to rescue about half of its lost pilots in search and rescue operations, and so it must lose all of its fighters in order to lose 1/2 of its crews; for the sake of simplicity, this rule applies even in cases where the fleet is unable to rescue all survivors.)

07.02 Strikegroup Grade (Optional)

These rules account for the fact that the pilots and their support crew earn and lose grade in ways that are totally separate from the carrier itself. When using these rules, a carrier earns only ½ engagement (for grade purposes) for each engagement in which its strikegroup fights, unless it is actually in the engagement itself (either firing directly at the enemy or being fired upon). Strikegroup grade is recorded separately from that of the carrier: each SG will have its own entry for grade and (in campaign games) engagements fought and/or strategic turns in service.

07.02.01 Strikegroup Organization

Squadron: Aboard each carrier, strikefighters must be organized into as many full squadrons of 6 fighters as possible. If a given carrier's fighters are not evenly divisible into full squadrons (i.e., divisible by 6), the remainder may be organized into a single under-strength squadron. Any time reorganization occurs, squadrons must be organized as above. During combat, a player may choose to forgo reorganization on any carrier unit, but once out of combat, proper reorganization must occur.

Squadrons and strikegroups of the same grade that have landed on the same carrier may reorganize into a single strikegroup during rearming. This reorganization may take place aboard any carrier, regardless of what carrier the strikegroup was launched from, and may even combine fighters that were launched from different carriers (that is, multiple strikegroups may be combined). A player may choose to split a single strikegroup in order to facilitate reorganization, but only fighters from a single split SG may land on each carrier.

Squadrons and strikegroups of different grades may never combine during combat, and thus SG of different grades may not land on the same carrier at the same time (though SG with different experience levels within a given grade may; see 07.02.02, below). If fighters would otherwise be unable to land before their endurance runs out, two SG of different grades may, as a last resort, land on the same carrier. However, the two SG must remain separate.

07.02.02 Replacement Pilots

Note: After many headaches, the SDS decided to eliminate fighter pilot fatigue, as it is much too complex. In order to prevent player manipulation of the rules below, we had to force the combination of SG pilots of the same grade. In addition, we have removed the idea of single-man fighters. All fighters carry both pilots and they alternate the piloting of the fighter. GB have a crew of 8 (including two pilots) and likewise carry all crewmembers on board. In the rules below, any reference to a "pilot" or "crew" refers to all crewmembers of a single fighter or gunboat; any reference to "fighters" also includes GB. However, fighter pilots and GB crews in a given fleet are handled separately, and do not interact in any way.

Replacement pilots join a carrier's flight crew after a battle, and this is typically the only time when replacements arrive, though a player may initiate the procedure below at any time (as when transferring experienced pilots from one fleet to another, for example). Before a fleet takes on replacements, surviving pilots of each permanent grade MUST be reorganized and combined into full squadrons and strikegroups before replacements arrive, starting with the pilots of the highest grade in the fleet and working down; surviving pilots include both the crew of surviving fighters and crew rescued during search and rescue operations (07.03). These new SG may be assigned to any carrier unit, regardless of the assigned carrier of the original pilots, with the restriction that each carrier must receive a full strike group before another carrier can receive pilots of the same grade. In most cases, this will leave a single carrier (for each grade of pilots) with an incomplete strikegroup; determine the number of replacements pilots needed on each carrier as a percentage of the number of hanger bays on the carrier (or the number of XOg). Replacements may come from surviving pilots of a lower grade, or may be newly trained pilots (see below), as the player chooses. Check the chart below to determine the new grade of the combined group.

Note that the above refers to the assignment of pilots only; the fighters themselves may be reassigned freely among the carriers in the fleet.

	GRADE OF REPLACEMENT PILOTS				
% NEEDED	POOR	GREEN	AVG.	CRACK	ELITE
1-25%	-1	0	0	0	0
26-50%	-2	-1	0	0	0
51-75%	-3	-2	-1	0	0
76-99%	-4	-3	-2	-1	0

The negative numbers represent the number of permanent grade levels lost as a result of taking on replacements. However, the new grade can never be lower than the grade of the replacements.

In addition to grade, each SG has its own level of experience (engagements fought and/or strategic turns in service) earned within the present grade. During strikegroup reorganization (including reorganization in combat; see 07.02.01, above), pilots of different experience levels may be combined freely. When this occurs, the experience levels (both engagements and turns in service) are averaged to create a new level for the entire SG (add the experience of each individual crew into a single total, and divide by the number of crews in the new SG); these average numbers are not rounded. SG formed from pilots of different grades are treated as having no experience above that necessary to reach the new grade (which means that a player forced to take on replacements should mix the replacement pilots with the least experienced survivors within each grade).

At the end of a battle, a carrier must always take on enough pilots to give it 1 crew per V or XOg. This means that some carriers in the fleet may take on entire strikegroups made up of newly trained replacement pilots. A carrier may never be assigned more pilots than it has V or XOg.

Note that the above refers to the assignment of pilots only; the fighters themselves (and any replacements, regardless of fighter generation) may be reassigned freely among the carriers in the fleet, without any loss of pilot grade. Likewise, old fighters may be removed from a fleet and transferred elsewhere, while the fleet's pilots crew replacement fighters. In some cases, a fleet will have more pilots than fighters (given that one crew is required for every V or XOg, whether or not that V or XOg holds a fighter or GB); when this happens, a player will usually assign the available fighters to the carriers with the most experienced pilots.

07.02.02.1 Replacement Pilot Generation and Availability

Replacement pilots are always available anywhere the CFN travels (treat them like maintenance is treated). And as a last resort, any number of poor pilots can be drawn from the crew of the carrier itself (these pilots can later be transferred back to their old jobs--or to pilot school!--if more qualified replacements become available).

Pilots can also be transferred from one fleet to another (or to a training facility) via the CFN. One Q is required for every 5 fighter crews or for every GB crew transferred.

A fighter using empire usually maintains a pilot training facility on its homeworld. Such a facility costs 1,000 MC to create (including the cost of all V) and can generate 4 green pilots, per month, per fighter assigned to the facility. A training facility may have a maximum of 12 pilots (including the pilots in training) per fighter assigned to the facility, since previously trained pilots require periodic practice with a fighter to maintain their grade. Fighters assigned to the facility do require normal maintenance. An empire with gunboats must maintain a separate facility for training GB crews; the cost and operation of this facility are identical to a fighter training facility.

Green pilots may be assigned to a designated "troopship" that travels with a carrier fleet (when the fleet is not in battle) and still maintain grade as long as the total number of pilots in the fleet (pilots assigned to fighters, pilots assigned to carriers with no fighters, and replacements on troopships) does not exceed 2 crews per fighter in the fleet. (For purposes of this rule, 5 fighter crews or 1 GB crew count as 1 HS of crewmen, which means one Q can carry 250 fighter crews or 50 GB crews). In addition, pilots of grades higher than green may retain their grades and experience levels only if assigned to carrier units (even a carrier with no fighters has the training and other facilities needed to keep experienced pilots at the top of their form). Pilots lacking the required number of fighters lose all grade and experience levels after one strategic turn; experienced pilots not assigned to carriers for a similar amount of time lose all grade levels above green and all experience levels. Pilots in transit via the CFN never lose grade (though the SM should take care to ensure that players do not abuse this rule by shipping pilots back and forth on "trips to nowhere").

07.03 Search and Rescue Operations

Generally, there are some survivors even from totally destroyed spacecraft. (EXCEPTION: No one survives from a starship lost due to interpenetration during a warp transit.) Destruction of their ships always wipes out all grades for the survivors, but victorious fleets that do not pick up survivors may suffer a fleet-wide loss of morale. If a fleet does not conduct search & rescue operations, roll percentile dice for each vessel in the fleet. Any roll greater than (RM+RD)/2 +25 (FRU) indicates that the unit's crew grade drops one level due to lost morale.

The total number of personnel, in hull spaces, who survive to be picked up is equal to 1d100/2+25 * the total hull spaces of warships lost in the engagement (assume that some of these survivors come from damaged HS). The total number of survivors from destroyed fighters and gunboats is calculated in a similar manner, with separate rolls for fighter crews and gunboat crews (the crews of small craft may also survive and be recovered, but this need not be handled explicitly, unless, for example, a graded officer is being carried on board). Rescued fighter and gunboat pilots do not lose grade (see 07.02.02).

The life pods will keep them alive for up to 3 system turns, and the pods are equipped with beacons and so locating them for retrieval is no problem. All search and rescue operations take three system turns to complete.

Small craft or starships may help perform search and rescue. Normal small craft Q capacity (see 28.05) is doubled and the capacity of the Q aboard searching starships is tripled (see 09.06.02) for up to 10 days (FT Q capacity is NOT tripled, but treat an FT's own crew as occupying only 1/3 as much capacity as the crew of a warship of similar size); however, any unit carrying survivors in excess of its normal Q capacity suffers a -4 modifier to all dice rolls in combat because of overcrowding, if forced into an engagement before it can transfer its rescued passengers elsewhere. For the purposes of search and rescue, 5 fighter crews or the crew of a single gunboat are treated as occupying the same life support capacity as 1 HS of ship crew (as passengers, they have little use for the simulators and other support facilities normally required in their quarters). In most cases, passengers can easily be transferred to the CFN before the life support capacity of the rescuing ships runs out (unless the fleet is cut off from a line of supply to a friendly population); however, unless the battle takes within 9 system hexes of a friendly population, CFN freighters will never be able to arrive soon enough to assist in rescue operations.

If only some (but not all) survivors are picked up, the morale check roll above must still be made, but the effective Militancy of crews of surviving warships is increased by the percentage of survivors which were picked up.

Example: *A fleet's Racial Militancy is 56%. After an engagement, the fleet dispatches small craft to search for survivors. They discover that a total of 800 hull spaces worth of personnel have survived, and, since 800/50=16, they must have at least 16 Q worth of capacity aboard their few remaining*

ships if they are to pick everyone up. Unfortunately, the surviving ships have only 6 Q. Even after temporarily tripling their Q capacity, they can pack in only 12 Q worth of survivors (in addition to their own crews). Accordingly, they must abandon 4 Q worth of personnel because it is physically impossible to rescue them.

They have rescued 75% of the survivors. Because not everyone was rescued, the fleet must check morale, but the Racial Militancy is modified upward by the percentage of survivors who were rescued. The modified RM is 56+75=131 which makes the modified checking number 131/2+25 = 90.5 or 91 and so the units of the fleet will suffer a loss of grade only if the checking roll is 92-100.

It is possible for the modified checking roll to be greater than 99, in which case no checking roll need be made. Note also that since morale is checked on a ship-by-ship basis and units in a given fleet may be crewed by allied races with differing militancies, some ships may be required to check morale while others, with more militant crews, are not.

07.04 Graded Admirals (Optional)

Players in campaign games may allow for graded admirals. Using this rule, all admirals and unit COs begin play as "green" and a fleet can create as many green admirals and CO's as it happens to need.

An admiral earns grade for battles in which his flagship makes an initiative roll. A green admiral becomes "average" if his flagship makes an initiative roll in two engagements. An average admiral becomes "crack" if his flagship makes an initiative roll in four engagements. A crack admiral becomes "elite" if his flagship makes an initiative roll in six engagements.

A captain gains grade as his ship does. When a captain has gained crack status, he may be promoted to admiral with a grade of average. An elite captain can be promoted to an admiral with a grade of crack. If he retains his original ship as his flagship, the ship loses no grade when he is promoted. If he transfers to another unit, the one from which he transferred loses one grade and must regain it under its new captain. Promotions from captain to admiral can't occur during combat.

While poor, green, and average are also grades, the terms "graded admiral" and "graded captain", as used in the following rules, refers only to officers who have attained a grade level above average.

07.04.01   Graded admirals roll initiative for any force under their command using the grade they have earned, even if that grade is lower than that of their flagship, but they do much more, as well. They have been through the mill, and they know how to inspire and motivate their personnel, as well as being able to recognize which aspects of their crews' proficiency most urgently require improvement.

07.04.01.1   For every three strategic turns a graded admiral spends on a given flagship, he raises that flagship's permanent

grade (i.e., the competence of its command staff) one level, up to a maximum level equal to his own. He may then transfer to another flagship.

07.04.01.2   If a graded admiral spends one month drilling a poor fleet (or poor units in a larger fleet), he raises its grade to green. To qualify as "drilling" his fleet, he and all of the ships under his command must spend the entire month in the same star system at "normal" readiness.

07.04.01.3   If a graded admiral spends two months drilling a green fleet (exactly as above), he raises its grade to average. An elite admiral (only) who spends six months drilling an average fleet may raise the grade of its units to crack. No admiral may raise the grade of any unit above crack simply by drilling.

07.04.01.4   Drilling units must start the turn and remain throughout the turn in the same system hex as the drilling admiral. The ships may not engage in any other activity, including combat, during this time or the training is interrupted (they may gain grade from combat). Units interrupted in the middle of a multiple-turn drilling period either lose all time spent toward the drilling and count the engagement toward advancement or continue to count the drilling time and ignore the engagement experience.

07.04.02   In addition to training skills, graded admirals have the confidence to make independent strategic decisions. Normally, no fleet can move from one star system to another without orders from an imperial capital or Imperial Command Center (Strategic Rule 20.02.03), but a graded admiral in any star system through which word of an encounter with unknown or hostile units passes may move his forces on his own authority to respond.

A crack admiral may move only units originally assigned to him, but an elite admiral may order any units of his own navy in any system through which he passes to join his own command.

07.04.03   Graded admirals are also better able to "tough out" critical situations. The graded admiral commanding a force uses his Racial Militancy and Determination for all Break-Off and Surrender Rolls, and admirals receive a bonus of 20% (not 10%) for each grade above average.

07.04.04   No graded admiral ever loses grade, though a graded captain will do so if his ship does (this applies even for captains with grades of average and below).

07.04.05   If a graded admiral's or captain's ship is destroyed in action, roll 1D10 for each graded officer aboard. A roll of 1-3 indicates the graded officer bailed out in an escape pod and (if his fleet conducts search & rescue operations per 07.03 in the 3 system turns before his pod's life support is exhausted) he will always be picked up. Fleets may also elect to recover the escape pods of defeated foes, in which case any

admirals or captains become POWs and may, at the players' discretion, become part of a prisoner exchange.

07.04.06 Graded Admirals and Seniority.

Most players who use the graded admirals rule usually consider that any graded admiral is senior to any admiral of a lower grade assigned to the same task force or fleet, but this is highly unrealistic. In real life, many a crack or elite admiral has found himself working for a total incompetent, and *STARFIRE* can be much more interesting (and frustrating) if that possibility is allowed for. What players ought to do is assign each admiral a numerical seniority rating. (That is, the first admiral a player creates would have a seniority of "1" and the 27th admiral he creates would have a seniority rating of "27.") When this system is used, no graded admiral under the direct command of another admiral with a seniority rating numerically lower than his own may use his graded functions.

Players who want to get a bit fancier can establish ranks for their "admirals," listing them in order from lowest to highest as: Commodore, Rear Admiral, Vice Admiral, Admiral, and Fleet Admiral (or whatever neat alien equivalent you prefer). Using this sort of rank structure, they can promote especially deserving officers who are "out of the zone." Promotions should be limited to one rank level at a time, and a newly promoted officer has the lowest seniority rating of any officer of his new rank, but at least he can be moved up a bit more rapidly.

Finally, players may wish to provide for a junior officer that is gutsy enough to buck his superiors when he's sure he's right. In this case, the admiral in question should roll against the average of his Racial Militancy and Racial Determination, with a roll equal to or less than the average indicating that he has chosen to defy his superior. His own command (squadron, task force, what have you) will always go with him; other commands will follow his orders only if the owning player makes a checking roll for each additional command which is equal to or lower than its commander's Racial Determination. If the admiral the junior admiral is defying rolls less than or equal to 1/2 his own Racial Determination, he has decided to give his junior his head and goes along with him. If he doesn't go along, the junior admiral always faces a court of inquiry and may face a court martial. Although (unlike real life) he will never be found guilty, he must return to the nearest sector or imperial capital to defend himself, which will take 1/2 the roll of 1D10 in months after he arrives there. During that time, he is, of course, out of play.

(NOTE: In campaign games, the Space Master may choose to rule that a defiant junior admiral can lose in a court martial and set up his own house rules to conduct such trials. If he does so, his decisions are final despite the provisions above.)

07.04.07   Using the graded officer rule requires more record keeping, but it's nice to have an Admiral Nelson around at need, and "building" a legend in his (or her) own time can add a lot to player enjoyment.

08.00 Tractor and Presser Beams

08.01 General Description

The Tractor Beam Phase is a separate phase, falling between combat and record keeping, in which all tractor and presser beam activities are conducted. Tractor beams are used to capture or tow spacecraft; presser beams (reverse polarity tractors) are used to push them away; and both may be used for shifting cargo, minefields, deep space buoys, etc.

08.01.01   During the tractor beam phase, each player may attempt to lock onto spacecraft with his operational tractor beams. More than one beam may be used against a single target, but no one tractor may be attached to more than one target. To switch targets, a tractor must release its current target in one tractor beam phase and attach to the new target only at the start of the next following tractor beam phase.

08.01.02   Tractors and pressers are "fired" like any other beam weapon. Both have a maximum range of five tactical hexes. If the target wishes to be locked onto, add "+1" to the hit probability. In the tractor phase following that in which a single one of a unit's tractors or pressers locks onto a target, all of its tractors/pressers are automatically able to lock onto the same target. A unit "fires" its own tractors and/or pressers at a "+3" hit probability at any unit that has tractored it.

Since units are "firing" their tractors, they may not lock onto targets currently in their blind spots (04.06). If, however, a unit has established a tractor link, it is not broken simply because subsequent movement places the target of its tractor(s) in its blind spot.

08.01.03   No tractor beam may be attached to a unit with an operating shear plane (C). A unit with an intact but inactive C may switch it on (and break a tractor link) in any movement pulse or in the combat pulse in which it is eligible to fire. A single C will negate any number of tractor beams. Without a C, a tractor link is broken only if the tractor is switched off or destroyed.

08.01.04   Presser beams do not negate tractor beams, but they do have certain offsetting effects. For the most part, however, they have special and distinct functions that are described separately below.

08.02 Effects of Being Tractored

A tractor link creates a unique relationship between units. They may no longer maneuver independently, the smaller unit is drawn closer to the larger, the tractoring unit has established a precise lock on its victim (which gives it better sensor resolution), missile fire is affected, etc.

08.02.01 Sensor Data & Fire Control

08.02.01.1   The owner of a "shields down" unit that has been tractored must show its control sheet to his opponent on demand, regardless of the type of sensors carried by the tractoring unit. If the tractored unit's shields are up, the owning player need only reveal the numbers and types of operable systems aboard his unit.

08.02.01.2   A unit that has established a tractor link may use its primary beams (or those of any unit datalinked to it) against specific systems on its victim. Before firing each primary, the firing player details the type of technical system (shield, force beam, life support hold, etc.) against units with shields up, or the specific system, regardless of location on the target's control sheet, against units with shields down. If firing through intact shields, the player who owns the target spacecraft picks the actual system destroyed of the specified type. Any hit against a specified system, on a "shields down" target, always destroys the target system.

This capability works only in one direction; a tractored unit cannot snipe specific systems off the unit which tractored it. (Of course, if the target has its own tractors and can establish its own tractor lock, both sides have exactly the same advantage.)

08.02.01.3   A unit which has tractored another unit also calculates all energy weapon and "sprint mode" missile hit probabilities as if the range were 3 hexes lower than it actually is. Non-sprint mode missiles fire as if at the modified lower range or with the normal hit probability for the actual range, whichever gives the higher hit probability. Only the tractoring unit receives this bonus; the target of a tractor link does not.

08.02.01.4   All units tractored by a single unit are treated as a single target for that unit. (That is, a unit without multiplex tracking could fire on all the units it has tractored without any "multiple targets" penalty.) In addition, because a unit always knows exactly where the target of its own tractors is, a unit may engage a unit it has tractored even if subsequent movement has placed that target in the tractoring unit's "blind spot." (See 04.06.)

08.02.01.5   The downside of tractoring enemy units comes when the enemy is missile-armed. Any missile fired by a tractored unit automatically hits the tractoring unit unless stopped by point defense.

08.02.01.6   Units may never use tractors/pressers on enemy fighters or small craft, because these units are agile enough to twist free before the tractor/presser can lock onto them.

08.02.02 Movement While Tractored

Tractor beams can produce large chains of starships and/or bases locked together into what is effectively one huge vessel. If all of them are on the same side, they will (presumably) agree on the course that they want to steer; if they aren't, things get complicated.

08.02.02.1 Whenever a starship or base is tractored, it must declare whether it will shut down its engines, cooperate with the movement the tractoring unit seeks to impose upon it, or oppose that movement.

In this instance, "shut down" engines are actually throttled back to station keeping levels. They do not count for movement but do provide missile interdiction.

08.02.02.2 If tractors link two or more cooperating units, the net speed of the tractored chain must be calculated based on the average engine power of the units in the tractored chain as described below.

1. "Chain Hull Size Equivalent": Total the number of hull spaces in the tractored chain regardless of the unit type. Treat the result as a warship, on the SPACECRAFT HULL SIZE chart, of the maximum hull size of the next lower type; unless the total is exactly equal to the maximum size for a particular hull type. I.e., if the total is 145 HS or 130 HS (but not 129 or 165 HS), treat the entire chain as a SD. This is the "chain hull size equivalent".

2. "Strategic Towing Power": The total number of hull spaces of fully functioning (i.e., active, neither damaged nor shut down) engines (commercial or military) of the chain is its engine power. The number of hull spaces of tactical engines is multiplied by 2/3 (do not round--keep all fractions) for this calculation. This is the safe strategic towing power and does not require burnout rolls.

   Military (including tactical) engines may provide additional power, at the risk of engine burnout. Above, the individual units are providing tractoring power at their engines' safe power. If a unit wishes to provide extra power, it may do so. However, this will cause burnout rolls, just as if the unit were moving on its own and at a speed higher than its safe cruising speed (see 03.11.03).

   The extra power provided by military engines is expressed in terms of MP. When a unit provides additional tractoring power equal to "MP" (that is, enough power that the unit would have to roll on the burnout table as if it were moving 1 MP over its safe strategic speed), add twice the number engines required per MP for that hull type (see Table 28.07) to the total tractoring power. For every additional "MP" used, add the same amount to the total power; the total power can never exceed twice the normal power (for I engines) or three times the normal power (for J engines).

Example: *A BC with 15 I (speed 6, safe strategic speed 3) can safely provide towing power of 15. If the BC decides to add an "MP" of power, it can generate extra power of 5 (2.5 x 2), for a total of 20; if it does so it must roll for burnout as if it were moving at a speed of 4 (one MP over its normal safe strategic speed of 3). The maximum power which the BC could provide would be 30: normal power of 15, plus extra power of 15 (2.5 x 2 x 3); in this case it would be required to roll for burnout as if it were moving at a speed of 6.*

2a. "Military Tug Rooms": A tug engine room (see 08.02.02.5) containing military engines has two operating modes, "safe" and "full." Safe mode risks no burnout. Full mode provides extra engine power equal to the number of spaces of engines in the tug room. However, the chance of burnout in the tug engine room is 1% times the amount of extra power provided, each week. If burnout occurs, the number of engines suffering burnout is equal to 1d10*5% (5-50%) (FRD, but a minimum of 1).

2b. "Tactical Towing Power": For tactical towing, at tactical or interception levels, military engines can provide extra power without risking burnout (03.11). In addition, damaged engine rooms that have not been shut down can operate, with a risk of losing additional engine systems as noted in (04.04.01.2).

3. "Towing Speed": Multiply the engine power by 15, and divide by the total number of hull spaces in the chain, to determine the potential speed of the chain. All fractions of speed are rounded down, except at tactical and interception levels, where fractions are rounded normally. De-tuning is not allowed during towing operations. Engine tuners can increase speed by 1, but only if all units mount working engine tuners.

   Cross-reference the chain hull size equivalent with the engine type in Table 28.07 to determine the chain's maximum towing speed. If a combination of engine types is used, the chain uses the lowest maximum speed and the highest turn mode of the engine types is use.

   If only tactical engines (J) are used in a chain, multiply the average engine power by 20, rather than 15, in step 3.

3a. "Safe Strategic Towing Speed": The maximum safe strategic speed for a chain is equal to the maximum Ic speed for the chain hull size equivalent (see 28.07), regardless of the engine types actually used by the chain. For every MP moved above the maximum safe towing speed, each unit has a 10% chance to burn out engines (i.e., 1 MP above the maximum means a 10% chance, 2 MP means 20%, etc.). If burnout occurs, the number of engines suffering burnout is equal to 1d10*5% (5-50%) (FRD, but a minimum of 1). A unit using the maximum power available to it rolls for burnout as if it were moving at its maximum speed.

NOTE: Military-engine tug rooms and military-engined ships may be required to roll for both types of burnout at the same time.

4. "Chain Turn Mode": The turn mode of the chain is equal to the chain hull size equivalent's turn mode, unmodified by any advanced maneuvering systems present. If the chain hull size equivalent exceeds the largest size on the hull table (28.07), use the largest size for turn mode purposes. If using only tactical engines, the turn mode is based on tactical engines.

5. "Minimum Speed": Although fractions round down at the strategic level, a tractored chain always has a strategic movement allowance of at least 1 so long as the chain's engine power is a positive number of 0.5 or more.

Example 1: *The following units are all tractored together: a speed 7 DD with 30 hull spaces and 7 I, a speed 4 FT6 with 60 hull spaces and 8 Ic, a BS3 with 80 hull spaces and no I or Ic, a speed 5 CL with 40 hull spaces and 7 I and 1 "i," and a speed 6 BC with 80 hull spaces and 15 I. The chain thus consists of 5 units with a total of 290 hull spaces and an engine power of 45.5.*

290 is within the hull size range of a supermonitor (SM), but not at its largest size, and so the "chain hull size equivalent" is that of a heavy monitor (MH), with a turn mode of 6. The engine power is 45.5; that multiplied by 15 is 682.5, and when divided by 290 hull spaces, it yields a speed of 2.35, which rounds to 2, for both strategic speed (FRD) and tactical speed (FRN).

At tactical scale, the military engines can be run at higher output, doubling the engine power they generate. This would increase the engine power to 75, and would allow a speed of 3.8 except that a MH has a maximum Ic speed of 2.

Example 2: *Assume you have a tractor chain of 11 units - 10 enormous tugs and a single asteroid base, with a total of 9,086 hull spaces and 1,200 engine power. The "chain hull size equivalent" is 9,086 hull spaces, but the largest hull currently listed is a Juggernaut, which is 500 hull spaces. The turn mode is treated as 6 (as for JG). The engine power is 1200, which multiplied by 15 yields 18000; this divided by 9086 hull spaces equals a speed of 1.98.*

Example 3: *Assume you have a tractor chain with 2 units, one very large asteroid base and one enormous tugs, a total of 1900 hull spaces with a total engine power of 200. The chain hull size equivalent is larger than the largest hull listed, and so the turn mode is treated as that of a JG (6). The engine power is 200, which yields a speed of 1.58, which rounds to 1 at the strategic scale. At the tactical scale, the maximum speed for a JG or larger hull is normally (with Ic engines) 1; thus, although rounding would allow a movement rate of 2 at tactical scale, it is not available unless no Ic engines are used.*

If the engine power were derived from military (I) engines rather than commercial (Ic) engines, at the tactical scale the engine power could be doubled, yielding 3.16 for a potential speed. But the maximum possible speed for the large asteroid

fort is 2 (as a JG), and this would cause engine burnout rolls, as the maximum safe towing speed is only 1.

08.02.02.3   Whenever units in a tractored chain choose to oppose movement, their engine power is subtracted from their opponents' engine power to determine the chain's net engine power. If net engine power is less than 0, the opposing units determine the chain's movement.

Example 4: *A BB equipped with J engines has tractored a FT5, which is using Ic engines and opposing the movement of the chain. The BB engine power at tactical level is 32 (16 HS of J systems times 2), and the FT5 engine power is 12 (6 HS of Ic systems). The net engine power is 32-12 = 20. Total hull spaces are 145, and the chain equivalent hull size is that of a SD (turn mode 5). The speed of the chain is 2.07, which rounds to 2. If the FT5 cooperated, the net engine power would be 44, for a potential speed of 4.55. This is greater than the Ic speed for the BB hull (and the FT5 is using Ic), which has a maximum speed of 3. If the FT5 had no engine power at all, due to damage or other cause, the engine power would be 32, for a potential speed of 3.31, treating the chain as moving under Ic engines (which limits the maximum speed to 3). However, only tactical engines are in use, and so the procedure described in (4) is usable. The engine power (32) is multiplied by 20, not 15, yielding a speed of 4.41 (rounds to 5 at the tactical scale). The turn mode of the chain rises by 2 (to turn mode 7). The chain could move at this higher speed (or rather, at speed 4) at the strategic level, but if it does, the BB's engines risk burnout: since the chain is moving 1 MP over its safe strategic towing speed of 3 (based on maximum Ic speed-see [3a], above), the chance of burnout is 10%.*

Normally, the BB controls movement. But when it wishes to haul the FT5 for an extended period, it risks engine burnout (based on its speed equivalent for its engine power [8], which is 5 over its safe speed); this chance of burnout is in addition to any chance arising from moving above the chain's safe strategic towing speed. At normal power, the BC has an engine power of only 16 x 2/3, 10.67, a net disadvantage of 1.33 to the FT5, and the FT5 would control movement. If the FT5 were cooperative, the average engine power would be 11.33, and the net potential speed 1.17, which rounds to 1 at the strategic level.

Example 5: *Assume that in the chain in Example 1, the DD and the FT6 oppose the movement of the chain as a whole, at tactical level. The chain hull size equivalent remains unchanged, but the net engine power would be that of the BC and CL minus that of the DD and FT5, or ([15 + 7.5] - [7 + 16] = 22.5-23 =) -0.5. This net power is a negative number, and so the DD and FT6 control the chain's movement, but the engine power is only 0.5, and the movement rate is 0.03 (rounded to 0).*

08.02.02.4   BS station keeping drives interdict incoming missiles but are very weak compared to starship drives. No BS can ever compel a tractored chain to move, but it can oppose

movement. The engines aboard BSs are small and widely dispersed (which is why none are indicated on BS control sheets). For the purposes of this rule, each BS's engine power equals four times the numerical designation of the BS type. (That is, a BS1 would have an engine power of 4, the equivalent of 2 Ic, a BS2 would have an engine power of 8, etc.) BS0 has an engine power of two. Because they have no real movement capability, BSs can only oppose or "shut down" and, if they oppose, they oppose everyone. To reflect this, calculate the net engine power of the chain, ignoring opposing BSs unless the side the BSs are opposing has the engine system advantage, in which case the engine power of the opposing BSs is subtracted from the total. If the result is 0 or less after subtracting the BS's engine power, the entire chain is held motionless.

08.02.02.5   *STARFIRE* empires often build "tugs." Tugs may be designated by adding the code (TG) to the normal code for the hull type, so that a tug built on a CA hull would be coded as a CA(TG). (Use normal counters of the appropriate type with the (TG) code added to their control sheets.) Tugs are built with extra engines in a single additional engine room ("tug engine room") that may contain any number of engine systems the designer can fit into it. Only one additional engine room may be added, and its engines must be entirely of the one type but need not be of the same type as that used by the tug for normal movement. This additional engine room provides the tug itself with no movement points (and therefore cannot push it above the maximum speed of its hull type), but its engines can be phased into the massed drive field of a tractored chain to increase the net engine power (and thus the average engine power) of the chain.

> **Example:** *If the BC in the first example for 08.02.02.2 were a BC(TG) with an engine room containing 15 additional I, the total engine power of the chain would be 60.5, not 45.5, which would provide 290 hull spaces with 3.13 movement points (60.5 x 15 / 290), which would be rounded to 3 at either the strategic or tactical level.*

08.02.02.6   Once the speed and turn mode of a tractored chain has been determined, the player controlling the movement of the chain selects one starship to serve as the "point ship" of the chain. He may choose any starship from his side so long as it has at least one functioning engine room and is engine power to the chain's movement. The facing of the "point ship" is altered to that in which the chain as a whole is moving. Those units cooperating with the point ship then alter their facing to match. Units that have shut down their engines do not change facing, while units opposing the movement of the chain must turn to a heading directly opposed to that of the point ship. Note that this may expose blind spots of turning units (of either side) to enemy fire.

08.02.03   Tractor beams will not function through warp points, and so no unit may force another through a WP. This limitation also means tugs cannot move a unit without at least one engine room of its own over interstellar distances.

08.02.04   Whenever tractors link two units, the smaller unit is forced one tactical hex closer to the larger each tactical turn, regardless of which unit belongs to the side controlling movement. Engine power is not a factor; only relative size (mass) matters.

When large chains of units are involved, players may agree to ignore this provision rather than make all the fine adjustments required. When relatively modest numbers of units are involved, move the point ship first, then move all other units in the chain to conform to the point ship. After moving the chain, move the units tractored to the largest unit (or largest units, if there is more than one unit of the same hull size) one hex towards it (or them). Units tractored to units of exactly their own size do not move. Work outward from the largest unit(s) until all units that must move have been moved to conform to the rule. (Note that this can mean the point ship must be moved a second time if linked to a larger unit.) If more than one unit of the same size has a tractor link to a single smaller unit, the smaller unit between them does not move relative to either of them. If any of the larger units which have tractored the same smaller unit are forced to move closer to a still larger unit, the smaller unit moves with them unless it is also tractored to another unit which does not move, in which case the smaller unit stands still.

08.03 Presser Beams

If a unit mounts presser beams, it may use them to push a unit away. Pressers are "fired" exactly as tractors, and, like tractors, have a maximum range of 5 hexes, and so 5 hexes is the furthest any unit may push another. Regardless of which unit mounts the pressers, the smaller will move. Pressers push units away at a rate of 1 hex per tactical turn, moved after all other movement in the movement phase.

08.03.01   Directing pressers at a unit which has tractored the mounting unit will not break the tractor link, but one presser will offset the "drawing closer" effect of one tractor. If a unit mounts (and is using) more tractors than its victim mounts (and is using) pressers, the two units still move 1 hex closer together per movement phase. If the tractored unit uses more pressers than the tractoring unit uses tractors, the two will be pushed 1 hex further apart (with, once more, the smaller unit moving) per movement phase to a maximum range of 5 tactical hexes. If the units are linked by an equal number of tractors and pressers, there will be no relative movement between them.

08.03.02   Note also that if a tractoring unit directs one presser on the tractored ship for each tractor it has attached, it negates the automatic hit rule for missiles. Each unopposed
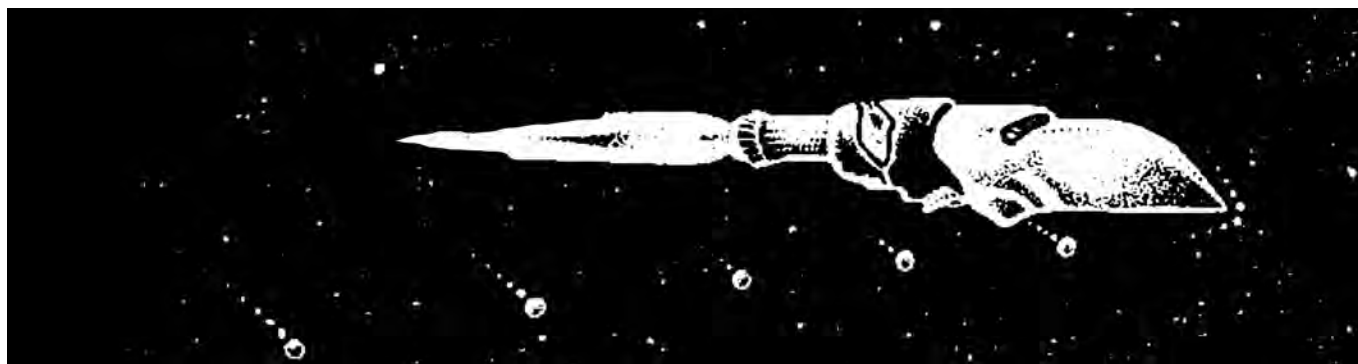
presser that a unit directs at a unit firing upon it reduces all missile to-hit probabilities for that firing unit by "-1."

Example: *If a unit at a range of 5 hexes had established a link to another unit with a single tractor (see 08.02.01.3), the effective range would become 2 and the beam hit probability would be raised from 8 to 9, the "gun" (sprint-mode) hit probability would be raised from 6 to 8, and the normal missile hit probability of 8 would be unchanged, since reducing the range would actually lower the to-hit number. (See 28.00 for hit probability values.)*

If a single presser offset the tractor, the hit probability for the beam (which is not a missile-type weapon) would still be increased to 9, but the gun hit probability would not increase. The standard missile hit probability would not be modified.

If the single tractor were offset by 2 pressers, the beam hit probability would still be increased to 9, but both the "gun" and missile base hit probabilities would be decreased by -1 (to 5 and 7 respectively). If 3 pressers were used, the gun and missile hit probabilities would be decreased by 2 (to 3 and 6), etc.

08.03.03   While presser beams cannot be used to push an enemy unit through a warp point, they can be used to push your own unit into a warp point assuming that the normal tractor movement would push your ship into the warp point's hex. When this happens, the presser beam instantly goes down, but so do any tractors. If your unit is faced to dash through the warp point when this happens, you may do so and escape. This is the only way in which a presser can be used to "break" a tractor lock. Obviously, bases, which have no movement capability, cannot use this technique to escape.

08.03.04   Shear planes have no effect against presser beams.

08.04 Space Stations and Tractors

Space stations are too fragile to move with tractors, and SS station keeping drives are of no use in resisting tractors, since SS come apart when subjected to such stress.

When a starship tractors an SS, it must immediately shut its engines down (to at least a station keeping level) or else it will damage the SS. Because of this, SS without functional C are extremely susceptible to "attack" by tractor-beam equipped ships. If an SS has no C, starships which can tractor it and then use their drives to open the range) at least one tactical hex in the next movement phase will literally tear chunks out of the SS and inflict one point of damage per tractor beam for each I or Ic in their engine rooms. (That is, a speed 8 ES with 2 tractors and only 3 I could inflict 2X3=6 points of damage, but a speed 4 MT with 5 tractors and 24 I could inflict 5X24=120 points of damage in a single turn! Moral: Don't let enemy capital ships attach tractors to your SS, or you won't have an SS for very long.) Damage inflicted in this way is marked off from left to right, ignoring shields.

If an SS establishes a tractor link to a starship that then moves away from the SS, the SS's tractor beam is destroyed (ripped loose from its mount), but no further damage is suffered.

Presser beams cannot move space stations, however, a presser beam applied by a spacecraft to a space station will always result in the other spacecraft being moved away from the space station, unless that spacecraft is larger than the space station, in which case neither moves. The presser beam will not damage the space station.

However, a space station cannot use a presser beam on an opposing spacecraft without risking the destruction of the beam, as the SS hull is not strong enough to absorb the stress at that point. If the presser beam moves the opposing spacecraft, the presser beam on the SS will be destroyed.

08.05 Deploying and Recovering Mines, Buoys, and SBMHAWKS

Minefields (27.08.05), deep space buoys (27.04.02, 27.05.04, 27.06.02, 27.07.06, 27.08.03, and 27.13.10, and SBMHAWKs (27.11.10) are transported to the hexes in which they are to be emplaced in the cargo holds of starships. Once there, they are laid (deployed) or lifted (picked up again) either by manually unloading them (which is very slow) or by using tractors and pressers.

Like any other immobile spacecraft, mines and buoys may not be placed in the same tactical hex as an open warp point (though they may be deployed in the same tactical hex as a closed WP), and so the normal practice is to deploy them in rings around WPs.

A unit may lay one pattern of mines or one deep space buoy or one SBMHAWK per presser beam or lift the same quantity per tractor beam in the tractor phase; 08.06.03 applies to this operation. Pods and Buoys may be lifted or laid to or from the any hex within tractor or presser range. Units, which use tractors/pressers to lay/lift mines, may place or collect them only from the tactical hex they are in. Without tractors or pressers, mines, buoys, and SBMHAWKs are laid and lifted manually at the standard rate of a single cargo stowage point (see 28.06: Ordnance Types and Magazine Cargo/Points for each type of ordnance) per tractor beam phase (see 08.06, below) and only in the same hex as the laying/lifting unit. In addition, mines may never be lifted by units without tractors. No unit may ever use tractors to lift hostile mines, buoys or SBMHAWKs, which self-destruct to prevent capture.

08.06 Loading and Unloading Cargo

Tractors and pressers are also used to load/unload cargo. Units with no tractors or pressers may load/unload only one stowage point of cargo per H in a tactical turn. This is done during the tractor beam phase.

08.06.01   A unit may use its own tractors to load 10 stowage points of cargo per tractor in the tractor beam phase of each tactical turn. It may use its own presser beams to unload cargo at the same rate.

08.06.02   Tractor beams and pressers mounted on other units may also be used to handle cargo, but they are less efficient due to the coordination required. Each tractor mounted on another unit may unload 5 stowage points per tactical turn from a unit; each presser mounted on another unit may load 5 stowage points per tactical turn onto a unit.

08.06.03   When loading/unloading cargo, spacecraft must shut down all drive fields completely, losing all missile interdiction effects.

08.06.04   Units that mount Cargo Handling Systems modify the rates given for loading or unloading cargo (see 27.03.03 & 27.07.04).

08.06.05   Personnel are transferred at the rate of 10 tactical turns per PP. Tractors and pressers cannot modify this rate, but Cargo Handling Systems may.

09.00 Designing and Building Units For Tactical Games

As *STARFIRE* players become more expert, the urge to "build your own" in search of the best possible configuration generally becomes irresistible.

All *STARFIRE* units larger than small craft and fighters (which are bought "off the shelf" by type), including ground bases, consist of a hull and the systems placed within it. Virtually any type of system may be placed in any hull (those few that cannot be are so noted in their descriptions under Rule 27.00), though certain specialized systems may cost more in different types of hulls. Cost differentials are also noted under 27.00.

The first step is thus to select (and pay for) a hull size that suits your need. Next, the systems to be placed within the hull are selected and priced, then arranged in the order they will appear on the unit's control sheet. Finally, the cost of the unit is subtracted from your funds so that you know how much (if anything) you can spend on the next unit you plan to build.

While the campaign building rules (15.09.03, 09.07 and 09.08) contain the additional details needed to interface this process with campaign games, the basic process never changes, and players may also use this rule section to build their own ships for tactical scenarios.

09.01 Select the Hull Size

The HULL SIZE AND CAPABILITIES chart (28.07) details the various unit types (including ground bases) and the numbers of hull spaces in each, plus data on turn modes, maximum possible speeds, etc. At the lower tech levels, a unit's hull may cost as much as 50% of the unit's total final cost; at the higher tech levels, system costs will come to dominate platform costs.

PDCs and SS may be any size, and asteroid bases may be of up to 1,000 hull spaces in size. The building player simply picks a number (of up to 1,000 for asteroid bases), plunks down the cash to pay for it, and proceeds to the next step. Note that asteroid bases are always built using the "hostile environment" costs for ground base construction.

09.01.01   All ships with fractional hull space totals round all fractions up (85.1 = 86) for computing the total hull space

for ANY formula or table (i.e.. a carrier hull of 85.1, is a CVB with the hull costing 86x8 = 774 MC).

09.02 Outfitting the Hull

In the case of a starship, the first consideration is its engine power. For each hull size, one column notes the maximum possible speed and a 2nd column notes the numbers of engine systems (see 09.05) needed to produce each movement point of speed. The player decides on the speed he wants, notes how many engine systems this will require and how much those systems will cost (see 26.02), and then subtracts the required hull spaces from the total capacity of his hull. The result is the number of hull spaces remaining for additional systems.

All available systems are listed by tech level (alphabetically within each tech level) in 26.02. The capabilities, requirements, and restrictions of each system type are listed under the tech descriptions in 27.00. (Rule section 26.02 is a unified alphabetical list of all systems along with the rule subsection from Rule 27.00 describing that system for easy reference.) By the time a player feels hardy enough to design his own units, he should be familiar with these systems and what they do. He should make himself particularly familiar with the systems of the first two or three tech levels, since some of these systems are basic requirements in spacecraft of any type (see below).

Certain systems (such as Q, Lh, H, etc.) are required by any spacecraft, regardless of type. Others (such as BbS or BbL) are required by vessels of certain sizes. The player should add all required systems to his unit, subtracting their hull space requirements. The hull spaces that remain may be filled with offensive, defensive, and support systems to the content of his heart. The procedure followed is exactly the same as the one he followed for engines and mandatory systems, above. When he runs out of hull spaces, he has filled the hull and no additional internal systems may be added. Certain "systems" are external to the hull (like external ordnance racks) or require no hull spaces (like advanced maneuvering and atmospheric capability). These systems are so noted on the system chart and under the system descriptions.

09.03 Arranging the Control Sheet

Once all systems have been selected and paid for, the designer must arrange them in his hull. Some systems have required locations; most do not and can be placed wherever the designer wishes. When arranging them, keep in mind the patterns in which weapons inflict damage. By placing a system towards the rear of the control sheet, one is (in effect) providing it with greater protection from enemy fire.

Explanation of the Ship Design Layout and Information

MEKONG SD(C) (refit B)-class SD	AM(2) 26 XO	130 Hull	TL 13

[3] S2x45{Al2Ac2Ac2}x9Al2Ac2x4Al2Ac2Ac2Al2HQH(IIII)(BbS)Wc(IIII)WcQDxz(IIII)(HET2)x2DxzWc(IIII)(HET2) Dxz-
   Wc(AMG)MgMg(HET2)Wc(2Mi2)(?4)(?3)(HET2)Dxz(Z2c)LhQ(CIC2)(Ig)(IIII) [5/2]

130 RCP; 20 MCP	• Trg:11 Atk +2 Def -4 Cloak •	PV = 315	Cost = 5245 / 786.8

131 HTK   2x45 Al2x12 Ac2x24 Dxzx4 (HET2)x5 Wcx5 Mgx2

Class Line

Name: Some navies use a designator to describe the type of ship or the mission of the unit design. These designators can be different for each navy. In the above case, the MEKONG is designated as a SD(C) with the (C) standing for a command ship. The ship is also the 2nd refit of the Mekong during the ISW-4 period.

Class: "-class xx" gives the actual hull type the unit was built on. For the TFN, it is important to remember that the SDA class was actually built on CVA hulls.

Built in Specials: Most units contain some special equipment. In ISW-4, Advanced Maneuvering Two AM(2) and "Atmospheric Capacity" (AC) are common. Almost all units built at High Tech Level 2 or higher carry Courier Drones.

External Ordnance Racks: These include both standard racks "XO racks" and Gunboat Racks "XOg racks".

Hull Size: The number of hull spaces the unit was built as.

Tech Level: The highest TL system aboard the design.

Design Line

This "line" can extend for 2-3 lines for larger designs.

Turn Mode: The turn mode of an undamaged unit is presented inside brackets "[ ]".

Design Code: The listing of systems and the order of construction for the unit. Systems are sometimes listed with a multiplier following the systems to limit the amount of space that a design takes on a page. This indicates that there are actually a number of systems equal to the multiplier in that location. In the above design, one code is (HET2)x2 which indicates that two 2nd Generation Hetlasers are present, which would be the same as (HET2)(HET2). The design above also contains a group multiplier that is indicated by the braces "{ }" and a following multiplier. A group multiplier applies just like the system multiplier but instead and entire group of systems is multiplied. An {Al2Ac2Ac2}x3 would actually expand to represent Al2Ac2Ac2 Al2Ac2Ac2 Al2Ac2Ac2. It does not represent Al2x3 Ac2x3 Ac2x3. Individual systems inside a group may also contain multipliers. These are expanded before the group is expanded.

Speed: Following the design code is another pair of brackets "[ ]" that contain the maximum undamaged speed of the unit. In some cases, two numbers are presented. The first number indicates the unit's maximum tactical speed, in the above case 5, and the second number indicates the unit's maximum safe strategic speed, in the above case 2.

Information Line

RCP: Regular Crew Points indicate the number of regular crew normally required aboard the unit (130 points for the Mekong above).

MCP: Marine Crew Points indicate the number of marines normally carried aboard the unit (20 points for the Mekong above).

FCP: Flight Crew Points are listed for some units to indicate the number of flight crew points that are required aboard the unit.

Trg:#: This lists the number of units the ship can target without having to-hit penalties added to the attack rolls. The Mekong above can engage 11 different targets without penalty.

Atk:#: This indicates the bonus added to any to-hit roll when this unit is attacking. The bonus is sometimes halved against fighters and does not include any crew modifiers that might apply. The Mekong above receives a +2 to hit from the (2Mi2) system.

Def:#: This indicates the modifier added to any to-hit roll that units attacking the listed unit receive. Attacks against the Mekong above receive a -4 to hit due to the presence of the (?4) system. This line assumes that any unit with ECM3 will operate the ECM3 in standard ECM mode, creating a -3 modifier, which naturally precludes use in any other mode. However, the ship will also be listed as having Cloak available. Players should check the summary line at the bottom of each ship description to determine if the defensive modifier is created by ECM3 in ECM mode, or by the more traditional first generation ECM.

Jam: Indicates the unit carries a system which "Jams" enemy datalinks.

Cloak: This indicates that the unit carries a system that allows cloaking mode. The (?3) in the above design may not always be engaged in the cloaking mode.

PV: This is a rough representation of the unit's military combat power. It is not meant to be 100% accurate.

Cost: The first number is the cost to build the ship in MC (FRU) and the second number is the amount of maintenance to be paid during a turn. In all cases within this product (and any other *STARFIRE* products, unless otherwise stated), the maintenance costs do NOT include added

maintenance due to fighters, or gunboats, whose usage or presence during a campaign will vary wildly.

Summary Line

HTK: "Hits To Kill" This is the amount of force beam damage required to destroy the unit. It does not take account of collapsing systems or internal damage multipliers, and thus for ships like carriers or freighters, the number actually needed to destroy the ship may be considerably lower.

Systems: Information for quick use during battles and indicating the quantities of weapons, defenses, and other important information.

09.04 The Accountant's Last Word

Sooner or later, the accountant has the last word. Balancing numbers against quality or, to put it another way, seeking the most cost-effective way to spend your money, is one of the challenges of the game system. In the end, there is no one perfect way to do it, and players will find themselves tending to design units which meet the needs of their own preferred tactics.

09.05 Engine Construction Rules

All engines follow the same basic set of rules. In the rules below, we refer only to I but we mean any engine, including J, Ic, and Jc. "Military engines" refers to I or J and "Commercial Engines" refers to Ic or Jc.

09.05.01   An engine code starting with a capital letter (Example I or Jc1) indicates a full-sized engine system. An engine code starting with a small case letter (Example i or jc1) indicates a half-sized engine system.

09.05.02   Each I (or i) is actually a single generator that combines with others to produce the drive field of a starship. The number of I (and/or "i") needed to provide each point of speed for a given hull size is shown on the HULL SIZE AND CAPABILITIES CHART. Note that some hull sizes derive multiple movement points from each engine (for I, an ES gets 3 MP per I) and that some larger ships require multiple engine systems per movement point (CL-sized, I equipped units require 1.5 engines per movement point).

09.05.03 Engine Rooms

Any starship groups its I in "engine rooms." All engines in an engine room must be of the same type. Half-sized engine systems must be mounted in an engine room with an operable full-sized engine system in order to function. A ship may mount only a single half-sized engine of each type and it must be mounted in the last engine room of its type in the design line of the ship control sheet.

Engine rooms are indicated on the control sheet by enclosing the systems in each engine room in parentheses. The number of I in an engine room must always be equal to the number of I required to produce at least one movement point for the mounting unit; exceptions are units that gain more than one movement point from a single engine (for such units each engine room is made up of one full sized engine and possibly a half-sized engine as well); units with "odd" engine requirements (see 09.05.05 below), and tugs (see 08.02.02.5). Moreover, only propulsive systems may be mounted in an engine room. The loss of an engine room reduces the speed of a starship by the number of movement points that engine room originally provided. An engine room with multiple engine systems may remain operable at the tactical level despite the loss of some of its engine systems (see 04.04.01).

Example: *A speed 7 DD, which receives 1 movement point per I, would have seven engine rooms, each coded (I), and would lose 1 movement point for each I destroyed. A speed 5 SD, which receives 1 movement point for every 4 I, would have five engine rooms, each coded (IIII), and would lose a movement point only if sufficient damage were inflicted on an engine room to force it to shut down.*

09.05.04   Units with fractional engine requirements (like ES) must use full-sized I or Ic to meet them wherever possible. A half-sized engine provides only 1/2 the MPs that a full sized engine provides.

Example: *A speed 7 FG, which receives 1.5 movement points per I. To determine the number of MPs per full sized engine, take the engine power from 28.07 and invert the fraction (that is, find its reciprocal). For FG with I, 2/3 engine power becomes 3/2 MP per engine or 1.5 per I Thus, the FG would have 5 engine rooms, each coded (I), and would lose 1.5 movement points for each I destroyed. A speed 5 FG would have only 3 engine rooms, coded (I), (I), and (Ii). If the first engine room is destroyed, the ship loses 1.5 movement points (of the 5.25 MP it started with; if the I in the third engine room is destroyed, the "i" goes with it and the ship loses its last 2 movement points.*

09.05.05   Some ships, such as light cruisers, are special cases because they receive one MP for every 1.5 engines. (That is, a speed 6 CL has a total of 6*1.5=9 engines.) Engine rooms aboard CLs are arranged in groups of 1 and 2 engines which must alternate. Remember that engine rooms (not the engine systems in a given engine room) may be separated by other systems, though they are shown as single chains for the purpose of the CL examples below.

Example: *A speed 6 CL's engines could be arranged (I)(II) (I)(II)(I)(II) or (II)(I)(II)(I)(II)(I).*

A CL with an odd number of movement points could make up the difference with an i (or ic) mounted in its last engine

room. Thus a speed 5 CL would have 5*1.5=7.5 I, mounted (I)(II)(I)(II)(Ii) or alternatively (I)(II)(I)(II)(Ii)

09.06 Required Systems

Certain types of units require support systems to allow the ship to operate at peak efficiency.

09.06.01 Cargo Hold

Any large spacecraft, including SS and FTs, are required to mount cargo storage capacity capable, on a one csp per MC basis, of carrying one full turn's maintenance for a unit. H (27.02.04) provides 500 csp of capacity and Hs provides 200 csp of capacity. Additional H may be mounted to carry still more maintenance resources, extending the time a unit can remain on deployment.

09.06.02 Crew Quarters and Life Support

Each unit is required to have crew and life support for all of its hull spaces (Exception: shipyards and Ms). One Q (27.02.05) can support up to 50 hull spaces but each Qs can support only 20 hull spaces. Q without Lh support is ineffective and Lh (27.02.08) can support up to 5 Q. See 27.02.05.4 for the effects of losing crew/life support.

Fighter squadrons require separate crew support of 1 Q for every 2 (or fraction thereof) squadrons, or one Qs per squadron. Gunboats also require separate (even from fighter pilots) crew support of 1 Q for every 5 (or fraction thereof) gunboats (not squadrons), or one Qs for every 2 (or fraction thereof) gunboats.

09.06.02.1 Commercial freighters (see 28.07 point 1) use smaller crews than warships, allowing Q and Qs to support triple the hull space (i.e. Qs supports 60 HS).

09.06.02.2 Hostile environment ground bases compute Q requirements on the basis of their non-armor hull spaces. If additional PCF are to be included in any PDC, hostile environment or not, Q must be added to accommodate the additional PCF. In non-hostile environments, however, no life support hold need be installed for additional PCF Qs.

09.06.03 SMALL CRAFT

Any "large spacecraft" larger than 30 hull spaces must have at least one boat bay to house its required cutter (27.03.06). A larger small craft, such as st or pn, may fulfill this requirement. Space stations constructed and operated by races that have not yet developed boat bays or small craft (except GB) are exempt from this requirement.

09.07 General Construction Rules

Building, repairing, refitting, demothballing, disassembling, or assembling units is either done by shipyards, machine shops or by planetary industry. The type of construction facility used
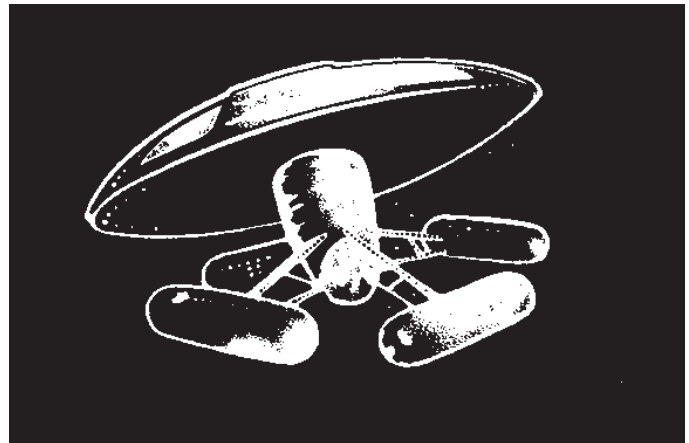
determines all construction rates. There are 4 types of construction facilities. Each construction facility has a basic capacity (also know as build rate) used to determine the amount of construction that the facility can perform in a single turn. The following table lists the rate at which various facilities can perform projects.

FACILITY TYPE	BASIC RATE AND CAPACITY
Shipyard (SYx)	10 + 2*HTL
Medium shipyard (SYMx)	(10 + 2*HTL)/3 (FRU)
Planetary Industry (SP required)	5 + HTL
Machine Shop Module (MSx)	10 + 2*HTL (Can't build or refit)

09.07.01 Construction Facility Projects

Construction: build a new unit from scratch.

Refit: replace system(s) with different systems and/or rearrange any or all systems on a unit.

Repairs: repair damaged systems to fully functional status.

Demothball: restore a mothballed unit to operational status.

Disassemble: disassemble completed unit for shipment.

Assembly: assemble prefabricated components.

Emergency Repairs: perform quick and dirty repairs [See "Damage Control," 05.00].

09.07.02 Operation Rates

For each type of operation, the number of HS a given module can work on is related to its base rate.

OPERATION	BUILD RATE	CAPACITY USAGE
Construction	Base Rate	entire hull
Refit	2 * Base rate	entire hull
Repair	2 * Base rate	HS repaired only
Demothball	4 * Base rate	entire hull
Disassemble	2 * Base rate	entire hull
Normal Assembly	Base rate	entire hull
Double Assembly	2 * Base rate	entire hull
Emergency Repairs	See Damage control rules	

Assembly of prefabricated components occurs at the basic build rate but can be accelerated to 2 times that rate for an additional cost of 50% of the assembled unit.

An empire researches and develops technology throughout the course of a campaign. Any technology that has completed the development phase may be added to a unit by any shipyard regardless of the tech level of the shipyard.

Machine shops used for prefabricated assembly operate at half the rate of shipyard modules for assembly operations. Thus, MSx are either 1/2 build rate (for no extra cost) or 1x build rate (for +50% cost) when assembling prefabricated units.

09.07.02.1   Asteroid Forts and moon-based PDCs use the prefabricated assembly operation rates, as above. An entire complex can be combined to work on any of these units.

09.07.03 Shipyard Modules

Shipyard Modules ((SYx),(SYMx),(MSx)) may be mounted in any size or type of hull in which they fit. If the unit is capable of movement, it will be a mobile shipyard. Since (SYx) are so large this can be very costly, and therefore Medium Shipyards (SYMx) (27.03.10.3) and Machine Shop Modules (MSx) (27.05.06) are often used in this role.

09.07.04 Restrictions

No work can take place in any turn in which a shipyard was moved, built, assembled, mothballed or demothballed (exception: see "Self Repair", 05.03).

Any shipyard, regardless of location, can be used to build, repair, refit or assemble other units. One of the following conditions must be met however;

1. The shipyard is in orbit around a medium, or larger, imperial population.
2. The shipyard is in a system that the CFN is eligible to ship to.
3. The shipyard unit has sufficient holds to contain the resources shipped to it by Imperial Freighters.

Each unit may only be worked on by one module, regardless of the construction project type, except for SS, AF, and PDC.

Each module may work on any number of units in one turn as long as its total capacity in not exceeded. All shipyards in a given tactical hex are assumed to be in the same location and may cooperate on the construction or assembly of a space station, asteroid fort, or PDC. Any given shipyard module may apply its build rate to as many projects in a turn as the player wants, though it must finish each project before it starts the next.

09.07.05 Capacity Usage

Large Units: Ships, Bases (BS), Space Stations (SS), Asteroid Forts (AF) and Planetary Defense Centers (PDC) are built on a per hull space basis.

Gunboats: each gunboat requires 3 HS of capacity.

Small Craft: small craft and fighters each require 1/2 of a HS of capacity..

Buoys, Mines, IDEW and Fighter Packs: each of these systems require 1/10 HS of construction capacity.

Expendable Munitions: all expendable munitions are tracked through the missile fund. No construction capacity is required to build them. If the players wish to track expendable munition construction and deployment, each requires 1/100 HS of construction capacity.

Prepping crated fighters and small craft (15.09.07.7) These require 1/10 HS of build capacity for shipyard and medium shipyard modules, and 1/6 HS of build capacity for machine ship modules.

09.07.05.1   Each spacecraft that is being worked on may have its own entry in the record sheet for the complex. For groups of units being built together, as in the case of the CA and DD in the example, a single line entry for the entire group would suffice (see example in 09.08.01).

09.08 Construction Complexes

This rule eliminates all need for direct consideration of the restrictions in rules 09.07.04 and 27.03.10.3 regarding use of a specific shipyard module. Rather than track the usage of each individual construction facility, this rule combines all of the facilities at one complex (defined as all facilities of the same type in a single tactical hex, on any number of hulls) into a single unit for tracking purposes.

Only a single complex can perform operations on a single unit in a turn. Each unit can receive no more than one module's build rate worth of work (restricted build unit) unless it is a space station, asteroid fort, or PDC.

Construction Complex Capacity: Total the rate of all SYx modules as the shipyard complex build capacity (SY CC), all MSx as the machine shop complex build capacity (Ms CC), and all SYMx as the medium shipyard complex build capacity (SYM CC).

A complex may not exceed its total build capacity in any turn. Evaluate all work in capacity usage at the basic build rate. Express any other operation that proceeds at a rate described

as some multiple of the basic build rate in terms of the basic build rate for capacity usage.

Use the build rate of medium shipyard modules in association with SYM CC. Do not mix these rates with the SYx complex capacity as they are lower than the SYx rates. Exception: a player may mix capacity usage on space stations, asteroid forts, or PDC; as several shipyard modules can build these units and therefore, mixing is possible.

The simplest method of tracking usage of the complex is to subtract the hull spaces of capacity used as they are allocated to each unit which has work done in that complex. When all spaces of capacity have been allocated, then no more work can be done in that complex in the current turn.

09.08.01 Construction Capacity Adjustment

For all bases, and all starships larger than EX (8 hull spaces and larger), the capacity used to build them will be 4 hull spaces less than the size of the spacecraft. When the ship is completed, add four to the remaining capacity of the complex. For EX, regardless of size, it requires 3 HS of capacity to build them and they do not receive a capacity adjustment. Any base requires at least 3 HS of capacity to build.

Note: This adjustment is added to the complex AFTER the unit has been completed.

> **Example:** *In a given tactical hex, there is a space station with 13 SY3 (build rate 16), 5 MS3 ("build" rate 16), and two SYM3 (build rate 6). The construction complex capacities are; for SYCC, 13x16 = 208; for MSCC, 5x16 = 80; and for SYMCC, 2x6 = 12.*

The capacity of the complex is used as follows. We add 16 HS each on 8 60-hull space CAs, each with 32 hull spaces built from previous turns, using 128 HS of capacity. 208-128 = 80 HS of SYCC remaining and each CA now has 48 HS completed. We complete 2 DD, which each had 21 spaces built previously, using 9 HS of capacity each, 9 x 2 = 18 HS of capacity, leaving 80 - 18 = 62. However, a capacity adjustment of 8 HS is added for completing two ships for 62 + 8 =

70 capacity remaining. We want to start building 8 new FG, and would like them completed as quickly as possible. We can apply 16 HS to 4 of them, using 16 x 4 = 64 HS, leaving 70 - 64 = 6 HS of capacity in SYCC, plus our SYMCC capacity. (Note: The 20-hull space FG can NOT be completed this turn even when considering the capacity adjustment that effectively makes them 16 HS large). We build one more in our SYx complex, using 6 HS, and two in our SYMx complex, adding 6 HS to each of them, using up 4 HS of SYCC and 8 HS of SYMCC. The MSCC cannot be used for new construction, but would be useful for refits, repairs, and prefabricated unit assembly.

09.08.02 "Work in Progress" Limits

The number of partially built units or partially demothballed units carrying over to the next strategic turn is limited to 1 per shipyard module (including SYMx and MSx modules). Work may be in progress on any number of units for purposes of refits, repairs, etc.

09.08.03 Special Cases: One Strategic Turn Operations

09.08.03.1 Captured Ships: To refit a captured unit, regardless of size, requires the complete capacity of one SYx, (you may substitute 2 MSx or 3 SYMx for the 1 SYx) module at the complex for one month (subtract that module's build rate as capacity as used). Any repairs must be done in following turns using normal methods and capacities. These two operations must be done consecutively and all costs paid up front. (Example: In the above complexes, the SY3 is most efficient with a build rate of 16HS/turn. Thus it requires 16HS of SY complex capacity in order to perform a refit of a captured ship, no matter what size the ship is, and it takes one strategic turn to perform that operation.)

09.08.03.2 Examination of captured vessels/systems uses the same rate above and is separate from refitting a captured ship

26.00 System Codes Through HT11

(Additional tech levels and/or systems have been added in *IMPERIAL STARFIRE*, *CRUSADE*, *ALKELDA DAWN*, and ISW-4. It is intended to that players own those products to fully use such systems. The versions here are usually corrected system descriptions or included in tables for completeness. Rules for the use of some of the systems below--as, for example, Datalink Leader--do not appear here in *STARFIRE* , but the systems in question are listed here to avoid "holes" in the lower tech levels.)

26.01 and 26.02 include information about systems in other products so that the table is complete.

26.01 Systems By High Tech Level

Designators - System codes in quotes "", missiles in braces {}, and other things in brackets []. Note: the technology listed in 26.01 and 26.02 does not exactly match the technologies described in 27.xx. This is because Alkelda Dawn systems and their updated rules in Sky Marshal #2 have not been included. While these remain official Starfire systems, the balance is somewhat questionable and many players chose not to use them.

PRE-INDUSTRIAL and INDUSTRIAL-1: Planetary Control Forces [PCF]

INDUSTRIAL-2: Armor A, ,Basic Kinetic Projector Kb, Basic Missile {BM}, Nuclear Bomb {nuke}, Bulkhead B, Cargo Hold H/Hs, Crew Quarters Q/Qs, Basic Gun G, Laser L, Life Support Hold Lh, Magazine Mg, Missile Launcher R, Nuclear Bomb {nuke}, Spaceport (SP), Basic Sprint Missile {GMb}

HT 1: Atmospheric Capability [(AC)], Boat Bays (BbS) (BbM) (BbL), Cargo Handling System One (CHS), Combat Information Center (CIC), Commercial Engine Ic/ic, Cutter ct, Jump Carrier Engines - Type 1 Jc1/jc1, Military Engine I/i, Science Instruments X, Shields S, Shipyard Module (SYx)/(SYMx), Shuttle [st], Tactical Engine J/j

HT 2: Basic Point Defense Db, Courier Drone {CD}, Deep Space Buoy [DSB-n], External Ordnance Rack [XO], Gun/Missile Launcher W, Gun G, Sprint Missile {GM}, Multiplex Tracking Mx, Communication Module (CC), Standard Missile {SM}

HT 3: Assault Shuttle [ast], Datalink Z, Deep Space Buoy Control System (DCS), Improved Kinetic Projector Ki, Kinetic Projectile Interceptor 1 Dk5, Laser Buoy [DSB-L], Long-Range Sensors Xr, Machine Shop Module (MSx), Point Defense D, Presser Missile {PM}, Presser Missile Launcher Rp, Tractor Beam T

HT 4: Datalink Leader Zl, Drive Field Enhancer - 1st Gen. Je1, Enhanced Drive Field Missile {EDM}, Force Beam F, Interstellar Communications Relay Buoy [DSB-c], Interstellar Communications Warp Point Relay Buoy [DSB-ncd], Presser Beam Pb, Presser Missile Guidance System (RpG), Shear Plane C

HT 5: Advanced Maneuvering One [AM(1)], Capital Missile {CM}, Capital Missile Launcher Rc, Cargo Handling System Two (CHS2), Improved Armor Ai, Improved Bulkhead Bi, Jump Carrier Engines - Type 2 Jc2/jc2, Kinetic Gun K, Primary Beam P, Sensor Buoy [DSB-Xr]

HT 6: Advanced Gun/Missile Launcher Wa, Augmented Shields S0, Capital Point Defense Dc, Electronic Counter Measures - Type A ?a, Energy Beam E, Kinetic Projectile Interceptor 2 Dk4, Mine Control System (MCS), Nuclear Minefield [MF], Independently Deployed Energy Weapons [IDEW-x]

HT 7: Anti-Drive Missile {ADM}, Close Assault Missile {CAM}, Datalink Point Defense Dz, Drive Field Enhancer - 2nd Gen. Je2, Electronic Counter Measures ?, Electronic Counter Measures - Type b ?b, Engine Tuner -It, Heterodyne Laser (HET), Improved Tractor Beam Ti, Inertial Sink U, Overload Dampener O, Pinnace [pn], Turreted Kinetic Gun Ks

HT 8: Advanced Maneuvering 2 [AM(2)], Boarding Sled One [Sled-1], Capital Force Beam Fc, Capital Primary Beam Pc, Drive Field Ram (RAM), Electronic Counter Measures - Type C ?c, Prototype Strikefighter [F0]), Fighter Gun [fG], Fighter Close Attack Missile {fR}, Hangar Bay V, HAWK Missile Upgrade [-HK], Needle Beam N, X-Ray Laser Detonation Chamber (Dec), X-Ray Laser Emitter Lx, X-Ray Laser Warhead {LWH}

HT 9: Advanced Basic Kinetic Projector Kba, Anti-Matter Warhead [-AM], Anti-Matter Fighter Close Attack Missile {fRAM}, Capital Energy Beam Ec, Composite Armor Ac, 2nd Generation Electronic Counter Measures ?2, Fighter Laser [fL], Fighter Missile {fM}, Improved Multiplex Tracking (Mix), Improved Point Defense Di, Jump Carrier Engines -- Type 3 Jc3/jc3, Keel Gun Kc, Kinetic Projectile Interceptor 3 Dk3, First Generation Fighter [F1], Strategic Bombardment Missile {SBM}, SBM Carrier Pod [SBMHAWK]

HT 10: Advanced Capital Point Defense Dcx, Advanced IDEW [IDEW-ax], Advanced Point Defense Dx, Anti-Matter Minefield [AMMF], Anti-Mine Ballistic Attack Missile {AMBAM}, Capital Inertial Sink Uc, Drive Field Enhancer - 3rd Gen. Je3, Fighter Life Support Pack [fLs], Fighter Missile Two {fM2}, Improved Shield S1, Long-Range Fighter Sensors [fXr], Second Generation SBM Pod [SBMHAWK2], Second Generation Strikefighter [F2]

HT 11: Advanced Anti-Matter Warhead [-AAM], Advanced Anti-Matter Fighter Close Attack Missile {fRAAM},

Anti-Fighter Missile 2 {AFM2}, Anti-Laser Armor Al, Capital Anti-Fighter Missile {AFMc}, Capital Gun/Missile Launcher Wc, Command Datalink Z2, Command Datalink Controller (Z2c), Command Datalink Point Defense Dxz, Deep Space Sensor Buoy Two [DSB-Xr2], Engine Tuner Two (It2), Inertial Breaker [Ok], Second Generation Assault Shuttle [ast2], Second Generation Close Assault Missile {CAM2}, Second Generation Enhanced Drive Field Missile {EDM2}, Second Generation Heterodyne Laser (HET2), Second Generation Pinnace [pn2], Third Generation ECM (?3), Third Generation SBM Pod [SBMHAWK3], Third Generation Strikefighter [F3]

26.02 Tech Systems Codes and Information

System	Code	Cost	Spaces	Devel.
Tech Level -- Pre-Industrial				
Planetary Control Force[G]	PCF-Pre-I	1	n/a	Free[o]
Tech Level -- Industrial 1				
IND-1 Planetary Control Force[G]	PCF-IND1	2	n/a	Free
Tech Level -- Industrial 2				
Armor[P]	A	2	1	400
Basic Kinetic WA Projector	Kb	30	5	3,000
Bulkhead[PC]	B	2	1	A
Cargo Hold[C]	H	1	1	200
Cargo Hold - Small[C]	Hs	1	½	H
Crew Quarters[C]	Q	5	1	400
Small Crew Quarter[C]	Qs	15	1	Q
Basic Gun[W]	Gb	5	3	600
Laser[WA]	L	30	4	4,000
Life Support Hold[C]	Lh	20	1	4,000
Magazine[D]	Mg	10	1	1,000
Missile Launcher[WR]	R	10	3	2,000
Nuke	Bomb	0.01	[MN]	200
Basic Sprint Missile	GMb	.05	[MN]	200
Basic Missile	BM	.05	[MN]	200
IND-2 Planetary Control Force[G]	PCF-IND2	3	n/a	Free
Spaceport[CG]	(SP)	5	30	1,000
Tech Level 1				
Atmospheric Capability[CP]	(AC)	10% of Hull	--	2,000
Boat Bay Small[CT]	(BbS)	10	1	2,000
Boat Bay Medium[CT]	(BbM)	15	2	(BbS)
Boat Bay Large[CT]	(BbL)	20	3	(BbS)
Cargo Handling System One[CL]	(CHS)	100	15	3,000
Combat Information Center[D]	(CIC)	50	4	5,000
Military Engine	I	10	1	1,000

System	Code	Cost	Spaces	Devel.
½ Military Engine	l	5	½	I
Commercial Engine[C]	Ic	4	2	800
½ Commercial Eng.[C]	Ic	3	1	Ic
Tactical Engine	J	15	1	2,000
½ Tactical Engine	j	8	½	J
Jump Carrier Engines -- Type 1C	Jc1	10	2	1,200
½ Jump Carrier Engines -- Type 1C	jc1	5	1	Jc1
Jump Carrier Racks[C]	@	20	2	4,000
Science Instruments	X	50	1	2,000
Shields[D]	S	4	1	800
Shipyard Module[CL]	(SYx)	400	80	2,000
Medium Shipyard[CL]	(SYMx)	150	25	(SYx)
Cutter[C]	ct	8	-[S]	1,600
Shuttle[C]	st	20	-[S]	1,500
PCFx, x =HTL[G]	PCFx	3+TL	n/a	300
Security Unit[G]	SEC	8	n/a	300
Interstellar Comm-and Center[CG]	ICC	7,500	Small Pop.	Free
Tech Level 2				
Courier Drone[C]	CD	2	-[M]	400
External Ordnance Rack[W]	(XO)	3	1 per 5 HS	600
Gun/Missile Launcher[WR]	W	20	3	4,000
Gun	G	15	3	1,000
Basic Point Defense[DTA]	Db	15	2	3,000
Multiplex Tracking[OT] x= added Targets	Mx	(15 * x) - 5 <changed>	1	4,000
Communications Module[C]	(CC)	100	5	4,000
Sprint Missile	GM	.1	[MN]	500
Standard Missile	SM	.1	[MNR]	2,000
Deep Space Buoy[C]	DSB	10	DSB	3,000
Tech Level 3				
Datalink[OT]	Z	40	0	8,000
DSB Control System[D]	(DCS)	100	8	7,500
Improved Kinetic Projector[WA]	Ki	40	5	4,000
Kinetic Projectile Interceptor 1[DWA]	Dk5	15	3	3,000
Long-Range Sensors[T]	Xr	<50>	2	6,000
Machine Shop Module (x = TL) [CL]	(MSx)	<100>	25	3,000
Presser Missile Launcher[WR]	Rp	20	3	2,000
Point Defense[DTA]	D	25	2	5,000
Tractor Beam[C]	T	10	2	2,000
Assault Shuttle	ast	30	-[S]	5,000
Presser Missile	PM	.1	[MNR]	Rp
Laser Buoy	DSB-L	35	DSB	7,000
Tech Level 4				
Datalink Leader[OT]	Zl	50	0	10,000
Force Beam[WA]	F	40	4	5,000

System	Code	Cost	Spaces	Devel.
1st Generation Drive Field Enhancer[D]	Je1	50% of EC	1	4,000
Presser Beam[C]	Pb	10	2	2,000
Presser Missile Guidance System[O]	(RpG)	20	2	3,000
Shear Plane[D]	C	15	1	3,000
Enhanced Drive Missile	EDM	3	M D	3,500
ICN Relay Buoy[C]	DSB-c	<10>	DSB	9,500
ICN Warp Point[C] Relay Buoy	DSB-ncd	100	DSB	DSB-c
Tech Level 5				
Advanced Maneuvering 1	(AM) or AM(1)	50% of EC	--	2,000
Capital Missile Launcher[WR]	Rc	40	5	8,000
Cargo Handling System 2[CL]	(CHS2)	200	10	7,000
Improved Armor[P]	Ai	4	1/2	2,500
Improved Bulkhead[P]	Bi	4	1/2	Ai
Jump Carrier Engines -- Type 2[C]	Jc2	15	2	1,500
1/2 Jump Carrier Engines -- Type 2[C]	jc2	8	1	Jc2
Kinetic Gun[WA]	K	55	5	10,000
Primary Beam[W]	P	50	4	10,000
Capital Missile	CM	.25	MNR	2,000
Sensor Buoy	(DSB-Xr)	45	DSB	4,000
Tech Level 6				
Adv. Gun/Missile Launcher[WR]	Wa	55	3	11,000
Augmented Shields[D]	S0	6	1/2	3,000
Electronic Counter Measures Type A[DT]	?a	30	1	6,000
Energy Beam[WA]	E	45	4	7,000
Capital Point Defense[DT]	Dc	35	3	7,000
Kinetic Projectile Interceptor 2[DW]	Dk4	30	3	6,000
Mine Control System[D]	(MCS)	100	3	7,500
Nuclear Minefield	(MF)	15/pattern	MN	1,000
Independently Deployed Energy Weapon	IDEW-x	Weapon +15	DSB	3,500
Tech Level 7				
Turreted Kinetic Gun[WA]	Ks	55	4	6,000
Electronic Counter Measures (Allies)[DT]	?	50	1	10,000
Electronic Counter Measures Type B[DT]	?b	40	1	8,000
Engine Tuner[D]	-lt	50	1	10,000
2nd Gen. Drive Field Enhancer[D]	Je2	100% of EC	1	8,000
Datalink Point Defense[DTA]	Dz	50	2	10,000
Heterodyne Laser[WA]	(HET)	70	6	12,500

System	Code	Cost	Spaces	Devel.
Improved Tractor Beam[C]	Ti	15	2	500
Inertial Sink[WA]	U	65	6	8,000
Overload Dampener[D]	O	20	1	4,000
Pinnace	pn	45	-[S]	4,500
Anti-Drive Missile	ADM	1	MR	7,000
Close Assault Missile	CAM	0.5	MN	7,000
Tech Level 8				
Advanced Maneuvering 2[D]	AM2 or AM(2)	100% of EC	--	6,000
Capital Force Beam[WA]	Fc	80	6	8,000
Capital Primary Beam[W]	Pc	75	6	15,000
Drive Field Ram[W]	(RAM)	75	15	12,500
Electronic Counter Measures Type C[D]	?c	50	1	10,000
Hangar Bay[OT]	V	10(30)	1	1,000
Needle Beam[WA]	N	55	4	11,000
X-Ray Laser Detonation Chamber[O]	(Dec)	50	10	14,500
X-Ray Laser Emitter[WA]	Lx	40	3	2,000
X-Ray Laser Warhead	LWH	1	M	1,250
HAWK Missile Upgrade	"–HK"	Free	M	5,000
Boarding Sled One	Sled–1	7.5	M	3,500
Prototype Strikefighter[F]	F0	20	F	15,000
Fighter Gun	fG	1	FWA	800
Fighter Close Attack Missile	fR	1	FMN	1,800
Tech Level 9				
Advanced Basic Kinetic Projector[WA]	Kba	80	5	4,000
Capital Energy Beam[WA]	Ec	100	6	10,000
Composite Armor[P]	Ac	5	1/3	4,500
Composite Bulkhead[P]	Bc	5	1/3	Ac
Second Generation ECM[DT]	?2	90	2	9,000
Improved Multiplex Tracking[OT]	(Mi-x)	200/level	8	15,000
Improved Point Defense[DTA]	Di	30	2	6,000
Jump Carrier Engines -- Type 3[C]	Jc3	20	2	4,000
1/2 Jump Carrier Engines -- Type 3[C]	jc3	10	1	Jc3
Keel Gun[WA]	Kc	130	8	25,000
Kinetic Projectile Interceptor 3[DWA]	Dk3	60	3	10,000
Anti-Matter Warhead	-AM	Missile x4	MN	25,000
Anti-Matter Fighter Close Attack Missile	fRAM	4	FMN	-AM
Strategic Bombardment Missile	SBM	.3	MNR	7,500
Boarding Sled Two	Sled-2	25	MR	1,500
SBM Carrier Pod	SBMHAWK	20	POD	2,000

System	Code	Cost	Spaces	Devel.
First Generation [F] Fighter	F1	30	F	6,000
Fighter Laser	fL	8	FWA	1,600
Fighter Missile	fM	0.2	FMNR	1,500
Tech Level 10				
Improved Shield[DA]	S1	<8>	1/3	3,000
Capital Inertial Sink[WA]	Uc	90	8	8,000
3rd Gen. Drive Field Enhancer[D]	Je3	150% of EC	1	12,000
Advanced Point Defense[DTA]	Dx	75	2	15,000
Advanced Capital Point Defense[DT]	Dcx	100	3	20,000
Anti-Matter Minefield	AMMF	35*	MN	8,000
Advanced IDEW	IDEW-ax	weap +30	DSB	Free
Anti-Mine Ballistic Attack Missile	AMBAM	30	MNR	10,000
Anti-Fighter Missile	AFM	4	MR	6,000
2nd Gen. SBM Pod	SBMHAWK2	30	POD	6,000
2nd Gen. Strikefighter[F]	F2	40	F	8,000
Fighter Life Support Pack	fLs	2	F	3,000
Fighter Missile Two	fM2	0.3	FMNR	8,000
Long-Range Fighter Sensors	fXr	10	F	2,000
Tech Level 11				
Inertial Breaker[P]	Ok	5% of Hull	--	2,000
Anti-Laser Armor[P]	Al	9	1	<5,000>
Capital Gun/Missile Launcher[WR]	Wc	60	5	<12,000>
Command Datalink Controller[OT]	(Z2c)	250	10	20,000
Command Datalink[OT]	Z2	80	3	Z2c
Command Datalink Point Defense[DA]	Dxz	120	2	24,000
Engine Tuner Two[D]	(It2)	80/HS	Varies	8,500
2nd Gen. Heterodyne Laser[WA]	(HET2)	95	5	2,500
3rd Gen. ECM[DT]	(?3)	150	5	11,500

System	Code	Cost	Spaces	Devel.
2nd Gen. Assault Shuttle	ast2	55	S	1,500
2nd Gen. Pinnace	pn2	60	S	1,500
Deep Space Sensor Buoy Two	DSB-Xr2	55	DSB	2,500
Adv. Anti-Matter Warhead	-AAM	missile x12	MN	35,000
2nd Gen. Close Assault Missile	CAM2	1	NMN	4,500
2nd Gen. Enhanced Drive Field Missile	EDM2	4	MD	1,250
Anti-Fighter Missile 2	AFM2	6	MR	1,500
Capital Anti-Fighter Missile	AFMc	10	MR	500
3rd Gen. SBM Pod	SBMHAWK3	40	POD	2,500
3rd Gen. Strikefighter[F]	F3	50	F	10,000
fR-AAM	fRAAM	12	FMN	-AAM

*per pattern "of EC" = "of Engine Cost": Note: Don't count Tug Engines when computing this cost but do count spare engines. For Je system, count only the cost of the J engines. For AM, count the single most expensive set of engines.

If the Development Cost is a System Code, then that item is available when the System Code listed is developed.

Notes:

O - offensive military (06.02 activation)
D - active defensive (06.02 activation)
P - passive defensive system (06.02 activation, always usable)
W - weapon system (06.02 activation, carrier hulls (27.08 (2)))
C - non-military (Commercial) System (see 28.07 (1))
A - affected by Atmosphere
F -Item is fighter ordnance
G - ground system
M - munition (missile or other expendable)
L - self-contained life support (SY, MS, CHS, etc.)
R - regular mode missile weapon {interacts w/point defense}
N - nuclear warhead damage effects
F - fighter XO weapon/device
T - inoperable or affected by warp transit; all weapons are affected; only used for those other types of items which are affected
S - Small craft
DSB - Item is a DSB
POD- Item is a missile pod, such as an SBMHAWK

20.02 Transmission and Reception Range Table

	Spacecraft			Receiving unit		Fighters
Transmitter Type	DSB-c	w/(CC)	w/o (CC)	HT Pop	IND-2 Pop	Small Craft
DSB-c	1 sH	3 sH	1 sH	3 sH	-----	1 sH
Unit with (CC)	3 sH	8 sH	6 sH	20 sH	7 sH	3 sH
Without (CC)	1 sH	6 sH	4 sH	10 sH	1 LM	1 sH
HT Pop	3 sH	20 sH	10 sH	75 sH	15 sH	3 sH
Ind-2 Pop	-----	7 sH	1 LM	15 sH	8 sH	1/2 LM
Small Craft or Fighter	1 sH	3 sH	1 sH	3 sH	1/2 LM	1/2 sH
DSB-Xr	2 sH	3 sH	1 sH(2/(CIC))	6 sH	------	----

NOTES: All transmission ranges are reciprocal. I.e. fighter to ship has the same range as ship to fighter. Over these ranges, bandwidth is somewhat limited. Detailed information such as raw sensor data and technology information may take longer to transmit.

27.00 Descriptions of *STARFIRE* Tech Systems

The costs and hull space requirements of systems are listed under 26.01 and 26.02. This rule section contains descriptions of what each weapon or technical system is and what it does. Cost information and space requirements are referred to only when necessary to make the explanation clear.

Parts of the system descriptions below have been removed to save space. Those players wishing to see the full descriptions may get them from the SDS Web Site or from SDS. The physics of Starfire systems are available in EC #18.

27.01 Pre-Industrial & Industrial-1 Systems

27.01.01 Planetary Control Forces (PCFx)

These are ground combat forces.

STARFIRE uses an abstract form of planetary combat (see Strategic Rule 21.00) that does not distinguish between armies, navies, air forces, etc., but higher TL PCFs receive bonuses in combat against those of lower TL. All are discussed here rather than under separate entries because of the way in which their costs (and capabilities) inter-relate.

PCF Values Table

HTL	Cost	Maint	CFP	Equipment Stowage
PCF-P	1	15%	.5	50 csp
PCF-Ind1	2	15%	1	125 csp
PCF-Ind2	3	15%	2	125 csp
PCF-1	4	15%	3	200 csp
PCF-2	5	15%	4	200 csp
HTL-x	3+x	15%	2+x	200 csp

For any HTL PCF, the cost to build is 3+1 per HTL, CFP is 2+1 per HTL, and maintenance is 15% , which can be added to the running maintenance total (see 06.04).

At HT 1 or above, players may pay an additional 25% for a PCF and make it air-mobile/airborne (noted by coding the PCF, PCF-xa). PCF-xa can be dropped from assault shuttles (ast) without requiring the shuttles to land.

When moved by starship, the combat equipment of a PCF must be shipped with it in cargo holds (27.02.04). See the Equipment Stowage column in the table above. The equipment need not be on the same spacecraft as the personnel of the PCF, but a small craft used to load the PCF must load the equipment as well, requiring additional time and travel to the other unit.

Q or Qs (27.02.05) are required to transport/house PCF (27.01.01). Each Q can house 1 PCF; 2 PCF-Ind1 or PCF-Ind2; or 3 PCF-x. Qs are not normally used for this purpose because much of the space PCF use in full-size Q is taken up with exercise areas, equipment servicing shops, etc. If Qs are used for PCF, the quarters requirement is tripled.

Lower-tech PCF-x are usually more manpower intensive because of their less sophisticated weapons, which is why fewer of them can be fitted into the same amount of crew quarters.

PCF always retain their original TL. If players wish to convert a lower-tech PCF to a higher-tech one, the PCF must be returned to a planet of the desired TL and a habitability differential of no more than 2 compared to that of the world on which the PCF was first raised. Once there, the PCF is disbanded and its personnel point value is added to the special personnel reserve (see Strategic Rule 15.01.02.10) on that planet. A new PCF of the desired TL must then be paid for, but the personnel points to "man" it may be drawn from the PCFs returned for upgrading. (In effect, the lower-tech PCF turns in its old weapons and draws new equipment while keeping its old grade.)

Combat damage may result in a PCF surviving without its equipment, or equipment remaining for a PCF whose Q was destroyed. New equipment must be purchased to replace lost equipment, at the cost of buying a new PCF, but no training time is required. Equipment must be transported to a world able to raise new PCFs, a new PCF raised using the equipment at no cost, with normal training time, and maintenance paid for it during transit.

27.01.01.1 Transporting combat ready PCFs

Because PCFs do not normally engage in combat while still aboard their transports, it is possible to fit more personnel into quarters on large spacecraft than can be deployed in combat ready condition. The transport numbers above reflect this.

In combat ready condition, 1 PCF of any type or TL (and its equipment) can be housed in each Q system, or 1/3 of a PCF in a Qs, or 1/4 of a PCF in a cutter. Each Q of capacity on a small craft can hold 1 PCF of any TL, plus 100 csp of that PCF's equipment (a cutter can hold 25 csp). This overlap of personnel and cargo space is possible because the PCF personnel are wearing or riding in the equipment.

Pre-industrial PCFs can operate indefinitely with just the equipment that they carry, but more advanced PCFs cannot. If the remainder of a PCF's equipment is not delivered within 1 system turn (12 hours) of landing on a planet, the PCF will not be able to conduct offensive operations. A PCF incapable of offensive operations cannot be counted for offensive CFP and cannot move, but can be counted as a casualty in ground combat.

PCF equipment is unloaded as cargo, using the 08.06 cargo handling rules if not located within a boat bay, or using 03.04.04 (5 turns to load or unload) when in a boat bay or on a planet. PCF personnel and equipment may load or unload simultaneously in combat ready condition.

27.02 Industrial-Two Tech Systems

27.02.01 Armor (A)

"Armor" includes any protective strength built into a unit, not just alloy plated over its hull. Armor, if present, is listed between the shields and any other systems on the ship.

Ground bases and asteroid fortresses do not pay for armor (A) at all, as their "armor" represents concrete and subsurface construction, both of which are covered in the "hull space" construction cost of the base. The player simply declares how many hull spaces of the base will be "armor."

27.02.02 Basic Missile (BM)

This is a rather crude weapon, but it is the best a civilization can do before production of advanced reactionless drives. Within its range, it is fired and inflicts damage exactly as the HT2 Standard Missile.

27.02.03 Bulkhead (B)

Bulkheads are internal armored partitions fitted with automatic blast doors. B may be thought of as interior armor and are often added to space stations and/or PDCs as exactly that. Most units may mount any number of B, but commercial freighters may mount only one hull space worth of bulkhead type systems for each 6 hull spaces of cargo holds (or portion thereof), as they are not cargo-efficient systems. Thus a commercial freighter with 1-6 H could mount only 1 B; one with 7-12 H could mount 2 B; etc. Treat bulkheads above this limit, on commercial freighters, as military systems.

27.02.04 Cargo Hold (H) and (Hs)

Cargo holds are storage areas designed to be quickly and easily configured for any type of cargo, and the basic capacity of an H is 500 stowage points (csp). Cargoes of any type are assigned stowage point requirements that are used to determine the quantity of each which can be stowed per H. If H are mounted in unbroken chains, they form one very large H for bulky cargoes (like disassembled base or starship components). H divided by bulkheads may not be used in this fashion.

Half-size cargo holds are also available but a unit may mount only a single Hs and its capacity is 200 stowage pts.

Cargo holds are needed to carry a ship's maintenance (see 09.06.01) and are collapsible systems (see 04.04.04).

27.02.05 Crew Quarters (Q/Qs)

These are crew living spaces for spacecraft or hostile environment ground bases. Q house large numbers of personnel and rely on the centralized capability of a life support hold (27.02.08) but they have limited integral life support (27.02.05.2). Qs (or Small Ship Crew Quarters) are the same size as Q but house fewer personnel because they also incorporate the functions of a life support hold (See 09.06.02 for crew support requirements.) Q or Qs are also required to transport/house PCF (See 27.01.01) and colonists (see 15.02.06b).

27.02.05.1   If a unit loses Q, Qs, or Lh, the crew must be reduced within 36 hours (3 system turns) to fit the surviving crew support by shutting down systems until the remaining systems can be supported by the remaining quarters until the damaged quarters can be repaired. (The displaced crew must be transferred to a habitable planet or to a unit or units with sufficient Q or Qs to support them.) If all Q or Qs are destroyed, the unit is totally uninhabitable until repairs have been made.

27.02.05.2   Q do not contain their own life support (see Lh, below), but do have a 30-day "canned" life support capability which gives the owning player one strategic turn to get back to base. This life support is only available inside an undamaged, operating Q system. In an emergency, a player may shut down some undamaged Q, reduce his crew to fit the capacity of the active Q he retains, and use the active Q for one month. At the end of the month, he can shut down the Q he has been using, reactivate the undamaged Q he has not been using, and leapfrog his crew between them in order to "stretch" his life support and get his ship home. The use of canned life support does not eliminate the crew grade penalty for lack of a Lh (27.02.08). Units containing systems with internal life support, such as SY, SYM, and MS, are considered to have unlimited "canned" life support.

27.02.05.3   Qs have no "canned" life support. As long as a Qs is intact, it provides life support to 20 hull spaces.

27.02.05.4   If all Q or Qs aboard a spacecraft or hostile-environment PDC are rendered inoperable, all other intact systems may continue to function for up to 3 system turns with the crewmen in hostile environment gear. To reflect the encumbrance of their gear, however, all crewmen aboard such units function at a grade level (07.00) two lower than their actual grade. This penalty applies when the last quarters system or last life support system is destroyed, i.e., intact Q without a supporting Lh does not prevent the two grade reduction. This reduction in grade does not affect the crew's Break-Off or Surrender rolls (04.13), and all of its effects vanish if life-support is restored to the unit.

27.02.06 Basic Gun (Gb)

Although commonly referred to as a basic "gun," the *STARFIRE* Gb is a high-powered electromagnetic catapult (not a cannon) used to launch short-range, high-speed "sprint-mode" missiles. Sprint-mode missiles have low-endurance but powerful drives and move at much higher velocities than longer-ranged missiles. They have comparatively limited homing capability, and so their accuracy falls off as the range increases, but their lack of powerful active homing systems makes them very hard to detect. Coupled with their high speeds (which limit engagement time) this makes them impossible for active anti-missile defenses such as D or Di to stop. Exceptions: PDC point defense (see 04.09.03.1) and Dk# (see.27.02.13b).

Gb may only fire their own ammunition (GMb 27.02.12).

27.02.07 Laser (L)

The earliest and, in some ways, most effective energy weapons are lasers. Lasers use coherent light and, because photons are neutrally charged, penetrate a target's electromagnetic shields without degradation. They are short-ranged compared to later energy weapons, but are prized for their ability to penetrate shields and for their anti-fighter capability, since they are the only non-fighter energy weapon which may engage fighters or small craft without Xr (see 27.05.05).

27.02.08 Life Support Hold (Lh)

Lh contain life support equipment to maintain the crew quarters of a unit. Each Lh can support up to 5 Q. If all of a unit's Lh are destroyed, all Q become inoperable. Units may mount additional Lh as backup systems.

27.02.09 Magazine (Mg)

Most *STARFIRE* projectile weapons have no on-mount ammo stowage capability. All missile launcher and gun ammunition must be drawn from magazines. Each Mg system has a capacity of 200 stowage points (see 28.06). Mg may be located at any point on a unit's control sheet, and any weapon may draw ammunition from any intact Mg. If a Mg is destroyed, so is all ammo in it.

27.02.09.1 Unless players declare differently, all ammo is stowed proportionately from the rear forward (that is, the total rounds carried are stowed with an equal number of each type in each Mg) and all ammo is drawn from the foremost magazine first. This is a game mechanics decision to make it simpler to keep track of the ammunition remaining after loss of a Mg, but players may rearrange their ammo to suit themselves and keep a running tally of what each undamaged Mg contains.

27.02.09.2 Carriers use Mg to store external ordnance for fighters, and any hangar bay may draw ammunition from any Mg. A hangar bay without access to an intact Mg may not rearm fighters. Fighter internal life support can be renewed and external laser packs and internal lasers already mounted by a fighter remain operational, but no new missile weapons or fighter gun ammunition is available, and no new external ordnance packs may be fitted to a fighter without access to an Mg. (Note that this means only that no additional ordnance is available. The hangar bay can still remove external ordnance from one fighter to mount on another.)

27.02.09.3 Units may use cargo holds to carry spare ammunition, but only Mg can deliver ammunition to launchers and/or hangar bays. Spare ammo must be unloaded from the holds and then reloaded into magazines before it can be used in combat. For this purpose, the spare ammo, including any ammo stored in small craft carried in boatbays, must be unloaded entirely from the ship and then reloaded into the Mg using the cargo loading/unloading rules (08.06). Mg and H stowage points are the same "size" as one another; the Mg's lower capacity results from the need to fit in specialized ammo-handling and feed equipment. This also applies to any ammo stored in small craft carried in boatbays.

27.02.09.4 Magazines are collapsible systems (see 04.04.04) that require 2 collapse points to destroy.

27.02.09.5 Magazines may be equipped with CRAM (Crash Release of Ammunition Measures). CRAM is automatically built into any Mg built at HT10 or above; Mg built at lower TLs may add CRAM, once HT10 is reached, in any refit at no cost above the normal 20% fee for the portion of hull containing the Mg (see 15.09.05). Mg with CRAM can be noted on the design sheet near the (AC) indication with a Mg-c. Any Mg-c can cram (or jettison) all ammunition of any desired type in the combat impulse in which the mounting unit fires or in the tractor beam phase of any tactical turn. This ability became necessary with the introduction of antimatter warheads, as the destruction of any magazine containing antimatter warheads causes the automatic destruction of the ship mounting the magazine. It is possible for an Mg-c to cram only its antimatter warheads, retaining any standard nuclear warheads.

27.02.10 Missile Launcher (R)

This pure missile launcher fires Basic and Standard Missiles. It cannot fire any missile in sprint mode nor can it fire missiles larger than SM.

27.02.11 Spaceport (SP)

This is a ground-based system, not a spacecraft system. (SP) may be built independent of any other system (i.e., as a stand-alone system or chain of systems forming a sort of weaponless PDC) or included as components of ground bases. If included in ground bases, they are protected by the base's active defenses but listed before the armor on the control sheet, as they are surface-level installations. (SP) may be built on moons or asteroids or on hostile environment planets, as well as on habitable worlds, but in that case the (SP) "base" must incorporate Q and Lh (or Qs) as if the (SP) were a spacecraft of the same number of hull spaces.

Each (SP) is a separate sub-system consisting of landing, servicing, and cargo-handling equipment capable of handling up to 40 hull spaces of spacecraft (including the loading/unloading of any cargo aboard those hull spaces), but contiguous chains of (SP) may combine their capacity to handle larger numbers of spacecraft or spacecraft of greater hull size. An (SP) of any tech level provides the same cargo handling ability as a (CHS) (see 27.03.03). Any (SP) or chain of (SP) can divide its capacity among as many units as it desires, so long as the maximum hull space capacity is not exceeded. A high-tech planetary populations may not build spacecraft on a planet unless it possesses at least one (SP). (See 15.09.03.)

27.02.12 Basic Sprint Missile (GMb)

Basic sprint missiles are high-speed, short-range "missiles" coded GMb because they are fired only from Gb. GMb is the only ammunition a Gb may fire.

27.03 High Tech One Systems

27.03.01 Atmospheric Capability (AC)

(AC) covers a host of special modifications required for a spacecraft to land on a planet or moon and/or enter atmosphere. Ships of more than 100 hull spaces cannot be made atmosphere capable. Any unit built on a planet or moon must be atmosphere capable. All small craft and strikefighters are automatically atmosphere capable.

27.03.02 Boat Bay (BbS, BbM, and BbL)

Boat bays are facilities to dock, service, load, and unload small craft. There are three versions of Bb: the small boat bay (BbS), the medium boat bay (BbM), and the large boat bay (BbL). The BbS can handle 2 boat bay points worth of small craft while BbM can handle 4 boat bay point and the BbL can handle 6 boat bay points. See 09.06.03 for information on boatbay requirements in starship construction.

27.03.03 Cargo Handling System One (CHS)

The (CHS) is a specialized spacecraft module that speeds cargo loading and unloading. The first generation (CHS) is a purely mechanical system of conveyers, monorails, etc. The function of a (CHS) is to increase the basic loading and unloading speed of any vessel by a factor of 10. [That is, if the vessel could normally load/unload 10 cargo stowage points in a tactical turn, it can load/unload 10x10=100 with the aid of a (CHS).] Each (CHS) can service only one ship at a time, regardless of the hull size of the ship being serviced, and multiple (CHS) cannot be used on a single unit to increase the speed multiplier above 10. (CHS) aboard space stations orbiting inhabited planets are assumed to be able to transfer cargo directly to planet-based shuttles for immediate transshipment to the planetary surface. (CHS) can also be used to transship cargo between two starships.

27.03.04 Combat Information Center (CIC)

A (CIC) is a specialized command and control segment built into a starship, base, or space station. (CIC) are staffed by specialists equipped with communications equipment, computers, etc., for sorting out tactical situations and passing orders smoothly, quickly, and without ambiguity. Flagships with a (CIC) add "+1" to all initiative rolls. If a graded admiral uses his personal grade rather than that of his flagship, he still receives the "+1" modifier for a (CIC) if his flagship mounts one.

27.03.05 Commercial Engine (Ic/ic)

This is a more massive, less efficient, but more durable version of the standard military "reactionless" drive (27.03.07) that can be run at full capacity for long periods without failure. It is called the "commercial engine" because freighter designers favor its higher safe speed and greater reliability, but it may also be installed in military hulls.

27.03.06 Cutter (ct)

The ct is a small spacecraft, barely larger than a fighter, used solely for personnel transfers. Any spacecraft larger than 30 hull spaces must carry at least one ct or larger small craft for transfer of critical personnel (admirals, passengers, survey personnel, etc.), search and rescue after military engagements, etc (see 09.06.03). Cutters may not pass through warp points. Cutters may also land PCF on planets, but their small size makes them rather inefficient for this purpose. If ct used to land PCF are lost before landing, each ct lost takes 1/4 of a PCF's personnel with it. To reflect this, count all destroyed ct in an assault wave and divide by 4, rounding all fractions up, then subtract the result from the total number of PCF which were being landed. Each ct requires 1 boat bay stowage point.

27.03.07 Military Engines (I/i)

This is the standard military engine. *STARFIRE* starships move using a drive that acts somewhat like reactionless drive the physics was described in EC#18. *STARFIRE* starships generate a force field about themselves and "eject" a stream of pure force astern (which produces the "blind spot" into which a starship's sensors cannot see). In addition, they incorporate inertial compensators (which distribute the mass generated at high-speeds over the entire surface or "skin" of the drive field) and crude gravity generators (which produce a steady internal gravity for their crews even during violent combat maneuvers). Finally, the combination of the drive field's propulsive capabilities with the tremendous "space-warping" effect of distributing a ship's mass over its surface, creates a barrier that provides protection against collision with all but the most massive space debris or direct hits with projectile weapons.

All in all, this is an efficient and flexible system, but it does have drawbacks. An active drive produces a massive energy signature, even for a relatively small unit, and so moving starships are detectable at extreme ranges. In addition, interruption of the drive (whether by intentional engine shutdown or destruction) causes a ship to stop dead, as all of its inertia was distributed across and a function of its drive field. Finally, despite very high acceleration rates, the maximum attainable speed using this system is lower than that attainable with reaction drives. At present the maximum speed for any reactionless-drive vessel larger than a fighter is around 20% of light-speed, whereas a reaction-drive vessel under continuous acceleration could conceivably reach a speed of .999999999999999999+ light-speed. In light of the existence of warp points, most spacers are more than happy to accept the I's limitations in order to obtain its advantages.

The actual way engines function in *STARFIRE* is not complicated, but some explanation and examples are required to be sure the player fully understands; see 09.05 for rules on constructing units with engine rooms, see 04.04.01 for rules on damage to engine rooms, see 03.11 for rules on military engine burnout, and see 08.03.02 for rules on towing units.

27.03.08 Science Instruments (X)

X are primarily data processors, used to refine, record, analyze, and store data received by other sensor systems. A survey ship must mount X to detect warp points and process data on planet types, atmospheres, populations, etc. The survey functions of X in the campaign game are described in the survey rules (19.00). All ships equipped with science instruments pay 15% maintenance, regardless of hull type.

27.03.09 Shields (S)

A shield is an envelope of electromagnetic force around a unit that absorbs one damage point from any weapon except lasers or primary beams. When an S absorbs damage, its generator's circuit breakers blow and must be reset to restore the shield to functioning (05.01). Shields do not function on PDCs or on spacecraft landing on or taking off from planets or moons because of interference from planetary gravity and magnetic fields. Shields also cannot protect large (over 2000 HS) space stations. All shield systems must be first (leftmost) on a unit's control sheet.

27.03.10 Shipyard Module (SYx)

A (SYx) is a large, self-contained, specialized module that is used to build, refit, repair, and/or assemble spacecraft and technical systems. In general terms, an (SYx) may be thought of as a sort of space-going assembly line. Each (SYx) contains its own internal life support, and crew support; thus, the hull spaces (SYx) are mounted in do not require any Q or Lh support equipment. (SYx) is able to repair/build its own parts for repairs and thus costs nothing to maintain. However, the hull that the (SYx) is built on does require maintenance; thus, for each (SYx) aboard a unit, reduce by 400 MC the list price of the ship when calculating maintenance costs.

27.03.10.1   Each (SYx) occupies 80 HS and takes 10 points of damage to destroy (see 04.04.05). Each (SYx) has a specific tech level (indicated by the "x" in the code) equal to that of the empire which built it. All (SYx), regardless of TL, cost the same amount (400 MC), and whenever a planet or empire rises in TL, its (SYx) are automatically upgraded, at no cost. This upgrade requires no "down" time. Thus, on the turn the empire increases in TL, the (SYx) can build at the new rate.

27.03.10.2   SYx have build capacity of 10 hull spaces per module per month plus 2 HS per HTL. Thus a SY3 can build 10+2*3 = 16 hull spaces per month. (See Strategic Rules 09.07, 15.09.03.2, 15.08.04, & 15.08.03.3 for a full explanation of repair, refits, and construction building.)

27.03.10.3   A Medium Shipyard Module (SYMx) is a smaller less capable version of a Shipyard. It follows all rules for SYx except that each (SYMx) occupies 25 HS, takes 3 points of damage to destroy, has a build rate of (10 + 2*TL)/3 (FRU), and costs 150 MC. (SYMx) and is developed along with (SYx) requiring no extra R&D cost or time.

27.03.11 SHUTTLE (st)

The shuttle is a larger version of the cutter. (See 28.05)

27.04 High Tech Two Systems

27.04.01 Courier Drones (CD)

CD are small, unmanned spacecraft slightly larger than fighters. They have powerful drives and sophisticated computers that permit them to make warp transits, but require navigational beacons (DSB-n) at each warp point to reorient themselves after transit (See 27.04.02). CD that make transit without nav beacons roll 1D10; any roll of 1-7 indicates that they have wandered off course and are lost forever. CD are far too tightly crammed with drive units and computers to carry any cargo, but can carry messages through warp points.

27.04.01.1   Spacecraft carry CD in special "silo" launchers not shown on control sheets. Each military spacecraft larger than a small craft carries one CD for every 10 hull spaces (FRU). One CD is lost for every 10 points of non-shield damage inflicted on a unit. Freighters carry only one CD for every 40 hull spaces (FRU). Once an empire develops CD technology, all of its ships are automatically fitted with CD at no extra cost whenever they are refitted or repaired for any other reason. So long as a unit is in maintenance, it begins each strategic turn with its full complement of CD on board. Additional CD may be purchased to use for reloads. One interception turn is required to reload all of the CD launchers on a spacecraft. The shields and drive field must be deactivated while reloading the CD launchers.

27.04.01.2   CD are launched as any other missile during the combat phase of any tactical turn (though they need not be targeted, and require no targeting capacity), but must be moved as if they were starships. On the turn of launch, they remain in the same tactical hex as the unit that fired them; thereafter they move normally. CD destinations and launch times must be recorded when they are launched, and their movement is plotted on the strategic movement form (18.01.03) as for any other unit.

27.04.01.3   Drones have a maximum speed of "12" but may be programmed to trade off speed for endurance and range. Possible speed settings are 12, 8, and 6. At speed 12, a CD has an endurance of 1 week (7.5 days/3 StMP). At speed 8, endurance is 4 weeks (30 Days/8 StMP), and at speed 6, endurance is 8 weeks (60 Days/12 StMP). A CDs always moves in a direct line between point of entry and destination in a star system. Within a star system, it will always move in a straight line to their destination.

27.04.01.4   CD may be engaged as small craft on the Fighter Kill Table because of their easily predicted flight paths but any unit not mounting Xr, receives a -1 to engage them. CDs are detected as small craft.

27.04.01.5   CD are programmed to self-destruct if intercepted, but there is a 02% chance that any CD tractored by a hostile unit can be taken intact and interrogated for data. The tractor to-hit number against CD equals the F hit number.

27.04.01.6   CD contain transmitters that are normally triggered whenever the CD enters a system hex containing a friendly unit with a communications module [(CC)] or combat information center (CIC) provided that the unit in question transmits to the CD and instructs it to do so, but they may also be programmed (by the firing unit) to maintain communications silence until they reach their destinations. They will always attempt to transmit upon reaching their programmed destination.

27.04.01.7   Each CD is a "throw-away" system; after it has made its one and only flight, its engines are so damaged that the cost of repair exceeds that of the manufacture of a new CD.

27.04.02 Deep Space Buoys (DSB)

DSBs may be considered very tiny bases. They are larger than most satellites, being equipped with station-keeping drives and astrogation control systems to maintain precise positions, and are designed for long-term deployment and many uses.

DSB are carried to their intended stations in cargo holds (at a rate of 25 cargo stowage points per DSB), then deployed (see 08.05). They may not be deployed in the same tactical hex as an open warp point.

Once deployed, DSB maintain their stations, functioning as programmed, until lifted or destroyed. The original 1st generation DSB was a navigation beacon, emplaced within one system hex of a warp point to serve as an orientation point for courier drones and starships and requiring no monthly maintenance payment. In time, they proliferated into a host of higher-TL sub-types with specialized functions. Any unit may detect most types of DSB with Xr within 10 tactical hexes; units without Xr may detect DSB at 1 tactical hex. A unit may engage DSB as if they were fighters, adding 1 to the fighter kill number of any weapon at any range, if that unit or a unit it is datalinked to currently detects the DSB; a unit never needs Xr to attack a DSB. Unless otherwise noted (the principle exception is IDEW--see 27.05.04 and 27.08.03), DSB can be commanded to activate or deactivate by any friendly unit at the same range that a DSB-c can receive communications (see 20.02b or 27.06.02).

27.04.02.1   The original DSB is a navigation beacon DSB, coded DSB-n, and requires no maintenance. Both DSB-n and DSB-ncd (27.06.08) may be placed up to 1 sH from the actual location of the warp point and still be fully effective, thus preventing easy location of enemy warp points (you know it might be around but not specifically where).

27.04.02.2   A service contract for the maintenance of DSB, MF, and IDEW is included in the purchase price of those systems, thus, those systems require zero maintenance.

27.04.03 External Ordnance Rack (XO)

External ordnance racks are hard points on spacecraft hulls stressed and designed to mount and launch missiles. Most types of missiles may be launched from XO racks (those that cannot are so noted under their tech description), and all missiles fired from a ship's XO racks and/or internal launchers in a single combat impulse are considered a single salvo for targeting and point defense purposes. Some types of missile may be mounted on a single XO rack; some require more than one. XO rack requirements are noted on 28.06, ORDNANCE TYPES AND MAGAZINE/CARGO POINTS. As with internal launchers, missiles from XO racks may be split between more than one target. XO racks may be reloaded from the mounting ship's magazines or cargo holds at a rate of one XO rack every 5 tactical turns, but the ship must lower its shields and switch off its drive during any reload period.

As external systems, XO racks are very vulnerable. Each point of damage inside the shields (except for damage from primary beams, needle beams, or ADMs) destroys one XO in addition to its normal damage. The owning player selects the XO rack lost, but he must lose loaded racks first.

XO-launched missiles' ranges are reduced to that noted in 28.06, and the accuracy of all XO-launched missiles fired from starships is reduced by "-2." XO-launched missiles fired from BS and SS have the same reduced range but unreduced hit probabilities, as BS and SS station-keeping drives are weaker than starship drives and so cause less damage.

When a unit is equipped with XO, the number of XO it mounts should be noted on its control sheet. (For example, a 50-hull space CA with 10 XO would note "10 XO" on its control sheet.)

Units may build in (or add in refits) one XO rack for every 5 hull spaces (1 per 10 HS for freighters). Bases and military components of space stations may mount XO racks and non-military hull spaces of SS may not be used to qualify for XO racks.

27.04.04 Gun/Missile Launcher (W)

The W is closer to a R than a G, but it combines the function of both. In effect, a W can fire a SM in either sprint-mode or long-range mode. The actual initial velocity of a W's electromagnetic catapult is lower than that of a G, but the SM's more powerful drive makes up for it. The maximum range of any round fired from a W is determined by the mode in which it is fired. Note that the W is unable to fire the GM.

27.04.05 Multiplex Tracking (Mx)

Any unit may fire on as many targets as it has weapons, but without multiplex tracking it suffers a -4 (-2 against fighters and small craft) to the hit number for all targets if it engages more than 1 simultaneously.

Multiplex tracking is a multi-generational fire control system that permits units to engage additional targets without this penalty. It is coded Mx, where "x" represents the number of

additional targets the unit may engage without penalty. (That is, M1 would permit a unit to engage 2 targets, not 1.) All generations of Mx require 1 hull space, but the tech level of the empire building it determines the maximum generation that can be built. M1 becomes available at HT2. At each succeeding tech level, one additional increment of multiplex tracking becomes available. At HT7, the maximum possible level would be M6, and the cost would be 15*6-5=85 MC.)

PDC on planets with high-tech populations above "colony" level have unlimited multiplex tracking. Other ground bases must have the system built in. Multiple installations of multiplex may be built into any unit (spacecraft or ground base), and that each installation's targeting ability in excess of one (plus the unit's inherent ability to engage one target) may be combined into a single total. (That is, an HT2 ground base with 6 installations of M1 would be entitled to engage 2+1+1+1+1+1=7 individual targets without penalty.)

27.04.06 Communication Module (CC)

(CC) function as powerful communications relays. When Courier Drones become available, each (CC) contains an unlimited (for game purposes) number of specialized, short-range courier drones. (CC) courier drones are reusable devices, designed only to be shuttled back and forth through a warp point, linking two (CC) on opposite sides of the point. (CC) drones may not be used to transmit messages over distances greater than 1 system hex (12LM). Since the (CC) uses the ship's own courier drone launchers, (CC)-equipped ships must allocate their CD space to (CC) drones, though they can use some for regular CD.

(CC) contain powerful transmitters and sensitive receivers in addition to their courier drones. See Strategic Rules 20.02.01 for communication ranges.

27.04.07   Used in Alkelda Dawn

27.04.08 Basic Point Defense (Db)

Db is a primitive active anti-missile defense, which the TFN failed to develop before the much better D was available. Db is able to engage up to three missiles, with an interception number of 5.

Unlike later versions of point defense, the Db is unable to take extra shots at incoming missiles, due to lesser tracking abilities and response times. While the Db can engage small craft on the "Db, sprint" line of 28.03, it is unable to engage fighters like the ast can. However, the Db can engage kamikazes, including fighters, as D and without the -1 to kill. (See 04.19 for point defense operation)

27.04.09 Standard Missile (SM)

A longer-ranged, more capable version of the BM, the SM may be fired from R, W, or Rc. SM may be fired from W in sprint-mode, exactly like GM, but may not be fired from R, Rc, or XO racks in sprint-mode. They may not be fired at all by G.

27.04.10 Gun (G)

This version of the gun (27.02.06) fires a larger sprint mode missile (GM) that causes 2 pts of damage. GM is the only ammunition a G may fire.

27.04.11 Sprint Missile (GM)

This high-speed, short-range sprint "missiles" coded GM can only be fired from G (See 27.04.10).

27.05 High Tech Three Systems

27.05.01 Assault Shuttle (ast)

Assault shuttles are intended to land PCF against opposition. They have the personnel and cargo capacity of a standard shuttle, can land without spaceports, and require 2 boat bay stowage points. Any ast mounts the equivalent of one Db (27.04.08) for use against missiles or fighters. This Db fires at small craft and fighters on the "Sprint mode" line of 28.03. In addition, ast may use evasive maneuvering in both space and atmosphere and can airdrop HT PCF-a.

27.05.02 Datalink (Z)

Datalink is a computer and communication inter-link that permits up to three spacecraft (referred to as a "datagroup") to fire as a single unit. Datalink requires no hull spaces but must be the first system inside a unit's armor (if any armor is mounted) and is destroyed as any other system, requiring a single point of damage to destroy. No unit may mount more than one datalink system (Z or Zl--see 27.06.06b).

Any fire from a datagroup is considered a single salvo. Z's maximum linkage range is 2 tactical hexes (see 04.15.03). See 04.15 for rules about "lead units" and scanning interactions, and datalink capabilities. All datagroups must be recorded in writing before an engagement begins and require time free of combat to reorganize or regroup (04.15.04).

27.05.03 Deep Space Buoy Control System (DCS)

This module may activate and control IDEW deep space buoys (see 27.05.04).

27.05.04 Laser Buoy (DSB-L)

The DSB-L is the precursor of a new generation of systems known collectively as IDEW (Independently Deployed Energy Weapons). In essence, IDEW are DSB-mounted energy weapons. Only laser IDEW may be deployed at HT3, and they are bomb-pumped (that is, powered by a detonating nuclear warhead) and so (obviously) single-shot weapons.

DSB-L are deployed as any other type of DSB or minefield (see 08.05). Players may deploy any number of DSB-L in any tactical hex that does not contain an open WP, but the exact location of each DSB-L must be noted when it is deployed. For deep space deployments, record the number of the system hex of deployment; a hex number from the interception-scale map, indicating the 1/4 LM deployment hex within the system

hex; and a hex number from the tactical map, indicating the exact tactical hex in which the DSB-L is located. (Thus 2702/0507/2611 = tactical hex 2611 of interception hex 0507 in system hex 2702.) For deployments covering specific targets--as a warp point or a planet--only the bearing (use the scattergram) and range in tactical hexes from the protected target need be noted.

DSB-L bomb-pumped lasers have the same range and damage as shipboard L.

DSB-L require zero maintenance (see 06.04.01)

See (04.18) Automated Weapons for details on control and firing of DSB-L.

27.05.05 Long Range Sensors (Xr)

Xr are packages of passive sensors and active scanners, (which are rarely used) used to locate, identify and track system bodies, warp points and/or spacecraft. They have some additional functions in conjunction with other tech systems, and these are noted under the description of the appropriate tech system. Xr detection and resolution ranges and capabilities are listed in 04.05.01.3 Long-Range Sensor Capabilities Table.

IMPORTANT NOTE: Units larger than fighters may not engage fighters with any energy weapon other than lasers if they do not mount Xr or have access to Xr data via datalink (see 04.15).

27.05.06 Machine Shop Module (MS)

An MSx may be thought of as a less capable shipyard module. It is much smaller and less expensive, but has no fabrication capacity; it can only repair damaged systems, assemble prefabricated components, or prep "crated" fighters. Within its limitations, it functions exactly as an (SYx) but does not require a supporting population.

27.05.07 Point Defense (D)

D is the active anti-missile defense developed by the TFN. The D is able to engage up to four missiles with an interception number of 7 and may choose to "double up" (that is, take one extra shot) vs. missiles (See 04.19)

27.05.08 Tractor Beam (T)

Tractors (officially known as "Erlicher Generators" by the Terran Navy) allow the mounting unit to lock onto another unit without physical contact during the tractor beam phase of any tactical turn. See 08.00 for the rules governing the use and effects of the device.

27.10.04 Enhanced Drive Field Missile (EDM)

NOTE: While the EDM retains the rule number of a HT8 system for rule compatibility, it is actually available at HT4.

The EDM is a defensive development of the missile drive field designed for the anti-missile role. Because the drive field of a spacecraft interdicts incoming missiles, missiles fired at large spacecraft carry proximity-fused warheads designed to detonate at the lowest possible "stand off" range (i.e., just before the drive field would vaporize them without effect). The EDM reinforces or enhances the drive field of a spacecraft to fool the warhead's on-board sensors into thinking it is closer to its target than it actually is, causing it to detonate prematurely.

The EDM is very large and can be launched only from an XO rack. An EDM can be fired either like a normal missile, in the firing unit's combat impulse, or as in reaction to an incoming salvo of missiles; the EDM will then accompany its "mother ship" for the remainder of the combat phase in which it was launched. In either case, the EDM's endurance is very short, and all EDM fired in a combat phase burn out their drives at the end of the ensuing movement phase. Like courier drones, EDM which have burned out would cost more to repair than to replace with new missiles, and so they are equipped with a self-destruct charge to prevent them from being captured and examined by the enemy.

Reaction Mode: Whenever a unit is attacked, the unit may fire EDM either before or after a salvo of missiles is intercepted by point defense (or both before and after, for a unit carrying multiple EDM). However, beam weapons and K weapons, which travel at or near the speed of light, and mines, which attack from a very close distance, allow for no reaction time; thus, a unit will have not time to launch an EDM before these weapons strike. Therefore, an attacker may choose to fire lasers or other beams, in hopes of destroying the EDM in XO racks prior to firing missiles.

EDM are not affected by the explosions of the missiles they "fool," and a single EDM may engage any number of missiles. As hostile missiles come in, the unit that deployed the EDM attempts to interpose the EDM between the incoming warheads and itself. Like point defense, EDM ignore missiles which are already going to miss, and only "hits" which are not stopped by point defense are engaged by EDM. For each such hit, the player deploying the EDM rolls 1D10, and any result of 1-3 indicates the EDM fooled the missile into detonating harmlessly. Up to 2 additional EDM (for a total of 3) may be deployed as "backups" to engage missiles which evade the 1st EDM, but because EDM must physically maneuver to meet their prey, engagement time drops rapidly. If 2 EDM are defending, the player makes a single defense roll, succeeding on a 1-4. If there are 3 EDM, the player makes a single roll succeeding on a 1-5. Any modifiers such as crew grade, AMP, etc do NOT affect EDM rolls.

The EDM is a reactive defense, able to generate its deceptive energy field against an infinite number of targets, but can do so only if it has time to detect them. Sprint mode missiles are too fast, and EDM are not able to generate an effective deception field against them. EDM do NOT function against -LT warheads, since -LT fire their warheads before reaching the range at which the EDM's deception is effective.

Hostile units may not specifically target an EDM for attack--they are too small, fast, and agile for that.

An EDM cannot totally prevent missile damage to a unit with no drive field, since the field generated by an EDM is too weak and localized interdict a warhead by itself. EDM may,

however, be deployed and rolled for normally by spacecraft without drive fields, in which case a successful interception roll indicates the warhead detonated far enough out to provide the effective equivalent of a drive field. Any warhead so detonated does do damage, but the damage is not multiplied by 10 as it normally would be against a spacecraft without an active drive field.

Ground bases may not use EDM, since missiles fired at PDCs or other targets without drive fields use different fusing parameters. EDM may not be used against sprint mode missiles.

27.06 High Tech Four Systems

27.06.01 Force Beam (F)

These weapons are known as "Erlicher Particle Projectors" to the scientists of the Terran Federation Navy, and they are based on the field generators of tractor and presser beams. Unlike those non-weapon devices, a force beam does not attempt to create a linking field of any type, but instead, it directs a focused stream of focused particles of drive field energy particles toward its target. The effect on the target is somewhat like getting punched by a huge fist, a purely kinetic impact via transfer of drive field energy. There is no photonic or material component to this beam at all, and it appears to sensors able to perceive it as a beam of pure kinetic force.

27.06.02 Interstellar Communication Buoy (DSB-c)

In effect, a DSB-c is a tiny space station fitted with a miniaturized version of the communications module. DSB-c have no courier drone capability but can be deployed across star systems, acting as relay stations to connect (CC) and permit messages to be transmitted clear across star systems at light speed.

DSB-c can receive transmissions from full-scale (CC) at ranges of up to three system hexes (36 LM) or from other units at up to one system hex (12 LM). The maximum range at which one DSB-c can receive a transmission from another DSB-c is only 12 LM (one system hex), and so it is necessary to deploy 1 DSB-c in the center of each system hex across which a message is to be relayed. DSB-c positions must be recorded, and one convenient method is to indicate any system hex containing DSB-c on the small System Display Map on the SYSTEM DATA FORM of that star system.

DSB-c are expensive and, unlike navigation beacon DSB, they require frequent servicing, as it is critical they maintain their exact positions. DSB-c requires zero maintenance (see 06.04.01)

27.06.03 Presser Beam (Pb)

For all intents and purposes, a Pb is simply a tractor with reverse polarity. Like the tractor beam, the Pb is used during the tractor beam phase of a tactical turn (see Rule 08.00). Shear planes (C) have no effect on Pb.

27.06.04 Shear Plane (C)

The C is an anti-tractor defense. So long as a unit mounts an active C, it can "shear" (or cut) any number of tractor beam(s) directed at it, simultaneously. C does not function against Pb. (See Rule 08.00.)

27.06.05, 27.06.06, and 27.06.07 are used in Alkelda Dawn.

27.06.05   Not used.

27.06.06   Not used.

27.06.07   Not used.

27.06.08 DSB-ncd

This specialized buoy combines the abilities of DSB-n and DSB-c, and carries two 2 of the specialized, short range, re-usable CD mentioned in the (CC) rules (27.04.06). While its 100 MC cost is high, in the long run, it is less expensive than stationing a (CC)-equipped BS at each side of a warp point. Like other buoys, DSB-ncd requires zero maintenance (See 06.04.01)

The DSB-ncd is developed as a co-project with the DSB-c. The cost is still 9,500 MC total. (i.e., an empire gets DSB-ncd free when it completes development of the DSB-c).

27.07 High Tech Five Systems

27.07.01 Advanced Maneuvering (AM)

(AM) is a system of modifications to a starship's engines that selectively deform its drive field to increase its maneuverability. In effect, (AM) lets a starship put itself into a "controlled skid," pulling out at the optimum moment to get around quickly, thus reducing the starship's turn mode by 1. (That is, a CA, with a normal turn mode of 3, would have one of 2 with (AM).)

Because advanced maneuvering is a modification of the starship's drive, it requires no hull spaces but becomes inoperable if the starship loses an engine room. The remaining drive systems retain their capability, but the effective functioning of the (AM) depends on maintaining all of the drives in a delicate balance. (AM) may be added in refits.

Cost of any type of (AM) equals 1/2 the cost of the single most expensive set of engines (that is, all the engines of one type) the ship mounts (FRU). Tug engines (08.02.02.5) are not counted in this cost.

27.07.02 Capital Missile (CM)

The CM is an upgraded development of the Standard Missile with 50% more range and penetration-aid ECM. Maximum CM range is 30 tactical hexes, and CM carry heavier warheads, which inflict 2 points of damage per hit. Penetration aids reduce point-defense interception numbers by one against CM.

CM are launched only from capital missile launchers (Rc, 27.07.03) or XO racks (27.04.03). Remember that a unit without access to Xr data cannot fire at targets further than 20 hexes away.

27.07.03 Capital Missile Launcher (Rc)

Rc are large missile launchers that launch capital missiles exactly as R and W launch basic or standard missiles. An Rc mass driver can be focused down so that a standard missile can be launched, but at a degradation in performance that makes "sprint-mode" fire from an Rc impossible. (That is, an Rc might fire standard missiles at ranges of 20 tactical hexes or less, but could never fire as a G at any range.)

27.07.04 Cargo Handling System Two (CHS2)

The (CHS2) is an upgrade of the original cargo handling system that uses the new tractor and presser beams. It functions as a (CHS) but multiplies the loading/unloading speed of any starship by a factor of 15, can service 2 ships at once, and is 1/3 smaller than the earlier system. (CHS) may be refitted into (CHS2) [in which case their system code is changed to (CHS1/2)] at a cost of 30 MC per (CHS) plus the refit fee for the hull spaces involved (see 15.09.05). A (CHS1/2) occupies the same space as the original "(CHS)," but functions in all ways as a (CHS2). Players who wish to do so may, of course, remove (CHS) entirely and replace them with normal (CHS2).

27.07.05 Primary Beam (P)

The P is a further development of the force beam, incorporating condensers and focusing lenses that reduce beam diameter from 100 centimeters to barely 5 cm while actually increasing throughput. The result is a narrow-focus weapon that must "cool out" between shots (it can be fired only in alternate combat turns) but which is immensely powerful and punches right through shields or armor. The holes it punches are too small to "destroy" armor or bulkheads and its effect on shields is too localized to damage them, but a 5 cm hole through most mechanical or electronic installations will put them out of business. Cargo holds are basically big, empty spaces; while a P will damage them, the damage is so small and localized as not to affect their operation or harm cargo in any significant way, and they are not eligible targets for primary beam fire.

The P destroys the active components of any activated system it hits, dissipating the energy of the hit in the process. If it hits a system with no active power at all (as in destroyed or mothballed systems), it passes right through, doing minimal damage on its way.

To reflect this, any P hit ignores any generation of S, A, B, H, or destroyed systems (even those destroyed in the same volley). Additionally, a P may skip a number of intact eligible systems. To determine the system actually hit, the firing player rolls 1D10 and divides by 2 (rounding all fractions over 1 down, but counting 1/2 as 1). The result is the number of the eligible system inside the armor that the P destroys. When counting, start with the first functional, eligible non-armor system on the control sheet (including datalink). The ineligible systems listed above are ignored when counting target systems; as far as the P is concerned, they do not exist.

As an optional rule, players may choose to either use the above method or just roll a 1d10 without dividing by two. This choice may be made after each roll for primary hit depth.

If the die roll gives a number higher than the intact, eligible systems remaining on the control sheet of the target, the P passes completely through the unit and is ignored.

Fighters and small craft, which are always considered active, are large enough targets that any primary hit on their hangars or bays will also destroy them.

If a Mg containing antimatter warheads is hit by a primary, roll 1D10. A roll of 1-3 indicates the primary detonated an antimatter warhead and thus destroying the unit. A 4-10 permits the owning player to "cram" the magazine when the targeted unit next fires or in the following tractor beam phase, assuming it has CRAM. A CRAM-equipped Mg (see 27.02.09) never loses its ability to jettison ammo due to primary damage. A primary-damaged Mg that the player chooses not to cram, or which does not have CRAM, retains all of its missiles intact, and they may be unloaded after the battle. However, if any system to the right of a primary-damaged Mg containing antimatter ammo (regardless of the number of systems between the two) is destroyed by non-primary, non-energy-beam, non-needle damage, the unit is destroyed.

27.07.06 Deep Space Sensor Buoy (DSB-Xr)

DSB-Xr are fairly short-ranged sensor packages mounted in deep space buoys. Their detection and resolution capabilities are 50% (rounding all fractions up) those of Xr (27.05.05). See 20.02 (pg 64) for data transmission ranges. DSB-c can be used to relay sensor data from DSB-Xr. DSB-Xr requires zero maintenance (See 06.04.01)

27.07.07 and 27.07.08 are used in Alkelda Dawn.

27.07.09 Improved Armor (Ai)

Improved armor uses denser synthetic alloys that offer greater resilience under the stresses of combat. It costs considerably more per hull space to use than older armor types, but allows for double the amount of protection in the same number of hull spaces. Ai may be used in PDCs and asteroid forts, but, unlike standard A, they must pay for Ai normally.

27.07.10 Improved Bulkhead (Bi)

The same technology used in improved armor allows for a similar internal armor insert to be used between adjacent compartments. Each Bi requires only 1/2 hull space, and aside from the lower hull space requirements, a Bi is treated in all ways as a standard B.

27.08 High Tech Six Systems

27.08.01 Advanced Gun/Missile Launcher (Wa)

The Wa uses advances in mass-driver technology to produce a higher rate of fire. The Wa is the same size as the W but fires

twice per combat phase. Both shots must be fired in the same combat impulse but may be fired at the same or different targets. Each shot is considered a separate salvo for point defense purposes. Wa may fire in both sprint-mode and SM-mode in the same impulse.

27.08.02 Energy Beam (E)

The energy beam uses excited helium nuclei to build up static-electricity-like charges on a target's hull, increasing the charge until it reaches destructive proportions. At close range, E inflict up to 5 points of damage, scoring damage normally from left to right but ignoring armor, cargo holds, crew quarters (Q but not Qs), magazines, bulkheads, and fighter bays.

27.08.03 Independently Deployed Energy Weapons (IDEW-x)

At HT6, it becomes possible to build DSB-mounted versions of almost any energy weapon that, unlike the DSB-L, are reusable. On the other hand, unlike the DSB-L, other IDEW are considerably less powerful than their shipboard equivalents.

The lower case "x" in the system code is used to denote the type of weapon (L, F, P, E) the DSB mounts. These weapons are severely downsized, and their power generation is slight compared to that of a shipboard weapon of the same type. Accordingly, they can fire only once per interception turn (i.e., once every thirty minutes per IDEW-x). This means, in effect, that each will fire only once per tactical engagement, but since they don't use bombs for power, they can be reused in later engagements. Note that the IDEW-L and the DSB-L are different systems and do different amounts of damage.

Any IDEW-x is activated and fired using the procedure outlined in 04.18 Automated Weapons. The maximum range for any IDEW-x (at this tech level) is 1/2 that of the full-size weapon mounted by the DSB, rounding fractions down. (That is: IDEW-F=7; IDEW-E=5; IDEW-P=6.) The damage inflicted at any range is 1/2 that of the full-sized weapon (FRU). (That is, an IDEW-E which did not fire until its target was in the same tactical hex would inflict 5/2=2.5 which rounds up to 3 damage points.).

Advanced IDEW-x may be built at or above HT10 and have the same range and effect as a full-size weapon. Lower TL IDEW cannot be refitted to accept higher-powered weapons, however. Full-power IDEW weapons are noted by adding the lower case letter a before the weapon code. (That is, an HT10, full power, IDEW-mounted F would be coded IDEW-aF.)

IDEW can not mount needle beam (27.10.09) nor any type of capital weapon.

27.08.04 Mine Control System (MCS)

(MCS) activates minefields as (DCS) (see 27.05.03) does DSB-L; the way in which mines actually attack is discussed under Nuclear Minefields (27.08.05) and in rule 04.18. (MCS) is used to activate/deactivate minefields during the combat phase of any tactical turn on the combat impulse in which the unit mounting the system is designated as a firing unit by the owning player. A single (MCS) can only control a maximum of 100 patterns of mines per turn. Each pattern that is activated or deactivated also counts toward this limit.

27.08.05 Nuclear Mine Field (MF)

MFs consist of patterns of small, fast, short-ranged hunter-killer satellites with nuclear (fusion) warheads. MFs are purchased in units called "patterns" consisting of 50 individual mines each, and transported to the tactical hex in which they are to be emplaced in cargo holds, then laid as described in 08.05. The locations of MF are noted as for the positions of DSB-L (see 27.05.04), but minefields have a maximum attack range of "0"; that is, their target must actually enter the hex in which they are emplaced. Mines have station-keeping capability and will remain in the tactical hex in which they are emplaced, but like DSB, mines may not be emplaced in a tactical hex that contains an open WP, a planet, or a moon. Mines will hit automatically when there are no offsetting modifiers (e.g., ECM or EM). (Realistically, they should hit about 70% of the time, but we are assuming for the sake of simplicity that patterns are really about 71 mines each). EM/ECM of any level reduces minefield attacks by 5% per -1 reduction. An EDM deployed during a previous combat phase reduces hits by 10% but additional deployed EDM provide no additional benefit. Sum all percentages before reductions.

27.08.05.1   Unlike other weapons, mines execute their attacks in the movement phase of the turn, at the end of the movement impulse in which their target(s) entered, left, or spent a movement point in their hex. If a starship not belonging to the owner of the minefield or one of his allies enters the or leaves the hex of an activated minefield, the owning player does not announce the mines' presence until all movement has been completed for that movement impulse. As soon as all movement is completed, the minefield hex immediately attacks all units that entered or left its hex that impulse. A ship may undergo two attacks in the same impulse, if it leaves a MF hex and enters a second one. MFs do not affect planets, moons, or PDCs in any way. After a minefield attacks a unit, the unit may declare that it is ceasing movement to avoid further attacks in that turn, giving up all remaining movement points (see 03.01.00).

27.08.05.2   Limited abilities allow a pattern to attack with only a preset volley size. For every 4 hull spaces of the targeted ship (FRU), the pattern fires 1 mine. However, the minimum that will ever be fired is 10 mines and the maximum, of course, is all 50 mines in a pattern. Each pattern fires one volley vs. one eligible target during each firing impulse. Eligible targets are selected according to the following list of priorities: ships leaving the hex, largest ships, otherwise random. No ship may be attacked twice until all ships have been attacked once. All available patterns will fire in sequence in each firing impulse in sequence if targets are available, until each pattern has fired once; if the MF destroys all targets in the hex, remaining patterns will

not fire. MF expenditures are expressed as a number of individual mines with every 50 mines fired in a single hex in a single impulse (at any or all targets) reducing the number of patterns in the minefield by one.

27.08.05.2.1 Automatic mode fires too few mines to kill a determined "sweeper" group. An (MCS) can command the MF to fire at a different rate than 1 mine per 4 HS but higher rates expend mines quickly.

27.08.05.2.2 Double Rate Fire: An (MCS) within 40 hexes can command a MF to fire multiple patterns at the same target simultaneously. The rate of fire is 1 mine per hull space. The number of patterns fired is 1 per 50 mines or fraction thereof but with a minimum of two patterns fired. However, accuracy suffers from this, and so only half (FRU) of the mines fired hit (which is why this is called "double rate"); the net effect is that the target is hit by twice as many mines per salvo as normal, but four times as many mines as normal are expended. If only one pattern is left in the hex, it automatically reverts to the normal release rate. The double-rate command is delivered in the combat impulse that the (MCS)-equipped unit fires, and applies in the following movement phase. (MCS) commands remain in effect for one system turn, thereafter the MF reverts to its default programming to avoid "wasting" mines in over-kill attacks. NOTE: The release rate of each MF should be written down by the controlling player and kept secret from the opponent until his units enter the MF.

> **Example 1:** *A MF of 30 patterns is present in a hex, set for the standard 1 mine per 4 HS (FRU) release level. One DD enters the hex. Since the smallest salvo size possible is 10 mines, the DD is subjected to 30 salvos of 10 shots in that impulse - if it survives that many! If a SD had entered the hex, it would be subjected to 30 salvos of 33 shots in that impulse. If it survives, the remaining patterns will attack the SD each impulse that it spends a movement point in the hex, including the impulse it leaves. If 3 ships enter the MF hex, each ship is subject to 10 volleys; however, if the first ship died after the first volley, the other two ships would split the remaining 29 volleys. If 60 ships enters the MF, the largest 30 will be attacked and the smallest 30 will be safe from attack. If the MF is set at double release rate and one DD enters, it will take 15 salvos of 20 mines each (...again, it is very unlikely that it survives that much!), but 15*20*2 = 600 mines (12 patterns) are expended. If 15 BBs or larger entered the 30 pattern MF set at double rate, each will take 1 salvo of 50 mines, and the minefield would be completely expended.*

> **Example 2:** *A MF of two patterns is ordered to fire at double rate. A 45 HS CL then enters a MF and is attacked by 45 mines, of which 23 hit (in a single salvo). Normally, two groups of 12 mines would attack the CL (HS/4 FRU), expending only 24 mines instead of 45.*

27.08.05.3 All eligible craft in a minefield are attacked in the first impulse of a turn. On the second or later impulse,

starships which lose their drive fields, ships which have stopped (03.01.00), or spacecraft that cannot move during that impulse, are not attacked in that impulse. Immobile BS or AF that are towed into a minefield are attacked normally as they move.

Ships that make warp transit directly into an active minefield are in big trouble. The effect of the warp transit makes mine defense limited; however, the mines (and any MCS preset) are also limited by the lack of warning. Therefore, for attacks on the impulse of transit, only 10% (FRU) of the shots in each salvo hit; in addition, no direct MCS or MCS2 command attacks are limited to the automatic level of release. NOTE: The mines are not limited if the transiting ship attempts to LEAVE the hex.

27.08.05.4 There is also a possibility that a minefield will misread the IFF (04.05.03) and attack a friendly spacecraft in error. To reflect this, any friendly starship that enters an active minefield hex must roll percentile dice, with any result of 01% meaning that the moving starship is misidentified as an enemy and attacked by the "friendly" minefield. The probability rises to 10% if the moving starship enters a minefield in the same movement phase in which it has transited a warp point because of the effect warp transit has on the moving starship's IFF.

27.08.05.5 Point defense systems are the best defense against mines. Each unit defends against mines as an individual, and its datalinked partners can contribute in no way to its defense. Units operating in minesweeping mode (see 27.08.5.6) may use certain types of beam weapons.

Point defense can intercept incoming mines at a -2. Point defense minefield interception is also subject to the -1 modifier for turn of warp transit for a total of -3.

All types of Capital Point defense (e.g., Dc) use longer ranged anti-missile missiles to achieve their higher intercept rolls. Since mines attack from a very close range, this longer range gives no advantage; therefore, all types of Capital Point defense receive an additional -1 penalty when intercepting mines.

AMMF have a penetration aid built into the mines and therefore, like the CM, they are always -1 to be engaged by point defense and beams in the interception mode.

27.08.05.6 Minesweeping: Any unit that has detected a MF in a previous tactical turn, and mounts active Xr (on that unit), can operate in minesweeping mode (these units are termed "minesweepers"). Minesweepers deal with minefields by virtue of superior preparedness and the ability to intercept mines, and ships designed to do so tend to be large ships with many point defense systems as well as heavy shields or armor. Minesweeping mode point defense does not suffer the -2 penalty to intercept, but Dc still suffer their extra -1 penalty. Certain types of energy weapons (force beams, lasers, needle, and energy beams) can intercept individual mines once per volley with a probability of 1-3 (max. range 0). If a minesweeper chooses not to fire a beam weapon in interception

mode (that is, the weapon fires at NO volleys during the impulse), all mine attacks (volleys) in a given impulse have been resolved AND if the minesweeper is not exiting the MF hex, those weapons may fire them in wide-angle mode to destroy multiple mines. Each beam fired in wide-angle mode destroys 50 mines. Ships firing weapons in this manner may fire them during each movement impulse, if the ship is attacked, but may not fire them during the subsequent combat phase; weapons fired only in interception mode during the movement phase may be fired normally during the subsequent combat phase. Tractor beams may destroy 50 mines at a range of 0 when fired in the tractor beam phase.

NOTEs: Lx have a reloading rate and so they may only be fired once per TACTICAL turn. Needle Beams may not use wide-angle mode.

27.08.05.7   Long-range sensors Xr can detect minefields at a range of 1 tactical hex, while units without Xr (including those with fXr) can detect them at a range of 0. Small craft and fighters that do not have fXr cannot detect mines at all. Detection is automatic at 20 tactical hexes with any type of sensors if the unit sees the MF fire. Detection scans for mines are made at the end of the movement phase, not during movement. The number of patterns in a minefield cannot be determined without entering the MF (at range 0) and small craft and fighters cannot count MF if they do not mount fXr.

27.08.05.8   Minefields ignore fighters, DSB, RD, RD2, cutters and shuttles. Fighters and small craft are unable to engage mines, because if they were to get close enough to do so, a pair of mines would attack it and automatically kill it (small craft D-equivalent is not effective against MF). Pinnaces and Courier Drones have drive fields as bright as pods do and are attacked as such unless they have fXr, in which case they can see the mines at range 0 and avoid them.

27.08.05.9 Pods (SBMHAWKS, see 27.11.10):å   MFs have a hard time with these, as they are fast, elusive, and harder to detect than starships. SBMHAWKs are attacked after all ships have been attacked once. Each pod is attacked by a SINGLE shot, which has a to-hit number of only 1, until all pods have been attacked once, after that they will be ignored during the rest of the movement impulse. A MF may not attack more pods than 50 times the number of patterns. Simplified patterns FIRED procedure: Total all SBMHAWKs moving through the minefield during that impulse, reduce the number of SBMHAWKs by 10% (as long as there are enough mines in the hex to attack every SBMHAWK; otherwise, the number of SBMHAWKs is reduced by 5 times the number of pattern present and no mines remain in the hex), then subtract the original number of SBMHAWKs (or the number attacked) from the number of mines remaining. SBMHAWKs may be attacked at double rate, in which case four mines are expended for every pod attacked, and two attacks are rolled against each pod (or 20% of SBMHAWKs attacked are lost).

27.08.05.10 Minefield Activation: Minefields may be activated continuously without losses, but most empires activate them only when they expect attack, given the possibility that mines may become confused and attack friendly ships. In time of war, any race may choose to leave MF activated continuously, even without the presence of friendly units to monitor the function of the minefields. Minefields remain activated until deactivated by a friendly (MCS). NOTE: The CFN will refuse to pass through an activated MF unless a (MCS) remains present at the mine location to turn off the mines as the CFN passes through.

27.08.05.10.1   As an optional rule, a player may make a roll against his race's Racial Militancy (RM) to activate a minefield without leaving units on Alert to monitor it. Such a roll may be made once for all minefields, or on an individual basis per each system hex, as the players chooses, but in either case, only one checking roll is made for any minefield.

27.08.06   Not used.

27.08.07   Not used.

27.08.08   Not used.

27.08.09   Not used.

27.08.10   Not used.

27.08.11   Not used.

27.08.12 Capital Point Defense (Dc)

Dc represents a different "path" in the development of anti-missile defenses. Normal Point Defense D and Advanced Point Defense Dx make use of counter-missiles in the long-range intercept role but actually rely most heavily on laser clusters to nail incoming warheads in the last few thousand kilometers of their run. This approach was adopted for several reasons, the most salient of which were a desire to reduce the amount of system space used to store counter-missiles and the extreme difficulty of designing seeking and guidance systems sufficiently sensitive for effective intercepts into small counter-missiles. While the counter-missiles used by D and Dx are much smaller than anti-ship missiles, they still require appreciable storage space (which is built into the point-defense mount itself), and have relatively low kill probabilities compared to the laser systems.

Capital Point Defense, however, utilizes advances in technology to produce much more sensitive (and hence longer-ranged) counter-missiles that are much better than even the planetary D installations. This both increases their accuracy and, coupled with improved drives which extend the engagement envelope, offers a substantially higher chance of a kill from beyond laser range. Its wider engagement window allows Dc to engage up to five incoming missiles on a roll of 8, and the defending player may choose to "double up" vs. missiles. In addition, Dc's very sensitive missile tracking systems, together with its lower reliance on laser clusters, makes it more effective in the anti-fighter role at longer ranges, rather than at point-blank range. (The

fighter may have longer to dodge, but it cannot outrun the counter-missiles, which are more than powerful enough to destroy any fighter or gunboat with a single hit.) The system is 50% larger than normal D, requiring 3 hull spaces rather 2.

Dc, of any generation, is not susceptible to the atmosphere penalty described in 04.10, even if starship-mounted.

27.08.13 Augmented Shields (S0)

Augmented shields are a major advance in the generators used in shield systems, and offer heavier capital ships a considerable advantage in sustained combat operations. Each hull space provides two shields, not just one as S allows. Damage control may restore 2 S0 per turn, rather than one S. A spacecraft may combine shields of different types and generations in any combination or pattern.

Note: This "zeroth generation" of "improved" shields is the predecessor to the S1 1st generation improved shields. The naming reflects the historical development, which allowed S1 to be used in combat before S0 was.

27.09 High Tech Seven Systems

27.09.01 Anti-Drive Missile (ADM)

The ADM mounts a small but powerful drive generator in place of a warhead. When an ADM hits a starship with a drive operating above station-keeping levels, it generates a burst of intense energy on the operating frequency of the drive, interfering with the drive field and burning out one engine aboard its target. An ADM hit destroys the first ACTIVE engine (including any tug engine) from the left of the design. ADM inflict no damage on any non-drive system and cannot damage bases, space stations, engines in inactive engine rooms, or starship engines "throttled back" to station keeping (i.e., not actively moving the starship). ADM will inflict damage upon units with active shields, as the burst affects the drive field by interfering with the output of the drive rather than striking the drive field directly. In addition, ADM are intercepted with a -3 on point defense intercept rolls.

ADM are too large for internal launchers and may be launched only from XO racks (27.04.03).

27.09.02 Close Assault Missile (CAM)

This very large weapon which, like the ADM, can be carried only on XO racks (27.04.03), is, in effect, a "sprint-mode" CM. Each CAM hit inflicts 2 points of damage and is intercepted (if at all) like G or W sprint-mode fire.

27.09.03 Electronic Counter Measures (?)

First Generation ECM (coded ?) is a system that modulates the drive field of a unit, perking up some parts and suppressing others, as well as influencing the shape of the drive field and shields. This has the effect of increasing the apparent volume of space where the ship could be, confusing enemy fire control computers, which will act on the default assumption that the ship is in the center of drive field. For missiles, a rapid

deformation of the drive field will tend to prematurely trigger the proximity fuse, or the missile will be struck and disabled by the expansion of the drive field.

Any unit with active ? is engaged with a hit probability for all starship, SS, and BS weapons of -3 at all ranges.

Fighter anti-ship hit probabilities are reduced by only -1 for attacks with fR and fighter beam weapon packs like fL but are at -2 for attacks with stand-off fighter missiles. (The lower hit reduction reflects the fact that fighters' fire control is less sophisticated than larger units'; in effect, it is too nearsighted and dumb to be readily fooled.)

PDCs are unaffected by spacecraft ECM to hit modifiers as their computers are powerful enough to resolve the exact location of the spacecraft regardless of range.

27.09.04 Engine Tuner (It)

It was thought for many years (by everyone but the Orions, who weren't talking) that Gorm starships could move at higher speeds than anyone else's because the Gorm came from a high-grav, super-terrestroid planet. Only gradually did it become generally known that the real Gorm advantage was an unusually high--indeed, very high--radiation tolerance.

The It is thus better suited to Gorm ships than to anyone else's, because they can endure the high radiation levels the device produces for extended combat periods.

The It is a device that must be mounted in each engine room of a starship. If all operable engine rooms contain an operable It, the starship's tactical scale speed is one greater than that which would normally be produced by the same number of engine rooms without It. (That is, a BC, normally capable of speed 6, could move at speed 7 if each of her six engine rooms had an operable It.) If any operable engine room does not contain an operable It, the additional movement point is lost because the required "fine tuning" becomes impossible.

Example: *Assume a CA with the following engines:*

Case 1 (II-It) (II-It) (II-It) (II-It) (II-It) (II-It)
Case 2 (xx-x) (II-It) (II-It) (II-It) (II-It) (II-It)
Case 3 (xI-It) (II-It) (II-It) (II-It) (II-It) (II-It) - Assume the owner succeeded in making the engine function roll for the first engine room.
Case 4 (xI-It) (II-It) (II-It) (II-It) (II-It) (II-It) - Assume the owner did NOT succeed in making the engine function roll for the first engine room.
Case 5 (II-x) (II-It) (II-It) (II-It) (II-It) (II-It)

- Case 1 is the base case. The ship runs at speed 7.
- For case 2, the speed is 6, because all operable engine rooms have a working tuner.
- For case 3, the first engine is 'operable', and since all engine rooms are operable and have a working tuner, speed 7.
- For case 4, the speed is 6 for the same reason as case 2.
- For case 5, the speed is 6 because not all operable engine rooms have a functioning engine tuner.

The Gorm may use It for up to four full interception turns (480 tactical turns) per week without ill-effect; any other race in the known galaxy may use It for only 15 tactical turns per week. For each additional tactical turn in which a non-Gormish race uses It in a week, the personnel necessary to man one internal system on the starship's control sheet die and the system becomes contaminated. (The owning player chooses the system and draws a square around it on the control sheet to indicate that it is inoperable for lack of crew rather than destroyed. H, A, and B may not be used for this purpose.) For the Gorm, one system worth of crew dies for every 10 tactical turns over 60 they use the system in any one week. For this reason, the Gorm continue to fit the system while most other races choose to use the required hull spaces for additional weapons or defensive systems and, particularly since the development of the strikefighter, to use fighters and ADM to offset the Gormish speed advantage.

Systems that lose their crews to It radiation are not usable until the contamination is removed by an MSx or shipyard module performing a "refit" costing 2 MC per hull space and using 1 HS of capacity per HS. Systems whose personnel are killed by It radiation count as "destroyed" for purposes of grade lost because of casualties (see 07.00) but absorb damage normally.

27.09.05 Improved Tractor Beam (Ti)

Ti are reversible-polarity tractor beams which can be turned into pressers by the flick of a switch. Any Ti may be used as a tractor beam or a presser beam in the tractor beam phase of any turn. A Ti may not be used as both a tractor and a presser in the same tractor beam phase. Shear planes (C) may cut Ti beams used in tractor mode as if they were T and have no effect on Ti used in presser mode.

27.09.06 Overload Dampener (O)

This defensive system is effective only against energy beam fire that actually strikes the unit mounting the system. In effect, O are huge accumulators which draw off the charge E build up on the hull of a unit and then discharge it in a controlled release. Whenever E beams hit a unit with O, the target unit may use each O to absorb one point of E damage per combat impulse. (Thus a zero-range hit with an E on a ship with 5 O would inflict no damage at all.) An O may also be used to absorb up to 4 points of damage per combat impulse, but any O which absorbs more than 1 damage point in a single pulse immediately burns out (and is marked as a "destroyed" system). An O has no effect on E damage to a unit's shields.

27.09.07 Pinnace (pn)

The pn is the largest, most versatile, and most costly first-generation small craft. Each pn uses 4 boat bay stowage points, carries up to 2 Q worth of personnel or up to 200 stowage points of cargo, can airdrop PCF-a as an assault shuttle, and has the same self-defense capability as the assault shuttle (except that it is treated as D and not a Db). pn speed is 7 and endurance with a full personnel load is 8 days (16 system turns

or one StMP), or 24 days (48 system turns or 3 StMP) with only the flight crew aboard. Unlike any other small craft, the pn is warp capable, but it cannot use evasive maneuvering in atmosphere as an assault shuttle can.

27.09.08 Laser Torpedo (LT1)

An invention of the Zarkolyan Empire, the first generation laser torpedo warhead (LT1) applies some of the principles of the DSB-L to missile warfare. The idea behind the weapon is simple: to devise a standoff warhead which need not close clear through the point-defense envelope of its target and hence has a better chance of inflicting damage before it can be intercepted and destroyed.

A laser torpedo (of any generation) uses a bomb-pumped laser weapon as a warhead, detonating well before it strikes the target's shields or drive field. Because of this greater attack range, all point-defense systems, regardless of generation or type, engage it at a -3 penalty; that is, D would stop a laser torpedo on a roll of 1-4 rather than 1-7. A laser torpedo's to-hit number is one less than that for a normal missile of the same type, because it must be precisely aligned to strike its target at the moment it detonates. Laser torpedoes may be used on missiles fired in regular or sprint mode. The damage done by the warheads is laser damage, and does not affect targets in atmosphere, but the missiles mounting them may be fired from within atmosphere.

SCW and AMPx do not work on laser torpedoes. Also, no type of anti-matter warhead can be used with laser torpedoes, because an AM explosion is so violent that the laser rod would not have time to generate a pulse. Laser torpedo warheads cannot be used on the 28.03 Fighter Kill Table against fighters, small craft, or other targets. Laser torpedo warheads cannot be mounted on fighter missiles such as fM and fR. Laser torpedo warhead costs are based on the size of the missile warhead replaced. The term LT is used as an abbreviation for laser torpedo warheads of any type and is used in scenarios.

At HTL7, the first generation laser torpedo warhead is available. It inflicts one half of the base damage of the missile type it is mounted on, dropping fractions; thus it is useful only on missiles with a base damage of two (CM, CAM, SBM, CAM2), and inflicts one point of damage. However, this is one point of laser damage, not stopped by shields, and the Zarkolyans found that, with its point-defense modifier, it was an excellent counter to a target protected by datalink point defense, EDM, and ECM.

LT1 warheads cost the same as the normal nuclear warhead and thus the missile price does not increase.

27.09.12 Datalink Point Defense (Dz)

Dz is an active anti-missile defense that can protect other datalinked units. Again, the Alliance races missed this very important point-defense development. The Dz uses the target's sensor information to weave a tight web of defense missiles and laser shots around the defending unit. The Dz may engage up to four missiles with an interception number of 7, and the defending player may choose to "double up" vs. missiles.

Further, Dz is designed to interface with datalink. A data-linked unit may be protected by its own point-defense systems (regardless of type) and by the Dz mounted on up to two other vessels in the same datagroup. A unit in a Zl datagroup may be protected in a similar manner by all units in the Zl datagroup. However, due to limits in the Dz's computer power, a unit in a command datalink (e.g., Z2c) datagroup is restricted to being protected by only two other units in that group.

27.10 High Tech Eight Systems

27.10.01 Advanced Maneuvering Two (AM2)

This further development of the original advanced maneuvering technology reduces the mounting ship's turn mode by 2 to a minimum of 1. [That is, (AM2) can never reduce a starship's turn mode to less than 1, so ships of FG or smaller classes receive only a 1 point turn mode reduction from it.]

Unlike (AM), (AM2) will continue to reduce turn modes even if the mounting ship loses engine rooms, though the loss of one or more engine rooms reduces (AM2)'s turn mode reduction to "-1."

27.10.02 Capital Force Beam (Fc)

The Fc is a so-called "capital ship energy weapon," a weapon whose greater size allows a longer maximum range and more damage per hit at all ranges. (They are called capital energy weapons because their size means smaller ships cannot mount many of them.)

27.10.03 Capital Primary Beam (Pc)

The primary-beam equivalent of the Fc, the Pc inflicts one point of primary beam damage on any hit and has a maximum range of 18 tactical hexes. It must still "cool out" between shots.

27.10.04 EDM

This is no longer a High Tech 8 system; see High Tech 4 section.

27.10.05 Prototype Strikefighter (F0)

The F0 is the earliest and least effective fighter, but still represents a quantum leap in power projection. Strikefighters are small, agile, one and two-man craft capable of operating up to several light-minutes from their carriers. They are organized into squadrons of six fighters each (see 07.00 for complete strikefighter organization rules) and all fighters in a squadron are datalinked; they maneuver as a single unit and fire in a single combat pulse, although each fighter may attack a different target. Fighter datalink can be jammed by ECM2 (27.11.03), in which case the squadron continues to move as one unit but each fighter counts as a separate unit for fire sequencing. In addition, fighter squadrons used in the reconnaissance role may be operated (but not organized) as individuals rather than as a single entity so long as they are all in separate interception-scale hexes.

Most fighters have a far shorter sensor range than large spacecraft. The capabilities of each fighter type (including sensor range) are listed on the STRIKEFIGHTER TYPES & CAPABILITIES table (28.04).

Each fighter type has an assigned external ordnance capacity, defining the external weapons it may carry. For each point of external ordnance carried a fighter of any generation loses ½ of a Movement Point (FRU).

Fighters may be transported in "crated" form at a rate of 20 cargo stowage points per fighter. Crated fighters must be reassembled or "prepped" by an (SYx) or (Ms) of HT8 or greater before they can be sent into action, but this is one way to ship fighters out to frontier posts without tying up valuable carriers.

27.10.06 Fighter Gun (fG)

The original fG is an external ordnance weapon pack; later versions can be built into more advanced types of fighter. The fG is basically a vastly updated mass-driver version of 20th century rotary cannon. This weapon is too light to have any effect on starship, BS, SS, or PDC drive fields or armor, but it is deadly at close range against other fighters, small craft, etc., and can be used against internal systems (those inside the armor) of large spacecraft without drive fields or ground bases on airless system bodies if all armor has been destroyed. The fG hit probability against such targets is the same as its hit probability on the Fighter Kill Table, but its maximum range is "0" and damage is never increased because the target has no drive field.

27.10.07 Fighter Close Attack Missile (fR)

Although this weapon is a missile of sorts, it is often referred to--inaccurately--as a "rocket" because it is so short-ranged. Maximum fR range against large spacecraft is only 2 hexes,
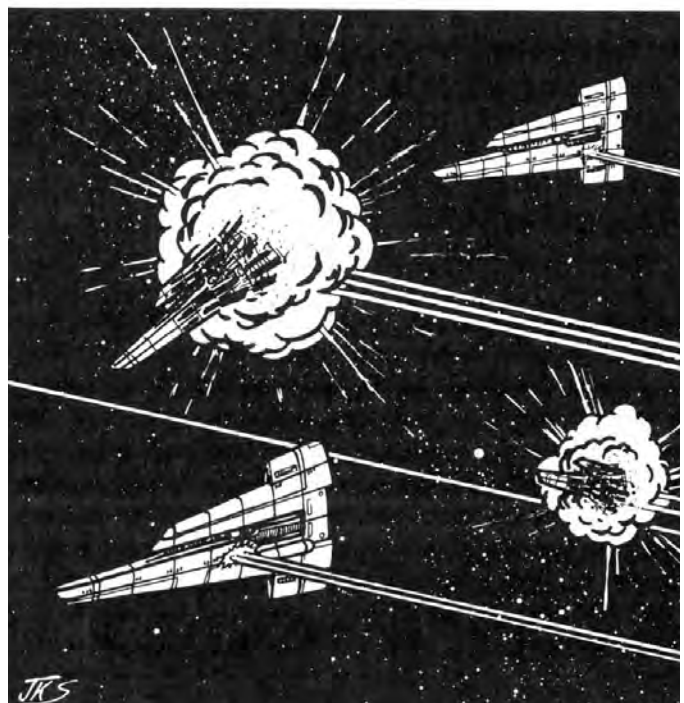
but their heavy warheads inflict 2 points of damage per hit. In anti-fighter operations, fR are woefully short-ranged, but when fired in proximity-fused mode they have a 70% chance of killing a fighter or small craft in the same tactical hex as the firing fighter. fR, like sprint-mode missiles, cannot be intercepted by point defense (Exception: PDC point defense).

Unlike later fighter missiles, the fR, even with squadron datalink, cannot be sequenced closely enough to be considered part of the same salvo for damage purposes. In effect, each fighter's fR are an individual "mini-salvo" within the squadron's fire.

27.10.08 Hangar Bay (V)

Each hangar bay represents the docking, service, and launch requirements for one fighter. Each operable fighter aboard a carrier must be in a V, and a carrier may not recover more fighters than it has V, nor may V arm or rearm a fighter if no magazine is available.

V are most efficiently grouped in squadron sizes, thus, V must be mounted in groups of 6 except for a single group which may have fewer V.

V are collapsible systems (see 04.04.04) that require 2 collapse points to destroy.

Note that although the term "carrier" is used to describe any starship or base with V, true carriers are actually a special sub-type of starship specifically designed to mount and operate V. Non-carrier hulls can mount V, but extensive modification to both the V and the ship is required (see 28.07 note 6)

27.10.09 Hawk Missile (-HK)

HAWK (or Homing All the Way Killer) is actually a guidance system that can be fitted to any anti-ship missile. Once an empire has researched HAWK, all missiles that can mount HAWK have it automatically and at no extra cost.

HAWK missiles, unlike other missiles, can be fired into a starship's blind spot. HAWK can be fired in one of two modes: blind-fire or hand-off fire.

In blind-fire mode, the hit probability of the missile is reduced by -5 at all ranges, as the missile is required to rely entirely on its on-board seeking systems to acquire its target. This does, however, let a ship fire into its blind spot with at least some chance of a hit.

A much better arrangement is the "hand-off" method, in which the firing ship passes control of the HAWK to any other ship to which the firing ship is datalinked. The "hand-off ship" takes over the missile, sending it mid-course corrections to close on its target and counting the missile's target against its own multiple targeting capability. The hit probability for a missile used in the "hand-off" mode is only one less than that of the hand-off ship's own weapons.

HAWK may NOT be used on missile fired in sprint mode or fighter missiles. HAWK may not be used on AFM, but is included (free) in AFM2, and may NOT be mounted on AFMc.

Example: *A ship datalinked to a unit which has just fired an SM-HK at a target 7 hexes behind it is in the same hex as the firing ship but on a heading which allows it to "see" into its companion's blind spot. The hand-off ship assumes control of the HAWK and guides it into its target. The range from the hand-off ship to the target is also 7 hexes, and the hit probability for an SM at that range is 8, so the hit probability for a HAWK fired in hand-off mode is 8-1=7. (For the ship that actually fired the HAWK, the hit probability would have been 8-5=3.) Note that the hand-off ship could also have fired its own standard missiles in the same salvo, and that their hit probabilities would have been a normal 8 each.*

27.10.10 Needle Beam (N)

The N is a particle beam, but unlike the E, it is a precision attack weapon. When fired at a unit with operable shields, an N inflicts a single point of shield damage per hit. If the target's shields are down and the firing player's unit mounts Xr, he may target specific systems by announcing the type of system he has chosen to target and rolling the shot. If he hits, the target unit marks off one operable system of the announced type (its control sheet location is up to the targeted player). If the firing player announces a system and the target unit carries no operable systems of that type, the player being fired on must inform the firing player, who must then select a different target before firing the shot.

N with Xr are also unusually effective against fighters, small craft, DSB, and mines, given their precisionist bent.

If, however, a unit with N has no operable Xr or its target has ECM1 not suppressed by ECM3 (27.13.08), precise targeting is impossible and the N becomes a "1-point force beam," inflicting single damage points from left to right, starting with S. In addition, N without Xr cannot fire on fighters at all and no N can be mounted in a DSB as an IDEW.

Due to the foolproof static-fields surrounding anti-matter warheads, N damage cannot detonate AM warheads. Any system containing antimatter, if damaged by a needle beam, will become inoperative, but its antimatter will remain safely within its containers. When some other sort of (non-primary, non-energy-beam) damage passes through the disabled system, the ship will explode if the anti-matter is still present. Because of this effect, the destruction of Mg by N also activates the Mg CRAM system for any antimatter warheads. Other types of systems which may contain antimatter, such as boatbays and cargo holds, must be unloaded within the restrictions of their respective rules, as they lack the CRAM ability of the magazines. Some systems are equipped with ejection mechanisms analogous to CRAM, and will have those abilities addressed within their respective rules.
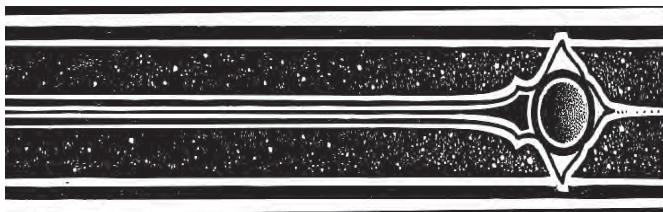
27.11 High Tech Nine Systems

27.11.01 Antimatter Warhead (-AM)

AM contain tiny quantities of antimatter in magnetic containment fields. When those fields deactivate (or fail by accident) the antimatter contacts normal matter in a cataclysmic explosion.

Antimatter warheads become available at HT9 and may be added to many missile types. They cannot be added to BM, fMx, or missiles mounting Laser Torpedo warheads. To indicate an antimatter warhead, add to the missile designation either -AM or a as a suffix; thus an anti-matter SM would become an SM-AM or SM-a and an antimatter fR would be an fRAM or fRa. AM do not affect hit probability, magazine stowage points, etc., but doubles the damage of any missile type. (Thus, an SM-AM would do 1x2=2 points of damage and a CM-a would do 2x2=4 points.)

There are drawbacks to using anti-matter. *STARFIRE* missiles use no propellant, and their laser-activated nuclear warheads can be blown up by enemy fire without any danger of exploding. Antimatter warheads are another matter entirely. If they are damaged in any way, they always blow up, as their containment fields fail. For this reason, if any magazine containing any antimatter warheads suffers any non-primary, non-needle beam damage (which includes ramming damage or simply collapsing in sequence), the entire unit mounting the magazine blows up in one huge fireball. (This is why most HT9 players quickly refit their magazines with CRAM [27.02.09]). Similarly, the destruction of any XO rack mounting an antimatter warhead also destroys the unit mounting the XO rack.

Anytime a system or craft, in a ship, is carrying/storing an anti-matter warhead and that system is destroyed, then that ship will blow up unless it was a primary hit. In that case, it should be treated as being in a Mg. See 27.07.05 for the effects of primary beam hits on Mg containing antimatter ammo.

If a ship successfully rams another unit and, in the process, causes its target's AM to detonate, the rammer takes additional damage equal to that described in 04.04.03.

Any missile with an antimatter containment system costs 4 times the base cost of the missile whether the anti-matter is loaded at factory or using AMG.

27.11.02 Capital Energy Beam (Ec)

The energy beam equivalent of the capital force beam (see 27.10.02).

27.11.03 Second Generation ECM (?2)

Also known as "jammer" ECM, ?2 is used to attack an enemy's communications, not his fire control. A unit equipped with ?2 is able to jam all but the crudest and most powerful transmissions from any enemy unit within 5 tactical hexes. While it is impossible to totally prevent communication between enemy units, all enemy datalink (including that of fighter squadrons) within the area of effect is rendered inoperable. Friendly datalinks are not affected.

A unit may mount both ?1 and ?2 and use both simultaneously.

Destruction of all ?2 within range of a datanet restores the datanet immediately following the current combat impulse. i.e. Next set of ships can fire datalinked.

Note that one unit of a datagroup may be close enough to be jammed by ?2 even though the other units of the group are more than 5 tactical hexes from the jamming unit. In such a case, only the unit close enough to be jammed is dropped out of the datalink; the others are unaffected.

27.11.04 Fighter Laser (fL)

Like the fG, this is an external ordnance pack, though an internal version is available at higher TLs. Unlike the fG, the fL is powerful enough to damage large spacecraft through a drive field and can damage armor. As all lasers, it ignores S. In anti-fighter combat, the fL has less "spray" capability than the fG and so is less effective at short range, but its maximum range is 3 times as great.

27.11.05 Fighter Missile (fM1)

Faced with increasingly dangerous close-range defenses aboard larger units, fighters adopted the fM1, a true standoff weapon with a maximum effective range of 8 hexes and a damage value of 1. All generations of fighters can fire multiple missiles (up to the number carried) simultaneously. Unlike the fR, fM1 can be stopped by point defense, and all missiles fired by a single squadron of fighters at a single target in a single combat impulse are considered a single salvo for point-defense purposes.

Note that the fM1 is designed to find and hit starships and bases--great big, obvious, relatively slow targets compared to fighters. Neither its homing systems nor its drive power are up to engaging fighters, small craft, mines, or DSB, and it may not be employed against them.

27.11.06 Improved Multiplex Tracking (Mi-x)

Mi-x is often called capital ship fire control because its mass (8 hull spaces) and expense (200 MC per level of targeting ability) make it impractical for most small ships.

At HTL9, the first version, Mi1, becomes available. For every two tech levels above HTL9, a new version, with an additional level of ability, becomes available (at HTL 11, Mi2; at HTL13, Mi3; at HTL15, Mi4; etc.)

Each level of Mi ability provides a +1 to hit bonus when firing any weapon at large units (Mi3 provides +3 to hit). This bonus is applied to the mounting unit and, provided that the unit mounting the Mix is designated as the lead unit, to any other datalink members. When firing at small craft or fighters, Mi-x provides 1/2 the normal bonus (FRU) (e.g., Mi3 provides +2 to hit). In addition to the to-hit bonus, the normal multiple-target ability of Mi-x is two units per level of capability plus 6 extra units (i.e., Mi3 can target up to 12 additional units [3x2]+6).

Mi-x may NOT be used to augment the hit probability of any generation of point defense used in the missile interception

role. (However, it may be added when used in the direct fire mode, even against kamikazes.)

The Mi-x to hit bonus may be used to offset targeting restriction penalty (04.05.02).

Mi-x targeting is cumulative with Mx mounted on the same unit, including to-hit bonuses. Multiplex abilities are NOT cumulative across datalink.

Multiple installations of Mi-x, on the same unit, are cumulative EXCEPT for the hit probability modification.

Crew quality to-hit bonuses and penalties are cumulative with Mi-x but only for the unit they are mounted on. Crew abilities never apply to other units of a datagroup but they always apply to the unit that has them.

Example: *Two ships, one with Z, Mi1, and two M8 but an ELITE crew at range 8, the other with Z, Mi2, and average crew at range 5. The datagroup could target 25 ships with a +1 to hit (using Mi1) or +2 to hit against 11 targets (Mi2).*

They could not get +2 against 25 targets because the Mi2 and the Mi1 & M8 are not mounted on the same ship, and Mix to-hit bonuses do not add. If they were on the same ship, the group would be able to engage 35 targets (8 from Mi1, 10 from Mi2, 16 from two M8, and one inherently), with a +2 to-hit bonus from the Mi2.

Using the Mi1/M8, Ship #1 would fire with a +3 to hit (+1 from Mi1, +2 for Elite) at range 8 and Ship #2 with a +1 to hit at range 5 with a total number of targets of no more than 25. Using the Mi2, ship #1 would fire with a +4 to hit (+2, +2) but ship #2 would fire at a +2 to hit, with a maximum number of targets no more than 11.

EXCEPTIONS: Multi-stage missiles do not receive Mi-x to hit bonuses. Currently this applies to AFMc but not AFM. You may NOT use any Mi-x bonuses in the HAWK blind mode (27.10.09) or HARM home-on-jam mode!

27.11.07 Improved Point Defense (Di)

The strikefighter threat created dreadful problems for the TFN's Fleet defense officers, and one response was the creation of Di by modifying the sensors and software of a standard D to provide enhanced anti-fighter performance. In order to obtain increased range and accuracy against fighters, the Di gives up some of the standard D's anti-missile performance. Di may engage up to five missiles with an interception number of 6, and the defending player may choose to "double up" vs. missiles.

The drawback to this improved fighter defense is the lack of any datalink capabilities.

27.11.08 First Generation Strikefighter (F1)

The 1st generation fighter mounts no internal weapons, but it has enhanced endurance and more external ordnance capability as compared to F0.

The F1's designed mission is scouting, though its external ordnance capability means it can be used as a long-range strike weapon at need. See 28.04: STRIKEFIGHTER TYPES & CAPABILITIES TABLE. The F1 have a 20-hex detection range.

27.11.09 Strategic Bombardment Missile (SBM)

The SBM is a specialized capital missile. It may be fired from either an Rc or from XO and has both better homing systems and a much more powerful drive than the CM. The SBM is used in either "loiter" or "extended range" mode.

In loiter mode, an SBM can be deployed to accompany its mother ship for up to 6 tactical turns, then be fired at a target up to 30 tactical hexes with the hit accuracy of a CM. The advantage is that the firing unit can control 1 SBM for each internal offensive weapon system of any type. (This reflects the percentage of total fire control dedicated to the missile shots, and no weapon system dedicated to SBM guidance or firing may itself fire in that tactical turn.)

Example: *A unit with 2 Rc and 12 F could spend 6 tactical turns' combat phases launching loiter-mode SBMs, placing each under the control of one of its F. In the 7th turn, the ship could fire 2 SBM from its Rcs and send along all 12 of the loiter-mode missiles, for a total salvo of 14 missiles.*

In extended range mode, the SBM is launched normally but may be fired to ranges of up to 40 tactical hexes.

SBM have to sacrifice something for their capabilities, and, in this case, it's on-board ECM. Unlike CM, which receives a bonus to penetrate point defense, SBM are stopped normally by point defense.

Any unit must mount Xr to use SBM at any range above 20 tactical hexes, and SBM in loiter mode may be detected (and engaged) as if they were fighters or small craft. Once they leave loiter to attack, they may no longer be engaged as if they were fighters.

27.11.10 Strategic Bombardment Missile Carrier Pod (SBMHAWK)

The range and power of the SBM's seekers and drive, coupled with new post-fighter advances in miniaturized fusion power plants, produced the SBMHAWK system--an effective way to bombard defending units through a warp point.

27.11.10.1   The SBMHAWK (or Strategic Bombardment Missile, Homing All the Way Killer) consists of two sub-systems: standard SBMs and a carrier pod, a single-use, throwaway spacecraft little larger than a pinnace. They are transported in H, then deployed as DSB before attacking. They have a maximum endurance (once activated) of one system turn if they do not move or 12 tactical turns if they move at all under their own power. When their endurance is exhausted, they self-destruct.

27.11.10.2   SBMHAWKs always make simultaneous transits in order to swamp the defenses. Due to their smaller size, they take lower interpenetration losses, and rather than roll lots of dice, players should simply mark off 15% of all SBMHAWKs as they make transit, taking the same percentage from all targeting sub-groups.

See 04.18 automated weapons for combat use of SBMHAWKS.

27.11.10.3   Each carrier pod carries up to three SBM. They move at speed 7 with a turn mode of 1 and can be programmed to move away from the warp point on any desired course and/or heading.

If the warp point's grav stress pattern is unknown to the launching player, each pod rolls individually against the scattergram to determine the heading on which it begins its movement, in which case the written move must be reoriented. The SBMHAWK will make the same maneuvers, but it will make them in the assumption that it is on the correct heading at the outset. (Thus an SBMHAWK programmed to emerge on heading 1 and change facing to heading 6 in the course of its move but which emerged on heading of 6 due to grav stress would turn to direction 5, not 6, and all subsequent facing changes would be similarly offset.)

27.11.10.4   Unexpended SBMHAWK pods built by an HT10 or higher empire may be recovered by the firing player and reused, but even if HT9 SBMHAWK carrier pods survive combat, they are not reusable. Any HT9 SBMHAWK which was committed to combat (i.e., ordered to move and/or to fire) self-destructs at the end of its endurance. They will also self-destruct if any unit of any side (including that that built them) attempts to recover them. (An HT9 SBMHAWK has no friends.) HT9 SBMHAWK pods, which are unrecoverable, are designated SBMHAWK-U.

SBMHAWKs which have not moved under their own power or been ordered to fire (as when deployed on tractors as described in 27.11.10.5, below) may be recovered by the side which deployed them. In this instance, the SBMHAWKs' on-board systems have never been enabled, and, consequently, the self-destruct command has never been activated.

27.11.10.5   SBMHAWKs may be used defensively as well as offensively. SBMHAWKs deployed around a warp point may be programmed to attack transiting starships, though their relatively short endurance may limit their effectiveness. SBMHAWKs may also be held on tractors to accompany a moving starship, but they must be assigned a specific target type before they fire, see 04.18.02.3.3b. Finally, SBMHAWKs may be deployed and sent in to attack targets (especially fixed targets like SS and BS) while the deploying fleet remains out of range of any weapons mounted by the target unit.

27.11.10.6   A single counter represents all SBMHAWKs in a tactical hex.

27.11.11 Composite Armor (Ac)

Composite armor represents a major advance in synthetic alloys, ceramic, and "sandwiching" technology. On a hull space-for-hull space basis, the new composites are much more expensive than older armor types, but their extremely low mass allows a ship to carry three times as much Ac as A in the same number of hull spaces. Ac may be used in PDCs and Asteroid Forts, but, unlike their standard A (which is essentially considered concrete poured on top of the base), they pay for Ac at a -2 MC per Ac.

27.11.12 Composite Bulkhead (Bc)

Once composite armor was developed, it became possible to build bulkheads of the new armor into spacecraft, as well. Each Bc requires only 1/3 of a hull space. Aside from its lower hull space requirements, a Bc is treated in all ways as the standard B.

Rewrites From Other Products

27.12.07 Improved Shields (S1)

S1 are a major but logical improvement in shields made possible by new advances in electronics and made necessary by the introduction of antimatter warheads. In effect, each hull space devoted to S1 produces three shields, not one. Note that if damage control begins restoring shields, a ship with S1 would restore three shields per turn, not one. S1 and S may be combined in any combination or pattern.

27.13.06 Command Datalink (Z2/Z2c)

Command datalink represents the first truly significant advance on the original datalink system. Although it is much bulkier than Z, the combination of Z2 and Z2c revolutionized the tactics of space warfare almost as much as the strikefighter.

Command datalink allows up to 6 ships of any type to be linked together into a single datagroup (called a "command battlegroup"). Command datalink has a linkage range of 4 tactical hexes. The command ship of the battlegroup must mount Z2c, a massive (10 hull spaces) and expensive (250 MC) system, while each other ship in the battlegroup must mount Z2 (3 hull spaces and only 80 MC).

Z2 and Z2c are much tougher systems than standard Z. They absorb one point of damage each from any weapon and may be located at any point on the control sheet (not just inside the armor). Finally, both Z2 and Z2c may be used as standard Z if a player wishes, and the ships of the battlegroup may drop into standard 3 ship and 2 hex linkage range groups as desired.

Note that ships equipped with Z2 or Z2c may mount additional increments of the same system and that these additional increments may be used to arrange pre-recorded alternate standard (3-ship) datalinks or as backups for the command datalink systems. (No ship, however, may operate more than one Z2c simultaneously; i.e., you cannot create huge datagroups simply by building additional Zc into your flagship.) If used to back up the command datalink, a unit equipped with an additional Z2 or Z2c will be out of the battlegroup for only one tactical turn while the backup system spins up to full power and re-enters the ship in the net.

Units equipped with Z2 or Z2c may also mount standard Z, but standard Z cannot link with Z2 or Z2c.

27.12 High Tech Ten Weapons and Systems

27.12.01 Advanced Point Defense (Dx):

Dx is what the Fleet anti-fighter officers really wanted in the first place. By dint of further modifications to its software and sensor packages, Dx can function as standard D in the anti-missile role and as Di in the anti-fighter roll, switching back and forth between them in different tactical turns (i.e., the same Dx may not engage both fighters and missiles in the same combat phase) and may engage up to 2 fighters in a combat phase (both in the same combat impulse) when operating in anti-fighter mode.

In addition, Dx's software, superior scanners, fire control, and higher cyclical rate of fire allow for multiple engagements of the same incoming missile. If a unit's Dx installations are numerous enough to allow it to engage more missiles than there are potential hits in any one salvo, it may use some of its excess Dx capability to go back and engage the "leakers" it missed first time around. It must still observe the firing order of its point defense, engaging each missile in turn, but it may make multiple attempts to stop the "leakers."

EXAMPLE: *A player's ship mounts 3 Dx (giving it the ability to engage a maximum of 15 potential hits) and his opponent fires a salvo of missiles at it, scoring a total of 10 potential hits. The defending player first engages all 10 missiles normally, with each Dx stopping the 1st missile it engages on a "1-9," the 2nd on a "1-7," etc. He stops 7 of the incoming missiles, at which point the first of his 3 Dx has engaged 4 missiles and the 2nd and 3rd have engaged 3 each (or a total of 10 out of the maximum possible number of 15). He then goes back to the first of the 3 missiles he did not stop, and engages it a second time. In effect, the missile is re-entered into the firing cycle of his Dx and must be engaged by his 2nd Dx, since his 1st Dx engaged the last missile.*

This will be the 4th missile Dx #2 engages, so the interception probability is "1-3," and he rolls a "4," which indicates he missed. But he still has 4 possible chances to stop it, and engages it with his 3rd Dx. This is its 4th target, as well, so it, too, needs a "1-3," and this time he rolls a "2" and destroys the missile. He then turns to the 2nd of the 3 missiles he missed first time around, engaging it with his 1st Dx. This is its 5th target, so it needs a "1" to stop the missile, and, in fact he rolls a "1," stopping it. One potential hit remains, and he engages it as the 5th target for Dx #2, rolling a "6" and missing. Since it is still coming, he rolls yet again, engaging the missile with Dx #3, and this time rolls a "1," destroying the incoming missile just before it hits.

Further, Dx is designed to interface with datalink. When one or more units equipped with Dx are datalinked together, all the Dx aboard the units of the datagroup may be programmed to defend a single unit of the datagroup against incoming fire. (Thus a pair of CLs datalinked to a CV might be programmed to use their Dx to stop missiles directed at the carrier.) The unit to be protected must be assigned in writing

before play begins. Not all Dx aboard a ship need be assigned, but any which are not assigned before an engagement begins cannot be so assigned in less than 15 minutes (30 tactical turns) because of the programming time required.

The major drawback of Dx used in this fashion is that it cannot be re-programmed very well in the midst of an engagement (see above) and will engage missiles aimed at the protected ship before it engages missiles aimed at the ship which actually mounts the system. At the same time that Dx is assigned to guard the protected ship, the player decides (and records) whether or not his Dx will be used for multiple engagements of "leakers" as above. If it will not, then it cannot do so during the engagement but will be released to engage missiles aimed at the ship mounting the Dx more quickly.

When missiles are fired at the protected ship, all Dx aboard its escorts are treated as if mounted on the protected ship. That is, they all join the protected ship's own point defense and engage potential hits on the protected ship in rotation with the protected ship's Dx engaging first. Dx aboard an escort which have fired in defense of the protected ship engage missiles fired at the escort only after defending the protected ship and begin at the point in their own firing cycle which they had reached in defense of the protected ship.

EXAMPLE: *A CVA with 3 Dx is escorted by two CL, each with 2 Dx which are assigned to the CVA's defense but which are programmed not to assist in multiple engagements of "leakers." An enemy datagroup fires a massive missile salvo at the datagroup, of which 14 are potential hits on the CVA and 5 are potential hits on each of the CLs. The 4 Dx aboard the CLs join the 3 aboard the CVA, firing in rotation against the "hits" on the CVA. One Dx on the CVA engages each of the first 3 missiles on a "1-9," and the 4 Dx on the two CLs engage missiles 4 through 7, also at "1-9" to stop them. The CVA's Dx then engage missiles 8-10 at "1-7," and the CLs engage 11-14 at "1-7." All potential hits on the CVA have now been engaged by point defense, so the CLs' Dx are released to defend the cruisers and will engage the first potential hit on their own ship on a "1-5." The CVA's Dx, of course, is still available to re-engage any "leakers" coming at it. Had the CLs' Dx been programmed to engage "leakers," it would not be released until all "leakers" had been destroyed or the total engagement capacity of the Dx had been exhausted. In either case, its ability to protect the CLs mounting it probably would have been considerably lowered.*

27.12.02 Anti-Fighter Missile (AFM)

The AFM is the starship's answer to the stand-off fighter missile: a stand-off anti-fighter missile with a maximum effective range of 10 tactical hexes, 25% more than that of the "fM." AFM hit probabilities are listed on the normal PROBABILITY OF HIT TABLE rather than the FIGHTER KILL TABLE, but they are normally effective only against fighters, small craft, DSB, etc. This is because the extremely powerful (and short-lived) drive and sensors needed to lock onto and catch fighters leave no room for a warhead powerful enough to penetrate a

starship's or base's drive field. Against a ground base or a spacecraft which has lost its drive field, however, an AFM will inflict a single point of damage and is fired (against such a large target) using the SM range and hit probability. Any unit which fires AFMs against fighters or small craft must mount Xr, and AFM may not be fired from XO racks.

Any missile launcher aboard a spacecraft, PDC, or asteroid fort may fire the AFM, and small craft Di and Dx may be used to defend the mounting small craft against attacking AFM.

27.12.03 Anti-Matter Minefield (AMMF)

The AMMF functions and attacks exactly as a nuclear minefield (see 27.08.05), but each hit inflicts 3 damage points.

27.12.04 Anti-Mine Ballistic Attack Missile (AMBAM)

Minesweeping is a risky way for a starship captain to earn a living, so the R&D types came up with the AMBAM, a large weapon armed with a great big, dirty antimatter warhead which actually enhances the already immense radiation and EMP of the explosion. AMBAMs are not precision weapons; they are fired into a tactical hex containing a minefield or independently deployed energy weapons and use radiation and EMP to kill their targets. Each AMBAM detonation in a tactical hex will destroy 10 patterns of mines or 10 DSB or IDEW of any type, or any combination of the foregoing, at the choice of the defending player. AMBAMs are fired only from XO racks, and the unit which fires them must mount Xr. When used in their designed roll (i.e., to kill mines, DSB, or IDEW), AMBAMs always hit their target hexes (which are pretty big targets, after all), but they are too slow and clumsy and lack sufficiently accurate terminal guidance to be used effectively against mobile spacecraft.

AMBAMs may be used against immobile targets (see below), but they are usually used in area attacks as described above. This means that an area-attack AMBAM normally will not pass close enough to a spacecraft in its "target hex" for that spacecraft to engage it with point defense. A tactical hex is 1/2 light-second (93,000 miles) across. An entire fleet would take up only a minute fraction of that volume, and point defense is intended to engage weapons entering threat range of the unit which mounts the point defense. Accordingly, point defense can intercept AMBAMs only when the AMBAMs are specifically fired at the unit the point defense is protecting, or, in the case of PDC point defense, into the PDC's planetary combat area. Further, AMBAMs, while slow compared to other missiles, are much faster than courier drones. They are also smaller than CDs or small craft, despite their large size compared to other missiles. This means Di and other anti-fighter systems may not be used to engage AMBAMs offensively.

AMBAMs may be employed against immobile targets (SS, BS, ground bases, and asteroid bases), but their accuracy against "precision targets" is abysmal (see 28.01). In addition, AMBAMs are so slow that point defense has a greatly extended engagement time. To reflect this, any D or Dx system automatically stops the first 4 AMBAMs it engages and is able to engage

2 missiles at each "step" in the engagement cycle. Di automatically stops the first 3 AMBAMs it engages, and is also able to engage 2 missiles at each step in the engagement cycle. (This means a D or Dx would stop the first 4 AMBAM "hits" without having to roll, would stop the 5th and 6th missiles on a "1-9," the 7th and 8th on a "1-7," the 9th and 10th on a "1-5," etc. Di would stop the first 3 hits without having to roll, would stop the 4th and 5th on a "1-7," the 6th and 7th on a "1-5," the 8th and 9th on a "1-3," and the 10th and 11th on a "1.")

AMBAMs may be used in planetary bombardments (see 21.03) but this is generally a bad idea if you plan on using the planet afterwards.

27.12.05 Fighter Life Support Pack (fLs)

The major limitation on fighter endurance is not fuel for its fusion plant but rather the heroic demands of the life support systems needed to counter the brutal stress fighter operations would otherwise impose upon the pilots. Each fLs mounted as external ordnance on a fighter adds 1 hour (2 interception turns) to the endurance listed for the type on the FIGHTER CAPABILITIES TABLE. Each fLs uses one external ordnance point, and no non-fighter small craft may use fLs to increase its endurance.

27.12.06 Fighter Missile Two (fM2)

No sooner did starships deploy the AFM than the fighter weapon design teams replied with the fM2, a longer ranged standoff fighter missile. With a range of 11 tactical hexes, it slightly out-ranged the AFM, and given the difference in targets, had a better hit probability. On the other hand, the fM2 is bigger and slower than the original fM; each fM2 uses two external ordnance points, and point defense is +1 to stop it. (That is, the first hit is always stopped by D and the second is stopped on a "1-8." Di would stop the first on a "1-9" and the second on a "1-7.")

27.12.07 Improved Shields (S1)

S1 are a major but logical improvement in shields made possible by new advances in electronics and made necessary by the introduction of antimatter warheads. In effect, each hull space devoted to S1 produces three shields, not one. Note that if damage control begins restoring shields, a ship with S1 would restore three shields per turn, not one. S1 and S may be combined in any combination or pattern.

27.12.08 Second Generation SBM Carrier Pod (SBMHAWK2)

The SBMHAWK2 functions exactly as the original SBMHAWK except that:

(1) The carrier pod can carry six SBMs instead of 3;
(2) The carrier pod moves at a speed of "8" and turn mode of "1";
(3) The carrier pod is reusable and can be recovered by the player who fired it. (It will still self-destruct if anyone else tries to recover it.)

The SBMHAWK2 also costs three times as much as the SBMHAWK1.

27.12.09 Second Generation Strikefighter (F2)

Just what the Fleet defense officers needed! The F2 is a substantial improvement on the F1, with greater endurance and speed (and hence range), more external ordnance capability (3 XO points), the built-in detection range of the FR, and one internal weapon system (either an fG or an fL). It posed a particularly severe threat to starships, especially when paired with the new fM2 stand-off missile, although the danger was somewhat offset by the added toughness starships could draw from the new improvements in shield technology. F2 are coded F2G or F2L, respectively, to indicate that they carry an internal gun or laser.

27.12.10 Long-Range Fighter Scanners (fXr)

This is a rather large fighter external ordnance pack (it can be carried by small craft larger than a cutter, as well) which greatly improves fighter scanner reach and resolution. A fighter equipped with fXr has 75% of the range of a starship with Xr for all functions (see 27.05.05) except that fighters and small craft cannot survey for warp points (they have no significant analysis capability). Each fXr uses 2 XO points for a fighter or 3 XO points for an ast2.

27.13   High Tech Eleven Weapons and Systems

27.13.01 Advanced Anti-Matter Missile Warhead (AAM)

Further advances in anti-matter containment field technology permitted the production of the advanced antimatter warhead, with a larger quantity of antimatter in a warhead of a given size. Accordingly, AAM warheads inflict 5 times the damage the same missile (or mine) would inflict with a normal warhead. In addition, while it remained impossible to squeeze an anti-matter warhead into an fM or fM2, it was possible to fit a small one into an fR, which had always had a larger warhead, anyway. Each hit by an fR-AAM inflicts 9 points of damage, but range and hit probability are identical to that of the standard fR.

27.13.02 Anti-Fighter Missile Two (AFM2)

The original anti-fighter missile was unable to accept HAWK guidance because it was already too crowded with powerful drive generators and tracking systems. The AFM2, a more advanced proposition (referred to in Terran Naval parlance as the AFHAWK), can mount HAWK guidance, providing starships with some means of striking back at fighters in their blind spots.

27.13.03 Anti-Laser Armor (Al)

At the same time as the AFMc (see below) was developed as a long-range active defense against fighters, anti-laser armor was finally perfected as a passive defense. Although the potentials of an ablative-reflective armor had been recognized for years, it proved unexpectedly difficult to turn the concept into a significantly effective system. With the advent of Al, that was finally accomplished.

Al reduces all laser hits by 1/2 with all half-points of damage being lost. (Thus the fL, which inflicts only 1 point of damage, has no effect against ships with Al.)

Al is much more expensive than standard A, and designers who wish to can layer A and Al in any combinations they wish, sandwiching anti-laser "cofferdams" between layers of normal (and cheaper) A.

Planetary Defense Centers which mount Al have to pay for it (unlike normal A) and the cost for PDC Al is triple that of spacecraft Al because each increment of armor on a ground base is larger and covers a greater area. Of course, only asteroid bases and PDCs in vacuum need it.

EXAMPLE OF LAYERED ARMOR: *Assume a spacecraft mounts two units of regular armor and two of anti-laser armor arranged "AAlAAl" and takes a two point laser hit. The first point of damage destroys the first A and is absorbed by it. The second point of damage is applied, as a single damage point, to the first unit of Al. Since Al cuts laser damage in half, and half points are lost, the Al takes no damage from the hit.*

27.13.04 Capital Anti-Fighter Missile (AFMc)

Confronted with the fM2 and the new threat of fR-AAM, the anti-fighter research crews borrowed an idea from Terra's old "wet navy" experience and produced the AFMc, an updated version of ASROC. In simplest terms, they grafted a standard AFM onto the nose of a capital missile in place of its regular warhead, and the result was an astronomical increase in range. At last starships had a weapon which could destroy enemy fighters as many as 30 tactical hexes away.

AFMc are launched from Rc or Wc (see below) and cannot be launched from XO racks. Like the original AFM, an AFMc inflicts 1 point of damage on non-fighter targets not protected by an active drive field.

27.13.05 Capital Gun/Missile Launcher (Wc)

In effect, a Wc is a W for capital missiles. It fires either a standard CM to 30 hexes or the refined and down-sized CAM2 to 12 tactical hexes, thus providing the "gun" equivalent of an Rc. Like the original CAM, CAM2 from Wc cannot be intercepted by point defense. Wc still may not be used to fire SM or BM in sprint mode, however.

27.13.06 Command Datalink (Z2/Z2c)

Command datalink represents the first truly significant advance on the original datalink system. Although it is much bulkier than Z, the combination of Z2 and Z2c revolutionized the tactics of space warfare almost as much as the strikefighter.

Command datalink allows up to 6 ships of any type to be linked together into a single datagroup (called a "command

battlegroup"). Ships linked by command datalink may operate up to 6 tactical hexes from the nearest other ship in the battlegroup (not merely within 3 tactical hexes of every unit in the datalink). The command ship of the battlegroup must mount Z2c, a massive (10 hull spaces) and expensive (250 MC) system, while each other ship in the battlegroup must mount Z2 (3 hull spaces and only 80 MC).

Z2 and Z2c are much tougher systems than standard Z. They absorb one point of damage each from any weapon and may be located at any point on the control sheet (not just inside the armor). Finally, both Z2 and Z2c may be used as standard Z if a player wishes, and the ships of the battlegroup may be designated to drop into prearranged (and recorded) normal datagroups with one another if the battlegroup command ship is lost. (Unless this is prearranged and recorded, the entire battlegroup will lose all datalink if the command ship's Z2c is lost. Like standard datalink, command datagroups may be reorganized between battles but not during them.)

Note that ships equipped with Z2 or Z2c may mount additional increments of the same system and that these additional increments may be used to arrange pre-recorded alternate standard (3-ship) datalinks or as backups for the command datalink systems. (No ship, however, may operate more than one Z2c simultaneously; i.e., you cannot create huge datagroups simply by building additional Zc into your flagship.) If used to back up the command datalink, a unit equipped with an additional Z2 or Z2c will be out of the battlegroup for only one tactical turn while the backup system spins up to full power and re-enters the ship in the net.

Units equipped with Z2 or Z2c may also mount standard Z, but standard Z cannot link with Z2 or Z2c.

27.13.07 Datalink Point Defense (Dxz)

Dxz is a further development of advanced point defense to take full advantage of command datalink. It has the same capabilities as Dx, but instead of being locked into the defense of a single protected unit, any Dxz mounted aboard any member of a command datalink battlegroup may be used to engage missiles fired at any member of the battlegroup, so long as the target of the attacking missile is within 2 tactical hexes of the unit mounting the defending Dxz. In effect, all missile fire directed at a battlegroup with Dxz in a single combat impulse becomes one huge salvo which the defending player may distribute among his point defense installations in any order of his choice. Note that this means Dxz aboard one unit of the battlegroup may engage missiles fired at another battlegroup unit from the target unit's blind spot if the unit engaging the missile is able to "see" the unit(s) which fired the missiles. In addition, a unit's own Dxz can take firing data from any other unit of its battlegroup which can see into its blind spot. Since the blind spot exists only due to a unit's inability to detect targets in its blind spot, this means that it may employ its own Dxz against missiles fired from its blind spot if some other unit of the same battlegroup can provide the targeting data. If a unit's Z2 is knocked out, any Dxz aboard it functions as normal Dx.

27.13.08 Third Generation ECM (?3):

?3 represents a major advance in ECM capabilities. Although both massive and expensive compared to ECM1 and ECM2, most navies find ECM3 worth the investment. ECM3 may be used in any of five different modes, three of which are unique to ECM3, but the mode in which it will be used must be selected before an engagement begins and may not be switched during combat.

27.13.08.1 MODE 1 ECM3 functions as ? -- that is, it may be programmed as the earlier (first generation) system. Note that the effects of multiple, separate ? systems are NOT cumulative.

27.13.08.2 MODE 2 ECM3 functions as ?2 -- that is, it may be programmed to function as the earlier (second generation) system.

27.13.08.3 MODE 3 ECM3 is known as cloaking mode. Used in this way, ECM3 renders a unit virtually invisible even to Xr at ranges above 30 tactical hexes by trapping the unit's electronic and drive emissions inside a force field "bubble" and radiating them away from enemy units' passive scanners. Because the emissions still have to be directed somewhere, there is still a chance of detection, and this increases when enemy units are so placed as to have a better "look" at the rear aspect of the cloaking unit. Although the probability of detection depends more upon the effective direction of emissions away from an enemy than on "fooling" the enemy's sensors, there is also a possibility (remote at long range, but growing steadily at lower ranges) that Xr will pick up an "eddy" from the emissions regardless of the relative bearings of the cloaked ship and the scanning unit. Because of this, the chance to detect a cloaked unit is represented by two different game mechanics, one which is used when the presence of cloaked units is only suspected and one which is used once the scanning units have positive evidence of their presence.

27.13.08.3.1 When a player uses cloaking ?3, he must use plotted, off-map movement rather than moving the cloaked units on the map. This works best when there is an SM to keep track of things. When no SM is available, the next best technique is to use a third player to assume the SM's role. If neither of these options is available, the cloaking player must keep a very carefully written record of his movements and be able to demonstrate after the engagement where his cloaked units were at any given point in the game.

27.13.08.3.2 The base chance for any cloaked unit to be detected by a unit with Xr (units without Xr cannot see cloaked units at any range above 5 tactical hexes) is a flat 05% at ranges above 30 tactical hexes. The base chance increases by 05% for each tactical hex under 30 between the cloaked ship and the scanning unit. Normally, this would mean the probability of detection would reach 100% at 11 tactical hexes,

but the chance is modified to reflect the relative positions of the scanning unit(s) and the cloaked unit(s).

The detection zones are defined as "Frontal Arc," "Broadside Arc," and "After Arc," located in reference to the cloaked unit. Refer to the "Fields of Fire" defined for starships in tactical rule 04.06.01.1. Any scanning ship in the "blind spot" of a cloaked unit is in that unit's "After Arc." Extend a matching wedge-shaped area in front of the ship. This constitutes the "Frontal Arc" of the cloaked unit. Any hex which does not lie in either the "After Arc" or the "Frontal Arc" lies in its "Broadside Arc."

Scanning units which lie in a cloaked unit's various detection zones receive the following modifications to their chance of detecting the cloaked unit:

Detection Zone	30+ Tac Hexes	29 or less Tac Hexes
Frontal Arc	-03%	-20%
Broadside Arc	No Modifier	No Modifier
After Arc	+10%	+25%
Scanning Unit Grade (any detection zone)		
Poor	-10%	
Green	-05%	
Average	No Mod	
Crack	+05%	
Elite	+10%	

27.13.08.3.3   Until the first cloaked unit is detected as described in this rule subsection, the SM or third player (or the owner of the cloaked units, if there is no SM or third player) rolls checking percentile dice for each hex which contains cloaked units if any enemy unit or unit(s) with Xr are present. He makes a single roll for each cloaked unit or group of units with the same facing in the same hex, modifying the roll as indicated in the table above, for each detection zone (not each scanning unit) which contains any hostile unit(s) with Xr. Note that the scanning units need not be in the same tactical hex; one roll is made for all tactical hexes in each detection zone relative to the cloaked unit(s). The cloaking player continues this process until he has made all required checking rolls. All dice rolls are made at the end of the current movement phase.

27.13.08.03.4   Once the presence of any cloaked unit has been detected, the other player knows that there are at least some hidden bad guys about and may begin making intensive, narrow beam scanner sweeps to locate them. Once he begins these sweeps, he rolls percentile dice once per scanning unit at the end of each movement phase. Each unit with Xr may scan only a single row of hexes (multiple units may scan the same row, in which case each makes a separate checking roll for that hex row). The rolls are modified as per the table in 27.13.08.3.2 (though, of course, the scanning player doesn't know precisely what modifiers are being applied). Note that if cloaked units within the hex row are on different headings and/or at different ranges, the modified detection probability will be different for each heading at each range bracket. If the roll indicates that a single unit on a given heading at a given distance was detected,

then all cloaked units on that heading and at that distance in that hex row are detected (subject, of course, to the limits of maximum detection range defined in 27.05.05). No unit may ever scan for cloaked units in its own blind spot.

The "one hex row" limit applies at all play scales: Tactical, Interception, and System. This means that on the higher play scales, each hex of the row will represent a greater volume of space - as it should, since the "angle of sight" from the scanning unit would grow as the range is extended.

27.13.08.03.5   A ship employing Cloaking ECM which has not yet been detected but which fires any weapon or utilizes any offensive system during its firing impulse of the combat phase reveals its position, however briefly, and may, subject to the following conditions, be targeted for return fire by enemy units. The ability to return fire is limited, in that it must be conducted during the same combat phase in which the cloaked ship itself fired, and then may be conducted only by units (or datagroups of units) which have the sensor capability to normally detect and target a ship at that range. Further, the to-hit probability for all missile fire is modified by "-1" for each three whole tactical hexes between the firing unit(s) and the cloaked ship IF THE CLOAKED SHIP HAS NOT PREVIOUSLY BEEN LOCATED AND TRACKED BY THE FIRING UNIT(S). (That is, a unit which had already located and tracked the cloaked unit would have its normal hit probability, but the hit probability for a unit which had not previously located the cloaked unit would be reduced by "-4" at a range between 12 and 14, "-5" between range 15 and 17, etc.) This hit modification applies to non-beam weapons fire only. The key factor here is the time-to-target potential of the weapon being fired. Can the weapon get to where the cloaked ship was when its weapons fired before it moves on too far to be targeted? Beam weapons don't have much trouble here, as they're cruising out to the target at light-speed; missiles, however, are much more likely to "guess wrong" about where a briefly-glimpsed cloaked target will be the longer they take to get to where it was.

27.13.08.03.6   If any Xr-equipped unit(s) in a hex locate a cloaked ship, then all other Xr-equipped ships in the same hex can see the same cloaked ship, as can any units datalinked to a ship with Xr. Units without Xr cannot detect ?3 cloaked ships at all at ranges above 5 tactical hexes, and so cannot engage them (unless datalinked to a unit with Xr) above that range.

Remember that FR, F2, and F3 strikefighters have a maximum scanner range of only 20 tactical hexes but that F2R and any fighter or small craft equipped with long-range fighter scanners have a detection range equal to 75% that of large spacecraft Xr. If any fighter in a strike group (not just the same squadron) can see a cloaked ship, then all fighters of that strike group and in the same tactical hex as the fighter which can "see" the cloaked ship can also see it.

Fighters and small craft which detect cloaked units cannot direct the fire of larger spacecraft onto them, but they can

"point out" the cloaked ship to larger spacecraft, in which case the larger spacecraft's detection probability is increased by a further 10% after all other modifiers for detection zone and range.

27.13.08.03.7   As long as a cloaked unit's ?3 remains operational and the unit continues to use it in cloaking mode, it can be "lost" by the units which have detected it. To reflect this, any currently cloaked unit must be scanned for and reacquired afresh at the end of each movement phase.

Once a cloaked unit is first detected (acquired) or fires from cloak as per 27.13.08.03.5 above, then the detection probability for scanning units against that unit is increased by a further 15% after all other modifiers for the check at the end of the immediately following movement phase.

This is the only instance in which scanning unit(s) may have different detection probabilities against cloaked units on the same heading and at the same distance, since what is actually happening here is that they are tracking a unit (or units) they have already acquired once which may be moving with or, in the course of the move, join up with cloaked units which have not been previously detected.

If the cloaked unit(s) are not reacquired (detected) at the end of the succeeding movement phase, the 15% modifier is lost.

27.13.08.4 MODE 4 ECM3 is deception mode.

ECM3 used in deception mode allows the mounting ship to assume a false scanner image which disguises it as any class of unit within plus or minus 3 ship hull types of its own type. (CVE and DD count as one "step" in the ladder, as do CVL and CA and BC and CV.) In deception mode, a unit can not only mask its hull type but can actually masquerade as a specific class (or design) within its assumed type.

> **EXAMPLE:** *A BC with ?3 might assume the scanner image of itself (or of a BC of another class) or a CV, or of a CVL, CA, CL, DD, or CVE (moving "down" the ladder) or as a BB, SD, CVA, or MT (moving "up" the ladder). It could also disguise itself as a BS1, BS2, BS3 or BS4 if it shuts down its engines to station keeping and remains motionless.*

This form of deception is more subtle than simply trying to hide, and the chance that scanners can differentiate between real images and false ones is 1/2 the chance of detecting a cloaked ship at the same range. Once a disguise has been penetrated, however, the true nature of the target can be passed to every ship of the same side (whether datalinked to an Xr unit or not) and thereafter the ?3-equipped ship will be unable to assume a new false identity.

27.13.08.4.1   Deception mode ECM3 will always fool SBMHAWK, DSB-L, or IDEW fire control into believing that the unit using it actually is the unit type as which it has disguised itself. In addition, ECM3 can be used at extreme range (above 20 tactical hexes) to "siphon off" CM or SBM fire. In this case, the unit mounting the ECM3 may disguise

itself as another type of unit, making itself a more attractive target, and, when fired upon, switch off its ECM and assume its actual appearance. Since on-board missile-homing systems are not very "smart" and any missile fired at ranges above 23 tactical hexes is in on-board terminal guidance long before it reaches its target, this often causes the missile to lose lock and veer harmlessly off course. The chance that this will happen is determined by rolling a D10 for each missile in the volley fired at the unit before it disengaged its deception mode ECM. If the number rolled is equal to or less than twice the number of hexes over 20 (rounding fractions down) at which the missile was fired, the missile loses lock and veers off.

> **EXAMPLE:** *If a CM were fired at a target 28 hexes away and that unit employed deception Mode as described above, the range above 20 would be 28-20=8. Half of 8 is 4, so the firing player would roll a D10 for the CM and a roll of "1-4" would indicate that the missile had lost its lock and veered off. If the firing unit had fired SBMs at a target 37 hexes away, the range above 20 would be 37-20=17. Half of 17 is 8.5, which would round down to 8, so the firing player would roll a D10 for each SBM in the volley and any roll of "1-8" would indicate a missile which had lost its lock and veered away.*

27.13.08.5 MODE 5 is ECCM (Electronic Counter Counter Measures) Mode.

If an ECM3 installation is programmed before battle for the ECCM mode, it may be used to offset two installations of either ECM1 or ECM2 mounted on a hostile unit within the effective range of the ECM type being used. (That is, it could offset ECM1's fire confusion effect at any range and ECM2's jamming effect if within 5 tactical hexes of the jamming unit.) Each ?3 installation may counter only two installations of a lower level at a time and, further, may counter only one type of instillation at a time. ECCM ?3 may switch at will from countering ?1 to ?2, but this switch takes one full tactical turn to accomplish, during which time the ECCM may not counter either type of ECM.

27.13.09 Engine Tuner Two (It2)

The It2 is an advanced version of the original It technology which poses the same radiation hazard to its crew but is much more compact. The It2 is a "stand alone" installation which may be located at any point on the control sheet and produces its speed "boost" of 1 MP as long as a single engine room is intact. Its mass varies, depending on the total number of I it must deal with, and the hull space requirement for It2 is equal to 20% of that of the total original I or Ic of the starship, rounding all fractions of 1/2 or more up. (Thus an SD with 20 I would require an It2 of 20X.2=4 hull spaces, a CL with 9 I would require an It2 of 9X.2=1.8=2 hull spaces, and a DD with 6 I would require an It2 of only 6X.2=1.2=1 hull space.)

27.13.10 Deep Space Scanner Buoy Two (DSB-Xr2)

This is essentially an upgraded DSB-Xr (see 27.07.06) made possible by the same technology which produced long-range fighter scanners. A DSB-Xr2 has the detection and resolution capabilities of regular Xr (27.05.05). DSB-Xr2 communicate and are deployed, detected, and engaged exactly as DSB-Xr (27.07.06).

27.13.11 Second Generation Assault Shuttle (ast2)

The ast2 is in all ways comparable to the ast in terms of speed, maneuverability, personnel and cargo capacity, and endurance. In addition, however, the ast2 has the point defense capability of Dx (not Di), and a substantially upgraded onboard targeting system which permits the vehicle to mount up to 5 points worth of standard fighter weapons as external ordnance. (If fXr is mounted, it uses up 3 of these points, not 2, because of the special adaptations required by the ast2's more limited onboard electronics.) Unlike the pn2 (see 27.13.14), the ast2 sacrifices no internal cargo capacity to mount these weapons, but it can mount less of them than the larger, more extensively modified pn2. Like the pn2, however, mounting fighter weapons on an ast2 does not reduce its speed. The field of fire for fighter weapons mounted on an ast2 is the same as for a strikefighter, but the field of fire for its Dx is unchanged (i.e., remains that of a starship).

The greatest weaknesses of an ast2 in the attack role when compared to a standard fighter are its lower long-range speed and the fact that it cannot datalink with other small craft.

The ast2 has much, much greater endurance than any currently available fighter, but its low system speed makes it difficult for it to overhaul regular starships and leaves it susceptible to long-range fighter interception as it seeks to close. At the same time, its inability to datalink means that while each ast2 can fire all of its XO-mounted weapons in a single salvo, it may fire them at only a single target and must attack it individually. Thus even though each ast2 can fire heavier salvos than individual fighters, its maximum salvo is considerably lighter than a fighter squadron's and so has less ability to saturate target point defense. Moreover, it lacks the fire control of larger starships and cannot target entire squadrons of fighters; it must target and engage only single fighters within a squadron, so any overkill is lost. It may, however, in any turn in which its point defense is not used for missile defense, engage up to 2 fighters located anywhere in the standard Dx field of fire, which means that under certain circumstances it could engage as many as three fighters simultaneously--one with its external weapons and two with its Dx. Of course, it can also choose to fire all three shots at a single target to increase the chance of a kill.

27.13.12 Second Generation Close Assault Missile (CAM2)

This is a smaller, even faster version of the original CAM which has been engineered down to a size that permits it to be fired from a Wc. When fired from an internal launcher, the CAM2 has both greater range and greater accuracy than a CAM fired from an XO rack; when fired from an XO rack, a CAM2 is treated exactly as a normal CAM.

27.13.13 Second Generation Enhanced Drive Field Missile (EDM2)

This is a smaller version of the original EDM with greatly miniaturized internal electronics which lets the builder squeeze the EDM's capabilities into a weapon which can be fired from an Rc or Wc. The EDM2 functions exactly as the original EDM, but its smaller size means much greater numbers can be carried in a spacecraft's magazines and that external damage will not "strip them off" the hull as happens when a spacecraft with XO-mounted ordnance takes damage inside its shields.

27.13.14 Second Generation Pinnace (pn2)

The pn2 is in all ways comparable to the pn in terms of speed, maneuverability, personnel capacity and endurance. Unlike the "pn," however, the larger pn2 has the point defense capability of Dx (not Di) and a substantially upgraded onboard targeting system which permits the vehicle to mount up to 10 points worth of standard fighter weapons as external ordnance. In addition, improved onboard sensor capabilities allow a pn2 to mount fXr in addition to any weapons without expenditure of additional XO points. Provision for these weapons and scanners reduces the pn2's cargo capacity by 3 stowage points per XO point, so a pn2 has a cargo capacity of only 170 stowage points. On the other hand, the pn2 is not slowed by mounting external ordnance. The pn2 has the same field of fire and targeting restrictions as the ast2 (27.13.11).

27.13.15 Second Generation Recon Fighter (FR2)

Essentially, this is an F2 which carries fXr internally in place of an internal weapon.

27.13.16 Third Generation Strikefighter (F3)

A logical progression from the F2, the F3 has the F2's "built-in" detection range, 2 internal weapons, and sufficient external ordnance capability to mount 2 fM2. Note that the internal weapons of the F3 must both be of the same type, though different weapon types may be carried as external ordnance.

The F3 may fire both its fM2 in a single salvo, which means that a squadron of six F3 could fire a total of 12 fM2 in a single salvo.

28.00 Player Information Card Tables

28.01 Weapon Range and Hit Probability Table1

RANGE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31-40	41-60
*** Energy Weapons ***																																	
Beam(any)	10	10	9	9	9	8	8	8	8	7	7	7	7	7	6	6	6	5	5	5	4	4	4	3	3	2	2	1	1	1	1	1	1#
IDEW	8	8	6	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	2	2	2	1	1	1	1	1	1
Pg/Pg2	9	9	9	8	8	7	7	7	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
*** Inertia Sinks ***																																	
U	8	7	6	5	4	3	3	3	2	2	2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Uc	9	8	7	6	6	5	5	5	5	4	4	4	3	3	3	3	3	2	2	1	1	1	–	–	–	–	–	–	–	–	–	–	–
*** Missiles: Sprint Mode ***																																	
CAM	9	9	8	8	8	8	7	6	5	4	3	to hit numbers are from XO rack.																					
CAM 2	9	9	9	8	8	8	8	7	6	5	4	3	receives no -2 penalty from XO rack.																				
GMb/GM/SM	9	9	9	8	8	8	7	6	5	3	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
SM2	9	9	9	9	8	8	8	7	7	6	6	5	3	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
*** Missiles: Long Range Mode ***																																	
BM	–	1	2	4	4	7	6	6	6	6	6	5	4	3	3	2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
SM	–	2	3	4	7	8	8	8	8	8	8	8	8	8	7	7	7	6	6	5	5	–	–	–	–	–	–	–	–	–	–	–	–**
PM	–	9	9	9	9	9	9	9	9	9	9	9	9	6	6	5	5	4	4	3	3	–	–	–	–	–	–	–	–	–	–	–	–**
SM2	–	2	3	4	7	8	8	8	8	8	8	8	8	8	7	7	7	6	6	5	5	5	5	5	5	5	4	–	–	–	–	–	–**
CM	–	2	3	4	7	8	8	8	8	8	8	8	8	8	8	8	8	7	7	7	7	6	6	6	6	6	5	5	4	4	–	–	–**
SBM	–	2	3	4	7	8	8	8	8	8	8	8	8	8	8	8	8	8	7	7	7	7	6	6	6	6	6	5	5	5	5	4	–**
ADM	–	1	1	2	6	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	4	4	–	–	–	–	–	–	–	–	–
AFM vs. Ftr	–	1	3	5	4	4	4	4	4	3	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
AFM vs. Other	–	1	3	5	7	8	8	8	8	8	8	8	8	8	7	7	7	6	6	5	5	–	–	–	–	–	–	–	–	–	–	–	–
AFMc vs. All	–	1	1	1	6	6	6	6	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	2	2	2	1	–*
AMBAM	–	1	2	3	3	3	3	3	2	2	1	–	–	–	AMBAM automatically hits when fired against mines or planets.																		
AMBAM2	–	1	3	5	5	5	5	4	3	2	2	2	1	–	AMBAM2 automatically hits when fired against mines or planets.																		
Sled–1	–	2	3	4	7	8	8	8	8	8	8	8	8	8	8	8	8	7	7	7	6	6	6	6	6	–	–	–	–	–	–	–	–
Sled–2	4	4	5	6	7	8	8	8	8	8	8	8	8	8	8	8	8	8	7	7	7	7	6	6	6	6	6	6	5	5	5	5#	–
(RAM)	^	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Max. range: Mines(0), P(12), N(12), Pc(18), Sled-2 (32)

1 GB are engaged at -3 to hit except with AFM types which use the AFM vs other line.

*AFMc fire on the Fighter Kill Table (28.03).

** -2 to hit when fired from XO rack.

ECM: inflicts a -3 penalty on everything except fighter missiles, which are at -2, and fighter non-missile weapons (including fR types), which are at -1 (27.09.03).

HAWK(h): -5 blind-fire, hand-off uses "hit probability of hand-off ship's own weapons -1" (27.10.09)

LT(L1,L2,L3) are -1 to hit, but are also -3 for point defense to intercept (27.09.08).

HARM(j) receives a +2 to hit and has a to hit of '2' at range 0 in direct fire vs. jam mode (27.14.21) vs. active ECM2 only. 8's become 10's. Home on jam mode uses the SM to hit table (no +2) to a maximum range of 15 hexes.

AMP1(p1) gives a -1 modifier to point defense rolls, no modifier to hit, and a 10% reduction in the base warhead damage (27.15.02).

SCW(s) are -1 to hit. Warhead damage increased by 50% (27.15.13).

Tractors and Pressers (08.02.01.3), (08.02.01.5), (08.03.02): Fire from a tractored unit to the unit which is tractoring it: Missiles automatically hit (no roll required) unless presser beams used by tractoring unit equal to or greater than the number of tractors in use.

Tractoring unit firing at the unit that it has tractored: Beams & sprint mode missiles calculate the hit probability as if the range were 3 less than actual. Regular mode missiles use that range or actual range, whichever has the higher hit probability. If the tractored unit is opposing the tractor with at least one presser per tractor, the range modification for beam and sprint mode missiles is negated (treat as actual range).

Pressered unit firing at the unit that is pressering it: Each presser beam that is unopposed creates a penalty of -1 to all missile fire. Presser beams are opposed by tractors used between the two units, no matter which unit in the pair is using the tractor in the pair.

Cloaked (27.13.08.3.6): Fire at a cloaked unit which has not been detected by sensors (27.13.08.3.4) on the firing unit and after the unit has revealed itself (by firing, utilizing an offensive weapon, or attempting pinpoint detection) is at a penalty of -1 for beam and energy weapons, and at a penalty of -1 for each 5 hexes of range (FRD) for missile weapons.

Deception mode (27.13.08.4.1): Switching deception mode off/on after a volley has been fired will fool missiles at ranges above 21 tactical hexes. A missile will be fooled if the number rolled (1d10) is equal to or less than half the number of hexes over 20 (FRD).

28.02.01 Fighter/Small Craft Weapons vs. Starships Table*

RANGE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ftr Beam	10	9	7	4	3	2	1	1	1	–	–	–	–	–	–	–
fR types	9	5	2	–	–	–	–	–	–	–	–	–	–	–	–	–
fM1	1	3	7	7	7	6	5	4	3	–	–	–	–	–	–	–

RANGE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
fM2	1	4	8	8	8	7	7	6	5	5	5	4	2	–	–	–
fM3	1	5	8	8	8	8	7	7	6	6	6	5	4	3	2	–

Max. Range for fL(4), fP(4) *GB are engaged at -3.

28.01.01 Kinetic Interceptors vs Starships

RANGE	0	1	2	
(Dk5)–	6	4	–	Damage 2

RANGE	0	1	2	
(Dk4)–	7	5	–	Damage 3
(Dk3/z)	8	6	–	Damage 5

28.02 Weapon Range and Damage Table:

RANGE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31-40	41-60
*** Energy Weapons ***																																	
Cb	30	24	21	18	15	12	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	(see ISW-4)
E		5	4	3	3	2	2	2	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ec	9	8	7	6	5	4	4	3	3	2	2	2	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ec2	10	9	8	7	6	6	5	5	4	4	3	3	2	2	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	(see ISW-4)
F	5	4	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fc	8	7	6	5	4	4	4	3	3	3	2	2	2	2	2	2	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–
Fc2	9	8	7	7	6	6	5	5	4	4	3	3	3	3	3	2	2	2	1	1	1	1	1	1	1	1	–	–	–	–	–	–	(see ISW-4)
L	3	3	2	2	2	1	1	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
(HET)	8	7	6	6	5	5	4	3	3	2	2	2	2	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–		(see CRUSADE)
(HET2)	8	7	6	5	4	4	3	3	3	3	2	2	2	2	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–		(see CRUSADE)
Lx/(DeC)	6	6	6	5	4	4	3	3	3	3	2	2	2	2	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–		(see CRUSADE)
Lx/(Dec2)	8	8	7	7	6	6	5	5	4	4	3	3	3	2	2	2	2	1	1	1	1	1	1	–	–	–	–	–	–	–	–		(see CRUSADE)
Pg		7	7	7	6	6	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	(see ISW-4)
Pg2	10	10	9	9	9	8	7	6	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	(see ISW-4)
Kb	3	3	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	–	–													
(see SM#2 & Alkelda Dawn for all K-weapons)																																	
Ki	3	3	3	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–
Ks	4	4	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K	3	3	3	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–
Kc	7	6	6	6	6	5	5	5	5	5	5	4	4	4	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	1	1	–	–
Fighter/Small Craft Weapons:																																	
fL2	4	3	3	2	2	2	2	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

The following weapons cause 1 point of damage per hit: BM*, GMb*, SM*, PM*, SM2*, N(max. range 12), P(12), Pc(18), fM1, fM2, fM3, fL(4), fP(4), Mines*.

The following weapons cause 2 points of damage per hit: GM*, CM*, SBM*, CAM*, CAM2*

"*" Damage listed is for standard nuke warhead. With AM Warhead multiply by 2. With AAM multiply by 3.

fR causes 2 pts of damage; fRAM - 4 pts; fRAAM - 6 pts.

SCW multiplies damage by 1.5 (FRU).

AMP1 damage is 90% of normal (FRD).

Nuke or antimatter warheads inflict 5 times damage inside shields on a target which is not protected by a drive field {SCW has NO additional effect}.

AMBAM causes 12 pts damage and AMBAM2 causes 6 pts damage per hit.

ADM hits destroy first ACTIVE engine (including Tug) from the left of the design.

(RAM) inflicts twice normal ramming damage (see 03.07.03 & 27.10.11) at range 0. To hit number of 8 at range 1.

AFM and AFMc cause 1 pt of damage for hit on non-fighter target w/out drive field. No effect against active drive field. Any hit on fighter or small craft destroys the target.

(Sr) inflicts 100 pts in successful ramming attack; 40 pts at range "0" against target of unsuccessful ramming attack.

All Primary beam damage ignores any generation of: shields, armor, bulkheads, and holds.

All Laser damage ignores shields. All Energy beam damage ignores Q and any generation of; armor, holds, magazines, bulkheads, fighter bays.

Laser Torpedo warheads convert damage to laser damage, and multiply it as follows: LT1 halves damage, drop fractions. LT2 converts to laser damage at 1 for 1, LT3 does 1.5 damage (FRD).

Inertia Sinks cause damage according to AD page 26.

28.03 Fighter Kill Tables*

Firing Unit: Starship/OWP								
RANGE	0	1	2	3	4	5	6	7
Db, Sprint {SM,GM,CAM}	3	2	1	–	–	–	–	–
Cb,F,Fc,Fc2	2	1	1	1	–	–	–	–
E, Ec, Ec2	2	2	1	–	–	–	–	–
L/Lx/HETx	2	2	2	2	1	1	1	–
Pg	3	1	1	–	–	–	–	–
Pg2	3	2	1	1	–	–	–	–
SM2 Sprint	3	2	1	1	–	–	–	–
N	3	2	2	1	1	1	1	1
D	3	3	2	2	1	–	–	–
Di	5	4	3	2	1	1	–	–
Dc	1	1	2	2	3	3	–	–
Dx/Dxz	8	6	5	4	3	2	–	–
Dcx/Dcz	2	3	4	5	6	7	8	–
Dk5	1	1	1	–	–	–	–	–

Firing Unit: Starship/OWP								
RANGE	0	1	2	3	4	5	6	7
Dk4	2	1	1	–	–	–	–	–
Dk3/Dkz	2	1	1	1	–	–	–	–

*NOTE: Mi-x bonus is halved (FRU) when firing on 28.03 or with AFMs other than AFMc. AFMc receive no Mi-x modifier.
*ALL SMALL CRAFT and objects targeted as small craft, such as CD, are +1 to be engaged.
For AFM/AFMc/HARM (see 28.01)

Fighter Vs. Fighter Kill								
RANGE	0	1	2	3	4	5	6	7
Gun	5	3	–	–	–	–	–	–
Laser	3	2	1	1	–	–	–	–
fR types	7	–	–	–	–	–	–	–
L2/fL2i	3	2	1	1	1	1	–	–
DPOD	8	–	–	–	–	–	–	–

28.04 Strikefighter Types and Capabilities Table

HTL	Fighter Type	Max. Speed	Loaded Speed	Internal Weapons	fXO Racks	Fighter Cost	Endurance Turns	Endurance Minutes	Scan Range
8	F0	9	8	0	2	20	120	60	6
9	F1	10	8	0	3	30	240	120	20
10	F2	11	9	1	3	40	360	180	20
11	F3	12	10	2	3	50	480	240	20
12	F4	13	11	2	4	60	600	300	20
13	F5	14	12	3	4	70	720	360	20

NOTE(1) Only 1/2 MP is lost per fXO loaded (FRU). Example: 3 loaded fXO reduce speed by 2. (2) Cost does not include the price of internal weapons. (3) See 04.16 for new fighter loadout restrictions.

28.05 Small Craft Capabilities

Type	Code	Bb Pts	Tac Speed	Inter/ Syst. Speed	Crew Only Days	Full Load Days	Per- sonnel Load	Cargo Points	PCF-a Airdrop	Warp Cap- able	Pt Def- ense Equiv.	fXO rack Pts	Sensor Range	MC Cost
Cutter	ct	1	7	4	12	4	0.25 Q	10	no	no	none	0	6	8
Shuttle	st	2	6	3	12	6	1.00 Q	100	no	no	none	0	20	20
Assault st	ast	2	8	4	12	6	1.00 Q	100	yes	no	Db	0	20	30
Pinnace	pn	4	7	4	24	8	2.00 Q	200	yes	yes	D	0	20	45
2nd ast	ast2	4	8	4	12	6	1.00 Q	100	yes	no	Dx	5	20	55
2nd pn.	pn2	6	7	4	24	8	2.00 Q	170	Yes	yes	Dx	10	fXr	60
Gunboat	GB	NA	9	6	6	NA	none	none	No	yes	Dxz	4x4	fXr	100

28.06b Ordnance Types and Magazine/Cargo Points

ORDNANCE	COST	CARGO POINTS	SHIP XO REQ.	FTR. XO PTS.	RANGE FROM XO RACK *
X-Ray Laser Warhead (LWH)	1.00	1.00	--	--	--
Gun Missile (GM)	.05	2.00	--	--	--
Basic Missile (BM)	.05	1.00	1	--	13 *
Standard Missile (SM)	.10	1.00	1	--	16 *
2nd Gen. Standard Missile (SM2)	.20	1.00	1	--	20 *

Ordnance	Cost	Cargo Points	Ship XO Req.	Ftr. XO Pts.	Range From XO Rack *
Capital Missile (CM)	.25	2.00	2	--	24 *
Strategic Bombardment M. (SBM)	.30	2.50	2	--	34 *
Close Assault Missile (CAM)	.50	3.00	2	--	10 **
2nd Generation CAM (CAM2)	1.00	2.50	2	--	10 *
Anti-Drive Missile (ADM)	1.00	4.00	3	--	20 **
Anti-Mine Ballistic M. (AMBAM)	30.00	7.00	5	--	10 **
2nd Gen. AMBAM (AMBAM2)	40.00	2.75	2	--	8 *
Boarding Sled One (Sled-1)	7.50	4.00	4	--	24 **
Boarding Sled Two (Sled-2)	25.00	50.00	--	--	--
Courier Drone (CD)	2.00	8.00	10	--	--
Enhanced Drive Field M. (EDM)	3.00	3.50	3	--	-- ***
2nd Gen. EDM (EDM2)	4.00	2.50	2	--	-- ***
3rd Gen. EDM (EDM3)	6.00	2.50	2	--	-- ***
Anti-Fighter Missile (AFM)	4.00	1.00	--	--	--
Anti-Fighter Missile 2 (AFM2)	6.00	1.00	--	--	--
Capital Anti-Fighter M. (AFMc)	10.00	2.00	--	--	--
Fighter Decoy Missile (fM?)	8.00	.25	--	1	--
Fighter ECM (f?)	45.00	.25	--	1	--
Fighter Gun (fG)	1.00	.25	--	1	--
Fighter Close Attack M. (fR)	1.00	.25	--	1	--
Fighter AM Close Attack M (fRAM)	4.00	.25	--	1	--
Fighter AAM Close Attack (fRAAM)	12.00	.25	--	1	--
Fighter Laser (fL)	8.00	.25	--	1	--
Fighter Hetlaser (fL2)	12.00	.50	--	2	--
Fighter Life Support Pod (fLs)	2.00	.25	--	1	--
Fighter Missile (fM)	.20	.25	--	1	--
Fighter Missile 2 (fM2)	.30	.25	--	1$	--
Fighter Missile 3 (fM3)	.50	.25	--	1	--
Long Range Ftr. Sensors (fXr)	10.00	.50	--	2#	--
Fighter Primary Pack (fP)	15.00	.75	--	3	--
Gunboat Jammer Pack 1 (gJ-1)	10.00	3.00	--	12	--
Gunboat Jammer Pack 2 (gJ-2)	50.00	4.00	--	16	--
KBS	6.00	20.00	--	--	--
Recon Drone (RD)	50.00	50.00	4	--	--
2nd Gen. Recon Drone (RD2)	90.00	4.00	--	--	--
SBM Carrier Pod (SBMHAWK)	20.00	40.00	--	--	--
2nd Gen. SBM Pod (SBMHAWK2)	30.00	50.00	--	--	--
3rd Gen. SBM Pod (SBMHAWK3)	40.00	60.00	--	--	--
4th Gen. SBM Carrier (SBMHAWK4)	50.00	60.00	--	--	--
AMBAM2 Carrier Pod (AMBAMP)	35.00	50.00	--	--	--
Defense Pod [DPOD]	40.00	60.00	--	--	--
Minefield Pattern	15.00	100.00	--	--	--
Deep Space Buoy (any)	varies	25.00	--	--	--

NOTE: Many prices changed. Review carefully.

*Accuracy -2 from internal launcher accuracy.

**No accuracy modifier; can be fired only from XO rack and hit probability on 28.01 is for XO launch.

***No range or accuracy modifier; EDM remains in tactical hex of the assigned unit under shipboard fire control.

$ RULE CHANGE: The fM2 only requires 1 XO rack, etc.

ast2 requires 3 XO pts to carry fXr.

28.07 Hull Table

Warship Type	Req. Tech Level	Range in Hull Spaces	Hull Cost	Turn Mode	(I) Engine Power	(Ic) Engine Power	(J) Engine Power	(Jc3)+ Engine Power	FT Hull Cost
EX [0]	1	5-7	1.0	2	1/4 (8)	1/4 (4)	1/8 (15)	1/6 (6)	1.50
ES [1]	1	8-12	2.0	2	1/3 (8)	1/3 (4)	1/5 (15)	1/4 (6)	2.00
CT [2]	1	13-16	2.5	2	1/2 (8)	1/2 (4)	1/4 (12)	1/3 (6)	2.50
FG [3]	1	17-20	3.0	2	2/3 (7)	2/3 (4)	1/3 (12)	1/2 (6)	2.75
DD [4]	1	21-30	4.0	{3}	1.0 (7)	1.0 (4)	1/2 (10)	2/3 (6)	3.00
CL [5]	2	31-{45}	4.5	3	1.5 (6)	1.5 (4)	3/4 (10)	1.0 (5)	3.25
CA [6]	3	46-60	5.5	3	2.0 (6)	2.0 (4)	1.0 (9)	1.5 (5)	3.50
BC [7]	5	61-80	7.0	{4}	2.5 (6)	2.5 (4)	1.5 (8)	2.0 (5)	3.75
BB [8]	6	81-100	8.0	4	3.0 (5)	3.0 (3)	2.0 (8)	3.0 (4)	4.00
SD [9]	7	101-130	9.0	{5}	4.0 (5)	4.0 (3)	2.5 (7)	4.0 (4)	4.50
SDH [10]	9	131-165	10	5	5.0 (4)	5.0 (3)	3.0 (6)	5.0 (4)	5.00
MT[11]	11	166-200	12	6	6.0 (4)	6.0 (3)	4.0 (6)	6.0 (4)	6.00
MH[12]	13	201-250	14	6	7.5 (3)	7.5 (2)	5.0 (5)	7.5 (3)	7.00
SM[13]	14	251-300	16	6	9.0 (3)	9.0 (2)	6.0 (4)	9.0 (3)	8.00
LN[14]	16	301-400	20	6	12 (2)	12 (1)	8.0 (3)	12 (2)	10.00
JG[15]	18	401-500	24	6	15 (2)	15 (1)	10 (2)	15 (2)	12.00

NOTE: Number in [] after type is the type of FT hull.

Carrier Type	Req. Tech Level	Range in Hull Spaces	Hull Cost	Turn Mode	(I) engine Power	(Ic) Engine Power	(J) Engine Power	(Jc3)+ Engine Power
CVE	1	21-30	7.0	{2}	1.0 (7)	1.0 (4)	1/2 (10)	2/3 (6)
CVS	3	31-{45}	7.5	(2)	1.5 (6)	1.5 (4)	3/4 (10)	1.0 (5)
CVL	6	46-60	8.0	(2)	2.0 (6)	2.0 (4)	1.0 (10)	1.5 (5)
CV	8	61-85	9.0	{3}	2.5 (6)	2.5 (4)	1.5 (9)	2.0 (5)
CVB	10	86-100	10	{3}	3.0 (6)	3.0 (4)	2.0 (9)	3.0 (5)
CVA	12	101-130	12	{4}	4.0 (6)	4.0 (4)	2.5 (8)	4.0 (5)

Base Type	Req. Tech Level	Range in Hull Spaces	Hull Cost
BS0	1	5-15	2.0
BS1	1	16-25	3.0
BS2	1	26-50	3.5
BS3	3	51-85	4.0
BS4	5	86-120	4.5
BS5	7	121-180	5.0
BS6	9	181-250	6.0
BS7	12	251-375	7.0
BS8	14	376-500	8.0
BS9	16	501-625	9.0
BS10	18	626-750	10.0

Other Units	Range in HS	Cost/ Space	Maint Cost	Tech Level
PDC (Benign/Harsh)	Unlimited	2.0	10%	IND-2 &
PDC (Hostile/Desolate)	Unlimited	3.5	5-15%	IND-2 &
PDC (Extreme.)	Unlimited	3.5	15%	HT 1 &
PDC (Asteroid Fort)	1-1000	3.5	5%	HT 1 &
SS	Unlimited	2.5	2%	IND-2

!: All carriers of fighters have additional maintenance requirements for their fighters; see note (7).

&: See 15.10 for exact rules for PDC construction, etc. HULL COST is as indicated, BUT ARMOR systems have a cost of ZERO. (A armor only, not any later types).

For the power column, the first number is the number engines required per MP.

Engines may not be mounted in fractional sizes (though half-sized versions of all engine types are available).

The 2nd number, in (), is the maximum speed with those engines. Things in {} are notable changes.

Maintenance: Warships and Carriers - 15%, Bases - 5%.

NOTE the exceptions in both J and Jc engines, where the larger engines become LESS efficient. This is a natural function of those engine types.

NOTE: All Jc speeds are for Jc3 and Jc4 types. Other Jc engines have reduced maximum speeds.

Hull Table Notes:

1. Freighters may carry military systems (weapons or defenses like S & D) and still pay 1/2 maintenance as long as those types of systems remain at or below 20% of the total hull spaces. Such a freighter receives triple effect from each Q and Qs due to lower crew requirements. XO racks need twice the normal hull space to mount on FT (1 XO per 10 HS).

   Any "freighter" built with more than 20% of its spaces in military systems must be built as a warship, but ships with more than 33% of space devoted to cargo holds or quarters will look like a freighter (even with shields down). FT is the freighter designation. BC(FT) is the designation of a warship that looks like a freighter.

   Freighters of 7 HS and smaller do not have to allocate a cargo hold to the exclusive use of their maintenance. The small amount of cargo space required for their maintenance can be stored (for one turn's use) without using any cargo space in the cargo holds. Unless otherwise specified, no other ship can share its crew Q or maintenance H capacity with the capacity for carrying passengers or cargo.

   Any system that can be used as an active or passive defense (providing combat support) is considered a military system Any Bulkheads above the 1 B per 6 H restriction in 27.02.03 count as military systems.

   Non-military systems are Jc and Ic Engines (only), Holds, Bulkheads (any), Tractors/Pressers, Shipyards, MS, Boatbays, Crew Quarters, Life Support, Courier Drones, Cargo Handling Systems (any), Atmospheric Capability, Communication Modules and Jump Racks.

   Freighter maintenance is one-half (7.5%) that of warships. Any ship with X pays the full 15% maintenance.

   Freighters and space stations are built using "weak hulls" (see 04.04.00)

   Conversion from freighter to warship is possible but the entire hull must be reinforced at a cost equal to the cost of the warship hull to which the ship is converted to minus 2 MC per HS. A BC conversion costs 7 MC

- 2 MC or 5 MC per hull space. Minimum cost is 1 MC per HS. FTs converted to warships count as new construction for crew quality purposes.

2. Carriers (including fighter carriers, jump carriers, and any other type of ship built on a carrier hull) may mount any type of system, but any offensive weapon system (see 26.02) costs double, including XO racks and tactical engines (J), because carriers are not designed to mount these systems. Carriers may mount V and @ systems at list price (see note 6) and standard effectiveness. XOg (gunboat racks) do not cost double.

   Carrier hulls may not mount any kinetic gun-series weapon other than the turret-mounted Ks types and Dk# series of kinetic interceptors (Dk# are NOT doubled in price).

3. CVB and CVA: Creating a hull of this size capable of "carrier speed" required breakthroughs in metallurgy and synthetic materials. Offensive weapon systems are triple price, point defense and XO racks are double price. All of the other costs, abilities, and restrictions of carrier hulls (2) apply.

4. Starships using Tactical Engines (J) have a turn mode one higher than the base turn mode for the ship. Advanced Maneuvering does work for (J) equipped ships.

5. Maintenance: The cost for maintaining a unit reflects both the hull size and the systems installed, and is based on a percentage of the total building cost for the unit (not adjusted for any manufacturing costs added in (15.09)). The costs for maintaining fighters and gunboats are in addition to the normal maintenance for the unit and are not affected by the Readiness State.

6. V cost 10 MC when mounted in Carrier hulls, 30 MC when mounted in anything else except freighters, for which the cost is 60MC. V must be mounted in groups of 6 except for 1 group which may be less. @costs 20 MC regardless of the hull type on which it is installed.

7. Fighter and GB maintenance: An empire must pay 1 MC per fighter for maintenance. Gunboats cost 1 MC each to maintain when based in XOg. These costs are not altered for the Readiness State of the unit. (In each case, it is best to just track the number of fighters and GB in the empire and pay the appropriate amount.)

29.00 Stars at War -- Revised Navies List

Stars at War, which may have come bound to this rulebook, contains ships designed under the old 3rd Edition hull table and rules. The ship list below lists the proper designs of those ships after all revisions and errata are considered. This information is available in electronic form though the SDS website. The electronic format contains additional lines of information that had to be removed from here due to space considerations.

29.01 Terran Federation Navy

CROMWELL-class SD   AM(2) 26 XO   130 HS   TL 9
[3] Sx13Ax14ZH(BbS)x2Q(IIII)RcFc(IIII)DM2QFcDi(IIII)DRc RcFc(IIII)FcRcMgMgLhQ DiFcFcXr?(CIC)D(IIII) [5/2]

CROMWELL-class SD   AM(2) 26 XO   130 HS   TL 9
[3] Sx13Ax14ZH(BbS)x2Q(IIII)RcFc(IIII)DM2QFcDi(IIII)DRc RcFc(IIII)FcRcMgMgLhQ DiFcFcXr?(CIC)D(IIII) [5/2]

CROMWELL-class SD   AM(2) 26 XO   130 HS   TL 9
[3] Sx13Ax14ZH(BbS)x2Q(IIII)RcFc(IIII)DM2QFcDi(IIII)DRc RcFc(IIII)FcRcMgMgLhQ DiFcFcXr?(CIC)D(IIII) [5/2]

CHURCHILL-class SD   AM(1)   130 HS   TL 7
[4] Sx21Ax21ZHQ(BbS)DWaP(BbS)(IIII)(IIII)M2PFDQ(IIII) (IIII)WaMgXrDPFFFD?(CIC)LhQDPF(IIII) [5/2]

CHURCHILL(r)-class SD   AM(1)   130 HS   TL 7
[4] Sx20Ax20ZHQO(BbS)OWaP(IIII)(IIII)M2PDQOF(IIII) (IIII)WaMgXrPFOOFOOFD?(CIC)LhQDPF(IIII) [5/2]

YPRES-class SD 26 XO   130 HS   TL 9
[5] Sx6AAAAHQQQLhQx6H(BbS)XrMgMgMgDiDi[Vx84] MgDi?LhQ(IcIcIcIc) [1/1]

THUNDERER-class BB   AM(2) 20 XO   100 HS   TL 8
[2] Sx12Ax10ZHWaD(BbL)(III)(III)WaWaWaMgMg(III)(III) DFcM2FcDDQ?(CIC)XrFcFcLh QD(III) [5/2]

THUNDERER(r)-class BB   AM(2) 20 XO   100 HS   TL 9
[2] Sx12Ax10ZHWaDi(BbL)(III)(III)WaWaWaMgMg(III) (III)DFcM2FcDiDQ?(CIC)XrFcFc LhQD(III) [5/2]

IRONSIDES-class BB   AM(1)   100 HS   TL 7
[3] Sx10Ax7ZHQO(BbS)(III)(III)WaMgOPFOM2(III)FPDXr WaOD(III)FDLhQWaMg?(CIC)DP FF(III) [5/2]

REVENGE-class BB   AM(1)   100 HS   TL 6

REVENGE(r)-class BB   AM(1)   100 HS   TL 7
[3] Sx18Ax6Z(BbS)HQO(BbS)OOWaWaMgF(III)ODWaMg FWa(III)(III)ODD(III)OXrLhQ?DWa MgFF(CIC)(III) [5/2]

INDEPENDENCE-class CV   AM(2) 17 XO   85 HS   TL 9
[1] Sx9Ax9ZHQ(BbS)QWaMgWaMgDi[Vx12](II)(III)(II)Wa XrDiQ[Vx12]Mg(III)(II)LhQ? Di(III) [6/3]

PRINCE OF WALES II-BC   (AC) AM(2) 16 XO   80 HS   TL 8
[2] Sx7Ax7Z(BbS)QHRcRcM2DRcMgXrDFc(II)(III)(II)(III) (II)LhQRcMgD?DFc(III) [6/3]

PRINCE OF WALES II(r)   (AC)AM(2) 16 XO   80 HS   TL 9
[2] Sx7Ax7Z(BbS)QHRcRcM2DiRcMgXrDFc(II)(III)(II)(III) (II)LhQRcMgDi?DFc(III) [6/3]

KING LOUIS-class BC   (AC) AM(1)   80 HS   TL 5
[3] Sx9Ax7Z(BbS)HQDRcRcRcMgRcXr(II)(III)(II)(III)(II)D FRcMgMgLh(CIC)QD(III) [6/3]

KING LOUIS(r)-class BC   (AC) AM(2) 16 XO   80 HS   TL 8
[2] Sx7Ax6Z(BbS)HQRcRcRc(II)(III)(II)(III)(II)DMgFcRc MgFcXrLhQD?(CIC)D(III) [6/3]

KING LOUIS(r2)-class BC   (AC) AM(2) 16 XO   80 HS   TL 9
[2] Sx7Ax6Z(BbS)HQRcRcRc(II)(III)(II)(III)(II)DiMgFcRc MgFcXrLhQDi?(CIC)Di(III) [6/3]

PRINCE OF WALES I-class BC   (AC) AM(1)   80 HS   TL 5
[3] Sx7Ax6ZH(BbS)QW(II)WXrP(III)WFD(II)WMgPF(III) (II)LhQPDF(CIC)(III) [6/3]

PRINCE OF WALES I(r)-class BC   (AC) AM(1)   80 HS   TL 7
[3] Sx6Ax6ZHQ(BbS)RcORc(II)(III)RcMgRcMgXr(II)OFD (III)(II)OFLhQF?D(CIC)(III) [6/3]

PEGASUS-class CVL   AM(2) 12 XO   60 HS   TL 9
[1] Sx7AAAAAZHQ(BbS)WaMgDiQ(II)(II)(II)WaMgXr [Vx12]Mg(II)Di(II)DiLhQ?(II) [6/3]

CHIHUAHUA-class CA   (AC) AM(2) 12 XO   60 HS   TL 8
[1] Sx6Ax6ZHQ(BbS)WaMgM1(II)(II)Wa(II)(II)DwaMgFc Xr(II)D?LhQFc(II) [6/3]

CHIHUAHUA(r)-class CA   (AC) AM(2) 12 XO   60 HS   TL 9
[1] Sx6Ax6ZHQ(BbS)WaMgM1(II)(II)Wa(II)(II)DiWaMgFc Xr(II)Di?LhQFc(II) [6/3]

GREECE-class CA   (AC) AM(1) 12 XO   60 HS   TL 8
[2] Sx7Ax6ZH(BbS)Q(II)Wa(II)DXr(II)WaMg(II)Fc(II)LhQ? (CIC)DFc(II) [6/3]

YUGOSLAVIA-class CA   (AC) AM(1)   60 HS   TL 7
[2] Sx7AAAZH(BbS)QO(II)OWa(II)ODXrP(II)WaWaMg(II) FO(II)LhQ?DF(II) [6/3]

OREGON-class CA   (AC) AM(1)   60 HS   TL 5
[2] Sx7Ax6ZHQ(BbS)Xr(II)(II)(II)M2WFD(II)(II)WMgPLhQ DF(CIC)(II) [6/3]

OREGON(r)-class CA   (AC) AM(1)   60 HS   TL 6
[2] Sx6AAAAAZH(BbS)QWaWaWaMgWaWaMgD(II)(II) (II)(II)(II)XrDWaWaMgDLhQ(II) [6/3]

ARGENTINA-class CA   (AC)   60 HS   TL 4
[3] Sx6AAAAAZH(BbS)QWF(II)(II)XrWF(II)(II)DWWMgF (II)DLhQC(II) [6/3]

QUEENSLAND-class CA   (AC)   60 HS   TL 3
[3] Sx6AAAAAH(II)Q(BbS)(II)XrWL(II)WL(II)D(II)DW MgLhQ(CIC)L(II) [6/3]

QUEENSLAND(r)-class CA   (AC)   60 HS   TL 3
[3] Sx6AAAAAZHQ(II)(BbS)(II)W(II)WLM2Xr(II)D(II)W WMgLhQ(CIC)DL(II) [6/3]

QUEENSLAND(r2)-class CA   (AC)   60 HS   TL 4
[3] Sx6AAAAAZHQ(II)(BbS)(II)W(II)WFM2Xr(II)D(II)WW MgLhQ(CIC)DF(II) [6/3]

NELSON II-class CL   (AC) AM(2) 9 XO   45 HS   TL 9
[1] Sx6Ax6ZH(BbS)WaWa(I)(II)WaMg(I)(II)DiWaMgXrD LhQ(I)(II) [6/3]

SEMMES-class CL   (AC) AM(1)   45 HS   TL 7
[2] Sx6AAAAZH(BbS)WaWa(I)Wa(II)O(I)(II)WaMgXr(I)F DLhQ(II) [6/3]

GOTO-class CL   (AC) AM(1) 9 XO   45 HS   TL 8
[2] Sx6AAAAZH(BbS)WaWa(I)(II)(I)(II)DWaMgXr(I)FcD LhQ(II) [6/3]

GOTO(r)-class CL   (AC) AM(1) 9 XO   45 HS   TL 9
[2] Sx6AAAAZH(BbS)WaWa(I)(II)(I)(II)DiWaMgXr(I)FcDi LhQ(II) [6/3]

RODNEY-class CL   (AC)   45 HS   TL 4
[3] SSSSSAAAAZH(BbS)WWW(I)(II)WWMg(I)(II)(I)WMg DCLhQ(II) [6/3]

COLLINGWOOD-class CL   (AC) AM(1)   45 HS   TL 6
[2] Sx6AAAAAZH(BbS)WaWa(I)(II)(I)FM2(II)(I)WaMgFLh QD(II) [6/3]

SPRUANCE-class CL   (AC) AM(1)   45 HS   TL 5
[2] SSSSAAAAZH(BbS)WWWWMgM2(I)(II)Xr(I)(II)(I)FD DLhQ(II) [6/3]

NELSON-class CL   (AC)   45 HS   TL 3
[3] Sx6AAAAAHWW(BbS)(I)(II)M2L(I)(II)WMgLLhQD(I) (II) [6/3]

COMET-class CL   (AC) AM(2) 9 XO   45 HS   TL 9
[1] SSSSSAAAAAZH(BbS)(I)(II)DDiD(I)Xr(II)M2DiWaWa Mg(I)LhQDiD(II) [6/3]

VIKING-class DD   (AC) AM(2) 6 XO   30 HS   TL 9
[1] SSSSAAZHQsDiDiDiXrDiDi(I)(I)(I)(I)(I)(I)QsDi(I) [7/3]

GUDERIAN II-class DD	(AC) AM(1)	30 HS	TL 6
[2] SSSAAZHD(I)(I)(I)Wa(I)Qs(I)WaMg(I)QsDF(I) [7/3]			

GUDERIAN II(r)-class DD	(AC) AM(2) 6 XO	30 HS	TL 9
[1] SSSAAZHDi(I)(I)Qs(I)Wa(I)(I)WaMg(I)QsDL(I) [7/3]			

FORREST-class DD	(AC) AM(1) 6 XO	30 HS	TL 6
[2] SSAAZH(I)(I)Qs(I)Wa(I)(I)WaWaMg(I)QsDF(I) [7/3]			

FORREST(r)-class DD	(AC) AM(1) 6 XO	30 HS	TL 7
[2] SSSAAZH(I)(I)Qs(I)Wa(I)(I)OWaMg(I)QsODF(I) [7/3]			

FORREST(r2)-class DD	(AC) AM(1) 6 XO	30 HS	TL 9
[2] SSSAAZH(I)(I)Qs(I)Wa(I)(I)WaMg(I)QsDiDiF(I) [7/3]			

CORNWALLIS-class DD	(AC) AM(1)	30 HS	TL 5
[2] SSAZH(I)(I)(I)Qs(I)W(I)(I)WMgFDQsF(I) [7/3]			

SCIPIO-class DD	(AC) AM(1)	30 HS	TL 5
[2] SSAAZHQs(I)(I)(I)(I)(I)F(I)FQsDDF(I) [7/3]			

ROMMEL-class DD	(AC)	30 HS	TL 4
[3] SSAAZXrHQs(I)(I)(I)(I)WMg(I)QsFDF(I)(I) [7/3]			

BRAZWELL-class DD	(AC)	30 HS	TL 2
[3] SSSSAAAH(I)WW(I)(I)(I)(I)WWMgLhQ(I)(I) [7/3]			

BRAZWELL(r)-class DD	(AC)	30 HS	TL 3
[3] SSSAAH(I)WW(I)(I)(I)(I)WWMgDLhQ(I)(I) [7/3]			

NAPOLEON-class DD	(AC)	30 HS	TL 2
[3] SSSSSAAAH(I)W(I)LM1(I)(I)(I)WMgLhQ(I)(I) [7/3]			

DISCOVERY-class FG	(AC)	20 HS	TL 1
[2] SSAA(I)HL(I)(I)RMgQsX(I)(I) [7/3]			

DISCOVERY(r)-class FG	(AC)	20 HS	TL 3
[2] SSSAAZHL(I)(I)WMgQs(I)(I)(I) [7/3]			

OUTREACH-class FG	(AC)	20 HS	TL 1
[2] SSAAHX(I)(I)GRMgX(I)(I)Qs(I) [7/3]			

OUTREACH(rHT2)-class FG	(AC)	20 HS	TL 2
[2] SSSAAH(I)(I)WWMgX(I)(I)Qs(I) [7/3]			

OUTREACH(rHT3)-class FG	(AC)	20 HS	TL 3
[2] SSAAH(I)(I)WMgXrDX(I)(I)Qs(I) [7/3]			

OUTREACH(rHT6)-class FG	(AC) AM(1)	20 HS	TL 6
[1] SSAAZH(I)(I)WaMgXr(I)(I)QsDX(I) [7/3]			

NEW YORK-class CT	(AC) AM(1)	16 HS	TL 6
[1] SAZH(I)(I)(I)WaMgQsP(I) [8/4]			

NEW YORK(SCr)-class CT	(AC) AM(1)	16 HS	TL 6
[1] SZH(I)(I)Xr(I)WaMgQsDX(I) [8/4]			

NEW YORK(SCr2)-class CT	(AC) AM(1)	16 HS	TL 6
[1] SZHXr(Ic)WaMgDQsX(Ic) [4/4]			

FALCON-class ES		12 HS	TL 1
[1] H(I)(I)QsRRMg(I) [8/4]			

TIGRIS-class ES	AM(1)	12 HS	TL 5
[1] SSAZH(I)(I)(I)QsP [8/4]			

| HERCULES-class BC | (AC) | 80 HS | TL 5 |

[4] SSSAAHQ(BbS)(Ic#21)DTT(IcIc)(IcIcIc)LhQD(IcIc) (IcIcIc) [4/4]

| HERCULES(r)-class BC | (AC) | 80 HS | TL 7 |

[4] SSSSAAAHQ(BbS)(Ic#20)DTiTi(IcIc)(IcIcIc)LhQD(IcIc) (IcIcIc) [4/4]

| HERCULES(r2)-class BC | (AC) 16 XO | 80 HS | TL 9 |

[4] SSSSSHQ(BbS)(Ic#20)DiTiTi(IcIc)(IcIcIc)LhQDiD(IcIc) (IcIcIc) [4/4]

| MOON-class FT2 | | 16 HS | TL 1 |

[2] HHHHH(Ic)HHHHHQsH(Ic) [4/4]

| FRANC-class FT4 | | 30 HS | TL 3 |

[3] HHHHH(Ic)HHHH(Ic)HHHH(Ic)HHHHHDLhQ(Ic) [4/4]

| SINGAPORE-class FT6 | | 60 HS | TL 3 |

[3] SSAAHHHBHHBHHBHHBHHH(IcIc)(BbL)HHHHH(IcIc) Hx8(IcIc)HHHHDQLh(IcIc) [4/4]

| DULL KNIFE-class CA | | 60 HS | TL 3 |

[3] Sx7Ax6H(BbL)x2(IcIc)QQ(IcIc)QQ(IcIc)QXrQDQLhQQ LhQQQDDLhQ(IcIc) [4/4]

| KRUPP-class FT9 | | 130 HS | TL 9 |

[5] Sx9QH(BbS)HQDTiXr(IcIcIcIc)(IcIcIcIc)DiQLhQC (SY9)(IcIcIcIc) [3/3]

| ICN BS1c-class BS0 | | 15 HS | TL 3 |

[0] H(BbS)XXrDDQs(CC) [0/0]

29.02 Ophiuchi Association Defense Command

| AL-MONTAUSUR-class SD | | 130 HS | TL 7 |

[5] Sx24Ax10Z(BbS)(IIII)QWOEP(IIII)WMgODEP(IIII)QH O(BbS)XrWMgEPD(IIII)EPOEPO OEDLhQ(IIII) [5/2]

| AL-MONTAUSUR(r)-class SD | AM(1) | 130 HS | TL 7 |

[4] Sx19Ax10Z(BbS)(IIII)QORc(IIII)RcMgO(IIII)(BbS)QHO (BbS)RcRcMgXrED(IIII)EP OEPOD(CIC)FOEFD?LhQ(IIII) [5/2]

| AL-MONTAUSUR(r2)-class SD | AM(2) 26 XO | 130 HS | TL 9 |

[3] Sx20Ax10Z(BbS)(IIII)Q(IIII)RcMgH(IIII)RcRcM2DiFc RcMgD(IIII)FcDiFcFcLhQQFcFcXrD(CIC)?(IIII) [5/2]

| AL-ASFAR-class BB | | 100 HS | TL 7 |

[4] Sx12Ax6Z(BbS)WOW(III)PW(III)HQOWED(III)PWW Mg(III)WWDEOWMgLhQPDE(III) [5/2]

| AL-ASFAR(r)-class BB | AM(1) | 100 HS | TL 7 |

[3] Sx10Ax6ZWa(BbS)(III)EWa(III)HQOWaMgED(III)WaWa MgXr(III)WaWaDEOWaMgDLhQ?E DE(CIC)(III) [5/2]

| AL-ASFAR(r2)-class BB | AM(2) 20 XO | 100 HS | TL 9 |

[2] Sx11Ax6Z(BbS)WaWa(III)Wa(III)HQWa(III)DiWaMgDi (III)WaWaFcDiFcWaMgFcDLhQFcXr?D(III) [5/2]

| ZIRK-ASHON-class CV | AM(2) 17 XO | 85 HS | TL 9 |

[1] Sx9Ax8ZH(BbS)QQDi[Vx18]Mg(II)(III)(II)[Vx18]Q(III) (II)MgDiQ?LhQDi(III) [6/3]

| AL-NIMMER-class BC | (AC) | 80 HS | TL 7 |

[4] Sx8AAAAAZ(BbS)W(II)HQWPE(III)OWMgE(II)(III)(II) OPFLhQOPEDF(III) [6/3]

| AL-NIMMER(r)-class BC | (AC) AM(1) | 80 HS | TL 7 |

[3] Sx7AAAAZ(BbS)Wa(II)HQWaE(III)OWaMgEO(II)(III) (II)DOEFLhQOFEXr?DF(III) [6/3]

| AL-TARIF-class BC | AM(1) | 80 HS | TL 7 |

[3] Sx10AAAAZRcRcMg(BbS)HQDRcRcED(II)(III)(II)(III) (II)RcMgXrDLhQ?DE(III) [6/3]

| AL-TARIF(r)-class BC | (AC) AM(2) 16 XO | 80 HS | TL 9 |

[2] Sx11AAAAZRc(BbS)HQDRc(II)(III)(II)(III)(II)RcDMgDi RcMgXrLhQDiDFc?(CIC)(III) [6/3]

ZIRK-HOLMAN-class CVL   (AC) AM(2) 12 XO   60 HS   TL 9
[1] Sx6AAAAAZ(BbS)QHQ(II)(II)(II)(II)(II)QDi[Vx24]Mg? DiLhQ(II) [6/3]

AL -SA'IF-class CA   (AC)   60 HS   TL 7
[3] Sx8AAAAZ(BbS)QHWWWEWWOEOWWMgDLhQC(II) (II)(II)(II) [4/2]

AL -SA'IF(r)-class CA   (AC) AM(1)   60 HS   TL 7
[2] Sx8AAAAZ(BbS)QH(II)WaWaEWaO(II)ODOWaMgEO? DLhQC(II)(II)(II)(II) [6/3]

AL -SA'IF(r2)-class CA   (AC) AM(2) 12 XO   60 HS   TL 9
[1] Sx6AAAAZ(BbS)QHDi(II)WaWaMg(II)DwaWaMgFc LhQ(II)(II)(II)?DFc(II) [6/3]

AL-HOSSAM-class CL   (AC)   45 HS   TL 7
[3] Sx7AAAAAZH(BbS)(I)EWWOWMgEOLhQCD(II)(I) (II) [4/2]

AL-HOSSAD-class CL   (AC) AM(1)   45 HS   TL 6
[2] Sx6AAAAAZH(BbS)(I)EWaWa(II)(I)WaMgELhQCD(II) (I)(II) [6/3]

AL-HOSSAD(r)-class CL   (AC) AM(2) 9 XO   45 HS   TL 9
[1] SSSSSAAAAAZH(BbS)(I)DiWaWaDi(II)(I)WaMgFXrLh QD(II)(I)(II) [6/3]

AL-AMIR-class DD   (AC)   30 HS   TL 6
[3] SSSSSAAZHQs(I)E(I)CQsEED(I)(I)(I) [5/2]

AL-AMIR(r)-class DD   (AC) AM(1)   30 HS   TL 6
[2] SSSAZHQs(I)(I)E(I)(I)QsEEDXr(I)(I)(I) [7/3]

AL-AMIR(r2)-class DD   (AC) AM(2) 6 XO   30 HS   TL 9
[1] SSAAZHQs(I)(I)Di(I)Di(I)QsEEXrD(I)(I)(I) [7/3]

AL-ZAQR-class FG   (AC) AM(2) 4 XO   20 HS   TL 9
[1] SSSAAZHDiDi(I)(I)(I)Di(I)QsDi(I) [7/3]

AL -A'SAFEH-class FG   (AC)   20 HS   TL 6
[2] SSSAAZHWMg(I)(I)EQs(I)(I)(I) [7/3]

AL -A'SAFEH(r)-class FG   (AC) AM(1)   20 HS   TL 6
[1] SSAZHWaMg(I)(I)(I)DQsE(I)(I) [7/3]

AL -A'SAFEH(r2)-class FG   (AC) AM(2) 4 XO   20 HS   TL 8
[1] SSAAZH(I)(I)Wa(I)(I)QsDWaMg(I) [7/3]

AL-SAHEM-class CT   (AC)   16 HS   TL 6
[2] SSAAHQs(I)WMgE(I) [4/2]

AL-PARIZH-class CT   (AC) AM(1)   16 HS   TL 6
[1] SAZHQs(I)(I)DWaWaMg(I) [6/3]

AL-MAJHED-class ES   (AC)   12 HS   TL 6
[2] SH(I)QsDE(I)(I) [8/4]

AL-MAJHED(r)-class ES   (AC) AM(1)   12 HS   TL 6
[1] SZHQs(I)(I)DWaMg(I) [8/4]

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RAZUMOND-class SD   130 HS   TL 7
[5] Sx25Ax12Z(BbS)WFWL(IIII)WFPDLPTM2QWMgD (IIII)HQXrLPFT(CIC)CD(IIII)LhQ(IIII)(IIII) [5/2]

KRUZAKOR-class SD   AM(1)   130 HS   TL 7
[4] Sx17Ax17Z(BbS)WaHDMgQFP(IIII)WaPD(IIII)QWaMg FP(IIII)FP(IIII)FPXrD(CIC)CD FPQLh(IIII) [5/2]

PORGHOZ-class SD   AM(1)   130 HS   TL 7
[4] Sx24Ax12Z(BbS)WaF(IIII)WaPEDPFTM2QWaMgD(IIII) HQXrPEEFTOOOO(CIC)(IIII)DCLhQ(IIII)(IIII) [5/2]

RAZUMOND II-class SD   AM(1)   130 HS   TL 7
[4] Sx22Ax11Z(BbS)TTFWa(IIII)FWaP(IIII)FWaPM2QFWa WaMgMgP(IIII)HQXrDFFD(CIC)C DLhQ(IIII)(IIII) [5/2]

RAZUMOND II(r)-class SD   AM(1) 26 XO   130 HS   TL 7
[4] Sx19Ax9Z(BbS)TTFWa(IIII-It)FWaP(IIII-It)FWaPM2QF WaWaMgMgP(IIII-It)HQXrDF FD(CIC)CDLhQ(IIII-It) (IIII-It) [6/2]

PORGHOZ II(r+n)-class SD   AM(1)   130 HS   TL 7
[4] Sx18Ax18Z(BbS)WaFWaFWaF(IIII)FWaMgMg(IIII)M2 QFFF(IIII)HQXrFFFDD(CIC)CDLh Q(IIII)(IIII) [5/2]

CHUMALZCHR II(r)-class SD   AM(1) 26 XO   130 HS   TL 7
[4] Sx16Ax15Z(BbS)WaFWaFWaF(IIII-It)FWaMgMg(IIII-It) M2QFFF(IIII-It)HQXrFFFDD (CIC)CDLhQ(IIII-It)(IIII-It) [6/2]

CHUMALZCHR II(r2)-class SD   AM(2) 26 XO   130 HS   TL 8
[3] Sx16Ax16Z(BbS)TWaWaWa(IIII)WaMgMg(IIII)M2QFc FcFc(IIII)HQXrFcx4DD(CIC)?DLhQ(IIII)(IIII) [5/2]

CHUMALZCHR III-class SD   AM(2) 26 XO   130 HS   TL 9
[3] Sx16Ax15Z(BbS)WaWaWa(IIII)WaWaMg(IIII)M2Q FcFcDi(IIII)HQFcDiFcFcDiFcXrDD(CIC)C?DLhQ(IIII) (IIII) [5/2]

SHARNO-class SD 26 XO   130 HS   TL 9
[5] Sx7AAAQQQHLhQx6H(BbS)XrMgMgMgDiDi[Vx84] MgDi?LhQ(IcIcIcIc) [1/1]

KALBACUN-class BB   100 HS   TL 6
[4] Sx16Ax14Z(BbS)(III)FFP(III)TM2PFPD(III)HQXrDTFP (CIC)CDLhQ(III)(III) [5/2]

JOLOCHOI-class BB   100 HS   TL 6
[4] Sx12Ax9Z(BbS)W(III)PD(III)WWWM3WWPD(III)HQXr DWWWWWMgMg(CIC)CDLhQ(III)(III) [5/2]

PHOL-class BB   AM(1)   100 HS   TL 6
[3] Sx11Ax10Z(BbS)(III)FDWaWaMgWaWaMgFM3(III) (III)HQXrDFWaWaWaMgDFF(CIC)DLhQ (III)(III) [5/2]

FILKHAB-class BB   AM(1)   100 HS   TL 7
[3] Sx10Ax10Z(BbS)Wa(III)PD(III)WaWaM3WaPF(III)HQ XrDPWaWaWaMgMgOOOO(CIC)DFLh Q(III)(III) [5/2]

FILKHAB(r2)-class BB   AM(1)   100 HS   TL 9
[3] Sx11Ax10Z(BbS)WaWa(III)FcDi(III)WaWaM3WaFc(III) HQXrDiFcWaWaWaMgMg(CIC)Di DiLhQ(III)(III) [5/2]

KALBACUN II-class BB   (AC) AM(1)   100 HS   TL 6
[3] Sx12Ax10Z(BbS)TTT(III)FP(III)FPM1HQXrFPD(III)FP DF(CIC)CDDLhQ(III)(III) [5/2]

KALBACUN II(r)-class BB   AM(1) 20 XO   100 HS   TL 7
[3] Sx11Ax10Z(BbS)TT(III-It)FP(III-It)FPM1HQXrFPD(III-It)FPDF(CIC)CDLhQ(III-It)(III-It) [6/2]

JOLOCHOI II-class BB   AM(1)   100 HS   TL 6
[3] Sx12Ax10Z(BbS)RcRcRc(III)M3RcRcRc(III)RcRc(III)H QXrDDMgMg(CIC)CDDLhQ(III)(III) [5/2]

JOLOCHOI II(r)-class BB   AM(1) 20 XO   100 HS   TL 7
[3] Sx12Ax10Z(BbS)RcRcRc(III-It)RcRcM3(III-It)RcRc(III-It)HQMgMgXrDD(CIC)CDD LhQ(III-It)(III-It) [6/2]

TRASKON-class BB   (AC) AM(2) 20 XO   100 HS   TL 8
[2] Sx10Ax9Z(BbS)WaWaWa(III)WaWaMgMgM2(III)PcD Pc(III)HQXrFcFcFc(CIC)?DDLhq(III)(III) [5/2]

TRASKON(r)-class BB   (AC) AM(2) 20 XO   100 HS   TL 9
[2] Sx11Ax10Z(BbS)WaWa(III)WaWaMgDi(III)M2PcDiPc (III)HQFcDFcFcXr(CIC)?DLhQ(III)(III) [5/2]

SINEKUR-class CV   (AC) AM(2) 17 XO   85 HS   TL 9
[1] Sx9Ax10Z(BbS)WaMgQQsDi(II)(III)(II)(III)Di[Vx30]Mg HQQQ?DLhQ(II)(III) [6/3]

PROKALHON-class BC   (AC) AM(2) 16 XO   80 HS   TL 8
[2] Sx10Ax6Z(BbS)Wa(II)(III)WaWaMgPcFc(II)M2HQXr Qs[Vx6]MgFcD(III)?DLhQ(II)(III) [6/3]

VALKHA-class BC   (AC)   80 HS   TL 5
[4] Sx6AAAAAZ(BbS)L(II)WW(III)FPWTD(II)M2HQXrDF PWMg(CIC)CD(III)LhQ(II)(III) [6/3]

ORDIANUM-class BC   AM(1)   80 HS   TL 6
[3] Sx6AAAAZ(BbS)F(II)WaWa(III)FPWaWaD(II)M2HQXr DFPWaMg(CIC)CD(III)LhQ(II)(III) [6/3]

PARZH-class BC   (AC) AM(1)   80 HS   TL 6
[3] Sx6AAAAAZ(BbS)FWaP(II)TDPWa(III)M2DWa(II)H WaQXrFPWaMgMgCD(III)LhQ(II)(III) [6/3]

PARZH(r)-class BC   (AC) AM(1)   80 HS   TL 7
[3] SSSSSAAAAAZ(BbS)FWaE(II)TDPWa(III)M2DWa(II)H QXrFPWaMgMgOOOOCD(III)LhQ(II)(III) [6/3]

PARZH II-class BC   (AC) AM(1)   80 HS   TL 6
[3] SSSSSAAAAAZ(BbS)WaWaWaMg(II)F(III)FPE(II)EP M2HQXrFED(III)CDLhQ(II)(III) [6/3]

PARZH II(r)-class BC   (AC) AM(1) 16 XO   80 HS   TL 7
[3] Sx6AAAAAZ(BbS)WaWaMg(II-It)F(III-It)FP(II-It)EPM2 HQXrFED(III-It)CDLhQ(II-It)(III-It) [7/3]

PARZH II(r2)-class BC   (AC) AM(1) 16 XO   80 HS   TL 8
[3] Sx6Ax6Z(BbS)WaWaMg(II)Fc(III)FcP(II)PM2HQXrFc FcD(III)CD?LhQ(II)(III) [6/3]

ISHKAR-class BC   (AC) AM(1)   80 HS   TL 5
[3] Sx8Ax7Z(BbS)Rcx7MgMg(II)(III)HQXrD(II)(III)DDLh Q(II)(III) [6/3]

ISHKAR(r)-class BC   (AC) AM(1) 16 XO   80 HS   TL 7
[3] Sx6AAAZ(BbS)Rcx7MgMg(II-It)(III-It)HQXrD(II-It) (III-It)DDLhQ(II-It)(III-It) [7/3]

ISHKAR(r2)-class BC   (AC) AM(1) 16 XO   80 HS   TL 9
[3] Sx8Ax7Z(BbS)Rcx7MgMg(II)(III)HQXrDi(II)(III)DiDi LhQ(II)(III) [6/3]

LITTNIEK-class BC   (AC) AM(2) 16 XO   80 HS   TL 8
[2] Sx8Ax7Z(BbS)WaWaWaMgMg(II)HQM2FcDPFc(III) (II)XrLhQPFc?D(III)(II)(III) [6/3]

LITTNIEK(r)-class BC   (AC) AM(2) 16 XO   80 HS   TL 9
[2] Sx7Ax7Z(BbS)WaWaMg(II)WaWaMg(III)HQM2DiFcDi Fc(II)XrLhQFc?D(CIC)(III)(II) (III) [6/3]

KHYNTRE-class CVL   AM(2) 12 XO   60 HS   TL 9
[1] Sx7AAAAAZWaMg(II)(II)Di(II)(BbS)QQMg[Vx18]Mg HQ(II)?DiLhQ(II)(II) [6/3]

DELGOR-class CA   (AC)   60 HS   TL 4
[3] Sx9AAAAAZ(BbS)W(II)L(II)LM1HQTXrLWMgCD(II) LhQ(CIC)(II)(II) [5/2]

KALAKZON-class CA   (AC)   60 HS   TL 5
[3] Sx9Ax6Z(BbS)W(II)PW(II)FM1HQTXrFWMgDC(II)Lh Q(II)(II) [5/2]

AMALRAE-class CA   (AC) AM(1)   60 HS   TL 6
[2] Sx8AAAAAZ(BbS)Wa(II)FWa(II)LM1HQTXrDFWa MgCD(II)LhQ(II)(II) [5/2]

AMALRAE(r)-class CA   (AC) AM(1)   60 HS   TL 6
[2] Sx10AAAAAZ(BbS)Wa(II)FWa(II)EM1HQXrDFWaMg CD(II)LhQ(II)(II) [5/2]

FIBUR-class CA   (AC) AM(1)   60 HS   TL 7
[2] Sx7AAZ(BbS)WaE(II)WaM2TEWaMg(II)HQXrFPOOC D(II)LhQ(II)(II) [5/2]

FIBOR-class CA   (AC) AM(2) 12 XO   60 HS   TL 8
[1] Sx8Ax7Z(BbS)Wa(II)WaM2FWaMg(II)HQXrDFFD?(II) LhQ(II)(II) [5/2]

AMALRAE II-class CA   (AC) AM(1)   60 HS   TL 6
[2] Sx6Ax6Z(BbS)WaWa(II)WaWaM1WaWaMgMgHQXr(II) (II)FD(II)DLhQ(II)(II) [6/3]

AMALRAE II(r)-class CA   (AC) AM(1) 12 XO   60 HS   TL 7
[2] SSSSSAAAAAZ(BbS)WaWa(II-It)M1WaWaWaMgHQ Xr(II-It)(II-It)FD(II-It)DLhQ(II-It) (II-It) [7/3]

SOMUK-class CA   (AC) AM(1) 12 XO   60 HS   TL 7
[2] SSSSSAAAAAZ(BbS)Wa(II-It)WaWaWaMgM1HQXr(II-It) (II-It)FD(II-It)FDLhQ(II-It)(II-It) [7/3]

FIBUR/FIBOR(r)-class CA   (AC) AM(2) 12 XO   60 HS   TL 9
[1] Sx6Ax6Z(BbS)Wax4MgM2(II)(II)HQXr(II)Di(II)DiFF? DLhQ(II)(II) [6/3]

KARHAE-class CL   (AC)   45 HS   TL 2
[3] Sx6AAAAA(BbS)GG(I)LR(II)RMgH(CIC)(I)(II)LhQ(I) (II) [6/3]

TALRAE-class CL   (AC)   45 HS   TL 3
[3] Sx7AAAAAZ(BbS)(I)WWT(II)HXrLWMgD(I)(II)LhQ(I) (II) [6/3]

REHFRAK-class CL   (AC)   45 HS   TL 4
[3] SSSSSAAAAAZ(BbS)WWMg(I)TL(II)HXrFCD(I)(II)Lh Q(I)(II) [6/3]

RADO-class CL   (AC) AM(1)   45 HS   TL 6
[2] SSSSAAAZ(BbS)Wax4(I)WaM2Wa(II)HxrWaMgMgD LhQ(I)(II) [4/2]

GHARBAHG II-class CL   (AC) AM(1)   45 HS   TL 6
[2] SSSSAAAZ(BbS)WaWaMg(I)F(II)HXrFFD(I)(II)LhQD(I) (II) [6/3]

ONTHY II-class CL   (AC) AM(1)   45 HS   TL 6
[2] SSSSAAAAZ(BbS)WaWaWa(I)WaWa(II)WaWaMgH(I) (II)DLhQ(I)(II) [6/3]

ONTHY II(r)-class CL   (AC) AM(1) 9 XO   45 HS   TL 7
[2] SSSSAAAZ(BbS)(I-It)WaWaWa(II-It)WaWaMgMgH(I-It)(II-It)DLhQ(I-It)(II-It) [7/3]

RADO II-class CL   (AC) AM(2) 9 XO   45 HS   TL 9
[1] SSSSAAAZ(BbS)WaWaWaMg(I)(II)F(I)L(II)HXrDiD?Lh Q(I)(II) [6/3]

TOLCHOI-class DD   30 HS   TL 3
[3] SSSAAZL(I)(I)M1HXrWMgLD(I)LhQ(I)(I) [5/2]

BOLCHOI-class DD   (AC)   30 HS   TL 4
[3] SSSAAZ(I)FM1HXrWMgLD(I)(I)LhQ(I)(I) [5/2]

TALCRED-class DD   (AC)   30 HS   TL 4
[3] SSSAAZ(I)W(I)QsHXrFWMg(I)(I)DQs(I)(I)(I) [7/3]

BOLCHO-class DD   (AC) AM(1)   30 HS   TL 6
[2] SSSSAAZ(I)WaQsWaWaMgHLD(I)(I)Qs(I)(I) [5/2]

IBHON-class DD   (AC) AM(1)   30 HS   TL 6
[2] SSAZ(I)FQsWa(I)WaWaMgHPDQs(I)(I) [4/2]

TLACH-class DD   (AC)   30 HS   TL 4
[3] SSAAZH(BbS)(I)Qs(I)(I)DWMg(I)(I)FXrD(I)QsX(I) [7/3]

TLACH(r)-class DD   (AC) 6 XO   30 HS   TL 6
[3] SSAAZH(BbS)(I)Qs(I)(I)DWaMg(I)(I)FXrD(I)QsX(I) [7/3]

TLACH(r2)-class DD   (AC) AM(2) 6 XO   30 HS   TL 9
[1] SSAZH(BbS)(I)Qs(I)(I)DiWaMg(I)(I)DiFXrD(I)Qs(I) [7/3]

TRAISUK II-class DD   (AC) AM(1)   30 HS   TL 6
[2] SSAAZ(I)(I)F(I)QsWaMg(I)F(I)HXrDQs(I)(I) [7/3]

TRAISUK II(r)-class DD   (AC) AM(2) 6 XO   30 HS   TL 8
[1] SSAAZ(I)(I)(I)QsWaMg(I)FF(I)HXrDQs(I)(I) [7/3]

IBHON II-class DD   AM(2) 6 XO   30 HS   TL 8
[1] SSAZ(I)WaMgQs(I)F(I)(I)L(I)HXr?DQs(I)(I) [7/3]

RAKAN-class DD   (AC) AM(2) 6 XO   30 HS   TL 9
[1] SSAZQs(I)(I)(I)(I)F(I)HDiFF?XrQs(I)(I) [7/3]

TILKUR-class FG   (AC)   20 HS   TL 4
[2] SSAZ(I)(I)(I)WMgH(I)QsDF(I) [7/3]

SY-class FG   (AC) AM(1) 4 XO   20 HS   TL 6
[1] SAZ(I)WaMg(I)HL(I)FQs(I) [6/3]

U-class CT	(AC) AM(1)	16 HS	TL 6

[1] SAZ(I)(I)HWaWaMgDQs(I) [6/3]

TALRON-class ES		12 HS	TL 1

[2] H(I)(I)GRMgQs(I) [8/4]

MOZLIR-class ES		12 HS	TL 3

[2] AZH(I)WWMgQs(I) [6/3]

MOZLIR(r)-class ES	AM(1)	12 HS	TL 6

[1] AZHD(I)WaMgQs(I)(I) [8/4]

X-class ES	(AC) AM(1)	12 HS	TL 5

[1] AZH(I)QsDF(I)(I) [8/4]

TALZAR-class CA	(AC)	59 HS	TL 3

[3] (BbS)HQ(Ic#16)TT(IcIc)(IcIc)(IcIc)TLhQ(IcIc) [4/4]

TALZAR(r)-class CA	(AC) 11 XO	59 HS	TL 7

[3] Z(BbS)HQ(Ic#16)TiTi(IcIc)(IcIc)(IcIc)DLhQ(IcIc) [4/4]

KHARBANAK-class FT8	10 XO	100 HS	TL 9

[4] Sx10(BbL)HHBHHHBHHHHBHHH(IcIcIc)DHHBHHHHB HHQHHHBHDiH(IcIcIc)HDiHHBHHHHHBHHHHBHHH HH-BHHHLhHQHDH(IcIcIc) [3/3]

LORMAKA-class FT8	10 XO	100 HS	TL 9

[4] Sx7AAAAA(BbL)x2H(IcIcIc)HQQQQQLhQQQQQLhDi QQQQQLhDi(IcIcIc)QQQQQLhQQQQQLhQQQQQLh QQQQQLh-DQQQQQLhQQQQQLhQD(IcIcIc) [3/3]

SHILARO-class FT11		200 HS	TL 11

[6] H(BbS)HQHQQDiQDi(IcIcIcIcIcIc)(SY8)x2DiQLh (IcIcIcIcIcIc) [2/2]

ICN BS1c-class BS1	5 XO	25 HS	TL 3

[0] SSSSSAAAAAH(BbS)XrDLhQD(CC) [0/0]

29.04 Imperial Gorm Space Navy

NORZ-class SD	AM(1) 26 XO	130 HS	TL 7

[4] Sx12Ax12ZHQRc(BbS)QRc(BbS)RcRcRcMgMg(IIII-It) (IIII-It)MgRcRcMgRcDM3(IIII-It)(IIII-It)RcRcDRcMg MgXrDD?DLh-Q(CIC)(IIII-It) [6/2]

NORZ(r)-class SD	AM(2) 26 XO	130 HS	TL 9

[3] Sx12Ax12ZHQ(BbS)RcQRcRcRcMgDiH(BbS)(IIII-It) (IIII-It)DiRcRcMgDiM3(IIII-It)(IIII-It)RcRcDiDRcMgMg XrDD?DLh-Q(CIC)(IIII-It) [6/2]

GORMUS-class SD	AM(1) 26 XO	130 HS	TL 7

[4] Sx10Ax10ZHRcQFQHF(IIII-It)(BbS)FM3F(IIII-It)RcMg FXrRcF(IIII-It)RcDMg(IIII-It)FFFDDF?DLhQ(CIC)(IIII-It) [6/2]

GORMUS(r3)-class SD	AM(2) 26 XO	130 HS	TL 9

[3] Sx10Ax10ZH(BbS)Q(IIII-It)RcQM3Fc(IIII-It)RcMgDi RcFc(IIII-It)DiRcRcMg(IIII-It)DiFcFcFcDDFcXr?DLhQ (IIII-It) [6/2]

MORG-class BB	(AC) AM(1) 20 XO	100 HS	TL 7

[3] Sx10Ax9ZH(BbS)QWFP(III-It)WFP(III-It)M3WMgXrFP(III-It)(III-It)DFFD?FDLhQ (III-It) [6/2]

MORG(r)-class BB	(AC) AM(1) 20 XO	100 HS	TL 7

[3] Sx10Ax9ZH(BbS)QWaFP(III-It)WaFP(III-It)M3WaMgXrFP(III-It)(III-It)DFFD?FD LhQ(III-It) [6/2]

MORG(rw3)-class BB	(AC) AM(2) 20 XO	100 HS	TL 9

[2] Sx11Ax10ZH(BbS)Q(III-It)WaFc(III-It)M3DiWaWaMgFc (III-It)Di(III-It)DFcFcD ?FcXrDLhQ(III-It) [6/2]

BOLZUCHA-class BC	(AC) AM(1) 16 XO	80 HS	TL 7

[3] Sx6AAAAZH(BbS)RcQMgRcRcRc(II-It)RcMg(III-It)Rc MgXr(II-It)(III-It)(II-It) D?DLhQ(CIC)(III-It) [7/3]

BOLZUCHA(rw3)-class BC   (AC) AM(2) 16 XO   80 HS   TL 9
[2] Sx7AAAAAZH(BbS)RcQRcRcDiRcMg(II-It)(III-It)RcMg Xr(II-It)(III-It)(II-It)D Di?DLhQ(CIC)(III-It) [7/3]

BOLZOIL-class BC   (AC) AM(1) 16 XO   80 HS   TL 7
[3] Sx8Ax6ZH(BbS)QW(II-It)(III-It)WMgF(II-It)XrF(III-It)F (II-It)DFF?DLhQ(CIC)D(III-It) [7/3]

BOLZOIL(r)-class BC   (AC) AM(1) 16 XO   80 HS   TL 7
[3] Sx7Ax6ZH(BbS)QWa(II-It)WaWaWaMg(III-It)WaWaMg (II-It)XrF(III-It)(II-It)DF F?DLhQD(III-It) [7/3]

BOLZOIL(rw3)-class BC   (AC) AM(2) 16 XO   80 HS   TL 9
[2] Sx8Ax7ZH(BbS)QWaWa(II-It)Di(III-It)WaWaWaMg(II-It) (III-It)(II-It)DiFcFcXr?DLhQD(III-It) [7/3]

HANGNYISTI-class BC   (AC) AM(2) 16 XO   80 HS   TL 9
[2] Sx9Ax8ZHQ(BbS)DiDiDiWaWaDiWaMgM4DiD(II-It) (III-It)(II-It)(III-It)(II-It) DiDiDiDXrLhQ(CIC)(III-It) [7/3]

HANGNYISTI(r)-class BC   (AC) AM(2) 16 XO   80 HS   TL 9
[2] Sx6Ax6ZHQ(BbS)DiWaWaDiWaMgM4Di(II-It)N(III-It)N (II-It)N(III-It)(II-It)Di?NDXrDLhQ(III-It) [7/3]

KORAK-class CA   (AC) AM(1) 12 XO   60 HS   TL 7
[2] SSSSAAAAAZH(BbS)Q(II-It)(II-It)F(II-It)FF(II-It)FF(II-It) DFDLhQ(II-It) [7/3]

KORZAK(r)-class CA   (AC) AM(2) 12 XO   60 HS   TL 8
[1] SSSSAAAAZHQ(BbS)(II-It)(II-It)Fc(II-It)Fc(II-It)Fc(II-It) FcXrD?LhQ(II-It) [7/3]

DOHARN-class CA   (AC) AM(1) 12 XO   60 HS   TL 7
[2] Sx6AAAAAZH(BbS)Q(II-It)W(II-It)F(II-It)W(II-It)WMg XrF(II-It)DFLhQ(II-It) [7/3]

DOHARN(r)-class CA   (AC) AM(1) 12 XO   60 HS   TL 7
[2] Sx6AAAAAZH(BbS)Q(II-It)Wa(II-It)F(II-It)Wa(II-It)Wa MgXrF(II-It)DFLhQ(II-It) [7/3]

DOHARN(rw3)-class CA   (AC) AM(2) 12 XO   60 HS   TL 9
[1] SSSSAAAAZH(BbS)Q(II-It)Wa(II-It)(II-It)Wa(II-It)WaMg (II-It)FcDiFc?XrDLhQ (II-It) [7/3]

CHLORF-class CL   (AC) AM(1) 9 XO   45 HS   TL 7
[2] SSSAAAZH(BbS)(I-It)(II-It)WWF(I-It)(II-It)(I-It)WMg FDLhQ(II-It) [7/3]

CHLORF(r)-class CL   (AC) AM(1) 9 XO   45 HS   TL 7
[2] SSSAAAZH(BbS)(I-It)(II-It)WaWaF(I-It)(II-It)(I-It)WaMg FDLhQ(II-It) [7/3]

KRAG-class CL   (AC) AM(1) 9 XO   45 HS   TL 7
[2] SSSAAAZH(BbS)WWWWWMg(I-It)(II-It)(I-It)(II-It)(I-It) DDLhQ(II-It) [7/3]

KRAG(r)-class CL   (AC) AM(1) 9 XO   45 HS   TL 7
[2] SSSSAAAZH(BbS)Wax4Mg(I-It)(II-It)Xr(I-It)(II-It)(I-It) DDLhQ(II-It) [7/3]

KRAG(rw3)-class CL   (AC) AM(2) 9 XO   45 HS   TL 9
[1] SSSAAAZH(BbS)Wax4Mg(I-It)(II-It)(I-It)(II-It)(I-It)Xr DDi?LhQ(II-It) [7/3]

TYNAGU-class DD   (AC) AM(1) 6 XO   30 HS   TL 5
[2] SSSAAAZH(I)(I)(I)Qs(I)(I)(I)FFDFQs(I) [7/3]

TYNAGU(r)-class DD   (AC) AM(2) 6 XO   30 HS   TL 9
[1] SSAAZH(I)(I)(I)Qs(I)(I)(I)DiDiFFcXrQs(I) [7/3]

DWERM-class DD   (AC) AM(1) 6 XO   30 HS   TL 5
[2] SSSAAZHXrQsWMgF(I)(I)(I)(I)(I)(I)DXQsD(I) [7/3]

DWERM(r)-class DD   (AC) AM(1) 6 XO   30 HS   TL 6
[2] SSSAAZH(I)XrQsWaMgF(I)(I)(I)(I)(I)DXQsD(I) [7/3]

DWERM(rw3)-class DD   (AC) AM(2) 6 XO   30 HS   TL 8
[1] SSAAZH(I)QsF(I)(I)(I)(I)(I)DDNXrQsD(I) [7/3]

CHYHAR-class BC   (AC) 16 XO   80 HS   TL 7
[4] Sx7Ax7(BbL)HXrQQQQQLh(II-It)QQQQQLh(III-It)QQQ QQLhD(II-It)QQQQQLhD(III-It)QQQQ(II-It)LhQDCD (III-It) [7/3]

ZHYKOHAN-class FT9   130 HS   TL 9
[5] SSSSS(BbS)HQHHHH(IcIcIcIc-It)TiQ(IcIcIcIc-It)Ti(Ms9) D(Ms9)Di(Ms9)Di(IcIcIcIc-It)D?LhQ [4/3]

29.05 Rigelian Protectorate Space Arm

TAMBACOUNDA-class CV   (AC) AM(2)   85 HS   TL 9
[1] Sx10Ax13ZH(BbS)QQQQXr(II)(III)(II)Di(III)Mg[Vx30] MgDi?LhQ(II)(III) [6/3]

TAMBACOUNDA(r)-class CV   (AC) AM(2)   85 HS   TL 9
[1] Sx9Ax8ZH(BbS)QQQQXr(II)(III)(II)Di(III)Mg[Vx36] MgDi?LhQ(II)(III) [6/3]

BOKO TAMBOKO-class CVL   (AC) AM(2)   60 HS   TL 9
[1] Sx9Ax9ZH(BbS)QQQ(II)(II)(II)(II)Di[Vx18]MgDiLhQ (II)(II) [6/3]

BOKO TAMBOKO(r)-class CVL   (AC) AM(2) 12 XO   60 HS   TL 9
[1] Sx9Ax9ZH(BbS)QQQ(II)(II)(II)(II)Di[Vx18]MgDiLhQ(II)(II) [6/3]

KHALKFONTEIN-class CA   (AC)AM(2)   60 HS   TL 9
[1] Sx6AAAAAZHQ(BbS)(II)(II)Wa(II)WaFWaMgDiM2 (II)(II)FFXrDiLh?QD(II) [6/3]

KHALKFONTEIN(r)-class CA   (AC) AM(2) 12 XO   60 HS   TL 9
[1] Sx6AAAAAZHQ(BbS)(II)(II)Wa(II)WaFWaMgDiM2(II) (II)FFXrDiLh?QD(II) [6/3]

CHUKUDU GOZIMI-class CA   (AC) AM(2) 12 XO   60 HS   TL 9
[1] SSSSSAAAAAZHQ(BbS)(II)(II)(II)(II)(II)WaFcWaMgDi M2FcXrDiLh?(CIC)QD(II) [6/3]

BOMBINA-class CL   (AC) AM(2)   45 HS   TL 9
[1] SSSSAAAZH(BbS)(I)(II)(I)WaWaMgDiF(II)(I)FxrLhQDi F(II) [6/3]

BOMBINA(r)-class CL   (AC) AM(2) 9 XO   45 HS   TL 9
[1] SSSSAAAZH(BbS)(I)(II)(I)WaWaMgDiF(II)(I)FXrLhQ DiF(II) [6/3]

TIMBEDRA-class DD   (AC) AM(2)   30 HS   TL 9
[1] SSAAZH(I)(I)(I)Qs(I)(I)QsWaMgLFXrDi(I)(I) [7/3]

TIMBEDRA(r)-class DD   (AC) AM(2) 6 XO   30 HS   TL 9
[1] SSAAZH(I)(I)(I)Qs(I)(I)QsWaMgFFXrDi(I)(I) [7/3]

HANIJ MONAKAH-class BC   80 HS   TL 9
[4] SSSAA(IcIc)(BbS)TiHH(IcIcIc)HHTiHQHQHTi[Vx24] MgTiHQHHHDiQ(IcIc)LhQDi(IcIcIc) [4/4]

YOSHINU CAMAMBA-class FT7   80 HS   TL 9
[4] SS(BbL)x2(IcIc)TiHHTiHH(IcIcIc)HHTiHQHHTiHHH (Ms9)H(IcIc)HLhQDi(IcIcIc) [4/4]

OZHMORD-class CA   60 HS   TL 9
[3] (BbS)QQ(IcIc)QQ(IcIc)HLhQQ[Vx35]LhMgDi(IcIc) [3/3]

HOMTET-class CL   45 HS   TL 9
[3] SSA(BbS)HQQ(Ic)QLhQ[Vx24]MgDiDi(IcIc) [2/2]

RPSA ICN BS2c-class BS2   40 HS   TL 9
[0] Sx8Ax7HQ(BbS)[Vx12]MgDiLhQ(CC) [0/0]

29.99 Miscellaneous SAW Bases & PDCs

30-01-02 BS1-class BS1   25 HS   TL 1
[0] SSSSAAAAAHLhQRGRGMg [0/0]

30-01-05 PDC-class PDCb   253 HS   TL 3
[0] (SP)x3Ax90RBGBRBGBMgBRBDGBRBDGBRDBMgBG BRBGBRBGBMgDDD [0/0]

30-01-06 SS-class SS   1875 HS   TL 3
[0] Sx45Ax45TTTTHQQQQQTTTTRx8GRRGRRGMgx10R RGRRGRRGRRTTTTQQQQQLhMgx10GRRGRRGR-
   RG RRQQQQQLhRGRGGGGGMgx15GWLWLWLWLWQQ QQQLhLWLWLWMgx10LWLWLWLWWWMgx5Lh
   QQQQQLh(CHS)x5QQQQQLh(CHS)x4LhQQQQQLh (CHS)x6QQQLhQQQLh(SY3)x15 [0/0]

30-01-06 BS2-class BS2   50 HS   TL 3
[0] Sx9Ax9ZH(BbS)XrLhQDMgWWDWWWWMgD [0/0]

30-01-08 BS2-class BS2   50 HS   TL 3
[0] Sx9Ax9ZH(BbS)XrLhQDMgWWDWWWWMgD [0/0]

30-01-08 SS-class SS   1533 HS   TL 5
[0] Sx25Ax25TTTHLhQHQHQHQHQHQHQHQLhHQW LQWLQWLQWLQWMgLQLhWMgTTTLQWMgLQXr
   M2WMgLQWMgLQWMgTTLQWMgLWMgLWMgLW MgL(CHS2)x10QLhQQQQQLhQQLh(SY3)x15DDLhQQ QDD [0/0]

30-01-09 BS2-class BS2   50 HS   TL 3
[0] Sx9Ax8Z(BbS)HLhQDDWLWLWLWMg [0/0]

30-01-09 SS-class SS   1533 HS   TL 5
[0] Sx25Ax25TTTHLhQHQHQHQHQHQHQHQLhHQW LQWLQWLQWLQWMgLQLhWMgTTTLQWMgLQXr
   M2WMgLQWMgLQWMgTTLQWMgLWMgLWMgLW MgL(CHS2)x10QLhQQQQQLhQQLh(SY3)x15DDLhQQ QDD [0/0]

30-01-18 BS2-class BS2   50 HS   TL 4
[0] Sx6AAAAAZHLhQDWWWWMgWWDCWWWMgD [0]

30-01-18 BS3-class BS3   85 HS   TL 5
[0] Sx12Ax12ZHXrQWWWWWFWMgDM4LhQDF(CIC) DFWFWMgD [0/0]

30-01-19 BS2-class BS2   50 HS   TL 4
[0] Sx6AAAAAZHLhQDWWWWMgWWDCWWWMgD [0]

30-01-19 BS3-class BS3   85 HS   TL 5
[0] Sx12Ax12ZHXrQWWWWWFWMgDM4LhQDF(CIC)D FWFWMgD [0/0]

30-01-19 SS-class SS   711 HS   TL 5
[0] Sx30Ax30ZQQQQQLhWMgTH(CHS2)WMgT(CHS2)W MgT(CHS2)WMgT(CHS2)WMgT(CHS2)LhQQQQQW MgT(CHS2)
   M3XrCFWMgTF(CHS2)FWMgTF(CHS2)F WMgTFDDD(CHS2)FWMgDTFQQQQQLh(CHS2)FW MgTFD(CHS2)(SY4)x5D
   [0/0]

30-01-25 SS-class SS   2066 HS TL 4
[0] Sx75Ax50ZHQx10HLhTTTTWx13TTTTQx9LhWWMg FWMgFWMgFWMgFWMgFWMgFLhQQQLhQx6LhC
   WMgTTTTFWMgFWMgCFLhQQQQQLhQQQQQLhW MgFWMgFWMgFWMgFCWMgFCWMgFQQQQQLhXr DDDD(SY4)
   x21DDDD [0/0]

30-01-27 BS3-class BS3   85 HS   TL 5
[0] Sx12Ax12ZHXrQWWWWWFWMgDM4LhQDF(CIC)D FWFWMgD [0/0]

30-03-03 SS-class SS   1466 HS   TL 5
[0] Sx40Ax40(BbL)QHHQHHBHHQHH(BbL)HHQHHBHHQ HH(BbL)HHQHHBHHQHH(BbL)HHQHHBHHQHH(BbL) QQQL-
   h(CHS2)TQ(CHS2)TQ(CHS2)TQ(CHS2)TQ(CHS2) TQ(CHS2)TQ(CHS2)TQ(CHS2)TQ(CHS2)TQ(CHS2)TQ (CHS2)Q(CHS2)
   Q(CHS2)Q(CHS2)Q(CHS2)Q(SY5)x3Lh Q(SY5)C(SY5)x2LhQ(SY5)x2LhQCLhQ(SY5)x2LhCQ (SY5)x3C(SY5)LhCQ [0/0]

30-03-07 BS2-class BS2   50 HS   TL 6
[0] Sx9Ax9ZH(BbS)LhQXrWaWaMgWaDWaDWaDWaMg [0/0]

30-04-01 BS2-class BS2   50 HS   TL 6
[0] Sx7Ax6ZH(BbS)LhQM3(CIC)XrDWaFDWaFWaMgF [0]

30-04-05 BS2-class BS2   50 HS   TL 6
[0] Sx7Ax6ZH(BbS)LhQM3(CIC)XrDWaFDWaFWaMgF [0/0]

30-04-05 SS-class SS   1570 HS   TL 6
[0] Sx50Ax25Z(BbL)HLhQHQH(BbL)HQHQHQH(BbL)QHQ HQH(BbL)QTQTLh(CHS2)TQTQTQQTQTLh(CHS2)QT QC-
    QTQ(CHS2)QwaLhWaQWaQWaQWaQMgMgMgCQ Lh(SYx)x5XrWaFWaFWaFWaFWaMgCFWaFWaFWaF WaMgFWaMg-
    F(CHS2)x2(SYx)x7WaQFQWaQFQWaQF LhWaQDFDWaMgx4DFDWaMgDFD(SYx)D(SYx)D (SYx)DCCLhQCD [0/0]

30-04-12 BS5-class BS5   36 XO   180 HS   TL 7
[0] Sx20Ax20ZHQQQ(BbL)Rcx5MgRcRcRcWaMgFRcWa MgFRcMgM4XrWaMgDFRcMg DWaMgFDRcWaMgDFRcWaMgD?-
    FLhQC [0/0]

30-04-12 BS4-class BS4   24 XO   120 HS   TL 7
[0] Sx15Ax14ZHQQ(BbS)XrFx6WaFWaM3FwaFWaFWa MgDLhQFFFDF(CIC)?C [0/0]

30-04-12 SS-class SS   88 XO   3963 HS TL 7
[0] Sx50Ax50ZHQTHQTHQTHQTHQTHQTHQTHQTHQH QHQHQHQHQHQ(BbL)Lh(BbL)Lh(BbL)Lh(BbL)LhXrQ M5QX-
    Q(CHS2)Q(CHS2)Q(CHS2)Lh(CHS2)Q(CHS2)Q (CHS2)Q(CHS2)Q(CHS2)Q(CHS2)Lh(CHS2)Q(CHS2)Q (CHS2)Q(CHS2)
    Q(CHS2)Q(CHS2)Lh(SYx)Q(SYx)Q (SYx)Q(SYx)Q(SYx)Q(SYx)Lh(SYx)Q(SYx)Q(SYx)Q (SYx)Q(SYx)Q(SYx)Lh(SYx)Q(SYx)
    Q(SYx)Q(SYx)Q (SYx)Q(SYx)Lh(SYx)Q(SYx)QrcQWaQRcQWaMgMg RcLhRcQRcQRcQRcQRcQRcMgLhRcQRcQRc-
    QWaMgQ WaMgQMgWaMgLhPQPMgQPQPQPQPLhPQPQPQPQP QPLhMgPQPQPMg(CHS2)Q(CHS2)Q(CHS2)Q(CHS2)
    D (CHS2)D(CHS2)D(CHS2)D(CHS2)D(CHS2)D(CHS2)x2 (SYx)RcMg(SYx)RcMg(SYx)RcMg(SYx)RcMg(SYx)Rc (SYx)Rc(SYx)
    Rc(SYx)Rc(SYx)?RcFFWaMgFFRcFFWa MgFDFRcFFWaMgFFRcFFWaMgFFRcMg(SYx)x3Lh (SYx)Q(SYx)Q(SYx)Q(SYx)
    Q(SYx)Q(SYx)D(SYx)?FFD DQDQDDLh(CIC)?C [0/0]

30-04-13 B3-class BS3   17 XO   85 HS   TL 7
[0] Sx10Ax10ZH(BbS)QWax11M2XrWaMgDWaMgLhQWa D?MgDWaMgC [0/0]

30-04-14 B3-class BS3   85 HS   TL 7
[0] Sx10Ax10ZH(BbS)QWax11M2XrWaMgDWaMgLhQWa D?MgDWaMgC [0/0]

30-04-14 SS-class SS   86 XO   450 HS   TL 7
[0] Sx40Ax34ZQHQ(BbL)QHQ(BbL)QRcLhRcQRcQRcQ Rcx4MgRcMgRcMgRcMgWaRcMgWaRcMgWaRcMgWa RcMgWaRc-
    MgWaRcMgWaPFPRcMgWaPFPRcMgWaPF PRcMgWaPFPRcMgWaPFPRcMgWaFRcMgWaFPFRc MgWaFPFRcMgWaFP-
    FM6RcMgWaFPDFDRcDMgDWa DFDPDF?DD(CIC)DLhQC [0/0]

30-04-14 SS-class SS   95 XO   5669 HS   TL 7
[0] Sx75Ax75ZHQTTTHQTTTHQTTTHQTTTHQTTTHQTT THQTTTHQTTTHQHQHQHQHQHQHQ(BbL)Lh(BbL)Lh(BbL)
    Lh(BbL)LhXrQTQXQ(CHS2)Q(CHS2)Q(CHS2)Lh (CHS2)Q(CHS2)Q(CHS2)Q(CHS2)Q(CHS2)Q(CHS2)Lh (CHS2)Q(CHS2)
    Q(CHS2)Q(CHS2)Q(CHS2)Q(CHS2)Lh (SYx)Q(SYx)Q(SYx)Q(SYx)Q(SYx)Q(SYx)Lh(SYx)Q (SYx)Q(SYx)Q(SYx)Q(SYx)
    Q(SYx)Lh(SYx)Q(SYx)Q (SYx)Q(SYx)Q(SYx)Q(SYx)Lh(SYx)Q(SYx)QrcQWaQ RcQWaMgMgRcLhRcQRcQRcQRcQRcQRc-
    MgLhRcQRc QRcQWaMgQWaMgQMgWaMgLhPQPMgQPQPQPQP LhPQPQPQPQPQPLhMgPQPQPMg(CHS2)Q(CHS2)Q
    (CHS2)Q(CHS2)D(CHS2)D(CHS2)D(CHS2)D(CHS2)D (CHS2)D(CHS2)x2QQQQQLhQx6LhQx6LhQx6LhQx6 LhQQQ(SYx)
    x2RcMg(SYx)x2RcMg(SYx)x2RcMg (SYx)x2RcMg(SYx)x2Rc(SYx)x2Rc(SYx)x2Rc(SYx)x2Rc (SYx)x2?FFWaMgFFFF-
    WaMgFDDFFFWaMgFFFFWa MgFFMg(SYx)x6Lh(SYx)x2Q(SYx)x2Q(SYx)x2Q(SYx)x2Q(SYx)x2Q(SYx)x2DD(SYx)
    x3?FFDDDDQDDQDDLh (CIC)?LhC [0/0]

30-06-03 BS6-class BS6   40 XO   200 HS   TL 9
[0] Sx35Ax36ZHQRcx4MgRcx4MgRcQM4QRcRcRcMg Rcx4MgRcDRcRcDRcMgDXr?(BbS)(CIC)DCLhQ [0/0]

30-06-03 BS5-class BS5   36 XO   180 HS   TL 8
[0] Sx34Ax16ZHQ(BbS)QFcFcFcPcFcPcFcWaPcFcWaM4Q DPcFcWaMgXrPcFcDFcFcFc?D(CIC)D CLhQ [0/0]

30-06-03 BS4(m)-class BS4   24 XO   120 HS   TL 7
[0] Sx17Ax10ZHQ(BbS)QRcx7MgRcWaMgRcWaM3MgRc MgWaRcXrDWaMgDWaMg?DLhQC [0/0]

30-06-03 BS4(b)-class BS4   24 XO   120 HS   TL 8
[0] Sx18Ax9ZHQ(BbS)QFcx6WaM3FcWaFcWaMgXrDFcFc Fc?DDLhQC [0/0]

30-06-05 SS-class SS   136 XO   3335 HS   TL 8
[0] Sx60Ax60Z{HQ(BbL)H}x12QH{LhRcQ}x5RcLhRcQQ RcQRcQRcQWaPcRcQWaLhPcQRcQWaQPcQRcQWaLh PcQRc-
    M7QwaQPcQRcMgWaMgPcMgQMgRcMgLhMg WaMgPcMgRcMgWaMgPcMgRcMgWaMgPcMg {Ti(CHS2)Ti}x6(CHS2)
    (SYx)x15(CHS2)x2{RcQ}x5Rc LhRcQQRcQRcQRcQWaFcPcFcRcQWaLhFcPcFcQRcQ WaQFcPcFcQRcQRcQWaFcPcFcRc-
    QWaLhFcPcFcQRcWa (CIC)QfcPcFcQRcWaFcPcFcMgQMgRcLhMgWaMgFc MgPcMgFcMgRcMgWaMgFcMgPcMgM7XrFc-
    QMgRcQ MgWaQFcQPcQFcLh{(SYx)D}x7{(SYx)D?}x4 {(SYx)CD?}x4(CIC)LhQQ [0/0]

30-06-05 BS6-class BS6   40 XO   200 HS   TL 9
[0] Sx35Ax36ZHQRcx4MgRcx4MgRcQM4QRcRcRcMg Rcx4MgRcDRcRcDRcMgDXr?(BbS)(CIC)DCLhQ [0/0]

30-06-05 BS5-class BS5   36 XO   180 HS   TL 8
[0] Sx33Ax16ZHQ(BbS)QFcFcFcPcFcPcFcWaPcFcWaM4Q DPcFcWaMgXrPcFcDFcFcFcC?D(CIC) DCLhQ [0/0]

30-06-06 SS-class SS   66 XO   1185 HS   TL 8
[0] Sx20Ax15ZH(BbL)H(BbL)HQHQHTiQTiQTiQLhTiQTiQ TiQRcMgQRcMgQLh RcMgQRcMgQRcMgQM7RcMgQLh PcWaP-cRcMgMgPcWaPcPcWaPcRcMgMgPcWaPcPcWa PcRcMgMgPcWaPcWaM7XrXFcRcMgMgWaFcWaFcRc MgMgWaFcWaF-cRcMgMgWaFcx7D(SYx)x2D(SYx)x2D (SYx)x2DC?(SYx)x2DC?(SYx)x2QQQQQLhQQQQQLh DDDDD?(CIC)CCP [0/0]

30-06-06 BS4-class BS4   24 XO   120 HS   TL 9
[0] Sx14Ax10ZH(BbS)HQQWaPFcWaPWaPFcWaPM3Wa MgDiPFcPFcDLhQFcFcXr?DiDC [0/0]

30-06-08 BS4-class BS4   24 XO   120 HS   TL 9
[0] Sx15Ax10ZH(BbS)HQQWaFcWaMgFcFcM3DiFcx4Ddi LhQFcx4Xr?DiDC [0/0]

30-06-10 BS4-class BS4   24 XO   120 HS   TL 9
[0] Sx15Ax10ZH(BbS)HQQWaFcWaMgFcFcM3DiFcx4Ddi LhQFcx4Xr?DiDC [0/0]

30-06-10 BS5-class BS5   36 XO   180 HS   TL 9
[0] Sx20Ax19ZH(BbS)QQQRcRcMgRcWaMgPRcWaMgPRc WaMgPRcWaMgPDiWaMgMgM5FcWaMgMgDDiFcx6 XrDD(CIC) CLhQ? [0/0]

30-06-10 SS-class SS   62 XO   1874 HS   TL 9
[0] Sx45Ax45ZQQHQHQHQHQHLhHQHQHQHQ(BbL)Q (BbL)LhRcQWaQMgQPcQRcQWaLhMgQPcQRcQWaQ MgQPcLhRc-QWaQMgQPcQRcQWaLhMgPc(SYx)x6Q (SYx)Q(SYx)Q(SYx)Q(SYx)Lh(SYx)Ti(CHS2)Q(SYx)Ti (CHS2)Q(SYx)Ti(CHS2) Q(SYx)Ti(CHS2)Q(SYx)Ti (CHS2)Lh(SYx)RcDWaDMgDDiPRcWaMgDDiPRcWaD DiPRcM7WaMgDDiPRcWaMgDDiPDDiF-cDDiM7FcQD DiFcQD DiFcQD?CDiFc(SYx)x2?C(CIC)LhQ [0/0]

30-06-11 AS-class AST   2332 HS   TL 9
HS Size out of range for type. {Special AF}
[0] Sx200Ax100Z{H(BbL)HBHTiH(CHS2)HB}x10Xr{QHQ HQHQHQHLh}x100{HBHB}x85{QQQQQLh}x49 {DDi}x10[Vx18]Mg-DQDQDQDQDLhQC [0/0]

30-06-12 BS4-class BS4   24 XO   120 HS   TL 9
[0] Sx15Ax10ZH(BbS)HQQWaFcWaMgFcFcM3DiFcx4DDi LhQFcx4Xr?DiDC [0/0]

30-06-12 SS-class SS   4022 HS   TL 9
[0] Sx60Ax60ZQx12LhLhHQHQHQHQHQHLhHQHQHQHQ HQHLhHQHQHQHQHQHLhH(BbL)H(BbL)Q(BbL)Q(BbL) Q(B-bL)Q(BbL)Q(BbL)Q(BbL)LhQTiQLhQTiQRcWaMgQ RcWaMgQRcWaMgQRcWaMgQRcWaMgQRcWaMgQ (CHS2)x8Tix-8(SYx)x42Qx35Lhx7PRcWaMgPPRcWaMg PPRcWaMgPPRcWaMgPPRcWaMgPDiDDiD M7DiDDix12Fcx12Dx-12?XrX?QQLhQLhLh(CIC)?C [0/0]

30-06-12 PDC-class PDCb   314 HS   TL 9
[0] (SP)Ax150ZDx20Dix20Dx25(CIC) [0/0]

30-06-15 SS-class SS   2596 HS   TL 9
[0] Sx75Ax75ZHx20(BbL)x20(CHS2)x10Tix10(CHS2)x10M7 Qx11(SYx)x10Qx10Dix10Qx10(SYx)x10Qx10Dix10Lhx10 M7QX-rQQQQLhQQQQLhM7QDDi(SYx)DDDi(SYx)DD Di(SYx)DDDi (SYx)DDDi(SYx)DQLhQ(CIC)C [0/0]

30-06-18 SS-class SS   2596 HS   TL 9
[0] Sx75Ax75ZHx20(BbL)x20(CHS2)x10Tix10(CHS2)x10M7 Qx11(SYx)x10Qx10Dix10Qx10(SYx)x10Qx10Dix10Lhx10 M7QX-rQQQQLhQQQQLhM7QDDi(SYx)DDDi(SYx)DD Di(SYx)DDDi (SYx)DDDi(SYx)DQLhQ(CIC)C [0/0]

30-06-20 SS-class SS   79 XO   2639 HS   TL 9
[0] Sx75Ax75Z{HQ(BbL)QH(BbL)HQ(BbL)QH(BbL)LhH (BbL)}x3{Q(CHS2)Ti}x5Lh{Q(CHS2)Ti}x5LhM5Xr {Q(SY)Q(SY)Q(SY) Q(SY)Q(SY)Lh}x5RcRcRcWaRcWa RcWaRcWaRcWaRcWaMgFcRcDiWaDiMgDiMgDiFcDi RcDWaDMgDMgDFcDiM-5Di(CIC)DiRcDiWaDiMgDi MgDiFcDiRcDiWaDiMgDiMgDFcDFcDFcDFcDFcQDFc QDFcQDFcQDFcQLhQ?C [0/0]

30-06-20 PDC-class PDCb   299 HS   TL 9
[0] (SP)(SP)Ax90HHHHHDix5RcWaMgDiRcWaMgDiRcWa MgDiRcWaMgDiRcWaMgDiRcWaMgDiRcWaMgDiRcWa Mg-DiRcWaMgDiRcXrDiDiWaDiMgDiMgDiMgDix6 [0/0]

30-06-21 SS-class SS   79 XO   2639 HS   TL 9

[0] Sx75Ax75Z{HQ(BbL)QH(BbL)HQ(BbL)QH(BbL)LhH (BbL)}x3{Q(CHS2)Ti}x5Lh{Q(CHS2)Ti}x5LhM5Xr {Q(SY)Q(SY)Q(SY)Q(SY)Q(SY)Lh}x5RcRcRcWaRcWa RcWaRcWaRcWaRcWaMgFcRcDiWaDiMgDiMgDiFcDi RcDWaDMgDMgDFcDiM-5Di(CIC)DiRcDiWaDiMgDiMg DiFcDiRcDiWaDiMgDiMgDFcDFcDFcDFcDFcQDFcQD FcQDFcQDFcQLhQ?C [0/0]

30-06-21 PDC-class PDCb   350 HS   TL 9

[0] (SP)(SP)Ax90HHHHHDDDDDRcWaMgDiRcWaMgDiRc WaMgDiRcWaMgDiRcWaMgDiRcWaMgDiRcWaMgDiRc WaMg-DiRcWaMgDiRcXrDiDiWaDiMgDiMgDiMg[Vx48] MgDiMgDiMgDix4 [0/0]

30-06-21 PDC-class PDCb   362 HS   TL 9

[0] (SP)(SP)Ax90HHHHHDDDDDRcWaMgDiRcWaMgDiRc WaMgDiRcWaMgDiRcWaMgDiRcWaMgDiRcWaMgDiRc WaMg-DiRcWaMgDiRcXrDiDiWaDiMgDiMgDiMg[Vx60] MgDiMgDiMgDix4 [0/0]

30-06-24 PDC-class PDCb   334 HS   TL 9

[0] (SP)(SP)Ax90ZHHHHHDix5RcWaMgDiRcWaMgDiRcWa MgDiRcWaMgDiRcWaMgDiRcWaMgDiRcWaMgDiRcWa Mg-DiRcWaMgDiRcXrDiDiWaDiMgDiMgDiMgDiMg [Vx36]Dix4 [0/0]

30-06-25 PDC-class PDCb   382 HS   TL 9

[0] (SP)(SP)Ax90HHHHHDix5RcWaMgDiRcWaMgDiRcWa MgDiRcWaMgDiRcWaMgDiRcWaMgDiRcWaMgDiRcWa Mg-DiRcWaMgDiRcXrDiWaDiMgDiMgDiMgDiMg[Vx84] MgDiMgDiDiDi [0/0]

30-06-25 SS-class SS   193 XO   3345 HS   TL 9

[0] Sx200Ax200ZQ{H(BbL)H}x25Q{Ti(CHS2)}x35QXrQ (BbL)XQ(BbL)Lh{Q(BbL)QDi(BbL)QDi(BbL)QDi(BbL)Q Di(BbL)QDi(BbL)Lh}x3{QQQQQLh}x126DiM4DiXrDiX DiQQQQQLh{Q(SY)Q(SY)Q(SY)Q(SY)Q(SY)Lh}x2{QRc QRcQRcQRc-QDiLhMg}x6M4[Vx36]M4{QDRcQDiQMgQ DLhWaQDiQMgQDQFcQDiLh}x12Di(CIC)Di?DiCDi [0]

30-06-25 PDC-class PDCb   618 HS   TL 9

[0] (SP)x4Ax180HHHHHDix5RcWaMgDiRcWaMgDiRcWa MgDiRcWaMgDiRcWaMgDiRcWaMgDiRcWaMgDiRcWa Mg-DiRcWaMgDiRcXrDix4WaDiMgDiDiMgDiDiMgMgDi DiMgMgDiDiMgMg[Vx144]MgMgDiDiMgMgDix4 [0/0]

NOTE: Get full ship display listings from the SDS web site.

STARFIRE Scenarios

The following scenarios are not specifically part of the "future history" of the various interstellar wars of the *STARFIRE* universe. The "official' scenarios appear in THE STARS AT WAR, but these are designed to familiarize players with the tactical rules and tech systems. Players are, of course, always invited to create their own ship designs and scenarios to use them in. Victory in most scenarios is awarded on the basis of victory points. Destruction of enemy starships and fighters is worth the following values:

SD	100	DD	30
BB	80	FG	15
BC	70	CT	10
CA	50	ES	5
CL	40	Fl	.25

Damage points scored inside the armor of surviving hostile BC, BB, and SD are worth 1 victory point; damage points scored inside the armor of hostile CA and CL are worth 1/2 victory point. Internal hits on vessels smaller than CLs are worth nothing. If a hostile unit is crack, add 10% to all victory points scored against it; if it is elite, add 20%.

Scenario 1:

TFN
1 FALCON-class ES: ammo = 200 BM
   Hex 1015; Facing 3

KON
1 TALRON-class ES: ammo = 100 GM, 100 BM
   Hex 4030
Type T Planet: Hex 4030

1. TALRON is a "crack" ship.
2. TALRON is picketing the planet and may be on any initial facing in orbit around it when FALCON enters the tactical map.
3. Victory in this scenario is not awarded on points. The side whose unit survives wins.

Scenario 2:

TFN
4 NAPOLEON-class DD: ammo = 200 SM

KON
3 KARHAE-class CL: ammo=100 BM, 100 GM
Warp Point 1: Hex 4009
Warp Point 2: Hex 2029

1. TFN ships enter and may withdraw only via WP 1; KON ships may withdraw only via WP 2.
2. 1 TFN DD (Terran player's choice) is "crack"; TFN units enter on turn 1 at General Quarters readiness.
3. All KON ships are at Stand-By readiness. Under 06.02, the units roll for activation at -4. Orion player may place his units in any hex(es) within 5 tactical hexes of his WP.
4. Special Victory Points: The player with the last unit on the map sheet receives a victory point bonus of 50 points.

Scenario 3:

TFN
2 BRAZWELL-class DD: ammo = 200 SM
   Hex 3930;Facing 6
3 NELSON-class CL: ammo = 200 SM
   Hex 3931;Facing 6

KON
1 KARHAE-class CL: ammo = 100 GM, 100 SM
   Hex 0130; Facing 2
2 TOLCHOII-class DD: ammo = 200 SM
   Hex 0130;Facing 2
4 MOZLIR (refit)-class ES: ammo = 200 SM
   Hex 0130;Facing 2
Warp Point: Hex 2001

1. Both sides have the same objective: to pass through the warp point while preventing any opposing unit from doing so.
2. Special Victory Points: Each player receives the victory point value of any of his own starships he passes through the WP.

Scenario 4:

TFN
1 OREGON-class CA: ammo = 200 SM
2 ARGENTINA-class CA: ammo = 200 SM

KON
2 DELGOR-class CA: ammo = 200 SM
2 TALRAE-class CL: ammo = 200 SM
Warp Point 1: 4201
Warp Point 2: 0101

1. All TFN units enter and may leave only via WP 1. All KON units enter and leave only via WP 2.
2. Each player secretly designates either one "elite" or two "crack" units.
3. Special Victory Points: The player with the last unit with operable weapons on the tactical map receives 50 bonus victory points.

Scenario 5:

TFN

1 PRINCE OF WALES 1-class BC:	ammo = 200 SM
2 OREGON-class CA:	ammo = 200 SM
3 ROMMEL-class DD:	ammo = 200 SM

KON

{All KON ships start in Hex 4030)

2 DELGOR-class CA:	ammo = 200 SM
4 TALRAE-class CL:	ammo = 200 SM
3 BOLCHOI-class DD:	ammo = 200 SM

Warp Point: Hex 4029

Scenario Length: 15 tactical turns

1. TFN units enter map on turn I from any map edge of Terran player's choice.
2. KON units begin play on any facing of Orion player's choice.
3. The TFN's objective is to pass through the WP with as many units as possible; the KON's objective is to stop the TFN. The Terran player receives the victory point value of each of his ships he can pass through the WP; the Orion player receives 1/2 the victory point total of each undestroyed TFN ship still on the map at the end of turn 15.

Scenario 6:

TFN

2 REVENGE-class BB:	ammo = 100 CM
2 OREGON-class CA:	ammo = 200 SM
2 RODNEY-class CL:	ammo = 400 SM
3 ROMMEL-class DD:	ammo = 200 SM
4 FRANC-class FT	
6 SINGAPORE-class FT	

KON

4 VALKHA-class BC:	ammo = 200 SM
3 KALAKZON-class CA:	ammo = 200 SM
3 TALRAE-class CL:	ammo = 200 SM

Warp Point 1: Hex 4029

Warp Point 2: Hex 4002

Warp Point 3: Hex 1630

1. TFN convoy enters via WP 1 on turn 1 and exits via WP 3; KON units enter via WP 2 on turn 1 and may withdraw only via WP 2.
2. One TFN vessel (Terran playees choice) is "crack".
3. One VALKHA-class BC is "elite" and one is "crack".
4. Orion player receives 20 victory points for each FRANC-class Fr he destroys and 50 points for each SINGAPORE-class FT he destroys.

Scenario 7:

TFN

{All TFN ships start in Hex 4001}

4 REVENGE-class BB:	ammo = 100 CM
4 PRINCE OF WALES I-class BC:	ammo = 200 SM
3 OREGON-class CA:	ammo = 200 SM
2 RODNEY-class CL:	ammo = 400 SM
3 ROMMEL-class DD:	ammo = 200 SM
2 SCIPIO-class DD:	ammo = 0

KON

{All KON ships start in Hex 4029}

1 RAZUMOND-class SD:	ammo = 200 SM
2 JOLOCHOI-class BB:	ammo = 400 SM
2 KALBACUN-class BB:	ammo = 0
2 ISHKAR-class BC:	ammo = 200 CM
2 DELGOR-class CA:	ammo = 200 SM
6 TALCRED-class DD:	ammo = 200 SM
2 BOLCHOI-class DD:	ammo = 200 SM

1. This is a fight to the finish between opposing battle-lines. The player with the last unit with operable weapons on the mapsheet receives a bonus of 150 victory points.

Scenario 8:

TFN

2 YUGOSLAVIA-class CA:	ammo = 200 SM
2 SEMMES-class CL:	ammo = 200 SM
3 FORREST-class DD:	ammo = 200 SM

KON

2 FIBUR-class CA:	ammo = 200 SM
1 GHARBAHG-class CL:	ammo = 200 SM
1 ONTHY-11-class CL:	ammo = 400 SM
3 TRAISUK-11-class DD:	ammo = 200 SM

OADC

2 AL-SA'IF-class CA:	ammo = 200 SM
2 AL-HOSSAD-class CL:	ammo = 200 SM
3 AL-AMIR-class DD:	ammo = 0

Warp Point 1: 0101

Warp Point 2: 4001

Warp Point 3: 4029

1. TFN units enter and may exit only via WP 1; KON units enter and may exit only via WP 2; OADC units enter and may exit only via WP 3.
2. Each player receives the full victory point value of any damage/destruction inflicted by his units on any unit of any other side. In addition, each player receives 1/2 victory points for any damage/destruction inflicted by anyone on any starship of any side other than his own. The player with the last unit with operable weapons on the mapsheet receives a 75 point bonus.

Scenario 9:

KON

2 PORGHOZ II-class SD:	ammo = 400 SM
2 RAZUMOND II-class SD:	ammo = 400 SM
4 ISHKAR-class BC:	ammo = 200 CM
4 AMALRAE II-class CA:	ammo = 400 SM
2 GHARBAG II-class CL:	ammo = 200 SM
2 RADO-class CL:	ammo = 400 SM
6 TRAISUK II-class DD:	ammo = 200 SM

GSN

3 NORZ-class SD:	ammo 400 CM
2 MORG-class BB:	ammo 200 SM
2 BOLZUCHA-class BC:	ammo = 300 CM
2 BOLZOIL-class BC:	ammo = 400 SM
2 KORZAK-class CA:	ammo = 0
6 CHLORF-class CL:	ammo = 200 SM
4 DWERM-class DD:	ammo = 200 SM

SD, BB & BC XO racks armed with CM
CA, CL, & DD XO racks armed with SM
Warp Point 1: Hex 3730
Warp Point 2: Hex 2902
Warp Point 3: Hex 4008
Planet: Hex 0323

1. KON units may enter via any 2 warp points on turn 1. They may withdraw via any warp point. The Orions do not have detailed survey data on the warp points and must roll randomly for facing against the scattergram.
2. The Gorm player places his units after the KON player has secretly recorded his warp point(s) of entry. At least one Gorm unit must be within 6 hexes of each warp point.
3. The Orion objective is the bombardment of the planet. The planet has no point defense and the Orion player receives 1/4 victory point for each point of missile damage inflicted on the planet.
4. GSN BOLZUCHA and BOLZOIL-class BCs are "crack" ships.
5. Play continues until all units of one side have either been destroyed or driven off the map sheet.

Scenario 10:

TFN

{All TFN ships start in hex 4229}

I CROMWELL-class SD:	ammo = 200 CM
2 THUNDERER-class BB:	ammo = 400 SM
3 PRINCE OF WALES II-class BC:	ammo = 200 CM
6 GUDERIAN 11-cfass DD:	ammo = 200 SM

RPSA

{All RPSA ships start in hex 0101}

2 TAMBACOUNDA-class CV:	30 Fl
ammo = 600 fR 500 fG; 400 fL	
1 BOKO TAMBOKO-class CVL:	18 Fl
ammo = 325 fR; 250 fG; 200 fL	
4 BOMBINA-class CL:	ammo = 200 SM

Warp Point: 2630
Scenario Length: 20 tactical turns

1. TFN objective is to leave the map via the warp point; the Rigelian objective is to prevent the Terrans' escape and to destroy as many TFN units as possible.
2. All TFN BC and SD are "crack" units.
3. All Rigelian CV are "crack" units.
4. The Rigelian player receives 1/2 victory point for any Terran unit which has not exited the map via the WP by the end of turn 20.

Scenario 11:

TFN

1 INDEPENDENCE-class CV:	24 Fl
ammo = 300 SM, 100 fG, 200 fL, 500 fR	
1 COLLINGWOOD-class CL:	ammo = 200 SM
1 COMET-class CLE:	ammo = 200 SM
2 GUDERIAN II-class DD:	ammo = 200 SM
2 VIKING-class DDE:	ammo = 0

RPSA

1 TAMBACOUNDA-class CV:	30 Fl
Ammo 300 fMl; 400 fG; 500 fL	
6 TIMBEDRA-class DD:	ammo = 200 SM

Warp Point 1: 4001
Warp Point 2: 4029

1. TFN units enter and may exit only via WP 1.
2. RPSA units enter and may exit only via WP 2.
3. Rigelian CV is "crack".
4. Play continues until only one side has units on the tactical map.

Scenario 12:

KON

2 SINEKUR-class CV:	30 F1
ammo = 100 SM, 120 fG, 480 fRl	
2 LITTNIEK-class BC:	ammo = 400 SM
4 RADO 11-class CL:	ammo = 200 SM
4 RAKAN-class DD:	ammo = 0

GSN

2 BOLZUCHA-class BC (ISW3 refit):	ammo = 200 CM
2 BOLZOIL-class BC (ISW-3 refit):	ammo = 200 SM
4 HANGNYISTI-class BCE:	ammo = 200 SM
3 DOHARN-class CA (ISW-3 refit):	ammo = 200 SM
6 DWERM-class DD (ISW-3 refit):	ammo = 0

RPSA

2 TAMBACOUNDA-class CV:	30 F2
ammo = 600 fR, 500 fG, 400 fL	
2 BOKO TAMBOKO-class CVL:	18 Fl
ammo = 600 fR, 250 fG, 200 fL	
2 CHUKUDU GOZIMI-class CA:	ammo = 200 SM
4 KHALKFONTEIN-class CA:	ammo = 200 SM
4 BOMBINA-class CL:	ammo = 200 SM
8 TIMBEDRA-class DD:	ammo = 200 SM

Warp Point 1: 0328
Warp Point 2: 4227
Warp Point 3: 2901

XO racks, of all races, armed with any missiles of player's choice.

1. The Rigelian player may enter via WP2, WP3, or both. His first unit must enter on turn 1, but he may delay entry of additional units for up to 5 tactical turns. He must record in writing before play which units will use which WP and on which turn they will enter.
2. The Orion/Gorm player places his units in any positions of his choice after the Rigelian player has recorded his warp points and turns of entry. Orion units may withdraw only via WPl.
3. One TAMBACOUNDA-class CV is "elite", the other CV is "crack".
4. Both SINEKUR-class CV are "crack".
5. Play continues until all units of one side have been destroyed or driven from the system. Possession of the system is worth an additional 200 victory points.

Scenario Playtesters

Tim Braddock, Jeff Brinegar, Fred Burton, Fred Davis, Bill Halbrook, Charles Hadden, Jeff Harris, Fred Howell, Jeanne Jackson, Fred Kazinski, Fred Kowalski, Sandra Landrum, David Linderman, Bill Matthews, Ken McCoury, John Skillman, Jackie Southerland, Jeff Southerland, Mike Thackery, John Thornton, and Steve White.

TFG Playtesters - Mark Costello, Lisa Costello, Bryant Wu, and James Jefferson.

31.00 Tactical Engine Changes

Nuke damage vs targets in Atmosphere.   x6

    Nuke damage vs non-drive field targets.   x5

    Nuke damage vs J-drive field.   x3

    All types of drive field enhancers as engine modifications that are installed and function similar to AM and take zero space. Each type reduces nuclear and ramming damage.

    Je1 costs 50% of J engine cost (FRU) and damage modifier is x2 (available at HTL 4).

    Je2 costs 100% (FRU) of J engine cost and damage modifier is x1.5 (FRD) (available at HTL 7)

    Je3 costs 150% (FRU) of J engine cost and there is no damage modifier (available at HTL 10)

    NOTE: Je2 cuts standard nuke damage to 1 pt thus seriously limiting the effectiveness of Wa- vs Je2-equipped ships until anti-matter arrives.

    Any J ship can increase protection level by 1 Je category (max of Je3) by moving at or less than 2/3rd of its max. speed.

    Tactical engines have a blindspot of 120 degrees; however, this blindspot is semi-transparent: -3 for beams, -6 for missiles. J ships will be able to fight quite well even if they must occasionally fire though the semi-transparent blindspot.

    J engines increase the 28.07 turn mode by 1.

    J engine ships may fire missiles using the normal to-hit probabilities BUT the missiles are effected by the inertial spread fields and thus have a maximum range equal to that of a missile launched from an XO rack.

    K weapons arcs are adjusted as follows: "forward arc" is 120 degrees and side arcs remain the same; "rearward arc" is also increased to 120 degrees. Note: there is an overlap between the forward/rear and side arcs.

    K weapons fire at a -2 for (I) or (Ic) drive fields.

31.01 Presser Missiles

Presser missiles have improved to-hit numbers, and are -1 to be intercepted by all point defenses. Additionally, they receive no range reduction when mounted on J-engined ships.

Designer Comments

Engine Power Formulas:

I and Ic formulas are: if ≤60, HS/30 otherwise HS/33 (there are, of course, rounding errors): (EX: ML should be 3 1/3 but simplicity won out)

J is: if ≤60, HS/60 otherwise HS/50

Jc is: if ≤80, HS/40 otherwise HS/33 (FG should be 2/5 but we went with simplicity)

Conventions

The SDS is not committed to and does not regularly attend gaming conventions. If that changes, any conventions that we may attend will be announced on our website news at http://www.starfiredesign.com/starfire

Credits and Acknowledgements

The Starfire Design Studio is very fortunate to have so many people with great interest and dedication to the Starfire concept and system.

Many thanks to Matthew Olson who pasted all the errata and Sky Marshal changes in the proper places. Also many thanks go to Scott D. Orr who checked this product more than once for proper grammar (well, at least better than mine).

The following individuals helped to review the material contained in this product in order to make the product the best it could be. I thank them all for their hard work.

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Ordering From *STARFIRE DESIGN STUDIO*

The Starfire Design Studio now has online ordering available at http://www.starfiredesign.com/starfire. Our ecommerce system accepts paypal (and any payment that can be made through paypal), and special arrangements for checks or money orders can be made by emailing orders@starfiredesign.com.

All checks must be drawn on a US bank and have magnetic code numbers. International Postal Money Orders are also acceptable. Make all checks out to "Marvin Lamb".

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#2) YOUR REGULAR MAILING ADDRESS

#3) YOUR PHONE NUMBER

If you have not received any information about your order after 3 weeks, please contact the SDS by email at orders@starfiredesign.com, or through the Starfire forum at http://www.starfiredesign.com/forum to make sure that your order was received and that I have your correct E-mail address. Failure to check on your order could mean a significant delay.

Classic Starfire Products

All *CLASSIC STARFIRE* products are available for order on our website through the Legacy CD or as individual digital documents. Original scenario books and other supplements will be re-releases over time after the release of the 3rd Revised Core Rulebook (this book). The following is a short list of some of the products associated with CLASSIC *STARFIRE* :

SKY MARSHAL #2 makes significant improvements to the ISF campaign system in addition to integrating the Alkelda Dawn technologies.

ISW-4 ARACHNIDS is over 225 pages long with dozens of scenarios, over 500 ship designs, and over 40 new items of technology including the complete list of Tech Levels 13 and 14. This product is LOADED with new tech items. It adds 6 HTL11 items, 22 HTL12 items, and 18 HTL13 items plus some miscellaneous ones at lower levels.

INSURRECTION: This is the first project that is entirely SDS from start to finish. It follows David Weber and Steve White's book Insurrection closer than Crusade or ISW-4: Arachnids followed the books of their names. A special

effort was made to have meaningful victory conditions for all scenarios.

SHIPYARD is a ship-designing program that follows the ship building rules for official *STARFIRE*. Shipyard is being released as shareware - you will be able to download {from the website} the Shareware version of the program for evaluation purposes (it is restricted to systems of maximum HTL 3), and if you like it and it runs on your computer, you can upgrade to the Registered version of the program.

Electronic Communique

Electronic Communique was "published" via E-mail during the late 1990's. Copies of the original EC's can be obtained by any CD purchase of digital *STARFIRE* products, or by individual ordering request through orders@starfiredesign.com.

The Future

The Starfire Design Studio has produced several newer versions of *STARFIRE* over the past decade. *GALACTIC STARFIRE*, *ULTRA STARFIRE*, and *SOLAR STARFIRE* are all available products. While these products are newer they also represent a different play style than *CLASSIC STARFIRE* and are not based on the *STARFIRE* history written by David Weber & Steve White.

You can find out more and get updates at:

http://www.starfiredesign.com/starfire.

STARFIRE

The Terran battleship emerged from the warp point, spanning light-years in the blink of an eye. A vast globe of gleaming high-tech alloys, the loving work of thousands of hands, the warship shimmered within the protective bubble of its shields. Within two minutes, a swarm of self-propelled mines, and a barrage of fire that built graduallly as the defending forces recovered from their surprise, tore the battleship into a million tiny shreds, leaving the surviving crew scattered amidst the debris.

It was going to be a long day for the Terran fleet.

In this updated and expanded edition of the classic game STARFIRE, players lead great space fleets through a "future history" in which interstellar superpowers clash in huge and bloody wars. Races featured in this set included the relatively peaceful *Terran Federation*, the war-like *Khanate of Orion*, along with smaller empires such as the *Empire of Gormus*, the *Ophiuchi Association*, and the *Rigelian Protectorate*.

The unique STARFIRE game system allows you to design your own ships, fitting out your fleet with ships personalized to your style of play. The swift-resolution D10-only system gives you the power to maneuver large fleets without sacrificing quickness of play.

Deply your fleet ... the universe is yours!

You've fought it out, ship to ship, and won; but do you also have what it takes to command a FLEET or, with *IMPERIAL STARFIRE*, what it takes to run an empire? Can you adapt or will your race slip back into the universal goo?
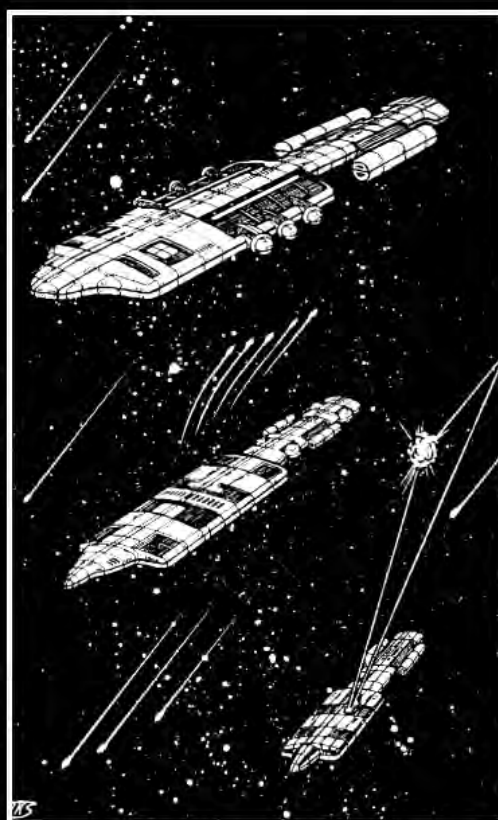
Terran Carriers in Battle

The link with *IMPERIAL STARFIRE* allows players to explore, exploit, and conquer their own galaxies. Deal with inscrutable aliens and alliances that shift and change as you struggle for your share of the universe.

Published by the STAFIRE DESIGN STUDIO.

NOTE: This product does not contain the required ten-sided dice nor a hexagon map, although any hex map will be sufficient.

Number of players:	Two or more
Recommended Age:	12 years or older
Playing Time:	Variable -- 15 min to hours
Complexity Level:	Moderate

Stock# CL-0100   Made in USA