ULTRA Starfire

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ULTRA Starfire

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Foreword

STARFIRE is a gaming system that simulates both tactical combat and empire building campaigns in space. Previous editions of the game are set in a "future history" in which interstellar super powers (such as the relatively peaceful Terran Federation and war-like Khanate of Orion) clash in huge and bloody wars. This history also includes wars upon or alliances with such smaller empires as the Empire of Gormus, the Ophiuchi Association, and the Rigelian Protectorate. The SDS has yet to decide whether to modify older materials or write new history in a different part of the galaxy (call us if you want to help do either). The SDS is focused more on the players using the campaign system to create their own "history" of empire building and political intrigue.

The STARFIRE system has been around for over 2 decades, progressing through a series of modifications and revisions as various designers and developers 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 Some of the revisions were good ideas…some weren't. Too often they resulted in patches and new rules which superseded those already in print and required continual cross-referencing between several sets of "official" rules. In November 1995, the STARFIRE DESIGN STUDIO (SDS) was created by Task Force Games to give STARFIRE some consistency and a long term look to the future of STARFIRE. Each member of the STARFIRE DESIGN STUDIO is a player of STARFIRE and an avid fan. One of the very first goals by the head of the STARFIRE DESIGN STUDIO was to explain why the rules work as they do using "STARFIRE Pseudo-Physics." The main goal of this effort was to make each and every technology internally and externally consistent with all the rules in STARFIRE. We readily admit that a few of these Pseudo-Physics are a great stretch of imagination, but once the stretch is made, we try to remain consistent in applying that physic.

STARFIRE comes of age in this edition as the actual players had a major say in how STARFIRE should be set up and played. A great deal of emphasis has been placed on making the game flow more easily, simpler to play, and in general more fun. Additionally the SDS has focused heavily on campaign rules and given them a vast amount of changes. Old STARFIRE hands will find it does many of the things the older games did in different ways. One of the biggest changes is to allow for three levels of rules: Basic, Advanced, and Optional. The Basic set includes the majority of the tactical rules (sections A to H) and is built for quicker and easier play than Advanced Rules. Advanced rules include the set of campaign rules for STARFIRE (what used to be IMPERIAL STARFIRE 3rd edition) but almost all have been simplified and are easier to play and work with. All single letter rules starting with the letter J or higher and all double letter rules (future expansions) are advanced rules. Optional rules are those that add a lot of realism but increase the level of paperwork and complexity. We hope in the future to create a rule supplement of just optional rules for those who enjoy more detail.

For those not already familiar with the concepts of the original STARFIRE rules, we have included an "quick-start" set of rules located on our Web site to get you quickly and painlessly into the STARFIRE universe. You'll have to take on additional concepts as you move from the "quick-start" to the regular rules, but the transition should be a simple one.

To eliminate confusion with the 3rd edition of STARFIRE, 4th and 5th editions will use letter-number rules. However, the rules are not always going to be in sequential order. This allows future additions to the rules to fit in an orderly manner. The rule booklet is laid out to allow players to hole punch them for easy insertion in a loose-leaf binder.

In an attempt to limit the size of printed material (and thus the cost to you), much of the explanation why things work have been moved to the comprehensive designer notes available on the STARFIRE web site.

This edition of STARFIRE has been in the works in one form or another since 1996. Play testing the campaign rules has exceeded 18 months. The SDS sincerely hopes that the effort expended will result in the best space exploration game on the market today.

Publisher's Information

STARFIRE is published by:

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Design Credits

Game Design 2004	Marvin R Lamb & SDS
Initial Game Design	Marvin R. Lamb
ULTRA Composition	James Yanchak
Original Game Design 1975 & 1979	Stephen V. Cole
Third Edition Game Design 1992	David M. Weber.
Production, Marketing and Promotion	Marvin Lamb
Countersheets	Jack Pottmeyer

Designer's Information

SDS is an internet focused company. It is preferred that all contact, submissions, etc. be done via the Internet but we understand that is not always possible.

Questions, comments, suggestions, and any expansion material for STARFIRE should be sent to Marvin Lamb at the STARFIRE DESIGN STUDIO address shown. All correspondence 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). Electronic Submissions to marvlamb@comcast.net are strongly encouraged.

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). In order to better serve the player community, letters asking 10 or fewer questions are given priority and are answered in 4-6 days. Letters with more questions are answered only as time permits (allow 2-3 weeks). 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. However, the E-mail list will generally provide this information, in detail. All questions and answers will also go on the SDS Web site.

Submissions of New Material

STARFIRE DESIGN STUDIO welcomes the submission of new STARFIRE material for possible publication. Send SASE for full details. Please do not send any submissions without writing or E-mailing first.

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How To Use These Rules

The ULTRA STARFIRE rulebook is a compendium of both the tactical and strategic rules. We have assembled these rules in a better format to help you learn them, and depending upon how you want to play the game, different rules are intended for different players.

In order to play *tactical battles* or *scenarios*, you only need to know the information in Sections A through H, and Appendix AA and EE (the charts and technology). These rules have been optimized for easy learning, and the extra rules for advanced technology do not need to be read before playing beginner battles.

In order to play *campaign games*, you will need to know how to run an interstellar empire. This is covered in Sections J through V. AppC-Play Advice and Example Month has been provided with all sorts of advice and examples on how to run your empire. Technology for play are in the AppA-Technology Trees and Systems. Many tables are duplicated in AppE-Tables, generally oriented for combat.

To *run a campaign*, and be the Space Master, you have to know how to setup and operate a game and deal with the players. This information is provided separately from the player's rules, in sections W through Z. In addition, we have provided ideas and advice on starting campaigns, different campaign styles and themes, and even some campaign "scenarios" for the Space Master in AppD-Campaign Ideas.

Sans parenthesis, multiplication/division is ALWAYS preformed before addition/subtraction.

AppC-Play Advice and Example Month deals with setting up your first race so reading this early may help.

Starfire Terminology

Starfire uses a very strict set of terms to present the rules. Starship means Starship, not Large Craft. Please read the first 3 paragraphs of [Section A] ***carefully*** before continuing. Also read the first part of [Section A5] and the first 3 paragraphs of [Section A6].

Understanding those 3 references will guide you in using the ULTRA rules effectively and efficiently.

The STARFIRE rules are fairly large and use a number of abbreviations and terms to represent various game elements. The following is a brief overview of the most common terms and abbreviations that you'll eventually learn. Unfortunately, reading this section can be rather tedious. Those that wish can skip to section B but will tend to constantly refer back to this section for a while.

IMPORTANT NOTE – The STARFIRE rules are written in a particular manner. The wording in STARFIRE has been carefully considered. Thus, some restrictions are determined by the definitions of the terms used. For instance, the transit carrier rack rules [C6.02] states that ships may be carried. The definition of ship omits bases, space stations, small craft, AP, etc., and thus bases, space stations, small craft, AP, etc. cannot be carried. However, later in the rule, small craft are allowed to be carried. Since the rule specifically allows this "exception," it is permitted. Some rules, especially tech rules, may *explicitly* override other rules. This override will apply only when both rules are activated at the same time.

In order to eliminate most disagreements over what the rules do allow, the following guideline has been instituted: If a rule does not specifically state something can be done, then the something in question is not do-able. In no case does the omission of a restriction imply that the restriction does not exist. For instance, the rules do not specify that you can tractor planets, but the rules also don't specify that you cannot tractor planets. Despite this omission, you cannot tractor planets. The rules are written so that omitted restrictions are assumed to exist.

A1 Game Scale (General Definition)

The game scale is a measurement of time and space within the game. The following is a complete definition of the game's time scales and their equivalents.

A1.01 Time Scale

Game Time	Equivalent	Equivalent
1 Month	6 Weeks	30 Days
1 Week	5 Days	120 Hours
1 Day	24 hours	1440 Minutes
1 Hour	60 Minutes	120 Tactical Turns
1 Tactical Turn	30 seconds	

STARFIRE is played on three, interlaced time scales: strategic, system, and tactical: Strategic activities are measured in strategic turns, each called a "month" in these rules. Economics, shipbuilding, and the like occur at this scale. The other divisions of the month are strictly for easing player perceptions as no one wishes to discuss things that happen every 2880 tactical turns (1 day). The system level is used when maneuvering units within the same star system that are well beyond weapon range. The system level is resolved in increments of 1 day. The tactical level is used for ship-to-ship combat resolution.

A1.02 How the Game Scales Interface (General Definition)

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 [Section Q] for detailed rules on strategic movement and [Section C] for details on system level movement and tactical level movement.

A1.02.1 The Strategic Level. The strategic level is where all strategic movement (between star systems) or Imperial activities occur. The time period for the strategic level is the Month (30 days or 6 weeks). Campaign games use this level for decision-making and record-keeping activities. When an unknown star system is entered or unknown spacecraft are encountered, play may shift to the system scale. All strategic movement [Section Q] is calculated in increments of StMP.

A1.02.2 The System Level. The system level is used for movement within a star system. Often such movement is abstracted to the strategic scale, but sometimes the exact location of various units within a system becomes important. System scale is resolved in periods of 1 day. The system level is used to resolve all movements and activities within a star system when encounters may occur. The base time period for these activities is 1 Day (24 hours), although this may be subdivided if required. Please note that a speed 1 unit takes 1 day to travel 1 sH (2880 tH) or 30 minutes to travel 60 tH. (The normal encounter range.) With that information, exact timing of encounters and reinforcements can be determined. Note: 2880 TH = 12 LM distance, 12 LM = 1 sH, and 1 StMP = 30 sH.

For simplicity, when reinforcements are not near (such as in the same or adjacent sH of the encounter), do not bother with exact timing, as it likely will not matter. Determining the sH (or even general vicinity) and day of the encounter is sufficient [V1.01.5].

A1.02.3 The Tactical Level. The tactical level is used for ship-to-ship combat resolution, and resolved during the tactical turn. Combat can occur once units reach maximum weapons range; however, maneuvering prior to combat may occur much sooner.

Once one opposing force has detected the other, but prior to itself being detected, it can *attempt* to maneuver to set up a more favorable combat situation (or avoid combat). If the detection range is above 60 hexes, divide the detection range by an even whole number (the multiple) such that a whole number in the range of 40 to 60 results (FRD). (Note that you are simply counting each hex as 2 or more hexes until the units get close enough to use a 1 hex equals 1 tactical hex ratio). Play can proceed to the map with each hex counting a multiple number of hexes as just determined. As units get close (within combat range or within 10 hexes), expand the map by choosing a center point between enemy fleets and moving all units 50% further, directly away from, the center point and halving the multiple. This can be done as many times as needed.

If the detecting force simply wishes to close and engage, then assume movement occurs until the other side detects the enemy. At that point, the enemy can also maneuver.

Example A1.02.3 - Movement to Weapons Range

Regardless of pre-movement intentions, forces should be placed on the map when 60 tH real range is reached unless detection has not occurred, in which case place units on the map when detection occurs.

Units that have not detected the enemy are restricted to movements that follow their current orders. Many times this is a

straight line at the tactical level but the player may write an SOP [K6] that performs random 60 degree facing changes or something to prevent this problem. However, this reduces the effective strategic speed and increases travel time. (See [Section Q] for more information about strategic movement)

Once a player has moved out of weapons range and can maintain that range without question for 10 minutes (no need to play out the turns), play reverts to the system scale until the range begins closing again.

A1.02.3.1 Multiple Resolutions at Lower Scales. It is possible for multiple tactical engagements to occur in the same or different system hexes simultaneously. However, unless reinforcements are possible (in the same sH), battles should be played to a conclusion. When they are possible, players must prioritize the order in which engagements will be gamed out. To do this accurately, players should game out 120 tactical turns (1 hour) of the battle which began first, then freeze that battle and game out 120 tactical turns of the battle which began second, etc. until all battles in that hour are done. Continue repeating the process until all battles are completed.

This process is never intended to prevent reinforcements from joining a battle in a timely manner. If the battles are close enough that they might merge/overlap the same time period, they should be treated and played as a single wide-scope battle.

A2 TACTICAL GAME MAP

The tactical map is any hexagonal playing surface on which combat is gamed out. Normally, the large 4 part map is used. During tactical combat, each hex represents an area approximately one quarter of a light second (46,875 miles or 75,000 kilometers) across. There are no map edges in outer space and fleets may move beyond the edges of the map by using another map or by shifting all objects on the current map in the same direction and number of hexes.

Each hex is numbered for easy identification for scenario set up. Directional references are made to a scattergram.

A2.01 SCATTERGRAM

The Scattergram is simply a single hex with the surrounding hexes representing directions. Starting with north (map numbers face up) each direction (surrounding hex) is numbered clockwise 1 to 6. The scattergram determines, among other things, movement orders when the optional simultaneous written movement rules are used, the initial facings of units in some "historical" scenarios, and the facing of any unit making transit through an unsurveyed warp point. A scattergram might not be printed on the map.

A2.02 HIDDEN MOVEMENT

In games with an SM, the players may wish to use "hidden movement," where the SM keeps a map with all the units and each player has a map with only his units and any visible enemy units. This type of play takes a little more time, but has the benefit that "fog of war" (the inability to see enemy units that are not in sensor range of any of your units) can be used during the battle to try and fool your opponent, run away, etc.

It is *optional* but suggested that if hidden movement is used, that simultaneous written orders [HH3.08] also be used so that the SM can simply move units around and announce any change in detection or resolution of enemy units.

A3 PLAYING PIECES

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 squadron strike counters. For the most part, however, each counter represents an individual starship, squadron, orbital base, space station, etc.

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

The counters provided with STARFIRE are un-numbered (the white box is for you place a number in), meaning that they do not have any unique numbering to identify each counter separate from each other. This is so that the players can number the counters themselves. When you buy more counters to supplement your collection, then you can continue the numbering sequence where you left off (or replace lost counters), without any duplicate numbers to cause confusion. Long term, this is much more flexible for the player although it entails a small bit of work at the start.

A3.01 TYPE CODES

Unit Type	Code	Unit Type	Code	Unit Type	Code
Explorer	EX	Superdreadnought	SD		
Escort	ES	Monitor	MT		
Corvette	CT	Heavy Monitor	HM		
Frigate	FG	Super Monitor	SM		
Destroyer	DD	Leviathan	LN		
Light Cruiser	CL	Juggernaut	JG		
Heavy Cruiser	CA	Mammoth	MM	Space Station	SS
Battlecruiser	BC	Colossus	CO	Base	BS
Battleship	BB	Giant	GN	Freighter	FT
Dreadnought	DN	Titan	TN		

Carrier types may add a "V" after the hull codes to indicate function. For example, BBV, CAfV, BS5V, or BBtfmV.

Warships that look like Freighters may add "(FT)" after the warship code. For example, BB(FT), BBtfm(FT), or BBf(FT)

Fast Hulls [Con.01] have an "f" after their designation. However, the counters were printed before this change and they use "a" for a fast (old advanced) hull designation. For example, BBa should be BBf.

Hull Improvements [Con.02] have a "t" or "d" notation. For example, BBt or BBd. No counters are so printed.

Generational Hulls [Con.04] have generational codes {
a, b, e, i, m, etc.}

Hull coding is Hull Type{Fast}{Improvement}{generation}.

Small Craft Type	Code	Small Craft Type	Code
Fighter Squadron	FQ	Shuttle	st
Gunboat Squadron	GB	Assault Shuttle	ast

Small craft [Con.02] may have a generation code after the type (example, FQa, GBm, etc.). Bases and FTs have a number after their type to represent size (example, FT2, BS4, etc.)

A4 Ship Control Sheets

The unit "control sheet" is a very important element in the game. There are two types of unit control sheets: large units and small units. Large unit control sheets are used for any large unit, such as starships, bases, space stations, PDC. Small unit control sheets handle fighters, gunboats, and other small craft. Spaces may be used to separate sections (unit groupings) on a control sheet for easy reading.

Each large spacecraft in the game has a unique control sheet that details what weapons, armor, personnel, etc. are on the ship and able to be used. Included are quick references to provide information about capabilities and what is stored on board, to allow for ease of use during combat when you have multiple ships to deal with.

Rule [A4.01] describes the master control sheets for large units in the tactical scenarios provided. Each scenario lists the units of each class engaged in the scenario. During campaign games, each player has a master control sheet for each type of unit he has available in his game. Before tactical combat begins, the players create a control sheet for each unit by copying the appropriate master control sheet onto paper, whether it is for a tactical scenario, or a campaign battle.

A4.01 Large Unit Control Sheets

A large unit's control sheet lists its internal systems in order from left to right. Each internal system is represented by a "code." These codes are one of the following: a single capital letter or symbol which may be followed one or two lower case letter(s) and/or a numeral(s), or A set of letters/numbers inside of parentheses "()." Any code may be follow by a small "x" (the multiplier) and a number. This indicates that there are that many systems in a row. A group of different systems may be enclosed in brackets "{}" and followed by a multiplier. This indicates that many groups of those systems.

For Example: "{(Bsa)Hx3AHx3}x3" expands to (Bsa)HHHAHHH(Bsa)HHHAHHH(Bsa)HHHAHHH.

The simplified control sheet is the suggested format for use as a combat record. More ships can fit on a single piece of paper, and all the extra information is not necessary as you can look it up or figure it out if you need it. 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 which are still functional) for the next round of combat.

Engines are noted by either their specific code (Ia, Je) or a general code (I, J, etc.) with the generation listed on the combat reference line.

First line after the # allows a player to record tactical turn information, like when his cycling weapons will fire, etc.

Example A4.01 - Starship Control Sheet Examples

A4.02 Small Unit Control Sheets

Squadrons of fighters and gunboats are handled in an abstract way, with a damage point capacity per squadron. Small craft, on the other hand, form into squadrons of a set size (4 for ast) when in combat. Any squadron's weaponry is noted collectively for the whole squadron - all the craft within a squadron are armed identically [G4].

Example A4.02 - Fighter Squadron Control Sheet

Example A4.02 - Gunboat Squadron Control Sheet

Example A4.02 - Small Craft Control Sheet

A5 Abbreviations Used in Starfire

Abbreviations and definitions are used in STARFIRE in order to shorten the rules. If you find an abbreviation or term that you do not recognize, in most cases you should be able to find the definition here. Some abbreviations are actually ship size codes and can be found in sub-section [A3]. Technology codes or abbreviations can found in the technology definitions in [AppAA-Technology Trees and Systems].

AF – Asteroid Fort
AP – Automated Platforms (space buoys, drones, and pods)
App – Appendix: Double Letter EX:[AppAA]
ast – Assault Shuttle (upper case letters are Asteroid)
AST – Asteroid (Lower case letters are Assault Shuttle)
BC(FT) – Warship that looks like a freighter, in this case a battlecruiser that looks like a freighter
BS – Base.
bb pt – Boat Bay point
csp – Cargo Space Point (different from "CSP")
CD – Courier Drone (Drone1-cm/n) [AppAA-AP.02]
CSP – Combat Space Patrol (different from "csp")
DF – Drive Field.
EMS – Engine Modulation System; works similar to EM and seems to act like an Electronic Counter Measures.
EM – Engine Modulation [C8]
FRD – Fractions Round Down – Same as ignore all fractions
FRN – Fractions Round Normally – 0.5 or more rounds up
FRU – Fractions Round Up – All fractions round up (1.01 = 2)
FT – Freighter
GB – Gunboat
GPV – Gross planetary value [L3]
GSV – Gross system value; sum of all GPVs in the system
HD – Habitability Differential [Definition]
HEL – High Economic Level [L2]
HI – Habitability Index [Definition]
HS – Abbreviation for "Hull Spaces"
LEL – Low Economic Level [L2]
LM – Light Minute which is 18 million kilometers
LOD – LOw Detection speed [D5.03.2]
LS – Light Second which is 300,000 km
MC – Mega-Credit [Section L]
MCP – Marine Crew Points (not currently used)
MP – Movement Point [C2]
MSP – Missile size point
Qv – Can mean either 1 civilian quarter system or 1 unit of troops that fits into a single civilian quarter system.
PDC – Planetary Defense Center
pt – Point (also **pts** is points). As in one damage point.
PTU – Population Transport Unit
PU – Population Unit
RACIAL CHARACTERISTICS - These define the psychological makeup of races (also called Racial Stats).
RM – Racial Militancy
RD – Racial Determination

RC – Racial Chauvinism

RO – Racial Outlook (the average of RM, RD, and RC)

RCP – Regular Crew Points

ROF – Rate of Fire: How many times in a combat pulse a weapon can fire.

SDS – STARFIRE DESIGN STUDIO, owner of STARFIRE

SM – Space Master: one who controls and coordinates a campaign game's events for players/empires. In these rules, SM never refers to a Super Monitor except perhaps in an example.

Smcft – Small Craft

SS – Space Station [D6.03]

StMP – Strategic Movement Point [Q1] - Also the *average* physical distance between two systems via a connecting WP.

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

tH or TacHex – Tactical Hexes (4 tH = 1 LS)

TR – Threat Response Research [N9.04]

WP – Warp Point

Die rolling abbreviation: #dx – This tells players that they are to roll # number of dice with x sides and sum the total. 1d100 indicates that you are to roll two ten-sided dice with different colors and calling one color as "high." The high roll is the number of 10s (multiply it by 10) and the other "low" die is number of ones. Thus if a roll of 5 "high" and 3 "low" occurs, the real number is "53." A roll of 00 is always treated as 100 not zero.

A6 GAME DEFINITIONS

The STARFIRE game is full of distinct terminology used to describe certain rules, actions, game elements, etc.

If you find a Term you do not know, first look near the top of the section of rules your in. If you don't see it there, look near the start of the Chapter for a definitions section. If not there, return to Chapter A (here) to find the Term.

I.e. While examining rule B6.01.1 you find an unknown Term. Begin by looking in B6, then near the top of Chapter B, and finally in Chapter A to find the Term.

A6.01 GENERAL DEFINITIONS

Burnout – Military engines that exceed safe cruising speed may burnout during extended operations [C7]. Burnout can also occur during DeTuning operations [C9].

Commercial Engine – An engine whose tactical speed is the same as its Safe Cruising Speed [C7], such as (Ic) engines.

Cruising Speed – Same as Safe Cruising Speed [C7].

Datalink – A technological system that allows multiple units to combine their fire into a single volley [E7.02]. Some units, like PDCs and armed small craft, inherently have a form of datalink.

Datagroup – A group of units that are datalinked.

DeTuning – A ship that DeTunes its engines allows an increase in tactical speed at the risk of engine Burnout [C7].

Down – This term is used in conjunction with shields and drive fields (shields down, DF down). It indicated that either all shield generators or all engines are not operating.

Drive – This term is synonymously with that of engine.

Drive Field – Generated by the engines, the STARFIRE DF is outside the shields and will interdict (destroy) small physical objects.

Engine – Any type of engine system (I, Jb, Ice, etc.).

Facing Change – Often termed "turn" when talking about ships, a facing change causes a ship to change its direction of travel.

Habitability Index – A value between 1 and 10 that indicates the "habitability" of an earth-like world.

Habitability Differential

-- Absolute difference between an environment's HI (either starship or habitable planet) and a race's homeworld HI. Some planets have specified environment and no HI or HD applies in those cases.

Inactive unit – A unit that has or can have a DF but has it turned off (any large object with engines off, BS, SS, etc.). Inactive Smcft are Small Craft with the drive field off.

Mega-Credit (MC) – A unit of measurement of monetary wealth and resources within the empire.

Military Engine – An engine which allows a ship to have a tactical speed that exceeds its Safe Cruising Speed [C7], such as (I) or (J) engines.

Month – Period of time equal to one Strategic Turn (30 days).

Population Unit (PU) – A single unit of population that provides 1 MC of income and resources to the empire. A single PU is larger than 1 PTU in SMALL or larger populations.

Population Transport Unit (PTU) – A race-relative population unit used for calculating the cost and cargo requirement for colonization and population transfer. (For Terrans, this is the equivalent of 50,000 humans).

Rate of Fire – The number of times a weapon can fire (generate a shot) during a single combat pulse.

Regular mode – Missiles that are not sprint mode missiles. This includes missiles launched from Ra, Rc, etc.

Safe Cruising Speed – Maximum speed that a ship can travel long distances without suffering engine burn-out. [C7]

Salvo – A single shot from a weapon that can fire one or more shots or a collection of single shots from multiple weapons fired simultaneously from the same ship or datagroup. Location of the weapon (same ship or datagroup member) is not important for determining whether it is a salvo or more than one salvo [E7.02].

Shot – One output from a single weapon. Some weapons have multiple shots in a combat pulse.

Sprint Missile – High speed missile that sacrifices range for better D system avoidance.

Standard Operating Procedure (SOP) -- These are "orders" given by emperors to all their units to behave a certain way under certain conditions in the absence of other orders [K6].

Station-Keeping – A unit whose engines can only operate in standby engine mode is said to be Station-Keeping. It allows

a unit to remain in place or orbit while having DF protection.

Standby – A ship or unit with engine output reduced to a bare minimum (orbiting only), no movement is possible. A unit does have a blindspot while in standby mode.

Tactical Speed – The fastest speed a ship can move without using detuning.

Turn – Used with caution. When alone, this refers to a tactical turn or sometimes a facing change. It can mean:

1. Tactical Turn - 30 seconds
2. The act of a unit changing its facing (Facing Change)
3. Strategic Turn - 30 days, usually called a month.

Turn Mode (TM) – The amount of MPs that must be expended since the last facing change (or other action that resets the turn mode) before another facing change can be done. [C3.01]

Tractor Link – A tractor link is a term used to describe an established tractor or pressor beam connection between the tractoring/pressoring unit and the tractored/pressored unit.

Uninvolved Player – A player that does not have game contact with any of the empires involved in the situation.

Volley – All salvos [E7.02] fired from a single ship or data-group during the same combat pulse.

A6.02 SPACECRAFT DEFINITIONS

Asteroid Fort (AF) – A type of large spacecraft built into an Asteroid; not a PDC despite the similarities.

Automated Platform (AP) – Unmanned small unit built for a wide variety of purposes. Includes Drone and Buoy.

Base – Space installation designed specifically for military use. Bases are not capable of warp transit but have station-keeping drives. They may be placed at any point in a star system and may either orbit or remain stationary. Often used to guard warp points.

Buoy – Immobile AP built for a wide variety of purposes, such as sensor, navigation aid, communication, or weapon platform.

Carrier – A unit that "carries" small craft in launch facilities.

Class – This 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 [E5.02.1] with a tractor attached.

Drone – Mobile warp-capable automated platform.

Fighter – A special manned smcft type with limited endurance and designed as a non-warp capable weapon platforms.

Freighter -- Commercial ship used to haul cargo around, usually unarmed or with very limited defenses.

Gunboat – Special manned smcft type with great endurance and designed as a warp-capable standoff weapons platform.

Jump Capable – The ability to use jump transit rules [C4.05].

Large Spacecraft – This includes Starship, Base, Space Station, and Asteroid Fort.

Note: **Type** – When referring to *Large Units*, this is the general category that the unit falls into, and for *Starships*, to the size category it falls into (CA, CL, DDf, FGf, etc.). The function, when visible externally (FT7, FT6, BC, CA, etc.) as a distinct type, is also covered. The counter used for a large unit will normally match its type or function.

Large unit – Any Large Spacecraft, plus PDC [D6.02].

Launch Facility -- A system that can land and launch other units, usually small craft. Fighter bays, XOg, and Boat Bays are types of Launch Facilities.

Maximum Speed – Throughout the rules, the term maximum speed has a specific meaning that is sometimes hard to understand. "*Maximum speed*" is defined as using all currently operable engine rooms, of the active type, without exceeding a number of active engine rooms that exceeds a hull's maximum speed for that type of engine. In the towing rules and the engine rules, maximum speed can refer to both the maximum speed of the ships hull and/or the current maximum speed the ship is capable of.

Example: Maximum Speed Definition

Mine – Armed Buoy that are built with the AP rules. [H3]

Planetary Defense Center (PDC) – A group of systems installed on a planet, which operates in a manner similar to large spacecraft [D6.02].

Pod – Armed Drone that is built with the AP rules [H3]. Exception: **life pod** (survival craft for large unit crews).

Shuttle – An unarmed manned smcft designed to ferry cargo, personnel, and information. These are the workhorses of the in-system CFN and invasion fleets.

Ship – Same as Starship

Small Craft – Small mobile manned spacecraft designed for various purposes. Types are fighters, gunboats, and shuttles.

Small Mobile Unit – A specialized detection term which includes Small Craft, Drones, and CC mini-Drones (but not RD).

Small Unit – This includes all space units which aren't Large Spacecraft and which are attacked under [G2.01]. These include Fighters, Gunboats, Shuttles, and AP, at this time.

Note: **Type** – When referring to *Small Craft*, each generation and type of unit are a separate type, for sensor information purposes. That is st, ast, FQa, GBi, 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, however, fighters are generally represented by a Fighter (Ftr) counter. If an opponent asks, and is at a range at which type and generation must be revealed, the player must always give the exact fighter type information.

Spacecraft – Any unit, large or small, capable of operating in space.

Space Station – Extremely large installation orbiting specific natural system bodies within star systems. Space stations are normally placed in geosynchronous orbits and usually contain shipyard facilities. They are bigger (and more fragile) than bases and may contain military (armed) components. Like a base, SS engines can only use standby mode, which allows for attitude adjustment and interdiction.

Squadron – A group of armed small craft which fight as a single unit.

Starship – A large spacecraft that can have engines installed within it. Types include Warships, Freighters, and Carriers. Starships are generally capable of making a warp transit on their own.

Strikegroup – All squadrons operating from a single carrier make up a strikegroup.

Transit Carrier – Any ship that has transit racks.

Units – Any hull type (small or large) that is used in STARFIRE.

Warp Capable – Any unit capable of transiting safely through a Warp Point.

Warship – Any military hull starship, generally used for combat-oriented missions.

A6.03 TECH SYSTEM DEFINITIONS

Active Defensive System – Defensive systems that must be turned on to have an effect.

Example: Tractor disrupter "Td" and EMS "?"

Commercial System – Any non-military system [H1.04.2]. These systems are most often used on freighters.

Defensive Weapon – Any system that normally defends a Spacecraft from enemy fire but may be capable of direct fire at enemy units.

Example: Point Defense (D)

Long-range Weapon (LRW) – A weapon which typically has a combat range that is longer than a ship's standard sensor range (such as missile, kinetic gun, or plasma torpedo).

Passive Defensive System – Defensive Systems that are always active. Some systems defined this way may have active type functions but they are unable to be switched on or off. Armor "A" is a passive system

Projectile Weapon – This is any unguided munitions weapon (such as kinetic guns).

Short-range Weapon (SRW) – A weapon which typically has a combat range that is shorter than ship's standard sensor range (such as laser beams, force beams, energy beams, sprint missiles, or plasma guns).

Transit Racks – Transit Racks allow ships to transport other ships by attachment to their hull [C6.02].

Warhead Weapon – This is any weapon with a warhead (such as missiles or plasma torpedoes).

Weapon – Any system that normally fires at large spacecraft using a to-hit & damage chart in AppEE-Tables. Most of these weapons can fire at small units using [G2.01].

A7 STAR SYSTEMS (GENERAL DEFINITION)

Star systems consist of Warp Points, stars, system bodies, and any artificial space constructs (like a Ring World) that orbit a central point (central for game purposes). The term Star System also includes Starless Nexus. A detailed description of system bodies and how they are generated is described under the System Generation rules in [Section W], The Star System survey rules are described in the Survey and Exploration rules in [Section R].

A7.01 STAR SYSTEM DEFINITIONS

Abnormality – An abnormality is a variation from the standard methods of system generation. The chances of an abnormality in each star system is very small [W5.05]. The abnormality chart [Table W5.05 Anomaly Systems] is used to determine what type of abnormality occurred, and what the rules are for creating the abnormality.

Asteroid – A small conglomerate of rock and material that is large enough to be used to make bases or, when much larger, to plant small outpost colonies on.

Asteroid Belt – A collection of very small asteroids that circle a star together, generally formed as a ring around the star. Usually contains some larger asteroids (qv).

Binary System – A star system with 2 stars circling each other. Each star may have its own stellar disk, asteroids, and planets.

Moon – A large ball of rock that circles around a planet. A moon is much larger than an asteroid but smaller than the planet it orbits. A moon can support a decent sized population.

Nebula – A nebula is a cloud of gas that hangs in space. Some stars are formed inside nebulas and have this "nebulous material" inside the star system. This is called "system terrain."

Planet – A large ball of rocky or gaseous material orbiting a star. Some planets make valuable colony sites, others are nearly worthless. Many planets have satellites of their own (moons).

Stellar Disk – A circular area around a star that *may* contain planets and/or warp points.

Star – A large ball of incandescent gas that is the source of a star system's light and heat energy.

Star System – A grouping of gravitic objects (Stars, WPs, Planets, Moons, etc.) with a single common center point.

System – This term is synonymously with that of Star System; however, it can mean a ship's system (a piece of technology).

Starless Nexus– This is an area in space where warp points were formed without a star nearby.

System Body – A Star, Planet, Moon, Asteroid Belt, or HGT

Terrain – Generally means any kind of system body within the star system, and how it relates to other system bodies (distance, direction, etc.). Nebula is often referred to as "system terrain" because it covers the entire star system and effects everything inside the system.

Terran World – A type T or ST world, which means it is "Earth-Like" and can support oxygen-based life-forms.

Tidelock, Moon – A moon that is tidelocked is gravitationally bound to the planet that it orbits so that it orbits with the same side always facing towards the planet.

Tidelock, Planetary – A planet that is tidelocked is gravitationally bound to the star that it orbits so that it orbits with the same side always facing towards the star. This tends to make the planet super hot on one side, and super cold on the other,

with the end result of a planet that is volcanic or has a large molten core.

Warp Point – The entrance to a wormhole-like between star systems, described in [A8] and [C4].

A8 WARP POINTS (GAME DEFINITION)

Warp points (abbreviated WP) are anomalies in space/time which allow starships to make instantaneous transits over interstellar distances. There are many sub-types of warp points (described under [C4]), but all are formed by the interaction of stellar gravity wells and share certain common traits:

A8.01 FORMATION AND LOCATION

Warp Points usually form in the strong gravitational fields around stars. Warp points do not orbit the star, but move with it through space in a fixed orientation. Warp points are usually some distance from the star, up to 360 light minutes (30 sH) away, but some are much closer.

A8.01.1 Starless Nexus Occasionally, a group of warp points will form in deep space, away from a star's influence. Oddly enough, a "Starless Nexus" (starless area with warp points) generally has a larger number of warp points than star systems do, and scientists speculate the reason is because the gravitational fields either distort, hide, or simply degenerate (destroy) warp points around the stars.

A8.02 TRANSIT LIMITS

Only physical objects may pass through warp points.

Objects that pass through a WP simultaneously can collide or interpenetrate [C4.04] resulting in a spectacular explosion.

If a unit's drive-field cross-section is not circular in shape, then the unit will be unable to enter the warp point and will "deflect" to the side of the warp point's entrance.

No unit can be forced to enter or towed into a warp point, and can choose to modify their cross-section so they deflect away from any warp point they are forced towards (specifically bases on tractor or presser beams, but any unit can do this).

Warp points may be thought of as "gravity whirlpools" whose "gravity surge" will destroy units or objects without sufficient drive-field strength to protect them (such as missiles, fighters, etc.). Units without at least one functioning engine room are destroyed when they attempt to transit.

A8.03 TRANSIT EFFECTS

Warp points are full of chaotic energies between the entrance and exit of the warp lane. This chaotic energy disrupts the drive-field's tuning, causing small amounts of feedback and causes the drive-field to have no recognizable (or readable) tuning. Thus, transiting ships are disoriented and their sensitive electronics are disrupted [D7.01]. For a short while, they are unable to launch units, and the ship's engine signature is not recognizable.

The ships themselves will be thrown violently off course during transit (random emergence headings), unless the exact warp point entry and exit points have been mapped. Once science instruments have examined the warp point during transit and this information passed on, starships may compensate for its surge patterns and emerge on the heading of their choice.

A8.04 DETECTION AND TRANSIT SIGNATURE

Warp points are impossible to detect, though a survey can calculate their position. Warp transits do not produce any detectable emission. However, a transiting unit's drive field produces a "transit signature." If detected, this signature is used to calculate (takes 1 day) a warp point position and transit information [D5].

A9 STRATEGIC GAME DEFINITIONS

These are definitions and terms used specifically in the strategic/campaign games, and not in the tactical game.

Commercial Freighter Network (CFN) – The Commercial Freighter Network represents an imperium's privately-owned (or, at least, consumer-oriented) freighters. It extends only to star systems with imperial population or conquered population being garrisoned by imperial troops. The CFN is not as closely controlled by or responsive to the imperial government as Imperial Freighters, but the imperium is not required to build individual ships for the CFN or pay maintenance for its units. It is a subsumed portion of the game.

Economic Level (EL) – The Economic Level of a planet, star system, or imperium represents, roughly, its overall economic efficiency. It also represents the general education level of its populace, and thus a starting point and difficulty level for any R&D project. It does not in any way represent what technologies a race may or may not have available but it may hint at a general ability level.

Empire – Any multi-planet and/or star system political unit. Often called "imperium" when speaking in general terms and an "empire" when referring to player-controlled empires.

Economic Variety Bonus (EVB) – The value added to the income of all planets in an empire during the amalgamation process.

Gross Planetary Value (GPV) – The value of a planet, in megacredits, to the controlling player or NPR.

GSV – Gross system value. The value income of a star system.

Imperial Capital – The planet that governs an imperium.

Imperial Command Center (ICC) – Imperial Command Centers are communication and decision-making nodes within an imperium. They may be thought of as sector capitals, as they contain both civilian and military command facilities.

Imperial Communication Network (ICN) – The Imperial Communication Network is the chain of communications between star systems. Prior to the establishment of extensive light-speed communication networks, communications will tend to be slow and cumbersome.

Imperial Freighter – These are freighters owned by an imperium's government. They must be individually built, are treated exactly as military starships for movement purposes, and require maintenance payments.

Maintenance -- This is a monthly fee paid for military units, Imperial Freighters, and some infrastructure components of an imperium. It represents spare parts, repairs, routine servicing, crew wages, etc.

Non-Player Race (NPR) – Any civilization-building sentient race other than that of one of the players. NPRs may be player-controlled (depending upon the military/political relationships a player race can establish with them) or controlled by the SM. In games without Space Masters, an "uninvolved player" controls "independent" NPRs.

Player Race – The race native to a player's home world. Also called an "Imperial Race" to differentiate it from non-player races incorporated into an empire's political structure as subjects or allies.

Record Form – This is actually a collection of forms, used and generated by the player to detail what his empire is doing during a specific month. These forms are turned in to the Space Master at the end of the month so that the Space Master can run the month, determine any battles (if any), and generate the Turn or Month Reports to give back to the players so they can do their next Strategic Turn.

Science Level – The amount of theoretical knowledge pertaining to one specific scientific category. As a category's SL increases, the more advanced the technological systems are that can be developed.

Space Master (SM) – The game's referee, organizer, chief clerk, and general all-round Master of the Universe (Warning: An irritated SM can be very nasty to your race).

Spaceport – A civilian ground facility for handling ground-space traffic.

Month Report – This is the information given back to the player by the Space Master, detailing any activities and changes that occurred in his empire during the last Month.

Uninvolved Player – This term is used often in rules governing NPR actions and should be clearly understood. An uninvolved player is one who has no contact with the NPR and (if possible) none with the player race in an NPR-player race situation.

If all players are in contact with the player race, then the player whose empire has the *least* favorable relationship (short of war) with the player race should be selected as the uninvolved player. If more than one player has an equally nasty relationship with the player race, then a random die roll should be used to decide which of a player's enemies will be considered "uninvolved." NPRs operated by Uninvolved Players are still restricted by the normal NPR operating rules and relationships.

Next Section: B - Tactical Sequence of Play

B – Tactical Sequence of Play

The "Sequence of Play" is the order in which each tactical turn's activities take place. STARFIRE has a simple sequence of play to facilitate large battles, but even so the later technology levels add a few sub-phases. The general sequence of play is:

1. ***Initiative Phase:*** Players determine who has the initiative as per section [B2].
2. ***Movement Phase***: The players move their units according to the provisions of [C2]. Units with Presser beams attached move farther away at the end of this phase.
3. ***Combat Phase***: Players fire the weapons of their starships, then their small craft, and finally their AP, etc. in accordance with the rules governing combat [Section D].
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 [E5].
5. ***Record Keeping Phase***: Any required record keeping is done and the turn marker is advanced to indicate the start of another tactical turn.

B1 Complete Sequence of Play

B1.01 Alternate Units and Sides

(Alternate units) means that a unit or datalinked group of units from one side fires, then a unit or datalinked group of units from the next side fires. This is repeated until all units have the opportunity to fire. *(see right hand column)*

(Alternate sides) means that one side fires ALL of its units, then the other side fires all of its units (see Phase 3. Combat Phase [D1]).

B2 Tactical Initiative

Initiative is an important part of the sequence of play, as it determines which player's force had better reflexes and timing during the turn. This allows the player to move last and fire first, making it so he can better take advantage of his opponent's maneuvers and then do damage first. Initiative gained during one turn does not ensure that your force will have the initiative on a later turn, and often the forces trade initiative many times during the battle.

Definition - A **"fleet"** is a group of units, potentially of multiple races, who are cooperating and are within 1 sH of the fleet flagship.

B2.01 Determining Initiative in 2-Player Battles

Each player rolls 1d10 for his entire force and the player with the higher die-roll result wins the initiative (any ties are won by the player who lost initiative on the last turn, reroll if first turn). He will move last in each pulse of the movement phase and begin the combat phase by firing one of his units first. During a warp point assault [C4 and D7.01], the player making transit always wins initiative on the first turn of battle.

B2.02 Determining Initiative in Multi-Player Battles

In games with three or more players, each player rolls 1d10 as in [B2.01], 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. Races fighting on the same side make only a single die roll. Cooperating players need to designate an overall fleet flagship for initiative purposes.

B2.03 Tactical Command Control (flagships)

Command and control are critical to combat efficiency. Tactical command is exercised from the command unit (flagship) carrying the Commanding Officer (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 after all other modifications, if any.

B2.03.1 Each player must assign a large spacecraft as the flagship for each of his forces. The grade [F3] of the flagship, or the race's base grade if no flagship is present, modifies the initiative roll. (CIC) equipped flagships receive an initiative bonus (see [Electronics]). A ship with the ranking graded admiral [Section S] must become a flagship.

B2.03.1.1 An admiral's initiative is always used in place of his flagship's grade but 1/2 the Admiral's Flagship's crew's initiative modifier (FRU) is also added to the initiative roll (represents the ability of that crew to process the Admiral's orders, work with his staff, and transmit orders to the rest of the fleet). An admiral's initiative modifier only applies in place of a race's grade when at least 2/3 of his assigned combat HS are within 30 tH (i.e., he has to be "at risk").

Only the "at risk" Admiral assigned the largest portion of combat forces can roll for initiative. When multiple admirals are present, the higher ranked (may not be the higher graded one) must be assigned the largest portion of combat forces.

Only Admirals who were "at risk" for the majority (66+%) of the battle can roll for grade advancement. Alternate Admirals who were "at risk" for the majority of the battle can roll for advancement at 1/2 (FRU) the chance. Such an admiral must be in charge of a significant (25+%) detachment. Maximum number of Alternate Admirals that can roll is TWO.

"At risk" definition: A friendly admiral is "at risk" when his flagship is within the higher of [enemies LRW range or 30 tH] of an enemy detachment of at least 50% of his detachment's HS. For the purposes of grade advancement, and admiral is also consider to have been at risk if his flagship was fired upon or at least 33% of the HS of his detachment was destroyed or damaged.

(*Optional:* Each Admiral must roll initiative for HIS assigned combat HS, of which 66+% must be within 30 tH.)

B2.03.2 All units in the same system hex must have a single flagship. Small craft operating more than 120 tactical hexes away from the nearest flagship always suffer the -1 "no flagship" penalty. Single units

or single squadrons operating independently are never penalized for lack of a flagship.

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 naval forces divide their fleets into task forces, assigning each task force a separate flagship which automatically assumes command if that task force moves out of command range of the fleet flagship.

B2.03.3 Units that are engaged in warp point assaults [D7.01] might have flagships assigned for each transit wave. However, the order of flagship transfers must be preset prior to the assault and cannot be adjusted until after the last ship has transited. A flagship may not assume command on the turn it transits into a system (including the first wave, which will always be without a flagship). Thus, a poor sequence of shifts could result in a lengthy no-flagship penalty.

B2.03.4 Flagship assignments may be changed without penalty on any turn that the force is not engaged in combat.

B2.03.5 If a flagship is destroyed or command transfer begins, the units under its command are penalized, as in [B2.03], until a new flagship assumes command. The player who lost his flagship selects and secretly records a new flagship. After two turns of "no flagship," the new flagship assumes command. The two turn waiting period does not apply during a WP assault's preset transfers.

If combat destroys a replacement flagship (or its CIC) before it assumes command, a new flagship is designated and the period of "no flagship" is begins again. A flagship equipped with a "(CIC)" may transfer command to a new flagship if its own "(CIC)" is destroyed.

B2.03.6 The flagship's command can be moved prior to the destruction of the flagship, but the units under the prior flagship's command are penalized, as in [B2.03], until the new flagship assumes command. This takes two turns. If the new flagship is destroyed before it takes command, then [B2.03.5] takes effect.

If the new flagship has an admiral and a "(CIC)" on board then the transfer is immediate. If the transfer includes moving the admiral from a previous flagship to a new one (with small craft) then any special modifiers the admiral provides will take effect the turn after he arrives at the new flagship.

B2.03.7 Transferring the flagship begins at the beginning of the turn and ends during the record-keeping phase of the last turn.

B2.03.8 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.

PHASE 1. INITIATIVE PHASE [B2]

Transit carriers launch/land units [C6.02.3] and switch DF off.
Roll for "n" or force (NAV) reorientation [D9.03.1]
Roll for and declare initiative [B2].

PHASE 2. MOVEMENT PHASE [C2]

Decide tractor chain movement [E5.03].
J'Rill Command Sub-Phase [J'Rill.12 J'Rill Command Subphase].
    (Ctr) commands to EAVs
    Write orders for (serve) and (slave) units
First movement pulse only (before movement)
    Land/takeoff from planet [C5.01] or (un)dock [C6].
    Declare Ramming [C10] or Hard Turn [C3.03].
    Declare DeTuning and EM
    Engines may change mode [C1.02.5.1] including activate.
    Engine Shutdown [C1.02.6]
{*Movement Pulse*} (Repeat until all units have moved)
    Unit Movement [C2], rotate SS in 6th pulse
    WP Transits [C4].
    Launch/land spacecraft from carriers [G2.04].
    Ramming Attack [C10.03].
        Anti-Ram Defensive Fire [C10.03 & C10.04].
        Collision Roll [C10.01].
        Collision Damage [D4.01.3].
    {*End of Movement pulse*}
Presser Beams Push Target Away

PHASE 3. COMBAT PHASE [D1]

Report false streaming atmosphere [D4.02.2].
Detect all EMS and declare Jamming (alternate sides)
Large Unit Subphase (until all large units have fired)
{*Combat Pulse*} *Datagroup* or single Large Unit Fires
(Alternate units between large unit subpulses)
    Attempt to activate unit/group until successful [F2.03].
    Use APC to give AP orders [D9.05.2].
    Declare Fire including:
        Roll To Hit other large units
        Activate shields [D4.02.1].
        J'Rill EAV explode [J'Rill EAV].
    Point Defense vs. Incoming Fire
    Apply Damage [D4].
    Announce status changes [D4.02].
{end of combat pulse for a unit or datagroup}
Small Craft Subphase
    All large units fire at small units (alternate sides).
    Small craft fire at each other (alternate units)
        Fire and/or drop ordnance [G4.02].
    Small craft fire at large craft (alternate sides)
        Fire and/or drop ordnance [G4.02].
AP combat Subphase (alternate units) [D9.03].

PHASE 4. TRACTOR BEAM PHASE [E5]

Beam Movement [E5.05].
Tractor Pulse (until all units have used their unused tractors) [E5.01.1] (alternate units)
    Tractor/Presser Firing
        Roll To Hit ***or*** choose to release tractor lock
        Tractor Disruptions [E5.01.4].
        Successful Tractors/Pressers Attach
Load/Unload Cargo [E4] including AP [E4.03.1].

PHASE 5. RECORD KEEPING PHASE

Shield Regeneration [E1.01 & AppAA-S & AppAA-Sr].
Drop carried ordnance [G4.02].
Reload Launcher Boxes [AppAA-W.01].
Report PDC location to fleet [D6.02.5].
Begin or end transfer of flagship [B2.03.7].
Roll for breakoff & surrender [D7.04.1], scuttling record and destruction [D7.04.4].
On turns ending 5 or 0, check for DeTuning burn out [C9.02.5].
Observed WP disruption [D5.04.1] gives WP size.
Set Order of Assault for the turn after the next [C4.06].

Next Section: C - Movement

For the purposes of actual combat, only the tactical movement rules are really 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.

At any scale below the strategic, movement takes place in each turn (or day) only after initiative has been determined. Starships and small craft move as individual units, each squadron moves as a single unit. Units are moved one pulse at a time. A ***movement pulse*** is a division of the movement phase at any scale that consists of expending one movement point for each unit of each player.

At the *system level*, players use the pulsed movement chart [Table C2.03 Pulsed Movement] to determine the pulses of the current turn (day) on which their units' speeds permit them to expend movement points. At the ***tactical level***, units move in each pulse until they expend all movement points, then sit motionless while units with unexpended movement points complete their moves. The player with the lowest initiative roll must expend one movement point per unit for every unit with unexpended movement points (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 pulse. These pulses are repeated until all units have expended their full movement point allowance. There is no limit to the number or combination of units that may be in the same hex during or after movement.

Example C – Movement

C1 Engine Rooms

In order to shorten design coding, usage of engines in engine rooms is always generic (i.e., I instead of Ia or Ib).

C1.01 Engine Systems

Each engine system (full or half size) is a single generator that combines with others to produce the drive field of a starship. The "Ship Hull Table" [AppEE-Ship Hull Tables] shows the quantity of engine systems, regardless of system size in hull spaces, needed per movement point.

C1.02 Engine Rooms

Any starship groups its engine systems in "engine rooms." An engine room must contain at least one full sized engine. Smaller ships (FG and smaller) may obtain multiple movement points per engine room. Others (like BB) require multiple engine systems to provide a movement point.

Example C1.02 - Fractional Engine Power

C1.02.1 Engine rooms are indicated on the control sheet by enclosing the engine systems in each engine room in parenthesis. The loss of an engine room reduces the speed of a starship to an amount *indicated* by the remaining operable engine *rooms*. An engine room with multiple engine systems may remain operable at the tactical level despite the loss of some of its engine systems [C1.03].

Example C1.02 - Fractional Engine Power

C1.02.2 Only a single half-size engine *of each type* may be installed on a ship. A half-size engine system *must* be mounted as the first engine in the left-most engine room with at least one functional full-sized engine system in order to function.

Example C1.02.2 - Single Half-Size Engine

C1.02.3 Some ships, like BC, require a fractional amount of engines above one. So a speed "6" BC needs a total of 6 * 2.5 = 15 engines. Engine rooms aboard BCs are arranged in pairs of 2 and 3 engines which must alternate. The right most engine room of each pair must provide enough power to generate one MP. Remember that engine rooms (not the engine systems in a given engine room) may be separated by other systems as indicated in the example.

Example C1.02.3 - Fractional Engine Power above One

C1.02.4 If a ship loses engines during movement, it must have enough currently active engine rooms to generate its next movement point or it stops moving.

C1.02.5 A ship or smcft may use its engines in five modes: Tactical, Strategic Mode, Low Detection Speed [D5.03.2], Standby, and Off. A standby mode unit can move up to 2 tH/hour (0.5 sH/month); thus, holding orbital position.

> **Tactical Mode** is also termed full military power and the engine may burnout [C7] during extended use.
>
> **Strategic Mode** allows movement at or below safe cruising speed, which is without risk of burnout.
>
> **Low Detection Speed (LOD)** sacrifices speed for stealth. Units switching from LOD to any other mode cause a LOD Flash [D5.03.3].
>
> **Standby Mode** is where the engines provide no movement points, but the drive remains active (including the blindspot). Standby mode on bases, AF, and SS is also called Stationkeeping.
>
> **Off** is where the engines are powered down, providing no movement points and no blindspot, but also providing no drive field protection. This mode is often termed "inactive." Armed Smcft and Assault Shuttles using the off mode can only be restarted with a BL system or on a friendly populated planet/moon and such units, after restart, are unable to fire their weapons.

C1.02.5.1 A unit's engines may change modes when a ship's first movement pulse occurs (exception [C6.02.3]). A starship which shuts down (deactivates) *all* of its engines has a 360 degree field of fire but loses its DF interdiction [D4.01.2].

Engines starting from "off" mode can only use standby mode on the turn of start up. {Exception: See [C6.02.3]}

C1.02.6 Multiple engine types, in their own engine rooms, can be installed on a ship. However, only one set at a time can be operating. Because activation of engines occurs prior to shutdown of engines in the sequence of play, a full turn with all engines off is required to activate a different type of engine.

C1.03 OPERATION OF DAMAGED ENGINES

Engine rooms with a destroyed engine system *always* becomes useless for movement *above* the tactical scale. Loss of a half-size engine never effects an engine room at the tactical level.

When damage occurs to an engine room, roll 1d100 dice to check for shutdown after the salvo the damage occurred in. If the roll is greater than the percentage of the original undamaged full-sized engine systems remaining, the engine room immediately shuts down. Inactive engine systems in a shutdown engine room absorb damage normally.

A shutdown engine room must repair at least one full-sized engine system before it can be re-activated (tactical movement only). Roll as above with shutdown meaning the room remains inactive. Once the room is reactivated, no further checking rolls are needed unless it takes additional damage.

Damaged engines rooms run at tactical scale will lose one additional full-sized engine system per 60 tactical turns, which may cause shutdown.

Example C1.03 - Damaged Engine Room Operation

C2 MOVEMENT ALLOWANCES

Ships determine movement allowance by operable engine rooms, but remember that smaller ships get multiple movement points per engine room. Other units have set movement allowances, though those can be altered at times [see various tech rules].

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 the adjoining hex that the unit is facing.
2. Move to the adjoining hex and *then* (if desired and turn mode satisfied) change facing.
3. Remain in place and (if desired and turn mode satisfied) change facing.

Note: Sideslipping in Starfire is not legal. A unit only directly faces a single hex.

C2.01 DIFFERENT TIME SCALES

Events taking place on one level of play may directly impinge on those at another level. When this happens, play must be sequenced on a proportionate basis to provide for their arrival in an order which reflects their speed and proximity [see A1.02.3].

When moving units on the *strategic* or *system* scale, consult Table C2.03 Pulsed Movement.

Tactical combat does ***not*** use pulsed movement (but they still move during movement pulses). The players simply move their units one movement pulse at a time until all the units have moved. This often results in turns with more or less than 6 movement pulses.

C2.01.1 Any 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.

C2.02 FRACTIONAL SPEEDS

The Ship Hull Table [AppEE-Ship Hull Tables] actually indicates fractional speeds for some hulls. The smallest hull of a group of same speed hull sizes is actually +0.5 speed (slight red shading). Those speeds can be used but the following rules apply.

- Tactical Speeds are always FRD.
- Strategic Speeds are always FRN except that 1/2 speed fractions are rounded down.

C2.02.1 Using Fractional Strategic Speeds (Optional) Optionally, fractional ***strategic*** speeds are rounded to the nearest 1/2 MP with 0.25 and 0.75 rounded down.

Example C2.02 - Using Fractional Speeds

C2.03 PULSED MOVEMENT CHART

The pulsed movement chart is only used for System and Strategic level movement. The pulsed movement chart uses 6 pulses for movement. Find the speed of the moving unit across the top line and cross-index with the current movement pulse of the turn (or day). The result lists the number(s) of the movement point(s) that unit is entitled to use on that pulse. (For example: On pulse 4, a speed 6 unit uses its 4th movement point, while a speed 12 unit would use its 7th and 8th movement points.).

OPTIONALLY the players may choose to use the pulsed movement for tactical combat as well, but it is not recommended (for simplicity). This slows play and deprives faster units of much of their maneuvering advantage but may generate a more realistic combat environment. However, be aware that its use during tactical combat will significantly alter game balance.

Table C2.03 Pulsed Movement

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

C3 FACING & TURN MODE

Each unit must have a specific facing at all times. That is, its counter must be pointed toward a specific adjacent hex. In order to change its facing at the tactical level, a unit must satisfy the requirements of its turn mode.

C3.01 TURN MODE

A unit's turn mode must be satisfied before each change in facing. Expending a total number of MPs equal to the turn mode on a single facing, whether by moving or remaining still, satisfies the turn mode. MPs expended in previous turns "carry over" for this purpose. At any level above the tactical, it takes only a *single movement point* to satisfy any unit's turn mode.

Although a unit "earns" the right to change facing by satisfying its turn mode, it need not turn immediately upon doing so (it may "save" the facing change). But once a facing change is done, all carry over MPs are gone.

WP Transit resets carry over MP toward turn mode to zero (i.e. it counts as a Change of Facing).

C3.02 CHANGING FACING DURING MOVES

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 starship units moving at the tactical scale may change heading by no more than 60° (one hex side). Units moving at *levels above the tactical* may change facing by up to 180°, but all facing changes at any level of play are always made after a movement point is expended. In other words, a player could move a unit into a new hex and change facing but could not change facing and then move in the same movement pulse.

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

C3.03 HARD TURN

A mobile unit that remains in the same tactical hex for one full tactical turn may change its facing to a hex side of its choice. This facing change is done when the unit spends its last MP.

A Hard Turn must be declared before that unit expends any MPs during the current turn.

MP used for EM do not count toward hard turn completion.

A unit which is a part of a tractor chain may do a hard turn even if moved, but it must be in "standby mode".

If a unit's movement allowance is less than its turn mode the unit may still change its facing as above, but the process takes more than one tactical turn. The unit must remain motionless expending all movement points in place, until the expended MPs equal to its turn mode, and then the facing change is made in that unit's last movement pulse as above.

C4 WARP POINT TRANSITS

One of STARFIRE's most difficult (and common) tactical problems is an assault on a defended warp point (WP). One major reason is the limited numbers of starships that can safely pass through a WP in a single turn, and the other is that warp transits negatively impact the ship's sensors and systems so that they are at less than full capability for one or more turns after transit [D7.01].

C4.01 GENERAL TRANSIT RULES

Any unit without "surge data" of a WP rolls 1d6 against the scattergram upon exiting the WP. Place the unit on the warp point facing the direction rolled.

A WP transit counts as a change of facing upon exit.

C4.01.1 Theoretically, any number of starships may transit a WP simultaneously. However, because ships that make transit simultaneously can interpenetrate and destroy one another, WP transits are usually spaced out somewhat in time. Units moving in opposite directions and, in a battle, units of *different alliances* do not interpenetrate [C4.04.2] (for game simplicity).

C4.01.2 There are always 6 transit pulses during a tactical turn. Transit pulses are not handled the same as tactical movement pulses. Only a unit that has spent a MP (either to enter the WP hex or to remain in place) can transit that tactical turn. Once the MP is spent, use Table C2.03 Pulsed Movement to determine which of the six transit pulses have already passed. The unit may then start transiting that pulse or any future transit pulse of the same turn.

After transit, examine the Table C2.03 Pulsed Movement to determine how many pulses remain in the turn and count how many Movement Points are in those pulses and thus remain for the unit to use.

C4.01.3 No unit may make 2 warp transits in the same tactical turn even if they have enough movement and facing changes.

Additionally, once a unit has emerged from a WP, it may not re-enter that WP until it either leaves and re-enters the WP hex or turns at least 180 degrees from its original orientation.

C4.02 WARP POINT SIZES

During each transit pulse, a WP has a maximum capacity (number of hull spaces) that can safely transit (without simultaneous transiting [C4.04]). When transiting, 2 boat bays points count as 1 HS.

Unfortunately, the letter code of a warp point is only known AFTER a unit transits through it. This is the only method to determine size. While WP size applies to both ends of a WP, the ends could be different stages of visibilities [W8.04]. WP type and visibilities are determined during system generation or declared in a scenario setup.

C4.02.1 WP Disruption Each unit that enters the WP disrupts it for a time. If the WP capacity is exceeded on a transit pulse, the disruption will last for one or more future transit. Units transiting during the disruption time risk interpenetration and are considered to be using Simultaneous Transit [C4.04]. Simultaneous Transit cancels the disruption period for future transit pulses.

C4.02.2 Transit Size A unit's effective size for WP transit is usually not the same as its exact HS and must be adjusted (FRU) by the engine type, generation, and a few other things [Table C4.02.2 WP Transit Size Adjustment] and can usually be determined at design. Units with multiple engines or transit racks [C6.02] can change their effective transit size during the game.

C4.03 WARP POINT TRANSIT "IN A LINE"

During the normal and safe method of WP transit [D7.01.1], units enter the WP one after another. The first ship though a WP on a

Table C4 WP Sizes

WP Type[a]	Base Capacity
A	25
B	30
C	36
D	43
E	52
F	62

[a] WP Type is determined during system generation, found in section [W8.03]

Table C4.02.2 WP Transit Size Adjustment

TSA[a]	Transit Size[b]	TSA[b]	Transit Size[a]	Engine Gen.[c]	TSA[b]	Engine Type	TSA[b]
-6	300%	16	5.41%	a	+0	I engines	+0
-5	245%	17	4.51%	b	+2	Ic engines	+2
-4	205%	18	3.76%	e	+4	J engines	-1
-3	172%	19	3.13%	m	+6	Gt engines	+4
-2	144%	20	2.61%	n	+8	Jc engines	+5
-1	120%	21	2.17%	o	+10	**Hull Type**	**TSA[b]**
0	100%	22	1.81%	q	+12		
1	83%	23	1.51%	s	+14	Fast hull	+1
2	69%	24	1.26%	u	+16	B Gen. Hull	-1
3	57%	25	1.05%	w	+18	E Gen. Hull	-2
4	48%	26	0.87%	y	+20	I Gen. Hull	-3
5	40%	27	0.73%	ka	+22	M Gen. Hull	-4
6	33%	28	0.61%	kb	+24	N Gen. Hull	-5
7	28%	29	0.51%	ke	+26	Loaded Transit Carrier	-3
8	23%	30	0.42%	ki	+28		
9	19%	31	0.35%	km	+30		
10	16%	32	0.29%	kn	+32		
11	13.5%	33	0.245	ko	+34		
12	11.2%	34	0.2%				
13	9.3%	35	0.17%				
14	7.8%	36	0.14%				
15	6.5%	37	0.12%				

Warp Point Transit Modifiers [D7.01]
Defensive Fire at transited units (same turn): -2 to-hit [D7.01.3]
On the turn of an "in a line" transit -- class B transit effects.
On the turn of a simultaneous transit -- class A transit effects ***and*** on the turn ***after*** a simultaneous transit -- class B transit effects.
Class A Transit Effects: No offensive fire plus Class B effects [D7.01.1]
Inherent sensors are -50% range.
Class B Transit Effects: All offensive fire is at a -3 to hit. [D7.01.2]
Point defense intercepts at -1. Non-inherent sensors, datalink, EM, and EMS systems are inoperable.
Multiplex tracking treats the first target as four units.
Launch facilities are inoperable except for XOg.
WP transit is not possible.
Designated flagships cannot assume command [B2.03].

[a] TSA = transit size adjustment (FRU)
[b] All fractions are rounded up.
[c] Engine Generation also adjusts the transit size, some times significantly.

pulse is treated as normal Transit Size. Any other units starting transit on the same pulse are counted as double Transit Size. If the modified size of multiple transiting units exceeds the WP capacity, the units are said to do a "simultaneous transit" [C4.04]. If simultaneous transits are not allowed, units cannot enter until the transit disruption subsides.

Note: Unit sizes are not doubled during simultaneous transit but there is always at least a 20% chance of interpenetration.

C4.03.1 If a single unit exceeds the capacity of the WP, it will take multiple pulses to transit. Each pulse, the unit's remaining transit size is reduced by the WP capacity. To safely use a multi-pulse transit during any but the last transit pulse, ONLY that ship must be transiting. Otherwise interpenetration is risked [C4.04.2]. On the last pulse of a multi-pulse transit, the ship will appear on the far side and additional ships may begin transiting. Additional entering ships' Transit Sizes are doubled during the last transit pulse and if they exceed the WP capacity interpenetration must be rolled for between them AND the large multi-pulse transiting unit.

Example C4.03.1 - Transit "in a Line"

C4.04 SIMULTANEOUS TRANSITS

Simultaneous transit [D7.01.2] allows the attackers to enter a WP faster in order, hopefully, to quickly overwhelm the defenders. The down-side is that units transiting at the same time may "interpenetrate," or enter normal space in the same spot and collide on the other side of the warp point.

Unless specifically allowed, simultaneous transits during a scenario are not permitted.

C4.04.1 Crewed units must check morale before accepting orders to make simultaneous transits. This check can be made in two ways:

1. The attacking race must roll less than 1/2 RM + 20 on 1d100 to use simultaneous transit. For a particular WP, a race may only make one die roll per 6 strategic turns. If the roll is successful, the simultaneous transit must occur within the next week. For multi-race attacks, each race must roll separately.
2. At the beginning of a Space Master run campaign game, the players may agree that they can plead special circumstances before any battle. If the player can convince the SM that his situation is so desperate that the interpenetration losses constitutes "acceptable casualties" the SM can allow him to do so, but the SM should be very hard to convince.

C4.04.2 Interpenetration The chance of interpenetration depends on how much the WP capacity is exceeded. Divide the total transit size by the WP capacity (FRU). Multiply the result by 5 and add 15 to determine the interpenetration percentage. The interpenetration percentage is halved (FRD) for Small Units.

Note: Unit sizes are not doubled during simultaneous transit but there is always at least a 20% chance of interpenetration.

C4.04.2.1 When units make simultaneous transit, divide the units transiting on any single pulse into pairs using the following order:

1. identical size,
2. same hull type, and
3. largest to smallest unpaired units.

Table C4.04 Interpenetration During Simultaneous Transits

Amount vs. WP Capacity	Interpenetration Chance	Average Surviving HS
1x	0%	1.0x
2x	25%	1.5x
3x	30%	2.1x
4x	35%	2.6x
5x	40%	3.0x
6x	45%	3.3x
7x	50%	3.5x
8x	55%	3.6x
9x	60%	3.6x

C4.04.2.2 Small craft are paired according to their size in Boat Bay points. If a pair includes one Small Craft and one ship, use the Small Craft interpenetration chance.

After pairing all units, roll 1d100 for each pair. A roll equal to or less than the interpenetration chance indicates that the *pair* was destroyed. *Optionally*, if there are more than 19 identical units in the transit (such as drones) the players may agree to destroy the specified percentage of pairs instead of rolling for each pair.

C4.04.2.3 If there is an unpaired unit, that single unit rolls versus half the interpenetration chance (FRD). If it is the only unit destroyed, it also destroys the smallest surviving unit.

C4.05 JUMP TRANSITS

Jump capability allows for warp transit without entering or exiting the tactical hex of the warp point. However, the Jump Hook effect does cross the warp point and collisions are still possible, in exactly the same manner as other drive types. It costs 1 MP to make transit and should two spacecraft of the same race or alliance make transit in the same pulse, collision must be checked for per [C4.04.2].

C4.05.1 Jump Hook Activation In order to engage a Jump Hook and enter a WP (Jump Hook activation roll), a ship must be within its maximum arrival range, and it must roll greater than or equal to three times the unit's distance from the WP on 1d100.

C4.05.1.1 Jump transit arrival placement procedure using Table C4.05 Jump Transit Arrival:

1. Determine if the unit arrives at the WP.
2. Determine the starting distance (arrival range die roll).
3. Determine the starting direction via scattergram (1d6)
4. Place unit in starting location based on rolled direction and distance, and then determine any location adjustment.

Location Adjustment: Determine a 2nd arrival range. From the starting location, move the unit a number of hexes equal to the 2nd arrival range WHILE moving clockwise and remaining the same distance from the warp point as the starting distance.

Table C4.05 Jump Transit Arrival

Jump Type	Outside WP Hex	Arrival Range
Wja	50%	1-5 tH
Wjb	60%	1-10 tH
Wje	70%	1-12 tH
Wji	80%	1-15 tH
Wjm	90%	1-20 tH

C4.05.1.2 The Jump Hook cannot activate during a turn that ships are released from transit racks or during the same *pulse* that ships attach.

C4.06 WP ASSAULT ORDERS

Unless stated otherwise, all attacking ships are in the WP hex just prior to entry into a WP during the attack, all are facing the same direction and all have been at battle stations for the 5 minutes prior to the first transit. The attack must submit an "Order of Assault" to the SM. This Order of Assault will contain the unit to transit, the turn and impulse they are to enter the WP, and any sequence if multiple units are using the WP on the same impulse. In the case of an unknown size WP, the player need only issue the order of transit and that units are to immediately enter when safe (i.e. this will avoid Simultaneous Transit). After watching for a time, the admiral will be able to figure out the WPs size [D5.04.1].

Changes to the Order of Assault are made during the record keeping phase and cannot affect the next turn's assault sequence, but they can prevent the next turn's wave from entering the WP.

C5 PLANET/SPACECRAFT INTERACTIONS

Only large spacecraft configured for atmosphere with "(AC)" may land on and/or take off from planets and/or moons. "Atmosphere capable" has little to do with "streamlining" and "aerodynamics," it has to do with enabling the ship's drive-field to be able to enter the atmosphere without shutting-down or having problems. It also reinforces the spacecraft's hull so it has been stressed to survive in planetary and lunar gravity fields. Because of this, large ships must be "atmosphere capable" to land even on airless planets or moons.

All small craft are Atmospheric Capable.

C5.01 LARGE UNITS

Starships may land on any landmass but the planetary landing zone (hexside) must be declared. In order to land, 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.

Taking off from a planet with atmosphere costs a unit all its movement points during a movement phase, which it ends in the planet's hex. Taking off from a airless moon or planet uses 1/2 of a unit's movement points (FRU). A departing unit starts by facing directly away from the planetary zone it departed but can always make a change of facing.

C5.01.1 Fighters and Gunboats must "land" in an operational bay but shuttles are designed for planetary landings. Small craft only use 1/2 their movement points (FRU) to land.

C6 DOCKING/TRANSIT RACKS

Spacecraft can "dock" with each other, hull-to-hull, in order to transfer cargo or personnel. Spacecraft can also dock with asteroids (i.e. land on them but use these rules).

C6.01 STANDARD DOCKING PROCEDURES

One of the involved spacecraft must be capable of generating movement points in order to reach the location of docking.

C6.01.1 A shield down, drive-field down spacecraft that spends an entire tactical movement phase in the same hex with another shield down drive-field down spacecraft may dock to it. Once two or more spacecraft are docked together, they form a "docked group".

C6.01.2 Docking or undocking requires an entire movement phase. Only one spacecraft may (un)dock with the group each tactical turn.

C6.01.3 Any number of spacecraft may join a docked group, subject to two limits:

- One spacecraft is designated the central unit, and all others in the group must dock to it. No spacecraft in the group may dock to any unit other than the central unit.
- The central unit may have no more than two times its own HS docked to it simultaneously.

C6.01.4 Docked units cannot raise their drive field or shields while docked together. A docked unit can be tractored but the docking is immediately terminated with each docked unit taking 3 points of damage.

C6.01.5 Docked spacecraft can transfer cargo between cargo holds (only) per Table E4.01 Cargo Transfer Rates. Docked spacecraft can transfer ammunition between magazines (only) at a rate of 1 MSP per turn. No spacecraft can be involved in transfers exceeding its total rate.

Docked spacecraft can instantaneously transfer any sensor data, sensor readings, maps, or other intelligence information.

Docked carriers may launch and recover other small units.

C6.01.6 Docked spacecraft are considered a single unit when fired upon. Warhead and plasma weapons damage all craft equally (FRU). Other weapons randomly determine which craft is hit. For each weapon hit, there is a 1 in 10 chance that the docking mechanism is destroyed which forces the craft to undock during the next turn. If a docked group is rammed, the damage is split among the docked units and they are all instantly undocked.

C6.01.7 Unless some sort of boarding rules are in play (available in future expansions), unwilling enemy units cannot be forced to dock.

C6.02 TRANSIT RACKS

Transit racks allow ships to transport other ships, many times at faster speeds. Smcft can be carried but only for a short time.

C6.02.1 Operable transit racks may transport ships (i.e. not bases). A single carried ship cannot exceed the carrier's size in HS. Transit racks may carry up to 10 HS of ship per @. Adjacent @ can be combined to carry larger ships.

Ships without active drive fields must be docked [C6.01.1]. A fast hull, due to its length, counts as 3x its hull spaces for purposes of being carried with transit racks.

C6.02.1.1 Transit racks may carry up to 4 boat bay points of small craft per "@" instead of ships.

Small craft in transit racks are subject to life support endurance limits and may not be rearmed or re-supplied with life support. In addition, small craft cannot remain in the transit rack for more than 5 minutes while the transit carrier has an active drive-field, or the radiation from the carrier's drives will kill their crew.

C6.02.2 Transit carriers are not slowed by the units they carry in transit racks. Units carried in transit racks ignore their hull size during warp point transit although having anything loaded in the racks adjusts the carrier's size [C4.02.2].

C6.02.3 Transit carriers launch/land units at the start of the initiative phase. During landing/launching operations, all units must be/start within the same hex and facing as the carrier.

Both the carrier and landing units must, and are allowed to, change engine modes to "Off" [C1.02.5] at the start of landing/launching operation. The carrier and launched units may raise their drive fields in the movement phase but per the terms of [C1.02.5.1] will not be able to move during that same turn. Carrier DF dropped in the initiative phase must be raised with the same set of engines operating prior to the dropping.

A launched unit has its turn mode reset [C3].

A unit cannot be launched with engines in LOD mode.

Tractor and pressor links do not prevent launch but do prevent landing.

See [D4.05.1.1] for the Combat effects of transit racks.

C6.02.4 . A unit being transported by transit racks, OR during the tactical turn it leaves a transit carrier rack, may not launch or land small craft. A unit mounting any transit racks may not mount any XO or XOg racks.

C6.02.5 . A ship with units in the transit racks may not land on a system body nor enter the atmosphere.

C6.02.6 . A unit being carried in a transit rack cannot carry other units in its own transit racks.

C6.02.7 . For a unit in transit racks, the following systems cannot be operated: shields, weapons, engines, tractors, tractor disrupters, science instruments, bays or datalink of any type. Point defense can only engage inbounds aimed at the PD mounting unit. All other systems operate normally.

C7 ENGINE BURNOUT

Sometimes a crew operates a ship's engines beyond their normal safe limits. This can cause the engines to fail from the stress ("burnout"), essentially destroying the drive until repairs are made. All units that perform DeTuning [C9] are subject to burnout. Military engines (e.g. I, J) -- built differently from commercial engines (e.g. Ic) -- are made to operate at high speeds during battles. This ability has its price as military engines are unable to sustain the higher speeds for more than 1 hour without risking burnout. Even so, emergency situations may make the risk acceptable.

Military engines that exceed safe cruising speed may burnout during extended operations.

A given engine room generates its full listed speed when operating in tactical mode, but must be reduced when operating in strategic mode, or risk burning out the drives. The amount of reduction when operating in strategic mode depends on the type of engine in use [Engine Types]. Thus, Ion Engines ("I") can safely generate one-half their tactical speed.

Note: for strategic mode speed, only Fractions *greater than* 0.5 are rounded up (but not 0.5 itself).

C7.01 CHECKING FOR BURNOUT

A unit exceeding "safe cruising speed" for 1 hour or more during the period being checked must make checking die roll(s).

When exceeding "safe cruising speed", there is a 1% chance per day of engine burnout.

The number of checks made is equal to the greatest amount, in MP, that safe cruising speed was exceeded during ANY portion of the period being checked.

If a fractional excess MP is used (safe speed 3, actual speed 4.5), make a check for that fractional excess MP using a proportional value. Thus, for 1.5 excess speed, two checks are made, one normal and one at 50%.

For each check that results in burnout, a single engine system is destroyed in a different random active engine room (a tug room counts as just 1 engine room). Multiple burnouts during the same set of checks occur at the same time.

C7.01.1 Crew Grade Modifications

The burnout check percentage is increased or decreased by 10% (FRN) (not 10 percentage points) for each Crew grade [F3] level below or above average crew grade.

Example: Crack crew reduces a check of 15% to 13.5% (FRN to 14%)

C7.01.2 Small Craft Checks

Small Craft engines must check for failure as in [C7.01] but burnout indicates total, irreparable failure of the entire engine. Shuttle types lose 3 DP, Fighters lose 4 DP, and Gunboat lose 6 DP per burnout.

For small craft, each check covers 2 MP excess, not just 1 MP (e.g. 4 MP over is 2 checks, not 4 checks).

C7.02 LOCATION OF BURNOUT

Once a burnout happens, it is important to determine when the burnout occurred. Roll 1d10*10 (or 1d100). This is the percentage of the trip that is completed before the burnout occurs.

C7.03 AFTER BURNOUT

After burnout and location have been determined, the player may change the orders for that unit (return for repair, continue at different speed, etc.).

After a speed reduction, determine the strategic pulse in [Table C2.03 Pulsed Movement] that the unit last moved. At its new speed, the unit may only move on numbered pulses AFTER the current strategic pulse.

Example C7 – Pulsed Movement and Burnout

C7.04 REPAIR

Engine systems that burn out cannot be repaired using the emergency repair rules [E2].

GAME TIP: Units with military engines may operate at strategic speeds greater than safe cruising speed but less than full, with one or more engine rooms inactive, to offer some protection from lost time. Then if an engine room must shutdown, a spare inactive engine room can be activated and the unit will still arrive at the required time.

C8 ENGINE MODULATION (TACTICAL ONLY)

Ships may divert engine power from movement to deform their drive field. By constantly altering the drive field's shape and deforming the drive field (into non-spherical shapes such as ellipses), they make it difficult for targeting computers to pinpoint the exact location of the ship. This causes weapons fire to hit the drive-field at an angle that it misses the ship. This is called "Engine Modulation" (EM). The transfer of power from movement results in a loss of speed. A unit using EM suffers no penalties other than a reduction of maximum speed.

C8.01 DECLARATION

A unit wishing to use Engine Modulation (EM) must declare so *before* expending any MPs in the current turn. The player announces the number of MPs expended for EM and the unit's movement allowance is reduced by that amount

C8.02 LARGE UNITS

For starships, the first level of EM costs an amount of MPs equal to the ship's turn mode. Each additional level of EM costs 2 MP. While ships may generate more than 2 levels of EM and/or EMS in order to counter anti-EM systems, the maximum effect of EM or EMS is two levels.

The benefit received by a starship using EM depends both on the EM level used and on the type of weapon attacking the unit, as indicated in Table C8. EM/EMS Modifiers.

C8.03 SMALL CRAFT

Small craft pay 2 MP for each level of EM.

C8.04 LIMITATIONS

Further limitations on the use of EM:

- A unit must move to a new hex during a turn to use EM. Expending an MP sitting in place is NOT enough.

- A unit cannot use EM, during the same turn if it occurs after, a WP transit [C4] or it is launched ([G2.04] for small craft, [C6] for large craft).
- Only crewed units may use EM.

Table C8. EM/EMS Modifiers

EM/EMS Modifiers[a]	
EM Level or EMS	**Starship Weapons**
1 or ?a	-1 to-hit
2 or ?b	-2 to-hit
3 or ?e	-3 to-hit
4 or ?i	-4 to-hit
5 or ?m	-5 to-hit
6 or ?n	-6 to-hit
7 or ?o	-7 to-hit
8 or ?q	-8 to-hit
9 or ?s	-9 to-hit

[a] All fire modifiers are affected by HEN [D2.04].

- EM cannot be used by ships in atmosphere.
- EM does not add together with any form of EMS. A ship may use both at the same time, but only the highest to-hit modifier applies.

Example C8 - Engine Modulation

C9 DeTuning (Tactical Only)

In navies that have units with SRW, the desire for the ability to move faster just to get into range before taking a lot of damage has encouraged experimentation. One of the solutions was "DeTuning" the engines, that is, temporarily altering the drive-field so that you move faster, but it can hurt your engines, partially blinds your sensors, hurts your targeting, and makes your blindspot bigger. So there is a trade-off.

DeTuning is actually a slight mis-calibration of the drive field generators in the engines so that they produce an unstable drive field. If done properly, this can result in a slight speed increase at the expense of normal operations of sensory input and targeting. This isn't always safe, as mis-calibrating too much can cause the engines to explode, even if successful they are at a higher risk of burnout, and not all drive types can perform this risky operation. Furthermore, small craft drives are too small to de-tune.

C9.01 How To De-Tune

C9.01.1 Unless specified otherwise, any large craft drive system can de-tune. I engines gain up to 2 MP, while J and Ic engines gain only 1 MP during a turn in which DeTuning occurs.

C9.01.2 DeTuning is announced during a unit's first movement pulse, before it spends any MP.

C9.02 Penalties of DeTuning

DeTuning puts a lot of stress on the unit. The following penalties apply when a unit is DeTuning.

C9.02.1 DeTuning increases turn mode by 2. Apply this modifier after applying AM [AppAA-(AM)].

C9.02.2 The blindspot is increased to 120 degrees of arc [D3.01.4].

C9.02.3 LRW fire is penalized by a -4 to hit, except Kinetics. SRW fire and Kinetics are penalized by a -3 to hit. Fire on the "Anti-Small Unit table" [G7.01] loses 1 BASV. Defensive fire (such as point defense against missiles) is not affected.

C9.02.4 While DeTuning, sensors cannot detect or track objects at medium and long sensor ranges. Scanning is not possible.

C9.02.5 During the record-keeping phase of every 5th tactical turn (2.5 minutes), any ship that de-tuned in that turn or any of the previous 4 turns must check for engine room burnout. On a roll of 1 on d10, the left most operating engine room burns out. Mark all engines in that room as destroyed. If all rooms are shutdown, destroy the left most engine room with an intact engine.

C9.02.5.1 If a ship de-tunes with two or more different types of engines within a single 5 turn period, both types must check for burnout.

C9.03 Other DeTuning Rules

C9.03.1 A ship attempting to use both DeTuning and engine tuners at the same time gains no benefit from the engine tuners.

C9.03.2 A unit may not tow other units while DeTuning.

C10 Ramming (Optional)

It is difficult for one starship to ram another, as ships with reactionless drives capable of radical speed changes up to 20% of light speed are elusive targets. It is not quite impossible, however, and a successful ramming attack is devastating … especially to the rammer.

C10.01 The Ramming Attempt

Any unit attempting to ram must declare so *before* expending any MPs in the current turn. The player does not need to specify which target he intends to ram, only that he is going to attempt to ram a target.

C10.01.1 The ramming unit must declare the unit it intends to ram when he moves into that unit's hex. The defending unit can then choose to use "anti-starship opportunity fire" as described in section [C10.03].

C10.01.2 Any ramming attempt between starships succeeds if both sides want it to. A ramming attack on a ground target always succeeds and the rammer is automatically destroyed.

C10.01.3 Starships may not ram small craft.

C10.01.4 A unit must be currently expending a MP in order to ram, even if it does not leave its current hex.

C10.01.5 On the movement pulse a unit intent on ramming enters a dodging target's tactical hex, 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 current maximum movement allowance, including [C10.01.7], is lower than his adversary's.

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

C10.01.6 BS have some ability to dodge and an SS or asteroid fortress has even less ability to dodge. Any mobile ramming unit, regardless of speed or turn mode, adds "+3" to its die roll against a BS and "+5" against an SS or asteroid fortress.

Example C10 - Ramming

C10.01.7 Any unit that attempts to ram loses two off its speed, after the ram attempt, for the current turn. A unit that succeeds in ramming loses all remaining movement during that turn. A unit may not change facing after the ramming attempt. Furthermore, it is considered to have turned and reset its turn mode.

C10.02 Applying Ramming Damage

See [D4.01.3].

C10.03 Anti-Starship Opportunity Fire

The target of a ramming attempt, but not its datalinked partners, may take "opportunity fire" against starships attempting to ram it.

C10.03.1 The attacker must declare all ramming attempts against a single target before any are resolved (move the rammer into the same hex as the target). The defender may then choose to use anti-starship opportunity fire.

C10.03.2 Opportunity fire reflects desperate, close-in fire with rushed firing solutions, and all to-hit probabilities are halved (FRU). Weapons may opportunity fire once, and only once, during each movement pulse. Fields of fire [D3.01] apply to each pulse when units are moving into the hex on that pulse to ram. For example, you cannot target a ramming unit entering from an adjacent hex that is in your blindspot. All opportunity fire must be declared before any fire is resolved.

C10.03.3 Opportunity fire damage is always calculated at a range of 0. A unit that uses opportunity fire may fire normally in the following combat phase [B1].

C10.03.4 If the rammer still has enough speed to spend the movement point that caused the ramming attack, the rammer make a ramming roll [C10.01.5].

C10.04 Kamikazes (Ramming Small Craft)

Ramming kamikazes (small craft and squadrons) use the same process as starships. Their masses are lower and their drive fields weaker, but their higher speeds make up for a lot in kinetic terms.

C10.04.1 Kamikazes are not allowed to ram small craft or squadrons.

C10.04.2 Each point defense system may engage one kamikaze per movement pulse in the same hex. If the kamikaze is a fighter, damage is −2 [G7.03]. Point defense used against kamikaze attacks may function normally during the following combat phase.

Other weapons may fire also engage Kamikazes. These weapons fire using [G7] but are at +1 damage. Weapons so fired, cannot be fired in the combat phase and weapon still have their normal ROF.

C10.04.3 The weapons and PD must spread their fire as follows. Each weapon (and each ROF) fires individually AND once all remaining kamikazes have been engaged by either a point defense or a weapon, an additional attack can be made against each. Likewise, once all remaining kamikazes have been engaged twice, an additional attack can be made against each (and so on).

C10.04.4 Damage from ramming small craft is calculated according to section [D4.01.3.1]. Weapons fire from ramming small craft occurs after ship weapons fire.

C10.04.5 Each small craft or squadron rolls individually against the target of its attack and, if in a squadron, no damage is applied to the target until the entire squadron has attacked.

C10.05 Use of Ramming in a Battle

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.

C10.05.1 During campaign games, a race must roll lower than 1/2 its RM for EACH battle in which ramming is intended to be used. If not successful, a given force may not attempt to ram in any engagement in the intended star system for six months (exception: when defending a system with a total PU above 1000, the race may roll once during each battle with the result applying for the next six months). If desired, the ramming roll may be made at any time during any battle.

C10.05.2 A race defending a populated star system adds 4 to his militancy, before dividing, for each 100 PU of his own or an allied race in the system. A race defending a sector capital [P7.01.2] adds an additional 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.

Next Section: D - Combat

D – 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 large units at targets of his choice. All of the weapons of a given unit are fired at the same time, even though they may be fired at different targets. When datalink [AppAA-Z] is used, a datalinked group of units may fire as if it were a single unit. The combat phase as a whole is often called a "combat turn" and is made up of combat pulses, comprising of a single exchange of fire (volley) made from all weapons fired by a single unit or a datalinked group of units.

There are three subphases to combat. Large unit [Section D], small craft [Section G], and AP [Section D9]. Each subphase is completed before the next subphase is started.

D1 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 firing one unit. 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.

Small units fire after all large units have fired.

AP can only fire after all crewed units have fired.

D1.01 Pass of Firing

A Ship or datagroup may choose to be designated as having fired without firing. Play then passes to the next player. Ships without the chance to at least damage a legal target may not be so designated (For example, a freighter with no weapons, D with no targets, or D already used in interception mode).

D1.02 Excess Units

If a player has fired all of his units, but his opponent has not, then the opponent can fire all his remaining units one at a time and then end the combat phase.

D2 How To Engage

Once you determine which unit is going to fire, you then need to determine the target, and the chances of hitting with each weapon. Then the player rolls to hit with each weapon, and applies damage from those weapons that hit the target.

D2.01 General Engagement Rules

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 (exception: targeting penalties always apply to an entire volley). The firing player must declare all fire directed upon a given target by a given unit (or datagroup) in a single combat pulse and the order in which he will fire his weapons before firing any weapons at it.

D2.01.1 Weapons that create more than one salvo for purposes of point defense resolution have their fire for each salvo resolved in a separate step. All defenses against a salvo (like point defense) must be resolved before any damage is allocated from the salvo.

D2.01.2 Uninterceptible weapons can be allocated for fire resolution, and damage, before or after interceptible weapons of each general type. In this case the general type is by the defensive system (for example, interceptible by point defense).

D2.01.3 Target status or systems (such as EM or EMS) may affect the to-hit number [appropriate weapon chart in AppEE-Tables] or the BASV [G7]. Any modifiers applicable when fire is declared against a unit apply throughout the resolution of that fire, even if the target's status changes during resolution.

D2.02 Determine Range

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 appropriate weapon chart in AppEE-Tables -- the number at the intersection 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 Engine Modulation or defensive EMS), and all such modifications must be made to the to-hit number before the die is rolled (they modify the to-hit number, not the die roll).

D2.02.1 Bases, SS, and AF are treated as starships, but they automatically deform their station-keeping drives and enemy ships do not get any bonuses or penalties towards shooting at them.

D2.03 Handling Extreme Numbers

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

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

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 <u>*0 or less*</u> and a 1 is rolled, then you have to make another roll to see if you actually hit.

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.

Table D2.04 Hit Effectiveness Number

Total of All To-Hit Modifiers	HEN
-7 or more	-4
-4 to -6	-3
-2 to -3	-2
-1	-1
0	0
+1	+1
+2 to +3	+2
+4 to +6	+3
+7 or more	+4

D2.04 HIT EFFECTIVENESS NUMBER

There are numerous reasons that a to-hit modifier will be applied to the number needed to score a hit. All such modifiers apply to the to-hit number and never to the number rolled on the die. Thus, positive modifiers make it easier to hit and negatives modifiers make it harder to hit. Because Starfire uses a d10 system, modifiers higher than 2 make a significant and unreasonable impact on the game system. Thus, anytime you have a to-hit number, you must total all modifiers and check for the Hit Effectiveness Number (HEN) (Table D2.04 Hit Effectiveness Number). Apply the HEN, instead of the total of other modifiers, to the number needed to hit.

D2.05 RESOLVING THE HIT

When a hit is scored, consult the appropriate weapon chart in AppEE-Tables and cross-index weapon type (and generation) and range a second time to determine the weapon's damage value at that range. That is the amount of damage done to the target. All damage in a single volley [E7.03] is applied together to the target, in the order that the weapons were fired (and hit).

> ***Note:*** A weapon's maximum range is the lower of the maximum distance at which it does damage or the maximum distance at which it can hit.

D2.06 DESTRUCTION OF LARGE UNITS

A starship, BS, SS, PDC, or asteroid fort is destroyed when all systems are destroyed. Units with only holds and passive defenses are called "wrecks" [D2.06.1] and may be destroyed. The destruction of small craft is handled in section [G3.02].

D2.06.1 Wreck A Wreck is a unit that has all systems destroyed except for holds and passive defenses.

Wrecks that contain only shields are destroyed 75% of the time.

Wrecks that contain any armor or hold are destroyed 25% of the time.

Wrecks have no active systems.

Note: AP will not fire upon Wrecks.

D2.06.2 Code Omega Just before a ship is destroyed it jettisons a pre-programmed buoy called an "Omega Buoy." This buoy broadcasts in broadband the IFF ID code of the destroyed ship. This buoy lasts for 24 hours before running out of batteries and self-destructing.

D2.06.2.1 After the discovery of the drone technology, the "Omega Buoy" changes into an "Omega Drone," that is programmed to transit back to the nearest population, ICC, or fleet commander and broadcast (in narrow band) the IFF ID code of the destroyed ship. The "Omega Drone" is identical to the most advanced courier drone available, and moves at maximum speed. Once it broadcasts the code, the "Omega Drone" self-destructs.

D3 TARGETING RESTRICTIONS

Units may not be able to fire in some situations such as; it cannot bring a weapon to bear, an obstacle (such as a planet or star) is in the way, the target is in the unit's blindspot, etc.

D3.01 FIELD OF FIRE

The area that a ship can shoot into is called the "field of fire," also known as an "arc of fire." This is expressed in degrees from either the front or the back of the ship, with half of the field on the right side and half of the field on the left side. With 360 degrees in a circle, a "field of fire" of 180 degrees forward would mean that the ship can freely fire at targets within 90 degrees of the right or left of its forward direction.

A "blindspot" is the area where a ship cannot fire into because the ship's sensors cannot refine their data enough to provide a targeting solution. A "half-hex" occurs when both the blindspot and the "field of fire" pass equally through the middle of a hex. In such a case, refer to the diagram to determine whether the hex can be fired into.

D3.01.1 Fields of fire are determined largely by sensor capability. Note that a starship's "blindspot" (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.

D3.01.2 The drive field of a starship creates a wedge-shaped "blindspot" astern of the ship. The size of the cone is different for the different drive types.

The blindspot size/width varies depending on the engine type [AppAA-Engine Types] and whether the ship has a fast hull [AppAA-Con.01].

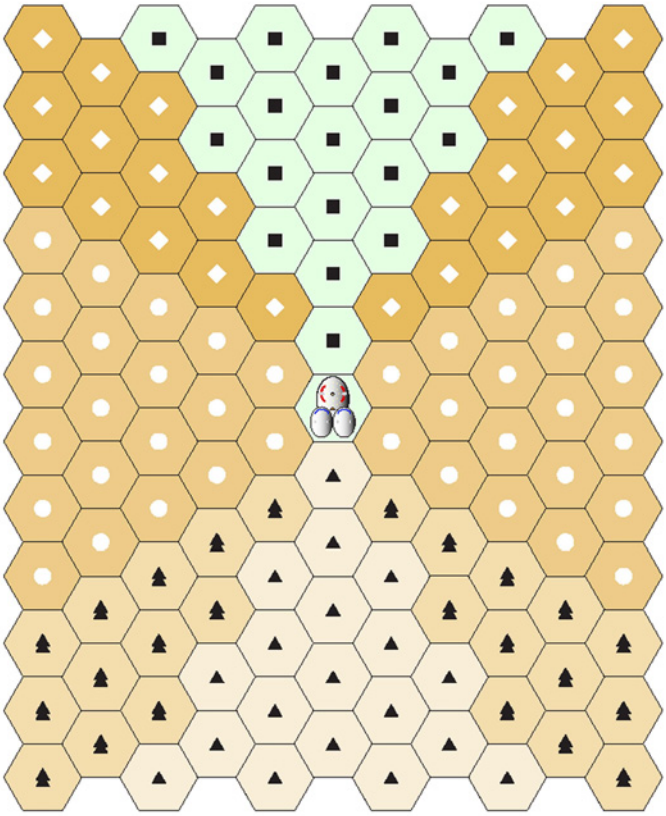
D3.01.2.1 Point defense is an active defense system and cannot intercept a missile fired from within a starship's blindspot.

D3.01.2.2 A unit with its engines off [C1.02.5] has a 360° field of fire

D3.01.2.3 BS, SS, and asteroid fortresses have no blindspots and enjoy a 360° field of fire for all weapons. Starships with engines in Standby mode still have a blindspot.

D3.01.2.4 Planetary defense centers face special field of fire restrictions (see [D6.02.3]).

D3.01.3 Spacecraft in the same tactical hex may always engage one another, but under some circumstances, spacecraft and PDCs may



	Firing Unit		Side Arc
	Forward Arc [H1.05] Fighter LRW Arc		Blindspot for (J, Jc engines)
	Fighter SRW Arc		Blindspot for (I, Ic engines)

not be able to because the spacecraft is "hiding" on the far side of the planet from the fortress [D3.03.2].

D3.01.4 Restricted Arc Weapons In smaller ships, non-homing weapons have arc restrictions because their size makes them impossible to mount in turrets. This restriction means that the weapons are limited to either the front, rear, or the side arcs [H1.06].

Arc restricted weapons can only fire into the arcs as shown in D3.01. These arcs are independent of blindspot arcs [D3.01.2], and can be rendered inoperable by any blindspots.

Example D3.01.4 - Restricted Arcs vs. Blindspots

D3.02 TARGETING LIMITATIONS

The targeting ability of a spacecraft depends upon the sophistication of your fire control.

D3.02.1 Multiplex Targeting All units have an inherent tracking ability of one target, and may fire all of its weapons at a single target without penalty.

Firing at a hex [future expansions] does ***not*** count against targeting limits because these attacks have little targeting involved. Hex type attacks do not receive the [D3.02.1.1] penalties.

D3.02.1.1 Large units may fire on as many targets as they wish, but if the unit exceeds its targeting ability (including any bonus due to multiplex tracking) it suffers a penalty. The penalty is -1 to-hit per unit targeted above its targeting level (maximum of -4). The penalty applies to every weapon fired at each target. Engaging small craft, the penalty is -2 damage points against all squadrons attacked. Any datalinked group of large units uses the fire control from one unit in the group [E6.01].

D3.02.1.2 Multiplex tracking systems provide the ability to engage additional targets without penalty. All of the multiplex tracking systems mounted on the same unit are cumulative.

Example D3.02.1.2 - Multiple Multiplex Systems

D3.02.1.3 Small units without datalink are INDIVIDUAL units for purposes of multiple target selection. Only Squadrons (both fighter and gunboat) and AP datagroups are targeted as a single unit among all of the small craft units [G2.01].

D3.02.1.4 Ground bases on any planet with a HEL population larger than a colony may draw on sufficient sensor capability and fire control from the planetary tech base to track and engage any number of targets without hit probability penalties.

D3.02.2 Special Targeting Circumstances There are a few instances where there are special targeting rules.

Squadrons are considered a single target [G2.01].

Each SS module is considered a separate target [D6.03.4].

AP are targeted as small craft [D9].

D3.03 BLOCKED FIRE

Each STARFIRE hex represents an enormous volume of space that usually, for game purposes, no unit ever blocks another unit's fire. System bodies (planets, moons, etc.) are another matter. 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 which choose to do so may "hide" behind them.

Immobile units cannot hide behind system bodies (exception: stars can accidentally hide immobile units simply because of their size and the location of the immobile unit relative to the location of the unit searching for it).

D3.03.1 Stars Stars are huge and any star always blocks fire. No unit may fire at another unit if any hex occupied by a star 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. See [W5.03.2] for star sizes.

D3.03.2 Planetoids Planets and moons may be used to block fire, for any number of units, when the owner of the targeted unit declares a unit hiding and BOTH of the following applies:

1. The target unit is in the same tactical hex as the planet or moon and the firing unit is not. The ***hiding*** unit must declare what planetary area it is above.
2. A line drawn from the center of the firing unit's hex to the center of the target's hex passes through the hex-side opposite the planetary area the spacecraft is above (as referenced by the scattergram) is blocked.

So: An attacking unit can VERY RARELY hide behind a planet/moon during its approach, but a DEFENDING unit (presumably an SRW unit) can hide behind the planet/moon until it wishes to fire.

D3.03.2.1 A spacecraft within the planet's hex must declare, when firing or being fired upon, what planetary area it is above, and it

may then be engaged by the PDCs or non-mobile landed units in that area and the two adjacent areas. Mobile (space going) units are hidden from each other when they declare themselves to be on opposite sides of the same planet/moon.

D3.03.2.2 In any of the above cases involving planets or moons 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 has to select a 60 degree, 120 degree, or single hex row of blocked area. Within this area the unit cannot be fired upon, and it cannot fire into that area. Once selected, the area remains blocked both ways for the remainder of the combat phase (it cannot be "unblocked" until the movement phase of the next turn). Any unit which fires at a target is always exposed to return fire from any other unit in its target's hex throughout the rest of the tactical turn.

D3.03.3 Asteroid Belts STARFIRE asteroid belts and HGT are always 1 system hex wide and extend across the entire playing area. Any tactical hex in an asteroid belt contains enough debris to prevent being detected at long range. Exception: units within 2 hexes of the edge of the asteroid field may be detected at long range.

D3.03.3.1 Units may hide behind asteroids. Hidden units that have been detected may not hide again behind an asteroid.

Squadrons can always hide in asteroid filled tH. Roll 1d10 to determine the number of starships that can hide behind asteroids located in that hex. Hiding units are detected at shorter ranges.

D3.03.3.2 Some units (starships of 30 HS or less and small craft) which shut down their engines completely (drive-field OFF) when hiding in an asteroid belt filled tH, may not be detected by any type of sensors at ranges above 10 tactical hexes.

Note: [C1.02.5] effectively prevents squadrons from hiding.

D4 RECORDING DAMAGE

When a unit takes damage, the damage must be marked off the unit's control sheet (some smaller units may be destroyed by a single point of damage). Damage is marked off after all fire is resolved (to-hit and damage totals) from the current volley. Any target status changes are announced at the end of the volley. These include: shields down, streaming atmosphere, EMS destroyed, target destroyed, etc.

OPTIONALLY, all status changes are only announced at the end of the combat phase (this increases the mystery of combat).

OPTIONALLY, and generally for larger battles, damage only applies at the end of the current combat phase after both fleets fire. This allows each player to fire his entire fleet before the next person does his attacks without any penalty for going last. This method can significantly speed game play although the importance of initiative and timing of fire is lessened.

D4.01 TYPES OF DAMAGE

Each damage point destroys one system, which might be repairable after battle [E2]. Destroy systems by marking intact systems as destroyed. Different weapons cause damage points differently, and these differences are noted under the weapon's description in AppAA-Technology Trees and Systems. The most common weapon systems score damage as follows:

D4.01.1 Weapon Damage Types

A. Standard Damage

The standard method of doing damage destroys systems from left-to-right starting with shields (if any), and skipping only destroyed systems. In the absence of any description on how a weapon does damage, apply damage in this standard manner.

Some weapons causing standard damage cause extra damage when the target's DF and shields are down [D4.01.2].

B. Skipping Damage

Some damage types "skip" or ignore one or more types of systems. Such a system passes the damage through to the next eligible system to the right. If a weapon "skips" any systems when applying damage, the weapon's description will state which systems they skip. Destroyed systems are always ineligible to all types of damage.

Passive defense (armor & shields) can stop damage that skips them, if they are strong enough. Each individual damage point will only be able to skip x number of passives. Once that number is reached, that system, passive or not, is destroyed. Thus, a weapon listed as skipping 5 shields really skips "**TO**" the fifth shield.

Example D4.01.1B - Skipping To (How Skipping Works)

All damage from a single HIT is added before determining skipping and each HIT skips from the left of the targets design. The damage points that skip the fewest number of systems must be applied first. Thus, if two weapons in the same salvo both hit, one does 2 damage (skips 10 armor) and another does 1 damage (skips 15 armor), the damage (3 total) would hit the 10th, the 20th, and restarting from the front, the 15th armor, assuming a ship had that many armor.

Some passives, like dense shields, may "count as" x passives for the purposes of skipping. If one of those x passives is the passive to be destroyed, then that entire passive is destroyed. However, if multiple damage points are required to destroy a skipped system, then apply multiple damage points to that system until it is destroyed; then continue skipping.

Example D4.01.1B - Skipping Specials

C. Random Skipping Damage

Some weapons may skip a random number of eligible systems. The generated number is the intact and "eligible" system counted from the left that is damaged. Generate a 4 and you destroy the 4th eligible system. Such weapons often skip [D4.01.1B] some systems, which makes those system ineligible.

Example D4.01.1C - Primary Beam Skipping

If the rolled number is higher than the amount of intact, eligible systems remaining on the control sheet of the target, the weapon misses "off the end of the sheet" and is ignored.

D. Deep Hits

Some weapons do "deep hits." If damage strikes a non-shield, non-armor system, a deep hit occurs instead. This damage type is applied to a specific type of system regardless of its location. Whenever a deep hit occurs, roll on Table D4.01.1D Deep Hit Resolution and the result will determine which system category is hit. If no systems exist in that category, then the next category's result (next row below) is used (called "cascading down"). If the damage "cascades down" past the last category, then return to the top of the table.

Table D4.01.1D Deep Hit Resolution

Roll	Damaged System[a]
01-03	Any Datalink
04-05	Crew Quarters
06-10	EMS/(Ita)/(DFS)/(CAP) (random)
11-18	Magazine
19-23	Shield Regenerator
24-29	Any SRW
30-33	Other[b]
34-39	Any LRW
40-42	Any Tractor/Presser
43-46	Cargo Hold (destroys contents)
47-48	Multiplex Tracking
49-58	Any Point Defense
59-60	Any Sensor or Science Instrument
61-72	Any Weapon
73-80	Any Bay or (SqdM)
81-90	Any Point Defense
91-00	Any Engine

[a] Multiple points of damage from a single weapon will hit the rolled (or cascaded system), then each point after that will cascade down to the next eligible system listed. After an Engine Hit, the next hit cascades to the top of the table.

[b] Any system normally enclosed in () excluding small craft bays or system listed elsewhere in the table.
Examples: (CIC), (DEC), (APC), (SY), etc.

E. Precision Hits

Some weapons do "precision hits," or have "precision mode," where the attacker selects either the number of the system, the type of system, or the specific system damaged. See individual tech rules for how each precision weapon works.

E1 Numeric Precision Hit

A "numeric precision hit" is done by selecting the system number that you want to hit. If you selected system #24, then you would count 24 systems from the left, skipping any ineligible systems, and the 24th system would be destroyed.

E2 General Precision Hit

A "general precision hit" is done by selecting the type of system you want to destroy, and the defender chooses which specific system of that type is destroyed. If you selected "D" as a system, the defender would have to choose which "D" type system was destroyed. If you select a system that is not on the ship, then the first eligible system in the ship is destroyed.

E3 Specific Precision Hit

A "specific precision hit" allows the attacker to see the enemies design and chose a specific system to destroy. Also see [D5.03.3.2].

D4.01.1.E1 Table D4.01.1E Precision Targeting Summary, gives a summary of when the various types of precision targeting can be used. Tractored indicates the firing unit has a tractor lock [E5] on the target unit, not visa versa. Specific targeting requires the attacking unit to have combat or capital sensors and the target cannot have active shields. Specific targeting data is transferable via datalink though its use is not possible if the target is in the blindspot of either the tractoring unit or the firing unit.

When shields are specifically hit by precision targeting, they are not able to regenerate [AppAA-S]. If the firing player targets a system that doesn't exist on the ship, the player owning the targeted ship can select any system to destroy.

D4.01.1.E2 Presser beams do not benefit the pressoring unit for precision fire control.

Table D4.01.1E Precision Targeting Summary

Weapon	Weapon Skips	Normal Weapon Damage Type	Tractored w/Shields	Tractored, no Shields
Focused attack only [L.01]	S & a few A	(C) 1d5[a] (FRD)	(C) 1d5[a] (FRD)	(C) 1d5[a] (FRD)
Lp	Shields	(D) Deep hit	Numeric	Specific
Ep	Armor	(D) Deep hit	n/a	Specific
Fp	S and A	(C) 1d5[a] (FRD) or (C) 1d10	Numeric	Specific

- Letters in () indicate the type of damage done [D4.01.1]
- [See D4.01.1.E1] Specific targeting requires combat or capital sensors.
- Normal Precision damage cannot be done until shields and/or armor are down or skipped

[a] 1d5 is 1d10/2 (FRD), i.e., 1-3 hits the 1st system.

D4.01.2 DF/Shields Down Damage Multiplier A starship's drive field and its shields protect the ship against small physical attacks and forces some weapons to explode some distance from the DF and shields. When both the drive field and shields are gone, damage from nuclear warheads and kinetic attacks are ***tripled***.

D4.01.3 Ramming Damage Ramming done by drive-field ships is not the actual ramming of the starships into each other; it is the ramming of the drive-fields into each other. This causes the drive-fields of each ship to deform. Depending on the amount of deformation the ship takes engine and/or kinetic damage before the drive-field returns to its normal shape.

The following applies to ramming attacks:

- Base Damage is equal to the HS of the unit.
- Damage is reduced by shields before other modifiers apply.
- Remaining damage is inflicted in the pattern defined in section [D4.01.1A] is applied left to right plus engines take damage per [D4.01.3.3].

D4.01.3.1 Any kamikaze, regardless of generation, inflicts 1 point of damage per DP it has remaining, regardless of attack angle. The kamikaze may fire all weapons as it attempts ramming.

D4.01.3.2 Ramming Damage Modifiers Active shields reduce the damage taken by 1 point per 4 shields (FRD), but shields cannot reduce the damage below 1 point. This applies before the multipliers that follow.

- Weak hulled units, *excluding SS*, and/or units without drive fields involved in ramming inflict 1/2 of the remaining damage (FRU) and take twice the remaining damage.
- Any BS or AF rammed by a starship suffers TWICE the total damage.
- Any SS rammed by a starship suffers THREE times the total damage points.

D4.01.3.3 If a starship that rams or is rammed by another starship takes more than 4 points of internal (non-shield) ramming damage, it also loses one engine in each operable engine room. (Including operating tug engine rooms) The number of engines that are damaged is no more than the total number of operable engine rooms aboard the other vessel, or 20% of the internal damage (FRD)

inflicted, whichever is less. Engine rooms are damaged left to right. Engine rooms losing an engine must roll for shutdown under [C1.03].

BS, SS, and AF never lose drive field interdiction due to ramming.

Example D4.01.3 - Ramming Damage

D4.02 STATUS CHANGES

Unless a unit is tractored to a target [E5.01.2], it is impossible for its scanners to determine the exact status of that target, but certain indications of damage are observable and must be announced after the salvo during which they occur.

Certain situations allow sensors to detect additional information [E5.02].

D4.02.1 Shields down When a unit no longer has active shields, the owning player must announce 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 pulse in which it fires.

D4.02.2 Streaming Atmosphere When a unit's first non-shield, non-armor, non-Z system is destroyed, the owning player must announce that his unit is "streaming atmosphere." Ships have been known to deliberately destroy a system and announce they are "streaming atmosphere" after an attack but when their hulls are actually still unbreached. However, such a false signal will only fool enemy ships until the start of the next combat phase.

D4.02.3 Losing Engine Rooms When an engine room(s) shuts down or is destroyed, the owner must announce that the "Drive Field fluctuates." The exact amount of fluctuation is not detectable.

D4.02.4 Losing the Drive Field When the last active engine stops working on a unit, due to damage or shutdown [C1.03], it must be immediately announced that drive field is down. All EM and EMS ceases to be effective when the drive field is down.

D4.02.5 EMS Loss The loss of the EMS system must be announced.

D4.03 LOSING THE BRIDGE

Each quarter represents a portion of the bridge, secondary bridge, combat center, etc. A unit losing its last operable quarter receives a -1 modifier to all future rolls for that unit, including to-hit, initiative, etc.

D4.04 WEAK HULL

Due to the weakness of their hulls, all Freighters and all SS sections (modules and core) receive double damage from any internal hits, unless the weapon does precision damage (primaries, needle beams). Internal armor requires 2 points of this doubled damage to be destroyed, with any odd point scored against them ignored at the end of a combat pulse.

D4.05 TRANSIT CARRIER DAMAGE

Transit racks place a great deal of strain on the carried units. When the transit rack is destroyed, this strain will cause damage to the carried unit.

D4.05.1 When damage occurs to loaded transit racks, the owner must determine which consecutive transit racks each unit is in. Each transit carrier rack destroyed causes 1 points of damage to every unit being held by that rack. Small units are destroyed by this damage.

D4.05.1.1 Units that are not held by any transit racks become "loose" within the drive field. Loose units are placed on top of and have the same facing as the transit carrier (or the remains of it). Loose units remain "associated" with their carrier until launching [C6.02.3] and do not receive a combat pulse.

Carriers who move without launching "loose" units suffer collision (ramming) damage with each loose unit.

On the next turn and after launching, loose units can fire weapons and active their engines.

D4.05.1.2 Once the transit carrier has lost its drive field and shields (or been destroyed), loose units may be targeted independently of their carrier. If the targeted unit (loose unit or carrier) takes damage from an explosive warhead weapon while having no shield or DF protection, each associated unit will take 1 pt of collateral damage (not multiplied by [D4.01.2]).

D4.05.2 When a transit carrier is rammed, the carrier takes normal damage and each of the carried units suffers 1/3 damage (FRD). All transit racks are destroyed (causing more damage to the carried units).

D4.06 NO HOLD

A large unit, after attempting Emergency Repairs [E2], that has no hold or not enough holds will not receive full maintenance. If nearby ships have sufficient extra hold capacity, they may be able to provide maintenance, although at a premium.

If full maintenance is not paid, systems will be destroyed [L7.02] and crew grade may drop [L7.04]

D4.06.1 Drawing Maintenance from other Ships
The extra hold capacity needed is (damaged ship's maintenance minus its remaining hold capacity in MC) times two.

Extra cost of the maintenance is halve that value.

D4.07 MAGAZINE LOSS

A unit automatically moves ammunition around between different magazines during combat. When a Magazine is lost, the storage capacity of the remaining magazines must be check to see if they can hold the remaining ammunition that has not began transferred to weapon system storage (that part also happens automatically, see [Ammunition]). If the remaining magazines are not enough to hold all ammunition, the player may discard whatever ammunition he chooses until he is under the storage limit.

D5 SENSORS AND DETECTION

The ability to detect the enemy depends on three main factors: your sensors, the range, and his speed. All spacecraft have inherent sensors (standard). Mounting better sensors improves detection range.

Sensor reports occur:

- after all ships have expended a MP in a movement pulse
- during each unit's combat pulse
- at the end of the combat phase
- and finally in the recordkeeping phase.
- Optionally, scanning only occurs once a ship has expended at least 1/2 of its MP.

A buoy or unit in T detection by one unit can be fired at by units with detection type P during the same turn; however, this is considered to be a snap shot and suffers -1 BASV damage to any hit.

D5.01 DETECTION RANGES

As a contact gets closer, sensor accuracy and detail increases. Ultra breaks detection down into 4 main range brackets: short, combat, medium, and long. When a contact moves into a closer range bracket, more information becomes available. At short range, almost everything can be detected and tracked individually. At long range, only the most general information about the brightest energy sources can be detected. Range brackets vary by sensor system. Each sensor system has a maximum distance listed for each range bracket. The most detailed applicable range bracket is used. In addition to the 4 main sensor ranges, some systems also have scanning capability (active functions work like radar). Active scanning range is 1/5 of short range (FRN).

D5.01.1 Detection Changes A unit detected by an enemy which switches on a device or changes engine modes such that the enemy can no longer detect them (or certain details) is then only detected as if at the new detection type. The only exception is detection type P from detection type T (see D5.02.4).

D5.02 DETECTION TYPES

When a unit fits into two or more detection categories, it is always detected by the category that gives the most information. Units that change status by raising shields, firing weapons, using active scanning, or using broadcast communications will be immediately detected if within the appropriate range.

D5.02.1 Presence only (D) Active DFs and or shields are detectable. All contacts within 15 LS of each other are reported as a single contact. WP location information might be available [D5.04.1]. Ship destruction explosions and nuclear explosions can be detected.

D5.02.2 Quantity (Q) In addition to D, Q indicates quantity, size, and hull generation of a unit. A unit's shield and drive field status can be detected (up/down) [D4.02]. All other types of non-shield weapon hits can be detected.

Active navigation beacons, responding IFF signals, and large unit warp transit signature are detectable [D5.04.1].

D5.02.3 Target (T) In addition to Q, T indicates weapons can target and fire upon a unit. Unit type (warship/FT/advanced), Streaming Atmosphere, Drive Field fluctuations, and EMS/EM level can be detected [D4.02]. Small unit warp transit signature is detectable [D5.04.1].

AP type is detected, but not their generation, contents, or mounted systems.

D5.02.3.1 Weapon Info When units fire (including AP), weapon type, generation, and quantity can be detected by individual unit. Fire from XO racks and different types of internal launchers cannot be determined (i.e. Wa and Ra fire appear identical as do La and XOB-La). Point defense usage including numbers can be detected.

D5.02.4 Possible Target (P) A unit may possibly (P) be in T detection. A unit may fire at an enemy in P detection range only if the enemy has previously been detected at T detection (which would be broadcast to the whole fleet) and that detection has not been lost.

P detection is lost as soon as the unit moves beyond P range from all enemies. Lost detection must be redetected normally. Units remaining at P detection ranges are detected after 10 minutes.

Once detected, P detection is the same as T detection, other than the above limitations.

D5.02.4.1 Snap Shot On the first tactical turn that a unit is detected, any craft firing at that unit with only P detection is using a snap shot and either subtracts one from their to-hit roll, or gets a -1 BASV to each weapon, or gets a -1 damage [G7.01].

D5.02.5 Scan (S) A scan is necessary to detect buoys and planetary facilities [D5.05.2]. Against a shields up unit, it allows for a prototype hull to be made of the scanned vessel [M1.03.4.1] and provides information for R&D purposes [N9.03.1]. Against a shields down unit, scanning identifies the enemy class [A6.02], identifies active technology [D5.03.3], and hull improvements [Con.02]. Specific weapon information gained on each system as it fires.

Note: Shield technology can never be scanned because the shields must be down and that effectively makes them inactive.

Table D5.02 Detection Category

Detection Type (Type of unit you are trying to detect)	Long	Medium	Combat	Short[a]	Scan[b]
Large ship generating MP (no LOD or CLK)	D	Q	T	T	S
Large ships using LOD with shields down or CLK or with engines in standby mode including BS, AF, and SS.	-	D	T	T	S
Small Mobile Units (Small Craft, Drones, and CC mini-drones) or Explosions	-	D	Q	T	S
Small Mobile Units using LOD; with engines in standby mode; Large Ast.; or Recon Drones	-	-	DP	T	S
Buoys, small asteroids (less than 1 Bb point in size)	-	-	P	P	S
DF down (any) or units hiding in AST. belt [D3.03.3.1]	-	-	P	T	S
Small (<31 HS) units hiding in asteroid belt [D3.03.3.2]			P	10 tH or P	S
PDCs & landed units [D5.05.2]			P	P and 30%T	S
Populations [D5.05.1] --- 1000+ PU, twice long range	61-1000 PU	0-60 PU			

For the purposes of detection:
DF down (any) includes large units, small units, and anything else at least 1 Bb point in size including significant space-junk, life pods, small asteroids, etc.
WP transits of large units can be detected at medium range, and the tH of the WP determined. Survey information allowing transit can only be detected at combat range.
Units which fire while outside enemy's combat range for detecting them can always be engaged by the enemy at a -2 to-hit as long as their weapons have the range [CLK.05]

Table D5.03 Sensor Capabilities[a]

System	SL	HS	MC	Scan	Short	Combat	Medium	Long	Note
Standard Sensors {Ranges (in tH)}									
IND-1	-2	n/a	0	-	3	5	9	-	
IND-2	-1	n/a	0	-	5	8	14	-	
Standard	0	0	0	-	10	10	20	-	
Standard	7	0	0	-	10	15	30	-	
Standard	15	0	0	-	13	20	40	-	
Standard	25	0	0	-	15	25	50	-	
Standard	35	0	0	-	17	30	60	-	
Standard	45	0	0	-	20	35	70	-	
Smcft	0	0	0	1	5	10	20[b]	-	
Drone2+	0	0	0	2	10	20	40	-	
Buoy or Drone1			0	-	4	7	10	-	
Combat Sensors {Ranges (in tH)}									
Ya	0	1	20	2	10	21	30	60	
Yb	4	2	35	3	12	26	45	240	1 LM
Ye	7	2	55	3	15	30	60	480	2 LM
Yi	11	2	75	4	17	35	75	720	3 LM
Ym	15	2	95	6	20	40	90	960	4 LM
Yn	19	3	120	7	22	45	105	1200	5 LM
Yo	23	3	140	8	25	50	120	1440	6 LM
Yq	27	3	160	9	27	55	135	1680	7 LM
Ys	31	4	180	10	30	60	150	1920	8 LM
Yu	35	4	200	11	32	65	165	2160	9 LM
Yw	39	5	220	12	35	70	180	2400	10 LM
Yy	43	5	240	13	37	75	195	2640	11 LM
Yka	47	6	260	14	40	80	210	2880	12 LM
Capital Sensors {Ranges (in tH)}									
Yca	2	10	150	3	15	25	60	2880	1 sH
Ycb	5	15	250	4	20	35	90	5760	2 sH
Yce	9	20	400	5	25	40	120	8640	3 sH
Yci	15	25	500	6	30	45	150	11520	4 sH
Ycm	21	30	650	7	35	50	180	14400	5 sH
Ycn	27	35	700	8	40	55	200	17280	6 sH
Yco	33	40	750	9	45	60	225	20160	7 sH
Ycq	39	45	800	10	50	65	250	23040	8 sH
Ycs	45	50	900	11	55	70	275	25920	9 sH

[a] See D5.03.1 for a summary of modifiers and other notes

[b] Smcft inherent sensor ranges vary by generation. Base Range (from the smcft abilities Chart [Small Craft Tree] is Medium Range. Combat Range is 50% Base Range. Short range is 50% of combat range. Scan range is 20% (FRD) of Short Range.

D5.03 DETECTION RANGE MODIFIERS

All additions/subtractions to sensor ranges occur before any percentage increases or decreases are applied. See notes by Table D5.03 Sensor Capabilities.

D5.03.1 Sensor Range Modifiers/Notes:

- Adjusted scan ranges are always FRU, unless noted. All additions/subtractions to sensor ranges occur before any percentage increases or decreases are applied.
- -50% range for units using LOD [D5.03.2.1]
- -50% Smcft Combat Sensor (sY) [smcft.02].
- AP mounted Combat sensors have full range.
- Class A transit effects (Simultaneous Transit) -50% sensor range [D7.01.1].
- Class B transit effects ("In a Line" Transit) Y, sY, Yc, and sYc inoperable [D7.01.2]
- Enemy operating with CLK reduces your effective sensor generation [(CLK)].
- Buoys only detect LOD mode and CLKed units at 4 tH [D9.05.1].
- *Terrain:* An asteroid belt hex reduces sensor range by 50%.
  Nebula: Dark -15%; Reflective -25%;
  Emission -50%; Maser -75%
- *Extended Range* [D8]: Drive Field Down unit +3 hexes; BS or SS +5 hexes; PDC or AF +7 hexes
- Populations:
  20-60 PU -- 100% of best sensor available; [D5.03]
  61-1000 PU -- 200% of best sensor available;
  1000+ PU -- 300% of best sensor available

D5.03.2 Low Detection Speed (LOD) Ships can attempt to avoid detection by moving at a lower than normal speed, while using the extra engine power to reduce drive-field emissions as a result.

If a ship is moving at 1/2 (FRD) or less of its CRUISING SPEED with engines in LOD mode and with shields DOWN, detection ranges for enemy units are reduced. This may result in surprise situations but firing will allow the targeting of the LOD vessels.

D5.03.2.1 A unit using LOD has all its sensor ranges reduced by 50% but firing by a LOD vessel will allow it to be targeted as if not using LOD.

LOD Flash: A unit using LOD that changes engine mode can be detected for 5 seconds as if the unit's engines were in tactical mode. A unit that "Flashes" can be targeted in the same turn. The 5 second detection window does not allow determination of the types of ships.

D5.03.3 Detecting Details Detecting details about a ship's armament, signature, and other such information is hard to get until you get to close range. But what can be detected? In general, things that are not actively producing emissions cannot be detected (such as armor type, systems that are turned off, CIC, etc.). However, certain systems and activities CAN be detected. These are the rules for detecting details.

- Active Scanning can be detected at combat range.
- DF strength (speed or number of engines/rooms) is not detectable [Exception: D5.03.3.1].
- Shield strength (number) and generation are not detectable
- APC emissions can be detected at combat range but not which ship they originate from (wide area broadcast)
- Broadband radio transmissions can be detected at a much higher range than sensor detection [P3.03].
- Operating (CC) can be detected at 1/10 normal reception range when using point to point communications (such as single ship to ship communications) but broad calls for help can be detected at normal distances and so can standard starship transmissions as they have no tight beam capability built in.
- A tractored or tractoring unit is detected as if its engines are in tactical mode.
- Tractor disrupters cannot be detected. However, the failure of the tractor beam to lock on is a good indication.

- A tractor link is detectable at short range.
- Tech data can be obtained at scanning range if the enemy is shields down and actively using the system. When combined with science instruments (X but not sX), this data can be obtained at short range.
- At short range, a sensor can determine the SL of any actively functioning tech item [N13].
- Units in shipyards are detected at detection level Q. At Q level, the intended hull size and quantity can be detected. At T level the hull type and completion percentage become known.

D5.03.3.1 Operational Combat or Capital sensors within the short range of an enemy "shields down" unit may ask for how many of ONE general type of system remains operable. This may only be asked once per target per turn.

D5.03.3.2 Reveal A tractored, "shields down" unit must allow the tractoring player to see that unit's control sheet, if asked. At such close range and with such a tight lock, the tractoring unit can tell exactly what shape its target is in.

D5.04 Learning WP Information

Knowledge of the warp point location (hex) is not the same as knowing the information required to transit a WP (transit info).

The table below provides how long and what type of information is gained for each type of transiting unit. Note that some types of information are not immediately available to a unit. The information is only provided about the EXITED side of the WP.

Transiting Unit	Learned Information[a]			
	Turn of Exit	End of 2nd Move phase	End of 3rd Move phase	End of 4th Move phase
Starship with X	Loc, Trans, Vis, Type, Surge[b]	n/a	n/a	n/a
Starship	Loc, Trans, Vis, Type	n/a	n/a	n/a
Gunboat	none	Loc, Trans, Type	n/a	n/a
Drone with sX	none	none	Loc, Trans, Type, Surge[b]	n/a
Drone	none	none	none	none
Recon Drone	none	none	Loc, Trans, Vis, Type	Surge[b]

[a] Loc = WP Location, Type = WP Type, Surge = WP Surge Data, Trans = WP Transit Info, Vis = WP Visibility

[b] Surge data takes 5 minutes to calculate.

D5.04.1 Definitions of WP terms:

WP Location -- The sH the WP is located in.

WP Surge Data -- Knowledge of this allows transiting units to choose their unit's facing when exiting the WP (note: you choose prior to entering the WP).

WP Transit info -- With this, a unit gains the knowledge to USE a WP.

WP Type (Size) -- WP type determines the size of the WP, in HS, which determines how quickly units are able to pass through the WP.

WP Visibility -- This is how easy it is to survey for a WP (open, secret, etc.)

WP Transit Signature -- By observing this, a unit gains the knowledge that a (dis)appearing unit just used a WP and knows the tH the warp point is in. The unit does NOT gain Transit Info.

Detection level on the Transiting Unit by the Observer

Detection level	Detected
D	WP location only (sH)
Q	WP transit signature
T	WP transit signature, WP Visibility
T with X operating	WP Transit info gained
1/2 T range (FRD)	WP Transit info gained (always), WP size
Range 0 or Scan Range	WP size

Note: Trade agreement star maps do not include WP surge data.

D5.05 Detection and Planets

The detection of populations and units on planets is not a simple task. If they are hiding or if your sensors are not good enough, it is conceivable to miss a population or armed force on a planet's surface.

D5.05.1 Detecting Populations A population can be distinguished as Pre-Industrial, Industrial (but not type), or HEL (but not EL) from the moment it is detected.

- P-IND populations can only be detected at 1 tH.
- Populations up to 60 PU can be detected at medium range.
- Populations of 61-1000 PU can be detected at long range.
- Populations > 1000 PU can be detected at twice long range.
- PU and IU quantity is detectable at 50% of short range.

D5.05.1.1 Black Out: A population smaller than "small" can shut down active emissions for short periods of time (up to 1 week per month). Shutting down emissions cuts the detection ranges by 50%.

D5.05.1.2 Going Bush: This is a desperation measure intended to improve the survival chances of non-indigenous populations. Any small or less population may "go bush" on any habitable planet, and deactivate all advanced technology. In so doing, it will produce income as a Pre-Industrial population, and will be detected as such. It cannot maintain any spacecraft or other equipment. It takes 1 week to "go bush" once the order is given to do so, and 2 weeks to begin generating their normal income, building at their current EL, etc. once the order to return to normal activity is given.

D5.05.2 Detecting miscellaneous:

- SA, RDS, Training Facilities, and ICC are detected at scan range.
- PDCs are detectable at 30% of short range (FRU) or until they produce active emissions [D5.02].
- Landed DF down units are detectable like a PDC.
- Qv and H totals can be determined at 0 tH.

D5.06 IDENTIFICATION, FRIEND OR FOE (IFF)

The IFF is a coded transponder system that identifies a unit as "friendly" *in response to a valid interrogation signal*. The IFF of airborne craft was adapted to space use to prevent deception due to the use of captured units or purchase of units from other more friendly races. Such deceptions will delay the recognition of a nationality for 1 tactical turn.

D5.06.1 The IFF is vulnerable to WP transit disruption, while undergoing WP transit effects [D7.01], there is a 10% risk that the IFF will malfunction until the transit effects are over. Such a unit will be designated as an unverified non-friendly unit.

Normally such a unit is attacked but 40% of the time the on-duty officer will choose to wait for verification. AP can be programmed not to attack unverified units.

D5.06.2 Military allies and Partners will share "friendly" IFF codebooks to allow them to pass through automated defenses, while lesser relationships [T3] do not and will not be identified as "friendly." To prevent the enemies from gaining use of codebooks, the codes are changed quite frequently and are one of the priority items destroyed when a ship is being captured [U5.02]. There is a 40% chance that a captured codebook code from the previous month will delay AP and units of the same race from attacking on the turn of transit.

D5.06.3 The IFF daily codes can be communicated by CFN, CD, AP-c, any ship, base, population, etc. This includes passing them to mines and buoys via normal communication methods. In other words, normally players don't have to worry about IFF status changes for friends and enemies. Unless an enemy has infiltrated the communications system [P1], intercepts a CD [E5.07], or uses espionage, the IFF cannot be obtained from any of these locations.

D5.06.4 It is impossible to decode an IFF signal to determine the codes.

D5.06.5 IFF can be polled at long range but results in the polling unit being immediately detected. If not normally detectable at this range, only the presence and direction to the unit is known, otherwise use normal detection rules. Note: IFF improves as sensors improve. Units may choose not to interrogate or to respond (switch IFF off). IFF never responds to an invalid interrogation signal. IFF is defaulted to respond but not interrogate without other orders.

D5.07 NATIONALITY (EMPIRE)

At short range, the nationality (such as "Terran") of a unit can be detected. An empire's units are distinguishable from other empires but without at least partial communications, the specific nationality will remain unknown. Nationality information cannot be "traded" among allies short of a partnership. Victory in a combat will yield nationality information from the bodies.

Example D5.07 - Nationality Detection

D5.07.1 There are four methods to determining the race and/or class of an approaching ship:

- Drive field detection, which gives the race of the drive [D5.05].
- IFF, which will determine the race of any same or allied race's ship [D5.06].
- Capture, which gives all information.
- Direct communications, which gives whatever information the broadcaster wishes to send.
- On the turn of transit, Nationality cannot be detected by the transiting unit nor can its own nationality be detected. Note that IFF often makes this irrelevant.

D5.08 DETECTION DURING PATROLS

Note: This section is not intended to cover every possibility (because it just cannot) so players and Space Masters will have to use their best judgement.

To be considered a "group" unit(s) must be (and remain) in a different sH from other groups. A group may contain any number of units and may be either a searcher or searchee.

$$\text{Detection Chance} = 0.0000004689 \times D \times \text{Speed Adjustment Modifier} \times \text{no. of friendly groups} \times \text{no. of enemy groups} \times \text{no. of days}$$

D5.08.1 Star System Area To resolve detection attempts between groups of starships in a star system use the following equation:

where

D = best force (enemy or friendly) sensor range in tH. This is averaged by side, using each groups' best sensor range. Remember to adjust sensor ranges by necessary conditions (LOD, CLK, nebula, etc.).

Speed Adjustment Table

Speed	1	2	3	4	5	6	7
1	100%	158%	224%	292%	361%	430%	500%
2	158%	200%	255%	316%	381%	447%	515%
3	224%	255%	300%	354%	412%	474%	539%
4	292%	316%	354%	400%	453%	510%	570%
5	361%	381%	412%	453%	500%	552%	608%
6	430%	447%	474%	510%	552%	600%	652%
7	500%	515%	539%	570%	608%	652%	700%

$$\text{Detection Chance} = \frac{2D \times \sqrt{A^2 + B^2}}{\text{Area}} \times \text{no. enemy groups} \times \text{no. friendly groups}$$

D5.08.2 Special Size Areas To resolve detection attempts in areas smaller (or larger) than a full system use the following formula:

where

D = best force (enemy or friendly) sensor range in tH. This is averaged by side, using each groups' best sensor range. Remember to adjust sensor ranges by necessary conditions (LOD, CLK, nebula, etc.).

A = average friendly forces speed in tH per day.

B = average enemy forces speed in tH per day.

Area=the area searched in tactical hexes. A system hex has 6,224,929 tH and a star system has 17,373,776,839 tH.

Once you have your percentage, resolve possible interactions:

Step One: When the number starts with zeros, total the number of sequential zeros following the decimal point then roll that many d10. All must equal one to continue to the next step.

Step Two: Take the next two numbers either following the decimal point or after the sequence of zeros. Treat this as the percentage for detection.

Step Three: Once a detection has successfully occurred, roll randomly between group A and group B to determine the individual ships. Roll randomly to determine the position in the system (Do this by creating a WP [W8.02] at a random location and then move it 100/3 (FRU) system hexes clockwise). This is the location of the initial encounter.

Example: Two races begin surveying a star system at the same time. Race A is using 10 Xa surveyors and Race B has 15 Xb surveyors, 3 with Yb. All the survey vessels are EL4 and are moving at their MSS.

Rolling once a day will net a 0.0597% chance of detection.

To resolve this, roll 1d10, if it rolls a "1" then roll percentile dice with a 60% chance of detection.

Detection Chance =
$0.0000004689 \times 240 \times 3.54 \times 10 \times 15 \times 1$
$= 0.059756616$

Note: That one side will usually detect the other side first and thus may shadow them (must be same strategic speed or faster), ambush them (must be faster strategically to get in front of it, go drivefield down, and wait, see P4 for getting off a warning message).

Designer's Note: This determines the chance of detecting randomly moving units with randomly moving units (patrollers seeking survey units). Units doing probes are not worth worrying about until after they are detected by an appropriate inhabited planet.

Groups at planets are usually detected during probes (the prober moves right to the planet, only sensor ranges are really an issue then).

If some groups are stationary but at odd locations (usually anything not at a planet would qualify (like a WP or in an asteroid belt), use the above as it works with speed zero units.

D5.08.3 Tailing the Survey Unit To tail a survey unit to the WP, the tracker must have sensor range of at least 30 tH more than the survey units sensor ability, and it must be able to move as fast as the survey unit (including any burnout rolls).

D6 Combat Rules for Bases, PDCs, and Space Stations

Non-ship units can play an important part in STARFIRE if only because they are much cheaper to maintain. See [M7] for combat information about ground facilities.

D6.01 Bases and Asteroid Forts

Bases and Asteroid Forts are designed to be defensive platforms to protect a fixed location in space. BS, SS, and AF cannot turn off their drive fields except during repair.

Note: Objects without a DF will drift 1 tH per 30 minutes away from a WP [W10.02].

D6.01.1 Asteroid fortresses are PDCs built into an asteroid but, excepting construction and maintenance, are treated in all other ways as BS. AF have no blindspot and may mount shields and do have station-keeping drives. Any player can find an asteroid of any size up to 1,000 hull spaces in any asteroid belt hex that may be used as fortresses in place or towed with tractor beams [E5].

D6.02 Planetary Defense Centers

Planetary Defense Centers (also referred to as ground bases or PDCs) are planet-side installations designed to defend against attacks from space. PDCs are cheaper than starships and have many advantages from the unlimited space and resources of a planet.

Realism note: We have done a number of things to simplify the play of PDCs and balance them. The overall effect of these numerous assumptions has been hidden within the final results of the PDC rules which work a great deal like regular ship to ship combat rules. If you need a physics explanation, see the physics explanations on the web site.

D6.02.1 PDC advantages

- Weapons have more power available and thus PDCs can fire SRW through the atmosphere without penalties [D7.02.2].
- All PDCs in adjacent areas can datalink.
- PDC targeting is not effected by ship EMS/EM.
- The PDC can use the planetary population's sensors [D5.03].
- PDC LRW have extended range [D8].
- PDC point defense can protect anything in its own or any adjacent planetary area [D6.02.6].
- PDC armor is energized and grounded to the planet/moon preventing E damage from skipping armor -- all armor is destroyed on a 1:1 basis.
- PDCs do not suffer from crew exhaustion [F1.02.1].
- PDCs can be enlarged during campaign games without closing down to refit [M6.02].

Note: The [D4.01.2] DF down multiplier does not apply.

D6.02.2 PDC disadvantages

- PDCs cannot mount EMS, engines, or shields [H1.01.1].
- PDCs have limited arcs [D6.02.3].
- Missiles that miss the PDC can destroy population [D6.02.8].

D6.02.3 Construction PDCs pay for hull spaces and systems as construction builds them. PDCs do not require crew quarters or cargo holds for life support and maintenance [H1.02 and L7.02].

D6.02.3.1 PDCs can be enlarged during campaign games without closing down to refit. Further, when refitting, only the HS being worked on need be shut down (the rest of the PDC remains active and functional).

D6.02.4 Firing Arcs PDCs have a firing arc of 180° for non-missile/non-torpedo weapons. This field of fire limitation applies

to sprint-mode missiles, point defense *attacks*, and energy weapons. Attackers must be within the PDCs firing arc to engage them [exception: D6.02.5].

PDCs missile/torpedo weapons have a 60° blindspot, like starships. If the PDC is on a planet with a population size of at least small, it has no blindspot. HAWK missiles have a -1 penalty when fired out of arc by PDCs.

D6.02.4.1 1 Planets rotate 1 hex side in every 4 hours as per [W9] and cause a PDC's field of fire to "move" through a full 360° in the course of each day. When a PDC is built, the builder uses the scattergram to note the "side" of the planet on which the PDC is located.

D6.02.5 Detection An observing spacecraft must be within 180° arc of the planet-side the PDC is located on to detect it (no matter how it is being detected) [Table D5.03 Sensor Capabilities]. A PDC that opens fire reveals itself to any spacecraft within its or the PDC's weapon range, even if the spacecraft does not have the sensor range to detect the PDC normally. The location of a PDC can be passed to the rest of the fleet during the following record keeping phase, if the unit survives that long.

An attacker can engage a "located" PDC despite being out of sensor range or the PDCs 180° arc. These attacks, with *regular* mode missiles/torpedoes only, can be from *any point* within range of the PDC but such attacks are -2 to hit.

D6.02.6 Combat differences PDCs have extended LRW ranges [D8]. Enemy EM and EMS do not effect PDCs; however, non-PDC units datalinked to PDCs are affected by EM and EMS. All point defense systems in a given planetary area, the two adjacent planetary areas, and on any unit datalinked to a PDC on or above the planetary area under attack can be used to defend the planetary area, PDCs, and all units *landed* within that area. PDCs may engage sprint mode missiles with point defense at no penalty.

D6.02.7 Datalink PDCs linking to other PDCs aren't datalinked in the classic sense. All PDCs on a planet are linked together at any Economic Level without the need for a Z type system. But only those in one area, and its two adjacent areas, can work together in an offensive/defensive support pattern, due to firing arc limits. The different PDC datalink groups can be "created" during different combat pulses, depending on the player's needs.

Non-PDC units with a datalink system preset to link to the "planetary PDC network" and within 1 TacHex of the planet may link into the planetary network. The amount of HS that can link into the planetary network is limited to the amount of PDC HS in operation on the planet. The units will be tied into the data-net of the planetary area directly below at the moment they come under attack assuming that a PDC exists in that area.

When creating PDC datalink groups, only a single non-PDC unit can be included at a single time. Thus, when an enemy unit fires missiles at multiple targets linked to the planetary network, each PDCs must choose only one non-PDC unit to protect. If there are enough PDCs with point defense, then each non-PDC can be protected by at least some PDC point defense.

PDCs can use any point defense in datalinked mode, even those without the datalink point defense module.

D6.02.8 Misses A missile that misses, and is not intercepted, is treated as strictly collateral damage [V6.03]. Planetary bombardment attacks work fine at range zero with regular mode missiles and don't require any to-hit rolls.

D6.03 SPACE STATIONS

A space station has a non-military central core and up to six outer military modules. See [H1.01.2] for the construction of SS.

D6.03.1 Each SS module is independent of all the other modules and SSs cannot use any form of datalink. Each module may use its point defense to protect the central core.

Both the space station core and outer modules have weak hulls, and internal damage is doubled.

D6.03.2 . Space Stations can rotate one hexside clockwise or counter-clockwise once every tactical turn to change their modules facing. Rotation occurs in the 6th movement pulse.

D6.03.3 . Each module on a space station is considered a separate target for targeting purposes [D3.02.1].

D6.03.4 . Shields are unique on SS. When a point of damage is scored on a module, either one shield system mounted in that module can be damaged or three shield systems on any combination of other modules can be damaged. The protected module does not have to have active shield generators.

D6.03.5 . Space Station modules are placed with each module (#1 to #6) facing a specific scattergram direction (called an SS facing).

D6.03.6 . Each SS facing is 60 degrees wide excluding half-hexes (the same area as a ship's blindspot, which in the [D3.01.4] figure would be facing 4 if up (or north) was the top of the page)

D6.03.7 . Module Facings

- With 1 module, the module blocks attacks from three facings (its own and both adjacent facings). The core is exposed on the opposite 3 facings.
- With 2 outer modules, each module blocks attack from different three facings (its own and both adjacent facings).
- With 3 outer modules, each module blocks attacks from two different facings (its own and the next clockwise facing).
- With 4 to 6 modules, each additional modules is placed in one of the empty facings that the other modules do not occupy. A module blocks its own facings and if empty, the next clockwise facing

Note: SS modules can move to protect a different facing of the SS (or even to a different SS) but this takes 5 full days and 1 construction facility. Modules are not combat capable when moving.

Modules are placed following the above during construction.

D6.03.8 . In order to attack a module, an attack must be from within that module's firing arc (180 degrees) [D6.3.10].

D6.03.9 . Each module blocks attacks from 1 to 3 facings [D6.03.6]. When a module is destroyed, attacks coming from within those blocked facings may attack the core.

Because of the way the hex map is laid out, certain hexes are between 2 different SS facings. A ship in one of these hexes may fire at the core only if the module(s) protecting both of the facings are gone.

D6.3.10 . Each module has a 180-degree firing arc, including half-hexes (its SS facing plus the 2 adjacent SS facings). This fire arc is regardless of the presence of modules in the adjacent facings. Module fire arcs do overlap on certain hex half hexes but mobile units can easily avoid those overlaps.

D7 OTHER COMBAT INTERACTION RULES

D7.01 WARP TRANSIT EFFECTS ON COMBAT

A transiting unit suffers many problems on the turn of transit. Fortunately the defender has problems too. Units that survive simultaneous transit suffer even worse problems. On the turn of an "in a line" transit [C4.03], a unit will suffer class B transit effects. On the turn of a simultaneous transit [C4.04], a surviving unit will suffer class A transit effects and class B transit effects on the next turn.

Exception: Gunboats and units released after transiting the WP on transit racks do not suffer class B transit effects on the following turn.

D7.01.1 Class A transit Effects All class B transit effects apply and in addition offensive fire is prohibited and XOg cannot launch. Inherent Sensor Ranges are -50%.

D7.01.2 Class B transit Effects All offensive fire is at a -3 to hit. Point defense intercepts at -3 on the turn of transit. Non-inherent sensors, NAV, n, datalink, EM, and EMS systems are inoperable. Multiplex tracking treats the first target as four units. Launch facilities are inoperable except for XOg. WP transit is not possible. Designated flagships cannot assume command [B2.03]. Units may use LOD mode to transit WPs but LOD is detected as non-LOD and all other penalties still apply including the sensor range reductions.

Example D7.01 - Sensor Detection

D7.01.3 Severe as the combat degradation of a transiting starship may seem, the defenders' problems can be worse as the defender is likely surprised [F2]. Additionally, any fire at a unit that transited in the same turn suffers a -2 to hit to reflect limited tracking time.

D7.02 FIGHTING IN AN ATMOSPHERE

Ships must have (AC) to be able to enter the atmosphere, while all small craft are assumed to be built with it installed.

D7.02.1 Precision weapons and Sprint Missiles are the only SRW weapons that function through an atmosphere (*Exception:* SRW fired from PDCs [D6.02.1]). LRW can be fired through the atmosphere without any problems.

D7.02.2 All other SRW can only be used if the ship actually moves into the atmosphere and fires from there, using the range 2 value from the damage tables.

D7.02.3 Point defense cannot be used offensively if the mounting ship is flying in the atmosphere (*Exception:* small craft in the atmosphere can use point defense). Point defense can be used normally at LRWs fired from the planet's surface or at LRWs fired from ships in space but at a –1 penalty. Dc does not have a penalty for intercepting LRWs from space while in an atmosphere.

D7.02.4 Squadrons may not engage small craft in atmosphere and will break up if they attempt combat maneuvers there.

D7.02.5 Shields do not function in atmosphere.

D7.02.6 Starships landed on planets and moons are treated as PDCs. Their shields may not be raised nor may drive fields be active.

D7.03 LARGE EXPLOSIONS

When a starship or small craft carrying multiple warheads is detonated (not destroyed by weapons fire), it may cause damage to nearby units under certain conditions.

Note that such explosions are considerably reduced in power, for several reasons, including the lack of directional focus in the explosions, and dispersion of the warheads away from the target as the exploding vessel is ripped apart.

D7.03.1 To cause damage to another craft, the detonating unit must attempt a ramming roll [C10.01.5]. If the ramming roll is not successful, then damage from Table D7.03 Large Explosions, is reduced by ten times (FRU) (to 10%). Note that ramming damage is not caused in either case.

Example D7.03 - Large Explosions

D7.03.2 Table D7.03 Large Explosions, gives the proper damage for the amount of weapons.

Multiply the table's result by the *average* warhead damage (FRN).

Table D7.03 Large Explosions

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

D7.04 BREAK-OFF AND SURRENDER RULES

A badly outnumbered force of spacecraft may attempt to break-off and run (regardless of orders) or even surrender. Units defending their home system or home world are never compelled to do so. The definition of a "badly outnumbered force" is very difficult to quantify in game terms. EL, SL, ship sizes, weapon types, and such all play a significant part. High tech ships may be few, but often have many times more HTK and firepower and thus each ship is typically better. The only true way to determine how badly a force is outnumbered is to observe the percentage of HS loses each side has taken and base it on the ratio of losses. It is assumed that any forces actually engaging in combat want to be there (or are forced to be there) and are thus willing to fight and accept some level of losses.

Break-off and surrender are *OPTIONAL* for purely tactical battles, as the results are meaningless unless part of a campaign. If Break-off and Surrender are going to be used in a tactical battle, then the players should roll random attributes [K2.06] unless otherwise pre-determined.

D7.04.1 Nature of the Battle Losses are totaled for all battles in a 30 day period that occur in the same or adjacent system -- this might occur in situations where gunboats constantly strike a fleet over weeks as they cross a couple of systems, or more. This paragraph is definitely not always 30 days or always same or adjacent systems. It is much more about the nature of a particular attack campaign. A fleet engaging multiple enemy fleets (or the same fleet repeatedly) as they travel can be worn down over time by multiple attacks to the breaking point whereas each enemy fleet starts whole (no losses). A fleet which stops and defends a WP or planet without being harassed for a period of 3 days resets its loss level to zero. Receiving reinforcements does not reset the loss level unless the reinforcements are at least 50% of the original fleet size or 100% of its current size.

D7.04.1.1 Crew grade [F3] or graded leader [S2] may modify the breakoff/surrender roll. These modifiers do not affect Scuttling or Record Destruction [D7.04.4].

D7.04.2 Breakoff Check When a fleet suffers heavy losses (via destruction or retreat) of its HS or modified HS, it may have to check for Breakoff.

- The breakoff check occurs during the record-keeping phase when a new loss threshold is crossed, which are 40%, 50%, 60%, 70%, 80%, and 90% losses. Check only once per turn.
- Take the percentage of losses of checking side (FRN) and subtract the percentage of losses of the other side (FRN). Squadrons use 1/2 their percentage of DP lost when modifying enemy fleets but can not breakoff themselves.
- Subtract (RM+RD)/10 + 5 (FRU) from this number.
- If this number remains above 1, multiply by five and subtract any applicable leader modifier.
- If die roll is less than the number, the fleet breaks off.

Exception: Unarmed units without armed units supporting them (within that race's best weapon range) and unable to retreat (enemy is equal speed or faster) will roll for breakoff every time they suffer internal damage.

Example D7.04 - Breakoff and Surrender

D7.04.2.1 For WP assaults, the entire force designated to attack (even if still on the far side of the WP) counts their HS and loses must exceed 60% before any rolls are taken. However, retreated ships count as losses and when an attack is called off, the attacking forces size is recalculated based on the ships that actually entered the WP.

D7.04.2.2 FT HS count only if the FT is armed and then only count 1/2 their HS. SS subtract any SY, SYM, or MS on board and then count only 1/2 of that number HS. Armed small craft are considered attrition units and thus do not count in these calculations. Thus, a pure fighter fleet could be very fragile in the case of minor carrier or escort loses.

Armed Smcft with no place to land will aggressively attack, including suicide attacks, any enemy in range.

D7.04.2.3 If a force fails its Break-Off Roll, it must retreat from the battle with as many ships as possible. Due to technologies and such, specific rules are difficult to determine. If a WP battle, the largest ships should exit before smaller ships when a choice of which to exit on a pulse is needed. In open space, it maybe that only the smallest units can flee with a chance to succeed while the larger, slower ships concentrate on the enemies fastest ships.

D7.04.2.4 If additional friendly units enter the system hex during the following 10 tactical turns, the Break-Off/Surrender Roll must be recalculated and re-rolled since relieving units are now at hand. This could result in a force breaking off, only to later change tactics and attack with reinforcements.

D7.04.3 Surrendering Surrendering is not merely the failure of morale. It is giving up under the persuasion of force (i.e., the crew fears death and sees nothing they can do to seriously affect the enemy fleet that would warrant their destruction). Normally, units may be encouraged to surrender by the enemy or may surrender without action on the part of the enemy. In Tactical Starfire, this second possibility is easy to forget during the battle, thus the onus is placed upon the winning side to "call for surrender."

D7.04.3.1 Calling for Surrender Calling for surrender can only be made in certain situations [D7.04.3.2]. If using the break-off rules, all calls for surrender must occur AFTER break-off.

The Call for Surrender can be made at anytime during the combat phase as long as the unit called upon to surrender has not been fired upon by any enemy weapon during the current combat phase. After being called on to surrender, the unit forgoes the rest of its combat phase (fired or not) as it decides.

D7.04.3.2 Surrender situations Definitions for this rule

ATTACKER -- The units of the race not considering surrendering at this point.

COMBAT RANGE -- The surrendering race's LRW with the greatest range (regardless of whether the surrendering unit mounts it or not).

COMBAT EFFECTIVE -- Armed, within the attacking unit's_ weapons range, less than 20% internal damage (in HS) {this is meant to be a rough guide; you don't really need to count}. BTW: a CA counts as 60 or 0 HS (either it is effective or not)

Units must be in one or more of the following situations in order to be called on to surrender:

- Within combat range of THAT unit, the enemy outnumbers (in "combat effective" HS) the unit and its allies by at least 4:1. Only counts units on the combat side of the WP. If combat is occurring on both sides, count range

THROUGH the WP with the WP being treated as existing in two places at once.

- Anytime the unit -- has no weapons** AND its fleet HS is outnumbered within "combat range" AND at least one enemy unit is within its weapons range and of at least equal speed.
  **Weapons without ammo are not counted as weapons. Weapons out of range or arc, are counted.
- 3 turns after break off occurs, enemy units are within their individual weapons ranges and the unit is slower or than a number of "combat effective" enemy HS equal to its HS (damaged or not) or greater.
- 10 turns after break off occurs, the unit remains within the enemies weapons range (enemy must have more "combat effective" HS {vs. the surrendering unit's undamaged HS} within range and they must be at least equal in speed).
- When the crew is within 1 hour of dying [AppAA-Q.02], a ship automatically surrenders.

D7.04.3.3 The surrender roll When a valid call for surrender occurs, make a 1d100 die roll during the RECORD-KEEPING PHASE. The chance of surrendering equals 110 minus the RO [See Table F3.03 Crew Grade Abilities for Crew grade modifiers that apply to the die roll, not the chance of surrendering]. Any ship rolling lower than the chance of surrender, powers down its weapons, switches the drive field to station keeping, and broadcasts a surrender message. However, a surrendering unit may still be scuttled by hard-core loyalists [D7.04.4].

- Unarmed units add +10 to the chance for surrender.
- Unarmed CFN owned FT add +15 (more).
- -10 if there is no language with which both sides are familiar.

D7.04.3.3.1 Not surrendering effects A ship that chooses NOT to surrender may now fire, during the record-keeping phase, including tractor actions. In effect, the rest of the unit's turn (including all normal actions as indicated in the turn sequence) was put on hold to consider the issue of surrender. Choosing not to surrender, the crew carries out those actions it would have normally done but during the record-keeping phase. The effect of this is a RISK to the attacker calling for surrender because the units called on to surrender are immune to combat that turn but could still fire. Don't call for surrender unless you're sure you can suffer the extra damage.

D7.04.3.4 Fire at surrendered units If the enemy fires upon any surrendered ship, all ships become immune to surrender and will fight to the death and may use ramming.

> ***Note:*** This includes fire by AUTOMATED WEAPONS -- thus de-activate such before asking for surrender. This also constitutes a Treaty violation against that race (if word gets out via the enemy ship or CD.

D7.04.4 Scuttling and Record Destruction If a unit surrenders, it will usually try to scuttle (blow up) and if unable, to destroy sensitive data (astrogation records, Fleet orders, etc.). All units carry scuttling charges. The probability that a unit will scuttle successfully is equal to 1/2 its Militancy. If a unit fails to scuttle, the chance that it will successfully destroy its records before surrendering is equal to its Determination. Each surrendering unit is checked individually. These percentages can never be less than 10% nor greater than 90%.

D7.04.4.1 Damaged units may attempt to scuttle even if the odds do not require a surrender or break-off roll. A unit which fails its scuttle attempt is out of action during the rest of the battle and will surrender to the winning side. A surrendering ship may still roll to erase its records.

A docked unit that self-destructs does 1/2 its remaining intact HS in damage to the other docked unit (or carrier/carried unit for transit racks).

D7.04.4.2 Captured large craft may be used by the captor, but only if refitted as per [M2.06].

D8 EXTENDED LRW RANGE

LRW gain an extended range when fired through a weaker (or non-existent) drive field. When using extended ranges on the to-hit and damage tables AppEE-Tables, subtract the extra range from the actual range (minimum range of 12) when it will result in a better to-hit number.

Unit	Extra range
Gt engined unit	2 hexes
Drive Field down Large Unit	3 hexes
BS, SS	5 hexes
PDC, AF, Silo	7 hexes

D8.01 MEDIUM AND COMBAT SENSOR RANGE INCREASE

Units also gain extended medium and combat sensor range by the same amount.

D8.02 NO BONUS FOR TRACTORS AND AP

Any unit being tractored or using a tractor beam does not get any extended range bonus. AP do not get extended range bonus.

D9 AUTOMATED PLATFORMS (AP)

STARFIRE empires use small, robotic units called "automated platforms" (AP) for various boring or dangerous tasks, such as communication relays, surveillance, and to attack or defend WPs. The two AP types are the mobile but usually short-lived drones, and immobile buoys which are capable of long deployments with minimal or no maintenance. Armed buoys are known as "mines," while armed drones are called "pods."

Most AP are equipped with miniature starship systems [H3]. AP-mounted starship systems from the Electronics tree (sensors, datalink, etc.), are operable each turn. Other AP-mounted starship systems take 4 turns to re-charge after use (or 9 turns, if the full-size system normally fires every other turn); thus they can only be used every 5th turn (or 10th) turn. AP may be equipped with datalinks [D9.08.1]. References to "single AP" below should be read as "single AP or a datagroup of APs."

AP are attacked as Small Craft [G2.01]. AP datagroups are targeted as a squadron of small craft, while non-datalinked AP are targeted like individual small craft.

D9.01 AP ORGANIZATION

An AP "*field*" consists of all AP of the same type (buoy/drone) in a single tH, belonging to the same empire or alliance, and with the same targeting program [D9.02]. There can be any number of AP in a field, and any number of fields in a single tH as long as each field has its own unique targeting program. No AP may be datalinked to AP belonging to another field.

> ***Note:*** A lone AP is technically speaking a very small field, and the program of an unarmed AP is called a "targeting program" even though it cannot attack any targets.

D9.01.1 There is no need for all AP in a field to have the same equipment. For example, it is entirely possible to create datagroups of buoys where some buoys carry sensors or other electronics while the other buoys have weapons.

D9.02 AP PROGRAMS

Since AP by definition lack crews, they must be programmed before they can be activated. The program should be written down when the AP are activated [D9.02.2 and D9.05.2.1]. This is required for all kinds of AP (including drones).

D9.02.1 The targeting program must specify certain trigger conditions as well as the action the field is to take when these conditions are satisfied. All AP in the same field must have the same targeting program to avoid conflicting targeting priorities. Drones may also be programmed to move [D9.06.3]. Movement programs do not count as part of the targeting program.

> ***Note:*** The program doesn't have to make sense for the individual AP. For example, a sensor buoy datalinked to mines can be programmed to "fire" at non-friendly units even though it itself has no weapons.

D9.02.1.1 Trigger Conditions: The trigger conditions consist of an engagement zone, a target type, and a timer.

The **engagement zone** (EZ) defines the hexes in which the field is to search for targets. The EZ is defined relative to the AP, so if the AP moves, its EZ will move with it. All hexes in the EZ must be within the AP's field of fire and within its sensor range, but may include hexes outside the AP's weapon range.

The **target type** defines the type(s) of units that will trigger an action. It must be one of the following:

1. All units the AP can detect. *This is the only Target Type allowed for buoys with basic sensors.*
2. All large units.
3. All small units.
4. ONE type of units (SD, DD, FT4, BS, GB, fighters etc.).
5. Populations (not "units" in the normal sense, but target able).

The program may also specify if the triggering unit(s) should be friendly [D5.06] or non-friendly. If this is not specified, ***any*** unit of the correct type will trigger the field.

The **timer** specifies the turns in which the field may execute its action. These turns are specified as the "Nth" turn, counting either from the turn the field was activated (usually used for pods), or from the first turn on which the other trigger conditions were satisfied (the usual case for mines). If the latter, the field will re-set its timer if the other trigger conditions have not been satisfied for ten consecutive tactical turns.

> ***Note:*** Drones are activated during a large unit's combat phase; thus, a drone can not transit during the turn it is activated. Program movement and combat instructions accordingly.

D9.02.2 Action: Armed AP may only be programmed to fire at the unit(s) that satisfied their trigger conditions. Unarmed AP may do a variety of things, such as "broadcast message to all units in range" or "send narrow-beam message to specific location (or specific unit)," depending on what systems they are equipped with. If an AP's systems haven't re-charged since the last time they were used, it will attempt to act but nothing will happen. AP will not fire upon Wreaks.

Example D9.02 – Sample Programs

D9.03 AP COMBAT SUBPHASE

Except for movement, AP act in the AP combat phase [B1]. If the trigger conditions of an AP field are satisfied at the beginning of its AP combat pulse, the field will execute its programmed action. The field divides its attacks as evenly as possible between all their targets with one AP firing wholly at one unit. If the ratio of AP to targets makes an even spread of fire impossible, odd numbers of weapon will fire at the closer units first, then randomly.

Each field attacks in a single AP combat pulse, but each AP or datagroup of APs count as a separate salvo for point defense purposes.

D9.03.1 A nav beacon ("n") equipped drone must check to see if it gets confused after transit. After transit effects end, the "n"-equipped drone rolls 1d10 to reorient [D9.06.3.1]; if the reorientation fails, it is confused and must determine its facing randomly. A confused or transit addled "n"-drone or (NAV) will give the wrong coordinates to the other drones trying to reorient on it. Still, even with a bad reorientation, it can be handy to make a single transit roll for an entire drone wave. Multiple "n"-equipped drones are often sent as part of a wave in order to avoid loss by interpenetration and combat. If multiple "n"-equipped drones or operating (NAV) are present, other drones reorient equally on each (i.e., 3 "n" present means 1/3 of drones reorient on each "n")

A large unit can mount a SINGLE navigation beacon (code (NAV), 1/2 HS, 5 MC). A (NAV)-equipped ship can make transit before, together, or after with drones. The ship's (NAV) must also reorient after transit effects but if the WP surge data is available, reorientation is always successful. A (NAV)-equipped ship has an advantage in that the crew can force a particular orientation during the initiative phase.

D9.04 AP AND IFF

See [D5.06.1] for the rules dealing with AP and IFF failures.

D9.05 BUOYS

Buoys have 360 degree fire arcs. Since buoys are incapable of movement, they have to be deployed using the normal cargo handling rules [E4]. NOTE: Buoys do have minimal thrusters for stationkeeping but no DF.

D9.05.1 Buoy Sensors The sensors that come with the buoy hull have a range of 7 tH, and can detect both small and large craft and

their type. However, units in LOD mode or operating CLK can only be detected at a range of 4 tH. Standard Buoy Sensors cannot distinguish between different unit types, so must always use the "All targets" target type [D9.02.1.1].

Buoys (or AP datagroups) equipped with any type of combat or long range sensors are able to detect all units within range of those sensors and distinguish between the different unit types, and may provide any buoys datalinked to them with this sensor data.

D9.05.2 AP Control Systems (APCx or CICx) and Buoy Activation An active (APCx) or (CIC) can send orders to friendly buoys within 1 sH. The number of orders an (APCx) or (CIC) can send each turn depends on its generation. Populations have unlimited (APCx) capacity. Each buoy can only receive one order per tactical turn. Orders are sent in the crewed unit's combat pulse in the main combat phase. At a range of 30 tH or less, the order takes effect immediately and the buoy can execute the order in the AW combat phase of the same turn. If the (APCx) or (CIC) is more than 30 tH away from the buoys, there is a delay of one tactical turn per 120 tH of distance or fraction thereof.

The following orders can be sent: activate, reprogram, deactivate and direct control.

D9.05.2.1 "Activate" programs the buoy and activates it. It takes the buoy one full turn to activate and/or implement its new program, so it will not be able to execute its program until the AP combat phase of the next tactical turn.

D9.05.2.2 "Reprogram" changes an active buoy's program. The change takes effect as soon as the order reaches the buoy. If the **targeting program** is changed, the buoy will either form a new field (if there are no other buoys already programmed with its new targeting program), or join an existing field (if there already is a field with the new targeting program).

D9.05.2.3 "Deactivate" orders the buoy to shut everything including its station-keeping engines down. Deactivated AP may be picked up by any unit, friendly or enemy, using the cargo handling rules [E4]. Deactivated buoys are still deployed.

D9.05.2.4 "Direct Control" means that the (APCx) or (CIC) unit provides active buoys with targeting data from its own sensors, allowing them to attack targets they can't detect on their own or that their targeting program would ignore. The (APCx) or (CIC) unit can provide data on any number of enemy units up to its own targeting capacity, provided the targets and buoys are all within 30 tH of the (APCx) or (CIC) unit. The buoys' own targeting capacity and their targeting program are both superseded by the Direct Control, and the buoy may only attack the specified units. The base to-hit probability is one lower than the mine's normal hit probability. At the end of the turn, the buoys reverts to the program they had at the start of the turn.

Direct Control weapons fire during the regular AP combat subphase and are still direct controlled even if the controlling ship was destroyed.

D9.05.3 Permanently Active Buoys Buoys can be left active permanently without any crewed unit nearby to supervise them.

However, the CFN will refuse to enter (including by transit) the EZ of a known field of active armed AP, unless at least one (APCx), not (CIC), is present to deactivate them as the CFN passes through.

D9.06 DRONES

Drones are equipped with standard small craft sensors and are therefore able to detect and distinguish between all types of units within 20 tH. A drone which moves under its own power will eventually burn out completely, and cannot be repaired. Drones have a basic endurance of 12 tactical turns if they move under their own power, but this may be increased manyfold using a "drone enhanced endurance pack" DEEP [AppAA-AP]. A drone which only uses its drive at standby level has an endurance of 1 month, after which time it de-activates itself. The drone hull (but not its internal systems) must then be repaired [M2.09] before it can be activated again. Drones have the same firing arc as starships.

D9.06.1 Drone Activation Standby Drones are those launched without a maneuver program [D9.06.2.1]. Drones can be programmed and activated by the unit launching or deploying them, by a friendly APCx, or by a friendly (CICx). (APC) and (CIC) control of AP is limited [AppAA-APC], [AppAA-Elec].

Active drones cannot be re-programmed. Since drones that move under their own power cannot be deactivated, this means that a ship with (CIC) or (APC) cannot transit together with the drones and then re-program the drones after transit.

Drones can be transported and unloaded using the Cargo Handling rules [E4]. Active drones may also be launched under their own power from Shuttle Bays and Launch Bays.

The unit sending the activation/deactivation signal must be within 30 tH of the drones.

D9.06.1.1 Handling Standby Drones Standby Drones can be reprogrammed and then activated with a single control instruction from (CIC) or (APC). Launching Ships cannot reprogram Standby drones.

A single (APC) may activate any number of Standby drones in the same tactical hex as long as all are given the same maneuver program and none are given a new targeting program or direct controlled [D9.05.2.4].

A unit which tractors a friendly standby drone can take direct control of it and provide it with targeting data using the same procedure as in [D9.05.2.4], but may not program it in any other way.

Drones in Standby mode can be deactivated, but must then be overhauled (10% of list cost) before being programmed and activated anew.

D9.06.2 Drone Maneuver Programs Drones can be programmed to move in any way (excluding engine modulation [C8]) within the limits set by their generation, speed, turn mode and endurance [see the tech descriptions]. The movement order must be unambiguous and cannot contain conditional statements. If a movement order is not unambiguous or contains conditional statements, the opposing player decides how the drones move. Except for reorienting [D9.06.3.1], the movement order may not refer to units other than the drone itself. A drone may refer to a hex location that it has already been in ("return to transit hex and transit again"). Anything else in a drone program is specifically illegal.

We recommend the notation described in [HH3.08] simultaneous written movement to write the movement order, even if the [HH3.08] rule is not in play for other units.

D9.06.2.1 Drone Standby Mode If the drones are not given a maneuver program, they will activate their drives in station keeping mode [D9.03] and are considered inactive or in Standby Mode. A

drone in Standby Mode can have a targeting program but until the drone is activated, the targeting program is ineffective.

D9.06.3 Drone WP Transits A drone which transits through a WP may be thrown off course by the WP's grav stresses.

If the WP's grav stress pattern ***is known***, roll 1d10 for each drone. On a roll of 1-6 the number rolled is the heading it emerges on, if a 7-0 is rolled the drone emerges on the pre-programmed direction. Optionally, if more than 19 drones make transit at the same time, the players can agree to send 10% of the drones in each wrong heading and 50% on the correct heading instead of rolling for each individual drone.

If the grav stress pattern ***is unknown*** to the player, roll 1D6 on the scattergram to determine the initial heading of each drone or send 1/6 of all drones in each direction if there are more than 17 drones.

A drone will follow its maneuvering program [D9.06.2] to the letter, and assumes that it starts on the correct heading. If it has been thrown off course, the movement orders must be reoriented accordingly. (Thus if a drone was programmed to emerge on heading 1 and change facing to heading 6 in the course of its move but emerged on heading 6 due to grav stress, it would turn to direction 5, not 6, and all subsequent facing changes would be similarly offset.)

Drones can fire on the turn they make WP transit but they suffer the same penalties as everyone else if they do so (i.e., -3 to hit, no datalink etc.).

D9.06.3.1 Reorient Drones can be programmed to reorient by referencing a navigation beacon ("n or NAV") with 1 sH. Reorienting cost 3 MPs and will be expended even if there is no beacon. A drone datagroup programmed to reorient after transit needs to only make 1 transit roll to determine the heading. Navigation Beacons do not function on the turn of transit.

To succeed, the 1d10 roll must be below the reorientation number. Reorientation number is based on a WP visibility at the exit end. Unmodified rolls of 9 and 0 always fail.

WP Type	Reorient Number[ab]
Open	7
Concealed	6
Hidden	5
Secret	4
Top Secret	3
Undisclosed	2

[a] add 1 per 4 EL (FRD), that the civilization has obtained.
[b] exiting into nebulas: Reflective -1, Emission -2, & Maser -3.

D9.06.4 Strategic Scale Drone Movement If a race has astrogation data on a star system, it may program DEEP-equipped drones to move on the strategic scale. In this case it sufficient to write down the destination, as long as the drone moves straight lines without using other maneuvers.

If a drone rolls less than 7 on its transit roll but emerges on the correct heading through luck, it has been thrown slightly off course. This doesn't matter in tactical battles, but if the drone has not reoriented itself with the aid of a navigation beacon it will deviate 1d100 tactical hexes to the side of its real course for every sH moved. This will cause it to miss any WP except the one it entered the system through. Roll one die per drone immediately after the transit: on an odd result it will always deviate to the left. On even results, to the right.

D9.07 AP COMBAT

APew always fire at a -2 on the to-hit chart (exception: Pg are -1 to-hit). Normal, non-explosive AP fire normally. Any XO launched ordnance is -1 to-hit except sprint missiles which are -2 to-hit. Firing at just transited ships does incur the normal -2 penalty. See D9.05 for additional direct control modifiers.

D9.08 AP CONSTRUCTION ISSUES

AP.01 handles how to install most systems in AP; however, there are a number of specialized systems that need longer explanation.

D9.08.1 AP Datalink AP Datalink allows multiple AP to fire as one AP. The major effect of this is to focus the fire power of an AP datagroup on a single target, which can help to overwhelm it with missiles or to penetrate dense shields and armor.

An AP datagroup consists of a master buoy/drone ("lead AP") and its linked slaved-buoys/drones. Installing datalink in the slave-AP always costs 1 MC per number of slave-AP linked and takes zero space (i.e., 3 buoys linked increases the cost of each buoy by 3 MC). The master AP datalink requires 2 HS, and costs 10 MC per slave-buoy linked -- This system's code is sZX, where X is the number of slave-buoys it can control. X cannot exceed twice a race's EL.

A master AP typically has combat sensors installed to allow more varied targeting programs for the entire AP datagroup but it could also have a weapon installed.

An AP datagroup is treated as a single unit for the purpose of activation by APC.

D9.08.2 AP Sensors Combat sensors are generally used to allow the engagement of targets at much longer range. Cost and AP HS used is the same as the ship mounted version.

Long Range sensors can be installed in a special AP *buoy* datagroup. The total HS of the Long Range sensor are divided among a number of AP buoys. However, the datalink is a special high capacity datalink costing 2 MC per linked buoy and taking +1 HS on each buoy (i.e., 3 HS on the master and 1 HS on the slaves). Code is sZr (master) and sZrs (slave). The remaining AP HS can be used to mount pieces of the Long Range sensors (those pieces can be 1 or more HS in size). Note: This special datalink requires the mounting unit to be stationary in order to calibrate the Yc and then to remain stationary; thus, it will not work on mobile units including drones.

D9.08.3 AP Science Instruments sX on Drone will gain WP surge data but the drone must transit, wait until after all transit effects are done (for the surge data to be stored in the now stabilized drone memory. NOTE: in order to return Y or X data, the drone must have cm installed), and then on the next turn, transit back. This means the drone must survive at least two turns of enemy fire. Note: Recon Drones can gain WP surge data, though it is difficult.

Drones with sX can survey (full X survey pts) but they burnout at the end of the survey period and are thus very expensive. Buoys cannot survey.

sX can not scan for technology [D5.03.3].

D9.08.4 AP Anti-Engine Modulation If the AP datagroup has it, the whole group gets the benefit.

D9.08.5 AP (JAM) AP JAM disables the targets datalink until the next AP phase. Explosive JAM is a legal weapon though it is rather expensive.

D9.08.6 AP (MNE) An AP with MNE functions normally in some hostile environments as long as the MNE ability is not exceeded.

D9.08.7 AP Memory (cm) Memory is covered under P5.01.

Next Section: E - System Rules

E1 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.

E1.01 Tactical Shield Regeneration

Depending on the shield generation, shields may regenerate one system, 1 HS of shields, or more. Early generations must wait 3 turns without taking damage that would normally damage shields while later generations regenerate regardless of damage. See the shield branch rules for specifics of each generation [AppAA-S].

Wrecks [D2.06.1] do not regenerate shields.

E1.02 Tactical Repairs

Should technology improve enough for repairs to a large unit to be made during combat, the rules for handling those systems will be given in the technology section for that system [AppAA-Advanced Damage Control].

E2 Emergency Repairs

Emergency repairs are made after the unit is no longer engaged in a fight for survival. "Destroyed" systems can sometimes be made to function again. Burnt out engines are unrepairable.

E2.01 Limited Nature of Jury Rigged Repairs

Any unit may attempt to repair destroyed non-armor systems once an engagement is over. Such repairs, even if successful, are "jury rigged" and will require complete repair by a shipyard or machine shop module (see [M2.02] "Repairs to Damaged Units") before they can be fully relied upon. A given system may only attempt repair once (actual die roll made).

E2.02 Chance of Success

To make emergency repairs, the owning player rolls 1d10 for each damaged system. The base repair roll is a "2" or less.

If at the start of the current day of repairs the ships has:

- SY, SYM or MS in support +2
- No intact H or Hs on a ship within 20 tH -1
- An intact H or Hs +3 (if repaired hold, +1) NOTE: A repaired H must be resupplied from the CFN or Imperial Maintenance FT in order to get the +3 bonus.
- No operating Q system -2
- (Subtract) the Crew Function modifier from Table F3.03 Crew Grade Abilities.

If the adjusted number is below 1 treat it as a 1.

On a successful roll, the destroyed system (and its crew) is restored to function. An unsuccessful roll means the system is destroyed (unrepairable without a construction complex).

All contents of systems (e.g., H, Hs, Mg, bays, etc.) are destroyed. Note that personnel are not killed just because their supporting Q are destroyed. Small Units destroyed while in other systems cannot be repaired.

"In support" is actively working on the damaged ship.

E2.02.1 A ship may only attempt to repair itself and only one repair per 10 HS of intact ship (or fraction thereof) may be attempted per hour. Each SYM or MS may attempt to repair 2 systems on a single unit each hour (4 systems on two units for SY). During the repair period, safe cruising speed cannot be exceeded. If the unit engages in combat or moves too fast before repairs are completed, all efforts are lost.

E2.03 Durability

Systems restored by emergency repairs are circled on the control sheet and function normally as long combat does not occur. 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) damaged by newly inflicted combat damage. Such a system does not take damage and is considered "Destroyed."

E3 "(SY)," "(Ms)," and Self-Repair

Units that mount construction modules and are currently in maintenance may repair, up to the facilities repair rate, their own systems (including armor). They must pay the full cost of any repairs done (treated as added maintenance cost) and they can continue to operate, rather than shutting down, during the repair process.

Table E4.01 Cargo Transfer Rates

Situation	csp Rate of Transfer[a]	Notes
Space to/from Large Unit	1 per H or 2 Bb pts	[b]
Space to/from Small Unit	2 per turn	[b]
To/From landed Small craft	25 per turn	Small craft landed in appropriate bay [G5.01] or on the ground
Docked units	3 per H or 2 Bb pts	Use the unit with the fewest H/2 Bb pts to determine rate[b]
Docked units	1 MSP per turn	Mg to Mg transfers between docked units[b] [C6.01.5]
From a unit with tractors	5 per tractor beam	Transfer can be to/from a 3rd unit[b] or space
To a unit with pressors	5 per pressor beam	Transfer can be to/from a 3rd unit[b] or space
To a unit with tractors	10 per tractor beam	Loading only[bc]
From a unit with pressors	10 per pressor beam	Unloading only[bc]
Internal transfer	5 per turn between any two systems	Systems - Hold, Shuttle Bay, or Magazine including small units in the Shuttle Bay.[d]
XO racks w/o tractors	5 minutes per XO rack	[b]
XO racks with tractors	1 minuter per XO rack per tractor	[b]

[a] A system cannot receive cargo faster than it can transfer it. Even using T, a system is limited to 20 csp per turn.
[b] DF and shields must be down on both the unit and the cargo.
[c] The DF and shields can be active when handling Drones or Pods with their DF up in this situation. Shields, but not DF, must be down when handling mines or buoys in this situation.
[d] Magazines may NOT accept cargo transfers from holds or Shuttle Bays during combat. Magazines transfer ammo to weapons systems and between themselves at rates fast enough STARFIRE does not worry about it. Other systems are covered in their respective tech rules.

E4 Cargo Handling

Cargo loading and unloading is done during the tractor beam phase. The cargo transfer table covers all situations, transfer rates, and restrictions. Cargo is stored in values of "Cargo Space Points" (csp), with cargo storage, maintenance storage, and missile storage *in holds* rated in maximum values of "csp". Magazines [AppAA-Ammunition] are rated in maximum MSP.

Table E4 Cargo Space Point (csp) Values

Item	csp
1 MC Maintenance	1
1 MC Trade (wealth)	10
1 HS of uninstalled tech system	50
1 HS of unassembled hull	100
1 Bb point of small craft	250
1 Bb point of crated small craft	20
1 DP of Squadron (FQ or GB)	100
1 DP of crated Squadron (FQ or GB)	25
1 Space Available on buoy AP	50
1 Space Available on drone AP	75
1 Missile Size Point (MSP)	7

E4.01 Cargo Transfers

Cargo transfers can only be done a few different ways:

- By manual labor (into and out of the ship),
- By manual labor (inside the ship), and
- By tractor/presser beams.

See Table E4.01 Cargo Transfer Rates, for a complete list of methods and the speed that cargo is transferred using those methods.

E4.02 Personnel Transfers

Personnel are transferred in a manner similar to cargo, with one PP taking the same amount of time as the transfer of 10 csp. Tractors and pressers cannot accelerate personnel transfers.

E4.03 Deploying and Undeploying AP

Automated Platforms count as 250 csp per boat bay point, and follow all the above cargo handling rules. Active AP from a race that is not allied self-destruct to prevent capture. Inactive AP ("off") do not self-destruct unless they are activated while in the process of being loaded, but once they are loaded they no longer respond to their controller's signals.

AP (Buoys and drones [AppAA-Automated Platform]) are transported in the cargo holds of starships. They are laid (deployed) or lifted (picked up again) either by manually unloading them (which is very slow) or using tractors and pressor.

E4.03.1 A unit (or small unit) may lay one automated platform per pressor beam or lift the same quantity per tractor beam (per small unit) to or from the hex the unit is located in each tractor beam phase. Without tractors or pressors AP are laid manually at the standard rate of a single Cargo Space Point. Units without tractors may never lift armed AP. Hostile AP attack or self-destruct to prevent capture, as appropriate.

E5 Tractor Beams

The Tractor Beam Phase is when all tractor and pressor beam activities are conducted. Within this section, normal polarity tractor beams (attractor) and reverse polarity tractor beams (pressor) are collectively known as tractor beams. Tractor beams are used to capture or tow spacecraft, and pressor beams are used to push them away. Both may also be used for shifting cargo, AP, etc.

Definitions:

Tractor -- The actual ship system.

Tractor Lock -- A successful tractor link between two units. Tractor link is the same term.

Tractoring -- The unit which mounts the tractor beam that is maintaining the link.

Tractored -- The unit which does not mount the tractor beam that is maintaining the link.

Tractor Disruption -- Something that may cause a tractor lock or attempt to fail.

Same Polarity -- Both tractors are the same type; either attractors or pressors.

Successful Tractor Attempt -- The tractor attempt has successfully hit the target.

E5.01 USING TRACTORS

During the tractor beam phase, a tractor may either maintain a tractor lock or attempt to establish a new tractor lock. A unit may also release a tractor link during this phase (does not count as firing). Players alternate firing tractors (or disrupters) at each other, one ship (or datagroup) at a time, starting with the player who won the initiative. Each such firing is considered a "tractor pulse" in the same manner as a "combat pulse."

E5.01.1 Firing Tractors Units may fire tractors as part of a datagroup. Tractors are "fired" like any other beam weapon but always require a 7 to hit.

- Add +1 for each additional same polarity tractor fired at the target. If successful, only one tractor lock occurs.
- Add +1 if the target wishes to be locked onto.
- Add +3 if a tractor lock already exists between the two units.

E5.01.2 Multiple Locks A unit may have a tractor lock to multiple units.

E5.01.3 Tractor Usage Restrictions

- A unit cannot be tractored by two different units.
- A unit cannot tractor and be tractored at the same time except that a unit may tractor a unit that is tractoring it.
- A unit cannot lock onto another unit in its blind spot [D3.01], unless a tractor link already exists between the two units. The tractor link is not broken when the tractored unit is in the tractoring unit blind spot.
- Only one tractor lock of each polarity can exist between two units.

E5.01.4 Tractor Disrupters Tractor disrupters are designed to disrupt tractor links. Tractor disrupter generation determines the base disrupt number (BDN) and the "maximum" attempts (MA) at disruption during the tractor phase. Only one disruption per tractor lock or successful hit can be attempted per tractor phase.

Tractor disrupters may attempt to disrupt tractor locks when it is that unit's turn to "fire tractors" or in response to tractor attempts. Tractor disrupters may attempt to disrupt successful tractor attempts prior to checking for Tractor Conflicts [E5.01.5].

Multiple Disrupters add to the chance of a successful disruption.

E5.01.4.1 Tractor Disruption Roll Chance of success is the BDN of the lowest generation tractor disrupter involved in the attempt.

A natural roll of 1 always disrupts the tractor attempt and a natural roll of 0 always fails.

Modifiers to the BDN

- add the amount of extra tractor disrupters disrupting
- subtract twice the number of tractors hitting.
- subtract two if breaking a tractor lock.
- reduce the modified BDN by 50% (FRD) if the attempt is pressor polarity.

Example E5.01 – Tractor Disruption

E5.01.5 Tractor Conflicts A successful tractor attempt, which is not disrupted, that violates a Tractor Usage Restriction [E5.01.3] may result in one or more tractor conflicts. Each current link (40%) and each successful tractor attempt (30%) has a chance to maintain its link as indicated. After each has checked to maintain its link, check for any remaining conflicts. If conflicts still exist, repeat the process until no conflicts exist.

Example E5.02 - Tractor Conflicts

E5.02 EFFECTS OF BEING TRACTORED OR PRESSORED

A tractor link creates a unique relationship between units. They no longer maneuver independently. They may be drawn closer in a tractor link, and pushed away in a pressor link. The tractoring unit has established a form of drive field bubble around its victim (which gives the tractoring ship a good idea where it is). This allows for some refined sensor and scanner resolutions, and for some more precise firing than would be possible otherwise.

E5.02.1 Seeing the Enemy Design [See D5.03.3.1].

E5.02.2 Effects of Tractor Beams on Fire Control

- Tractored units are treated as a single target for the unit doing the tractoring. A tractored unit can always be fired upon by the tractoring unit, even if movement has put it in the "blind spot" [D3.01].
- A unit that is tractoring a unit receives a +1 to-hit that unit.
- LRW fire by a tractored unit at the tractoring unit receives +2 to-hit, regardless of tractor polarity.
- Tractored targets may be subject to special precision attacks by Primary Beams [AppAA-Fp], Needle Beams [AppAA-Ep], and Lasers [AppAA-L].

E5.03 MOVEMENT WHILE TRACTORED

Definitions:

Chain -- A group of units which are tractor linked including primary and non-primary ships.

Primary Ship -- The unit with the most engine systems (not engine type or engine rooms) actively engaged (not standby or off mode).

Primary Ship Size -- Primary ship's HS plus 10 HS for each Tug Engine in THE Tug Engine Room.

Towed Size -- The modified HS of all non-Primary Ship units in the chain.

Maximum Towed Speed -- The fastest a hull could go if it was fully installed with engines of Worst Engine Type. Bases and AF use the warship hull speed of the same size (BS3 = 60 HS = CA).

Worst Engine Type -- A chain's worst engine type is the assisting engine that gives a single hull size the slowest speed (tactical or safe cruising depending on the towing operation and burnout issues).

When a unit is tractoring one or more units, then it forms a "chain" of units that is pulled along by the strongest ship in the "chain" (not necessarily the tractoring unit). The engine type is

irrelevant to tractored movement, only the speed of the unit and number of engine systems (not engine rooms).

E5.03.1 At the beginning of each movement phase, a tractored starship or base must declare whether it will aid the tractoring unit's movement (bases cannot do this), be passive by going into "standby mode," or oppose that movement.

E5.03.1.1 Each non-primary unit adds to the Towed Size according to its movement choice in E5.03.1. See table below.

	Aid	Standby/DF Down	Oppose
Warship/FT	1/2 HS (FRU)	HS	2*HS
Base	n/a	HS	1.5*HS
AF	n/a	1.5*HS	2*HS
SS	n/a	n/a	n/a

Optional Method of determining Towed Size: All non-primary units add their normal HS size. Each engine system that opposes movement increases Towed Size by 5 HS. Each engine system that aids movement decreases Towed Size by 3 HS.

E5.03.1.2 If any unit is resisting being towed, it must check for engine burn-out (regardless of engine type) every 5 minutes (10 tactical turns), [C7] and the "primary ship" [E5.03.2] must check for engine burn-out every 30 minutes (60 tactical turns).

E5.03.1.3 Bases that oppose movement count as having (1.5 engines * base size [AppEE-Base Hull Table]) in engines.

E5.03.2 To determine the "primary ship" that will move the chain, you add up all the engines from the side aiding the tractoring units movement, and the side that is opposing it. The ship with the most engines, from the side with the most engines, is the "primary ship." If both sides have the same number of engines, the ship with the most engines is the "primary ship." If a tie still exists, ship with the most engines on the side with the tractoring ship is the "primary ship."

E5.03.2.1 If all units in the chain are either in station keeping or cooperating, any ship in the chain can be the primary ship should its [E5.03.3] calculation be a speed above one.

E5.03.3 Chain Speed The "primary ship's" maximum tactical speed is calculated as follows:

Towed Size as a percentage of Primary ship size	Primary Ship's speed reduction and Turn Mode increase
1%-50%	none
51%-100%	-1 speed, +1 TM
101%-200%	-2 speed, +2 TM
201%-300%	-3 speed, +3 TM
301%-400%	-4 speed, +4 TM
each additional 100%	-1 speed, +1 TM

The primary ship's maximum tactical speed is limited by the unit in the rest of the chain with lowest Maximum Towed Speed [E5.03].

Example E5.03.3 - Towing & Chain Speed

E5.03.4 Tugs Tugs are built by designing a unit with more engines than it needs to go to maximum speed. Any extra engines are placed in a special TUG Engine Room that may be any size and is indicated by an engine "type#quantity" (Example: (Ib#14) or 14 extra Ib engines). Tug engines can only operate when other same type engines are operating on that ship. Each extra engine on a tug adds 10 HS to the tug size for calculation of [E5.03.3] should the tug be the "primary ship."

E5.03.5 When towing over the long term with military engines and to avoid burn out [C7], units without Ic engines must only count a fraction of their engines (1/2 for I, 1/3 for J, 3/4 for Gt).

For the purposes of determining the tug's tactical speed to use in the burnout rules, the following apply:

"Tug room" engines are always run at a power setting such that they match the ship's maneuvering engines. Thus, determine the speed the tug must normally move at (i.e. before using E5.03.3 to determine the actual speed). For each point that this speed is above the TUGs normal safe speed (i.e. before E5.03.3), that requires burnout. I.e. effectively you ignore the fact that your towing something when determining burnout speeds.

A Tug engine room that suffers a burnt out engine must shutdown for 5 minutes to reconfigure. After that, it may continue providing power to a strategic towing operation. This is the lone exception to the preventing of damaged engine rooms from operating at the strategic level.

E5.03.6 Chain Movement When the "primary ship" moves (via movement or tractor), all units in the chain move in the same direction, regardless of the facing of the units tractored and without their changing facing. Units aiding or opposing the chain can change facing but their turn mode is doubled.

Example E5.03.6 – Chain Movement

E5.03.7 The (de)activation of a tractor does not impact the number of pulses saved toward the turn mode, it only increases the TM.

Example E5.03.7 - Tractoring and Turn Mode

E5.04 TRACTOR BEAMS AND WARP POINTS

Warp points are finite points that require the entering unit's DF to be a specific shape. Tractor beams don't have the ability to change their shape, and thus they cannot be used to push or pull a unit through a warp point.

E5.04.1 Mobile units may choose to enter a warp point when they enter a WP's hex. When a unit enters a WP, all tractor links are immediately cut off. A base will still be destroyed if it enters a WP, although it can "refuse" to enter the warp point [A8.02].

E5.05 BEAM MOVEMENT

Tractors are created by tethering drive-field bubbles to the unique tractor system. However the side effect of doing so is that normal polarity tractors can "pull" their bubble towards the tractoring unit, and reverse polarity tractor can "push" their bubble away from the tractoring unit.

When resolving beam movement, if more than one hex fulfills the requirements, the owner of the tractored unit selects which hex the unit moves into.

E5.05.1 Each Tractor Beam Phase, a unit held in a normal polarity tractor link (tractor) will be pulled one hex closer to the tractoring unit unless both units are already in the same hex. I

Example E5.05 - Tractor Beam Movement

E5.05.2 Each Tractor Beam Phase, a unit held in a reverse polarity tractor link (pressor) will be pushed one hex directly away from the tractoring unit. This movement cannot break the tractor link by pushing the unit beyond the maximum range of the tractor beam.

E5.05.3 There is no tractor "beam movement" if the tractoring unit uses both a normal polarity tractor and a reverse polarity tractor on the tractored unit, or if both units hold each other in a tractor link of opposite polarity [E5.01.3].

E5.05.4 Tractor "beam movement" does not affect the facing of either unit, nor does it affect their turn mode.

E5.06 TRACTORING SPACE STATIONS

Space stations are too fragile to move on tractors and can take damage when this is attempted.

E5.06.1 If a tractor beam locks onto a space station, the space station takes damage each movement phase equal to the number of operating engine systems on the tractoring ship (excluding the tug engine room if any). Regardless of the number of tractor beams used, each unit can only cause this damage once per tractor phase.

E5.06.2 Tractor disrupters can still disrupt tractor attempts to damage the station. The tractor disrupter functions in the same manner as [E5.01.4], and success means that the station took no damage from the attempt to tractor the station.

E5.07 TRACTORING SMALL UNITS

A tractor engages small units using the E beam to hit table. Deactivated AP are hit automatically.

E5.07.1 Active tractored hostile AP have a 98% chance to self-destruct, unless specifically programmed otherwise. AP failing to self-destruct deactivate themselves.

E5.07.2 A tractor/pressor can only engage a single small craft or squadron.

E5.07.3 Crewed Individual Small Craft At the end of the Tractor phase, tractored small craft may immediately try to break free. Roll 1d10, if the roll is 1 or 2, the small craft breaks free. If the small craft fails to break free, roll 1-3 to determine the amount of damage points lost due to the attempt. If the small craft has only 1 or 2 damage points remaining, it must roll for surrender (not Breakoff). If it surrenders, it ceases all attempts to break free but may self-destruct. If the small unit lives through all that, it is captured once "loaded" into a cargo hold or Bs. If it ends up surviving the battle, it may be analyzed for data (including the recorded messages of CDs, recent WP transits, etc.).

E5.07.4 Crewed Squadron Attempting to tractor a squadron occurs at a -2 to-hit. At the end of the Tractor phase, tractored squadrons may immediately try to break free. Roll 1d10, and consult the table for results.

1-2	Squadron breaks free
3-4	Squadron breaks free suffering 1d10 damage
5-6	Squadron breaks free suffering 2d20 damage
7-10	Squadron fails to break free (suffers 1d10 damage)

If the squadron has only 1 through 4 damage points remaining, it must roll for surrender (not Breakoff). If it surrenders, it ceases all attempts to break free but may self-destruct at +20 RC. If the squadron lives through all that, it is captured once "loaded" into a cargo hold or BL. If it ends up surviving the battle, it may be analyzed for data (including recent WP transits, etc.).

E6 DATALINK

For purposes of targeting and fire control, at the instant of firing a datagroup must pick *a single "lead unit"* in the group, and use that unit's fire control computers to enact firing solutions for the whole group. This means that a group of 3 ships, all with "M3," would only be able to fire, *as a group* at four targets without penalty, even though the aggregate targeting ability of that group is 12 targets.

A datalinked ship may choose to fire as a separate unit, rather than as part of the datagroup. The individual ship must fire on a separate combat pulse, either before or after the rest of the datagroup. A ship firing independently cannot share fire control with the rest of the datalink, nor can they share fire control with it.

E6.01 LEAD UNIT

The "lead unit" may be any unit in the datalink group. A new lead unit may be designated each time the group fires.

E6.02 RANGE CALCULATION

Weapons fire is always calculated at the true range between each firing ship and the target, *not* at the range between the lead unit and the target.

E6.03 CREW GRADE MODIFIERS

Crew grade penalties and bonuses only apply to each individual unit's fire.

E6.04 SENSOR DATA

All sensor data is carried across datalink, unless specifically disallowed.

E6.05 DATALINK AND ALLIES

Only partners can datalink to each other's units.

E6.06 REPROGRAMMING DATALINK NETS

It takes 5 tactical turns in the same hex with another unit (or group of units) for a datalink net to be established. No unit in the new datalink net can operate a datalink during this period. Normal limits on numbers and sizes of ships do apply [AppAA-Z].

Datalink net of units must be designated prior to the start of any battle.

E7 POINT DEFENSE

For this section, an inbound is defined as being anything that a point defense system can intercept before it attacks the ship. Point defense systems also have an offensive mode [E7.07]. Offensive mode does not apply to inbounds. See AppAA-D systems for what is interceptible and any modifiers.

When inbounds 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" (for example, 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.

E7.01 OTHER RULES INTERACTIONS

Point defense is a weapon system, albeit a defensive one. Crew grade firing bonuses [F3] modify the number of shots that a point defense system has available. No point defense may engage inbounds fired from within its blindspot. Point Defense systems have their own multiplex and thus are not counted against a unit's targeting abilities.

E7.02 SALVOS AND VOLLEYS

A salvo is all single shots fired *simultaneously* from a single unit or datagroup (usually one shot/inbound per weapon). A volley is all salvos fired during a combat pulse. Each point defense can engage a limited number of inbounds in a salvo (maximum of 1 per point defense shot). Each *salvo* of inbounds starts the entire point defense cycle over again.

E7.02.1 If different types of inbounds are fired in a single salvo, the *intercepting player* determines the order in which they are engaged.

E7.02.2 Salvo Restrictions A unit or datagroup cannot fire more salvos than the weapon with the highest Rate of Fire that will fire in the current volley (combat pulse). A weapon with a lower Rate of Fire may fire a shot in any salvo of a volley, as long as its ROF is not exceeded.

E7.03 COMBINING SHOTS

D type systems may use combined shots at incoming inbounds to improve the chances of interception [AppAA-D.01]. All inbounds 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).

E7.04 MULTIPLE POINT DEFENSE

Even if a unit (or datagroup) has more than one point defense system, no inbound may be engaged more than once.

E7.05 BLINDSPOT

Inbounds fired from within a targeted unit's *blindspot* may never be engaged by *that* unit's point defense.

E7.06 EXAMPLES

Example E7 – Intercepting Missiles

E7.07 ENGAGING SMALL UNITS

Point defense, which has not yet engaged inbounds during a combat phase, may instead engage small units. It *cannot* be used to intercept missiles in the same turn that it fires offensively. (See "Anti-Squadron Section" at [G7])

E7.08 ESCORTING

Escorting allows a single unit to provide point defense for one other unit. All types of PD can protect other units, even non-datagrouped PD or units. The protected (escorted) and protecting (escorting) units must travel in very close formation (within 1000 km).

E7.08.1 The Basics A unit may only escort one unit at a time. Escorting can be detected at detection level T.

E7.08.2 Escort Formation Escorting requires escort formation. To start and maintain escort formation, the escorting and escorted units must be in the same tH with the same facing at all times. The facing requirement does not apply if the escorted unit is immobile (standby or no drive field). Warp Transit voids escort formation.

E7.08.2.1 Effects of Escort Formation:

a. If all units involved are mobile, the turn mode for those units is the worst turn mode +1 (Pt, Ptc, and ramming use the each unit's normal turn mode).
b. The escorting unit may not detune.
c. The escorting unit moves at the same time as the escorted unit, even if this means moving in the wrong movement pulse. To maintain formation, the speed of escort and escorted ships is treated as that of the slowest ship
d. Either or both units may use EM as long as escort formation is maintained.
e. All point defense intercept attempts by the escorting unit are penalized by -1, regardless of target (itself or the escort). If this penalty applies, ignore the datalink PD penalty .
f. Any fire, either direction, between an escorting unit and its escorted unit gains a +3 to-hit (no I don't know why you'd want to attack the unit your escorting).
g. An escorted and the escorting unit(s), including a chain [E7.08.7], count as a single target for multiplex tracking purposes [AppAA-D.02]. The units are fired at separately.
h. An escorting unit cannot ram.

E7.08.3 Entering Escort Formation Before any units have expended MP, each player may declare units that are going to enter escort formation. The declaration is made by the escorting unit, which immediately suffers all effects of E7.08.2.1 except f and g. If the escorted unit accepts, both units suffer all effects of E7.08.2.1, and the two units enter escort formation. If the escorted unit refuses, the escorting unit may not offer to escort a different unit and effects f and g do not apply.

A unit may escort a non-friendly unit but a mobile enemy unit may refuse.

E7.08.4 Leaving Escort Formation Units may declare cancellation of escorting at the start of the movement phase without further penalty. Units exiting escort formation [E7.08.2] at any other time

suffer the effects in E7.08.2.1 until the end of the turn, except f and g, which cease immediately.

E7.08.5 Escort Point Defense Once units have been in escort formation for a complete turn, the escorting unit may use its PD to protect the escorted unit within the following rules.

E7.08.5.1 For a given salvo, an escorted unit can use either its own PD OR *one* escort's PD to protect itself, but never both. Exception: Multiple datalinked escorts may use *datalink point defense* [D.02] to simultaneously protect the escorted unit.

E7.08.5.2 For a given salvo, an escort can defend both itself and the escorted unit but each D system can only protect one unit.

E7.08.6 Multiple Escorts A single escorted unit may have multiple escorts but E7.08.5.1 will always apply. Individual escorting units may enter or leave escort formation without affecting existing formations, and an escorted unit may refuse some escort offers while accepting others.

E7.08.7 Escort Chains A unit may be escorted while escorting but E7.08.5.1 still applies. Even in a chain (a collection of units both escorting and being escorted), each unit can only escort 1 other unit.

E8 HIDDEN GROUND BASES AND SILO MISSILES

Stealth technology adds an element of surprise.

The silo missile is a single missile/torpedo/single use kinetic that is placed in a fixed, dug in position and launched when desired by the owner. They are best used in masses, as their cost is rather high. A counter-silo hit, regardless of the damage caused, will only destroy a single silo-missile due to their wide spacing. Undestroyed silos can be reloaded at 1/2 cost -- reloading takes 1 day and is as detectable as the silo is.

Mostly and Fully Hidden PDCs and Silo Missiles (hereafter hidden objects) have a chance to be detected each day. Each scanning point gives a 1% chance to detect each hidden object with a maximum of 80%. Only 20% (FRD) of the accumulated scanning points carry forward each day and no roll can be made unless at least 1 new scanning point is generated in the zone that the hidden object is in. Construction of hidden objects is detect as a Starship on the planets surface.

Scanning points are generated in each zone as follows:

Scanning Unit	Points per Day vs.	
	Mostly Hidden Objects	Totally Hidden Objects
X	none	none
Y or Yc at scan range	1 in each zone	none
small craft in atmosphere	1 in a single zone	none
Landed supplied Qv	0.25 in a single zone	0.1 in a single zone
Landed SEC	1 in a single zone	0.5 in a single zone

Any hidden object may choose to fire before a detection roll is made. After the detection roll is made, the attacker may EITHER initiate space to ground combat (attacker has initiative and defender "units" must use the activation rules) OR make an attempt to destroy the hidden objects with ground troops [The attacker rolls 1d100. If the 1d100 roll is below 5 or

$$((RD * 0.75) - (((\text{supplied } Qv/PU) - 0.25) * 50))$$

whichever is greater but a maximum of 80, then the facility has been destroyed in the fighting. Otherwise, the facility can fire and normal Qv to PDC and space to ground combat begins.]

E8.01 MOSTLY HIDDEN GROUND BASES AND SILO MISSILES

Some effort to hide the location of these weapons both from space and the local population has been made.

E8.02 TOTALLY HIDDEN GROUND BASES AND SILO MISSILES

A Major effort to hide the location of these weapons, their power source, and emissions from both space detection and local population has been made. Still, people will talk when pressured and at a ground level things are much clearer.

Facility	Unit Cost	Build Rate	Capacity Used
Mostly hidden PDC	30% higher	halved	normal
Totally hidden PDC	100% higher	halved	double
Mostly hidden silo	Normal launcher price/4	n/a	2 HS
Totally hidden silo	Normal launcher price/3	n/a	4 HS

Maintenance of hidden objects is 4% of Unit Cost. Hidden objects on airless worlds, moons, and asteroids are 6%.

E8.03 HIDDEN SHIPS

These are no longer detected by planetary surveys. Ships can hide while active or inactive (mothballed). Mothballed ships hide as Totally hidden while active ships can hide as either type.

E8.03.1 Natural Hiding places Typical natural hiding places are volcano craters (inactive), under oceans/seas, in tall forests (redwood like), in dense atmospheres (gas giant or V worlds). Roll two 1d10 rolls to determine availability and quality of hiding places.

1d10 Roll	Amount of Ships that Can Hide (FRD)	Max. Size of Ships that Can Hide
1-2	none	none
3-4	1d100/4	45 HS
5-6	1d100/3+5	80 HS
7-8	1d100/2+10	100 HS
9	1d100+20	165 HS
10	2d100+30	250 HS

E8.03.2 Underground Hangers A mostly or totally hidden PDC can be built to accept a single landed Starship. The PDC must have a contiguous string of (Hh) that is least as large as the Starship to be stored (Hh is 5 HS, 5 MC). One non-precision hit destroys all continuous (Hh). Starships take 12 hours to land and enter or depart the hiding location. However, an emergency departure can be made in 1 tactical turn. The Starship may not fire during the turn of departure and the PDC is wrecked (may be repaired).

Ships in underground hangers are not detectable, though the PDC is detectable.

Next Section: F - Readiness and Personnel

F – Readiness and Personnel

While a ship's design and the power of its weapons are important, the crew must be ready to fight, if the ship is to perform well.

F1 Definition of Readiness States

F1.01 Battle Stations

Unit has all systems fully manned and functioning. Battle Stations are only reached during combat and end immediately after [EXCEPTION: see F1.02.1]. A unit which transits a potentially non-friendly WP always does so at battle stations but if no combat occurs within 2 minutes, they relax and drop to general quarters.

F1.02 General Quarters

Unit is at normal readiness but at a heightened state of awareness with much of the crew at or near their battle stations. Such units receive a bonus to the activation roll of +4. For every hour of general quarters, a crew must "rest" at normal readiness for two hours. No unit can maintain general quarters for more than 8 hours in a 24 hour period. Only GQ units can maintain a Combat Space Patrol (CSP) [F2.05].

F1.02.1 Exhausted Crews A unit which exceeds GQ limits suffers a -1 to activation for increment of 1 hour past the GQ limit (8.5 hours is -1, 10 hours is -2). The maximum is 12 hours at GQ. Once a unit stops exceeding the GQ limit, the crew collapses into a state of exhaustion (and is no longer at GQ). This state of exhaustion will continue for 16 continuous hours and the crew functions at two grade levels lower than their normal grade during this time period.

F1.02.1.1 The [F1.02.1] limit also applies to active duty pilots. If a pilot flies more than 8 hours a day he is subject to the penalties of [F1.02.1]. If a pilot is on duty and away from the carrier when he hits the 12 hour limit, the state of exhaustion begins when he returns to the carrier. Squadrons are generally immune to this rule but see [G1.02.3].

F1.03 Normal Readiness

Unit is operable but not expecting trouble. All defensives are fully manned. Communications are fully active including datalink. Weapons, including any launch facilities, are unmanned and inactive. Point defenses are fully active. When the unit makes a successful activation roll [F2.03], it has achieved battle stations and all of the above restrictions are lifted

F1.03.1 A unit at normal readiness, and without contrary orders, will start any combat with safe cruising speed [C1.02.5] as its maximum speed. Each turn after the first, the unit's maximum speed increases 1 MP until full tactical speed or battle stations are reached.

> ***Note:*** Engine Deactivation and reactivation will remove this speed limit.

Units with orders to exceed safe cruising speed, given prior to knowledge of a combat, and having made burnout rolls, start combat with their maximum speed at the higher cruising speed previously quoted to the Space Master. The Space Master should use care not to tip off the player that a battle is upcoming and ask for the players intentions (or preferably, have a written SOP) in the same manner for each new system being explored regardless of the presence, or lack thereof, other races.

EM is unavailable during the first combat turn at normal readiness

F1.04 Mothballs

Unit is completely inoperative and may not be made operative in less than one complete month. As mothballed units have no operable drive fields, they are highly susceptible to missile damage.

F2 Surprise Attacks

Surprise happens when a unit is not fully prepared to enter combat (for example, at normal readiness). The activation roll represents the unknown amount of time that it will take the crew to arrive at battle stations and get the unit prepared for battle.

F2.01 Surprise Situations

A surprise attack occurs when an opponent is detected, without warning, at a range of 1 system hex or less. Surprise attacks commonly occur: during a warp point assault, with hidden or cloaked units, or against forces without capital sensors. Surprised units, without orders to the contrary, are considered to be at normal readiness.

F2.02 Activating Surprised Units

Rather than worry about activation of individual systems, each unit has a chance to be fully active or not. This activation roll is made during the combat phase. When a side has surprised unit and it is their combat pulse to fire a unit/group, they follow [F2.02.1].

F2.02.1 Activation options Choice A or B and follow that procedure.

- **A.** Pick ***active*** unit/group to fire.
- **B.** Attempt to activate a surprised unit/group via an Activation Roll.
  - **B1.** If Attempt to activate fails, those ships remain partially active for the rest of the turn AND the defender may choose A or B again.
  - **B2.** If Attempt to activate is successful, then the unit/group may fire and is at Battle Stations. A "carrier" may emergency launch units in launch facilities. A successful activation always counts as the defenders combat pulse even if the unit does not fire.

An emergency launch puts the launched units in the same hex, same facing as the carrier. Launched units are at normal readiness, even if previously activated, until the next turn when small units are at battle stations and large units, if not previously activated, must roll for activation. Emergency launched units cannot fire on the turn of launch.

F2.02.2 Warnings If WP defenders have been warned of attack by a picket, they may begin activating the turn after the picket vessel or a

warning courier drone comes through. However, no unit may remain at battle stations, without entering into combat, for more than 2 hours at a stretch. After that, it must revert to GQ with the battle station time counting as GQ time.

F2.03 ACTIVATION ROLL

During the first turn of surprise, each defending unit or datagroup must roll 0 or less to be at battle stations. For each additional turn after the first turn of transit/surprise, each unit receives a +3 bonus to the activation number (for example, on turn 3, units must roll 6 or less). Note: The defender may choose to roll per datagroup or per unit but maximum of 1 roll affecting any one unit may be made during a single turn. When rolling to activate a datagroup, determine the activation number individually and use the lowest one of the group.

F2.03.1 Activation number modifiers:

- BS, SS, AF, and PDC add +2.
- FT hulls subtract 1.
- Crew at GQ +4 [F2.04].
- CREW GRADE: [F3] first turn ONLY.
- APC systems can only activate mines and pods after the spacecraft mounting them are activated. AP that were activated prior to combat do not need to roll for activation.
- Squadrons and shuttles are units for activation when out in space, but are considered active automatically on the turn after launch if they were not on CSP. Ordinance loads must be determined prior to the battle.
- Exhausted crew subtracts 4 [F1.02.1].
- GQ Limit: -1 per hour over the GQ limit of 8 hours per day (including active duty time for pilots) [F1.02.1].

F2.04 GENERAL QUARTERS ASSIGNMENT

Prior to a battle or as a battle starts, a fleet may assign units to a GQ schedule, which insures that no unit violates the GQ time limit. A fleet without a GQ schedule determines randomly which units are at GQ. In general, only 1/3 of the total HS of any one type of unit (warship, ship, base, FT, carrier, or jump carrier) may be active. Place similar-size and type units into three sets. Roll to determine which set is at GQ, repeat until all units have been placed into sets. The sets can be as large or as small as a player/SM like but should be roughly the same combat power.

F2.05 COMBAT SPACE PATROLS (CSP)

Carriers at GQ may maintain a combat space patrol (CSP) of armed small craft actually in space equal to no more than 1/4 of a fleet's squadrons. A carrier's squadrons must provide CSP together. This is the only time the 1/4 squadron restriction can be exceeded. The amount the CSP 1/4 limit can be exceeded by must be *less than* the number of squadrons provided by the smallest carrier providing the CSP.

A player who maintains a CSP must write the schedule that the squadrons will rotate within the limitations of their endurance. The player must, at the end of any battle in which his CSP is engaged, be able to show an opponent the record of which squadron's carrier(s) had the CSP duty at any given moment and what his CSP small craft was armed with.

Example F2.05 - Combat Space Patrol

F3 CREW GRADE

Crew grade represents better maintenance of equipment and training. A better trained crew is more able to act as a single unit, has better maintained equipment that is less likely to fail, and focuses in critical moments on the job without hesitation or second-thought. Better crews mean better results.

OPTIONAL Simplification: Crew grade rules take work to use. Normally, NPRs have crew grades, however just treating all NPRs units as having the NPRs base grade works ok. *Optionally*, player units can always be average.

F3.01 BASE GRADE (BG)

A race is assigned a base grade for the purposes of determining average crew grade abilities [Table F3.03 Crew Grade Abilities]. This base grade is one of the grade levels (Green, Crack, etc.). In these rules, grades above or below base grade are denoted with a sign and number following the "BG." (For example, if base grade is crack, BG+1 is elite.) Player races have a base grade of "Average" unless a racial characteristic changes it. A race's units can have grades only 2 behind the base grade level. Thus, a player's units start at Poor and can advance to Legendary. A NPR whose base grade was Crack would start new units with a grade of Green (BG-2 for them) and could advance to Legendary (BG+4 for them).

Note: Advancement to grades more than two above a race's BG can only be accomplished by Combat Advancement [F3.04.2].

F3.01.1 Units may earn grade up to the level of BG without facing combat, but grades *above* BG can be earned only through actual combat experience or, if the graded leader rules [S1] are used, by intensive drill under a very experienced admiral. Carriers and their strikegroups always have the same grade unless the carrier is a base, PDC, or SS (in which case the strikegroup grade must be tracked because the carrier has a fixed grade [F3.03.4]) or unless the optional rules for strikegroup grades [G1.02.1] are being used.

F3.02 NPR BASE GRADE

The Space Master may, at their choice, choose to allow 20% of the NPR fleet to be BG-1 and 20% of the NPR fleet to be BG+1. The SM may roll randomly for each ship or assign grades. Races with a BG of poor or elite may exceed the chart below that is capped at ultra and inept. In such cases, ultra units would be considered both BG+1 and BG+2 and inept is both BG-1 and BG-2.

F3.03 GRADE LEVELS

There are 9 grade levels: inept, poor, green, average, crack, elite, ultra, heroic, and legendary. See [Section S, Table F3.03 Crew Grade Abilities].

F3.03.1 Crew grade to-hit bonuses may not be used to fire weapons beyond the maximum effective range shown on the appropriate weapon chart in AppEE-Tables, nor does grade change the damage a weapon inflicts.

F3.03.2 Crew grade does not affects other ships. Crew grade to-hit modifiers do not affect defensive systems (point defense) unless those systems are used in offensive mode (firing point defense at a fighter).

Table F3.03 Crew Grade Abilities

Grade	Inept	Poor	Green	Average	Crack	Elite	Ultra	Heroic	Legendary
Initiative	-3	-2	-1	0	+1	+2	+3	+4	+5
To Hit/Activation	-2	-1	-1	0	+0	+1	+1	+2	+2
Point Defense shots	-1	-1	0	0	+1	+1	+2	+2	+3
Crew Function	-3	-2	-1	0	+1	+2	+3	+3	+4
Breakoff/Surrender	-30	-20	-10	0	+10	+20	+28	+35	+40
Combat Point adjustment	-33%	-20%	-10%	0%	+10%	+20%	+28%	+35%	+40%
Rearming	+3	+2	+1	0	-1	-2	-2	-3	-3
Smcft Crew Rolls (fighter and gunboat vs. ships and the ships vs. fighter/gunboats)									
Squadron/Anti-squadron	-20%	-20%	-10%	0	+10%	+10%	+20%	+20%	+30%

To-hit is for units attacking large units. Activation is used in the Surprise rules [F2]
Point Defense Shot modifies the number of shots per point defense system.
Crew Function includes emergency repairs and engine malfunction rolls.
Breakoff/Surrender modifier is explained elsewhere [D7.04.1.1]
A fleet's Combat Points are adjusted if the grade is different from average.
Rearming modifies the amount of turns required to rearm smcft. This modifier also applies to the time needed to reset datalink [E6.06].
Squadron/Anti-squadron applies to Tables [G7.01],[G7.04], and [G7.05] is engaging and being engaged by fighter and GB squadrons.

F3.03.3 Any crew or grade leader may "sandbag" and use a lower grade's hit probabilities, initiative rolls, etc., to conceal its grade. In any case, the player who "sandbags" must have written proof of the actual grade and must produce it when he first begins using his full grade's advantages. NPRs never sandbag.

F3.03.4 Bases, PDCs, and *unarmed ships*, always have a grade equal to the race's BG. SS always have a grade of BG-1. If refitted to an armed design from an unarmed design, the ship's crew grade is the same as if it was just built.

F3.03.5 Crews cannot transfer to a different unit unless [F3.08].

F3.04 GRADE ADVANCEMENT

Grade advancement is caused by one of three things, general training (valid only for low-grade crews), combat experiences (valid only if the battle represents a reasonable challenge), and specific combat training (valid only if a higher-grade officer leads the training). Some crews are better at learning than others and advance quicker, thus advancement is somewhat random.

F3.04.1 End of Month Advancement (Training)

A unit may only make one roll on Table F3.04.1 Training Advancement using the best option.

- The peace column is always available for use.
- Races that qualify as being actively at war with a HEL race may use the war column.
- A unit that trains for an entire month under an admiral of one grade higher may use the war column [S2.03].
- Training for an entire month under an admiral TWO (or more) grades higher uses the "drilled" column [S2.03].
- Inoperative units cannot advance in grade.
- A ship that makes a die roll for advancement after combat loses any training during that month.

Table F3.04.1 Training Advancement

Current Grade	Peace	War	Drilled	Notes
BG-2[a]	3	5	9	Zero and negative numbers will only apply if a +1 or +2 training adjustment modifier is present. {} Numbers in **brackets** are based on 1d100 rolls and only apply if the other number doesn't apply -- no training adjustment
BG-1	2	3	5	
BG	0	0{05}	2[b]	
BG+1	-	-	0{05}[c]	
BG+2	-	-	-	
BG+3	-	-	-	
BG+4	-	-	-	

[a] BG-2 units automatically advance with shakedown cruise [F3.05]
[b] Requires a LG+2 admiral or Squadron Training Facility [F3.09.1].
[c] Requires a LG+3 or better admiral.

- Number = the number or less that must be rolled on 1d10 in order to achieve grade advancement.
- (Two-Digit Number) = the number or less that must be rolled on 1d100 in order to achieve grade advancement.
- ADV = automatic advancement to next grade level.

F3.04.2 Advancement After Combat

After combat, an advancement roll may be made, if the fighting was intense enough. These rolls are by choice as training may be better.

The advancement roll is made after the ship has had one week of non-combat duty ("de-briefing" and practice of new methods). If multiple battles are fought prior to this week, then take the most favorable battle results and use them. All battles occurring during a debriefing time count as one battle, and the debriefing time for that group of battles ends at the end of the first battle's debrief time.

Ships may roll after each group of battles as long as the required "de-briefing" time has occurred.

Ships without functioning life support may not roll.

Add 2 if the unit attempting to advance was a squadron that went through combat.

F3.04.2.1 Battle Intensity The ability to learn from a battle depends on how stressful the battle was. This is best determined by examining the percentage of HS that fleet lost during the battle.

Table F3.04.2 Combat Advancement

Current Grade	Combat Intensity - HS Lost				
	5-<20%	20-<40%	40-<55%	55-<75%	75-100%
BG-2	6	8	Adv	Adv	Adv
BG-1	4	6	8	Adv	Adv
BG	2	4	6	8	Adv
BG+1	0	2	4	6	8
BG+2		1	3	4	6
BG+3			1	3	4
BG+4			0{05}[a]	1	2

Combat intensity is in warship HS lost/damaged which fired. Each smcft counts as 1 HS per damage point. Carriers who launched but did not "fire" don't count.
Add 2 if the unit attempting to advance was a squadron
Zero numbers will only apply if a +1 or +2 training adjustment modifier is present.

[a] Requires a LG+3 or better admiral.

F3.05 SHAKEDOWN CRUISE

In the month after any unit is built or leaves the yard after repairs or refitting it is shaking down and its grade is BG-2 (usually "poor") regardless of whatever grade it may have earned. After shakedown new and reactivated units advance one grade and repaired/refitted units return to whatever grade they have earned and not lost due to damage and casualties [F3.06]. A warp-capable spacecraft may move between star systems during its shake down cruise.

F3.05.1 A unit undergoing a shakedown cruise does not roll for grade advancement unless involved in a battle. During the battle it fights as the temporary grade and after the battle it rolls for advancement at its earned grade as if it had fought at the earned grade. If the earned grade is advanced, the shakedown cruise continues for the rest of the month at BG-1.

F3.06 LOSING GRADE

Crews only lose grade in situations where they have been morally devastated, there are massive crew losses, or the crew is released from duties. All grade losses are permanent unless otherwise noted.

- The grade of any unit that surrenders automatically becomes BG-2 (usually poor).
- Units lose one grade level after suffering the loss of more than 1/2 their internal systems (not spaces), before emergency repairs. This occurs after the current battle is over. Note: Such a crew may lose a grade due to crew losses and gain the same grade back due to crew advancement.
- Units of a victorious fleet that abandons personnel from destroyed units may suffer a loss of grade. This only occurs if the victorious fleet does not perform [F3.07].
- Any BG+1 or higher crew that survives the destruction of their ship has their grade reduced to the BG.
- "Voluntary failure" to receive maintenance supplies from the empire [L7.04].
- If a fleet fires upon its own units, the whole fleet immediately loses 1 permanent grade level.

F3.07 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.) Generally the destruction of the ship always wipes out all grades for the survivors, but rescued fighter and gunboat pilots do not lose grade. *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 unit in same system during combat. Any roll greater than (RM+RD)/2 +25 (FRU) indicates that the unit's crew grade drops one level due to lost morale.

F3.07.1 For simplicity, STARFIRE uses a "good faith effort" method of rescue. Upon winning a battle, victorious fleets must perform S&R. Life pods work for 72 hours but S&R takes only 2 hours. A minimum of 1 HS of surviving ship must perform S&R for every 3 HS of units destroyed. Any ships above this limit may continue on their way but there is no penalty if there are not enough ships. Each small craft participating in the S&R counts as 1 HS of surviving ship and reduces the time required by 2 minutes down to a minimum of 30 minutes. Ships performing S&R must drop off the survivors on the closest inhabited or habitable world or meet with the CFN.

F3.07.2 In most cases, survivors 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 place within 9 system hexes of a friendly population, CFN freighters will never be able to arrive soon enough to assist in search and rescue operations.

F3.07.2.1 If the CFN is not within range, ships can accommodate only double their capacity for 30 days. While doubled, all crew function rolls are at a -1 including combat rolls of any type such as initiative, to-hit, interceptions, repairs, etc.

F3.07.3 Conducting S&R takes no time at the strategic scale (no StMP are lost) unless movement to a planet is required.

F3.07.4 *Optional Rule:* Some players may want to recover their experienced crews, and the above rule does not address this type of crew recovery. *Optionally* the players can perform search and rescue as a means of actual crew recovery, with each ship and small craft participating in the S&R recovering 1 HS worth of crew in life pods per hour. For simplification the amount of crew that bail in life pods is 1 HS per 3 HS of ship destroyed.

F3.07.4.1 *Optionally* players can choose to have the amount of survivors randomized. Roll a 1d100, subtract 10 and divide by 2. This is the percentage of HS worth of crew that escaped. (FRU)

F3.08 CREW TRANSFERS (OPTIONAL)

Space Masters may allow their players to transfer graded crews to other ships. Crews of units can transfer to a new ship of the same size without penalty. If they transfer to a smaller ship they lose one grade permanently. If they transfer to a larger ship, they lose 1 grade plus 1 grade for each class larger than their current class.

The transferred crew may not split between multiple ships no matter how large the old ship was. Warship hull crews may not transferred to other types of ships (advanced or freighter) or vice versa and still maintain a grade above BG-1. Crews of units that are

scrapped or mothballed lose all grade unless transferred during the same month. Transfers to new construction are allowed.

F3.09 REPLACEMENT SMALL CRAFT CREWS

Squadron crews must reorganize [G1.04] before replacement craft (DP) and crews (CP) join its carriers. To create Replacement Small Craft Crews, Pilot Training Facilities [F3.09.1] are used. Squadron Crews can only crew the specific type of craft they were trained for but any generation of that type is allowed. To operate, each Squadron requires 6 CP less than the maximum DP a squadron can have.

Example: A FQa with 20 DP requires 14 CP to operate.

Note: unassociated DP are always damaged before DP with CP.

A squadron can regain full strength in one of two ways: Repair [F3.09.3] or Reorganization [F3.09.4].

F3.09.1 Pilot Training Facility (PTF) An armed small craft using empire usually maintains a pilot training facility (either fighter or gunboat specifically). See [M7.03] to build them. A Pilot Training Facility can create 40 CP of BG-1 crews, per month.

A (PTF) may train up to 200 CP unassigned to squadrons as if the empire was at war and as if the training facility was a LG+2 Admiral. Likewise, a Training facility may, instead of 20 unassigned CP, drill (and acts as a carrier for) a Squadron as if the training facility was a LG+2 Admiral. Squadrons may not fly combat missions from training facilities but could transfer and rearm at a launch facility.

Pilot training facilities are limited exactly as RDS are [N4.03].

F3.09.2 A Fleet's Pilot Reserve Replacement CP are created/trained at Pilot Training Facilities and must be shipped in Qv (usually by CFN) at 20 CP per Qv.

Once they arrive with a fleet, they may be assigned to a "troopship" (20 CP per Qv) that travels with a carrier fleet. CP in the Fleet's Pilot Reserve will maintain crew grade unless the total CP exceeds the number of squadrons in the fleet times 40. CP above this number lose 1 grade level per month starting with the highest graded crews first (instead you may demote {delete} CP to regular ship crew). This grade loss occurs at the end of the month but the number of squadrons used is the highest number available during any portion of the month. Thus, after a battle, you have 1 month to strengthen the squadron compliment before grade loss.

Crews 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 crews back and forth on "trips to nowhere").

F3.09.3 Repair and Crews In order for Squadron to repair more than 6 DP in a month [Squadron Maintenance Bay], CP (crew points) must also be available. 1 CP is needed per DP above 6 DP repaired. These CP are typically drawn from the Fleets Pilot Reserve.

Once repairs are completed, determine the new squadron grade via [F3.09.5].

Replacement CP are always available anywhere the CFN travels (treat CP like maintenance is treated). As a last resort, any number of BG-2 CP can be drawn from the crew of the carrier itself.

F3.09.4 Squadron Reorganization Damaged squadrons of like type and generation may combine anytime they are aboard the same carrier as long as the total DP does not exceed the maximum DP of that type/generation of squadron. Squadron grade must be averaged [F3.09.5]. The newly reorganized squadron gains a benefit in that total DP repaired during the month is reset to zero.

F3.09.5 Averaging Grade Add CP times the Crew Grade value of each part of the squadron together. Divide by the (new total DP minus 6).

Then roll 1d10 versus the digit in the tenths place, if the die roll is equal to or less than the digit, then the average pilot value is rounded up, otherwise drop the fraction. Determine the new grade based on the value listed in the table.

Crew Grade Value Table

Grade	BG-2	BG-1	BG	BG+1	BG+2	BG+3	BG+4	BG+5
Value	1	2	3	4	5	6	7	8

Example F3.09.5 - Averaging Squadron Grade

F3.09.6 Search and Rescue (optional) One-third of lost CP during combat are available to be rescued [F3.07]. Once rescued, they can be combined with DP repairs and placed back into squadrons. Each 3 CP available counts as 1 HS to be rescued.

Next Section: G - Small Craft Rules

G – Small Craft Rules

Small craft can come in numerous flavors and are generally represented by armed and unarmed versions. Regardless of the version, they all operate and perform in Squadrons (even if the "squadron" is a single small craft). Unarmed small craft are generally cargo moving types - like the gig to move a few personnel at a time between ships or the st capable of moving 747 quantities of cargo. Armed small craft are small, agile, and fast moving units to aid the larger, slower warships.

In Ultra, Squadrons are an integrated unit, even when they contain multiple quantities of small craft, that cannot be split apart. The Strikegroup is no longer used as a combat resolving mechanism, but is still used to refer to all squadrons aboard a single launcher.

DEFINITIONS: "**Launcher**" refers to any unit with appropriate launch facilities including BS, planets, PDCs, SS, and carriers. **Squadron** refers to a group of one or more small craft such as a shuttle, fighter or gunboat. Additionally, each AP is attacked as a Squadron. A **strikegroup** is all squadrons aboard a single launcher.

PROPER FACILITIES: A "**proper**" launch facility is both of the correct type (Bs for st/ast, BL for GB/FQ), size, and generation to handle its contained squadron(s). Improper facilities can only transfer landed craft [G2.04.1.3].

In particular, the proper facility for a Gunboat Squadron is a (BL) of the same or greater generation and a (Bg) of the same or greater generation. Likewise for Fighter Squadrons (BL) & (Bf). Shuttle Bays (Bs) are more flexible and the launch system is part of the Bay itself. The only requirement is the bay must have enough Bb pts to contain all the squadrons attempting to be in it. (Bs) can normally not land or launch fighter and gunboat squadrons. In order to be a "proper" "launcher" a unit must have all of the required facilities necessary to handle the squadron in question.

G1 Squadrons

Game play tracking is done by squadron DAMAGE POINTS. In general, damage represents more than just physical damage to the small craft contained in the squadron. It also represents the difficultly in hitting the target, the factor of luck, crew morale during combat, the ability of the drive field to deflect close hits. A squadron with damage may lose certain abilities or even speed. To some degree, this damage is repairable in a short amount of time.

G1.01 Armed Small Craft Limits

No Squadron Bay [AppAA-B?.01] can support more than one squadron of craft. Thus, rotating some squadrons into space in order to re-supply another squadron and thus defeat the one squadron per bay limit is specifically disallowed. There is one exception. Fleets who have lost carriers in battles may allow this but must find proper launch facilities within one month or lose those extra squadrons. If engaged in combat, all carrier and Strikegroup crews sharing facilities temporarily lose two grades.

G1.02 Crew Grade and Organization

Only armed fighters and gunboats have crew grades separate from their "launcher." Squadron grade can be tracked individually by Squadron or by Strikegroup (all units on the same carrier). A Launcher's crew grade is always tracked separately from any squadrons aboard.

G1.02.1 Crew Grade by Strikegroup Each carrier maintains and tracks its strikegroup's crew grade separate of the carrier's crew grade. When possible, only squadrons of the same crew grade may land on the same launcher. After the initial reorganization to launchers, it is possible due to launcher losses, that some squadrons may have different grade from other squadrons. When this occurs, grade is averaged between the squadrons [F3.09.5].

G1.02.1.1 Emergency Landing If a squadron is otherwise unable to land prior to its endurance running out, squadrons of different grades may, as a last resort, land on the same carrier. However, those squadrons must remain separate and be reorganized into same grade strikegroups as soon as possible (preferably immediately after launch)

G1.02.2 Crew Grade by Squadron (optional, recommended) Squadrons of different grades may be aboard the same launcher (including PDCs) at the same time.

G1.02.3 Squadron Crew Exhaustion Squadron crews are usually immune from crew exhaustion [F1.02.1] rules. Gunboats have multiple pilots and the room for the off-duty pilot to rest. Fighters can link the fighters allowing all but one pilot to rest while the on-duty pilot flies the squadron.

However, if any squadron is in potential combat range (120 tH or less) for more than 8 hrs in a day (including multiple missions), then exhaustion rules would apply. Likewise, any mission exceeding 12 hrs for a fighter or 24 hrs for a gunboat squadron requires a 6 hrs on carrier rest time.

G1.03 Grade Advancement

Roll for Strikegroup or Squadron crew advancement due to combat [F3.04] before reorganization.

G1.04 Reorganization during Rearming

Damaged same-grade squadrons, which are rearming aboard the same carrier, may combine into a single stronger squadron (max. DP per squadron limit does apply). Such a combined squadron cannot be split again for repairs [F3.09.3] (which means at least one squadron is eliminated permanently).

G1.05 After Combat Reorganization

This reorganization is fleet wide (all launchers in the same sH). Squadrons may come from any launcher and return to any proper launcher excepting that those using Crew Grade by Strikegroup [G1.02.1] must only land squadrons of the same crew grade on the same launcher.

G2 Squadron Movement Rules

Squadron movement is essentially identical to starship movement, but there are a few differences.

G2.01 GENERAL MOVEMENT RULES

- Squadrons follow the same movement rules as in [C2].
- Unless noted otherwise, Squadrons have a turn mode of 1, and follow the same rules as in [C3].
- Most squadrons are unable to transit warp points, but those that can follow the same rules as in [C4].
- Squadrons, excepting Gunboat squadrons, have "military engines." Their Safe Cruising Speed is one-half their maximum movement speed. Squadrons check for engine burnout every 6 hours [C7.01]. If a squadron's engines burnout, the squadron suffers damage (small craft crews are rescued according to the search-and-rescue rules [F3.07]).
- Squadrons can perform engine modulation [C8] at the rate of 2 MP per –1 cumulative modifier, to a maximum of –2 but cannot use DeTuning [C9].

G2.02 SQUADRON MOVEMENT RULES

Each squadron moves as a single unit, using a single counter.

G2.03 PLANET/SMALL CRAFT INTERACTIONS

See section C5 for this information.

G2.04 LAUNCHING AND LANDING FROM LAUNCH FACILITIES

Any launcher of the same navy, military ally [T3.11], or partner [T3.13] may recover, rearm, re-supply, and re-launch squadrons if it has proper facilities.

- Fighter and Gunboat Squadrons may never use Launch Bays (BL) of a lower generation, even in an emergency.
- A Squadron may not land/launch directly to/from a Squadron Bay (Bf or Bg). They must land/launch through a (BL).
- A Launch Bay (BL) may only land or launch one squadron per tactical turn (it cannot do both).
- A Shuttle Bay (Bs) may land or launch any number of squadrons in a turn (it cannot do both).
- A unit cannot be launched with its engines in LOD mode.

G2.04.1 General Rules for Launching Squadrons can launch from undamaged launch facilities during any movement pulse of the turn.

A squadron expends one movement point to launch and the squadron's total movement allowance is reduced by 1 for each movement point expended by its carrier in the movement phase(s) prior to launch.

When a squadron launches, it ends its movement for that movement pulse in the same hex as its launcher, stacked on top of the carrier's counter but *on any heading* the launching player chooses. Squadrons move normally on the pulse after launch and may attack in the combat phase of the turn of launch.

G2.04.1.1 A launcher can use as many launching systems as it has simultaneously. WP transit imposes some launch restrictions [D7.01.2]. Squadrons can freely move between their bay and any suitable launch facility on the ship.

G2.04.1.2 If a squadron can be detected at launch time by enemy sensors, the launch must be specifically announced.

G2.04.1.3 Improper launch facilities cannot launch small craft. However, those craft may be transferred as cargo (drive field down) along the outside of hull to an empty bay of the proper type in one (1) tactical turn. Such craft may also be transferred to a unit that does have proper launch facilities using either the [C6.01] docking rules (using the same method described above) or the [E4] cargo transfer rules. The launch facility that is transferring the small craft is unusable during any transfer. Cargo transfers directly to/from Bf and Bg are allowed but take 5 minutes.

G2.04.2 General Rules for Landing Squadrons can land during any movement pulse onto a launcher that has sufficient undamaged and empty proper launch facilities. The small craft must start the movement pulse in the same hex as the launcher and be facing the same direction as the launcher (any direction for SS, BS, PDC, or AF). The actual landing uses a single movement point, and the squadron cannot land if it has no movement points left.

G2.04.2.1 Squadrons cannot land on a launcher undergoing any class of transit effects [D7.01].

G2.04.2.2 Squadrons may sometimes emergency land in bay types that are not proper (Bs) but they will not be able to launch [G2.04.1.3]. A squadron occupies 1 bb point per 4 damage points remaining in order to land this way.

Example G2.04.2 – Landing Small Craft

G2.04.3 Arming/Rearming Small Craft Squadrons require 5 turns (2.5 minutes) to arm or rearm if they are in a proper bay facility, beginning on the tactical turn AFTER landing, and assuming the owner of the bay facility chooses to rearm them.

G3 SMALL CRAFT COMBAT RULES

Squadrons are more difficult to hit and use special tables during combat. Section G3 covers normal engagement of a squadron.

A squadron fires as a single unit in a single combat pulse.

G3.01 ENGAGING SMALL CRAFT WITH LARGE UNITS

Each squadron counts as one target for targeting restriction purposes [G3.02] even if it contains multiple small units. See [G7] .

A squadron can only be engaged once by a datagroup, even if the datagroup members choose to fire individually.

G3.02 DAMAGING SMALL CRAFT

All Squadrons have a number of damage points (DP). Squadrons can be crippled and they are destroyed when they have zero DP remaining.

G3.02.1 If a bay facility is destroyed, any squadron(s) in it are lost, but the rules assume unoccupied launch facilities are destroyed first. The owning player determines which small craft are lost when occupied facilities are destroyed.

G3.03 ENGAGING WITH SQUADRONS

When squadrons attack, either Large Units or Small Units, roll 1d10 against [G7.04] (LRW attacks) or [G7.05] (SRW attacks). This is the amount of damage done to large units or the amount of damage points (DP) done to a squadron. Squadrons may fire both external and internal ordnance during a turn but see [G3.03.2].

Table G3.0.3.1 Arc of Fire

Weapon Type	Firing Arc
ast	forward 180°
Gunboat SRW	forward 300°
Gunboat LRW	forward 60°
Fighter SRW	forward 60°
Fighter LRW	forward 120°

G3.03.1 Arc of Fire [D3.01.4] The forward 60° Arc includes half hexes [D3.01.4]. Also see Table G3.0.3.1 Arc of Fire.

G3.03.2 Targeting Restrictions A single squadron may only target single units or single squadrons.

G4 SMALL CRAFT ORDNANCE

Squadron use specialized ordnance that is smaller than starship weaponry. This ordnance includes non-weapon systems. Squadrons have two locations for mounting weapons (or support systems): internal and external. External ordnance can be changed during rearming [G2.04.3]. Internal ordnance can be changed at a construction facility [M1.02]. Large units cannot mount nor fire any smcft weapons.

G4.01 ORDNANCE TYPE

Squadron ordnance falls into two general categories: Expendable and Reusable systems. Expendable ordnance is 'fired' from the squadron when it is used and is consumed in the process. In either case, one squadron (or smcft) ordnance piece consumes all available space in the installed location.

Small craft LRW gains LRW twig upgrades as the empire upgrades those twigs.

Squadrons gain ?d [AppAA-Anti-Engine Modulation] as a inherent ability at the same time it is developed for ships.

Squadron ordnance is not available for mounting in all locations,

Table G4.01 Squadron Ordnance

Ordnance Code	Category	Locations	System Type
ast weapon[a]	SRW	Internal	Reusable
F, E, L	SRW	Internal	Reusable
Fp, Ep, Lp	precision SRW	Internal	Reusable
Rocket (fG)	SRW	External	Expendable
R, K, Pt	LRW	External	Expendable
Y[b]	Support	External	Reusable
Q[c]	Support	Either Locale	Expendable
Y + Q Combo[d]	Support	External or Internal	Y Reusable Q Expendable

[a] ast weapon (basically a type of gun) is always available as the default weapon for fighters.
[b] sY only has a 50% of range of Y.
[c] Fighter sQ increases fly time by 2 hour + 1 hour per sQ generation while gunboats get an additional 12 hours plus + 6 hours per sQ generation
[d] sY + sQ Combo only provides 25% sensor range and 50% life support duration. Squadrons with internal Y+Q combo are designated as RECON Squadrons.

Example G4.01 – Squadron Endurance

G4.02 EXTERNAL ORDNANCE EFFECT ON SPEED

Fighters carrying external ordnance are slowed by 2 MP (-1 safe cruise speed) while gunboats carrying external ordnance are slowed by 1 MP (safe cruise speed not reduced). Shuttles, depending on type, may be slowed by external ordnance carried. Carried ordnance may be dropped in the firing pulse of the squadron mounting it, or in the record-keeping phase, to allow the squadron to move faster, with the new, higher speed applying in the next movement phase.

G4.03 INTERNAL ORDNANCE

Armed small craft, like fighters and gunboats, have internal systems.

Squadrons use codes to indicate the type of system being used. Weapon codes and some other codes are used without generational, while some do have generational suffixes indicated by an x below. See [A4.02] for an example. See Table G4.01 Squadron Ordnance for the ordnance codes used.

G5 MISCELLANEOUS SMALL CRAFT RULES

G5.01 CARGO TRANSFERS

Squadrons with cargo capacity, when in a proper bay facility, can transfer cargo up to 25 csp per tactical turn of personnel and materials in and out of their storage space at the rate listed in ([Smcft.02 Sensors]).

G6 SMALL CRAFT MAINTENANCE

In order to simplify the game, small craft ordnance has no cost or maintenance, which have been hidden in the prices of the small craft, the bay, and their maintenance. No specific quantities of any item are available. Rather, reloading is handled as a total squadron unit [AppAA-B?.02].

Squadrons may have a maintenance cost beyond that of their bay.

G7 SQUADRON COMBAT

STEP 1 -- Base Anti-Squadron Value (BASV)

Any unit or datagroup that fires at a squadron or AP (datalinked AP are attacked as Squadrons but non-datalinked AP are attacked individually), determines the BASV - "Base Anti-Squadron Value" [Table G7.01 Base Anti-Squadron Value] by cross-indexing each firing weapon type and range on the appropriate table and totaling their values.

STEP 2 -- Determine the Attack's Damage Adjustment

Determine the Damage Adjustment via Table G7.02 Anti-Squadron Damage Adjustment Table.

STEP 3 -- Determine the Attack's Damage

Roll 1d100 on Table G7.03 Damage Caused to Squadron and apply the Damage Adjustment from Table G7.02 Anti-Squadron Damage Adjustment Table in order to determine the amount of Damage Points (DP) caused to the squadron.

Note: Do not use G7.01-G7.03 tables when a Squadron Attacks.

G7.01 CALCULATE BASE ANTI-SQUADRON VALUE

A weapon which uses its Anti-smcft value cannot fire normally at large units. Weapons with multiple ROF can fire some salvos at small units and some at large units, if desired.

Table G7.01 Base Anti-Squadron Value

Wea-pon	Range[a] 0-2 Short	3-5 Mid	6-9 Long	Gen Inc	Wea-pon	Range[a] 0-2 Short	3-5 Mid	6-9 Long	Gen Inc
LRW Values					**Beam Values**				
R	1	2/3	1/3	+1/3	F, Lj	4	3	2	+1
Rc	3	4	3	+1	Fc, Ec	7	5	4	+2
Rh	14	17	14	+3	Fh	16	14	12	+3
Pt	3	4	3	+1	L, E	3	2	1	+1
Ptc	6	6	5	+2	Lc	10	8	6	+2
Pth	7	9	7	+3	Lh	19	17	14	+3
K	6	5	4	+1	Eh	15	13	11	+3
Kc	16	13	10	+2	Fp, Ep	3	2	1	+1
Kh	35	31	27	+3	Fpc	8	7	6	+2
PD Values					Epc	3	2	0	+2
D[b]	3	2	2	+1	Fph	20	18	15	+3
Dc[b]	7	6	6	+1.5	Eph	4	3	1	+3
SRW Values					Lp	5	4	1	+1
Pg	2	1	n/a	+0.5	Lpc	6	5	2	+2
Pgc	2	1	n/a	+1	Lph	10	7	3	+3
Pgh	3	2	0	+1.5	C	6	5	3	+1
G	2	1	0	+1	Cc	11	9	7	+2
Gc	3	2	1	+2	Ch	19	17	14	+3
Gh	5	4	2	+3					
50 PU / 10 Qv	1 but see [G7.06];add 5% per EL. Once/day at x10								

The following modifiers apply per individual weapon. No weapon's BASV can be reduced to less than one.
Add +2 to anti-squadron value for each ROF above 1
+ weapon specific increase for each generation above "Alpha" (above)
-1 if unit is detuning
-1 snap shot (just detected at P level [D5.02.4.1])
-1 per shot from XO racks
- Fighter point defense modifier [N10.03]
-1/+1 for each -1 or +1 to-hit modifier not accounted for.
Long Range not usable by Buoy2/Drone2 fire.

+/- Crew Grade Percentage Modifier to Total BASV (FRN)
Apply Crew Grade modifier last

Inept	-20% .	Average	0% .	Ultra	+20% .
Poor	-20% .	Crack	+10% .	Heroic	+20% .
Green	-10% .	Elite	+10% .	Legendary	+30% .

[a] Bases & PDCs: 0-3 is short range, 4-6 is mid, and 7-11 is long.
[b] Includes all shots *Example:* 3 Db at range 3 have a BASV of 9.

Note: Attacks which exceed 201 BASV, are converted into multiple "attacks" (all modifiers are the same except the damage modifier, even to the point of treating this "attack" as a single attack vs a squadron). Each additional attack must be exactly 200 BASV with the remainder in a single smaller attack.

Example: A 556 BASV attack would convert to two 200 BASV attacks and one 156 BASV attack.

Example G7.01 - Anti-Squadron Combat

G7.02 ANTI-SQUADRON DAMAGE ADJUSTMENTS

Total the BASV from a firing ship or group against a squadron and consult Table G7.02 Anti-Squadron Damage Adjustment Table.

Table G7.02 Anti-Squadron Damage Adjustment Table

BASV	Dmg	BASV	Dmg	BASV	Dmg
01	-9	37-41	+2	109-115	+14
02-03	-8	42-46	+3	116-122	+15
04-05	-7	47-51	+4	123-129	+16
06-08	-6	52-57	+5	130-137	+17
09-11	-5	58-63	+6	138-145	+18
12-14	-4	64-69	+7	146-153	+19
15-18	-3	70-75	+8	154-161	+20
19-22	-2	76-81	+9	162-169	+21
23-26	-1	82-87	+10	170-177	+22
27-31	+0	88-94	+11	178-185	+23
32-36	+1	95-101	+12	186-193	+24
37-41	+2	102-108	+13	194-201	+25

Large Units only: -1 damage, per additional volley (not salvo) fired at a squadron (not AP).
Examples: 2nd volley is -1, 3rd volley is -2, 4th volley is -3, etc.
-1 damage for all attacks against Recon Drones.

G7.03 DAMAGE CAUSED TO SQUADRON

Roll 1d100, consult Table G7.03 Damage Caused to Squadron to determine basic damage caused. The damage, not the roll, is then modified by Table G7.02 Anti-Squadron Damage Adjustment Table.

Table G7.03 Damage Caused to Squadron

Roll	Damage	Roll	Damage
01-05	0	41-50	6
06-10	1	51-61	7
11-16	2	62-73	8
17-23	3	74-86	9
24-31	4	87-100	10
32-40	5		

Add +1 damage when firing at AP.
-2 damage if Buoy2/Drone2 is firing

G7.04 SQUADRON LRW ATTACKS

LRW attacks cause 1d10 LRW hits vs. ships or Squadrons. These hits are interceptible by point defense as a normal LRW and each hit causes 1 point of damage if not intercepted.

LRW Attack Modifiers (Max Range 9 tH)

-0.5 per DP suffered by the attacking squadron (FRU)
+5 if gunboat squadron firing
+3 per generation of squadron (weapon) above alpha (alpha = 0)
-5 if attacking a fighter squadron
-3 if attacking GB squadron or shuttle
-2 if using torpedoes
-4 if using kinetics
+1 at Mid Range (3-5 tH), +2 at Short Range (0-2 tH)
-1 per EM/ECM level of the target not countered
-1 per each other -1 not accounted for.
-1 snap shot (just detected at P level [D5.02.4.1])
+/- Crew Grade % Modifier (FRN) (see bottom of Table G7.01 Base Anti-Squadron Value) (apply after die roll).

G7.05 SQUADRON SRW ATTACKS

SRW attacks cause direct damage to the ship/squadron. Each SRW or fG attack causes a base 1d10 damage modified by Table G7.05 SRW Attack Modifiers.

Note: last modifier is divide by 2.

Table G7.05 SRW Attack Modifiers

Range	0-2	3-5	6-9
fG, Beam, or ast weapon	+1	-1	-3
-0.5 point per DP *attacker* has below 50% of total DP (FRU)			
+1 per generation of squadron (weapon) above alpha (alpha = 0)			
+1 point if fighter squadron firing			
-2 if firing unit is an ast squadron (plus -1 per ast less then 4)			
-4 ast weapon firing (does not apply to ast squadrons)			
+2 if fG firing			
-1 pt E or L firing			
-2 pt if Lp or Ep firing			
-3 pt if Fp firing			
-1 pt per EM/ECM level of the target not countered			
-1 per each other -1 not accounted for.			
-1 snap shot (just detected at P level [D5.02.4.1])			
+/- Crew Grade Percentage Modifier (see bottom of Table G7.01 Base Anti-Squadron Value)			
*2 damage vs. gunboats (applies after all other modifiers and rounding)			
AFTER above modifiers are applied, divide by 2 (FRU)			

SRW weapons cause damage in the same manner as their shipboard counter parts including the amount of skipping by weapon generation (if not using small craft weapon generation optional rule, then use the squadron generation as the weapon generation). All damage from a single attack is applied as if it came from a single hit.

G7.06 PLANETARY ANTI-SQUADRON COMBAT

Planets can fire at attacking squadrons that are ***IN*** *the atmosphere*. Each 50 PU add a single point of BASV (2000 PU would be 40 BASV). Each 10 Qv adds a single point of BASV. BASV is adjusted by adding 5% per EL (EL 5 is +25%).

The BASV of all PU and Qv is totaled, and then divided by 6 (FRU) to provide defensive fire on a specific facing of the planet. If the attacker is landing on all 6 six sides of the planet, he will suffer 6 attacks. Damage from each attack is calculated, and then applied to small craft squadrons, fully destroying a squadron before attacking the next squadron (no damage is wasted).

Fire vs landing shuttles occurs before they land, and as they depart (two defensive "shots"). Fire vs ast that are air-dropping troops, small craft that are dropping bombs, or squadrons that are firing weapons at planetary targets is only conducted once, AFTER the small craft have performed their task.

G7.06.1 Expendable Attack Once per day, the defensive Qv and PU on the planet can make an attack using expendable ordnance (i.e ground to air missiles. This attack is 10 times stronger than a single facing's attack. This attack can be done once per planetary facing. Damage is calculated from these six attacks and totaled. The damage is then applied to squadrons fully destroying a squadron before attacking the next squadron (no damage is lost).

Fire vs. landing shuttles occurs before they land and as they depart. Fire vs. air-dropping ast, bomb dropping shuttles, and weapon firing squadrons occurs AFTER the drop occurs.

G7.06.1.1 Attacking Landing FT Expendable attacks have the ability to damage FT hulls. Calculate as normal vs shuttles normally but divide all damage by 5 (FRU). Remember that FT hulls are weak hulls and take double internal damage [D4.04]).

And if the CFN is used to land troops, any damage taken or losses to FTs must be must be replaced [V3.06.1].

Note: This replaces Section V combat vs. shuttles.
Warship hulls are immune to this sort of fire.

Example G7.06 - Landing Invasion Troops

G8 WARP POINT TRANSIT

While Fighters cannot transit warp points, Gunboats, except GBa, have a strong enough drive field to survive such a transit. A gunboat squadron counts as 8 transit size regardless of gunboat generation. Gunboats are immune from the HS doubling of multiple transits during the same transit pulse [C4.03]. This immunity extends to transiting on the same pulse as a warships or other objects. However, gunboats are not immune to interpenetration and must make a roll for every 10 DP transiting.

Gunboats may not fire on the turn they transit but may move and fire normally on the following turn.

GB and Ftrs launched from XO racks can not fire on the turn of launch when Class B transit effects apply.

Next Section: H - Designing Units

H – Designing Units

All STARFIRE large units, including ground bases, consist of a hull and the systems placed within it. Virtually any type of system may be placed in any hull. Exceptions noted under system descriptions in [Appendix AA]. System cost may vary depending on the hull that it is installed into. These are also noted in [Appendix AA]

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 [Section M] contain the additional details needed to interface this process into campaign games, the basic process never changes, and players may use this rule section to build their own ships for tactical scenarios.

Articles on fleet and ship design are provide in Appendix CC at *Ultra Fleet Designer's Guide* and *ULTRA Ship Designer's Guide*.

H1 Building Your Own Starships

To build a starship you must carefully consider the purpose of the ship, what systems are required, and what weapons and defenses you will want to protect it with. Despite this, all units are built using the same basic process:

1. Choose hull size [H1.01].
2. Install Required Systems [H1.02].
3. Install Engines [H1.03].
4. Install other components [H1.04].
5. Did you remember important things [H1.07]?
6. Arrange the Control Sheet [H1.08].

H1.01 Select The Hull Size

The "Hull Size and Capabilities Table" [Ship Hull Tables] 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.

H1.01.1 Planetary Defense Centers PDCs may start or increase to be any size up to 500 HS [M6] The building player simply picks a number, plunks down the cash to pay for it, and proceeds to the next step. PDCs cannot mount engines, shields, or EMS.

H1.01.2 Space Stations Each SS has a central, non-military "core." The core may only consist of non-military systems and may be of any size. This core may be protected by up to 6 outer modules, each with a max. size of 1,000 HS. Outer modules may mount any system.

Modules protect the core from 1, 2 or 3 facings and are placed according to [D6.03.7].

H1.01.3 Bases and Asteroid Forts Bases are designed like starships, but they can't have engines.

Asteroid forts are designed like bases. Maximum size for an AF is 1,000 hull spaces.

H1.02 Required Systems

The most important part about any Starship is the requirement to provide life and crew support for the crew. Life support covers maintaining a friendly environment while crew support provides living quarters, exercise equipment, and recreational facilities necessary to maintain a happy, alert crew.

Each HS requires one point of life support except (SY), (SYM), and (MS) which provide their own life support.

All large units, except some PDCs, require at least 1 cargo hold to carry maintenance paid each month [L7.02.2].

Note: No PDC requires Life Support or Holds [D6.02.3]

H1.03 Installing Engines

In the case of a starship, the second consideration is its engine power. Each hull size has a maximum possible speed and a column which notes the numbers of engine systems [C1] needed to produce each movement point of speed (this may be fractional). The player decides on the speed he wants, notes how many engine systems this will require and how much those systems will cost, 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.

Example H1.03 - Installing Engines

H1.03.1 Only a single generation of each type of engines may be installed on a ship, i.e., a unit with both (Ia) and (Ib) engines is illegal but a unit with (Ja) and (Ib) is legal."

H1.04 Installing Other Systems

The remaining hull spaces may be filled with offensive, defensive, and support systems as desired. The procedure followed is exactly the same as the one he followed for engines, 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.

H1.04.1 All available systems are listed in [AppAA-Technology Trees and Systems] including the system's capabilities, requirements, and restrictions. By the time a player feels ready to design his own units, he should be fairly familiar with these systems and what they do.

H1.04.2 Non-military systems Non-military systems are Ic Engines, Holds, Tractors, Shipyards, MS, Shuttle Bays (Bs), Life Support (Q), Atmospheric Capability, Advanced Maneuvering 1, Planet Surveyor (Xp) and Communication Modules. One internal armor mounted per 5 H on a FT counts are a non-military system, above that is military.

Note: Any system that can be used as an active or passive defense (any combat support) is considered a military system. Science Instruments are considered a MILITARY system.

H1.04.3 Commercial freighters (FT) Freighters may not exceed 20% of their HS in military systems. Any ship built with more than 20% of its spaces in Military systems MUST be built as a Warship. Warships with more than 33% of hull space devoted to H and or Qv will look like a freighter (even with shields down).

Some Freighters pay reduced maintenance [L7.02].

H1.04.3.1 Commercial FT of 7 HS and smaller do not have to allocate a cargo hold to the exclusive use of their maintenance (but they must still have a cargo hold). The small amount of cargo space required for their maintenance can be stored (for one month's use) without requiring its own dedicated cargo hold(s).

H1.04.3.2 Freighters receive double damage from internal hits because they have Weak Hulls [D4.04].

H1.05 Bay Mounting Limits

Non-Fast hulled units are limited to bay (1 Bs, Bl, Bf, or Bg) per 30 HS [B?.03].

H1.06 Restricted Arc Weapons

Starship weapons are normally installed in turrets. However, large weapons on smaller units may have to be mounted in a "spinal-mount" fashion that limits their arc.

> ***Note:*** Homing weapons, like Missiles and Plasma Torpedoes, can change directions in flight and thus their arc is unrestricted when spinal mounted.

H1.06.1 There are three types of mountings that weapons can be placed in: forward or rear (same concept), side (both), or turret. Turret is the preferred mounting (fires 360 excluding blindspot if any. Side fires into either of the 60 degree side arcs (including those half hexes). Forward/rear mounts fires into forward/rear 120-degree arc.

Ships must be at least a certain size compared to the weapon in order to mount in the various ways. The following table gives the size of the ship compared to the weapon to allow specific mountings. See [D3.01.4] for a visual image of the arcs.

H1.06.2 How to mark the arcs on your ship control sheet There are a few designations that are used to mark the arc of a weapon on the ship control sheet [A4].

The forward arc is noted as "+" (For example, "K+" is a forward arc kinetic gun)

The rear arc is noted as "-" (For example, "L-" is a rear arc laser)

The side arcs are noted as ">" (For example, "Fc>" is a side arc capital Force beam)

Turreted weapons have no extra notation (For example, "E" is a turreted energy beam)

Table H1.06 Restricted Arc Weapons

Hull Type +weapon	Turret	Side Arc	Forward or Rear
Any Hull + Homing weapon	Never restricted	N/a	N/a
Normal Hull + SRW	More than x3	More than x2	x2 or less
Fast Hull + SRW	More than x5	More than x3	x3 or less
Normal Hull + Kinetic	More than x50	More than x5	x5 or less
Fast Hull + Kinetic	More than x100	More than x7	x7 or less
Base[a] + SRW	More than x2	N/a	N/a
Base[a] + Kinetic*	More than x3	N/a	N/a

[a] Bases must be more than double the size of a kinetic weapon to mount it.

H1.07 Did You Remember?

There are a number of systems that require other systems to work properly, and ship designs that require or are enhanced by certain systems. It isn't uncommon to forget to install the proper systems, or the proper amount of systems!

Reminder #1: A Good guideline for total passive defense (armor plus shields) is: 13% + x% of the unit total HS, where x is the higher passive defense (Ax or Sx) generation. *Example*, S4 & A5 would be 13 + 5 or 18% of the units HS.

Reminder #2: Don't forget to equip these *ESSENTIAL* systems as they become available: Datalink and EMS.

Reminder #3: If fighting an enemy who uses one kind of weapon most of the time, don't forget to equip the right defensive systems! LRW = D/Dc, T = Td, etc.

Reminder #4: Units intended to fight long range missiles duels for long periods of time need lots of ammo. Don't forget to install extra magazines to keep them well supplied.

Reminder #5: For weapons with long range (15+), don't forget to install longer ranged sensors (Y), if needed! Otherwise you won't be able to fire farther to the weapons max. range.

Reminder #6: For anti-swarm units, or units with a lot of weapons, don't forget multiplex tracking (Mx) for units with many different weapon types or if you expect to fight lots of small spaceships. Without multiplex-tracking your units will have penalties for shooting at multiple units, and often you will have more weapons than targets.

Reminder #7: Total ship cost [L6.01] and total ship size [AA.03] both round fractions up to the next whole number. Maintenance rounds up to the next high 0.1 MC [L6.01].

H1.07.1 Determine the units effective WP transit size [C4.02.2].

H1.08 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. Also consider that certain weapons skip certain systems, so you may need to alter the control sheet to protect vulnerable systems from certain types of weapons. You'll learn most of this through experience, so don't get frustrated if your first few designs don't work as expected.

H1.09 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.

H2 BUILD YOUR OWN SCENARIO (BYO)

Now that you know how to build ships and bases, what do you do with them? Aside from building ships for campaigns, you can also do custom scenarios, often referred to as "BYO Scenarios." These types of scenarios are usually just competitions to see who can build the best fleet given a certain amount of money, certain technologies, and the rules.

H2.01 SETTING UP THE SCENARIO

There are a number of things that must be considered for setting up the scenario: the playing area, amount of resources (money), technologies available, build restrictions, and who sets up first. If you are playing scenarios as a contest or information tournament, the only suggestion we have is that the same rules be used EVERY time, and that the technology and money be the same for both players.

H2.01.1 Playing Area The first thing to consider is where the battle is going to take place. This is usually in one of four places: open space, around a planet, around a star, or a warp point assault.

If you play in *open space*, it is important to remember that you will start in full visibility, at maximum weapons range of each other. This is a flat map with nothing else on it. Another possibility is the ambush scenario with one player starting DF-down and inside maximum weapons range but just outside sensor range.

If you play *around a planet*, then there is a planet in the middle of the map. You can play with one of two scenarios: The first way is that both fleets start at maximum range with the planet in the middle, both fighting over who owns the planet. The second way is that one player starts in possession of the planet and can build bases, space stations, and ground bases (PDC) to protect it.

If you play *around a star*, the best way to play this is to have both fleets around the edges of the star, with the star halfway between them. In this type of battle the star blocks sensors until you go around the edge, and although similar to open space battles, this type of battle can be won or lost if your scout cannot find the enemy before he finds you.

The last type of battle is the toughest, the *warp point assault*. This can be played one of two ways, both difficult for the attacker. The first way is that one player surrounds the warp point and protects it from attackers coming from the other side. This is the standard warp point assault. The second type of assault is where the attackers are already in the star system, and are attacking the warp point from deep space (perhaps the attacker is trying to exit the system vs. a stronger opponent).

H2.01.2 Amount of Resources This is a simple determination of how many Mega-Credits each player gets to spend. Depending upon the scenario, it is advisable to give some players a little more money to balance out a tougher starting situation. For games using technology at SL5 or lower, a lot of games are small (less than 500 MC), but then good amounts can range from 1000 MC to HUGE battles of 10,000 MC or more. The higher the technology, the more ships cost, and the less ships you can buy in this range. A good recommendation would be to start with 1000 MC as a "small battle," 10,000 MC as a "medium battle," and 20,000 MC or more as a "large battle." Every SL over 5, increase this amount by 20%. It is not recommended to have battles over 50,000 MC in size (at SL5 technology) unless your READY for the huge amount of preparation and game time that battles that size require.

For warp point battles, when the attacker is attacking THROUGH the warp point is it suggested that he have more resources than the defending player. NOTE: It is impossible to give even a rough amount of resources the attacker would need but it is dependent on how long it will take the attack to transit his forces through the WP with a normal in-a-line transit. The longer it takes for his whole force to transit, the higher the percentage of resources he'll need.

H2.01.3 Technologies A good standing rule for BYO scenarios is that all the players have the same science levels. However you can do a couple of varieties:

One suggested idea would be to limit the number of available weapon branches to 1, 2, or 3 branches. The following branches are suggested: Missile, L, K, E, F, Lp (if you have L), Fp (if you have F), Ep (if you have E), and T. The capital branches are considered part of the original tree. You can also limit the defenses available to 1 or 2 branches. The following branches are suggested: D, EMS, and Dc.

Maximum of three weapon trees open, 6-10 weapon Branches open or x number of total weapons SLs (SLs is more flexible. SL in branches are "bought" separately.) To get Cap Missiles (SL5 cap in the branch and SL5 missile requires 7 SLs, 5 to get missiles up to SL5, 1 to open the cap missile branch, 1 to get SL5 cap.)

Another suggested idea would be to limit the available drive technologies to either I or J drives.

H2.01.4 Build Restrictions One of the most important considerations of any scenario is "building restrictions." A "building restriction" is when you prevent one of the builders from building specific hulls or styles, such as bases, space station, freighters, etc. Why is this important? Because sometimes you want to see if you can win with or without certain techniques.

Good examples of build restrictions are:

- No bases, asteroid forts, or space stations in *open space* playing areas.
- No freighters for warp point assaults.
- Only build units under a certain size (swarm technique).
- Only build units over a certain size (battle line technique).
- Build 1/2 total HS in units over a certain size (Balanced fleet technique).

There are many possibilities, and this is definitely one area that the players can experiment with, and have a lot of fun with.

H2.01.5 Who Sets Up First? The last decision to make is who sets up first, and what are the conditions for setup. Does he get to setup as if he owned the place? (like planet or warp point defenses). Does each player setup at maximum combat range and move into combat? This is important. But one rule should always be used: if a player is supposed to *start* at a location such as a warp point or a planet, then he should setup as if he owned it. Then, and ONLY then, should the player be allowed to hide units behind planets or drive-field down.

So get to it and have fun!

H3 DESIGNING AUTOMATED PLATFORMS

Automated platforms (AP) are small buoy devices that are custom built to a specific purpose. AP are built by constructing a hull and installing miniaturized systems into the AP hull.

H3.01 HULL CONSTRUCTION

AP are built as a whole shell (all the HS must be built, unlike a ship which can choose any number up to its maximum).

H3.02 SYSTEM INSTALLATION

Once the hull has been built then systems can be installed as per [AP.01]. The entire hull of the AP does not have to be filled with systems.

H3.03 CONSTRUCTION CONSIDERATIONS

Once the AP hull has been designed the player can build it as a small craft [M2.07].

Next Section: J - Strategic Components

J – Strategic Components

CAMPAIGN STARFIRE is the name given to the "strategic" or "campaign" rules for STARFIRE. CAMPAIGN STARFIRE is a "4X game" (eXplore, eXpand, eXploit, eXterminate) that allows players to build and expand their own empire to dominate the galaxy. Players build fleets and supporting infrastructure using the resources available from their homeworld, colonies, allies, and the worlds of alien races that they conquer. Along the way the player will encounter other player races and non-player races (NPRs) that they will avoid, ally, with, or fight.

The tactical STARFIRE scenarios are rooted in the "official" future history, which will be revised and continue to develop and expand as the 4th edition game series is expanded. CAMPAIGN STARFIRE is designed to allow two or more players to create their own history rather than following the races and events described in the "official" history, and to create their own battles and empires.

Star systems and the characteristics of non-player races (NPRs) are generated randomly, using the rules and tables provided, either prior to the game start by the Space Master, or during the course of the game. This creates an infinitely variable strategic game with a unique universe, unique races, and unique game play for every single game.

An open-ended campaign system is presented for use with a Space Master, but while a Space Master increases player uncertainty and enjoyment, the random on-the-fly generation rules also make the system suitable for play without a Space Master. Since generation of the galaxy and NPRs can be done as the game proceeds, those games do not require a Space Master and no player can gain any advantage because of "pre-game intelligence." Several possible setups have been included in the appendixes, along with suggestions for custom campaign setups for your individual gaming group desires. Because CAMPAIGN STARFIRE uses the rules from tactical STARFIRE as the basis for combat, players should be familiar with Rules A-H and the technical systems in [AppAA-Technology Trees and Systems] before beginning any campaign.

Players should also understand that the rates at which processes such as shipbuilding, research and development, population growth, etc., which occur under the strategic rules have been *considerably* compressed. (By a factor of 10 or 12, with each game month representing what would in reality be about one game year.) This has been done to simplify and speed up game mechanics. The "historical scenarios," on the other hand, are structured at a pace which reflects rather more realistic time requirements, which is one reason the fleets available to the historical empires do not increase enormously over the period of a given war.

Enjoy creating your own races, battles, and empires!

Keep in mind that the strategic game does NOT replace the tactical game, but instead often generates battles that are played using the tactical game.

J1 Scale

The scale of the strategic game is identical to that of the tactical game, explained in section [A1]. The tactical components are thoroughly explained in Section A.

J2 Strategic Turn Sequence

Each strategic turn (month) is played in a series of phases and steps. At the strategic level, all players perform the actions of each phase simultaneously. Typically the record-keeping step is completed as a single step, and then all communications, tactical actions, and counter-actions and counter-orders are done one event at a time by the SM or both the SM and players (for local games).

> ***Note:*** Throughout the rules, the term "month" should be read as "Strategic Turn". This avoids confusion with the term "turn" which refers to "Tactical Turn" (30 seconds).

I. Economic Phase
- Population Growth (if any) [L1.04].
- Calculate Revenues [L3.01].
- Make required payments
- Maintenance [L7.02].
- Spend available resources
- Record changes in economic potential
- Make and pay for political offers [T2 and T3]

II. Information Phase
- Evaluate Overt Intelligence Data [Section U]
- Invest in Covert Activities
- Resolve Covert Activities [Future product?]

III. Monthly Activities Phase
- Receive new military units
- Write Movement Orders [Q1].
- Move military spacecraft and convoys
- System Triggers and Tactical Combats
- Receive resources arriving via CFN or Imperial Freighters during current month [L4].
- Respond to alerts and communications, re-issue counter-orders, etc.

IV. Political Phase
- Political Control: check for rebellion of conquered planets and resolve any revolts [V5.06].
- Extend First Contact to Sustained Contact with newly encountered races [T1].
- Resolve political offers and receive replies

V. Record-Keeping Phase
- Record unit losses due to combat
- Record population losses, CFN shipment losses (due to raiding), etc.
- Record survey, exploration, and R&D discoveries
- Record all CFN shipments that reach their destination, and add those cargoes to the destination's total
- Record all changes since Phase I

J2.01 THE ECONOMIC PHASE

During the economic phase, each player does the following:

- Calculates population growth (if a growth month),
- Determines the gross planetary value (GPV) of each planet he controls as of the beginning of the month,
- Totals that for an empire income and adds any additional source of income such as trade treaties, the previous month's treasury, etc.,
- Decides what to purchase (if anything) including making all political offers,
- Records the new treasury balance for the next month.

Resources shipped between star systems via the CFN are immediately available to the player, as it is assumed that credit is given until the resources arrive. The empire also guarantees protection of civilian freighters and must replace their losses when intercepted by commerce raiders or the like [L4.10.4.3].

J2.02 THE INFORMATION PHASE

During the information phase, all information-gathering activities are resolved. Information may be gathered overtly (openly, by the acknowledged information gathering agencies of an empire) or covertly (through secret espionage activities). Information gathered from either sort of activity is also evaluated during this phase. Note that covert activities are possible only in Space Mastered games and are optional rules.

J2.03 THE MONTHLY ACTIVITIES PHASE

During the monthly activities phase, each player receives and records any replacements (new military units), organizes and/or reorganizes his task forces, and writes and executes movement orders. Since this is also the phase in which unknown star systems may be entered or hostile spacecraft may be encountered, some timekeeping and sequencing are required. All space combat, planetary assaults, and survey work takes place during this phase. At the end of the monthly activity phase, the arrival of all economic resources, PTU or personnel, and goods shipped between star systems via CFN is noted and recorded. Differences in income from the Economic Phase of the current month reduce or increase the treasury as appropriate.

J2.04 THE POLITICAL PHASE

During the political phase, each player-controlled conquered planet is checked for political unrest. Any rebellions that occur are fought out in this phase. Once rebellions have been checked for, each player determines political control for the following month by resolving political offers with NPRs and other player empires and/or landing additional PCF on conquered planets.

J2.05 THE RECORD-KEEPING PHASE

All changes that occurred between the first phase and this phase are recorded, but specifically:

- Any military losses
- Population losses
- CFN and shipment losses
- Survey and exploration discoveries
- All shipments via CFN that reach their destination(s)
- Any other record changes
- R&D rolls and results

J3 GAME MAPS

The CAMPAIGN STARFIRE game system uses two types of maps, which are all incorporated into a single large four-part hex map: the system display map and the tactical map (same map used for the tactical section as described in [A2]). Many players prefer to have multiple maps for battles that occur across multiple star systems, and in situations where tactical battles occur when there are still units in other areas of the system map.

J3.01 SYSTEM DISPLAY MAP

The "system display map" is used to set up entire systems and, when necessary, conduct system play openly. When setting up the system, remember to include known, to all involved races, warp points, planets, asteroid belts, etc. If using hidden movement [A2.02], then each player will have a separate map with only the information known to him, and the location of his own units. The SM will notify the other player(s) whenever he detects a unit that is not his own.

> ***Note:*** When the tactical scale is triggered and you do not have any extra maps, remove all units from the system display map noting their locations for later, and set up the tactical map.

J3.02 TACTICAL COMBAT MAP

The tactical map is used to resolve contact and combat between various forces. When units moving at the system level drop to the tactical level, they are set up the same distance from the center in a direction corresponding to the direction from which those units entered the system hex. The center unit(s) of each player's formation are placed on the appropriate even radian with other units placed in any desired and appropriate formation around the center. However, no opposing unit can be closer than 2d10 hexes plus the maximum weapons range of any weapon present (With no space master, use the weapon range rounded up to the nearest number divisible by 10).

Next Section: K - Setup of the Player Empire

K – Setup of the Player Empire

In CAMPAIGN STARFIRE, a player's starting empire setup is a critical portion of the game. How the player setups up his empire will affect the entire game and how he plays it. This section reviews player empire choices and what the player needs to do to properly setup his empire. In addition, we will give the player pointers on what kinds of choices he will need to make, and how they will affect his game.

Please note that the following information and rules are not for setting up NPR Empires. Those rules can be found in [Section Y].

K1 What Is Your Empire?

An empire is not just a name or a face, it is a population of people with a distinct background and future. The empire is an entity of people that works together to advance itself in science, exploration, and warfare. But what does your empire look like? Simply put, your empire is comprised of six branches:

K1.01 Populations

Population is where the majority of your empire's income is generated. You start the game with a large population on your homeworld, and then colonize outward from there. Your empire's population will soon expand to many multiple star systems.

The trick is to carefully balance the need for colonization (to increase income) with the risk of exploration. Your larger benign world populations will generate more colonists that you can possibly use but each new system explored runs the risk of finding enemies. While any resources used for colonization will take away from the other areas of your empire, that cost will eventually be offset by the increase in income generated by the new populations.

Colonization is one of the most profitable investments your empire can make but only if your careful. Even the colonization of asteroid belts is a good investment, because of the huge potential population that can grow there.

K1.02 The Economy

The economy is literally the income generated by your populations, the movement of those resources, and the construction of units (both military and not). In general the empire's treasury is what supports the activities of ALL other branches of your empire, and when the treasury runs out of money the empire stops building and functioning. All monies generated are considered "tax" monies, and are only a fraction of the total empire's civilian economy. All economic transactions are made on a monthly basis. Each empire uses "megacredits" (money unit of one million credits) as the standard economic unit. All wealth and non-monetary resources in the game are quantified into megacredits.

Megacredits are obtained from the economies of the star systems that an imperium controls. The value of a planet to an imperium is determined by using the tables provided [L3], and is based on the exploitation of the planet's resources and the production capability of the planetary population. All resources generated on a planet may be used on any other planet with a spaceport or by any space station in the same system. The MC balance for all such worlds in the empire is recorded as a single whole (unless the planet has been separated and the CFN cannot reach it [L4.07]). The resources of any planet without a spaceport must be recorded separately and can only be used elsewhere if physically picked up by cargo shuttles.

Any resources generated by any planet may be shipped to other planets or other systems for storage if a player desires [L4.07]. This may be done via the Imperial Freight Network if the planet in question has a spaceport (all inhabited planets have space ports), or via Imperial Freighters which physically collect the resources from the planet(s) of origin. Resources (megacredits) may be used for economic investment, infrastructure expenditures (R&D, command and control structures, etc.), or pure military items (weapons, PCF, warships, bases, etc.).

The CFN is the "Commercial Freighter Network," or a collection of the available civilian holds available to the government for use. This cargo capacity can be used for colonization, movement of resources, movement of goods, delivery of maintenance or equipment (pods and buoys), or anything else the empire can need. Understand that this is civilian capacity, and thus costs the empire to use. The CFN also provides some services for free, such as the delivery of messages, and the transfer of all goods and populations within a single system. When the empire's income grows, and so does the size of the civilian economy, and the available capacity of the CFN.

The empire's construction ability represents the majority of all construction ability, civilian or government. While the populated planets have their own production (and some of which the empire can use), the most valuable construction takes place in shipyards in the orbit of populations. In addition to constructing new units, this segment of the empire is also responsible for refits and repairs of older units.

Construction requires resources and is limited by the technology available to the empire. The higher the EL of the empire is, the faster it can build. While any number of units can be built simultaneously on the planet's surface, the rate of construction is severely limited compared to shipyards. This causes a choke-point when a large number of units needs to be constructed or repaired at a high rate of speed, and the option is to build more shipyards, or wait it out and hope you won't need the extra building capacity for very long.

K1.03 The Military

The military consists of your offensive sword, your defensive shield, and your ear to the ground. Your fleets, defending bases, and ring of tripwires are what help you conduct warfare, whether it is to attack an enemy race or defend from an attack by an enemy race.

Fleets of ships are your offensive arm, reaching out to attack any enemy that dares to come near. Fleets enable you to go out and do unto others. Without sufficient ships, your military's mobility and firepower goes down, and so does its ability to go on the offensive.

A network of bases both repels and discourages attacks from an enemy. Bases are most important around warp points (so you can attack the enemy when it is weakest on the offense), and around your planets to defend them until your fleets can arrive to chase down the enemy ships. But bases have little mobility and can be a long term liability, so again, balance is necessary.

K1.04 Research and Development

Research and development is a highly specialized section of your empire, and one of the most important. Through research your race's EL goes up (and thus its income and build rate). Through science level research, new technologies become available, which you can develop into new weapons and systems.

There should be NO circumstances in which you are not researching your next EL. Likewise, the SL of your main branches of technology should always be at least equal to your EL, if not higher! You can always spend extra money to get your SL a few levels higher than your EL, and then develop higher level technologies, as those are great surprises to spring on your enemies.

K1.05 Exploration

Exploration is a tricky part of your empire, and can be very dangerous or very rewarding. Basically, the more systems you explore the greater the chance you'll find a habitable planet (or more than one). But at the same time, the more you explore, the more NPRs you find, and the more NPRs you find, the greater the chance that you'll run into an NPR that won't like you. It is a trade off, but you should always be exploring as hard and fast as you can unless you are already involved in a war and can't afford to accidentally get started in another.

K1.06 Foreign Relations

Foreign relations in CAMPAIGN STARFIRE are the diplomatic dealings with NPRs and Player Races. You will basically have three types of foreign relations: allies, enemies, and isolationists (non-intercourse relations where they don't want to ever see you again).

You will have to make contact with races through "First Contact Communications" where you attempt to learn their language and establish the ability to communicate. Then you will need to find out what kind of relations they are willing to pursue, whether it be friendly, none at all, or war. Sometimes it isn't entirely clear, so caution is advised.

Eventually you will either conquer or become friendly with most races, and then you will step up their relations until you become partners or amalgamate with them. This will basically merge your two empires to be a single, stronger entity.

All political interactions other than First Contact [T1] with other races, including activated NPRs, allied/conquered populations, and other player empires, take place during the political phase of the month. There are 22 possible political states which may exist between empires (whether player or NPR). The exact meaning and consequences of each of these states is defined under the political interaction rules [T3].

When any NPR is discovered, its initial political relationship with the discovering empire must be determined. If the initial relationship does not cede control of the NPR to the discovering empire, the NPR will be run by the SM (if there is one) or an uninvolved player, using the NPR economic and military guidelines [Y10].

Political relationships are determined by negotiation and/or military action. Conquered races are controlled by placing planetary control forces (PCF), or military forces, on the conquered planets, which may or may not rebel against the controlling empire [V5.06]. Certain other relationships give a player empire partial or full control of an NPR [T3.13.1].

Player empires that come into contact with one another may make treaty agreements during the political phase. Player races may also attempt to change their political relationships with NPRs, but no more than one attempt per NPR may be made per month. Each conquered population must be checked for rebellion once per month.

K1.07 Keeping It All Together

Even though your empire is made of six distinct branches, it is important to realize that no empire can function without ALL six branches being healthy. For example, you cannot completely forget about exploration because then you won't have any new worlds to colonize and increase your income. In many cases the branches rely completely upon one another in order to be able to do their job (such as the military relying upon the economy for money, and relying upon research and development for new advanced weapons).

Sometimes you can choose a strategy which will lower your concentration upon one branch and focus on another, but in general it isn't a good idea to do that unless there is a specific need (for example, researching new technologies that you encountered and are needed to win the war).

K2 Setup Rules

These setup rules are the most basic rules for setting up a player empire. While your campaign may not follow these rules, these are the basic rules you can expect to use in any other circumstances. In the event that your SM does not specify, it should be assumed these are the rules you will start with.

K2.01 Beginning Infrastructure

Each player in the game takes the role of one of the races that have achieved warp travel and has just looked into 3 adjacent systems. Obviously, player races have created a technical and economic presence in their home star systems, so the first order of business is to create their home worlds and beginning infrastructure.

K2.01.1 Players start with a Very Large Population with 2005 PU on a Rich Benign T world or ST world (or equivalent for Unusual Life Forms [HH3.06]). Each player's home system should have an equal number of habitable worlds and an equal number of asteroid belts.

The SDS recommends one habitable world and one asteroid belt in the starting system (could be binary or single star). The starting systems should have equal short-term colonization abilities (in particular, within 10% of the same total possible PU on each environment with the same richness (for *example*, 100 PU on Very Rich O2 worlds/moons). If not, game imbalance is likely. In addition, it is strongly recommended that each home system have exactly 3 open exit warp points (more of other types are ok but should be roughly balanced among players).

K2.01.2 Playtesting has determined that even with equal home systems, the variation of the adjacent systems is far too great to allow even roughly balanced starts. Luck early in a campaign can have a major impact on the outcome due to "economies of scale" and the "value of money." Thus, the starting point of a new campaign is when the government/leader receives word of the characteristics of the 3 adjacent star systems. In total, these systems should have the following characteristics:

- 5-7 outgoing "open" WPs (There might be more WPs of other types). 5 WPs on 1-2, 6 WPs on 3-8, 7 WPs on 9-0.
- 1-2 Habitable worlds (none are VP, VR, nor have NPRs.). If only 1 Habitable, it is Benign. If 2 habitables, one is Harsh and one is Hostile. Like the home system, the combined colonization possibilities for each type of colonization of VR, R, and N environments should be within 10% of each other.
- The 3 adjacent systems have not been surveyed, just probed [Q2.02] and they do not have NPRs.

K2.01.3 A player race's base grade is average. All ships start as BG. All player races start with 1 BG+1 Admiral and 1 BG+1 General [Section S].

K2.01.3.1 *OPTIONALLY*: Player races can also start with a BG+1 Governor on his homeworld.

K2.01.4 Each race receives free: 10 SY (and the SS hull to hold them plus HQa), the default interstellar base CFN capacity (don't forget to design the freighters), 100 IU, and 100 PTU. There is no cost required to emplace the PTU but it takes 2 PTU to equal one emplaced PTU on a Extreme body and *no* more than 1/2 of the PTUs may be placed on any single body (none may be placed on the Home World). Player may not use starting funds to increase these numbers.

K2.01.5 All player races start with the full amount of the system's science academy (SA) [N4.01] and double their system's research facility (RDS) limits [N4.03]. (3 SA and 6 RDS if the world is a 2000 PU large world)

K2.01.6 Player race's starting resources are high in order to allow the players to defeat an early, nasty NPR. Ships may start in mothballs.

NOTE about setups: The normal state of affairs assumed is that part of your fleet is in mothball. This means that players who choose not to do so will have an unusually high fleet maintenance and will tend to fall behind in the economic building portion of the game. Since CAMPAIGN STARFIRE is above all other things an ***economic*** wargame, you will lose the game if you fall too far behind in economics.

K2.02 STARTING RESOURCES

- Each player receives megacredits to buy certain types of things to build his forces with. An item qualifying for two funds may be built with money from both funds.
- EL 2 hulls and Prototypes cannot be build from any fund.
- 5,000 MC Survey Fund: These ships may be armed, must have an X system but are limited to a maximum of 60 ships. Only FT0 or FT1 with X can be built.
- 5,000 MC Battle Fund: These ships cannot mount X, must be armed, and must be ES size or larger. Bases, squadrons and shuttles can be built. FT, PDC, and SS cannot be built.
- 2,000 MC Other Fund: Can build warships, X equipped ships of DD or larger size, FTs, PDCs, SS, shuttles, and bases. Nothing else is permitted. CFN FT strongly recommended.

K2.02.1 Transit carriers, if they have X, must be built with the survey fund. If they don't have X, they may come from either the warship fund or the other fund. Armed carriers may only come from the warship fund.

K2.02.2 *(Optional)* Allow the war fleet fund and survey funds to be mixed as long as no more than 60 survey ships result, and no more than 5,000 MC is spent on non-X equipped units. This can add some interesting flavor with better-armed survey units.

K2.03 STARTING TECHNOLOGIES

Each player must decide what kind of technologies he wants to use.

K2.03.1 Economic Technology
Players start at EL 2, with science trees open at SL 1.

K2.03.1.1 *Optional*: Campaigns may start at any agreeable economic/science level. Keep the theme of EL being one above SL.

K2.03.2 Weapon Technologies 1 of each of the following at SL 1.

- **Short Range Weapon:** Laser (La), Energy (Ea), Force (Fa), X-Ray Laser (DeC/Lj)--- NOTE that Ga is not allowed.
- **Long Range Weapon:** Missile (Ra)+Mg/Mgs, Kinetic (Ka), or Plasma (Pta)+Mg/Mgs.

K2.03.3 Engine Technologies Choose one at SL 1

- I Engine (SL1) – Ia, Ica
- J Engine (SL 1) – Ja, Ica

K2.03.4 Construction Technologies The Construction tree is linked to EL but only the EL-1 technologies have been prototyped or developed. These are (for an EL 2 start)

- Max size hulls: DD, BS2 FGf, FT4, and PDC.
- CL prototype available for build during the first month.
- Cargo Holds – H, Hs
- Atmospheric Capability – (AC)
- Hidden Ground Bases and Silo Missiles [E8]
- ShipYards – (SY), (SYM)

K2.03.5 Other Technologies The players start with ALL of the following technologies:

- Electronics (SL 1) – M1, CICa, (MNE)
- Life Support (SL 1) – Qv, Qa
- Small craft (SL 1) – st, (Bsa), gig
- Construction Tech (linked to EL) –
  Max size hulls (all are prototyped): DD, BS2, FGf, & FT4.
  CL prototype available for build during the first month.
- Sensor (SL 1) – Ya
- Science Instruments (SL 1) – Xa
- Planet Surveyor (SL 0) – Xp
- Armor (SL 1) – A
- Shields (SL 1) – S
- Tractor Tree (SL 1) - Ta
- Magazines (Mg and Mgs) may be available [AA.07.1]

Note: If the SM decides to change the technologies available, and specifically lift the restrictions in [K2.03.2] so that the players can choose any combination of weapons, the player may select a combination that is disadvantaged compared to the selections above. In [K2.03.2] if a player selects two long-range weapon branches, the player will be disadvantaged in warp point battles. If the player selects two short-range weapon branches, the player will be disadvantaged in open space battles. You've been warned.

K2.03.6 Pre-Game Prototypes *Optional*: Allow the building of prototypes, at full cost, during the pre-game month.

K2.04 Player Race Protection (Optional)

Being attacked early in a campaign by a NPR can be devastating to a player empire and the NPR can sometimes wipe the player race out of the game. As an option, the players and SM may agree to let the Player Empire survive an attack by any NPR upon his home system.

The player may call for this option at any time once an attack upon the home system is begun. The NPR will then agree to withdraw from the player's home system, and the player will agree to never intrude in the NPR's space without triggering an immediate renewal of war without this option being available (the NPR keeps all occupied star systems).

This option is only available for the first 10 months of the game. After that point, any NPR that had been affected by it will continue to abide by their peace agreement.

No communications are required to achieve this situation. You can consider it a self-imposed blockade of the player system by the NPR, where the NPR chose not to conquer the player.

Should the player ever encounter this same NPR elsewhere in space, the contact will be treated as an intrusion and war will begin again. The NPR will still refuse to conquer the player's home system if it is before the month of the time limit for this player advantage.

K2.04.1 This protection rule can be unbalancing if players scrap or mothball more than 70% their starting warfleet fund MC OR build large amounts (50% or more) of bases or SS with the warfleet funds. Therefore, the SM should not apply this rule to races that take the above risk. The actual values and the method the player is running the race should impact upon the SM decision. The goal is to prevent players from running without serious defenses during the early months expecting that the protection rule will "save them."

K2.05 Home System

The player may roll his star system, or the SM may assign the player a star system. Since this is to be his home system, he cannot accept or be assigned a system that does not have at least one benign system body (usually T or ST planet) that can support the largest population for that life form type at EL 1. Multiple habitable planets and asteroid belts should only be allowed if all home systems have the same number of habitable planets and asteroid belts.

Some Unusual Life Forms [HH3.06] may be required to spread out over multiple benign bodies to make a home system.

K2.05.1 Players do not check for NPRs or system exploitation for home systems. No player race home system *ever contains* more than one race and no adjacent system ever has an NPR either.

K2.06 Racial Traits

After generating systems and populations, the player makes 3 (d100) rolls and gives one of those numbers each to one of their racial traits. They are as follows:

- **Racial Militancy (RM):** How much the military means to your race. Can be a violent race bent on conquest, or a militant race where one has honor for serving in the military.
- **Racial Chauvinism (RC):** How quick or slow your race is to accept aliens and strangers. Low RC could be quick acceptance or worship of those greater than themselves, and high RC could be a race that hates all aliens, or simply wants to isolate itself from any alien influence.
- **Racial Determination (RD):** How determined your race is to reach their goals and to survive. This is a general overview of the attitude of the people, whether they let fate take over (low RD) or whether they are determined to create their own fate and persevere against any opposition (high RD).

The last value is **Racial Outlook (RO)**, which is an average value used to index of all the above traits. This is found by adding up all three values for the above traits and dividing by three (FRN).

Optional: Players may use K3 and K4 to design custom races.

K2.07 Pre-Game month

After making all of the rolls above, each player uses the starting resources granted in [K2.02] to expand his empire's beginning infrastructure and military forces. All spacecraft purchases are considered as built at the mass production rate (no surcharge) and shipyard usage is ignored (instant builds). None of a player's "starting balance" may be carried forward.

In all cases, the pre-game month is a month-long period before the first game month.

K2.07.1 Once the beginning infrastructure has been created, play begins on Day One of Month One of the new galactic era.

K3 Player Race Design (Optional)

For years players have clamored for the ability to design their own races much like the Master of Orion series. Here is an optional set of such rules that seems well balanced.

See Racial Ability Descriptions for attribute effects.

K3.01 Race Design Points

All races get 10 points to spend on improving their race plus any points they accumulate from negative advantages.

K3.01.1 Amalgamating races may pick and choose their abilities but may only choose among those ability levels they already possess (or levels in between those that they possess). The new race MUST have total positive points of 10 or less.

> *Example:* Race A has +0 income while race B has +10% income. Either +0, +5%, or +10% income could be chosen for the new race. Negative incomes could not be chosen because those are outside of the range (+0 to +10%) of the two races amalgamating.

> *Example:* Race C and Race D both have crew grade of BG. The new race can only have crew grade of BG and nothing else.

K3.01.2 Alternate Levels (Optional) Many modifiers are percentages and in between levels can be created. i.e., 7% income. Determining the points requires to get these levels is as easy as dividing the points required to move between levels by the percentage of the adjustment up from the lower level and adding the points to get to the lower level. 7% income would be 27 points.

(45 pts - 15pts) * (7%-5%)/5%+15 pts.
-15% survey pts would be
(9-3) * (-15% - -10%/-10%) + 3 pts = 6 pts

K3.02 RACE DESIGN TABLES

Each ability has a level and cost listed after it. All percentages are FRU.

Income		Maintenance		EL R&D		SL R&D		Construction		Colonization		Growth Rate	
-10%	-42	+20%	-19	+30%	-20	+40%	-18	+20%	-16	+20%	-30	0.6%	-33
-5%	-17	+10%	-7	+15%	-8	+20%	-7	+10%	-6	+10%	-10	0.8%	-11
0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	1.0%	0
+5%	+15	-10%	+8	-20%	+8	-25%	+7	-15%	+6	-10%	+7	1.5%	+15
+10%	+43	-20%	+24	-40%	+24	-50%	+21	-30%	+18	-20%	+21	2%	+45
								-50%	+35				

Initiative		Base Crew Grade		Training Adjustment		Graded Leader		Ground Combat		Advanced Tech		RP needed		RP Rate	
-2	-8	Poor	-48	-2	-19	0	0	-40	-10			+20%	-16	8	-27
-1	-3	Green	-24	-1	-7	none	-30	-20	-4	0 SL	0	+10%	-6	9	-10
0	0	Avg.	0	0	0	LG	0	0	0	-1 SL	+3	0	0	10	0
+1	+3	Crack	+10	+1	+6	LG+1	+10	+20	+3	-2 SL	+7	-10%	+5	11	+7
+2	+9	Elite	+32	+2	+18	LG+2	+30	+40	+8	-3 SL	+15	-20%	+15	12	+21

Build Rate		Initial Contact		Political Offer		Survey Points		PTU Size		Breakthrough Max. Percentage		Habitability Range	
8+EL	-16	-6	-18	-6	-21	+20%	-9	12 Qv	-12	8%/-40%	-15	0	-10
10+EL	-8	-3	-6	-3	-7	+10%	-3	11 Qv	-4	9%/-20%	-5	1	-4
10+EL*2	0	0	0	0	0	0	0	10 Qv	0	10%/0%	0	2	0
10+EL*3	+4	+3	+5	+3	+6	-10%	+3	9 Qv	+4	11%/+20%	4	3	3
10+EL*4	+12	+6	+15	+6	+18	-20%	+9	8 Qv	+12	12%/+40%	12	4	7

K3.03 STARTING MODIFIERS

Races do not receive bonuses to their STARTING Construction and Income levels.

K4 NPR RACE DESIGN (OPTIONAL)

Using the tables in K3, NPRs can also have variations on their race design.

An analysis, slightly out of date, is provided at [AppCC-Racial Design General Analysis (From EC 49)].

K4.01 PRIME MODIFIER

75% of the time, a NPR has a PRIME positive modifier. A prime modifier increases either -- 1 ability by 2 levels (75%) or 2 abilities by 1 level (25%).

K4.02 SECONDARY MODIFIER

75% of the time, a NPR has a SECONDARY positive modifier. A secondary modifier increases 1 ability by 1 level.

K4.03 WHAT IS MODIFIED

Roll 1d20 on the table (reroll missing results) to determine the area of the prime or secondary modifier. Then the space master may either choose the actual ability or randomly determine one. If ability is chosen twice, it is increased from its previous level. If the ability is already maximized as to levels, then roll for a new area to place the extra levels.

Money Modifiers
1 Income
2 Maintenance
3 EL R&D
4 SL R&D
5 Construction
6 Colonization

Growth Modifier
7 Growth Rate

Combat Modifiers
8 Initiative
9 Crew Grade
10 Graded Leader

Combat Preparedness Modifiers
11 Training Adjustment

R&D Modifiers
12 Advanced Tech
13 RP needed
14 RP Rate

Construction Modifier
15 Build Rate

Political Modifiers
16 Initial Contact
17 Political Offer

Survey Modifiers
18 Survey Points

Colonization Modifier
19 PTU Size
20 Habitability Range

K4.04 Negative Modifiers

Once all positive abilities are determined, then determine the amount of negative points that must be distributed. Multi-system NPRs are always limited to a final total of +10 ability points. Single system NPRs can have more than +10 points. Each 20 full months of game time that has passed gives the NPR 1 additional point to use.

K4.04.1 Negative modifiers are randomized but will generally not be in the same area as any primary or secondary modifier. Keep rolling negative modifiers until the NPR has +10 (plus 1 per 20 months) or less ability points.

K4.04.2 Use of this rule allows NPRs to ignore general spending limits set in section Y.

K4.05 Racial Ability Descriptions

Regardless of your choices, the more you use something the more value it will have. If you like big fleets, get low maintenance. If you get reduced colonization costs, colonize like crazy.

Combining bonuses can make for a really powerful race design. Low maintenance (big fleet) and high crew grade can make for a strong fleet even if R&D abilities must be sacrificed.

The best thing to do is to design your race to fit your style of play or at least the style of play you intend to use in the game. See EC#49 for further analysis

K4.05.1 Income - This modifies all income from PU and IU (after the asteroid bonus). It does not increase revenue from trade, leasing, or any other source.

K4.05.2 Maintenance - This modifies a race's final empire wide maintenance cost each month. In addition, because section M8 is based on the maintenance cost, mothballing and demothballing costs are adjusted. Lowered maintenance means a race can support more ships for the same cost or have more MC for other parts of the economy. Either way, it is helpful as a typical race has around 40% of its income tied up in maintenance every month.

K4.05.3 EL R&D - This modifies the total cost of EL R&D during a month. It does not affect SL R&D or breakthrough project cost.

K4.05.4 SL R&D - This modifies the total cost of SL, tech development projects, and breakthrough attempts.

K4.05.5 Construction - This modifies all construction costs for ground facilities [M7] and all M4 projects and tasks EXCEPT for reactivating a mothballed unit, which is covered under maintenance. This modifier does not affect the List Price of a unit and thus does not impact maintenance cost or scrapping.

This modifier also applies to Leasing Income [L4.09.3] and maintenance of CFN ships (including government ships leased to the CFN) to prevent game imbalance.

Players selling or buying FT from the CFN use the construction cost to set the price, NOT LIST COST.

K4.05.6 Colonization - This modifier affects all colonization costs including the CFN transportation fee.

K4.05.7 Growth Rate - This modifier affects the growth rate of all populations.

K4.05.8 Initiative - This modifies all fleet initiative rolls.

K4.05.9 Crew Grade - This modifies the base crew grade of your entire race EXCEPT for graded leaders. Thus, BG+1 fleet will gain a +1 initiative during combat if no leader is present but will NOT gain that +1 modifier when a graded admiral is present.

K4.05.10 Training Adjustment - This modifies the Crew Grade advancement number that results from the F3.04 table. Both standard training and combat intensity advancement rolls are affected. If a number is modified below 1 (or above 9), use D2.03 to see if the ship advances (or not). Leader Advancement rolls are NOT affected.

K4.05.11 Graded Leader - STARTING Graded leaders start the game at a higher level than LG+0 or you start with no leaders (you can still gain leaders the normal way). Does not affect any Governors.

Note 1: The points here assume a game in which you start with 1 LG+0 Admiral and 1 LG+0 General and no governors. Campaigns using more leaders or leaders with different starting grades should carefully adjust these values or not use them at all.

Note 2: Race Design Crew Grade and Leader Grade do not affect each other. See Graded Leader section for revised extended ability leaders [Section S]

K4.05.12 Ground Combat - This is a modifier to the Assault Phase table [V4.08], Consolidation Phase table [V4.09], and PDC Reduction table [V4.07]. In addition for the purposes of capturing facilities [V4.04], subtract the modifier from the enemy RD, i.e., a +20 modifier from the table reduces the enemy RD by 20.

K4.05.13 Advanced Tech - This modifier applies to SL within a single tree and a single branch of that tree. Both of which must be specified at the beginning of the game. Example: If a -2 SL applied to the Fp branch, then the Fp branch would start at SL 4 and all SL and items available in the Fp branch would be reduced by 2 SL while the F tree itself would be unaffected. Or the F tree could be improved but not the Fp or Fc branches.

> ***Note:*** When reducing a tree/branch with other branches attached, those branches must remain at the same nominal level. Thus, a -2 to the F tree would reduce Fb to SL 1 but would leave the Fc branch at SL 5.

This "ability" may be selected for multiple branches.

Game Start: All items at an SL of -- EL -1 or lower -- are deployable on starting ships regardless of how they got to that SL.

K4.05.14 RP needed - This modifies the amount of RP needed to complete any SL or development project. It does not affect EL R&D.

K4.05.15 RP Rate - This is the maximum amount of RP that the race can apply to any project, including EL projects each month without using acceleration rules.

K4.05.16 Build Rate - This modifies the build rate of all construction facilities of any type.

K4.05.17 Initial Contact - This modifies die rolls on the initial contact table. A +3 increases the likelihood of full communications by about 3% (which is about 11% fewer wars in the early game).

K4.05.18 Political Offer - This modifies all die rolls on the political acceptance table. A +3 increases the likely hood of treaty acceptance, particular with high RC races and tends to result in fewer wars.

K4.05.19 Survey Points - This modifies the number of survey points required to complete any type of survey.

K4.05.20 PTU Size - This modifies the size of each colonization or evacuation PTU, which changes the amount of space in a Qv needed to transport each colonist. In general, this reflects a larger or smaller sized race.

K4.05.21 Breakthrough Max. Percentage - This modifier changes the maximum amount of percentage points that can be purchased at an SA during a month. More and quicker breakthroughs have obvious advantages. The 2nd percentage applies to the SA but not RDS facility purchases, increasing or decreasing their cost.

K4.05.22 Habitability Range - This affects the ease with which a race can live on other habitable worlds [Table L1.03.1 T/ST Environment] by altering the Habitability Difference that determines which environment each Habitable World has.

For T races, it affects T planets. A habitability range of 1, would mean that a T5 race would treat a T7 world as harsh, instead of benign.

For ST races, a value above 2 affects T worlds. A value below 2 is only allowed if the optional rule [W6.07] is in use. It affects ST worlds.

For unusual life forms races [HH3.06], this must be HR 2 (zero pts).

K5 RECORDS AND FORMS

CAMPAIGN STARFIRE has provided a set of forms that the SDS found useful in running an empire. These forms will be provided both in the appendixes for photocopy, and on the web site (**http://www.starfiredesign.com/starfire**) for players to modify for their custom campaigns. The SDS suggests that all the players use these forms (or identical variations) so the SM can process the game months at a quicker pace. The information on these forms should be all the information you will need to know about your empire.

K5.01 MASTER ASTROGATION CHART

A complete map of all the star systems and how their warp points link, basically an overview of the empire.

K5.02 EMPIRE SUMMARY AND TREASURY

The summary has the race's basic information and a treasury with total income and expenditures by category.

K5.03 POPULATIONS AND INCOME

This is a master list of all the populations in the empire, their sizes, incomes, and other information.

K5.04 COMMUNICATIONS AND REPORTS

This is a master list of all communications and reports that were sent or received somewhere in the empire.

K5.05 CFN RECORD

This is a master list of the CFN and the size of its pools, plus what was shipped, movements, usage, and costs.

K5.06 CONSTRUCTION RECORD

This is a master list of all construction being carried out in the empire, including future orders to do so, and how far along they are.

K5.07 FLEET ORGANIZATION

This is a complete list of all the units in the game, what fleets they belong to (if any), where each fleet or unit is, etc.

K5.08 MASTER ORDER AND MOVEMENT RECORD

This is a master list of all movement orders carried out in the empire, excluding the CFN (unless it is intercepted).

K5.09 MAINTENANCE RECORD

This is a complete list of all the units in the game, what maintenance they pay, what stockpiles they carry, etc.

K5.10 RESEARCH AND DEVELOPMENT RECORD

The R&D record has a list of all EL, science, and tech projects under development, and all known sciences and tech developments.

K5.11 ESPIONAGE AND INTELLIGENCE

This is a list of all espionage activities and all espionage and overt intelligence reports received by the empire.

K5.12 DIPLOMACY AND RELATIONS

This is a list of all known races and how they relate to your empire, what negotiations are underway, etc.

K5.13 STANDARD OPERATING PROCEDURES

This is a master list of all SOPs that your empire has issued, and to whom they apply to.

K5.14 MASTER DESIGN LIST

This is a master list of all ship designs that your empire has available, any notes, standard loadouts, etc.

K6 STANDARD OPERATING PROCEDURES

Standard Operating Procedures (or SOP) are directions for how your empire's forces should behave in specific situations. While you can write SOPs for nearly any condition, there are a few specific ones that new players tend to forget. Why write SOPs? Because the Space Master will many times perform the actions and activities of your fleet during the month, and if he lacks information on how to do it he may do something that you didn't want to happen.

One good SOP point would be to command your units to transit all warp points at general quarters [F1.02]. This would be so your units are not surprised and killed by enemies on the other side, so that you can have a fighting chance or just be able to send a courier drone to warn others. SOP are used by the SM, and can be as long or as short, and cover ANY conditions the player desires.

K6.01 How To Write SOPs

SOPs are written for one thing: to tell your forces how to act under certain circumstances. A clearly written set of SOPs will define the condition under which you want them to react (such as transiting a suspected hostile warp point), and then define EXACTLY how you want them to react (transit in a line at general quarters, launching fighters as soon as transit is complete).

You need to be very careful when writing your SOPs, as you need to be as exact as possible. For example, if encountering a hostile race you may want your fleet to "return to the nearest benign world to defend it." If you write "return to the nearest world to defend it" your fleet might stop at that O2 outpost in the next system over because it was closer.

Also consider that the Space Master might use your SOPs as a reference in the event something unexpected happens. Some people like to write a set of "rules" to cover situations that your SOPs do not cover. Common rules are: do not interfere with low tech races, do not fight a combat with an unknown alien force when you can retreat to safety, etc. You'll find that your rules and SOPs will expand as situations occur, and you should always carry from one campaign to the next those SOPs and rules you find most useful.

See [AppCC-Standard Operating Procedure Examples] for examples of writing SOPs.

Next Section: L - Populations and Economic Infrastructure

All money and resources in STARFIRE are represented as "Mega-Credits" (MC), which represents a "million credits" of money or manufactured goods and materials. Because everything is handled in mega-credits, there are no other resources in STARFIRE (unless you count populations as resources).

The total power of any Player Empire or NPR civilization is mainly dependent upon its economic and technological power, which is a product of its population, economic level, and resource base. Additional wealth can be gained from trading with NPRs or other players [T3.10], but by far the greatest portion of a player's economic power will be generated internally by his imperial population.

L1 Populations

Populations may be indigenous to a given planet or non-indigenous (emplaced there as colonists of a HEL race) and are defined in categories based on their ability to produce wealth rather than on any specific numbers of citizens. These population categories range from Outpost, the smallest, to Very Large, the largest. Permanent indigenous populations are always at least "Small" or larger, while Outposts, Colonies, and Settlements are non-indigenous population enclaves emplaced on a planet, moon, or asteroid by a HEL race.

Each system body in the game, other than starlike bodies, has the potential to support some level of population based on the life form that wishes to inhabit it.

The environment of a system body varies depending on the life form type that is inhabiting it [Table HH3.06.1a Life Form/Planet Environment Type]. T and ST races must use Habitability Index and Table L1.03.1 T/ST Environment to determine final environment type. Other life types merely record their racial HI for future use.

Once environment type is known, then the maximum population size can be determined [Table HH3.06.1b Population Limits] or [Table L1.01b T/ST Population Limits] (data for T/ST life only).

L1.01 Population Units

The "Population Transport Unit" (PTU) and the "Population Unit" (PU) are key concepts and different from each other. The PTU is the measurement unit used when transporting population to a different location. The PU is the measurement unit used when calculating income. Each PU generates one MC of base income.

Table L1.01a Population Type/Conversion

Population Units	Population Type	Populations Transport Units	Conversion Factor
1-20 PU	Outpost	1-20 PTU	N/A
21-60 PU	Colony	21-60 PTU	N/A
61-180 PU	Settlement	61-180 PTU	N/A
181-500 PU	Small	182-820 PTU	PU = 2 PTU
501-1,000 PU	Medium	830-5,820 PTU	PU = 10 PTU
1001-2,000 PU	Large	5,890-75,820 PTU	PU=70 PTU
2,001+ PU	Very Large	76,320+ PTU	PU=500 PTU

Note concerning population boundary sizes: Certain PTU values, like 821 and 5850, are not listed on the table. These boundary values do not compute correctly with the formulas. Treat the unlisted values as being the highest value of the lesser population size (i.e., 821 PTU is 500 PU.

Table L1.01b T/ST Population Limits

World Type	Maximum Population Size	Growth Bonus
Benign Planet	3000+250*EL[a]	Size *(EL+ 8)% with a maximum increase of 20%
Harsh Planet	1500+200*EL[a]	
Hostile Planet	750+150*EL[a]	
Hostile Moon	400+100*EL	
Desolate Planet	Settlement[a]	
Extreme Planet	Colony[a]	
Extreme Moon	Outpost	
Asteroid Belt	LM times 20	[W7]
Habitable Gas Torus	LM times 150	[W7.04.1]

[a] If the world is a moon, reduce maximum population size by one row. (i.e., A benign moon would be 1500+200*EL.)

Table L1.01a Population Type/Conversion lists how many PU make each population type. While population types are calculated in PU, populations are moved in PTU and the conversion factors are also listed-- rule [L1.02] explains the conversion process.

L1.02 PU / PTU Conversions

In large populations, the number of PTU is actually larger than the number of PU. Small populations and bigger have a "conversion factor" that lets you calculate exactly how many PTU are on the planet (and thus the actual number of people). The following rules convert PTU into PU and back.

Note: The conversion factor only applies to the PU in the same bracket as the current population type. 550 PU only has 50 PUs in the same bracket (501-1000) and the conversion factor only applies to those 50 PUs. So 50*10+ 820 PTUs convert to 1,320 PTUs. (820 is the maximum amount of PTUs (not PU) in the next lower population bracket.)

Example L1.02 – Population Conversions

L1.02.1 Converting PTU into PU Find the bracket that the amount of PTU puts you in. Subtract the maximum amount of PTU for the next lower bracket. Divide the remaining amount by the conversion factor (FRD to 0.1 PU). Add the maximum amount of PU for the next lower bracket (EX: Large is 1,000 PU).

L1.02.2 Converting PU into PTU Find the maximum PU value for the next lower population size, and subtract that from the current PU. Then multiply by the conversion factor. Then ADD the maximum PTU value for the next lower population size, and the result is the total PTU in the population.

Adding PTU to a population larger than 180 PU also requires conversion, in the other direction. Convert the existing population PU size into PTU, add the new PTU, and convert the entire PTU quantity back into PU at the new size.

Simplification: Unless you move from one population bracket to another with a different conversion ratio, divide the PTU by the conversion factor for the current population bracket, and add that many PU to the population (FRD to 0.1 PU).

L1.03 ENVIRONMENT DEFINITIONS

Life Bearing is used in regards to the life form in question. So a hot world would bear low level hot life form and thus be life bearing to a hot race. But a cold race would view the world as non-Life Bearing.

Habitable means life bearing, which includes Benign, Harsh, and Hostile environments.

Non-Habitable means non-life bearing, which includes Desolate, Extreme, and Death environments.

There are six possible Environment Types in Starfire.

Benign means the population (life type) can survive and thrive on that world without aid.

Harsh means the population (life type) can survive with minor help from equipment, somewhat habitable.

Hostile means the population (life type) can only survive with help from equipment, barely habitable.

Desolate means the population (life type) requires life support equipment just to survive at all.

Extreme means the population (life type) requires life support equipment and the world is somehow especially difficult to survive on for that life type. Difficult environments, for a particular life type, could be extreme (high or low) temperature, pressure, or just toxic environment.

Death means the population (life type) will die, regardless of life support equipment shortly after arriving (hours at the most).

L1.03.1 Habitability Index Different HI races may treat a world's environment differently. Note: HI 1 and HI 10 are only 1 apart (essentially HI 11 is treated the same as HI 1). Thus, an HI 2 race treats HI 10 T worlds as Benign (2 different).

Table L1.03.1 T/ST Environment

Race	World	HI Difference	Environment
T	T	Within 2 (HR)[a]	Benign
T	T	Not within 2 (HR)[a]	Harsh
T	ST	Any[a]	Hostile
ST	ST	Any[a]	Benign
ST	T	Within 2 (HR)[a]	Harsh
ST	T	Not within 2 (HR)[a]	Hostile

[a] The value two (2) can be altered by Race Design Habitability Range [K4.05 - Habitability Range]

L1.03.2 All populations of a race always retain the same HI of their home planet regardless of the current environment they exist in. When colonizing, the population's (or racial) HI is used to set the colonized planet's environment, not the planet the colonists departed from.

L1.04 POPULATION GROWTH

To make for a more interesting game and to reduce the overall effects of NPRs, population growth has been accelerated roughly 12 times from the (human) real-life growth rate (considering longer life spans, encouragement of reproduction, unlimited food, etc., this rate is believable for a per year rate. Of course, STARFIRE uses 10 month to the year). Additionally, PU growth is given priority over PTU growth despite some weird actual population number growth rates on higher populated worlds. SDS recognizes these differences but have left them in to make the game more enjoyable by having the income of a planet grow consistently and not the actual population size.

When growth exceeds a planet's maximum population, the extra PU are non-income producing colonists which must be used or lost on the next turn.

L1.04.1 All population units (PU)] grow by 1% each month and must be done in 10ths of a PU (FRD).

L1.04.2 IND-1 and IND-2 grow at 1/2 rate. Conquered worlds grow at reduced rate (see [AppT1-Table T3: Summary of Forced Control Statuses]). Pre-Ind worlds and worlds under ground assault do not grow (exception [L1.04.3] still applies).

L1.04.3 Economic Level Growth When a race increases its EL, all populations increase in PU size by (EL+8)% with a maximum bonus of 20%. Thus, the bonus for reaching EL 2 is 10% added to the normal monthly growth rate. This represents increasing efficiency by the workers. EL also influences the maximum amount of population on habitable worlds [Table L1.01b T/ST Population Limits.]

L1.04.4 10th-Month Growth (*Optional, not recommended*) This rule cuts down on paperwork for players without computer support. Regardless of when a planet is found or established, every 10th GAME month (those ending in a '0'), growth occurs at the beginning of the month before new colonists land and before income is gained. Growth must be done in PU. All PU grow by 10.5% every 10 months (FRD) [L1.04.2] still applies to 10th month growth.

IU may only be sold without restrictions on growth months.

IU may be sold on any month when a race is actively at war [N14]. However, the money received from the sale of IU may only be used for new construction, repairs, refits, or de-mothballing.

L1.05 POPULATIONS PRODUCING MANPOWER

Populations are generally so large that finding sufficient crews is never a problem. However, starships do still have crews that are sometimes effected by various weapons, damage, and other things. Personnel points are automatically supplied to man units when they are built, repaired, or reactivated. When a unit receives maintenance, it also receives any replacement crew it may need.

L1.05.1 In general, each hull space of a large unit requires one personnel point of crew including holds and armor. While this may not seem quite right, it is much simpler to ignore the differences. Each damaged HS also causes one personnel point of crew loss but successful emergency repairs return those HS of crew to duty (minor injuries). A shuttle's crew is inherent and that unit provides its own life support.

L1.05.2 Armed small craft squadrons each come with 2 sets of pilots in order to reduce fatigue. This is rarely important and ignored for most purposes to simplify things. The Small Craft Bay [B?] supports the extra set of pilots.

L1.05.3 Shields are not "destroyed" when they are knocked out. Accordingly, a unit loses no personnel points from "damage" to shields.

L1.06 POPULATION DENSITY

Not all populations are spread around their world evenly. The populations (PU) and any industrial units (IU) are spread around the planet facings of the world in the following manner:

- Benign and harsh world populations are spread evenly among all six planet facings.

- Hostile, desolate, and extreme environment populations are all within the same planet facing. Roll on the scattergram to determine which facing the population occupies during a battle. *Optionally* players can choose the planet facing and track the revolutions of the planet (1 facing per 4 hours). This option is not recommended.

L2 ECONOMIC LEVELS

A population's ability to produce wealth depends heavily upon its technological attainments. The Economic Level of a population is used to evaluate its wealth-generating capacity but also impacts R&D of science levels. Science Level and Economic Level are *NOT* always identical. For the purposes of 4th generation STARFIRE, the economic level is considered to be the population's general learning level. The higher that economic level, the more efficiently workers work, factories and machines function better, etc. Also since R&D scientists are taught under the school systems of the general population, economic level limits the maximum Science Level that a race may have in any one area of scientific advancement. Races that are not as advanced as "High Economic Level (HEL)" societies are termed "Low Economic Level (LEL)" (this currently includes Pre-Industrial, Industry 1, and Industry 2 Economic Levels).

A **Pre-Industrial Economic Level** indicates an agrarian civilization which has evolved a degree of sophistication in tool-making and city-building capable of generating at least some surplus wealth, although (by the standards of higher-tech civilizations) only a very limited amount. The rough Terran equivalent would be from late Bronze Age to approximately 1800 AD. No Pre-Industrial population may be larger than small, the technology to support a larger population simply is not available.

An **Industrial-One Economic Level** indicates a civilization which has completed the first stage of industrialization and developed a factory-based production system but has not yet progressed far beyond steam power or the very early stages of fission power. The rough Terran equivalent would be from the 1800's to when Fusion first became available (Date: 2025).

An **Industrial-Two Economic Level** indicates an industrial civilization that is in transition from purely planetary industry to a true space-based culture. This may also be thought of as a "High Frontier" civilization, since some orbital space technology is available but practical inter-planetary space flight is not. The rough Terran equivalent would be from approximately Fusion until to roughly 2040 when the first crude reactionless drive is created. An IND-2 population produces a moderate amount of wealth and is limited to "Medium" or (rarely) "Large" size.

A **HEL Economic Level** indicates a civilization centered on advanced technology, including space flight. A NPR HEL population may have substantially exploited its own star system or even other star systems. HEL populations are capable of generating large amounts of wealth and can support populations of any size. HEL populations also have the technology to colonize inhospitable worlds and support populations on those worlds through mining of asteroids and moons.

L2.01 ECONOMIC LEVEL ADVANCEMENT

Conducting research and development (R&D) increases an empire's economic level. It is important to remember that a economic level represents a general level of knowledge, not specific hardware produced *using* that knowledge. It is necessary to research and develop specific technical systems before they can be built [N2.04]. The economic level of any star system rises one level in the month immediately following that in which its development is completed.

Note: Research and Development is explained in [Section N].

L3 GROSS PLANETARY VALUE

The Gross Planetary Value of a planet (or moon) is equal to the total amount of wealth that planet is capable of generating for governmental use each month (strategic turn). Please note that the GPV *does not* represent a planet's total wealth production, only the percentage of planetary wealth which the government can extract. Determine a GPV for a planet if any of the following occurs:

- maximum populations are adjusted for the current EL,
- old population grows,
- new population starts producing income,
- industries are sold or bought,
- new industries start producing income.

L3.01 CALCULATING GPV:

- Multiply the number of PU [in 10ths (FRD)] by the mineral content/environmental value income modifier.
- Add IU.
- Multiple by any Low EL modifier (IND-2 is 90%, IND-1 is 60%, Pre-Ind is 30%). To simply and balance things, HEL increases are handled as Growth.
- Apply Asteroid belts bonus. AST Belts provide a 10% bonus to the GPV per belt for HEL populations in the same star system. To use the bonus, the in-system CFN must be in place [L4.11]. Any belt more than 1 StMP from a population provides no income bonus.
- Apply any Economic Variety Bonus (EVB)[T3.14.5]
- The Gross System Value "GSV" is the sum of the GPVs.
- When a planet's income increases due to the placement of new PTUs or when the Economic Level increases, the increase is available at the start of the next month.

Example L3.01 - GPV Calculation

L3.02 INCOME MODIFIERS (REI AND ENVIRONMENT)

Income is modified by both the environment (how much effort a population puts into wealth generating efforts as opposed to efforts to maintain a safe and livable environment) and by mineral content

(quantity/type of valuable minerals a system body has and how easy they are to access). See Section L3.02.1 for REI modifiers.

Table L3.02 Mineral/Environment Value

REI Value	Mineral Content	Income modifier		
		Habitable	Desolate	Extreme
1	Very Poor	60%	60%	60%
2-3	Poor	80%	75%	70%
4-7	Normal	100%	90%	80%
8-9	Rich	120%	105%	90%
10+	Very Rich	140%	120%	100%

L3.02.1 REI Modifiers

Table L3.02.1 REI Environmental Modifier

World Type	Bonus to REI Roll
T, ST, V, mT	+0 REI
G	+1 REI
O2 (any type)	+3 REI
O1, I, O3 (any type)	+5 REI
Asteroid Belt or HGT	Rich

Note: All asteroids are "rich" mineral and "desolate" environment. While each asteroid is limited to outpost size, for simplicity, we track each asteroid belt as a single population. The total size of a belt's population equals the number of LM from the star times 20 PU. If the exact placement of populations on the belt is needed for some reason, the SM will roll randomly to determine position (assume that 50% of max pop puts an outpost in each asteroid hex). Asteroid Mineral content is determined by an asteroid survey [R3.02.3].

L3.03 INDUSTRIAL EXPANSION UNITS

Governments may purchase extra factories to increase the amount of income the government receives from a planet. IU may only be placed on planets with a Small or larger population. Should the IU be greater than 50% of PU, the extra IUs remain idle and do not produce income.

L3.03.1 Industrial expansion "IU" units cost 30 MC each. IU may be sold for 30 MC on any month.

L3.04 INTEREST ON TREASURY

A race earns 2% interest (FRD) on any amount unspent at the end of the month but this is below most return rates for colonization and IU. NPRs will never save money in treasury unless saving to start a prototype unit or trade startup.

L4 TRANSPORTING IMPERIAL RESOURCES

The freighters (here after FTs) that ply the space-ways between worlds are mostly owned and operated by corporations and sometimes individuals. Some of the empire's commercial (non-government) income is spent building and maintaining these freighters. And while the government can build and operate its own freighters, civilian transportation costs are generally lower due to volume discounts. Thus the ***CFN*** (Commercial Freighter Network) can serve nearly all of an empire's shipping needs. Governments need not build any Imperial Freighters for shipping cargo or personnel, if they do not wish to do so. Unlike Imperial FTs, there is no paperwork needed to account for these operations, thus eliminating a lot of record keeping and orders within the game.

The CFN should be thought of as a large pool of available freighters, with H and Qv capacity, ready to be hired as needed by the government. They can be used for any purpose that any imperial freighter could be used for. Colonization is best-done using the CFN. CFN designs are selected by the player in any combat situation [L4.04] according to the rules for CFN freighter design.

L4.01 CFN TERMS AND DEFINITIONS

Common terminology and definitions are explained before the rules that rely upon them.

Base CFN Pool - A CFN owned pool that comprises the CFN capacity normally available for hire to the government.

CFN – Commercial Freighter Network: The CFN operates for commercial interests and is available to be contracted by government. Just about anything can be shipped via the CFN.

CFN Terminal – The facilities maintained for freight/passenger transfer by populations.

Commercial Pool - A CFN owned pool that comprises the CFN capacity not normally available for hire to the government.

Dangerous System Pool(s) – Each dangerous system pool is linked to a specific dangerous system or WP. Ships in these pools are owned by the Government but provided to the CFN to enable it to overcome naturally dangerous systems that would otherwise divide the CFN. A trade partner's systems can be designated as "dangerous."

Extra CFN Pool - A CFN owned pool that represents the mothballed surplus capacity in the CFN over and above that required to meet its normal obligations. This pool is NOT available for hire.

FTs - Freighters

GEV (Gross Empire Value) – The sum of all GSV earned by an empire including conquered planets, trade income, lease income, treasury interest, and anything generating revenue.

GSV (Gross System Value) - The sum of all GPV in a system.

Government FTs – Freighters owned and operated by the government or military. They may be leased to the CFN.

Government Pool - A CFN "controlled" pool that contains government owned FTs leased to the CFN.

Imperial Freighters – Cargo and personnel carrying large spacecraft operated and owned by the imperial government.

Income – Those megacredits generated from any source within the game on the current month (q.v. wealth).

Pool – A pool is the conglomerate of the H and Qv capacity available as CFN freighters within the empire. The various pools have certain restrictions, uses and costs. The pools are: "Base CFN Pool"; "Extra CFN Pool"; "Government Pool" and "Commercial Pool." Each trade treaty (Free, Limited or Restricted) has its own (very small) "treaty pool" plus dangerous systems and WPs have specific pools.

Pool Capacity Modifier (PCM) - This modifier adjusts the size of the various CFN pools when an empire is very small and most trade is on a planet.

STF – Shuttle Training Facility. The facilities at which shuttle pilots are trained.

TCF – Traffic Control Facility. Used to monitor and regulate the flow of traffic in a system or about a planet.

Table L4.02 CFN Capacity Pools

Pool	Owner	Size or Limit		Growth	Shrinkage
		H	Qv		
Base CFN	CFN	PCM*(GEV+Trade Income)/5 (fixed size)	PCM*(GEV+Trade Income)/10 (fixed size)	From Extra Pool then From Civilian Shipyards	To Extra Pool
Commercial	CFN	9* Base CFN	9* Base CFN	From Extra Pool then From Civilian Shipyards	To Extra Pool
Extra CFN	CFN	Varies from 0 to a max. of 100% of Base CFN	Varies from 0 to a max. of 100% of Base CFN	From Base/Commercial Pool or Purchases from Government	To Base Pool or Sales to Government or Scrapped by CFN
Government	Gov.	Varies with No Limit [but see L4.02.2.4]	Varies with No Limit [but see L4.02.2.4]	From Imperial Freighters	To Imperial Freighters
Dangerous	Gov.	Varies with No Limit [but see L4.02.2.5]	Varies with No Limit [but see L4.02.2.5]	From Imperial Freighters	To Imperial Freighters
In-System	CFN	PCM*GSV/10	PCM*GSV/100	From Civilian Shipyards	Scrapped by CFN

Trade – Trade comprises the goods and passengers that are transported in or between empires. The goods include resources of various types – raw materials; food products; manufactured parts; industrial machinery; etc. Trade megacredits are not 'Money'. The volume of trade is calculated from the megacredits of income generated by the planets in the empire and from the trade-bonus values of trade treaties.

Trade Megacredits (MC) – MCs do not represent "money" within the game, in general, when transported. It represents resources of various types, including raw materials, food products, manufactured parts, industrial machinery, etc., which is simply quantified in terms of megacredits to make bookkeeping much simpler.

Wealth – Wealth is any megacredits stored within an empire for any purpose and were not generated that month (q.v. income)

L4.02 CFN CAPACITY POOLS

Each CFN pool capacity represents the amount of the CFN that can be leased to the government. Each CFN pool capacity is the sum of all H plus Hs and of Qv in the freighters comprising that pool. Except for the Government Pool, commercially owned civilian facilities are used to construct the additional freighters required by the pools as the economy expands.

Individual ships are ignored but designs placed in the pool are tracked [L4.04]. The maintenance for CFN owned FTs is paid by the CFN.

L4.02.1 Pool Capacity Modifier (PCM) All NPRs have their base pool capacity adjusted by the PCM.

IND1 and Pre-IND NPRs PCM values are always 0.

IND2 NPR's PCM is initially zero. On each month after the technology to build freighters is available, the PCM will increase by 10% of PCM until 50% of PCM is reached.

A non-multi-system HEL NPR's PCM is 50% of PCM. On each month after a race transits is first WP (not into another race's system), the PCM will increase by 10% of PCM until 100% of PCM is reached.

A player race always uses a PCM of 1. Optionally, players must also use NPR PCMs.

Large or Very Large populations in Empire	PCM Value WP capable
0	0.1
1	0.2
2	0.3
3	0.5
4	0.8
5+	1.0

L4.02.2 The Pool Types As an empires economy grows and shrinks, the CFN (base and commercial pools) expands and contracts to match the "demand" without costs or resources from the player's imperial income. The base CFN capacity automatically expands/shrinks with the economy (GEV). The table below lists where new FTs come from (when growing) and where FTs go to (when shrinking).

L4.02.2.1 The Commercial CFN Pool Much of the CFN is hidden from the player as it plies across the spaceways to and from locations. For those interested, this hidden amount is NINE times the size of the Base CFN Pool. This amount affects raiding values.

Note that when another empire is captured, its CFN automatically goes to work for the new owners and thus is generally ignored. The new owner is not liable for any losses to that CFN prior to new owner.

L4.02.2.2 Base CFN Pool The "**Base CFN**" pool capacity of an interstellar empire is that which is normally available for government contracts. The FT in the base pool are owned, operated, and maintained by commercial interests. **NOTE**: A player cannot expand his ***Base CFN*** capacity.

L4.02.2.3 Extra CFN Pool The "**Extra CFN**" pool is an overflow pool of CFN owned and operated FT. When the economy is shrinking, the extra capacity is placed in the Extra CFN pool. Because the commercial CFN pool also grows and shrinks, multiply by TEN all H and Qv placed into or taken out of the Extra CFN pool due to growth/shrinkage. This pool has a limit of 100% of the base pool capacity. Any amount above that will be scrapped by the CFN unless immediately bought by the government.

When the **Base** CFN pool increases, the CFN takes capacity from the "Extra CFN pool" first (before building new FTs), thereby reducing the Extra CFN pool (remember the x10 multiplier).

L4.02.2.4 Government CFN Pool The "**Government**" pool is government FTs which are ***owned*** and ***maintained*** by the player/government but which are leased to and operated by the CFN. These FT are not tracked as to location in the game. (Player attempts to cheat the system by adding "specific FT(s)" on one side of the empire and pulling those "exact same FT(s)" out on a later month at a location that they could normally not have reached should be punished by the SM). FT leased to the government pool earns revenues [L4.09.3].

The "Government Pool" capacity may be used in the same way as the base CFN capacity, with the same shipping costs. FT owned by the government, even if leased to the CFN via the government pool, have their maintenance paid by the government (that's you).

L4.02.2.4.1 What can go in the Government Pool? A unit must have at least 20% of its spaces as Qv or H in order to earn lease income (i.e., be counted as a FT). However, any quantity or type of units can be placed in the CFN. But the removal of such units from the CFN is governed by L4.02.2.4.2 which is rather random.

L4.02.2.4.2 Where is it now? Determining the location of a particular design (armed or otherwise) in the CFN is a rather difficult process. As a simplification, determine the number of "possible" systems: any system with a population or any system that must be transited to get to a populated system via the shortest safe route from the nearest large or very population. Number all the systems and roll a number between 1 and the number of possible systems. The number rolled is the system the unit is in. All units roll individually for location.

The player may assign special units to particular routes, or group of connected systems, (run by the CFN) as long as that unit's (or group of units) H and Qv capacity does not exceed that of the route it is traveling (see section V2 on raiding).

OPTIONAL METHOD: The location of CFN units is really based on the population sizes of various systems. Roll a number between 1 and 1000. Divide by 10 and multiply by the empire's total income (or group of system's income, if limited) from populations and IU. Then, starting from the home system, add systems incomes (in an order specified prior to rolling) until the amount is greater than the roll/10*income amount. This is the current BASE system that unit is in. Then determine the route to the closest large or very large population not in the same system. Count the number of systems between those systems but not counting the large or very large system. Roll a number between 1 and number of systems. This number is how far along that route, counting the base system as 1, that the unit is located.

Note: When using the spreadsheets, this income method is easy to accomplish when looking at the upper left of the OTHER page.

L4.02.2.5 Dangerous System Pool(s) Each dangerous system pool, a type of Government Pool, is linked to a specific route which usually includes a dangerous system, WP, or set of systems of a specific trade partner. These pools enable the CFN to overcome naturally dangerous systems that would otherwise divide the CFN.

All earnings from Dangerous CFN operations through dangerous systems are doubled though the CFN receives 1/2 the income (i.e., the player receives normal leasing fees). Earnings are not doubled in trade partners systems.

L4.02.2.6 Locating FTs within the empire Freighters spend their time plying along the space ways between the origin and designation of each shipping objective. There is no easy way to track this but perhaps I've found an acceptable solution.

Economic Capital: Your empire has an economic capital, which may not be the same as your homeworld system. The economic capital is the system that generates the most amount of income.

Trade Number: For each system, determine a trade number. The trade number is equal to 1 per 100 MC of income plus a bonus. The bonus is +2 per small population in the system (asteroid belts do not count), +4 per medium population, +8 per large, and +16 per very large population.

For each system determine its LINK system.

- Small systems (<1000 MC income) link to the closest large system (1000+ MC income). The link's value is equal to the small system's value.
- Large systems (originator) also link to another large system (destination) which is the closest large system which has not already been an originator system. Use the lower Trade Number as the link's value. The Economic Capital is never used as an originator.

Note: The third star of a Trinary is treated as a separate system as is each StMP between the two parts of the Trinary (other oddity situations are treated in a similar manner).

Determine System Trade Value: For EACH link, apply the unmodified link value to EACH system involved in the link including the originating and designation system. (So even uninhabited systems may have FT traffic moving though it). Some systems may have multiple links adding trade value to it. Just total the trade values.

After determining each system's trade value, total the value of all systems. This is the Total Empire Trade Value.

The Formula: The amount of H or Qv capacity transiting a system during a single StMP is System Trade value/total empire trade value * 10 * Base CFN size (plus any PCM modifier). See table above.

Trade Agreement Traffic: Trade agreements also generate FT traffic but these FT are not part of the CFN and therefore must be determined separately. Each system in a trade link - this traffic moves from the trade location of each of the involved empires depending on the type of agreement - gets H or Qv equal to 1/length of link * trade income/50. Because of the low number of H in single systems, you may have to add systems together to make up an FT1 (i.e., some link systems may be empty on a particular StMP).

Converting to FT: Once the H and Qv capacities have been determined, determine the amount of FT in the system via V2.04.1 with the whole system being a group.

When using this method to determine the amount of traffic in a zone, evenly distribute the traffic of each link into the zones that it passes through/into.

L4.02.2.7 Other types of FT Trade agreements generate trade between the trade system and a particular location in your empire (free trade uses the economic capital, not the homeworld). Base FT trade value is distributed among all systems in that route exactly the same except that the distances will be greater and the lower income of the two is used.

L4.03 CHANGING POOL CAPACITY

If a freighter does not have a safe cruising speed of four, multiply the capacity of that freighter by the freighter's speed divided by 4. In all cases for figuring capacity, drop all fractions after completing all the calculations above.

Example L4.03 - Speed and Pool Capacity

L4.03.1 Transferring Freighters Imperial Freighters may be transferred to or from the CFN at the beginning of any month at any CFN terminal.

At the start of the month (after income calculations):

- if the base CFN limits are exceeded by the base CFN capacity, H and Qv are transferred from the base CFN pool to the extra CFN pool until the base-pool size limit is no longer exceeded. If after transferring, the extra CFN pool limit is exceeded, the additional H and Qv capacity is offered for sale [L4.03.3]. If not sold by the end of that month, the additional capacity is scrapped.
- if the base CFN limit is larger than the base CFN capacity then H and Qv are transferred from the extra CFN pool (if available) to make up the shortfall. Any continued shortfall is then made up by (free) CFN construction.

L4.03.2 Buying CFN Freighters FT in "Base pool" may be bought by the player for 125% of that race's construction cost (not list cost) but the capacity removed is treated as capacity lost to raiding [V2].

FT in the "Extra Pool" may be bought for 100% of construction cost. Extra Pool capacity exceeding 75% of base pool capacity may be bought for 75% of cost.

FT for sale [L4.03.1] may be bought for 50% of construction cost.

Note: The government may never purchase small-craft or CFN facilities from the CFN.

L4.03.3 Selling FT to the CFN A player may sell FTs, which are built to CFN standards, to the Extra Pool for 90% of construction cost (not list cost). The CFN will not purchase FT that would increase the "Extra CFN" pool capacity above 50% of the Base Pool capacity.

L4.04 CFN FREIGHTER DESIGN

All CFN owned freighters (Base, Extra and Commercial pools) must be capable of transiting Warp Points and mount only a single type of engine with no extra drive rooms, have at least one hold (H or Hs) and have the minimum required HS in life support. All remaining hull spaces must be used for CFN payload systems (H or Qv). No other systems may be mounted on these FTs (must be FT hull). Exception: see the armed CFN option [L4.12] for adding other systems (including military equipment) to CFN FTs.

All CFN FTs must have a strategic speed of 4 or more.

Note: All cargo holds on CFN owned freighters are available for hiring or leasing unless [L4.12] is used.

L4.05 COSTS OF HIRING THE CFN

The various CFN pools charge the following rates when the government hires capacity from those pools:

Pool	H	Qv
Government	1 MC	1.6 MC
Base CFN	1 MC	1.6 MC
Extra CFN	N/A	N/A
Commercial	3 MC	4.8 MC

L4.05.1 Revenues from the Government Pool The revenue earned by the capacity placed in the Government Pool is as follows:

Type	H	Qv
Standard	1.0 MC	1.6 MC
Excess	0.5 MC	0.8 MC

Excess capacity is any Government Pool capacity that is greater than sum of the Base CFN Pool Capacity less the Extra CFN Pool capacity AND is not in use being hired back to the government.

L4.06 CARGO CAPACITY

Each H of capacity in the CFN pool may transfer 500 MC of maintenance at a rate of 1 MC per Cargo Space Point (csp) or 50 MC of wealth at a rate of 1 MC per 10 csp. Personnel are transported in Qv systems. Other cargo is covered under the rules for the specific material or equipment transferred. See Table E4 Cargo Space Point (csp) Values for ordnance transport requirements.

L4.06.1 CFN Terminals All HEL populations, and IND2 populations where the IND2 empire has a CFN are assumed to have CFN terminal facilities.

L4.06.2 Load Time At the strategic level, it effectively takes no time to (un)load resources/personnel in any system with a CFN terminal.

The emplacement of a new population creates a new CFN terminal, which may be considered usable immediately. At any scale below strategic level, see Table L5.03 PTU Transport Requirements, for cargo and personnel transport requirements.

L4.07 FREE CFN TRANSPORT

As long as all planets within an empire have the required CFN terminal facilities, any HEL population may transfer its income, from any source, to any other CFN terminal within the same empire without cost or delay. This means that all of the income of the entire empire may be treated as a single grand total income and spent wherever desired within the empire (unless cut off [L4.07.4]). Amalgamated races are part of the same empire. Transfer of income does not use any CFN capacity.

L4.07.1 Trade Revenues Trade revenues [T3.10.1] may be transported as income. The fee for setting up a trade route covers assigning CFN freighters and facilities for this mission. Inter-empire transfers of income between Partners may be conducted without delays or costs. (See [T3.10.2] for restrictions on such transfers)

A player may assign Imperial Freighters (including those that have been added to the Government Pool) to the duties of actually picking

up the trade bonus if desired, for such things as intelligence gathering or other military services. See [U1] for more details.

L4.07.2 Maintenance Transport The CFN may move all your maintenance [L7.02], ammunition (part of maintenance), and personnel points, without costs, delays, or capacity use unless contested by an opponent. Imperial freighters can also be used, if desired, or when needed due to hostile action. Unlike the delivery of bulkier cargoes, maintenance only requires a CFN terminal to be present at the originating end of the shipment, not at its destination.

EXCEPTION: The movement rate and current location of graded leaders using the CFN ***must*** be tracked. Graded leaders always use the fastest CFN ships available in the pool.

L4.07.3 Messages The CFN may carry messages between CFN terminals at the speed of the CFN. Messages cost nothing, and use no space.

L4.07.4 Cut-off Sections of the Empire If any section of the empire is "cut-off" (lost contact with the capital) then it has the shipping restrictions listed in [P7.01.1].

L4.08 MC TRANSFERS

Shipping costs are required for MC transfers to all races and are handled as a non-income cargo shipment, with standard CFN charges and shipping times. Exception: transfer to a trade ally or partner is free as the FT go there anyway.

L4.08.1 Treasury Transfers A treasury balance of up to 10% of an empire's total GPV can be treated as income. Any additional saved resources must be shipped as cargo and shipping fees paid.

L4.08.2 Colonization The CFN may perform colonization [L5].

L4.09 OPERATIONS

This section covers how the CFN is used and accounted. In the "Handling the CFN with running totals" section below, the steps are numbered. Some sections below reference the "Handling the CFN with running totals" section with a number listed in () after the title. However, all the rules below apply to any method of CFN operation. All capacity usage is calculated independently for H and Qv.

L4.09.1 Capacity Used (L4.15.2 #3) CFN capacity must be used in whole H and Qv increments and normally for a ***full month*** (Exception [L4.10.3]). If a shipment only requires a fraction of a H or Qv, it still requires the use of 1 full unit of capacity, and the payment of the CFN fee for that capacity.

The capacity of the CFN is expressed in terms of a speed 4 FT. Using speeds greater than this, in effect, increases the amount of capacity not available to the rest of the CFN. Therefore, the shipper must pay for the unavailable capacity. If an empire has technology which offers a faster CFN strategic speed capability than the standard speed of four, this extra speed (increase in shipping range) may be used by paying (per point of increase above 4), a 25% increase in capacity USED (this increases the cost of the shipment). (See [L4.10.1])

Example L4.09.1 - Capacity Usage

L4.09.2 Government Freighter Usage Shipments made using Freighters assigned to the "Government Pool" must pay shipping costs as in [L4.08].

> ***Note:*** That they also earn leasing fees [L4.09.3].

L4.09.3 Imperial Freighter Leasing (#2) Imperial FT assigned (leased) to the Government pool generate income, and thus, help support themselves by paying some of the maintenance. The amount of such revenue equals 1.0 MC per H of capacity, and 1.6 MC per Qv of capacity.

> ***Note:*** While this sum is above the maintenance for the FT, it is below the amount you would have received from IU expansion because of the expense of building and running the shipyards.

L4.09.4 Excess Unused Capacity (#2b) The portion of the Government FT capacity assigned to the CFN and ***not used*** by the player, which exceeds the Base CFN capacity minus the Extra CFN capacity, receives only 1/2 revenue due to excess capacity.

L4.09.5 Exceeding Normal Capacity (#4c) Exceeding the total capacity of the "base" plus the "government" pool is very expensive and the shipping costs are tripled.

L4.09.6 Shipping Cost (#4) The cost of a shipment is based on the amount of capacity used each month [L4.09.1]. The shipping cost via the CFN is 1.0 MC per "H" and 1.6 MC per "Qv" capacity used, per month (or fraction thereof) of shipping. Shipments which take more than one month require a payment for shipping each month, and the payment must be made each month. This rate applies as long as the CFN pool capacity is not exceeded.

L4.09.7 Colonization Rebate (#4b) Because new colony sites increase the marketplace, the CFN rebates 50% of the normal shipping cost for any PTU shipped via the CFN.

L4.10 SPECIAL CASES

L4.10.1 High Speed Unless specifically paid for a higher speed of transfer, the CFN will move goods at a strategic speed of 4 StMP per month. The additional cost of CFN FTs with higher speed means that there is limited capacity available and that the highest speeds are not economical. This additional cost is reflected in the capacity taken up and is:

Speed	Multiplier
4	1
5	1.25
6	1.5

L4.10.1.1 High Speed Availability When higher speeds become available to the CFN, some CFN owned ships will be converted to those higher speeds. This occurs at a rate of 5% of base or commercial pool capacity until the listed limit is reached. Thus the maximum

shipping amount at higher speeds is limited by the availability of faster ships. These limits are:

Max Speed Available	Percentage of Units at a Given Speed		
	4	5	6
4	100%	0%	0%
5	70%	30%	0%
6+	60%	30%	10%

L4.10.2 Wait Time If he wishes, a player may keep loaded CFN ships in place for one or more StMP. (for example, ships carrying pre-fabricated parts might have to wait for a mobile shipyard to arrive). In such cases, treat each StMP of wait time as an StMP of movement for the purposes of CFN capacity and fees.

L4.10.3 Round Trips Shipments of 1 StMP will allow a given H or Qv to be used more efficiently. In this case, reduce the amount of H or Qv capacity used by 1/2 for that shipment.

See [L4.11] for in-system shipping.

This discount is applies even to multi-month shipments which end on the first StMP of the final month.

L4.10.4 Contested Systems Contested systems will block the CFN transfer of resources (including CFN traffic blocked by AP fields [D9.05.3]), requiring transfer aboard specific freighters, whether Imperial FTs or CFN FTs hired to the government. If the CFN is used, the controlling player for that empire may select Government Pool designed freighters before resolving any interceptions. The player is not required to do so until the CFN raid interception [V2] results in an interception.

A system is considered contested if hostile forces are known to be present in that star system, and can be expected to intercept shipments through the system.

L4.10.4.1 Base CFN Pool in Contested Systems Base Pool shipping will not attempt to operate in a system in which hostile forces are expected unless the government assigns combat forces as escorts to protect them. The CFN will trust the assigned escorts to protect them and will attempt to make shipments. A player may choose to curtail shipping into or through a contested system rather than risk losses (see section [V2])

L4.10.4.2 Government Pool in Contested Systems The government pool and imperial FTs will operate in a contested system even without escort, though it may be unwise to do so. Shipments in this fashion may not exceed the government pool capacity and must avoid specifically using the same FT during following month(s) in which that FT could not have reached the starting location.

L4.10.4.3 Replacing Losses Losses to the government pool or Imperial FTs need not be replaced since they are owned by the player.

Losses from the base CFN pool and commercial pool must be replaced. 50% of the losses to the extra CFN pool must be replaced. Note: Capacity maybe transferred from the any CFN pool to the base/commercial pool before replacement is necessary.

'Lost' capacity may be replaced at the start of the month *before* the government debt is calculated.

Lost capacity can be replaced by:

- Transfer of an equal amount of capacity from the Government Pool to the appropriate pool.
- Paying the CFN 20 MC per H or 30 MC per Qv loss outstanding.
- Paying not less than 15% of the above plus a 10% interest on the outstanding balance and deferring paying for the remainder of the H and Qv loss to the next month.

L4.10.5 Dangerous Systems and Warp Points

L4.10.5.1 Limited Size WPs Some WPs are gravity shrouded (W5.05.5) or otherwise have an upper limit on the hull size that can pass through them at all. In such cases, the player must design ships for the CFN that are below the WP size limit.

L4.10.5.2 Other Dangers The CFN will not normally move through systems (or WPs) that are so dangerous that the ships will be destroyed by, or risk destruction from natural (or alien made) conditions. This includes:

- pulsars [W5.05.4],
- coronal warp points [W5.05.4],
- warp points in asteroid belts [W5.05.5],
- warp points in radiation belts around a neutron star [W5.05.6],
- Any system owned by another race that the CFN does not have specific permission to transit unless the races are at war and the military has cleared the system and declared it safe or is escorting CFN vessels, via convoy, through the system,
- and maser nebula [W5.04.5].

In these cases, and in these cases only, the Government may hire additional shipping to the CFN over and above the Government pool.

The maximum volume of H and Qv that the CFN will hire (at normal rates) under these cases to these Pools is:

	In a Dangerous System	Through a Dangerous System
H	2*System GPV (L3.01)	WP ATV (V2.03.2.2)
Qv	System GPV	WP ATV/2

The maximum volume that may be transferred through the system or WP in any one month is then limited to the amount of H and Qv capacity in that pool (Dangerous System Pool) or twice the H and Qv capacity (Dangerous system Pool). 10% of the capacity hired to the CFN by this mechanism is available for hire back to the government at base pool rates; 90% is available at the commercial pool rates!

If the government does not meet the CFN base and commercial pool requirements, the CFN stops serving the system and all income from that system is reduced by 15% and can only be spent on the body that produced the income.

L4.10.6 CFN and Potential First Contact Situations The CFN cannot engage in first contact and does not qualify as capable to initiate first contact. Frankly, the crews of freighters would be scared if they found a new alien. In the event that the contact is a potential first contact, any CFN units involved will fire courier drones to the nearest population or communications base (any BS with (CC)), whichever is closer. The CFN units will remain in place until they have been given orders to move, or a more capable imperial unit arrives. Then the CFN units will continue their job. If the alien becomes hostile the CFN units will immediately move at the highest possible speed for the nearest population or warp point defenses (any ships or bases surrounding a warp point).

The CFN will consider the contact system a hostile system until the alien has made other intentions known. Any CFN deliveries that have not yet moved through the system will instead be canceled, although the player can immediately give new orders for those deliveries if they want to.

L4.11 In-System CFN

Within a single star system, all of the planets, etc. are fairly close and small craft - 'in-system boats' or isb – are used to distribute cargos. The in-system CFN comes into existence when any PTU are emplaced in the system. The in-system capacity is available is given in L4.02. Using the in-system capacity costs nothing.

L4.11.1 In-system shipping costs and capacity

Journey Type	Capacity Used	
	In-System CFN	Interstellar CFN
Between a Planet and its moons	Unlimited	N/A
Between moons of the same planet	Unlimited	N/A
Between bodies in orbit about the same star	Free but limited by L4.02 table	1/10th Standard
Between bodies in orbit about different stars in a Binary system (i.e. <1 StMP apart)	N/A	1/4 Standard
Between bodies in orbit about different stars not in a Binary system	N/A	Standard by StMP shipping

L4.11.2 Contested Systems Any income bonus applicable to a planet's income due to an asteroid belt is lost if the planet loses in-system CFN communications with that asteroid belt. See [V5.09] for additional reductions due to blockades.

L4.11.3 Dangerous Systems Dangerous systems do not have any in-system CFN.

L4.12 Arming the CFN (Optional)

The player may chose to arm the CFN base or commercial pools. The armament is handled somewhat abstractly, and is listed as the number of non-standard ships of given design(s) in the CFN.

L4.12.1 Designs Each non-standard design must be a conversion from a standard CFN design replacing only H or Qv and not changing the order of any other systems. The designs must be lodged with the SM and a class fee is payable by the player when the first CFN freighter of the converted class is converted.

L4.12.2 Refitting While the CFN vessel is undergoing conversion from standard CFN design to armed CFN freighter, the player must pay 1 MC for each HS not dedicated to engines or life support aboard the vessel each month it is in refit (to or from Armed state) in addition to the normal conversion costs (M3.04 Build new system and M3.06 Refit Hull). The government may sell or reuse the systems removed from the freighter.

L4.12.3 Maintenance The government must pay the difference in maintenance cost between the armed and unarmed versions of the FT and 0.5 MC per month per HS of the installed systems as the fee for hiring the space.

L4.12.4 Conversion Limits The sum of the H, Qv and HS assigned to weapons on armed freighters may not exceed the sum of H and Qv in the base CFN, Extra CFN and commercial pools.

L4.12.5 Armed CFN units in starting forces A player may start with armed shipping in the CFN if this rule is being used. The cash for conversions must come from the 'other fund' [K2.02] and must include the cost of hire during conversion and the systems and installation costs. The H and Qv released in this process may be kept or sold, but if sold the proceeds are returned to the 'other fund'.

L4.13 Split Empires

Where an empire is broken into more than one region, each region has a separate CFN capacity. This capacity is based on the income of that region and income transfers between regions are not possible. Having a split CFN does not necessarily constitute a break in communications [P7.01].

L4.14 Shipping Form

For each month of play, you must determine the total capacity used by the player to determine who pays what to whom. This is best done with a Shipping Form. The shipping form should have 6 columns on it (The seventh column, PTU Equipment cost, could go on the income/revenue form).

> ***Note:*** This form only deals with shipments handled by FT assigned to the CFN. Do not total in any capacities used for FT operating outside the CFN which should be handled with warships on a warship movement form.

Example L4.14 – Shipping Form

L4.15 Handling the CFN with Running Totals

The idea is to add and subtract pool capacity as it is increased or decreased each month instead of recalculating the entire amount each month.

L4.15.1 Definitions: In this section only, the following abbreviations are used: GPC = Government Pool Capacity, EPC = Extra pool capacity, PC = Pool Capacity, and BPC = Base Pool Capacity.

Adjusted H and Qv: These are the capacity amounts for ships modified by non-standard speed and design, etc. [L4.03].

L4.15.2 Handling Procedure:

1. Adjust CFN Capacity Pools (in adjusted "H" and "Qv") [L4.03].
   - 1a. Account for any shipping capacity losses which occurred in the military phase of the preceding month.
   - 1b. Determine NEW BPC: New BPC "H" is Total Income/5 and New BPC "Qv" is Total Income/10.
   - 1c. If the current BPC is different from the #1b value, account for any changes. Make changes to BPC and the EPC if applicable [L4.03].
   - 1d. Account for all transfers to or from CFN shipping pools in adjusted H and Qv.

If taken from the Government FT pool, reduce the GPC by the amount removed. If taken from the Extra CFN pool, reduce the EPC. If Imperial FT are sold to the Extra CFN ships pool, reduce the GPC and increase the EPC. If Imperial FT are purchased from the CFN, reduce the EPC or the BPC, depending on where they were obtained from. If new Imperial FT are constructed, they may be sold the Extra pool, or added to the Government FT pool. Adjust those pools affected, by the changed capacity.

2. BASE Government Pool REVENUE: Multiply Government pool H and Qv capacity times revenue value for H (1.0) or Qv (1.6) [L4.09.3 and L4.09.1].
   b. EXCESS UNUSED CAPACITY adjustment: If the (Government pool capacity + Extra Capacity - Shipping capacity used - the BPC) is greater than zero, then reduce revenue earned by the amount above zero times 1/2 revenue value for H(0.5) or Q(0.8).
3. SHIPPING CAPACITY USED: Total the amount of H and Qv capacity used this month from The Shipping Form
4. SHIPPING COST Calculations:
   a. Shipping cost equals SHIPPING CAPACITY USED (#3) times H (1.0) or Qv (1.6) multiplier.
   b. CFN Colonization REBATE: Reduce shipping cost (#4a) by 0.5 for Each H and Qv used to ship PTU.
   c. OVERCAPACITY USE Costs: Take the total amount of capacity used #3 (including colonization). Subtract the Base CFN capacity, and Government FT pool capacity, from this amount. If this amount is above zero, multiply this amount by the shipping cost [H(1.0) or Q(1.6).], times 2 (for over-capacity use charges). Add this amount to the shipping costs [L4.09.5].
5. Add any extra shipping costs due to [L4.10.1] to #4a. Always use the base shipping cost even if PTUs were shipped (don't use the colonization shipping costs). Any extra distance after delivery should be noted in a separate section of the Shipping Form.

L5 COLONIZATION

Colonization represents the movement of labor forces and the industrial infrastructure they require to produce wealth from one planet or moon to another. This may be done for several reasons, of which the three most important are:

1. To increase the wealth of an empire in the long term and to diversify its wealth in the short term.
2. To increase sensor/communications ability, since a population enclave of EL1 or better has a "planet-based transmitter/receiver" (CC) capability [AppAA-Electronics] and may have sensor ability [D5.03].
3. To create an imperial command and control center (or sector capital as per [M7.01]).

L5.01 COLONIZATION DISCOUNT

Using the CFN to transfer colonists and their equipment is considered the normal method of emplacement. Since such emplacements expand the marketplace the CFN provides governments with a 50% price discount (0.5 MC per H, 0.8 MC per Qv) on all such shipments (CFN Grant [L4.09.7]).

L5.02 COLONIZATION TYPES

There are 2 types of colonization, population and economic. The colonization of habitable worlds is a population colonization, whose main purpose is to spread the race across the universe. At each new EL, the maximum population of habitable worlds is increased and the workers become more efficient (represented by the [L1.04.3] growth bonus). The economic colonization of survivable worlds, moons and asteroids is done by government sponsorship of exploitable sites. These sites are manned by mostly short-term contract employees, who leave after their contracts are up, immigrate to more habitable surroundings, and are replaced by new contractees. The population of these sites is limited by the need for workers by the primary industry, the civilian port, and the communications/sensor base. Since these needs are finite there is no call for a large permanent population, and since it is expensive for civilians to build the infrastructure to house and maintain themselves just for their own support, for the most part, they don't.

L5.02.1 Populations with different HI may not co-exist on the same planet. Populations of different races with the same HI must be amalgamated and are treated as one population size.

L5.03 POPULATION TRANSFER UNIT (PTU)

A Population Transfer Unit (PTU) is the basic quantity of personnel and equipment, modified by environment, required for establishing a colony or output. The actual personnel in a PTU is abstracted, but is considered to be approximately 50,000 human-sized beings.

During transport to their new home, colonists (PTU) are in suspended animation. 1 PTU requires 10 Qv of shipping capacity for transport. PTU can only be transported to a colony site after the appropriate survey for that body has been completed. Fractional PTU cannot be transported.

A PTU's cargo (H) requirement varies depending on the environment it is going to be emplaced in. The more unfriendly the environment, the more cargo and equipment is needed to maintain life support for the colonists.

The H component of a PTU must be shipped from the same location as the Qv. The required H can be emplaced no more than 10 turns before the Qv. The H and Qv can be emplaced on the same turn, however, the Qv cannot be emplaced before the H is available.

The complete cost and transportation requirements for each PTU can be found in Table L5.03 PTU Transport Requirements.

The complete cost and size of transporting PTU can be found in Table L5.03 PTU Transport Requirements.

Note: Shipping is extremely expensive. The average "one month" shipping cost has been added to the end of the table to give players a feel for how expensive it can be. Shown is the cost of shipping to a location 2 systems (StMP) away from the PTU source, and includes the emplacement cost and CFN Colonization Discount.

Table L5.03 PTU Transport Requirements

Environ-ment[a]	Emplace-ment Cost	PTU needs[b]		Emplacement cost plus CFN Shipping Cost[c]
		H	Qv	
Benign	6	4	10	16
Harsh	10	8	10	22
Hostile	14	12	10	28
Desolate	20	16	10	36
Extreme	30	24	10	50

[a] Environment definitions located at [Table L1.03.1 T/ST Environment]
[b] Amount of Qv and H needed to emplace one PTU in the environment listed.
[c] Distance of 2-4 StMP including the CFN discount [L4.09.7],

L5.03.1 Colonization and Population Sizes To ship people off a planet, simply convert some PU into PTU. Any extra PTU may be used in future colonization. A world with 1,000 PU or more OR -- a world colonized with a benign or harsh population which is at maximum size -- will provide 2% (FRD) of its PTU per month as "colonists" without reducing the PU on the planet. Any PTU removed in excess of the "colonist" PTUs reduce the number of PU in accordance with the conversion factor.

L5.03.2 Colonization and Conversion Factors When PTU are emplaced on planets with a conversion factor, the PTUs must be divided by the conversion factor [L1.02.1].

L5.03.3 In-system Colonization See [L4.11.1].

L5.03.4 Income Generation All PTU (PU) generate income (and growth) on the month after they arrive on the destination planet.

L5.04 EVACUATIONS

A PTU can be pulled off a system body using ***just*** the Qv requirements, in order to ship just the population to a *habitable* world (remember, you left all their life support equipment on the last world). This only works for shipment to a population of size Small or larger, and they cannot produce any income (nor add to that world's PU) without paying the required colonization cost for the destination world. These PTU can be used to colonize any other world, at the costs indicated.

When a population is voluntarily evacuated, 50% of the infrastructure on the planet is left intact, and may be used to support new colonists in the future. Only the "Qv" requirements for personnel need to be met to re-colonize an abandoned world.

When an evacuation removes PTUs from a system, any remaining population suffers a large morale loss (they were left to die) and income produced by that system is halved for the next three months. If a remaining population is conquered, use conquest penalties instead [V5].

L5.05 SPECIAL CIRCUMSTANCES

In Emission Nebula [W5.04.4] or Maser Nebula [W5.04.5] colonies cannot be placed on any planet or moon not protected by a protective magnetosphere [W5.04.1] as the colonists would be killed instantly.

L6 SPENDING RESOURCES

A player may spend the resources that he earns in a month at any location in his empire (Exceptions: [P7.01.1]). After all expenditures have been completed for the month (strategic turn), the total spent is subtracted from the balance for the system as a whole or, if necessary, for each planet within the system.

L6.01 STANDARD ROUNDING

All STARFIRE incomes (GPV) and ship costs are rounded to the next higher whole MC (FRU). All maintenance costs are rounded to the next higher 1/10th of a MC. This method simplifies bookkeeping. With both costs and incomes being rounded up, the lost fractions of MC generally equal out.

L6.02 EXPENDITURE TYPES

There are three basic categories of possible expenditures, each of which covers many different possible combinations of expenditures. These are:

- **Economic expenditures** are those directly associated with the production of wealth--industrial expansion. These include Economic Level increases, colonization, and industrial expansion.
- **Military expenditures** are those made in direct support of military power: shipbuilding, raising troops, maintenance, and procurement of weapon systems at each Economic Level, etc.
- **Infrastructure expenditures** may support either economic or military activities or both. Infrastructure expenditures include investments in research & development (which enhances both income and military capability), command and control (communication) facilities, etc.

L7 MAINTENANCE

Maintenance is a monthly fee that represents the day-to-day adjustment and repair of equipment: replacement of consumable parts and missiles, feeding, housing, medical care for personnel, and wages. All maintenance methods assume that thrice the actual value maintenance paid or amount in a maintenance fund is "in the pipeline" of CFN FTs as the civilian producers anticipate demands.

Maintenance is calculated as a percentage of the list price of the unit for most units – that is, on their cost had they been built in an "(SY)" – regardless of where and how they were actually built. The list price is not effected by the cost of ammunition, small craft, etc. The maintenance percentage for most large spacecraft is listed on the "hull capabilities chart" [Ship Hull Tables]. A complete list of maintenance costs is provided in [Table L7.02 Complete List of Maintenance Costs].

Designer's NOTE: Why no increased cost for combat? War maintenance costs more for the whole empire. The increased maintenance, missile-building costs can be generally said to be offset equally by wartime increases in production rates. Thus, we can assume that both increase at the same rate. The increased war maintenance includes the cost of all replacement missiles.

L7.01 MAINTENANCE TYPES

Once built, almost all units that are not mothballed or crated pay maintenance. An empire's maintenance costs are tracked as a running total, called the maintenance fund.

Maintenance is paid during the Economic Phase (Phase I) of the month, while changes to the maintenance fund occur in the Activities Phase (Phase III) or the Record Keeping Phase (Phase V).

Received: When new unit is received (built, demothballed, refurbished, or otherwise received) add its maintenance cost to the maintenance fund total.

Lost: When a unit is lost (destroyed, captured, sold, given away, mothballed, crated, or scrapped), subtract its maintenance cost from the maintenance fund total. *Additionally* when a unit is mothballed or scrapped, add its maintenance cost to the current month's ***treasury***, as the supplies for that unit were never used.

Refitted: Refitted ships add or subtract the difference in maintenance amounts during the month the refit is completed.

Mothball/Crated: Mothballed or crated units have trivial or no maintenance costs, so maintenance for such units is ignored.

Refurbished: Any unit that must be refurbished [M2.06] before it can be used is not added to the maintenance fund until after refurbishment is completed.

Example L7.01 – Maintenance

L7.01.1 Long Range Patrols Starships, or Imperial FTs, may carry extra maintenance resources with them in cargo holds, thus increasing their cruising radius when the CFN is not available. This extra maintenance must be specially paid (it arrives immediately if transported via CFN) and tracked in addition to the normal amount of maintenance the ship carries. This extra amount will not be reduced until the ship is not in a system where it can be supplied by the CFN.

L7.02 PAYING FOR MAINTENANCE

An empire that does not pay its maintenance will quickly have trouble defending itself as its combat forces degrade. When lacking sufficient funds for maintenance, the player may decide what units are not supplied with maintenance.

Failure to pay Maintenance Penalties:

Qv: If combat troops (Qv) do not receive maintenance they are lost.

AP: If AP maintenance is not paid in any given system hex, 15% of the AP in that hex are lost (FRU).

Squadrons: Squadrons of small craft lose 10 DP each month that they do not receive maintenance. This damage forces them to reorganize [G1.05] which may result in the loss of entire squadrons.

Large Units: Large spacecraft or ground bases lose operable systems equal in number to 1/10th of their original systems (FRU) *and* one non-squadron small craft for each month maintenance is not paid. Armor and cargo holds cannot be lost due to maintenance failure. Shields lost to maintenance failure cannot be repaired by damage control [E2]. Systems lost due to lack of maintenance are treated as destroyed system which have failed emergency repairs [E2], but absorb damage as normal in combat. They must be repaired or replaced before they can be used again. Loss of a small craft bay also destroys the small craft, which is not repairable. The particular systems and small craft lost are chosen by the owning player, reflecting the fact that he could choose which systems his on-board service personnel would keep running at the expense of others.

An HEL planet cannot maintain any tech system unless they have the technology to build that tech system. A unit with un-maintainable technology ***can*** receive maintenance (including the cost of those non-maintainable systems), but any un-maintainable system has a 10% chance of failure each month or when in combat, it rolls a 10 to hit or intercept. This includes ships cut off from their own empire and forced to rely on an ally's maintenance. Technologies more than 3 SLs above the maintenance race's EL fail at a 30% rate (rolls 8-10 to hit or intercept or make a separate roll when it affects the enemy - one roll per turn max.). A system which fails does so before it can function (for example, a weapon needing a 9 to-hit and rolling an 8 to-hit would fail causing no damage).

Table L7.02 Complete List of Maintenance Costs

Unit	Maint	Note
Fast Warship	15%	Weapons and Point Defense cost +20% more

Table L7.02 Complete List of Maintenance Costs

Unit	Maint	Note
Warship (any Type or Generation)	15%	
FT with X	15%	
Mobile Base	10%	
FT	7.5%	
Squadron (FQ/GB)	7.5%	Doesn't apply if crated
Base or ast	5%	
AP - Buoys	4%	Only applies if deployed[a]
AP - Drones	4%	Always applies
Unarmed Smcft	0%	
PDC or AF	3%	
SS	2%	
Hidden PDC/Silos	4%	On benign moon/world
Hidden PDC/Silos	6%	Airless moons/worlds/ast [E8.02]
Special Maintenance Charges		
Squadron Bay reload	10%	10% of Bg or Bf cost
(DAM)	n/a	10 MC per repaired system
Mothballed [L7]	0	Unit is unusable
Crated	0	Unit is unusable
Ineffective [L7.02.4]	normal	Rebate of 90% of maintenance
SY, SYM, MS	0	No maintenance on the system
Star System Defense	n/a	[L7.06] rebate

[a] Buoys stored in H, bays, or on populated planets are not deployed.

L7.02.1 Exception: Technologies with an SL below a race's EL will not fail even if the race cannot build the system. However, that race cannot repair that technology.

L7.02.2 A large spacecraft is required to mount sufficient cargo holds (H or Hs or Ht) to carry its current maintenance (for example, the spares it is using in the current month). Each H used for maintenance holds 500 MC (each Hs carries 200 MC, each Ht carries 130 MC) and if the large spacecraft's maintenance is greater than 500 MC, additional holds are required. If the large spacecraft's maintenance is *less* than 500 MC, more than one month's may be carried, thus extending its endurance. Additional H may also be used to carry extra maintenance for any spacecraft even further. Any ship in a fleet can draw upon the maintenance of any other ship [D4.06], as long as they are able to transfer the goods between each other [E4].

Maintenance failure cannot cause crew casualties.

L7.02.3 Units which do not receive maintenance cannot be repaired during the same month.

L7.02.4 Ineffective Units Many times damaged units are not cost effective to repair due to the maintenance issue. Seriously damaged units (at least 1/2 of internal systems destroyed) can declare ineffective status. Such a unit is incapable of fighting (all systems except engines, life support, and holds are inoperative) but receives a 90% rebate of all maintenance paid until it arrives at a repair facility. It must still pay full maintenance while being repaired/refitted/etc. Such a unit must proceed at best speed to the nearest shipyard to be repaired. Units starting in the same system as a shipyard or machine shop lose ineffective status.

L7.03 EFFECT OF MAINTENANCE

Maintenance is received at the end of the month unless:

- non-ally presence could affect/prevent it including the detection of a CFN maintenance carrier.
- the unit is in some sort of combat situation and wishes to not slow down in order to transfer maintenance over (see cargo handling units for MC transfer.

A unit receiving maintenance:

- has its magazines fully loaded
- has its single special free gig replaced
- has its CDs replaced
- has its XO racks loaded or charged
- has any penalties associated with lack of maintenance, excepting damaged/destroyed systems, removed.
- can attempted emergency repairs [E2].
- can be repaired [L7.02.3].
- receives any empire wide free upgrades [AA.04].

L7.04 FAILURE TO PAY MAINTENANCE

Voluntary failure to pay maintenance on a unit, when the unit does have access to a source of maintenance resources, will result in a loss of grade by the unit [F3.06]. It is quite demoralizing to not get supplied when the resources are available. Maintenance failure is intended only to allow a unit that is cut off from supply to be able to continue to operate, under penalties.

L7.05 SHIPYARD MAINTENANCE

SY, SYM, and MS do not pay for maintenance (though the HS they are installed in do).

L7.06 SYSTEM DEFENSES

Populations like to feel protected. Therefore, a system with at least 500 PU present will pay maintenance, based on their income, to support units assigned to that system. Those units are in two categories: fixed defenses and patrol boats. A "system" here includes close stars (i.e., binary but not trinary component) as one system. An assigned unit must be present in the system throughout an entire month to qualify.

L7.06.1 Amount Available A system will pay up to 5% of their income to support System Defenses. However, no more than 40% of that 5% (2% of system income) will be paid to support patrol boats (mobile defenses).

> ***Note:*** Hidden objects [E8] cannot be supported in this manner as no one is supposed to know about them.

L7.06.2 Fixed Defenses Fixed defenses are bases, AF, military SS modules, or PDCs (they do not include AP).

L7.06.3 Patrol Boats Patrol boats are defined as armed warships at least 3 sizes below the maximum warship hull size that race can build (has already completed a prototype on). Fast Hulls and other special hulls are all treated as different for the purposes of Largest Prototype Size built, though certain types still count as other types.

L7.06.3.1 Limitations A patrol craft must be stationed in (present in) in a system for TWO complete months before any

support is paid (support is actually paid for remaining in the system during the entire PREVIOUS month).

There is one exception to this rule: if a battle involving more than 500 HS of warships is fought and won in the system, the system, happy to be alive, will make payments for their surviving patrol craft for the next three months even though those craft might be in other systems or be during those three months.

Note: This payment is above and beyond the systems normal taxes (income) provided to the player.

Newly created races (player or NPR) are assumed to have met the two month stationary requirement.

L7.07 ALLIES AND MAINTENANCE

Partnership, Full Trade and Defensive, and Full Trade and Offensive allies may support each other's ships. HOWEVER, NPRs will not give maintenance for free. They must be wholly compensated for the value of the maintenance provided. The provisions of L7.02 and L7.02.1 still apply.

L7.07.1 Ammunition When providing maintenance, allies are also providing various forms of ammunition. However, an ally cannot provide ammunition for a system he cannot build unless L7.02.1 applies.

Next Section: M - Construction

In order to defend itself against its enemies, an empire needs to build spacecraft and planetary defense centers. Sometimes it is also necessary to repair damaged units or refit old units with modern weapons, to build unassembled units which can be shipped as parts for assembly in distant star systems, or even to send old units to the shipbreakers to reclaim whatever materials can be recycled. All these jobs are handled either by ground-based industry or by large orbital construction facilities.

All STARFIRE units are designed using [Section H]. Turning these blueprints into actual hardware is somewhat more complicated however, and a lot more expensive.

Example M – Construction Examples

M1 Construction Complexes

There are four main types of construction facilities in STARFIRE: Large Shipyard (SY), Medium Shipyard (SYM) and Machine Shop (MS), all of which are space-based facilities, and ground-based construction, which is inherent in all PU and IU. Other types may be added later but the basic rules are the same.

A construction complex (or just "complex") consists of all construction facilities of the same type, like MS, belonging to the same empire that spent the entire month undamaged in the same tactical hex or orbit. No complex may contain more than one type of construction facility, but the facilities in the complex may be carried in more than one hull (e.g., if two FT4 equipped with an SYM each are in the same tH, they would make up a single complex). Each complex is a single unit for tracking of build capacity and usage.

M1.01 Build Rates and Build Capacities

Each construction complex has a *build rate* showing how much work, measured in hull spaces (HS), it can do on a single project in one month, and a *build capacity* which is the maximum total amount of work the complex can do on all its projects taken together in a single month. The *build capacity* is equal to (number of facilities in the complex) times (*build rate*).

Table M1.01 Facility Build Rates

Type of Complex	Build Rate
Shipyard (SY), Machine Shop (MS), Ground-based Industry	10+2*EL
Medium Shipyard (SYM)	(10+2*EL)/3 (FRU)

M1.02 Construction Facility Types

Space construction facilities (SY, SYM, and MS) cannot be installed on the surface of a planet or moon nor in a PDC. Work done by space facilities on planetary surfaces (such as building a PDC on an uninhabited moon) is at normal rate, but the build capacity used by any such project is tripled. A unit with SY or SYM and Atmospheric Capability may land on a planet's surface where it may perform Build Hull or Install Systems tasks for PDC at a normal build capacity rather than the triple build capacity penalty.

M1.02.1 Ground-Based Industry A population has (PU/200 + IU/50) (FRD) construction facilities with the same build rate as the race's SY. All projects and tasks, except those involving PDCs or Ground Facilities, cost 150% the project price/task. Assembly tasks cost an additional 50% of the hull cost. LEL ground-based industry counts as having EL 0. No ground based industry exists on asteroids or HGT.

M1.02.2 Limited Facilities Machine shops and populations smaller than medium are unable to do any "build" project or task [M2.01, M2.07, M3.02, and M3.04] including those on PDCs.

M1.02.3 Upgrading Construction Facilities When the EL of an empire increases, all its construction facilities are automatically upgraded immediately at no cost.

M1.02.4 Low-Tech Populations LEL populations cannot build any STARFIRE units.

M1.03 Using Construction Complexes

A **project** is defined as all work on one single unit ordered and paid for at the same time. For example, repairing a damaged cruiser and having its weapons refitted with more modern ones could count as a single project, or as two projects if the repairs were started and then the refit ordered. Each project that is being worked on has its own entry in the record sheet for the complex., though identical projects may use combined entries (for *example*, "build 4 Toga-class DDs").

New projects are ordered at the beginning of the month (before any strategic movement or combat). Each project has a base cost (in MC) and uses a certain amount of build capacity. All resources used in a project must be present at the complex before the project starts, including MC fees, any existing unit to be modified, and parts coming from other units or storage. No unit may take part in more than 1 project per month. No such resources or units may participate in more than one project in a single month, and only one complex can work on any single project.

M1.03.1 Capacity After the movement phase of each month, the construction complex does up to its build rate HS of work on each of its projects. Projects begun in an earlier month must be worked on before any new projects may be started. A complex may work on any number of projects during a month provided that its build capacity isn't exceeded, but at the end of the month a complex may not have more than 1 unfinished project per construction facility. Any project that exceeds this limit is immediately interrupted, without finishing the remaining work [M2] and [M3] specify what happens when the various types of projects are interrupted.

Example M1.03.1 - Capacity Usage

M1.03.2 Incomplete Units A unit may be incomplete (such as not having systems installed in all hull spaces) at the end of a project. The spaces where a system has not yet been installed are represented by "(x)," where "x" is the size of the system (in whole HS). The maintenance cost of the unit is calculated on the cost of the systems that have actually been installed.

At a minimum, an incomplete unit must have a hold and life support for all hull spaces (not just the HS of installed systems).

Incomplete hulls, including prototypes, are immune from new class fees unless more than 50% of the Hull has installed systems.

Building empty spaces still requires the normal build rate at no extra charge. However, when you later install real systems, you must use the refit rules (and charges). This causes those extra empty spaces to undergo a 2nd usage of SYx space, which means you end up using shipyard capacity twice.

Empty spaces are treated as M1.04.1 (hull completed but no system installed) and thus take 1/4 damage pt to destroy.

Note: ShipYard users: (1), (2), (3), (4), (5), (6), (7), (8) all represent empty hull spaces of the number indicated.

M1.03.3 Tech Limitations Any complex may examine [M2.05], refurbish [M2.06] or scrap [M3.08] any unit, hull or tech system regardless of SL. No other work can be done on a system or small craft unless its owning empire has developed the system or small craft.

M1.03.4 Prototypes To prototype a new hull, simply build that hull at prototype rates [M4]; however, the technologies required to build bigger ships are limited by EL [AppAA-Construction] Hull sizes above 30 hull spaces must have a prototypes built. This is a special research, development, prototype designing, and building task. Until this prototype unit is completed, other units of this hull type and size are built at the prototype rates [M4] and costs including any +20% first in class requirement [M1.03.5].

PDCs, AFs, SSs and small craft do not require prototypes. Some hull types become available with a same or bigger sized prototype of a different hull type (see [Con.03]). A prototype unit is designed as normal, using the maximum hull size for the new hull type. It does not need to install systems in all hull spaces, but any spaceship prototype must have life support and at least one full-sized engine room installed.

M1.03.4.1 Early Prototypes A race which captures or is given a unit above its current maximum build size may build a prototype unit of the same hull type and size, even if it lacks the EL normally required to do so. Likewise, a scan of a shields down units allows the scanning race to prototype it but the prototype cost is three, instead of two, times the hull cost.

M1.03.4.2 Prototypes - Late System Install When a prototype is started, the main part of the prototype construction is the hull. The last 33% of the prototype construction (That is the last 33% of the doubled amount of capacity used) is the beginning of the installation of systems. It is possible to decide the actual design of and pay for the systems just prior to the last 33% of the ship's HS being constructed. At the start of the project you must pay the cost of the Hull (doubled) plus the cost of 1 hold and any necessary life support [M1.03.2]. Later, prior to the 33% point, you may pay the normal cost of the ship minus the regular cost of the hull to "finalize the design" of the ship (yes, you lose the fees paid for the hold and life support paid earlier as a cost of doing this). Any 20% new class fee must be paid at the time and on the cost of the finalized design.

Scanning a hull that is beyond what you can currently build, if it is above your current EL's abilities, is sufficient to be able to start to build such a unit.

Example M1.03.4.2 - Prototype - Late System Install

M1.03.5 Class Units and Mass Production The list cost of a unit represents its mass production cost. Any project resulting in the class unit of a new class pays an extra fee equal to 20% of its list cost, all units of that class started on any month AFTER the class unit was started are built at normal cost. PDCs, AFs, SSs and small units do not have class units as such, and never pay the 20% class unit fee.

OPTIONAL: The class unit fee may be avoided in a refit if systems are replaced by other systems from the same tech branch and of the same size in HS, without re-arranging the order of the systems on the control sheet.

M1.03.5.1 New Class The new class fee is required at the start of either the Build [M2.01] or Install Systems [M3.05] project.

(Optional) The 20% new class fee [M1.03.5] is designed to limit the Space Master's effort in checking dozens of ships. It also tends to favor small units. Here are two options to alter that:

1. The new class fee is only 5%+20 MC (recommended).
2. The new class fee is a flat 75 MC (favors larger units more).

M1.03.6 Construction Location Ground-based industry working on non-atmosphere-capable spacecraft and orbital complexes doing work on planet or moon surfaces may be located up to 1 tH away from the unit being worked on. In all other cases, the work is done in the same hex as the complex.

M1.03.7 Unit Availability A unit is inoperable and may not be activated, moved, or move (except by orbital mechanics) during any month in which any work from a complex occurs to it.

M1.04 ATTACKING CONSTRUCTION COMPLEXES

If enemy units attack a construction complex, both it and the units it is working on may be damaged. Space construction facilities are always mounted in large spacecraft, and are attacked accordingly [Section D]. It takes 10 damage points to destroy an (SY) module (5 if installed on a weak hull), and 4 damage points to destroy an (MS) or (SYM) module, but a single point of damage will stop the module from doing any work. Each point of damage to a (SY) module is worth 1/10 of its list cost for repairs. Each point of damage to an (MS) or (SYM) is worth 1/3 of its list cost for repairs. Ground-based industry can only be attacked by planetary bombardment [V4] It is not possible to target individual ground-based construction facilities.

Each unit undergoing work is a separate target that is outside the shields and DF of the building unit and ALL systems are totally inoperable. Grounded large ships are treated as PDCs.

M1.04.1 Damage to Uncompleted Units A refitting unit's systems take damage normally. Systems that are damaged and unrepaired are skipped just like in normal combat. Any standard project must be broken into its component tasks.

Task Status:

- Build Hull - Determine the number of HS completed. Each HS takes only 1/4 pt of damage to destroy.
- Install Systems - Systems are installed right to left and each installed system takes damage normally -- if fractional damage remains, 1/2 pt or more is enough to destroy a system.

A unit that is destroyed before completion loses 60% full value if the constructing race has 1 day to salvage the wreckage.

M1.04.2 Combat Using Uncompleted Units (optional) Units nearing completion are available for combat although their effectiveness is limited.

For NEW units, in order to be eligible for combat, the build hull task must be complete. Thereafter, the amount of Hull Spaces of systems available is determined by the following formula:

(2x (Number of HS complete at the end of the month)
- (the unit's hull size))

If the number is positive, the systems are installed in the following order, right to left until the first engine room is completed. Then the right-most Quarter system is complete, then all shields are installed, and finally the rest of the ship is completed from right to left with all armor and then XO racks being completed last.

During combat, the systems which were installed on the current month (amount of HS applied this month) are subject to failure due to incompletion. Unfortunately, you usually don't have time to test them. Each system has a number of days into the month times 3.33% chance of working the first time used (no effect from the system -- yes, even armor must roll (to see if properly installed). Once it is working, systems will continue working throughout the battle.

All incomplete units effectively have BG-3 crews due to a lack of trained personnel.

Early Completion [M2.01.2] may at times supersede this rule.

M1.04.3 Combat Using Repairing/Refitting Units (optional) This rule should only be applied during wartime situations with dangerous HEL enemies. This section is highly dependant on the space master. Such units may have many strange problems that cannot possibly all be covered. The main points to remember are:

- 3.33% per day of the month chance of failure applies to systems installed or repaired during the month.
- Order of system completion is right to left as listed in M1.04.2.
- See M2.01.2 for Early Completion
- Space Master decisions on other issues are final.

M2 STANDARD PROJECTS

Standard projects are those that cannot be modified or combined (as opposed to custom projects, [M3] which are a more flexible but requires more work from the players). The build capacity and base cost of the project are given in the [M4] projects and tasks table, and are modified by the [M1.02] rules. In order to start any of these projects, simply pay the MC at the complex.

M2.01 BUILD UNIT/BUILD PROTOTYPE UNIT

A unit is built from scratch, without using any stored parts. Assumed tasks are [M3.02], [M3.04], then [M3.05].

M2.01.1 Capacity Bonus After a base or starship larger than 7 HS has been completed (systems installed in *all* hull spaces) in a build unit project, add a 4 HS bonus to the remaining build capacity of the complex. The bonus may not finish the unit the bonus is given for. Ships and bases 7 HS or less in size require 3 HS of build capacity to build in a build unit project regardless of their actual size, but do not receive a build capacity adjustment. Only build unit projects [M2.01] get a capacity bonus.

M2.01.2 Early Completion (optional) It is recommended that this rule only be applied during wartime situations with dangerous HEL enemies. Small units, and large units nearing completion, may be completed earlier than the end of the month. The time to actually complete a project is not less than (30 * (build size/Build Rate) + 1) days (FRU) (For large units, the build size is the amount of HS left to finish at the BEGINNING of the current month). Such units are BG-2 for both the remaining portion of the current month and the entire next month (which is their shakedown cruise). NOTE: If an SY is building 5 small units during a month, they are not all completed at once, rather each is an individual project and each project can only be started after the previous project at the same shipyard has been completed. NOTE: This sort of early completion requires that individual SY be assigned specific projects for that month and is considerably more complex. This problem generally only occurs when shipyard complex capacity is more than half used.

M2.02 REPAIR UNIT

Repair all damaged systems and their hull sections on the large spacecraft or PDC, without using any replacement parts. Assumed tasks are [M3.06], then [M3.07]. See [M3.01] for zero-hull space system issues.

Example M2.02 - Repair Unit

M2.03 DISASSEMBLE LARGE UNIT

Any spaceship, base or space station hull, but not PDC or AF, can be disassembled into an unassembled state. Any systems installed in the hull are uninstalled. The systems and unassembled hull can be stored or loaded into freighters for transport [M5]. A disassemble project can be completed in a single month if capacity is available. If the project is interrupted, the entire unit is lost.

M2.04 REACTIVATE MOTHBALLED UNIT

See [M8]. If the project is interrupted, the unit immediately reverts to mothballed status for no extra cost.

M2.05 EXAMINATION OF CAPTURED VESSELS/SYSTEMS

[U2] Examining a captured unit, or a piece of tech, for Copy or tech item [N9.04] or Tech Data [N9.03] uses a build capacity equal to the complex's build rate for one month and no other project may be started on the examined unit during that month. This must be done prior to refurbishment/repair/refit. The examined unit may not count as being atmosphere capable [M1.02.4].

Multiple examinations cannot be done concurrently regardless of whether they are on the same or different tech item.

An unit cannot be disassembled and reassembled prior to examination, except by the original builder of the unit.

M2.06 REFURBISH LARGE/SMALL UNIT

An empire must refurbish a captured unit before using, repairing, or refitting it. *Exception*: a race that was once considered to be an imperial population of another race, within the last 250 months, may use that race's captured ships without refurbishment.

Systems that the refurbishing empire has not yet developed may be uninstalled. A refurbishment project can be completed in a single month if capacity is available. If the project is interrupted, the work done is assumed to go from the left to the right on the unit's control sheet.

M2.06.1 Using Captured Ground Industry Ground Industry may only be used to build/refit/refurbish things once a Slave or better relationship is achieved. All such projects use 50% more build capacity and cost 75% more (including the normal 50% modifier). Slave races cannot build PDCs.

M2.07 Build Small Unit

Small units are always built from scratch. Any internal systems mounted in a small unit are included in the build capacity usage but must be paid for in addition to the hull cost. It is not possible to build small units directly into crated form [M2.08]. Crating must be done separately.

Buoys use less capacity to build than other small units.

M2.08 Crate/Prep Small Unit

Small units except automated platforms may be disassembled (or "crated") for easy shipping [M5]. They must be assembled, or "prepped," by a construction complex before they can be used.

M2.09 Repair Small Unit

Repairs a damaged small unit. Drones used in standby mode [D9] may have their drives and sensors repaired for reuse for 10% list cost.

M3 Custom Projects

Custom projects are all projects not covered in the previous section, such as construction or repairs using some stored parts, refits of units into new designs etc. Each such project consists of one or more sequential tasks.

In order to start a custom project, the player needs to determine what tasks it should contain. For example, in order to install a system into a hull you first need a hull to install it in, which usually means that the hull must be built, assembled or repaired/refitted to carry the system. You must also have the system in order to install it, which may mean that you need to build it or perhaps remove it from storage or from somewhere else in the same unit. The tasks are then listed in the order they will be executed and their base costs and capacity usages calculated in [M4]. The base cost and capacity usage of the entire project is the sum of those of its tasks, modified by [M1.02]. If a project is interrupted, any uncompleted tasks are cancelled.

No custom projects ever receive the capacity bonus [M2.01.1]. However, a class unit fee [M1.03.5] may apply.

M3.01 Zero Space Systems:

Some types of tech systems don't have any HS values listed in the tech tables. Normally they are built as parts of a hull or of other systems, and don't take up any build capacity beyond what their "mother" component requires, but when they are added afterwards they do use extra build capacity.

- Hull modifications (such as (AC)) are very difficult to add to a unit after it has been completed. They cannot be built separately, but can be added by refitting [M3.06] the entire hull. This refit task uses 2x the build capacity and costs 3x the base cost, in addition to the cost of the hull modification itself.
- Modifications to other systems (such as (AM)) count as the having the same number of HS as the systems they are to be fitted to. In addition, the hull spaces carrying the soon-to-be-modified systems must be refitted.
- XO racks (any generation) count as 1/2 HS each.
- Zero space datalink systems count as 1 HS in size to build, but 10 HS to install.
- CDs may be "installed" in a refit for 2 MC and 1/2 HS of build capacity per bay.

M3.01.1 Repairing Zero Space Systems

- AM, AC, and CDs take no HS to repair.
- XO systems take 1/2 HS capacity to repair, and zero space Datalink systems takes 1 HS of capacity to repair. In both cases, treat these systems as the size listed here when repairing them and not as a zero size.

Example: Repairing 4 XOa requires 1 HS of hull to be repaired, at a cost of 2 MC, and a *total* of 2 HS of capacity to fix them and a total of 2 + 8/3 = 4.66 MC.

Example M2.02 - Repair Unit

M3.02 Build Hull

Builds an empty large hull of a specific class from scratch, or in the case of PDCs and AFs dig tunnels and rooms in the ground or the asteroid. Only hull modifications and XO racks are installed at this stage. This task can also be used to build replacements for unassembled hull parts that have been lost [M5]. Note that Prototype hulls have different costs and capacity requirements than normal hulls.

Starship, base and space station hulls may be built as unassembled parts instead of as a finished hull. They can then be transported to far places [M5] and assembled using the Assemble Hull task. Unassembled parts are built at the same costs and capacities as finished hulls. Hull construction or assembly [M3.02] [M2.03] must be finished in a single project. If a project ends leaving a partially built or assembled hull, that hull is destroyed.

M3.03 Assemble Hull

Assembles an unassembled hull into its exact original class. Fast Assembly is possible [M4].

Example M3.03 - Assembly with Complications

M3.04 Build new System

Builds a new system ready to be installed into a hull or to be stored or shipped [M5] for future use.

M3.05 INSTALL SYSTEMS

Installs a system in undamaged, empty HS specifically built to fit it. If the HSs have been damaged or were originally built to fit a system of a different type, they must first be rebuilt using the repair/refit hull task before the system can be installed. Fast installation is possible [M4].

M3.06 REPAIR/REFIT HULL

Prior to repairing a damaged system [M3.07] in place or installing a different one [M3.05], the HSs that carry the system must be repaired/refitted. Unassembled hulls [M2.03] [M3.03] must be assembled, and mothballed units [M8] reactivated, prior to any repair or refit.

Repairing a HS counts as refitting it and systems may be uninstalled, even damaged ones.

Refitting a HS allows the owner to uninstall any system the owner wants and preps the HS to receive a different system. The 1 MC/HS refit cost is only available when the HS is undamaged.

> ***Note:*** Hull Size cannot be increased or decreased when refitting. However, when using the optional generational hull [Con.04], ship hull size can in some cases be increased. See [Con.04] for details.

M3.06.1 Prototypes You may refit or repair a hull size/type that you are not yet able to build also long as you have a prototype of a hull size/type under construction that will allow you to build that hull.

M3.06.2 Refitting Mothballed Ships Units that are mothballed may be refitted normally except the cost is 2 MC per HS of system installed/moved. Mothballed units undergoing refit must pay *normal* maintenance and they are inactive during an attack. De-mothballing, if desired, cannot begin until after the refit is completed.

Example M3.06 - Repair/Refit hull

M3.07 REPAIR SYSTEM

Repair a damaged tech system. On the month a damaged system is uninstalled, it must be either repaired or scrapped [M3.08].

M3.08 SCRAP

Old hulls, systems, wrecks, and small units can be scrapped reclaiming 30% of their list cost, even if damaged. Destroyed units and PDC hulls have no scrap value. If the scrapping is done within 1 tH of an imperial population it takes no build capacity and the reclaimed resources are available for use next month, otherwise it uses up build capacity and the reclaimed resources are available AFTER the task has been completed.

M4 PROJECT AND TASK TABLE

Project:	Task Size:	Base Cost[a]
BUILD -- Projects and Tasks		
Build Prototype Unit [b]	HS*2[c]	Hull cost*2 + List cost of systems
Build Unit [b]	HS[c]	List cost
Build Buoy [b]	0.5 HS per DP	List cost of unit
Build Small Unit [bd]	1 HS per DP	List cost of unit
Build system	HS of system/4	List cost of system
Build Hull (Prototype Hull)	HS/2 (HS*3/2)	Hull cost (2*Hull cost)
REPAIR -- Projects and Tasks		
Repair Damaged Unit [b]	HS of damaged systems	2 MC per HS + (List cost of systems)/3
Repair hull	Damaged/refitted HS/2	2 MC per HS repaired
Repair system	HS of damaged system/2	(List Cost of damaged system)/3
Repair Small Unit [b]	Bay pts/2	List cost/3
REFIT/REFURBISH -- Projects and Tasks		
Refit hull	refitted HS/2	1 MC per HS modified
Refurbish Large Unit [b]	HS/4 (FRU)[e]	List cost/3
Refurbish Small Craft [b]	Bay pts/4	List cost/2
MOTHBALL -- Projects and Tasks		
Reactivate Mothballed Unit [b]	HS/4	See [M2.04]
CRATED UNIT -- Projects and Tasks		
Disassemble (Crate) Unit [b]	HS	Hull cost
(un)Crate Small Unit [b]	Bay pts/4	Crate: List cost/5 (Prep: Free)
(un)Crate Squadron [b]	DP/20	
Assemble Hull at Normal (Fast) rate	HS/2 (HS/4)	Free (+50% of Hull cost)
Install system Normal	HS of system/4	Free
Install system (Fast)	(HS of system/8)	+50% of system's list cost
MISCELLANEOUS -- Projects and Tasks		
Examine Captured Ship [b]	Equal to complex's Build Rate	None but see overt intelligence rules [U2]
Scrap [b]	0 or Same as to Build the component[f]	30% of base cost

[a] See [M1.03.5] for Class Units).
[b] Indicates that the Project is a Standard Project.
[c] Modified by the Capacity Bonus rule, [M2.01.1].
[d] Only takes one month if the complex has sufficient capacity [M2.06].
[e] Only takes one month if the complex has sufficient capacity [M2.06].
[f] See (M3.08).

M5 TRANSPORTING AND STORING PARTS

Unassembled hulls, uninstalled systems and crated small units may be stored or transported at the rates in Table E4 Cargo Space Point (csp) Values.

A population may store any number of such components without cost and without using any H. The loss of a single csp of a HS or system requires the entire HS or system to be replaced using the build hull [M3.02] or build system [M3.04] tasks. A crated small unit which loses any csp counts as being destroyed.

M5.01 SMALL CRAFT AS CARGO

Uncrated small craft may be carried in, but not launched from, cargo holds. Such small craft may be unloaded as cargo, and must dock and rearm in a normal bay before they are combat capable.

Each Bb pt of small craft requires 250 csp of contiguous hold space (i.e., a 4 Bb pt smcft would need Hx2 to be carried).

Each DP of squadron requires 100 csp to be carried.

Crated squadrons require 25 csp to be carried.

M6 SPACE STATIONS, GROUND BASES, AND ASTEROID FORTS

Space stations and PDCs are large, sprawling collections of tech systems, quite unlike the compact spaceships or bases. An SS or PDC is divided into a number of modules, each of which counts as a separate "unit" for availability, so any module may be worked on while the rest of the station or PDC is still active and each module can be worked on separate from any other unit.

M6.01 SPACE STATIONS

SS modules are built as any other large spacecraft. The core module has no size limit, but cannot be equipped with any military systems. Any SS module can add new systems to the right of the module's control sheet without shutting down that module. *Exception*: shields and armor can be added to the left side of the module without shutting it down.

Note that SS modules on the same SS can be worked on independently of each other. Each module must be self-sustaining and self-sufficient.

M6.02 PLANETARY DEFENSE CENTERS

PDC modules must be 500 HS or less. PDCs are built like any other large spacecraft with a few minor exceptions:

A PDC adds new systems without shutting down that module.

When refitting, only the HS being worked on need be shut down (the rest of the PDC remains active and functional). Shutdown systems take double damage based on the NEW configuration, not the old one.

M6.03 ASTEROID FORTS

Asteroid Forts are built like bases, except that:

- Each armor system costs 1 MC less than its list cost.
- The asteroid itself isn't built from scratch but must be present at the construction facility (or vice versa) before construction can start.
- The hull cannot be built unassembled [M3.02].
- Build rate is limited to standard construction facility rate.

AF can add systems but must shutdown while doing so.

Note: See [E5.03.1.1] for AF towing size.

M6.04 HIDDEN PDCS, MISSILES, AND UNITS

See [E8].

M7 GROUND FACILITIES

Many ground facilities require that imperial PTUs from at least a small population be assigned permanently. Such PTU are subtracted from the planet population, earn no income, and do not count toward the maximum population limit. If transport is necessary, each PTU requires only 10 Qv of transport. Many ground facilities must be supported by at least a small imperial population located in the system. The rate of construction on these ground facilities is unlimited. Each ground facility is a discrete surface or subterranean facility and requires no maintenance cost.

Example M7 - Building A Ground Facility

M7.01 IMPERIAL COMMAND CENTERS

Imperial Command Centers (ICC) are important components of an imperium's communications and command and control network [P1]. To build, an ICC requires 2,500 MC and 50 PTU from the planet it is located on and the use of 200 HS of the planetary construction capacity but the rate of construction is unlimited. An ICC takes 100 hits to destroy. Damage is repaired as (SY) above but only planetary industry can repair (2/3 cost).

M7.01.1 Replacing Imperial Capitals If an Imperial Capital is destroyed, conquered, or cut off from a portion of an imperium, an ICC may upgrade itself into a true sector capital, discharging the functions of the Imperial Capital for the portion of the imperium with which the ICC has contact. The owning player selects an ICC, pays an additional fee of 5,000 MC, and 100 PTU and 400 HS of construction capacity.

M7.02 SA & RDS

Both (SA) and (RDS) [N4] can take 10 hits (ignoring nuke damage multipliers) before being destroyed (each hit destroys a PTU and costs 10% of the facility cost to repair) and may be mounted in PDCs or in the open. Each (RDS) has a base cost of 400 MC, 40 HS of construction capacity and 10 PTU of population. Each (SA) has a base cost of 1,000 MC, 100 HS of planetary or (SY) construction capacity and 10 PTU of population. The cost of building multiples of these facilities may be higher, see [N4.03] for details.

M7.03 PTF TRAINING FACILITIES

A Pilot Training Facility (PTF) costs 1,000 MC and uses 100 HS planetary construction capacity to create. This facility includes appropriate small craft launch and maintenance facilities for 1 squadron of a specific type, always the best generation available, of small craft (fighters or gunboats) [F3.09.1] and takes 10 hits to destroy.

Training facilities are restricted as RDS systems [N4.03].

M8 MOTHBALLING

Large units may be mothballed, or placed in controlled condition storage, by the unit's crew. Reactivation of a mothballed unit requires a construction facility. Mothballed units are inoperable and pay no maintenance. It is not possible to mothball small units, but crating them [M2.08] has similar effects.

M8.01 Starships Mothballed in Space

Large spacecraft may be mothballed in space simply by putting it into a parking orbit, shutting all systems down, and opening it to space. The exact parking orbit of the mothballed unit must be recorded.

M8.02 Starships Mothballed on Planets

Atmosphere-capable large spacecraft and PDC modules may be mothballed on the surface of a planet or moon. Large spacecraft can either be mothballed in easily accessed (and detectable) locations (called "in the open"), or in any hidden locations the player can think of. Hidden units are almost impossible to detect from orbit, but are rather expensive to hide and recover. The planetary combat area in which a unit is mothballed must be recorded.

M8.03 Partial Mothballing of PDC and Space Stations

PDCs and space stations may mothball individual modules while other modules remain in operation, in which case their maintenance cost is calculated only for the hull and systems that remain operational.

M8.04 Mothball Costs

Location	Cost to Mothball	Cost to Reactivate	Detected and Attacked as:
In space	Free	3 x Maint.	Inactive spaceship [D5.02]
Large spacecraft on the ground in the open, or PDC module anywhere	1x Maint.	4 x Maint.	PDC [D6.02.4]
Large ship hidden on planet/moon surface	2 x Maint.	5 x Maint.	Detected by scanning [E8] only

M9 Allies and Shipbuilding

Races with a partnership political relationship [T3.13] can do any construction work on one another's units, as long as the race doing the work has the ability to build all the systems built, repaired or installed and the race that owns the ship is able to maintain them. NPRs always charge a fee of 20% of the base cost of any construction project done on a partner's ship, in addition to the cost of the project itself. Players may not charge more than 20% of the base cost, but may charge less if they wish.

M9.01 Trade and Military Allies

(Optional) Trade (any) & military (any) allies (but not simple military allies) may build large spacecraft for one another (but not repair or refit them). If the races are not partners, however, the building race may install only engines and life support in the finished hulls. All other systems must be built and installed by the race that will finally use the spacecraft. As always, NPRs will charge an extra fee of 20% of the base cost of the project. (See [M1.03.2] for the procedure to build incomplete hulls.)

Next Section: N - Research and Development

"Research and Development" (R&D) are separate phases of the process of advancing technology. Often these two phases are denoted as R&D even though only one may be occurring.

Research is the process of advancing your technological understanding in an area. The level of understanding in a particular area, lasers for example, is termed a "Science Level" (SL). In ULTRA Starfire, the level of knowledge in one area may not be as high as in another area. For example, a race may be SL 4 in Lasers but only SL 1 in Force Beams. A SL usually provides no tangible benefits but may allow the development of a Technological Item(s) to begin.

Development is the process of making technological knowledge (SL) into a usable item. Not all "items" are physical in nature such as improving shield regeneration abilities.

Economic knowledge also has an understanding level termed "Economic Level" (EL). Economic Level also indicates a population's general knowledge of science. Thus, the ability to research higher levels of science is more or less difficult depending on whether the SL is above or below a race's EL.

Economic Level One (EL1) represents a significant advancement from the level below it, which is IND-2, due to the development of starship engines. Races below EL 1 are termed "Low Economic Level" (LEL). Races at or above EL 1 are termed "High Economic Level" (HEL).

Because LEL races have little chance of affecting HEL races, they use simpler R&D mechanics, which are covered in [N12]. R&D is conducted in projects that are termed "Economic Level" (EL), "Technical Item Development" (systems, buoys, small craft, etc.), or "Science Level" (SL) [N2.01]. While research of SL and development of tech items works much the same, economic level advancement [N2.05] is a special type of R&D project.

Each area of science has a Technological Tree assigned to it, which are covered in N2. The tech tree defines how research and development progresses in a particular area of science.

The final part of ULTRA Starfire's R&D system is the concept of the "Knot" and technological "Breakthrough." Most Tech Trees contain knots, which are an area of science that it is impossible to bypass without a technological Breakthrough.

Game Play Note: The economic level of a race often matches most of the race's SLs but heavy spending on one or two sciences may push both SL and items above the EL.

When complete, R&D results are instantly available to all of your empire.

(*OPTIONAL*) Once an empire completes R&D on a project, then the research results must be transmitted to the rest of the empire before they can be used. This may be done by starship, courier drone, CFN, or interstellar communications relay. The new EL or technology becomes available in the month after research data arrives at a star system. Imperial or amalgamated populations of the same empire may choose to not send the research results to other populations but if they do, the information may be intercepted by other races and used for "copy of tech item" R&D [N9.03.2].

Example N – Research and Development

N1 R&D Terminology

R&D – Research and Development

EL – Economic Level

HEL – A race that is at least EL 1. Called a HEL race.

Area of Science - A tree, branch, or twig

SL – Science Level

TGI – Total Gross Income - The total income generated by all imperial PUs and IUs in an empire. Excludes income from trade, CFN reimbursement, wealth transfers, scrapping, IU sales, and conquered populations.

(SA) – Science Academy

(RDS) – Research and Development Station

RP – Research Point

RP Rate – The amount of RP a race can purchase without using acceleration rules. This amount is normally 10 RP but [K3] may change it.

TA – Technological Assistance [N9.03]

TR – Threat Response [N9.04]

Tech Item – This is a non-EL, non-SL piece of "applied science," like F, AM, or AP.

Tree – A tech tree defines the progression of R&D in a particular area of science. The tree may have branches or twigs to other technologies that may be developed once the tree's SL is high enough (and a breakthrough occurs). Once opened, branches and twigs also function like trees.

Root – Similar to a Tree but may have unique properties (defined where used). A technology that uses the 'root' term has trees and/or branches that come depart from a root. Used in the engine technology area to help define things there clearly.

Branch – A branch defines the progression of R&D in a particular area of science that is a derivative from another area of science (Tree or Branch). Except for the requirements to open (Tree SL vs. Empire EL), trees and branches function the same.

Twig – A twig defines the progression of R&D in a particular area of science, like a branch. However, a twig can often be reached from different areas of science (branches and trees). Twig SL without tech items are automatically researched.

Note: **Trees, Branches, and Twigs** for the most part function exactly the same with the main difference being the method and requirements needed to open them. In this section, the term tree also includes the term branch unless specifically stated otherwise.

Knot - A difficult research concept that must be over come before R&D may continue in the tree, branch, twig, or development of a specific item. Knots are opened by a breakthrough that is successfully applied to that knot.

Breakthrough - Necessary to open (break, remove) a knot. Focused and Random breakthroughs are possible. Unfortunately, you have little control over which knot is opened by a breakthrough. Sometimes, a breakthrough will not even be about a knot and instead makes a research project easier or faster to do.

Scan Data – Scans of technologies taken at scan range on shield-down units. These allow development of systems that might not normally be possible.

Assisted Tech – Various methods used to finish projects faster

Threat Response – Technology projects that create defenses against powerful weapons are call "threat response."

Uplift – An assisted R&D method use by a HEL to rapidly increase a lower EL race's EL.

Critical Project – A project that is more difficult than normal.

Hazardous Project – A more difficult than normal project that also has a risk of explosion.

N2 TECH TREES

The idea behind tech trees are that realistically a race should not (and typically does not) have all types of technology available all the time. Furthermore, races advance in different areas of science at different paces -- this is usually because they are interested in developing different technologies with a limited budget and cadre of scientists. While each race could get all sciences eventually, it is unlikely due to cost and limited numbers of breakthroughs [N11]. R&D is rarely a sure thing and ULTRA Starfire's R&D system reflects that uncertainty (it can be frustrating at times).

The areas of technology (sciences) in STARFIRE are divided into general categories we call tech "trees." These trees also have sub-categories called "branches" and "twigs". A tree and its branches represent a general line of technological progress for that science and the developments that are possible. Some branches represent a slight scientific divergence from the main science area of a tree (capital and precision weapons), while others are almost a new science (ATM and HAWK).

All tech items (applied science) belong to a specific SL in a tree, branch, or twig. Typically, items of technology of a lower SL will be developed before tech items of a higher SL in the same tree, but there is usually no requirement to do so.

All Trees, Branches, and Twigs have an *unlisted knot* preventing initial progress in that area of science. Once a tree (or branch or twig) has been opened (knot broken), its first SL is the lowest one listed in that tech section's table (exception: in a few cases, the science's description will indicate a lower SL). This initial science level must be researched before any item listed at that science level can be developed; this requirement represents the theoretical research necessary to understand the breakthrough that allowed access to the area of science.

Most trees, branches, and twigs have a tech item listed at their first science level but *that science level must be researched first* before the item can be developed and this first science level is not available as part of a combined project [N9.06].

At the beginning of a game, numerous tech trees are not available for research as they have yet to be opened [see K2.03].

See A6.03 for a list of abbreviations used in the tech tree description section.

N2.01 SCIENCE LEVELS (SL)

Science levels represent a general science base and specific technical abilities *in a given area*, and support the development of specific technologies (applied science) within that category. Each SL in a tree builds on the theories of the last science level in that tree. Skipping them is impossible.

N2.02 KNOTS

A knot represents a difficult juncture in a science or a difficulty in developing an item that normal R&D is unable to overcome. A knot can only be overcome by rare insightful scientific thought, called a "breakthrough," or with assistance from another race. Knots exist at certain science levels or on certain items. Without a breakthrough on a SL, no R&D at or above that knot's SL (including opening new branches or developing items associated with that SL) can be conducted.

N2.03 BRANCHES AND TWIGS

Branches and Twigs are sciences that derive from one or more different sciences. Both Branches and Twig have an unlisted knot that needs to be broken before the Branch or Twig is open. If the listing for a branch on another tree or branch has a listed knot, that branch requires two breakthroughs to open the branch. All branches start at the same SL level as the SL in the parent tree/branch needed to open the branch.

Once a branch or twig is open, its SL is never linked to the tree it came from, except that the SL of a twig may be increased by research in the tree/branch it came from.

A knot inside a twig or branch, including the unlisted knot to open them, does not prevent advancement along the parent tree or branch they are opened from.

N2.03.1 Twig In Twigs, only the SL where an item is present (and the item) need to be researched, i.e., SL 18 or SL 24 of the engine tuner tree. SL without items present are automatically researched when any SL in a tree or branch that the twig ***could*** have come from (**not** *"did come from"*) is equal to or greater that the twig SL.

Twigs only require access from a single science tree, even though they are often listed in many trees. A knot on the twig's SL prevents the twig from advancing until the knot is opened.

Combined projects are allowed on twig items.

Most Twig SL can be researched, at full price, in order to advance them more quickly, if a player desires.

Example N2.03 - Free Twig SL

N2.04 DEVELOPING TECH ITEMS

Science levels lead to projects that are generally termed "tech items," which can be ship systems as well as other items (such as AP and AM). Upon completing a SL's research, the tech items at that level are available for development. Under special circumstances, these tech items can be developed without having the prerequisite SL. In all such cases, completing development on a tech item does not provide the race with the corresponding SL, which must still be researched in normal SL order in order to further advance that science.

N2.05 ECONOMIC LEVEL

An "Economic Level" represents more than just an increase in economic output efficiency -- which is represented for game balance by an increase in the races PU [L1.04.3]. EL advancement represents an increase in the races overall knowledge on a wide area of topics. Most importantly, improvements in the education system, and its

facilities, allow development of better scientists who can better advance scientific research (science levels). Thus, the economic level is a basis for all scientific advancement by a race [N6.05]. All sciences are derived directly or indirectly from economic level.

N2.05.1 EL R&D is a massive project that includes thousands of businesses and government employees. An EL project is really a system of government incentives and tax rebates that encourage civilian R&D in a number of areas. Lacking such incentives, EL advancement would be very slow and outside the time parameters of a STARFIRE campaign. Economic Level R&D uses the entire economy as its research facilities. However, the presence of an (SA) in the empire is required.

N2.05.2 Increasing a race's EL increases more than just the MC output of the race. It also includes build rates, ground combat effectiveness, and the maximum potential hull size of its ships among other things.

N3 R&D REQUIREMENTS

R&D for science and economic levels above one MUST be carried out in a system with a planet with a population of at least medium size, since smaller populations cannot support the necessary pool of talent for effective research. Each R&D project is independent of all other R&D projects. Duplicate projects are permitted as long as the requisite costs and R&D facilities are allocated. A project may be cancelled at any time.

N4 R&D FACILITIES

R&D is done in "Science Academies" (SA) and "Research and Development Stations" (RDS). Both (SA) and (RDS) are infrastructure units like (ICC) and are created per [M7.02]. A project without a facility assigned to it loses all RP.

N4.01 SCIENCE ACADEMIES (SA)

These are collections of research centers that do theoretical science and verification of the theoretical science instead of direct application science. Science academies primary purpose is to perform "pure" random research projects in the hopes of achieving an amazing breakthrough [N11] but SA can also research SL. Construction details are at [M7.02].

N4.01.1 Each (SA) has the ability to work on two science level projects or *a single breakthrough project* [N11], but they cannot work on any tech item development projects. An (SA) can develop either a focused or random breakthrough.

N4.01.2 HEL research requires an (SA) be present in the empire but doesn't use any project "space." Science academies can be constructed at any EL, but P-IND races do not normally begin with them.

N4.01.3 Starting (SA): All races start with their full base allotment of SA based on their population size (for example, a large population gets 3 (SA)).

N4.02 RESEARCH AND DEVELOPMENT STATIONS (RDS)

These facilities are practical applied science laboratories, designed to produce working hardware in addition to focused scientific research. (RDS) may work on a *single* project of any type but cannot attempt breakthroughs. Construction details are at [M7.02].

N4.02.1 Starting (RDS) note: Because (RDS) are essential for any race which is rapidly expanding its technology, all player races, HEL NPRs, and NPR advancing to HEL 1 start with double their basic support level for (RDS). P-IND and industrial races will only have their basic level of (RDS).

N4.03 R&D FACILITY LIMITS

Any system with at least a medium population can support R&D facilities (equal quantities for both types) but an Imperial Capital can support more. Facility limits are by system, not by planet, so 2 very large populations around opposite stars in a binary system are limited to a total of 3 facilities.

All RDS rules (limit, build, etc.) also apply to Pilot training facilities [F3.09.1].

Table N4.03 R&D Facility Limits

Largest Population	Capital R&D Facility Limit	Non-Capital R&D Facility Limit
Small	1 of each	N/A
Medium	2 of each	1 of each
Large	3 of each	1 of each
Very Large	4 of each	2 of each
Each additional VL pop.	+1 of each	+1 of each

N4.03.1 Exceeding the facility limit R&D facilities above the limit, but not exceeding 4 times the limit, can be built at extra cost (PTU and HS requirements remain the same).

Added facility is	Cost is
<= the limit[a]	Normal
> the limit but <= double the limit*	200%
> double the limit but <= triple the limit*	400%
> triple the limit but <= x4 the limit*	1000%

[a] > is greater than <= is less than or equal to.

Both (SA) and (RDS) may be constructed on any planet in the system they occupy (as long as colonization is allowed on that planet. For example, O1m is fine). They do not have to be on the planet whose population is supporting the facility.

N4.03.2 If more than one race (empire) is present in a system, each has a separate limit for R&D facilities, counting only their own populations.

N4.03.3 If an imperial population is present in a system, captured SA and RDS may be converted to imperial use for a 20% cost + 5% per level of economic difference with a maximum base cost of 75%. The facility limit cost multiplier is then applied to this base cost.

N4.03.4 Forced Sale of R&D Facilities R&D facilities need qualified scientists to man them. Scientists of different races tend to work poorly for new masters. Thus, whenever new R&D facilities are gained in a system, either by capture or by amalgamation, all R&D facilities above the non-capital limit [N4.03] are *required* to be sold for their "base" price. The income from such sales may, of course, be used to immediately buy more facilities, at possibly increased prices due to [N4.03.1], on the same planet(s).

N5 R&D PROJECT STARTUP & OPERATION

An R&D project advances by the accumulation of "research points" (RP). To begin a non-EL R&D project, the race must pay double the normal fee [N6] for the first "RP rate" (usually 10) RPs, and assign the project to an appropriate SA or RDS facility [N4]. All R&D must be purchased in 1 RP increments. Failure to purchase at least 1 RP causes a project to lose 10 RPs. Failure to assign a project a facility for the month eliminates all RP in the project. After the project's target RP [N7] are exceeded, the project has a chance of success [N8].

Research on a science level can only be conducted if the race has completed research on the previous science level of that tree or branch. Projects can be swapped among R&D facilities as long as both facilities are capable of doing that type of project.

N5.01 RP PURCHASE LIMIT

A race can purchase only "RP rate" (usually 10) RPs per project per month without acceleration [N9]. RP rates can be different see [K3 and K4]

N5.02 THE RULE OF 3

You cannot begin any R&D project with a SL that exceeds your current EL by more than 3 levels. A SL cannot exceed your EL by more than 3, except as a temporary SL. You cannot build any tech item that is more than 3 SL above your highest SL (count SLs in different sciences for this).

N5.03 SHORTFALL (OPTIONAL)

Once scientists are allocated to a project, and as long as minimal funding is given, they will continue to advance the research (theories) of the project at a faster rate than they have money to conduct the development (testing). These theories can be tested at a rapid rate once money is available (buying back the shortfall) although it takes more money to hire extra help to set up many tests at once. In order to handle this, add the number of RP by which the project has fallen short AND their cost to the "shortfall totals." For example, if less than "RP Rate" RPs are purchased, add both the unpurchased RP and the cost of the unpurchased RP to the shortfall totals.

When funds are again available, an empire may "buy back" the RP in the shortfall totals. Shortfall RPs are purchased before the R&D roll. The cost of a shortfall RP is Shortfall MC total divided by shortfall RP total (FRN). Purchasing shortfall RPs reduces both the shortfall RP total and that shortfall RP MC total. At the end of any month, the cost of shortfall RP is increased by 20% (10% for EL projects). The longer the empire waits the more each shortfall RP will cost. An empire may reset both shortfall amounts to zero, or reduce them by an equivalent percentage, at any time. In other words, you don't have to buy them back; you can just discard them, if you want.

Example N5.03 - Shortfall

N6 R&D COSTS

Each R&D project has a base cost made up of two components. The first is a fixed cost, called "x," and the second is a percent of the empire's income, called "y," and represents, among other things, the requirement to implement and teach the general population the principles behind the technology, retooling factories and training factory workers. For most projects, the y cost changes each month since the population to teach grows.

Note: Both EL and development projects have constantly changing costs.

N6.01 ECONOMIC LEVEL RESEARCH RPS

- A Economic Level RP has a "x" cost of 10 MC.
- A Economic Level RP has a "y" cost of 2% of TGI.

Thus 10 EL RPs cost 100 MC + 20% of TGI.

N6.02 SCIENCE LEVEL RESEARCH RPS

- A Science Level RP has an "x" cost of 2 + SL * 0.5 MC.
- A Science Level RP has no "y" cost.

Thus, 10 SL6 RPs cost 50 MC (Math -- 2 MC + 6 * 0.5) *10.

N6.03 TECH DEVELOPMENT RPS

- A Tech item RP has an "x" cost equal to 1/10th the cost of the tech item to build. *Exceptions:* See [N6.04].
- A Tech item RP has a "y" cost of 0.1% of TGI.

Thus, 9 "Ia" RPs cost 18 MC + 0.9% of TGI.
(Math -- Ia cost is 20 MC, so 20/10 * 9 = 18 and 0.1% * 9 = 0.9% of TGI.)

N6.04 SPECIAL ITEMS "X" COST

Any tech item without a fixed build cost or not mentioned in this section has effective "system cost" of 50+20*SL cost. If an R&D price is given, this is used as the "system cost" in N6.03. Any generation of:

- Shields or Armor = (system cost)^2
- EMS must pay 10 times normal cost.
- (AC) = 10.
- Any AM = AM level * 5 (i.e., AM2 = 10)

Examples: x cost for AC is 10/10 = 1 MC; x cost for S1 is $6^2/10$ = 3.6

N6.05 SL VS. EL ADJUSTMENT

Because EL represents the general knowledge level of a race, EL also impacts SL and Item R&D projects. The cost adjustment is found on Table N6.05 SL Cost Adjustment Table.

N6.05.1 Target RP adjustment is the percentage (FRU) by which the target RPs of the project is adjusted to.

N7 R&D TIME

Each R&D project requires a minimum number of RP (target RP) be completed before a chance of completion is possible. [Table N6.05 SL Cost Adjustment Table] adjusts the target RP for SLs and tech items and thus the time to compete them.

Table N6.05 SL Cost Adjustment Table

SL vs. EL	Target RP Adjustment [N7]	Cost/RP
4 or more SL < EL	20%	100%
3 SL < EL	40%	100%
2 SL < EL	60%	100%
1 SL < EL	80%	100%
SL = EL	100%	100%
1 SL > EL	120%	200%
2 SL > EL	140%	250%
3 SL > EL	160%	300%

Note: Increasing the EL level readjusts all target RP and thus may increase the chance of success for a project on the next month.

N7.01 EL TARGET RP

Each EL project has a base target RP of 80 RP plus 10 times the EL being developed with a maximum requirement of 200 RP. Thus, EL 2 has a target RP of 100 while EL 13 would only be 200 RP instead of 210 RP.

N7.02 SL/ITEM TARGET RP

An SL or tech item project has a base target RP of 20 RP + SL * 5 RP, which is then adjusted per N6.05.1.

N8 R&D PROJECT COMPLETION

The chance of completion is 1% per RP over the adjusted target RP. The maximum chance of success is 80%. No die roll is made unless the chance of success is at least 5%. Economic level R&D is automatically successful when the chance of success reaches 60% or greater.

Example N8 - R&D Project Success Chance

N8.01 SUCCESS ROLL SPECIAL RESULTS

When rolling for non-EL project completion, certain rolls indicate special results, which can be either good or bad.

N8.01.1 A successful roll that ends in "1" creates a focused breakthrough success [N11] in the tree/branch that the die roll was for.

N8.01.2 A roll of "00" is always a critical failure and will immediately reduce the cumulative RP total by 20% (FRD). This represents a "wrong turn" during R&D, worse than merely failing to succeed.

N8.01.3 Critical Project A "critical project" is one that is particularly difficult to complete and essentially has two major components of the same technology that must be completed sequentially. Thus, critical projects require two successes (on different months), not just one success, in order to complete the R&D project. RPs are totaled normally. An unsuccessful roll of 96-99 wipes out any accumulated successes and reduces the RP total by 20% (FRD).

Critical projects are indicated by a "{c}" on the trees and can apply to either items or SL.

N8.01.3.1 Critical, and hazardous, projects may suffer major setbacks. If an unsuccessful roll of 00 is made, all RP are lost, requiring the development phase to begin again from zero.

N8.01.4 Hazardous Project Hazardous projects are critical projects (two successes required) with a 10% chance of an explosion in addition to the RP loss resulting from a research roll of 96-00. The explosion destroys the (RDS) or (SA) and results in 10 points of collateral bombardment damage (certain projects may result in larger explosions, and any *exceptions* will be noted in the rules for that technology).

Hazardous projects are indicated by a "{h}" on the trees and can apply to either items or SL.

N8.01.5 Excluded Development ("NOT:") Certain projects are harder to develop because the empire's science and economy has been built around concepts that do not interface well.

N8.01.5.1 An excluded development project's target RP is doubled and each RP costs twice as much. That is, it takes twice as long to develop at double the per month cost. All excluded projects are Critical Projects if they were not already. All branches, SL, and tech items of an excluded tree are excluded projects.

These excluded development penalties apply until the excluded science can be researched normally, usually via a different path of development. Many sciences of this type will have an alternate set of prerequisites, which bypasses the exclusion.

N9 R&D PROJECT ACCELERATION

Some circumstances allow a race to exceed the normal R&D limit [N5.01]. Crash R&D represents a massive technological investment, often in a crisis, in order to force faster R&D. Technological Assistance allows races with information on a tech item to develop that tech item when it normally could not, or to develop it faster. Perceived Threat and Tech Intelligence R&D represent the development of technology already in use by someone else, whether ally, enemy, or neutral. These options may not be combined except as outlined in the specific rules for the acceleration option.

N9.01 ACCELERATION RULES

Regardless of the type of acceleration, each month the first "RP Rate" RPs (normally 10) may be purchased at normal cost (exception: Counter TR). A race may purchase (or gain for free) "extra RP" in order to accelerate the accumulation of RP toward the completion of the project. These "extra RP" cost often more than the first "RP Rate" RPs cost as indicated in the table at [N9.01 R&D Acceleration Table]. Some types of research require an extra project slot in order to purchase the extra RP available.

Lines with "+x% of RP Rate" are FRN. Those RP are available as long as a single RP is purchased.

N9.01.1 Combining acceleration When two types of acceleration apply (like TR to gunboat with tech data on fighters), apply each separately.

N9.01.2 EL acceleration EL project acceleration may only occur with the assistance of another race [N9.03.3].

N9.01 R&D Acceleration Table

Acceleration	Extra RP Available[a]	Cost of Extra RP	Extra R&D Facility Needed
General (anytime)	+10 RP	400%	No
TA - Tech Data	+30% of RP Rate	Free	No
TA - Copy of Tech Item	+50% of RP Rate	Free	No
TA - Assisted R&D	+75% of RP Rate[b]	Free[c]	Yes[d]
TA - Assisted EL R&D	+75% of RP Rate[a]	75%	Yes[c]
Uplifting an EL	+15 RP	100%[e]	No
Counter TR[d]	+50% of RP Rate	varies[f]	No
TR - (normal)	+50% of RP Rate	200%	No
Crash - Normal	+5 RP	300%	Yes
Crash - War Type A	+10 RP	250%	Yes
Crash - War Type B	+15 RP	200%	Yes

[a] Extra RP Available are only available if the race purchases at least one RP for that project.
[b] Number of RP gained is limited by [N9.03.3.1]
[c] NPRs will demand repayment for Assisting [N9.03.3]
[d] Requires the Assisting Race to use an R&D project slot.
[e] Extra Payment by Empire doing the Uplifting Required [N9.03.4]
[f] During Counter TR, all RP costs (even the 1st "RP rate" RP are per [N9.04.2.2]

N9.01.3 Free Breakthroughs When a breakthrough is provided for free (knot skipped), that breakthrough must be verified before continuing R&D.

N9.01.4 Target SL A number of rules use Target SL. The target SL is a number of SL below the SL of a particular Tech Item. Tech Items and SL which are equal to or lower than the Target SL receive the benefit of acceleration. Unless specified, if a SL or Tech Item knot is in the way, a free breakthrough, which must be verified, is generated.

Example: "Target SL is -3" means that the Target SL is 3 lower than the SL of the Tech Item.

N9.01.4.1 Knots that are not in the direct path leading to the Target SL, from the root tree, do not generate free breakthroughs. Thus, side branches are not opened.

N9.02 General Accelerated Research

A race may purchase up to 10 extra RPs per month for 4x the normal RP cost.

N9.03 Technological Assistance (TA)

Technological Assistance is when a race's scientists have received outside information about the project to be worked on.

N9.03.1 TA-Tech Data Tech Data only applies to SL, tech items and hull types. Tech Item Tech Data is gained by scanning a shields-down unit that is actively using a tech item [D5.03.3]. Hull Tech Data is gained by scanning a shields-down mostly (50%+) intact hull.

Having Tech Data on a Tech Item generates Free RP [N9.01 R&D Acceleration Table] on any project leading to the Target SL.

"Target SL is -3" [N9.01.4].

Example N9.03.1 - Tech Data Benefits

N9.03.2 TA-Tech Item Copy Capturing a unit may gain a working copy of a tech item [U5.04] or a race might purchase a tech item copy.

Having a Tech Item Copy generates Free RP [N9.01 R&D Acceleration Table] on any project leading to the Target SL.

"Target SL is -2" [N9.01.4].

In addition, after a 3 month examination of the Tech Item [M2.05], there is a 33% chance that you can build the next earlier generation of that Tech Item immediately or the Alpha generation. This die roll can only be made once per tech item.

N9.03.3 Assisted R&D A race, which has completed R&D knowledge on a project (EL, SL, or tech item), may assist other races in researching the unknown project. The assisting race must devote one RDS, in their empire, to the assistance project. This represents sending scientists to assist the other race.

For non-EL assistance, the extra RPs generated are free but NPRs will demand a fee equal to their (RM+RD)/3+40% of the assisted race's cost for "RP rate" RPs to pay for the use of their scientists.

For EL R&D assistance, NPRs require double payment {(RM+RD)/1.5+80%}. In addition, the assisted race must also pay 75% of their normal EL RP cost.

- Only a slave, forced ally, military ally (any) or partner may receive assisted R&D.
- All success roll [N8.01] penalties are halved (*Example:* explosion chance is 5%; "00" reduces RP by only 10%)
- Assisted R&D may not be used in conjunction with any other form of R&D acceleration.

EL R&D Only:

- A NPR will not provide EL R&D assistance unless there is a possibility of amalgamation [T3.14] and the NPR may have to be reimbursed for their R&D costs [T3.12.1].

N9.03.3.1 HEL R&D assistance provides +75% RP but has the following per month limits based on the difference between SLs (or ELs for EL projects).

- If one different, max is +10 RP per month.
- If two different, max is +20 RP per month.
- If 3 or more different, max is +30 RP per month.

Exception: Due to game balance issues, a player race may not receive more than 10 EL RP per month in EL R&D assistance.

Note: use EL vs. EL to determine the difference

Note: For every 10 EL RP the assisted race helps with, the receiving race is -1 RC (FRD) friendlier (to a Max of -20 RC).

N9.03.3.2 Conquered races may not be assisted [T3.01].

N9.03.4 Uplifting a Partner's EL A race with a higher EL partner may receive a rapid uplift of its technology base by diverting normal EL population growth and EL efficiency increases. Uplift is fast but the cost of genocide & colonization is rather cheap.

The race under going uplift stops all normal EL R&D. The uplifted race must purchase 25 EL RP per month, at normal cost, for x months [See N9.03.4 Uplift Time Table]. The uplifting partner must also pay 80% of the amount that the uplifting race is paying each month. At the end of that period, the uplifted race's EL increases by 1. Normal growth still happens but no EL growth bonus occurs.

Subject races may be uplifted [T3.06] in the same manner but must buy 30 EL RP per month and the partner must pay 100% of uplifted race's cost.

Example N9.03.4 - Uplifting an EL

N9.03.4 Uplift Time Table

Current EL	Number of Uplift Months
PI, Ind1, Ind2, or EL 1	1
EL 2 to EL 5	2
EL 6 to EL 12	3
EL 13+	4

N9.03.5 Forced EL Assistance If a race captures a small (or larger) population of an opponent and that population's effective EL [V5.11] is higher than the race's EL, the race can gain a bonus to its EL research. After building an RDS (one RDS allowed on a small in this case) or converting a captured RDS [N4.03.3] (if any exist on the conquered world), that empire can use that RDS to purchase an extra 5 RPs as assisted R&D towards their EL advancement until their EL matches that of the conquered population. This is not cumulative with any other form of accelerated research.

Table N9.04.2 Counter TR - Weapon Threats

"New" Weapon	Counter-Measure
Missile/torpedo hit with a range 17[a] or more (any SL)	EDMa, Db
Fighters	Initial Gunboat Project
Gunboats	Initial Fighter Project
Drone2 with Weapons	Dca
Capital Missile or Torpedo Weapon	Dca

[a] Extended Range [D8] does not apply when calculating this range.

N9.04 THREAT RESPONSE (TR)

A "threat response" is when a technology is observed that is either significantly different or overwhelmingly superior to your own technology. There are two types of TR R&D: Counter TR and Normal TR.

N9.04.1 During any TR project, all success roll [N8.01] penalties are tripled (*Example:* explosion chance is 30%, RP lost is 60%, etc.)

N9.04.2 Counter TR A race has learned of another race's possession of a powerful "new" type of offensive tech item and needs a defensive tech item to limit this threat. The knowledge cannot be rumor and thus the only qualifying situations are successful espionage, combat use against the race, or the possession of Tech Data or Copy of Tech Item. In addition, the "new" weapon must be powerful enough to cause major concern [Table N9.04.2 Counter TR - Weapon Threats]. The N9.04.2 table is the complete list of weapons and counter-measures.

Note: Upon completion of a counter-measure, you gain a TA-Copy of a Tech Item [N9.03.2] that you are countering, with all the benefits.

N9.04.2.1 Upon starting a Counter TR project and if the Counter-Measure tree is not open, a free breakthrough is generated but it must be verified before continuing. Once the tree is open, the Counter-Measure itself may be developed -- this temporarily skips all SL between opening the tree and the Counter-Measure item's SL.

N9.04.2.2 For Counter TR instead of using the SL versus EL adjustment [N6.05], take the best (lower percentage) of the two following categories. Note that the Rule of 3 [N5.02] still applies. If no category applies, use 400%.

N9.04.2.2.1 A project's SL is higher than the race's highest SL in either the threatening Weapon's or the counter-measure's branch SL:

- 4 or more -- RP cost 300%.
- 3 more -- RP cost 250%.
- 2 more -- RP cost 200%
- 1 more -- RP cost 150%
- Equal to -- RP cost 100%

N9.04.2.2.2 The project's SL is _____ than your current EL:

- 3 more – RP cost 250%
- 2 more – RP cost 200%
- 1 more – RP cost 170%
- Equal to – RP cost 150%
- 1 less – RP cost 130%
- At least 2 less – RP cost 100%

Example N9.04.2 - Counter TR

N9.04.3 Normal TR Instead of producing a counter-measure, normal TR allows a race to improve their weapons technology in the same area of science as the "threat". To be a threat, the tech item must be observed in combat (fired while in T or better detection) and must either be higher than the race's EL or be in a branch that they have not yet opened.

Normal TR does not allow skipping SL. The benefit from Normal TR ceases once "Target SL is -3" [N9.01.4] is reached.

N9.05 CRASH R&D

Crash R&D is a massive technological investment during a crisis. All success roll [N8.01] penalties are doubled (*Example:* RP lost is 40%).

N9.05.1 General Crash R&D A race may use general crash R&D to accelerate all non-EL R&D projects when:

a. The race knows of a race with a EL greater than theirs and the project's SL is less than or equal to the other race's EL.
b. The race is at war with any HEL race.

N9.05.1.1 A race may use general crash R&D to accelerate all SL projects, but not items, leading up to an observed technology.

N9.05.2 Crash R&D - War Type A A race that is "actively at war" [N14] with a HEL enemy who is "known" to be no more than two ELs lower than it or who has used a weapon with a SL equal to or greater than its EL may use war type A crash R&D.

N9.05.3 Crash R&D - War Type B A race that is "actively at war" [N14] with a HEL enemy who is "known" to have a higher EL, or has used a weapon with a range greater than all of your weapons (GB and fighters do count) or activates a weapon does more damage in a single shot than any weapon you have, may use war type B crash R&D. It can also happen if the race has deployed a weapon of a higher SL than your race's EL, or the weapon has triggered TR.

N9.06 COMBINED PROJECT

An item and its required SL, which can not be the first SL in a branch/tree, may be researched as a single tech item development project. The target number of RP is the same as for the SL alone but the cost of each RP is equal to the 125% of the total cost of the SL's

RP cost and the tech item's RP cost. A combined project may not be accelerated in any other manner except assisted R&D.

N10 SPECIAL PROJECTS

These projects are different enough from the normal that discussion about them is needed. Some use the normal method, with modifications, and some use an entirely different method.

N10.01 EL R&D AND AMALGAMATION

Amalgamation causes a huge influx of new people who may or may not be in the process of being educated to a new EL. They may also be of a different economic level. Both of these situations cause an adjustment to either the RP completed or the shortfall must be made up.

Race A and B are the two amalgamating races. Race C is the new amalgamated empire. If there is an EL difference, Race A always has the lower EL. Otherwise, Race A has the lower amount of RP.

N10.01.1 Amount of EL R&D Difference The difference is determined twice: once when amalgamation is accepted (for RP shortfall) and when amalgamation is almost completed (for RP shortfall and EL shortfall).

N10.01.2 Time (RP) Shortfall Determine the weighted average RP with the following equation:

$$\text{Average RP} = \frac{Ai}{Ti} \times Arp + \frac{Bi}{Ti} \times Brp$$

where

Ai = Imperial income of Race A
Bi = Imperial income of Race B
Arp = RP of Race A
Brp = RP of Race B
TI = combined total imperial income of both races.

N10.01.2.1 Subtract the "Avg. RP" from the race B's RP. This is number of RP that the amalgamation between the two races would lose. If this number is negative, the combined race's EL might be 1 lower than the race with the higher EL (Race B).

N10.01.2.2 During amalgamation, the lower EL race (A) may close the gap to the higher EL race (B) by paying 11 MC + 2.2% of Race A's income per 1 RP. A maximum of 20 RP per month can be made up in addition to normal EL RP generation. Remember that failure to do normal R&D will cause the race to fall further behind if the more advanced race continues to do EL R&D. These RP may be bought by either race.

N10.01.3 Final Amalgamation Check Determine the RP shortfall as above; however, the cost for each shortfall RP purchased is 13 MC + 2.5% of Imperial Income of Race A. At this point, the now amalgamated races have an RP total equal to the "Avg. RP." This RP total may be advanced to equal the "RP total" of the most advanced race.

N10.01.4 EL Shortfall Since the two empires must start amalgamation at the same economic level, this factor only applies as amalgamation is completed.

N10.01.4.1 If race A is behind in EL, adjust race B's RP total by adding 110 + 10 * (Race A's EL). Use the adjusted RP total in the RP shortfall rule. This is Race C's new RP total.

N10.01.4.2 If after any shortfall RP are paid for, Race C's new RP total is above 120+10* (Race A's EL), then the new amalgamated race's EL is the higher EL of the two races and an EL growth bonus occurs.

N10.01.5 Delayed Growth Bonus During the 6 month amalgamation period, a race cannot gain an EL growth bonus unless the other race has already advanced in EL.

The intent of this rule is to prevent a portion of an empire from gaining two growth bonuses for the same EL advancement. Space Masters are welcome to disregard this delay as long as they ensure that neither of the old race's received a double growth bonus.

N10.02 EL R&D AND CUT-OFF PLANETS

If a planet is cut off from the rest of the empire, as long as it continues to pay 20% of its income, the cut off planet advances ELs at the same time as the rest of the empire. (The major portion of the empire covers the 100 MC fixed fee) If the world doesn't continue EL research while cut off, the planet must be "amalgamated" back into the empire. The requirement to be the same EL still applies. The cost for this type of "amalgamation" is the cost to make up any shortfalls that occur under rule [N10.01.4].

N10.03 ANTI-FIGHTER POINT DEFENSE MODS

Upon first encountering or developing fighters, but not gunboats, a race's point defense systems are programmed to handle fast easily destroyed inbounds. Defense against inbounds requires a wide pattern of fire in order to maximize the chance of a hit. But because fighters are more durable and slower than inbounds, a wide pattern of fire is less effective against them. For point defense to destroy a fighter, it must achieve numerous hits at the same moment. Fortunately, this is a simple project.

N10.03.1 To begin this project, a race must allocate 1 RDS facility and pay a one time fee of 500 MC. On each month thereafter, roll 1d10. On a 3 or less, the project has advanced one level. This project starts at level 0.

- Level 0 Subtract 2 from each point defense's BASV [G7.01].
- Level 1 Speed difference accounted for. Subtract 1 from each point defenses BASV [G7.01].
- Level 2 Speed and concentrated fire achieved. Use normal BASV against fighters.

N10.04 BREAKTHROUGH VERIFICATION

Breakthroughs acquired from outside sources must be verified at a SA. This project takes one month and uses both project slots, just like attempting to create a breakthrough.

Cost of verification varies [N11.06].

N11 BREAKTHROUGHS

A "breakthrough" represents a random and amazing scientific theory that has been proven true. This revolutionizes a particular scientific field or area. Sometimes these can be relatively minor (for example, a technique to allow bigger (capital) weapons to be reliably operated). Others can revolutionize entire civilizations (for example, the drive field). For simplicity, STARFIRE ignores what specific theory was proven.

N11.01 TYPES

Two types of Breakthroughs may be created: random and focused. An (SA) may perform speculative research in the hope of discovering a new field of science (a random breakthrough). An (SA) may perform speculative research in a particular science area (a focused breakthrough).

N11.02 SUCCESS RATES

Using (SA) costs 10 MC per 1% chance of achieving a random breakthrough, with a maximum chance of 10%.

N11.02.1 An (SA) may also be used to attempt to create a focused breakthrough in a selected "known" area of research. The cost is doubled per 1% chance with a maximum of 10% per (SA) but the chance of opening the specific knot is more than doubled [See N11.08].

A focused breakthrough may also result from a "success roll special result." [N8.01].

N11.03 APPLYING BREAKTHROUGHS

A player may attempt to apply a breakthrough in many ways [N11.04]. Unfortunately, it is rarely possible to guess which science is improved. To reflect this, the options to open knots require a roll to successfully apply the breakthrough.

ULTRA Starfire allows the player to somewhat guide the application of breakthroughs by providing the Space Master with Breakthrough Objective List [N11.03.1], which is a list of R&D priorities. Each breakthrough then starts at the top "objective" and a roll is made to see if the breakthrough opens that "objective." If it does not, then the next list entry is checked. This continues until each objective has been checked once. If the breakthrough applies to nothing in the list, which occasionally happens, the Space Master informs the player of the breakthrough and that the player must accelerate something (N11.04 option B) or convert a critical (option C) or hazardous (option D) development.

Only one attempt per knot *per breakthrough* can be made to open a specific knot. However, a race that luckily got two breakthroughs in the same month would have a 2nd chance to get the top listed knot if the first attempt failed.

If a focused breakthrough fails to work in the tree, branch, or twig that generated it (or if there are no valid knots to apply it to), it becomes a random breakthrough and is applied to the *entire* Breakthrough Objective List. This may result in the same breakthrough being applied twice to the same knot - once as a focused breakthrough and once as a random breakthrough.

Breakthroughs must be used on the month they are generated.

N11.03.1 Breakthrough Objective List A SM should require each race to have a list of breakthrough knots to open (objectives), in the order that the empire most desires research to continue.

Players must note any bonuses they get on this list.

N11.03.2 A knot cannot be removed by Breakthrough until after all the SLs leading up to it are complete.

Example N11.03.2 - SL Needed before Breakthrough

N11.04 APPLYING A RANDOM BREAKTHROUGH

A. Open a new area of science: roll 1d10 -- an unmodified 1 always succeeds and an unmodified 10 always fails.
Subtract 1 from the roll if the race has had a tech item (or has tech data or copy of that tech item) used against it from beyond the knot that it is attempting to open (i.e., in that tree or in a branch starting beyond the knot).
{**Player must specify this in the Breakthrough Objective List as it would be too burdensome for the Space Master to worry about it for dozens of races.}

Science's initial SL minus EL	Open a new area of Science		
	Knot to open Tree	Knot to open Branch	SL or Item Knot
+3[a]	n/a	1-2	1-2
+2[a]	n/a	1-3	1-3
+1[a]	n/a	1-3	1-4
0	1-3	1-4	1-4
-1 or -2	1-4	1-5	1-5
-3 or -4	1-5	1-6	1-6
-5	1-6	1-7	1-7

[a] These three lines represent an optional rule. I don't recommend using the optional rule though. Any tree requiring an EL to open (say EL 2 instead of IND-2) always needs at least EL 1 open regardless of the table above.

B. Accelerate R&D on one "active" project (except EL R&D): Allows the purchase of up to 10 extra RP per month for three months at normal cost (note: this is in addition to any other form of acceleration). An "active" project has had RP bought for it this month and was started in a previous month.
C. Convert a Critical Project into a normal project.
D. Convert a HAZARDOUS project to a Critical Project.

Note: Two breakthroughs are required to convert a HAZARDOUS development to a normal development.

Note: Hazardous developments involving Anti-matter cannot be converted.

Note: Options B, C and D are always successful

Note: Breakthroughs cannot be applied to Economic Level R&D, or to any development which is "synched" to EL R&D.

N11.05 APPLYING A FOCUSED BREAKTHROUGH

For a focused breakthrough, if applied against a knot within the tree (or any branch of that tree) that created the breakthrough, it will be useful in the selected area on a roll of 1-9.

N11.06 Buying A Breakthrough

Races may trade/sell specific breakthroughs (for example, the opening of the force beam tree) that they have achieved to other races. There is no die roll to achieve success.

NPRs will sometimes sell breakthroughs with the cost indicated in the following table.

Breakthrough Buying and Verification Costs

What the Breakthrough does	To Buy[a]	Verification[b]
Open Tree	400+150*SL	150+75*SL
Open Branch	500+100*SL	100+100*SL
In an already open Tree or Branch	400+100*SL	100+50*SL
Captured Breakthrough (any)	n/a	200 MC

[a] Cost to buy a Breakthrough from an NPR

[b] Cost to verify a breakthrough - Captured Breakthroughs cost a flat 200 MC [N11.08].

N11.06.1 Verification Cost A breakthrough that is gained from any method other than using one of your race's SA facilities must be verified.

N11.07 Breakthroughs From Conquered Races

A conquered race cannot aid the conqueror in breakthroughs until after it is no longer in a "conquered status" (i.e., not conquered, a forced ally, a slave, or a subject race).

N11.08 Capturing A Breakthrough

For *each* piece of INTACT captured technology that is dismantled and studied (and destroyed), your scientists could have a 10% chance of breaking through a knot. The knot must be in the same tree as the item and it must be at an SL less than or equal to the item's SL. For each piece of damaged technology captured, there is a 1% chance of breaking through a knot. If there is no qualifying knot, then you don't get any breakthrough.

Breakthroughs from captured technology must be verified.

N12 Technology For Low EL NPRs

Pre-Ind, IND-1, and IND-2 do not specifically spend for R&D. Instead, they earn a fixed rate of RP points per month. Once 101 RP is reached, they automatically advance to the next level. Each LEL NPR gets 1d100 starting RP. Pre-Ind earns 1 RP per month, IND-1 earns 2.5 RP per month, and IND-2 earns 5 RP per month. Assisted R&D can provide up to 10 extra RP per month for a LEL race.

N12.01 R&D for IND-2 Races

When an NPR achieves IND-2, SS, H, Qa, Qv, M1, st, and their trees, become available (open with SL 0 and item development completed). IND-2 races can advance in SL beyond zero (treat IND-2 as EL 0).

N12.01.1 For every 25 RP an IND-2 race earns, one of the following choices is available (each group can only be chosen once). If a weapon is chosen, the item R&D has also been completed.

- LRW Trees: Missiles, Plasma Torpedoes, or Kinetic Gun.
- SRW Trees: Laser, Energy, Force Beam, Sprint Missile, or X-ray Laser.
- Sensors and Planet Surveyors (Xp)
- SY, SYM

When 50 RPs have accumulated, armor "A" becomes available and the armor tree opens (20% chance of "S" instead of "A" being available). When 50 more RPs have accumulated, then shields becomes available (or armor if shields are already developed).

For every 25 RP gained, gain 1 RDS.

For every 25 RP gained, there is a 15% chance that Cp, (AC), and hull sizes EX-CT are developed/prototyped.

For every 50 RP gained, gain 1 SA.

N12.01.2 When SY becomes available, the race receives the prototype shipyard [HQa(SY)] for free.

N12.01.3 When an NPR is "uplifted" [N9.03.4] to EL1, the NPR can ONLY select weapon or engine branches that are available to the race uplifting the NPR. The NPR can NEVER choose a branch that the uplifting race does not have opened or available to them. If there are multiple choices, the NPR may still only choose one (as per [N12.01.1]).

N12.02 LEL NPRS Achieving EL1

When a NPR achieves EL1 during the course of a Starfire game, it causes a number of trees, branches, and twigs to open and items to become developed and available. These openings and developments do not require breakthroughs, MC or projects. They are considered part of the EL 1 project.

The new HEL race must choose a branch, I-Engine or J-Engine, to open and proceed along. The first engine in that branch, (Ia) or (Ja), is developed along with the Commercial Engine twig opening and the Ica developed. Xa becomes available and SL 1 Science Instruments are completed. Hull sizes EX-FG and EXf-FGf are prototyped when the first engine becomes available.

In addition, they gain 1 new free SY-SS for each of the first 4 months of being EL 1.

N13 Perceived Science Level

Other races will perceive the science level of a given empire to be that of the highest SL technology that has been observed in use. This includes the observation of technology in combat and encounter situations. For purposes of the threat of war [T3.02], this is the science level that applies. In all cases for perceived threat, the actual basic SL of the item is used, regardless of what EL the observing race would be able to get that technology at.

Exception: Single probe ship is not considered for this due to the possibilities of deception. Until combat ship(s) systems are detected, NPRs will consider the enemy EL to be equal to their own.

Note: It is what you perceive the enemy fleet to be like not what he really is like. To determine the SL level of a tech item, you must be within short sensor range [D5] when the tech item is actively functioning. This information may be sent via courier drone or regular transmission. There are some tech items that are internal and you can't tell with sensors. *Examples* include (CIC), (APC), A. Other tech items like "Td" only are detected when they "cut" a tractor beam.

N14 ACTIVELY AT WAR

To be considered "actively at war" at least one of the following must apply:

- The enemy used genocidal policies [V4.04] resulting in the loss of 75% or more PTUs on a population of at least settlement size within the last 4 months. Last 8 months for large and last 12 months for Very Large. Additionally, income is increased by 10% when "actively at war" against a race using genocidal policies.
- During the last 6 months, you have lost and still haven't regained - 3 systems OR 1 or more systems with a total of 500 PTUs or more.

N14.01GLOBAL WAR STATUS

There are three global states that an empire can be in - Peace, War, and Actively at War.

A race that is at war, but not "actively at war" per N14, does not feel a immediate threat to its existence/independence.

"Actively at War" is used in the following parts of the rules.

F3.04.1 Crew grade advancement

L1.04.4 IU sale restriction

N9.05.2 and N9.05.3 (Crash R&D Types)

N14 (Definition of actively at war)

T3.11.2.1 Military Treaty support restrictions

Y12 Home Fleet Size

Spending restrictions (section Y) are applied only to NPRs but other restrictions, such as IU sales, apply to players too.

Y11.06.3 This lifts NPR spending restrictions regardless of the type of war. I.e. "at War" not "actively at War"

N14.02 CAPTURED TECHNOLOGY

A captured ship that has been refurbished may use any systems in the captured ship, with the exception of items more than 3 SLs above its EL, even if the race has no SL ability in that technological area. However, after each combat in which the system is used, there is a 10% chance that it cannot be maintained and becomes damaged. Commercial technologies and armor need never roll. Military engines roll one die roll per MP above safe speed used.

N14.02.1 Any technology that a race does not have the ability to build is treated as a captured technology. Thus, you can use your allies' technologies but your going to end up in his shipyards a lot since you cannot repair the items.

N15 R&D GENERATIONAL CODES

STARFIRE uses a consistent set of generational codes, in alphabetical order, to depict improvements in it technologies such as more power, better efficiency, and so on. Each system will have its basic code group followed by a generational code. The generational codes are listed in [Generational and Appended Codes]

N16 TECH GATHERING REVIEW

Next Section: P - Communications and Command

Tech Gather Type	How to get it	Result
Tech Data	Must SCAN [D5.02.5] shields down unit	+30% RP on SL in same branch; target SL -3
Tech Copy	Must gain an intact copy of the tech item	+50% RP on SL in same branch; target SL -2
Assisted R&D	Another race must help; they must allocate an RDS	+75% RP on SL in target area; Max RP gain [N9.03.3.1]
Assisted EL R&D	Another race must help; they must allocate an RDS	+75% RP on EL (75% cost); Max EL RP gain [N9.03.3.1]
Uplift EL	Partner must help; Partner must pay 80% of uplifted race's payment.	Gain EL in x months [N9.03.4]; Must buy 25 EL RP per turn; No EL growth bonus occurs
Forced EL Assistance	Capture planet with an effective EL above yours; build or convert RDS	5 EL RP available to be bought at normal cost; uses the RDS on the planet
Counter TR	Gain knowledge of powerful weapon (see N9.04.2 table)	Gain breakthroughs as needed; Temp skip SL below counter item; +50% RP SL; Each RP cost a variable amount;
Normal TR	Observe being fired in combat at T detection or better	+50% RP SL; Each RP costs 200%

P – Communications and Command

Communication can be an empire's "Achilles Heel." The ability to transmit information speedily over interstellar distances is critical to control of the economic, political, and (especially) military activities of the empire. When information and orders can be passed quickly, flexible and effective response to threats is possible. When information and orders pass slowly or not at all, responses to threats become fumbling and uncertain.

Early in the game, the only means of interstellar message transmission is via starship or CFN. After a while, the courier drone becomes available and empires may station navigation buoys [AppAA-AP] near warp points for Courier Drones. Later on, the communications module [P2.04] or communication AP becomes available, allowing light-speed communication links across large distances.

However, security and secrecy often play a large part in transmissions and thus there are two types of communications: Broadband (see [P3]) and Tightbeam [P2]. While both types of transmission methods have high security (encryption and weekly keys), only Tightbeam is a high secrecy transmission.

Definitions: Contact Point: The time (to the minute) and location (to the tH) where a unit says it will be in order to receive a Tightbeam communication.

P1 Communications in Space

The communication situation in STARFIRE is complicated by the fact that messages must be passed through two quite different media: the normal space within star systems and the warp points between them. Messages may be transmitted through normal space via tightbeam radio arrays [P2] or broad-band [P3], but they may pass through warp points only via a warp capable unit. WPs thus serve both as portals that link widely separated star systems and as barriers that cut off or slow message transmission between them. Accordingly, an effective Interstellar Communication Network (ICN) [P8] combines technology to cope with both message transmission media into a single system.

P1.01 Communication Speed

Light-speed communications (Tightbeam or Broadband) occur at 120 tH per tactical turn, 1 sH per 12 minutes (24 tactical turns), 5 sH per hour, 120 sH per day (4 StMP per day), or 120 StMP per month.

P1.02 Communication Ability

HEL populations in star systems have inherent message transmission capabilities, as do (in a more limited way) IND-2 populations. IND-1 and Pre-Industrial populations have no message transmission capability. Spacecraft have a limited inherent communications range.

P1.03 Intercepting Communications

Note: Tactical Tightbeam communications (less than 60 tH distance) can never be intercepted.

All units and populations within range of a broadband communication will intercept it. Units within 10 tH of the designated arrival point of a Tightbeam communication will intercept it.

P1.04 Reading Intercepted Communications

Unless the intercepting race has at least a Defensive Military Alliance (or better) with the race transmitting the message, it will be unable to read the transmission. The message will be in a foreign language and encrypted. See [U2.04] about decrypting messages. Capturing an enemy ship that has not purged its database [D7.04.4] will give the encryption codes for a single week [U6].

P1.05 Blocked Communications

Any message passing through an asteroid belt has a 1% chance of the message being blocked.

P1.06 Range Reductions to Communications

Broadband communications are completely unusable in a nebula. Tightbeam communications are limited in some types of Nebulas: Reflective Nebula, -50% Range; Emission Nebula, -75% Range; Maser Nebula, max. range 1 tH.

P2 Tightbeam Communications

"Tightbeam" transmissions are made using a tight-focused, highly directional beam of light or energy. While there is a tendency for the beam to spread with distance, Starfire mostly ignores this.

P2.01 Sending a Tightbeam Communication

In order to send a Tightbeam communication, a unit must know the "Contact Point" that the receiving unit intends to be and must send the transmission such that it arrives in that location at the correct time.

P2.02 Receiving a Tightbeam Communication

In order to receive a Tightbeam communication, a unit must be stationary, within 5 tH of, and arrive at least 10 minutes prior to the specified the Contact Point.

P2.03 Tightbeam Range

P2.04 Using Tightbeam with Mobile Units

A mobile unit can communicate at ranges indicated in [Table P2.03 Tightbeam Transmission Ranges] by following [P2.01 and P2.02].

In effect, this works as described in the following two rules.

P2.04.1 Both Units "Moving" Both units set "Contact Points" ahead of time. Each unit must "during movement" stop to send their message [P2.01] (remember to adjust for message lag times), and then continue moving to their Contact Point to receive any message sent. Note that this is not two way communication but rather two one-way communications.

Table P2.03 Tightbeam Transmission Ranges

Transmitter Type	Receiving Unit				
	Small Craft	Large Craft	(CC)	LEL Pop	HEL Pop
Small Unit/AP	1 LM	1 sH	1 sH	1 sH	1 sH
Small Craft	1 LM	1 sH	1 sH	60 sH	60 sH
Large Craft	1 sH	2 sH	3 sH	60 sH	60 sH
(CC)	2 sH	3 sH	60 sH	60 sH	100 sH
LEL Pop	1 LM	1 sH	60 sH	60 sH	100 sH
HEL Pop	1 sH	4 sH	100 sH	100 sH	100 sH

Each time a message is sent, a new time and position to receive the next message must be sent. If just one message is missed by either unit, communications will be lost until a physical meeting (within sensor range) occurs or a broadband communication reestablishes the next Contact Point.

P2.04.2 Using a Relay One unit remains stationary as a "relay" (often at the entry WP). This allows one or more moving units to Tightbeam to the "relay" without having to stop. If in this message, the moving unit specifies a Contact Point to receive a message from the relay, then such a communication can happen if the moving unit is within 10 minutes and 5 tH of the arrival location of the message (remember to adjust for message lag times).

Since the Relay never moves, it never misses a message. Thus, communications loss will generally only occur with the moving unit missing transmissions.

Populations often act as relays also.

P3 BROADBAND COMMUNICATIONS

Broadband communications are nothing more than an omni-directional multi-frequency radio transmission. These require more energy than Tightbeam communications and every unit (friendly or not) within range hears them because they don't require knowledge of the receiving unit's location. Exception: [P1.04]

P3.01 ALWAYS OMNI-DIRECTIONAL

All units intercept broadband communications in the same star system. While in reality the interception area would be a cone, some transmissions would be made omni-directional because of the lack of knowledge of the receiver's locations. It is just safer for game balance to assume ALL communications are omni-directional.

P3.02 TRIANGULATION

All units that receive the transmission know what direction the transmission came from, but not the distance from the transmitter. Triangulation would give a general location of the broadcast if the receivers were at least 1 sH apart, locating the transmission's source to the system hex of origin.

P3.03 MAXIMUM RANGE

Broadband transmissions have a maximum range of 300 sH for populations, 200 sH for large units, and 50 sH for small units.

P4 PRACTICAL COMMUNICATIONS IN SYSTEMS

For the purposes of Starfire, we don't want to worry about all these contact points and such when moving around systems. That would be too much of a burden and take the fun out of things. Thus, this sort of stuff is only important if someone or something interferes with the moving unit(s). Thus, a standard 8 hour contact is assumed (remember that the moving unit loses at least 10 minutes of movement so anything less would start incurring movement rate penalties). Both units are sending messages every 8 hours. For simplicity, players cannot alter this standard contact time. As long as nothing prevents the unit from moving at its stated cruising speed along the proposed path, contact is assumed to be safe and the moving unit can receive messages. Of course, if using a relay or using broadband communications, the moving unit can always send a successful message (unless blown out of space in a single tactical turn or before it can activate).

If an ambushed unit fails to get off a warning message, the next contact time was 1d8 hours away (plus any communications lag). Then the ambushed unit's side will be "alerted" to "something odd," if a relay ship or broadband communications exist. Players can have their forces "run silent" and attack at a certain time from different directions (often not recommended) but communication issues could become a serious problem if anything goes wrong.

P4.01 ISSUING COMMANDS AND COMMUNICATIONS

All commands and communications are sent in a particular format so that the SM and players can easily read and understand them. Each message must have the following information: the sender, the receiver, the time sent, and the time received. in addition to the actual message.

However, the practical application is that all command and control messages are actually sent during the previous month and arrive for implementation at the beginning of the month. Only during war and in the case of moving units around to address enemy actions (CFN, IFN units, military units, deploying AP, etc.), issuing attack orders, etc. are messages delay times actually addressed. In fact, if no attacks occur or systems are captured for two months, then all messages return to implementation at the beginning of each month.

P4.01.1 Optional Time Saver: Ignore time lag for units within 5 transits of an ICC or Imperial Capital when a Light-Speed ICN exists to the recipient's location. This places an emphasis on building up the ICN throughout the empire to avoid time lags.

P5 DETAILED COMMUNICATIONS

A few things cannot be sent "instantly" via STARFIRE communications systems. Among these are sensor records of combat: Every large unit maintains within its sensors a complete record of all information that the sensors have observed. This includes detailed combat results (hits, misses, damage amounts used to determine/estimate the generation of enemy weapons), scans of alien ship designs, WP gravity surge data, and the technical sensor data on the observations of unknown units. This type of data cannot be transmitted reliably during combat, as it takes 10 tactical turns to transmit one turn's worth of such data. Such data can be carried via a

light-speed ICN, or downloaded to courier drones, but again, transfer to either system requires considerable time. Should the transmitter be destroyed, or otherwise rendered incapable of continuing to transmit, before this time has elapsed, none of the detailed information is treated as received by the intended target.

Other things that fall into the "too detailed" category: survey data (any type). Note that survey ships routinely have one CD (or more) continually updated with information on the state of the survey. However the actual data is not compiled until near the end of the month so during the month only the PREVIOUS month's information is available, and that was probably sent off already. Linguistics data that is necessary to communicate with a new race after partial, initial or full communications established. Linguistics data is so massive that it requires 2 full days to transmit.

P5.01 Courier Drone Memory

A courier drone (CD) is an AP drone with the following statistics: Drone1-cm. If available, the CD will have DEEP.

This rule addresses the cm portion of the CD.

Data transfer to cm is very quick but large unit sensors collect incredible amounts of data. Often this data is constantly being encrypted and downloaded into cm but this process takes time. A CD's data is considered to be fully updated during the record-keeping phase of each turn: Basic Data and Detailed Data. Such updates occur during combat too.

P5.01.1 Basic Data Types of basic data are:

1. Enemy unit location, number, facing, and size
   Exception: Units which can only be detected at P or S detection are not known unless they fire.
2. WP data (position, grav surge, visibility, and size).
3. System Body Configuration (positions of stars, planets, moons, etc. and basic type -- rocky planet).
4. If buoys fire, the number of firing buoys and whether they destroyed themselves is known. The type of weapon is not.

P5.01.2 Detailed Data Types of Detailed Data are:

A. Survey Information
B. Combat Results (hits, misses, damage amounts of enemy weapons)
C. Sensor Scan Data including detection of buoys.
D. Survey Data
E. Linguistics Data
F. Observable Anomaly Data
G. Enemy ship hull type and status

P6 Long-Range Tactical Communications

Light-speed communications occur at 120 tH per tactical turn (1 sH per 24 tactical turns). CLKing and LOD create situations where those units, which have short sensor ranges and low speeds, are likely to be "guided" by other units with better performing sensors (including sensors with ranges in sH). Such delays in obtaining actual sensor readings of enemy positions will, at times, play a major role determining whether slow moving units are able to "make contact" with detected enemy fleets. This may also highly affect ambush situations if the enemy fleet is doing "zig-zagging." This rule is reminder to space masters and players to take this into account when setting up battles with players attempting ambush type situations. Zig-Zagging (left or right of course by 30 degrees each x time periods), which can be preset by the moving player, does delay travel by 16%. (Actual course is along a spine.) 60 degree left/right of course zig-zags (two turns in the same direction before turning back) cause a 42% travel delay. (Actual course is along a hex-row.)

P7 Command Structure

Without a command structure, no orders can go out, no fleets can move -- really, nothing gets accomplished.

P7.01 Imperial Capital

The Imperial Capital is the "heart and brain" of any empire. All actions by any ICC, fleet, ambassador, governor, etc., must be returned to the Imperial Capital for review and approval. All empire-wide policy is formulated at the Capital and other ICCs simply implement those policy guidelines None of these activities are individually reflected in the ICN rules to cut down on the message traffic, but players should understand that it is a continually ongoing process.

For combat purposes, an Imperial Capital is treated as 6 ICC units, one in each planetary area. See [P7.01.1] for the penalties of losing an Imperial Capital.

P7.01.1 Lost Contact with Imperial Capital/ICC A section of the empire is "cut-off" when it loses contact with the Imperial Capital (meaning that there is no way to send a message or a ship through friendly territory to reach the capital). Sometimes the cut-off areas will have an ICC to continue the government until contact is re-established, but if an ICC is not present then one will need to be built [M7.01].

An ICC can lose communications with the Imperial Capital through the loss of territory, the conquest of, or destruction of the Imperial Capital. An ICC that is not in communications with the Imperial Capital or a reserve Imperial Capital may not:

1. Negotiate any relationship closer than Limited Trade Intercourse with newly encountered races,
2. Emplace any additional populations on any planets the exploration units encounter,
3. Engage in espionage [U6] or offensive counter-espionage [U7], or
4. Freely ship resources to systems cut-off from that ICC. Resources can only be shared within the cut-off section that is connected to the ICC. Resources can still be shipped (or attempted to be shipped) via imperial freighter.

If a cut-off portion of an empire does not have an ICC, it faces all of the above restrictions and, in addition, may not--

5. Conduct further warp point exploration,
6. Conduct Assisted or Crash R&D,
7. Freely ship resources, which must be spent in the system generating them or shipped via imperial freighter.

P7.01.2 Reserve Imperial Capital ICC, even cutoff ones, can be built into Reserve Imperial Capitals. A reserve Imperial Capital ICC can be reactivated as an Imperial Capital in a single month at no extra cost, but only if the original capital becomes unavailable (cut off).

Reserved Imperial Capitals are sometimes called Sector Capitals.

P7.01.3 No Imperial Capital Required A race with any of the following political states does not require an Imperial Capital [P7.01]: Conquered, Slave, or Forced Ally. Once a race accepts a Subject Race status or any other status with the conquering race OR the conquering race no longer controls the previously controlled conquered race, the conquered race must begin construction of an Imperial Capital.

P7.02 IMPERIAL COMMAND CENTER (ICC)

Reserve Imperial Capitals and ICC may be thought of as sector capitals -- communication nodes manned by military and civilian officials and their staffs for the purposes of day-to-day management of the star systems and a quick response to unexpected crises.

Additional ICC may be established using the procedures in [M7.01]. Orders from an ICC take 1d10 hours to generate and can only affect units assigned to that sector.

P8 INTERSTELLAR COMMUNICATION NETWORK (ICN)

Developing, maintaining, and upgrading your ICN is important to linking all systems together into a fast responding empire.

Fortunately, each player has a built-in ICN via the CFN. Unfortunately, the speed of the CFN is very slow.

P8.01 COMMUNICATION RESTRICTIONS

No starship or force of starships may move on the strategic scale without express written orders to do so. Orders are written at the Imperial Capital or closest Imperial Command Center (ICC) for transmission to units which are to move, and movement may begin only after the orders reach the units expected to carry them out. (A unit may move in the same StMP that orders for it to move arrive). At HEL 1 when courier drones are not available, orders intended for recipients in other star systems must be physically carried through warp points from the Imperial Capital or ICC via starship, as there is no other way to get them there. At higher Economic Levels, they may be transmitted via courier drone or via communication modules. Determining the message receipt times to the nearest StMP is generally sufficient for the purposes of the game but players are welcome to be more detailed if they wish.

P8.02 LAST ORDERS

A unit or group of units will continue to execute the last set of orders it received until they are superseded or altered by later orders. A unit or group of units, unless commanded by a graded leader [Section S], can never do anything not covered by its orders except to defend itself or the star system it occupies against attack.

P8.02.1 Just as military orders are binding upon military units until new orders are written and transmitted to them, so political "orders" are binding until amended by the capital or an ICC. Section T restricts a player empire to making a single political offer per month to each another Player Empire or NPR.

P8.03 RESPONDING TO NEWS

A player cannot send orders to a unit in response to specific situation until news of the situation reaches the Imperial Capital or an ICC it is assigned to.

P8.04 DEALING WITH CHEATERS

There will, undoubtedly, be some wayward soul who tries to get around communications restrictions. Of course, he always meant to send Sixth Fleet off to System 817 for, um, training maneuvers. The fact that the Ravening Horde of Heshi just invaded System 817 (a fact of which his closest ICC will not become aware for another month and a half) has nothing to do with the case. You believe him, don't you?

It is the function of the SM to restrain such weaker brethren. When there is no SM, each player should maintain a message log, assigning each order sent and each message received a unique identifying number and recording the date and time at which it was sent/received. Orders responding to a given situation should then include the ID number of the message that made the issuing authority aware of that situation. Unless such an ID number is included, the order is invalid and may not be obeyed, and the other player has the right to examine any player's message log to be certain that no one is playing fast and loose with reception times and dates. If the SM, in his sole opinion, decides someone is playing fast and loose with the ICN, his decision to disallow any order is final. Players without an SM's wise and dispassionate guidance should resolve differences of opinions with an amicable roll of the dice rather than attempting to nuke one another across the gaming table.

P8.05 (CC) CAPACITY LEASING

(CC) is a high-capacity communication system designed to pass on large amounts of data at a low cost. As such, and unlike other types of networks, they have the bandwidth to carry civilian messages.

(CC) income is generated by (CC) links but is limited by the total number of (CC) involved.

P8.05.1 (CC) Network A (CC) network is a series of (CC) links between two or more populated systems, at least one of which contains the Imperial Capital [P7.01] or an Imperial Reserve Capital [P7.01.2].

A (CC) link is a series of (CC) between two different systems. The (CC)s can be mounted on buoys (i.e. AP-c) or large units.

A completed (CC) link has 2 (CC) per warp point, with a (CC) on each side of each WP, between the two eligible populated systems. While a network cannot place extra CC at a WP, it can make other linkages as long as they go to different systems.

P8.05.2 (CC) Network Income The maximum amount of MC a (CC) network can generate is equal to the value of each connected system excepting the Largest System (if multiple planets are the largest value, count all but one of them). A connected system can generation a value equal to the system's PU divided by 25 (FRD).

The message transfer (income generation) is unaffected by hostile forces operating in any of the systems as long as the (CC) bases are operational.

P8.05.2.1 Limitation Due to the capacity limit of the (CC) (and for game balance reasons) the total income generated by (CC) in a (CC) Network cannot exceed 20 MCr per (CC) involved in the

network. Note: (CC) going to nowhere or to system which generates no value are not counted.

Do not worry about how much traffic is each link is carrying. Just total the number of (CC) involved in any link of the network times 20 MC. If it is smaller than the (CC) Network Income, use that number.

Example P8.05 – (CC) Capacity Leasing

Next Section: Q - Strategic Movement Rules

Q – Strategic Movement Rules

Movement occurs on the strategic level when starships move over interstellar distances. As the actual time of contact is rarely going to have a major impact on any battle due to the long travel time verses the lightning fast battles, STARFIRE uses a highly simplified system of strategic movement so that players and space masters do not become bogged down with paperwork. For those wishing a more detailed system, use the one presented in IMPERIAL STARFIRE (3rd edition).

Warp point transits are nearly instantaneous, but the normal space between them must be crossed, which takes time. This simplified system assumes an average distance between locations.

> ***Note:*** that normal sH movement may not be possible when using this method but this is corrected for in [Q3].

Example Q – Strategic Movement Form

Q1 Planning A Strategic Move

When a player moves starships over strategic distances, he must record the month and strategic pulse that the movement started. A starship receives a number of "strategic movement points" (StMP) equal to its ordered strategic speed. Strategic movement is resolved using [Table C2.03 Pulsed Movement], with a Strategic Movement Pulse (hereafter termed 'pulse') equal to 5 days. A ship may not "save" StMP for use later in the month. If a unit chooses not to move, for any reason, on a pulse in which it is scheduled to move, it loses that StMP.

Q1.01 Specify Route

After recording the StMP with which movement begins, the player consults his imperial map, noting which star systems the starships must move through. Fill in the system numbers through which the ship(s) wish to travel and the final destination (including location).

Q1.02 Location in a System

A starship may enter or travel across one star system per StMP. A starship is considered to be moving from the star's location to the next star's location during normal movement. While performing a multi-system series of transits, a ship ends a pulse at the WP exiting the system entered with that StMP. Note that the ship(s) may end in any location in the destination system.

Q2 Strategic Locations

The major locations in a star system are the "star location" (the area surrounding each star where the planets are located) and the "WP location" (where a warp point is located). The two ends of a warp point are considered different "attached" locations.

Q2.01 Binary Star Systems

Each component of a star system is treated, in effect, as another star system. The distances vary but on average are about the same as travel to an adjacent system. Thus to move from one component to the other requires spending 1 StMP. Entering or exiting a system via a WP allows movement to or from EITHER A or B component's locations by spending one StMP. The distance from the WP to the B component is only slightly greater (on average) than the average distance between any two random WP and moving between two WP in different systems costs 1 StMP.

Q2.02 "Probing" Movement

As the star location includes planets, most races who are doing something in a system have either a ships and or populations in that location. Probe movement is used when a player wishes to check an adjacent system for either populations or enemy activity in a star's location.

A "probe" might miss populations like those emplaced on asteroids or ice world moons. The probe moves directly to each T and ST world and then leaves the system as quickly as possible. Deviations cannot occur unless something happens like a population found or unit detected. The player's standard operating practice document should cover these situations or the ship will have to wait for new orders. A probe of a new system takes 1 StMP to examine component A in a binary system or the single star in a non-binary system. A "probe" must begin movement in the "attached" WP location of the adjacent system and must 'end' movement in the same location. Exception: A ship may "Probe" Component A and then move to Component B during the same probe (this cannot be reversed). Probes of binary component B stars are not allowed as the avg. distance is too far. To "Probe" only the B component, use 1 StMP to move to component B's planet(s) and 1 StMP to return.

A probe is an unusual movement situation. At the end of the movement pulse the unit is actually still in the system probed, in terms of relative distances. A probing unit requires 1 StMP to move ANYWHERE after making the probe, including back to the star location in the system it started from. You only worry about this if a probing unit doesn't remain in the probed system on the next StMP.

Example Q2.02 – Probing Movement

Q3 Resolving Conflicts

Because StMP movement is an averaging system, there are times when ships move significantly more or less sH than using sH movement (1 sH per day per point of speed) would allow. This difference between the movement systems will usually only have impact when enemy forces are converging on the same location. However, it must be noted that concern about the actual distance outside the system of conflict must be ignored in order to minimize the difference between the two systems.

Q3.01 Strategic Movement Pulse Timing

Normally, units arrive at their destination for the particular StMP spent at the end of the Strategic Movement Pulse [C2.03] that they move in, regardless of the distance involved.

Q3.01.1 Mid pulse allows calculations for units moving over speed 6.

Pulse Timing Table

Pulse 1 Starts Day 1, Hour 0, Minute 0
Mid Day 2, Hour 12, Minute 0
Ends Day 5, Hour 23, Minute 59.
Pulse 2 Starts Day 6, Hour 0, Minute 0
Mid Day 8, Hour 12, Minute 0
Ends Day 10, Hour 23, Minute 59.
Pulse 3 Starts Day 11, Hour 0, Minute 0
Mid Day 13, Hour 12, Minute 0
Ends Day 15, Hour 23, Minute 59.
Pulse 4 Starts Day 16, Hour 0, Minute 0
Mid Day 18, Hour 12, Minute 0
Ends Day 20, Hour 23, Minute 59.
Pulse 5 Starts Day 21, Hour 0, Minute 0
Mid Day 23, Hour 12, Minute 0
Ends Day 25, Hour 23, Minute 59.
Pulse 6 Starts Day 26, Hour 0, Minute 0
Mid Day 28, Hour 12, Minute 0
Ends Day 30, Hour 23, Minute 59.

Q3.02 SIMULTANEOUS ARRIVAL

Forces that use the same Pulse to arrive (by moving) at the same destination, must determine the day of arrival.

Q3.03 DETERMINE ARRIVAL DAY

If two opposing forces should both move to the same location in the same strategic movement pulse, roll 1d10/2 (FRU) to determine the day of that strategic movement pulse that the force arrives at its destination location. See [Q3.03.3] for exceptions.

Example: Two forces enter the same system on the second strategic movement pulse. The first force: rolls a 4, which means that it reaches the location on the 2nd day of the 2nd strategic movement pulse, or, in other words, the 7th day of the month. The second force rolls an 8, and arrives at the location on the 4th day of that pulse (9th day of the month). The first force will arrive at the location 2 days of movement at the system scale before the 2nd force arrives. If combat should then occur before the 2nd force will arrive, move the 2nd force back a number of sH along the route it was taking each to (days * speed). In this case, if the battle occurred immediately, 7th day, the 2nd force would be, if it had a speed of 3, 6 sH from the location of the combat.

Q3.03.1 More than Two Forces There maybe cases where multiple forces are involved in moving around a system. Use the pulse chart as much as you can until combat/contact actually occurs, then determine the locations of all reinforcements.

For example, if a third force had been involved in the above situation, and if it arrived on the 3rd day of the 4th pulse (Day 19) and was moving speed 2, it would be placed (19-7)*2 = 24 sH from its destination location (often the location of the battle). This applies even if the destination location is DIFFERENT but in the same system. If this "backward movement" took this force back into the previous system, then that is where it is placed and then all forces then use sH movement. This is important because lightspeed messages of the battle may cause the units to change destinations. If the force that wins the battle ceases movement, in effect, the battle and sH movement can be stopped, though in moderated blind-movement battle, the Space Master may continue movement for the purpose of deceiving the moving force (and for mystery).

Q3.03.2 Reinforcements If reinforcements are called from an adjacent system into the system in question, do not use sH movement except in rare cases. First off, the reinforcements must receive a valid order to move and then are still restrained by the Pulse movement chart [C2.03] according to the speed they wish to travel. Once their arrival time at a particular location (planet, WP, etc.) is determined per [Q3.03], then sH movement could begin. However, it is important to note that if the enemy invaded the system, defeated the WP force and advanced upon the planet, this would all occur in a single Pulse during the same StMP used. Any reinforcements, would very likely NOT be able to move during that same pulse and thus it is likely that the original force would be stationary and thus sH movement would be unnecessary until the reinforcements were detected (contact made). At this point, then the actual time of the battle would be determined by [Q3.04].

Q3.03.3 A fleet which ended a previous pulse in a WP location may move to the other side of the WP without any delay. This also includes moving reinforcements using sH movement.

Q3.04 ADDITIONAL SITUATIONS

There may be cases where one moving fleet is detected or detects other units. In such a case, you have effectively "entered combat" and should be moving to system level movement (not StMP movement).

Calculate the arrival time at destination using the previous StMP speed in use. Determine the point of detection. Determine the distance between destination and point of detection. Determine time to travel said distance using the StMP speed that would have been in use. Subtract that time from the arrival time and begin system level movement.

Next Section: R - Survey Rules

Unless a race captures data about, is given data about, or enters a system, it does not know anything about that star system. If a race has no advance information about the system, use the following rules to obtain information.

In a pre-generated universe the SM will roll the systems prior to the players exploring them. In a game where the universe is rolled as it is explored, each player will either be given the proper system information at the time they enter the system, or roll the information as the system is explored (in games without an SM). If another player has already surveyed the system, the system data gained by the new surveying player will come from the system data file of the player who carried out the initial survey.

Space Masters should not tell players whether or not a system has previously been surveyed. For this reason, the SM should make all the system generation rolls called for even if he is actually taking the data from an existing system data file (in order prevent the player from learning that another race has previously entered the system). As a player surveys a star system, he should enter the data he obtains in his own system data file.

Whenever a survey ship makes transit through an unexplored WP, the WP's range and bearing from the primary are determined as per [R1] and [W8.04] and entered on the new system data file being filled out by the surveying player. Unless another race is within detection range [D5.02.2] of the WPs location at the time a unit makes transit, it is not told the range and bearing of the WP by which the new unit entered.

R1 Large System Body Detection

Large system bodies – suns, planets, moons, and asteroid belts (though not individual asteroids) – can be detected at any range within the star system by any starship, but data about planetary types, primary types, etc., cannot be processed (and so cannot be used) without Science Instruments.

See [D5.05] for rules on detecting populations and [D6.02.5] for detecting PDCs.

R2 Surveying for Warp Points

Note: WP type and WP visibility are interchangeable terms.

Warp points (WP) cannot be directly detected. The location of a WP is calculated by taking gravametric readings. One-third of the system hexes (930 of 2790 sH) in a 30 hex radius of the Star (these hexes must be *Non-Adjacent -- See diagram on the left*) must be entered/surveyed (this is called a detailed survey location). During the survey, the X readings are collected and a single X calculates the warp point locations. Survey speed is limited by the need to take some additional readings between the system hexes in which detailed readings are taken. Approximate WP locations are available in advance of survey completion to allow survey ships to move to the projected WP location and prepare to "probe" the system beyond the new warp point in the StMP after WP survey completion

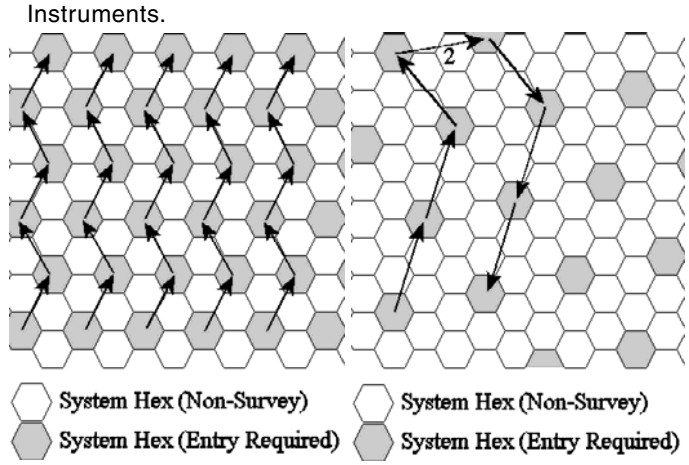
Note: Higher level Science Instruments (Xq and higher) only require surveys of every 7th sH (around 400 sH). This improved capability is integrated in various charts and tables. The exact survey rates for each generation of Science Instruments can be found in AppAA-Science Instruments.

R2.01 Ship Locations

During a warp point survey, the player has little control over his survey ship's locations. Ships should not be in adjacent system hexes. The arrows in the diagram show one typical movement pattern of individual survey ships. There may be gaps in the pattern in order to allow a unit to reverse course to do the next "line" over (see 2nd picture). This may not even be the *most* efficient survey pattern.

Designers note about survey ship positions: At the start, the ships are spreading out to the various reaches of the system. In the middle, no ship is closer than 2 sH to another. At the end phase, the warp point's general location is being calculated and updated, and the ships can close on a quadrant(s) and end the last survey StMP right at the WP (or WPs) as the data is refined.

Example: Standard Survey patterns for Science Instruments.



The example on the left is for Science Instruments Xa-Xo while that on the right is for Xq and higher level Science Instruments.

The type of survey is defined by the most hidden (highest visibility [W8.04]) WP that survey can find. Thus, an open survey (previously termed a rough survey) can only find warp points with open visibility. A hidden survey can find WPs of open, concealed, or hidden visibility.

R2.02 Warp Point Survey

It requires 200 survey points (SPs) to complete each type of survey. SPs may be gathered in non-consecutive StMPs but extra SPs from one survey do not carry over to the next survey, even surveys of the same type. If you like a slower paced game, increase the number of SPs required and minimum number of StMP needed to complete a survey by an equal percentage.

R2.02.1 A ship with operable Science Instruments generates at least 1 survey pt per strategic movement pt spent surveying. The generation of Science Instrument determines the maximum surveying speed and the

Table R2.02 Survey Types and Completion

Survey Types	Points to Complete	Survey Can Find a WP of x Type or Lower	Science Instruments Needed
Open	200	Finds open WPs	Any (Xa or better)
Concealed	200	Finds concealed WPs	Requires Xb or better
Hidden	200	Finds hidden WPs	Requires Xn or better
Secret	200	Finds secret WPs	Requires Xq or better
Top Secret	200	Finds top secret WPs	Requires Xu or better
Undisclosed	200	Finds undisclosed WPs	Requires Xy or better

Table R2.02.4 Warp Point Discovery

WP Type or Visibility	Survey Result
Open	Chance to find during a survey 90%.
Concealed	Chance to find during a survey 80%.
Hidden	Chance to find during a survey 75%.
Secret	Chance to find during a survey 70%.
Top Secret	Chance to find during a survey 65%.
Undisclosed	Chance to find during a survey 60%.

number of survey points generated per StMP [X.01]. Only one Science Instrument per ship can generate survey points during an StMP. Drones with sX can survey but they burnout at the end of the survey period and are thus very expensive. Buoys cannot survey.

R2.02.2 A WP survey cannot be completed in less than 3 StMPs spent surveying the system and no single survey can gather more than 75 survey points per StMP.

R2.02.3 A survey can only be started if a previous survey type has been completed. Thus, a hidden survey cannot be started before both an open and a concealed survey has been completed.

R2.02.4 There is a chance to miss a warp point during a survey. Roll for Each WP separately on Table R2.02.4 Warp Point Discovery. The chance to find a given WP is not affected by the type of survey performed.

R2.02.4.1 A survey will find warp points of the types above it. Thus, a hidden survey could find both concealed and open WPs.

R2.02.5 A survey fleet wishing to survey an adjacent system may count the StMP spent entering the system as a StMP of surveying (For example, they do NOT spend a StMP when entering a system in which surveying immediately begins).

R2.02.6 Approximate WP Location (optional) Early generations of WP instruments require a great deal more calculation time than latter generations which are able to calculate data as it arrives. However, in either case the approximate location of each newly found WP may be known before the completion of the survey.

	Area	Quadrant	Exact sH	Exact tH
Xa-Xm	180	190	195	200
Xn-Xo	160	175	192	200
Xq+	150	170	190	200

Quadrant -- SM divides the area into 4 roughly equal sized quadrants of sH and tells the player which one the WP is in. 20% of the time, false leads (WP that don't exist which are indicated and WP that are NOT initially identified but exist), occur but are eliminated after 190 SP.

R2.02.6.1 Survey Areas The areas are similar to the raiding zones in V2.02 but have different distances. The last radian listed is NOT in that area.

Radians	All	1 to 3	3 to 5	5 to 7	7 to 9	9 to 11	11 to 1
1 to 8 sH	1	n/a	n/a	n/a	n/a	n/a	n/a
9 to 22 sH	n/a	2	3	4	5	6	7
23 to 30 sH	n/a	8	9	10	11	12	13

R2.02.7 Survey Data Transmission Each survey point (SP) requires one hour of transmission time.

R2.02.8 The Survey Scan To complete a warp point survey, a ship must do two things with its science instruments:

- maintain a running scan as it moves between detailed survey locations
- remain in the center of each detailed survey location system hex for 2 minutes with the drive field and shields down in order to operate the Science Instruments without interference.

Example R2 - WP Survey Possibilities

R2.03 SURVEY INTERFERENCE

It is very difficult to BLOCK a survey. Planets orbit Stars at 1/2 sH per month [W9.04.1] but the gravametric sample locations do not so only a slight delay would occur. In any case, the delay will be relatively short (it depends on whether the surveyor minds being seen by the planet or not).

It is recommended that survey movement be done on the sH scale when enemy units are attempting to block an area.

R2.03.1 Blocked Area If a "blocked" area of connected sH is smaller than 38 sH then the survey will produce results. If entry to any single sH is blocked, such results will be delayed by 1 StMP. WPs will be missed in sH which are in the blocked area. To find a WPs in a "previously blocked" hex, only 5 SPs are needed. If the blocked area is greater than 37 sH, then the survey is incomplete until the remaining needed hexes have been surveyed. Until that point no information on warp point locations are determined {exception: R2.02.6 optional rule}.

R2.04 TOP SECRET AND UNDISCLOSED WPS

There is a 10% chance of a either a Top Secret or Undisclosed Warp point in a system (normally this is only checked for when a survey capable of detecting them occurs). These are rolled for outside of the normal system generation process. Including Top Secret and Undisclosed Warp points, a system is limited to TWELVE warp points. Top Secret WPs can connect with either Top Secret or Undisclosed Warp points (if Space Masters wish, 20% of Secret WPs will connect with Top Secret WPs but this is optional). Undisclosed WPs can only connect to Top Secret and Undisclosed WPs.

Top Secret and Undisclosed WPs always connect to previously generated systems. If the system indicated has not previously rolled for a Top Secret or Undisclosed Warp, make that roll. If that system does not have a WP of the proper type available, move to the next generated system and check again. Continue until you find another Top Secret or Undisclosed Warp location.

R3 SYSTEM BODY SURVEY

Planet and system body types are easily identified as per [R1], but before a system body can be colonized, the surveying player must obtain detailed information on it. This will require both careful study from orbit and, for habitable planets, the collection of atmospheric and soil samples from widespread points across the planetary surface. Type O2 bodies are easier to survey for colonization, since any population emplaced upon them will have to be placed in hostile environment habitats, which are sealed and self-contained. Science Instruments were developed with this task in mind.

R3.01 GENERAL SYSTEM BODY SURVEY RULES

Except for habitable worlds and groups of habitable moons, STARFIRE groups system bodies of the same type around a single star into a single survey. Extra survey points from a System Body Survey [R3.02] carry over to the next System Body Survey and survey points need not be gathered in consecutive StMPs.

- A ship with operable Science Instruments or Planet Surveyor (Xp) generates x survey points per StMP spent surveying (amount based on the quality of Science Instrument).
- During habitable and unlivable surveys only, the captain's gig [Smcft.04] (MSS=1), st (MSS=3), and ast (MSS=3) each generates 2 survey points per StMP. A GB or FQ squadron only counts as one craft (MSS=4). To count small craft aid, a ship with X or Xp must be surveying at the same time.
  No ship or craft may move faster than the MSS nor faster than its strategic speed while surveying.
  Small Craft use their own StMP speed for surveying.
- Each type (of survey) may be done simultaneously but each unit may only be assigned to 1 type at a time. No system body survey can be completed in less than 1 StMP spent surveying and each survey applies to a single star only. Surveys may be done in any order.
- A survey fleet spends a StMP not surveying when entering a system to do a System Body survey because it takes significant time to travel from the WP to the planets.
- For unlivable surveys, there is a 20% chance of any ship/GB being destroyed. Any small craft has a chance to be destroyed of 70 minus (10 times the number of boat bay points). A captain's gig is always destroyed when attempting an unlivable survey. Destruction occurs before any survey points are generated by the destroyed craft.
- All surveys ignore inhabited worlds (unless specifically ordered) when doing a system body survey involving multiple bodies.
- Habitable worlds must be surveyed individually.

R3.02 SYSTEM BODY SURVEY

R3.02.1 Habitable Worlds Survey (Benign, Harsh, and Hostile) When completed, it reveals the HI (if applicable), REI, and mineral content of a *single* Benign, Harsh, or Hostile planet (or all habitable moons around a single world). For a T/ST race, this would be T, ST, HGT, and mT.

The number of survey points required to complete a habitable world survey is follows:

- 20 SP -- I planet
- 80 SP -- V planet
- 40 SP -- O2 or O3 planet
- 16 SP -- G planet
- 50 SP -- T, ST planet or HGT or mT

Note: If a life type treats a worlds as habitable, then it uses these values during the habitable survey.

If a race treats moons as habitable, a single habitable survey reveals the values for all moons around a single planet.

R3.02.2 Survivable Bodies Survey (Desolate and Extreme) When completed, it reveals the HI (if applicable), REI, and/or mineral content of ALL planets and moons circling one star with environments that are Desolate or Extreme for the race doing the survey. SBS surveys require 50 SP for all life form types.

R3.02.3 Asteroid Survey (Asteroid Belt - regardless of habitability) When completed, it reveals the REI and/or mineral content of all asteroids circling one star. Does not apply to HGT. Unsurveyed asteroid belts provide the income bonus [L3.01]. Asteroid surveys require 50 SP for all life form types.

R3.02.4 Unlivable Body Survey (V, G) When completed, will reveal the HI (if applicable), REI, and/or mineral content of ALL planets and moons circling one star with environments that preclude colonization by the race doing the survey (such as V, G, and I planets for T/ST races). Be aware that no technology for the use of these worlds exists, so surveying them will be a waste of time until such technology exists.

When doing an unlivable world survey, there is always a chance that the surveying units will be destroyed as per R3.01 5th bullet. Unlivable world surveys require 50 SP for all life form types.

R3.02.5 Survey Data Transfer Restrictions Since each type of system body survey looks for different things, survey data transferred between races of different life types is only useful to the receiving race if they would have used the same type of survey to gather data on that type of system body.

Example: If a Terran race did a Survivable Bodies survey it would get data on O1, O2, and O3 type worlds. If the survey data were given to (or captured by) a Vacuum race, the latter could colonize the O1 and O3 worlds without performing their own survey (since they would also have used a Survivable Bodies survey for those system bodies). However, the Vacuum race would have to do their own surveys before they could colonize the O2 planets and moons, since they treat those worlds as Benign and Harsh, respectively (which require habitable body surveys prior to use).

S – Graded Leaders (Optional)

A "Graded Leader" is a specific commander who has stood out from the crowd, demonstrating that he has the unique talents and experience required to individually influence the events and battles he controls. Explanations of "base grade" (BG) and other grades can be found at [F3.01] and [F3.03].

All leader grades (LG), regardless of the race's BG, are the same. Thus, a LG+0 leader from a poor race is equally as effective as a LG+0 leader from an elite race. Leader grade is never affected by a race's base CREW grade level. Thus, effectively, leader LG = Average, LG+1 = Crack, and LG+2 = Elite. Maximum grade is LG+5 (Legendary).

Only a single Graded Leader can modify a single event, action or die roll at a time unless a rule specifically states that leaders can add together.

S1 General Rules

These rules apply to all graded leaders. Player races start with 1 LG+1 Admiral, 1 LG+1 General, and 1 LG+1 Governor [K2.01.3]. Furthermore, each starting leader gains one-special ability, which can be picked by the player!

Only a single graded leader of any type can modify a particular die roll.

NPRs also get free leaders [Y3.05].

S1.01 Leader Survival

- A leader aboard a ship when it is destroyed escapes to the life pod 70% of the time and is waiting to be rescued (or captured). Leaders have many special perks in life and one of those perks is improved life pods. Leader life pods have a 2-week life support and food supply.
- A leader on a planet's surface when it is captured or the last friendly ground force is destroyed has an 80% chance to escape into the "outback" and will be living off the land. If the planet is not habitable, the leader has a 1d10+3 month supply of food and life support.

S1.02 Graded Leader Authority

All leaders have the authority and confidence to make independent decisions without waiting for orders from an ICC [P8.02]. Normally military and government units cannot divert from their orders without another order from an ICC. But in response to developing situations, an LG+0 or better leader can take command of certain forces, unless a higher graded/ranking leader gives (or gave) those units a command.

The Graded Leader authority table describes who can give orders to what types of units based on their grade and the type of leader. "In the same system" does not allow a leader to direct forces in systems he moves through.

S1.02.1 LG+1 or higher leaders can order units to transit WPs.

S1.02.2 A higher graded/ranking leader always has authority over a lower graded/ranked leader of any other type. If the leaders are the same grade/rank, see same grade authority line to determine who has control over what. Otherwise, priority order is diplomats, admirals, generals, and then governors.

S1.02.2.1 A leader can order units normally controlled by another leader type, as if one level below his actual grade. Any leader of the proper type that is of equal (or higher) grade may override the acting leader at any time. For example, a LG+1 General can lead a fleet, but only if there is not a LG+0 (or higher) Admiral there to override his orders

S1.02.3 Rebellion Loyalty High level graded leaders generate a great deal of loyalty in their subordinates, even cross-service. Table S1.02 Graded Leader Authority shows the forces that will follow a graded leader's decision to defect or remain loyal to the current government.

S1.02.4 Ranking Players may develop their own method of ranking leaders (time as a Graded Leader is a typical version). Whatever the method is, it must be used throughout the game and the rank, not the grade, determines who has authority.

S1.03 Leader Creation and Death

All fleets, planets, and promotion events [S1.04] are assumed to have a LG-1 leader in charge -- this is not a "graded" leader and has absolutely no positive or negative effects on the game. This LG-1 leader can be promoted via [S1.04] (this creates a new graded leader).

When a new graded leader is created, there is a 30% chance that the leader is LG+1 (with an extra roll for special abilities), otherwise he is LG+0.

Table S1.02 Graded Leader Authority

Grade	Admiral	General	Governor	Diplomat	Rebellion Loyalty
Same grade authority, also units that are controlled	Warships	Supplied QV and transport ships	SEC	His own ship and its escort(s)	Any type of forces unless specified
LG	Own Squadron of ships	Forces on the same planet	Forces on the same planet	His own ship and its escort(s)	Assigned forces based on leader type
LG+1	Forces in the same system	Forces in the same system he starts in	Forces in the same system	See S1.02.2	Same Type Forces i n the same sH
LG+2	In any he travels through	In any he travels through	In any he travels through	See S1.02.2	ALL Forces in the same sH
LG+3	Any adjacent system	Any adjacent system	Any adjacent system	See S1.02.2	ALL Forces in the same system
LG+4 or LG+5	Any system	Any system	Any system	See S1.02.2	ALL Forces within 1 Warp Jump

S1.03.1 Abilities Each time a graded leader is created or grade promoted, the leader gets to roll for a special ability [S6], which is in addition to his "normal" ability.

S1.03.2 Extra Admirals Every 10 months (months ending in zero), there is a 50% chance that any empire (even an amalgamated one) generates a new graded admiral. An empire with at least one amalgamated race gets two 50% rolls, not one! (but they never get more than 2 rolls).

Extra graded leaders may be "stored" on a habitable imperial population world until they are called back to duty.

Captains can also be promoted to graded admirals [S1.05].

S1.03.3 Leader Death *Optionally*, on every 10th month (those ending in zero), there is a 10% chance per leader that they will die or be forced into retirement. This will never cause a player lose the last leader in any category (i.e., admiral, general, diplomat, or governor)

S1.04 GRADE PROMOTIONS

Certain events or successes, based on leader type, give those leaders a chance to advance in grade (but not rank [S1.02.4]). When a LG+5 leader is promoted, a new LG+0 leader of that type is created instead. These events may also cause the default LG-1 leader [S1.03] leading the event to be promoted to LG+0.

Summary of Promotion Events

- **All Graded Leaders:** Months ending in Zero [S1.04.2]
  - **Admiral:** Promotes on Table S1.04 Leader Promotion.
  - **General:** Promotes when peace phase starts [table] or when a 98-100 is rolled on the invasion or consolidation table.
  - **Governor:** 30% chance when population size changes to small or better
  - **Diplomat:** 30% chance when full communications achieved from first contact (i.e., no war).

    30% chance when partnership or amalgamation occurs.

    20% chance when first Trade component achieved.

    20% chance when first Military Treaty component achieved.

S1.04.1 Leaders acting as other types of leaders can achieve grade promotion but all promotion rolls are 1 harder.

S1.04.2 General Experience Every 10 months (months ending in zero), each Graded leader has a chance of advancing one grade due to general experience with his job. See Table S1.04 Leader Promotion.

Table S1.04 Leader Promotion

Type Leader Advance	Combat Intensity - HS Lost				
	<20%	20-39%	40-54%	55-74%	75-100%
Per combat[a]	2	3	4	5	6
	LG	LG+1	LG+2	LG+3	LG+4
Month ending in zero[b]	5	5	4	3	2

[a] Leader advancement number is reduced by 1/2 pt (FRU) for each level above LG+0 he is. Thus, a LG+1 admiral advances on a 4 or less if the battle was 40-54% intensity. Add +1 if the leader won the combat (space combat -- winning is controlling the battle area, or ground combat -- invaders off the planet or into peace phase). Subtract 1 if the leader is acting as another type of leader [S1.04.1].

[b] Leader Advancement (month ending in zero) -- these advancement numbers are based upon the leader's Grade. Thus, a LG+2 has a 4 (1-4 on 1d10) chance to advance.

S1.04.3 Losing Grade A Graded Leader never loses grade except by random event.

S1.05 PROMOTING CAPTAINS

The captain of a BG+1 or better battle line ship can be promoted to an "admiral" or "general" graded leader at the end of any month. The ship becomes BG and the leader's grade is the ship's old grade -1 (thus, a BG+1 ship creates a LG+0 admiral).

S1.05.1 Restrictions to promotions:

1. Only a "battle line unit" (3 largest classes of ship that a race can build {already prototyped}) captain can be promoted to admiral.
2. The captain of a BG+1 or better ship can be transferred to a larger ship (maximum of 3 classes larger in size, i.e., CT to CL). This does two things:
   - 2a. The ship the captain leaves loses two crew grades but not lower than BG.
   - 2b. AFTER an orientation cruise, which may also be the shakedown cruise, both the new ship and the transferring captain become the old ship's grade -1. NOTE: The new ship may go from BG-1 to BG+1 or better when this happens. That is normal.

Note that a captain's grade is always the same as a ship's grade and therefore does not need to be tracked.

S1.06 ONE AT A TIME

Only one leader can modify any one event, action, fleet, planet, or die roll at a time (e.g., only one governor can increase the income at a planet).

S2 GRADED ADMIRALS

Admirals lead an empire's navy. They take command and consolidate a fleet into a well-trained entity of destruction. A good admiral provides bonuses and extra capabilities to his fleet. STARFIRE only addresses good leaders. The ship an admiral is aboard becomes his flagship [B2.03].

S2.01 MODIFYING INITIATIVE

Graded admirals must modify the fleet's initiative if they are present on the fleet's flagship.

S2.02 GRADE PROMOTION FROM BATTLE

Admirals roll for promotion after a battle based on the battle's intensity and the Admiral's grade level [Table S1.04 Leader Promotion]. Only one of the highest ranking admirals, whose flagship made an initiative roll during the battle, may roll for grade advancement.

S2.03 TRAINING UNITS

An admiral may train (or "drill") a fleet in the attempt to raise unit grade [F3.04.2]. The training area is limited to a 1 StMP radius, so units can sort of patrol and defend an area. No admiral without the special trainer ability can train or drill more than 10 units at a time.

S2.04 BREAK-OFF AND SURRENDER [D7.04]

Admirals are better able to "tough out" critical situations. The admiral commanding a force increases his force's chance to avoid Break-off or Surrender [See S6.02].

S3 GRADED GENERALS

Ground forces are led by generals. Their job is efficiently using the capability of any ground force. A good general provides bonuses and extra capabilities to ground forces.

S3.01 MODIFYING FORCE POINTS

Graded generals must modify a force's combat points.

S3.02 GRADE PROMOTION FROM INVASION

Generals roll for promotion (30%) when the peace phase is achieved or when a natural 98, 99, or 100 is rolled on the invasion or consolidation table.

S3.03 BREAK-OFF AND SURRENDER [D7.04]

Generals are better able to "tough out" critical situations. The general commanding a planetary force increases his force's chance to avoid Break-off or Surrender [See S6.03]. Rolls for his army and any defending bases and space stations.

S4 GRADED GOVERNORS

Graded governors are the civilian leaders of a large population who are trusted to govern the economy, law, and politics of the planet's population. Graded governors have the authority to make independent decisions affecting forces not assigned to their planet [Table S1.02 Graded Leader Authority]. Graded governors are distinguished governors who have shown good aptitude towards the job, a likeable personality, and an all-round ability to get things done.

Only habitable planets (not asteroid belts, HGT, or habitable moons) may have a graded governor. Both habitable planets of a twin planet configuration may have graded governors.

S4.01 MODIFYING INCOME

Graded governors *must* modify the planet's economy with their bonus.

S4.02 GRADE PROMOTIONS FROM GROWTH

Except on the first month of a game, when a population grows to any size of small (or higher), roll a d10. On a 1-3, the current governor is grade promoted or a new LG+0 governor is created. Each world only gets one governor chance per size level (you cannot use shipping/growth to force it back and forth across a boundary).

S4.03 SURRENDER [D7.04]

Graded governors are more likely to resist caving in to the demands of invaders. A graded governor increases his force's chance to avoid Surrender [See S6.04] (but not for breakoff). A governor reduces his race's RO by 3 per grade (LG+1 is -6) for the purposes of Overwhelming Force [V3.03], Demonstration Nuclear Strikes [V3.04.1], and NPR Reaction to Invasion [V3.05]. A graded governor also halves the bonus an attacker gains for demonstration strikes [V4.08.1].

S4.04 CHANGING WORLDS

Governors may leave the world they are currently on but it takes time to form an efficient organization and there are a few restrictions that will apply.

The cost to change planets is 100 MC (exception: Wartime can transfer to conquered worlds without cost). During the first two full months on the planet, the leader provides no bonuses. During the next 2 months, the leader's effective grade is LG+0. Thereafter, the leader's effective grade increases by 1 for each additional two months that pass until the governor reaches his true grade. Thus, it takes 7 month for a LG+2 governor to become fully proficient in his new location and 13 months for a LG+5 governor to be proficient.

S5 GRADED DIPLOMAT

A diplomat's job is to conduct foreign relations on behalf of his empire. A graded diplomat has shown an unerring ability to initiate and engage in communications with alien races so that he can sell them on nearly any issue he chooses.

Graded diplomats are found whenever an outstanding diplomatic success occurs [S5.02]. Empires can have a maximum of two graded diplomats plus one for each NPR they have amalgamated.

S5.01 MODIFYING NEGOTIATIONS

Graded diplomats *must* modify the rolls for any negotiations their ship conducts.

S5.01.1 In order for a graded diplomat to handle negotiations between two empires that are not conducted by diplomatic ships (for *example*, through communications networks), the diplomat must be present at an ICC or the Imperial Capital. If the optional rule for communicating offers directly from an ICC or capital to the other empire is used [Section T], then the diplomat must be present at that ICC or capital that is handling the negotiations.

S5.02 GRADE PROMOTION FROM DIPLOMACY

Roll a d10 when your empire gains full communications from first contact (i.e., no war) with an alien race, or a partnership or amalgamation treaty is reached, or the diplomat arranges a peace treaty between two warring parties. On a 1-3, either the diplomat present earns a grade or a new graded diplomat was "found."

On the first successful trade treaty or the first successful Military treaty (from non-aggression to R Trade and Military counts as two occurrences) there is a 20% chance that a diplomat will be created or promoted.

> ***Note:*** The diplomat only needs to be present at the END of the month in order to be able to make a die roll.

S6 SPECIAL ABILITIES

Graded Leaders have the potential to gain special abilities that distinguish them even further. When a graded leader is first found, and every time he advances a grade, he has a chance to develop one or more special abilities that he can use. The chance of gaining a special ability is 30%, -5% for each special ability the graded leader already possesses. (i.e., a special LG+1 leader with 2 abilities advances to LG+2, and only has a 20% chance of getting a new special ability roll)

All leaders have a "normal" ability, which is the one listed as being for "all" leaders of that type.

Reroll all results that create a duplicate special ability.

Special abilities that duplicate the "normal" ability supersede the normal ability (I.e. a LG+2 decisive admiral is +2 initiative, not +3).

S6.01 DETERMINE SUPERIOR QUALITIES

A Superior Qualities roll means you roll twice on the same table ignoring rolls of 100 and any duplicating result. RC

S6.02 ADMIRAL SPECIAL ABILITIES TABLE

Dice Roll	Attribute	Modifies	LG	LG+1	LG+2	LG+3	LG+4	LG+5
n/a	All admirals	Initiative	+0	+1	+1	+2	+3	+3
n/a	All admirals	Break-off/Surrender[a]	2%	5%	10%	15%	20%	25%
01-15	Decisive	Initiative	+1	+2	+2	+3	+3	+4
16-30	Alert[b]	Activation + 1[c]	15 U	25 U	35 U	45 U	55 U	65 U
31-45	Navigator[b]	Safe Cruise Speed is +1 MP[d]	15 U	25 U	35 U	45 U	55 U	65 U
46-60	Engineer[b,e]	Bonus to repairs +2	15 U	25 U	35 U	45 U	55 U	65 U
61-70	Courageous[f]	Break-off/Surrender	+10	+15	+20	+25	+30	+35
71-80	Scientist	Survey Points	+10%	+16%	+22%	+28%	+34%	+40%
81-99	Trainer	Grade Advance #+1	10 U	15 U	25 U	35 U	45 U	55 U
100	Superior Qualities: Roll twice more ignoring this result or any duplicating result [S6.01].							

U = units

[a] The Breakoff/Surrender modifier reduces the chance to breakoff/surrender.
[b] Alert, Navigator, Trainer, and Engineer admiral's can only apply their bonus to a certain number of units per month. Each Ship, Base, SS, PDC, or CAP squadron is a unit for this purpose.
[c] An Alert admiral adds +1 to the activate rolls for a certain number of ships per tactical turn. Note: they do not have to be the same units each tactical turn. Thus, if a LG+0 alert admiral commands a fleet of 40, on turn one, 15 would get a bonus of +1 (determined prior to the roll). On the next turn, say 26 ships remained inactive, 15 of those ships would get a +1 bonus.
[d] A Navigator admiral can raise a ship with Ic engines from a speed of 4/4 to a speed of 4/5. Note the bonus does not apply in battle.
[e] When an Engineer Admiral rolls a "1" while helping to repair, the system is completely restored as if repaired at an SY.
[f] A Courageous admiral may order a "Charge" once per battle. For one turn, all units must move at full speed directly toward the enemy and they gain a +2 to hit but a -1 to PD rolls.

S6.03 GENERAL SPECIAL ABILITIES TABLE

Dice Roll	Attribute	Modifies	LG	LG+1	LG+2	LG+3	LG+4	LG+5
n/a	All Generals	Qv Points	+5%	+10%	+15%	+20%	+25%	+30%
n/a	All Generals	Break-off/Surrender[a]	2%	5%	10%	15%	20%	25%
01-20	Efficient	Qv Points	+10%	+16%	+22%	+28%	+34%	+40%
21-40	Medic[b]	Qv Losses	-10%	-16%	-22%	-28%	-34%	-40%
41-60	Scavenger[c]	Effect of H to Qv	+10%	+16%	+22%	+28%	+34%	+40%
61-80	Security Specialist[d]	Security Points and Income	+10%	+16%	+22%	+28%	+34%	+40%
81-99	Special Forces[e]	Revolt chance reduced (FRU)	-25%	-35%	-43%	+50%	-56%	-61%
100	Superior Qualities: Roll twice more ignoring this result or any duplicating result [S6.01].							

[a] The Breakoff/Surrender modifier reduces the chance to breakoff/surrender.
[b] All Qv losses are reduced by the indicated amount.
[c] Also increases income from pillaging by listed amount.
[d] Income increases while in peace or slave status.
[e] A Special Forces General who is on the side of the conquered population INCREASES the chance of a revolt.

S6.04 GOVERNOR SPECIAL ABILITIES TABLE

Dice Roll	Attribute	Modifies	LG	LG+1	LG+2	LG+3	LG+4	LG+5
n/a	All governors	GPV	+2%	+5%	+10%	+14%	+17%	+20%
n/a	All governors	Surrender[a]	2%	5%	10%	15%	20%	25%
01-20	Economist	GPV	+5%	+10%	+14%	+17%	+20%	+23%
21-40	Engineer[b]	Construction Rate	+1 HS	+2 HS	+3HS	+4 HS	+5 HS	+6HS
41-55	Grower	Growth Rate	+0.5%	+1%	+1.5%	+2.0%	+2.5%	+3.0%
56-70	Industrialist[c]	Creates new IU	+2 IU	+4 IU	+6 IU	+8 IU	+12 IU	+15 IU
71-85	Scientist[d]	R&D Success	+2%	+3%	+4%	+5%	+7%	+9%
86-99	Wartime[e]	GPV bonus	X2	X2	X2	X2	X2	X2
100	Superior Qualities: Roll twice more ignoring this result or any duplicating result [S6.01].							

[a] The Surrender modifier reduces the chance to surrender.
[b] Engineers can only affect 25 units per month, regardless of the number of shipyards present or the use of planetary, SY, or MS.
[c] These IU are free but can only be sold during active wars [N14].
[d] R&D projects on the same planet or its surrounding moons have an increased chance of success if their chance is at least 5%. Breakthrough attempts are not affected,
[e] During active wars [N14], double the GPV bonus. A LG+5 Economist/Wartime Governor would generate +46% GPV.

S6.05 DIPLOMAT SPECIAL ABILITIES TABLE

Dice Roll	Attribute	Modifies	LG	LG+1	LG+2	LG+3	LG+4	LG+5
n/a	All diplomats	Other race's RC	0 RC	-3 RC	-6 RC	-9 RC	-11 RC	-13
01-30	Soother	Other race's RC	-6 RC	-9 RC	-11 RC	-13 RC	-15 RC	-16 RC
31-50	Empathetic[a]	War check DR	+5	+9	+12	+14	+16	+18
51-70	Linguist[b]	First Contact DR	+5	+9	+12	+14	+16	+18
71-90	Peacemaker[c]	Other race's RC	-10 RC	-15 RC	-20 RC	-25 RC	-30 RC	-35 RC
91-99	Detailer[d]	Other race's RC	-5 RC	-9 RC	-12 RC	-14 RC	-16 RC	-18 RC
100	Superior Qualities: Roll twice more ignoring this result or any duplicating result [S6.01].							

[a] An empathetic diplomat modifier effects other race' war checks and makes it difficult for an offer to cause a war. Further, when they are involved, no negative modifiers or treaty drops can occur due to the die rolls of (01, 02, or 03). Note: The modifier applies to the die roll result, not the value determined in the war check rule.
[b] Linguist diplomats have a further special ability in that first contact can NEVER result in "impossible communications" while they are involved (Reroll such results).
[c] Peacemaker diplomats only get their full modifier when negotiating with a conquered race.
[d] Detailer diplomats only affect the RC when used to propose a partnership or amalgamation agreement. Detailer diplomats get a +2 to their advancement number but only get a check when they successfully negotiate a partnership or amalgamation agreement. Furthermore, a Detailer diplomat allows amalgamation between races with only 2 areas of similarity [T3.14.2).

Next Section: T - Political Rules

The relationships between races (players or activated NPRs) are defined by the political states established between them. Player races have a great deal of flexibility in negotiations with other player races, and may negotiate special, customized treaty relationships with them. Relationships with or between NPRs are much less flexible. NPRs may be thought of as card game "dummy hands," and negotiations with them are handled in a very stylized manner.

Before any negotiations are possible, full communications (Sustained Contact) must be established. This is handled as per T1, below. Once sustained contact is established, player races may make whatever offer(s) they wish to one another. NPRs may be offered only the stylized political relationships defined in [T2]. All political offers must be made in writing (passed through ICN). A predetermined offer may be made in the same month that Full Communications are established.

The restriction on the number of offers per month reflects the slow passage of communications at interstellar distances. *OPTIONAL*: If players (or the SM) prefer, additional written offers may be made in a single month, but only if sufficient time is allowed for each offer and its results to be transmitted to the closest Interstellar Control Center and/or Imperial Capital and for a reply to be returned.

The ICN [P8] is of critical importance in the application of this provision. It takes 1 week for an NPR to make a decision about an offer. In all Space-Mastered games, the SM should make all required dice rolls for Contact and negotiations secretly and should never reveal the actual rolls (or values required for success) to the player(s) involved. Beware that both players and NPRs will not always abide by a negotiated treaty [Y15].

Political Abbreviations

R Trade - Restricted Trade
L Trade - Limited Trade
F Trade - Free Trade
RT&D - Restricted trade and Defensive military
LT&D - Limited Trade and Defensive military
FT&D - Free Trade and Defensive military
RT&O - Restricted Trade and Offensive military
LT&O - Limited Trade and Offensive military
FT&O - Free Trade and Offensive military

T1 Initial Detection & First Contact

Initial Detection occurs whenever a unit of one race detects a population or unit [D5.05] of a previously undetected race. There may be simultaneous "Initial Detection" if the units (ships, populations, bases, etc.) of both races are able to detect one another simultaneously. Once initial detection has occurred, one or both races may initiate first contact. First contact does not mean communications have been established, only that effort to establish communications have begun.

In order to negotiate with another race first contact must be extended into sustained contact so that some method of exchanging information and political offers must be created. This requires that the two races come into communication range and that communication access be created. Establishing communications make take some time, but once this task is accomplished, the two races are in sustained contact and enter the political state of "negotiation."

T1.01 Initiating First Contact

Once initial detection has occurred, the detecting race(s) may decide to initiate first contact. For a player race, the decision is the player's. If the race that makes the initial detection decides not to initiate first contact, the other race may itself initiate first contact once it has detected the first race.

T1.01.1 If Detecting race is a Native NPR: A "native" [T1.03.1] NPR will initiate first contact only if it rolls greater than or equal to its initial contact number [Y3.02.1] on a 1d100. When a "native" NPR decides NOT to initiate first contact and the other race does not initiate it within 2 tactical turns (usually because the native NPR has better sensors), it rolls on the first contact table (recording the modified die roll but ignoring the modifier for multiple ships). If the roll indicates communications impossible, a war check is performed. If immediate war is indicated, the NPR will attempt to ambush the alien ships and prevent them from communicating. If time is available before the enemy gets within detection range of a population, the NPR will attempt to backtrack the vessel to its starting point. (In either case, the Space Master may do whatever he feels is appropriate for that race and its government including ignoring this first war result) If the war check process does not indicate immediate war, it will move a unit forward and allow the other race an attempt at initiating first contact. If the enemy fails to withdraw extra ships within the appropriate time after it initiates first contact, apply that modifier to the recorded die roll which may alter the result and could indicate communications impossible and a resulting immediate war.

T1.01.2 If detecting race is a non-native NPR: An exploring NPR will usually initiate first contact with an HEL race [Y15] in any system in which is it not a native, and may or may not initiate First Contact with an LEL NPR [Y16].

An NPR that chooses not to initiate first contact (whether or not it was the race that made the initial detection), may do whatever the Space Master feels is appropriate to the situation. Suggestions are keeping at least some of its detecting ships in place (uncloaked), reinforcing them, moving some ships to protect its home world, or searching for additional units of the detected race. If any ship of the detected race moves into the maximum detection range for the least capable ship [D5] and fails to initiate first contact within 2 tactical turns, the NPR that elected not to initiate first contact will consider itself to be in a state of war with the other race, if the detection occurred in a system where that NPR is a "native" or the NPR passes a war check [Y18]. Otherwise, the two races are treated as having a Non-intercourse agreement [T3.07], except that either race can move one of its ships to initiate First Contact at any time.

Exception: an IND-2 NPR that chooses not to initiate first contact will not consider itself to be in a state of war, but will begin building up its military capabilities, just in case. Once it has achieved EL 1 and built its own spacecraft, if the other race has not yet initiated first contact and still has ships in the NPR's system, the

newly spacefaring race will declare war on the interlopers. (Though of course, it may decide not to attack until it has built up its war fleet) If ships of the other race are no longer present in the system, the initial detection and first contact process must be followed from the beginning should the two races ever meet again.

If the race that makes the initial detection decides not to initiate contact, and if the other race never detects the first race (this will usually happen only in the case of a LEL NPR), then the detecting race may ignore the NPR and its home world. The NPR might as well not even exist since it was not activated. (*Optionally* the SM can activate the NPR and it can become an entity that does not yet know about anyone else)

T1.01.3 First Contact options for the contacting race

A. You can hold contact at the point of initial detection. In order to maintain communications with the home government, one unit can pass between this point and the WP of entry each time a new offer is made, and each month in order to re-supply the ship. A CFN FT can perform this mission or any imperial unit with the capability to deliver maintenance supplies (if needed).
B. The contacting race can retreat back to the WP and attempt to establish communications at that point. A communications or supply ship may enter the system as above, or the contacting ship may withdraw from the system for a short period of time to pick up supplies and communicate.
C. The contacting ship may hold position at the point of contact, but return to the WP and pass through in order to communicate and/or receive supplies. If this is done, the contacted race may (and usually will) follow and a new communications attempt point will be established, as in the second option, at the WP of entry.
D. If the contacting ship has CDs installed (sufficient to allow communications as needed) and has sufficient maintenance supplies to remain on station at the point of contact for an extended period without re-supply ships, the contacting ship can hold station at the point of contact until either its CD or maintenance supplies run out. At that time, one of the other options for attempting to establish communications or negotiations must be used.

T1.02 COMMUNICATIONS RANGE FOR FIRST CONTACT

A race initiates first contact by moving into communication range and hailing the other race. Communication range depends upon the technology available to both sides of the communication attempt [P2.03]. Communication with an LEL population requires the discovering empire to actually land on the planet to meet the natives.

Though hailing the other race is viable at full communications ranges, establishing sustained communications from such ranges, due to the long response time, is impossible. Thus, the range at which Table T1.04 Initial Contact Results can be used is quite short, 10 tactical hexes for HEL to HEL, 1 hex for HEL to IND2, and landing required to communicate with P-IND or IND1.

T1.03 FIRST CONTACT PROTOCOL

First contact is a very tense process, especially for a race whose home turf has been intruded upon by newcomers. Because of this, races engaged in first contact normally take great care to avoid any action which might be interpreted as threatening, since nervous contact teams (with nervous politicians and admirals behind them) do not function at their best. Most NPRs will not violate this protocol intentionally (they won't refuse first contact once it is initiated by another race), though player races may do so if they choose [T1.03.7].

T1.03.1 Native Race For the purposes of [Section T], a race is "native" to a system (including both parts of a binary system) if it has a population in the system or its CFN routes run through the system. (Including routes between the race and another race with which it has at least a restricted trade relationship [T3.10.2]). More than one race may be native to a given system, but only one of the two races engaged in first contact can be a native.

T1.03.2 Surveying Race Any race not native to a system is a "surveying" race, and must abide by certain restrictions to avoid the appearance of presenting a threat. If neither party to first contact is native to the system, both are bound by the restrictions on surveying races since neither knows that the other is not native.

T1.03.3 Contact Ship In order to avoid a penalty to the roll on the Table T1.04 Initial Contact Results, a surveying race must restrict itself to a single "*contact ship*" at the point of contact. This ship must be one of the ships present when first contact is initiated and may not normally be replaced for the duration of the first contact process. (Other ships present must begin withdrawing within 4 tactical turns after the initiation, or as soon as a message to withdraw can reach the other ships) In addition, a surveying race is allowed to station one "*logistics ship*" at the WP of entry, in order to maintain communications and supply with the contact ship. This ship may travel to the point of contact (by the shortest possible path) twice each month, to exchange messages with and deliver maintenance to the contact ship, and may leave the system at any time (to exchange messages and take on maintenance). Like the contact ship, the logistics ship may not be replaced unless by a FT.

For every unit of the surveying race (including small craft, base stations, buoys, or even courier drones other than those headed between the WP and the point of contact) over and above these two detected in the system during a given month (or if the logistics ship is detected at any point not along the path from the WP to the point of contact), a penalty is assessed to the roll on Table T1.04 Initial Contact Results. If the same ship is detected at two or more different points in the system at different times during the month, it is counted as multiple ships (since the other race has no way of knowing if it is the same ship). In general, a native NPR will make every effort to locate additional ships and the entry point to the system, and will attempt to identify any ships detected at long range.

T1.03.3.1 A native race may move its ships freely throughout the system.

T1.03.3.2 The contact ship must be owned and operated by the race involved in negotiations.

T1.03.3.3 The surveying race's entry point into a system is usually a critical defensive priority for the native race, as is preventing raiding from beyond 30 sH. A native race must roll (on separate 1d100 rolls) over its RM, over its RD, and under its RC in order for these things not to be a priority.

If it is a priority, the native will attempt to track all enemy vessels in a system. They will attempt to follow any retreating ships to find out how they leave the system. Leaving the system is through a WP,

or by travelling 10 StMP from the star in a constant direction (native race use a relay of CFN vessels or CDs in order to communicate). The native will attempt to determine both the sH and tH of the point of entry. NPRs will attempt to follow every ship detected. NPRs will regard multiple ships dividing up as an attempt to survey, see Stupid War Tricks. Trying to hide in the system (less than 10 StMP from the star) will be considered hostile and will cause a war check.

Note: If the retreating ships choose the 10 StMP option, they cannot return openly until an agreement is reached that allows military vessels to enter the NPR's system.

The native NPR will be wary of leaving the homeworld unprotected and will use at a minimum Yc ships, small craft carriers, small fast units, and CFN FT as the means to accomplish this tracking and locating of the WP. Aliens who "lose" the trackers will be considered hostile unless they remain in a bunch and were on a heading to exit a WP that the aliens find on completion of their first survey. If full communications have not yet been established, those "lost" ships will be considered to still be in the system and detected and appropriate first contact penalties will apply.

T1.03.4 Second Contact If units of the two races should meet in any other system while first contact is taking place, those ships use the first contact protocol but either may leave the system in the manner it entered without penalty. Any transit out of the original system of contact, while contact is in progress in the original system, through a WP obviously controlled by the other race will be treated as an aggressive act (war check).

T1.03.5 Broken/Rejected First Contact If either race rejects first contact at the time of initiation, or moves its contact ship, (for a surveying race) or otherwise breaks off first contact once initiated, the other race, if an NPR, will consider itself at war if any system of contact is one where the race is a native, or if it passes a war check [Y18]. If no war ensues, the races are treated as being in a non-intercourse relationship, except that either can move a ship to re-initiate first contact at any time. First contact need not be re-initiated at the original point of contact, and need not involve the original contact ships. Any accumulated bonus for successive months of attempting to establish communications is halved (FRU).

T1.03.5.1 If first contact is broken off for reasons outside the control of either race (such as an attack by a third race in the system of contact), and if these reasons are known to both races (as would be the case if the attacking ships sweep through the contact point), the break-off does not trigger a war, and either race can re-initiate first contact at the time of the next meeting without penalty.

T1.03.6 In a few cases, the ship that initiates (or responds to) first contact may not be capable of remaining in contact or may not be an appropriate ship to do so. If all the ships of one race that are present at the point of contact are either small craft or FT (for rules on encountering the CFN, see [L4.10.6]) that race must substitute a more appropriate ship for the original contact ship as soon one can arrive. No rolls on Table T1.04 Initial Contact Results are possible if either race is represented only by small craft or CFN freighters (both of which lack the contact teams and sophisticated computer equipment necessary for establishing sustained contact).

T1.03.6.1 If one race has only a single ship at the point of contact, that ship may, after initiating or responding to first contact, travel to a new contact point. This new point may be a world with a friendly population, another ship, or anywhere else that messages can be passed on. (Note that if the new point of contact is near the WP of entry into the system, a logistics ship will be needed for a surveying race only for quick trips across the WP -- but the contact ship may not itself cross the WP) The other race will never follow a contacted race through an unexplored WP, and therefore crossing such a WP breaks first contact [T1.03.5]. Of course, a ship may choose to remain at the contact point and communicate with its empire using courier drones (and NPR ships will normally do so if they are able), but a ship is never required to do this.

T1.03.6.2 If a surveying race has multiple ships at the point of contact, and the other race must travel to a new contact point to maintain communications with its empire, the surveying race may follow with two ships, so that one can be used to transmit a message once the new point is reached. In any case, once the new point of contact has been reached, the normal restrictions on each side apply.

T1.03.6.3 If both races have only a single ship at the point of contact (and neither has the ability to send a message by courier drone allowing it to follow the other race's ship while maintaining contact with its own empire), then both ships may travel together to two points where messages can be passed on to each respective empire (roll randomly to determine which point the ship captains decide to visit first). The second such point becomes the new point of contact.

T1.03.6.4 In any case, once the new point of contact has been reached, the normal restrictions on each side apply.

T1.03.7 Bluffing Since no penalties are assessed if a race is not actually detected while violating first contact protocol, in some circumstances it may be possible for a race to "bluff" by pretending to be a native in a system in which it is actually a surveying race. If a race attempts to bluff in a system in which the other race is a native, the usual penalties for having extra ships in the system apply. If both races attempt to bluff, the penalties for both apply. However, if two surveying races are in first contact and only one attempts to bluff, the bluffing race is treated as a native for all purposes (even if it has no population in the system, its contact teams will be on edge due to the risk involved in the situation).

However, if a bluff is revealed (usually, by surreptitious scouting on the part of the other race), the offending race's action is treated as a violation of a state of negotiation [T2], and on this and subsequent months both races are treated as being surveying races. In order to prevent a bluff from being revealed a race can quickly move colonists into the system, justifying its claim after the fact. If this move succeeds, the race is thereafter treated as being native to the system. On the other hand, if the other race is itself native to the system, or if the other race attempts to colonize the system at the same time (bluffing as well), the colonization attempt will automatically trigger a war if the other race is an NPR.

T1.03.7.1 An NPR will bluff only if it is reasonably sure that the other race has not yet probed the system. (Generally, this will be the case if the NPR arrived in the system one or more months before the other race) The NPR must roll lower than or equal to its Racial

Militancy (RM) on a 1d100. If an NPR bluffs, it will back up the bluff by moving colonists into the system as soon as possible.

T1.04 FIRST CONTACT PROCEDURE

Communication access requires the development of some common language or other means of communication. How quickly, and if, this can be done depends on several factors--the experience of the Contact teams of the discovering empire, the language and technological capabilities of the newly discovered race, the eagerness of both sides to communicate, etc. Of course, the SM should never reveal to the players what modifiers are in effect. When a race enters communication range and attempts to establish communication access, roll 1d100 once per month against Table T1.04 Initial Contact Results, allowing for all modifiers from the list following the table.

A war resets all initial contact modifiers including the +05 per month attempting to establish communications.

Table T1.04 Initial Contact Results

Dice Roll[a]	Result
<=-15	All communication impossible
-14 to -03	Negotiations rejected (but attempting communications)
-02-29	Communication not established
30-59	Initial communication established
60-99	Partial communication established
100+	Full communication established

Initial Contact Modifiers:

Subtract the "Initial Contact" number from Table Y3.02 NPR Government Types for the race that is native to the system. If both races are surveying races, use half of the Initial Contact number for each race (FRU). If one race is a player race, use the NPR's "Initial Contact number." If both races are player races, use 25 as the initial contact number.

+01 to the dice roll for each race with whom either party to the attempt has already established Full communications (Maximum bonus +10).

+01 to the dice roll for each economic level of either party (Maximum bonus +10).

+05 to the dice roll for each successive month spent in attempting to establish communications.

+10 Player controlled NPR meeting [T4].

+20 if one race controls a NPR that previously had a T, T&M, or P Agreement with the race that was canceled when control was established [T3.13.5]. This modifier only applies for one month.

-01 for every enemy ship (or if known, 30 hull spaces of ships) other than the first that is in current detection range and not withdrawing [T1.03.3].

-05 for transiting a warp known to be owned by the other race [T1.03.4].

-10 (and add 10 to the other race's RC for any future negotiations) if one races is known to have violated a Treaty [T2.05].

-25 from the dice roll if the parties to the communications attempt are at war with one another.

[a] roll of 00 = 100.

Note: Races cannot distinguish the difference between communication impossible, negotiations rejected (but attempting communications), and communication not established.

T1.04.1 Previous Knowledge of Same Language At times, both races may both be at full communications with a third race (and thus able to talk somewhat in that language). In this case, the procedure is slightly changed. No modifier for this is applied to the FIRST initial contact roll. Apply those results completely including Communication Impossible and any war generated.

At the beginning of the 2nd month, an Initial Contact result is upgraded temporarily to Partial Communications. This is then used, including the bonus to future initial contact rolls, as the starting point for the roll for the 2nd month.

T1.05 INITIAL CONTACT TABLE DEFINITIONS

The following is a list of the possible first contact results and how they are to be handled.

T1.05.1 All communication impossible This result overrides all other results. However, if a previous "negotiations rejected" result was rolled the race will go to war immediately. The two races' mind-sets are so alien or so distrusting that any meaningful communication is impossible. It will never be possible for the races to establish Sustained Contact *peacefully*, and furthermore one of the races is so provoked as to consider war against the other.

All that is reported to the other race is "communication not established"

Make a war check [Y18] for the NPR. If both races are NPRs, then make the war check for the native race. If neither race is native, then randomly determine which one makes the war check. If no war is indicated, the checking NPR ceases further attempts to establish communication but continues to send messages telling the other race to leave (So far as the other race can tell, communication is still being attempted). Attempts to maintain a presence in a system in which the provoked race is a native will be regarded as a hostile act, and immediately trigger a war. (Obviously, a LEL race that can't reach its enemies can't hurt them, but if they ever obtain the ability to attack, they will certainly do so)

In the case of a delayed war, the race which is going to be attacked is not told what's going on because the provoked race continues to pretend to communicate. The NPR that is going to attack will perform a build-up of units first, and the other race may get the hint if it observes the build up.

War may end in the conquest of the one race(s) by the other race(s), in which case it is still possible (though difficult) to establish communications [T3.01.1].

T1.05.2 Negotiations rejected (but attempting communications) One race (the NPR - if both are NPRs the native race - or if neither race is native a randomly selected race) has taken such a dislike to (or conceived such a fear of) the other race that negotiations are rejected in hatred or hysteria. However, the race has decided to attempt to establish full communications so that when war comes their intelligence agents can gather information about the enemy. (This is not a nice result) The provoked race will begin preparations for war by plowing every available MC into military expenditures and go to war within 6 months of full communications being established (Roll d10 minus 4). A result of 0 or less means it attacks as soon as full communications are established. It will not accept any offers during this time. (It will be "considering them") This result is reported to the other race as "communication not established" for this result. Any future results of "negotiations rejected" are treated as "communication not established."

Note: If the other race breaks off communications attempts, the newly provoked race will use that as an excuse to attack them. Additionally, the NPR will go to war if communications are not established within 18 months of the initial contact.

T1.05.3 Communication not established Some progress has been made, but communications have not been established at all. The two races may continue efforts to do so in succeeding months without penalty and any future result of "communications impossible/negotiations rejected" is valid.

T1.05.4 Initial communication established True communication is not yet possible, but progress has been made and any future result of "impossible/rejected" is ignored and re-rolled. This does not mean that the races like each other, but simply that they are at least willing to listen to one another.

T1.05.5 Partial communication established Both parties can get general concepts across to the other and are doing so. It is still impossible to negotiate effectively, but +25 is added to all subsequent attempts to establish better communications and future results of "impossible/rejected" are ignored and re-rolled.

Simple single word ideas can be given. EX: "Ours. Out."

Note: For both initial and partial communications, if a future result of "communication not established" is rolled then "negotiations rejected" is again possible! However, once an initial/partial result is rolled, then communications will always be possible.

T1.05.6 Full communication established The races have established sustained contact and can speak each other's language. They can talk to one another with a fair degree of fluency, negotiations are possible, etc. The races enter the political state of negotiation [T2].

At the end of the month that full communications are established, the government tendency is learned [Y21] (i.e., M/F).

T1.05.7 (*OPTIONAL*) When two player races are involved, modified results of "impossible/rejected" from the table above are ignored.

T2 POLITICAL OFFERS

There are over 20 possible political states between players and NPRs. The same states apply to relations between player races and other player races, but player races may also negotiate "customized" treaties, subject to the SM's restrictions. If a specialized treaty is negotiated, it must be written out in full and each party must have his own copy of the treaty. In addition, the SM (if there is one) must have a copy of any such treaties. A race can make only 1 political offer per month to another race.

An NPR may have treaties with more than one player race so long as it has not amalgamated with a player race.

T2.01 POLITICAL ACCEPTANCE ROLL

When a political offer is made to an NPR, a Political Acceptance Roll is made by rolling 1d100 against the Racial Chauvinism (RC) of the race to whom the offer is made. If the political acceptance roll is equal to or greater than the modified RC, the offer is accepted (See T2.01.2). The players decide a player to player offer.

If an offer is rejected, the effective RC is increased by +05 for each rejection that occurs (see [T4] for peace treaties with conquered populations). A "cooling off" period during which no additional rejections (and effectively new offers are made) will help offset this, as the RC of a NPR drops by 02 per month, to a minimum of its original base RC. An accepted offer reduces this modifier to zero.

A complete list of political offers modifiers can be found in Table T2.03 Political Offers Modifiers.

T2.01.1 *OPTIONALLY:* Player races don't have to roll and can instead choose for themselves when an NPR offers them a treaty.

T2.01.2 After an offer has been accepted, the accepting NPR will not consider any new offers until after 6 months have elapsed. (For example, if an offer is accepted on month 5 under these conditions, then on month 11 a new offer may be made. Offers made during this period are simply ignored.)

Player races may entertain and accept offers made to them during this period and the accepting race may make offers.

T2.02 IRRITATED NPRS

If the modified RC reaches 101 or greater, including the Table T2.03 Political Offers Modifiers, and a "non-intercourse," "non-aggression," or "negotiation" political relationship is in effect, the side approached with the offer is so irritated it may declare war upon the other. If the irritated race is an NPR, roll a war check [Y18]. If the roll indicates that the NPR does not go to war, it immediately insists on a state of non-intercourse and acts accordingly. The SM should never reveal the RC of the other side of any negotiation to players.

If a relationship other than negotiation, non-intercourse, or non-aggression is in effect, roll 1d100. If the roll is greater than 1/2 RC, then the races will remain at the current political state. Otherwise the NPR insists on a political relationship 1 level lower than the current relationship [Y17.02].

After the modified RC goes over 101+ without causing war, neither race may make a new offer until after 6 months have elapsed.

T2.03 POLITICAL OFFER MODIFIERS

When making political offers, apply the modifiers are listed in Table T2.03 Political Offers Modifiers. Apply the "Offered Modifier" to the RC when making an offer of that political state. Apply the "Current Modifier" to the RC based on the current relationship between the races. These modifiers also apply when checking for exceeding 100 RC for the purposes of war [T3.02].

T2.03.1 Any race that is battling a "recent Genocidal" race receives a +5 modifier per level of genocide [V6.04] to all political acceptance rolls made by any other race involving military treaties with 3rd parties. This rule applies to political offers, NOT to initial contact rolls.

Note: Recent Genocide is one that occurred in the current or last war and in which that race was the initial race in that war to use genocide (the aggressor). The purpose of this is to allow for a gathering of "good guys," including NPRs, to stop the "evil" genociding race.

Table T2.03 Political Offers Modifiers

Political State	Offered Modifier	Current Modifier
Conquered	N/A	+40
War	N/A	+30
Cease Fire Treaty	-15	+15
Slave[a]	+70	+20
Forced Ally[a]	N/A	0[b]
Subject[a]	+60	-45
Non-Intercourse	-25	+10
Negotiation	0	0
Non-Aggression	0	-05
Restricted Trade	+05	-10
Limited Trade	+10	-20
Free Trade	+15	-25
Defensive Alliance	+10	-20
Offensive Alliance	+20	-30
Restricted Trade and Defensive	+15	-25
Limited Trade and Defensive	+20	-30
Free Trade and Defensive	+25	-35
Restricted Trade and Offensive	+25	-40
Limited Trade and Offensive	+30	-45
Free Trade and Offensive	+40	-55
Partnership	+50	-60
Amalgamation	+70	N/A

[a] These treaties have special progression [Y17.02].
[b] When a forced ally is offered Subject, the current modifier becomes -30.

T2.04 SPECIAL OFFER RESULTS

Note: Race A is the original offering race and race B is the race that would do the counter-offering.

During any political acceptance roll, an unmodified die roll of ...

(01) Indicates that the offering side has made a racial slur.
Current offer is rejected.
Any current treaty is canceled.
Check for War [Y18].
+20 RC vs. that race permanently.

(02) Diplomatic Blunder
Current offer is rejected.
Current treaty is canceled, but a counter-offer is made of an alliance of two levels lower than the canceled one [Y17.02].
+10 RC but cooling down does work.

(03) Social Blunder
Current offer is rejected and no offer may be made for (3) months.
Current RC modifier does not change (go down) during the next 3 months

(98) Brilliant description of the advantages of the alliance to the overall negotiator works.
Current offer accepted.
-10 RC to next two offers.

(99) Race B decides to risk all.
Current offer accepted.
Counter offer per [Y17.01] but with Race A in control.

(00) Inadvertent discovery of same basic life philosophy, similar ethics, or morals, etc.
Current offer accepted.
Counter offer made of partnership with Race A in control (any lower level of treaty may be accepted instead or the offer turned down without penalty).
-10 RC vs. that race permanently.
-20 To any future war checks versus the offering race.

T2.05 TREATY VIOLATIONS

If a race violates a treaty, all other races who "know" about the treaty violation have an RC modifier of +10 RC. Treaty violation penalties accumulate. However, time heals all wounds and blurs memories, and this modifier will go down by one every 5th month starting 10 months later. This temporary modifier is removed for specific NPRs when they accept a treaty from the violator race.

"Knowing" A race knows if it was the race that had the treaty that was violated. A race knows of a violation if it has at least limited trade [T3.10.3] with the violating or violated race. A race with treaties with both the violated and violating race will believe no violation occurred only if it has a higher level treaty of at least T&M level with the violating race than with the violated race.

Each violation of the "Negotiation" state causes a permanent RC modifier of +10 RC against the violating race and a war check [Y18]. This only counts as a treaty violation against the violating race.

Example T2.05 - Treaty Violations

T2.05.1 Loss of Military Allies Treaty violations are mentioned throughout this section and apply to all political states except War and Negotiation. If you violate a treaty without the concurrence of your allies, each non-concurring ally with any from of Military or T&M treaty must roll for loyalty to such a nasty race as this. Roll 1d100 and if less than (100-RM)/10+1 (FRU), then the ally drops the military portion of the agreement.

You may avoid a treaty violation by giving the other treaty race(s) at least full 1-game month notice of the beginning of war or reduction in the current state of treaty. Non-concurring Military and T&M allies will still consider this a violation unless the relationship drops to trade first.

Example T2.05.1 - Avoiding Treaty Violations

T2.06 DROPPING TRADE TREATIES

A race may, in rare cases, wish to drop either the level of or a trade treaty entirely. There is little chance of war but NPRs will not view such an action with favor. If a satisfactory explanation to the NPR (Space Master) as to why this action is being taken is not provided, the NPR will have a temporary +10 RC modifier toward the dropping race. This modifier will go down by one every 3rd month starting 6 months later. This temporary modifier is removed when the NPR accepts a treaty better than the treaty level dropped to. Military Treaties can only be dropped (or lowered) with cause, by agreement of both parties, or after 20 months have passed. Causes: Failure to aid, failure to keep word about attacking something, etc.

T3 POLITICAL STATES

Table T3: Summary of Forced Control Statuses

Treaty Status	Build Rate	Growth Rate	Max RP	Income Loss	Income to Controller	Political Changes	RC modifiers
Conquered (Peace Phase)	N/A	none	4	Total	Per [V5.04]	6 months force to slave (10% revolt chance [V5.08.5]) or make offer	See V5.08.3
Slave	-6	1/2 normal	8	(RO/3)%	40%	12 months, force to subject or after 6 months, make offer	See V5.08.3
Forced Ally	-4	normal	6	25%	25%	6 months, make offer	+25 RC - 1/month and -30 when offered Subject Status
Subject	full	normal	10	10%	5% plus Free Trade	12 months, make offer	-45 (subject)
Max. RP is modified by pluses and minuses. Only subject races will perform R&D assistance and only with 25% (FRD) of their RDS.							

A conquered, slave, forced ally or subject race may have their effective EL and SL are reduced. See [V5.11] for effective EL/SL issues.

At the time a conquered race enters the peace phase, all on going treaty negotiations are wiped out. All other treaties that the conquered race had with 3rd parties remain in force but are inactive. Allies may or may not choose to honor those treaties without penalty.

Conquered races in any of the Treaties in Table T3 may not enter into a treaty with any other race except the conquering one, even if the conqueror requests/orders them to do so.

At the time a race is invaded (and possibly sooner if a blockade occurs to a trade route), all trade with 3rd party races ceases until:

- the race is freed by either the conqueror or by a 3rd party "rescuing and freeing them" or
- they accept a normal relationship with the conqueror (instead of a relationship in Table T3).

Conquered (peace phase) populations are considered "at war" with their conquerors [See V5.08].

T3.01 CONQUERED

This is a planet that has lost the consolidation phase of an invasion, and the invader establishes a garrison upon it [V5.01 and V5.03]. This race may not do anything unless the invader permits it. The race does not earn income for itself (RP are essentially free), it cannot colonize, buy IU, own ships or troops, etc. It exists only to earn income for the invader until it is willing to accept a better agreement.

T3.01.1 Sustained contact will eventually be achieved when using any invaded but unconsolidated population (of at least PTU size) as a communications laboratory. Captured crew/Qv personnel cannot be used to establish a communications base. Once sustained contact (full communication) is achieved (or if it already has), the player will learn the exact values of all the racial attributes and the LEL/HEL policies of the conquered planet's race the month after it has been captured.

T3.01.2 . After 6 months at conquered status (peace phase), slave status [T3.04] may be forced on the race [V5.08.5] *if* full communications have been achieved.

T3.01.3 . A partially conquered race (the remaining part earns at least 500 MC per month or has at least one small population) will retain its government. A fully conquered race may change its government (10%) or, at the conqueror's option once during the peace phase, be forced (80%) to change governments. If changing governments, adjust each racial stat by (1d100/2)-29 (that is up or down and max. of 100 and min. of 1). Then Reroll activations and government type. This is the new permanent government type. New government types can't be J'Rill, Hive Mind, AI or Group Mind as these all also have specific physical/mental requirements that can't be met.

T3.02 WAR

War is a very simple political state. War need not be declared (simply opening fire usually gets the message across). If sustained contact was achieved before or during the war, a cease fire treaty is possible. NPRs will capture an envoy's unit. If a NPR rolls less than 40+RM/2 they will imprison all envoys and refit the units during the current month. Otherwise they will begin negotiations if the war is stalemated or they are losing AND this does not override their [Y15] policy.

T3.02.1 Intermediary Negotiators A race may ask an intermediary (player race or NPR), which has at least limited trade with both warring races, to arrange an end to the war by negotiating for/with both sides. The current state of "War" (+30 RC) and an extra +10 RC applies to all political acceptance rolls but neither of the warring nations will go to war with the intermediary. The intermediary first attempts to negotiate a cease-fire agreement with ***BOTH*** the other races. RCs over 100 do not cause a war check. Additionally, each time an offer is rejected both races RCs are modified by -03. (Yes, negative three.) The modified RC of a race can never be less than its original RC. When a cease-fire agreement (no NPR government modifiers apply) is finally reached with ***BOTH*** races ***ON THE SAME MONTH*** then a cease-fire treaty has been arranged between the warring races, and the intermediary begins negotiating for a non-intercourse treaty. If any die roll (for the cease-fire agreement) for either race is within 10 points of succeeding, then a 1-month truce (cease-fire) has been negotiated for the next month. If a race breaks the truce, then the other race has an additional +10 added to its RC permanently.

> ***Note:*** A race may agree by die roll on one month and then pull back its agreement, by die roll, on the next month, but the monthly RC modifier continues to apply. Also, this might actually FORCE a race into a peace agreement but don't expect it to last long in that case.

T3.02.1.1 . If using the [Section T] *optional rule* that allows multiple offers, the intermediary sends an offer to both races and cannot send another offer until it has a response to that offer from both races. Both races must use the closest ICC to the intermediary's ICC that is possible.

If communication of offers is not possible through the ICN, then both races can send a single unarmed ship with a diplomatic envoy to a system of the intermediary's choosing, where the intermediary will also have a ship with an envoy. The intermediary can make offers to both of the envoys at the same time, but the envoys must communicate those offers using any means possible to the nearest imperial ICC, and receive a response. If either race shows up with more than one ship (except a logistics ship to supply maintenance or send communications as in [T1.03.3]), or with an armed ship, than the mediator will refuse to intermediate between the races.

Example T3.02.1.1 – Intermediary Negotiators

T3.02.1.2 . *OPTIONALLY* the intermediary may charge money or some other payment for their services. (A player race with good contacts can make a pretty fair living by acting as an intermediary for a financial consideration)

Example T3.02.1.2 – Intermediary Negotiators.

Peace Negotiation Modifiers apply to each race's RC

-10 RC - Lost fleet exceeding its TGI income in the last three months (per occurrence).
+10 RC - Known to have killed/captured more Hull Spaces than the enemy did in the last 3 months.
-10 RC* - Lost 10% of PU in the last three months.
+15 RC - The enemy has used Genocide on one of your populations.
+05 RC - The enemy has used Genocide on any population (including yours).
+10 RC - If the enemy attacked while under treaty.
+05 RC - If the enemy violated a non-intercourse agreement to attack.
-05 RC per "observed" Science level that the enemy is superior.
+05 RC If the enemy race has ever used Nuclear Demonstration strikes.

T3.02.1.3 If neither of the races can communicate with each other the intermediary will continue to negotiate with them until they reach a non-intercourse agreement.

T3.02.1.4 If both races can communicate with each other (sustained contact/full communications) then after 20 months at non-intercourse, an intermediary negotiator will help to upgrade the treaty to non-aggression (but the war modifier still applies).

T3.02.1.5 An intermediary can also be approached by one race that has a non-intercourse agreement with another, and if they fulfill the conditions of [T3.02.1] (that is the intermediary has limited trade with both races), the intermediary can negotiate a non-aggression pact between the races as per [T3.02.1.4].

T3.02.1.6 In both cases of [T3.02.1.4] and [T3.02.1.5] the intermediary has completed his business and is not obligated to continue helping the races negotiate. If the intermediary is a player race, then he can choose to continue negotiating with the races, as an NPR intermediary will always choose not to continue negotiating (even for money).

T3.02.2 Stupid War Tricks The following things are likely to start a war but the race doing one of these actions is treated as starting the war (if one does start). All modifiers listed as "penalty" apply to the DIE ROLL for [T3.02.1], the first contact table [T1.04], and the Political acceptance roll [T2.01]. The penalties only apply if the NPR finds out what happened and if the two races are not currently at war.

1. At any treaty level below partnership, colonizing:

Note: Double die roll penalties if world is same type as the NPRs homeworld. Always use the worst case that applies. This section does not apply to conquered populations.

- **1a.** A system body in a system claimed by a NPR but with no NPR population in the system. Effect: Treat as a social blunder
- **1b.** A system body in a system with a NPR population in the system. Effect: Treat as a diplomatic blunder [T2.04] but with a -15 penalty until the colonists are removed.

2. At any treaty level below partnership, surveying:

- **2a.** Any portion of a system claimed by a NPR. Effect: +10 RC per system. First applies when the next political offer is made by the player and after that, cooling off period works.
- **2b.** Any portion of a system with a NPR population in it. Effect: +10 RC permanently, each war between these two races reduces this penalty by 1/2 (FRD).
- **2c.** Any system body with a NPR population on it. Effect: Treat as a diplomatic blunder [T2.04].

Section 2 penalties will not apply to races that were LEL when the surveying occurred as long as the surveying race is now a partner and shares all the survey data.

T3.03 CEASE FIRE TREATY

The war continues but shooting has stopped. There are no penalties for breaking the cease-fire and "inadvertent" shooting may occasionally occur. NPRs make a war check when a cease-fire has been broken to decide if to go back to war again or not. The cease-fire agreement is the stepping stone between a shooting war and ending the war.

NPRs will offer a Cease Fire Treaty when things are going poorly.

T3.04 SLAVE RACE

The conqueror has complete control over the race. A slave race will not aid other invasions (they would turn on their conquerors). The slave race must provide 40% of its full income to the conqueror for protection from other space faring races. The conqueror is under no obligation to actually provide such protection. Additionally, the economy of the slave race losses 1/3 * RO% of its income (due to lower worker desire). This leaves 100%-40%-1/3*RO% for the slave race to spend as instructed by the conqueror (It will not give away anything of value but only sell for fair market value).

Slave races do not revolt in Starfire except via a Random Event or Enemy Espionage.

See [V5.11] for effective EL/SL issues.

T3.04.1 The Conqueror must maintain SEC forces on slave planets at 1 SEC per 5 PU (Extra Qv + H / SEC can be disbanded {receive 75% of value} or moved or supported with H). This force is maintained at zero cost by the slave race and grows as the slave race grows (if this garrison fall below the required level by more than 10%, the race will revert to conquered status). A garrison below

strength must be increased to full strength as soon as possible. When subject race or better status is achieved, the SEC may be moved or disbanded.

T3.04.2 The conqueror may use them to colonize habitable worlds, but only in set proportion with his own population, at the maximum rate of 1 conqueror SEC for each 3 slave race PU. Treaties and other agreements with races other than the conquer are suspended. The only benefit to the slave race is continued survival and possible interstellar expansion in the Future. Slave races may not amalgamate without going through the normal or subject race state(s).

T3.04.3 After 12 months as a slave race, subject status may be forced upon them.

T3.05 FORCED ALLY

Forced Allies are only created via [V3.03]. The CFN base pool units are disposed of per [V5.10]. 4d10% of all weapon buoys (active, inactive, and crated) are captured with the remainder destroyed. All other units in the system become the property of the invading race (treat as surrendered and roll for scuttling). SS and non-weapon-equipped buoys must be returned to the forced ally (with weapons systems destroyed or removed if so desired).

See [V5.11] for effective EL/SL issues.

T3.05.1 The surrendering race becomes a forced ally who may only have warships at the controlling race's discretion (warships increase the chance of revolt by 5% if it appears they would have a chance of successfully eliminating other races ships in the system). A 2% chance of revolt exists for the first 20 months of this political state. Freighters are permitted. The race provides 25% of its income to the invader. In addition, 25% of income is lost internally due to protection of the invaders people and inefficiencies. This race will not consider other political offers until after 6 months have passed. While under this treaty, starting on the month after the offer accepted, the race adds +25 RC to all political offers from the race surrendered to. Subtract 1 from this modifier per month that passes (modifier can be negative). When offered a different political relationship and the race goes to war (because of a war check), it will NOT accept a negotiated surrender again. A forced ally may not negotiate with other races without the permission of its forced ally. This political state cannot be offered at any other time.

When a Forced Ally relationship first begins, all current political agreements with other races are wiped out and voided.

T3.05.2 R&D is very slow as many scientists are in hiding. A maximum of 6 RP per month per project can be purchased. Colonization of the home system is allowed but the invader must approve out-system colonization. Exploration with unarmed survey ships is permitted if the invader allows.

T3.05.3 The "Conqueror" or "Invader" (COR hereafter), in the case of a forced ally, is actually neither. This race remains independent (not under the control of another race) and is an ally of the COR. If the COR lands ground troops, it will cause a war and is a treaty violation. The COR can station any quantity of ships or bases in the system as part of this agreement. The forced ally will tend to be quite hostile (but not always) toward the COR. Like a typical ally, it will not give out knowledge about things (especially tech and such).

T3.06 SUBJECT RACE

Maximum military maintenance payments are limited to one-half of the sum of the government type's warship and defense fund percentages. (for *example*, Clan/Family councils have a Warship percentage of 50% and a Defense percentage of 10%. Thus, their maximum maintenance percentage of income is 30% of total empire income.) Warship and base hulls are limited to maximum of one size smaller than normally available or one size smaller than the conquering race's maximum hull size, which ever is less.

They may explore but the conqueror gets first choice to colonize any benign planets (to the conqueror) found. If the conqueror declines to colonize a planet then the Subject Race may do so. They may not have any political agreements higher than limited trade with any other race encountered and will give up that relationship if the conqueror makes at least a limited trade agreement with the same race. The subject race may not research anything that the conqueror does not have or is not working on. It may provide full assistance to other races.

See [V5.11] for effective EL/SL issues.

T3.06.1 A race can only become a subject race if it currently is a forced ally [T3.05] or a slave race [T3.04]. A slave or a forced ally race receives an additional -30 to accept this offer. Subject races will not go to war with the controlling race if a war check is made, instead they add +20 to their RC and refuse to negotiate for the next six months.

T3.06.2 This treaty also counts as a free trade agreement [T3.10.5]. The subject race must provide 5% of its income to the conqueror as part of a mutual defense treaty *and loses 10% of its income*. Failure to honor this mutual defense treaty with a subject race causes a 40% chance of each other subject race reverting to a limited trade agreement with the dishonorable lead race.

T3.06.3 The controlling race may attempt amalgamation after 12 months.

T3.07 NON-INTERCOURSE

The two races reject all contact with one another (or at least one rejects the other). Any purposeful intrusion of units of either side into space claimed by the other would result in a war check [Y18] (players can decide against going to war with a player or NPR in this situation). If the race intrudes into an NPR's space, the NPR's RC is increased by 05 for any future negotiations. No matter what, the status of war does not truly start until after shots are fired.

T3.07.1 A LEL race will be unable to prevent a HEL from transiting its system until it achieves space flight, at which time the other empire must withdraw all units. If it does not, a state of war exists between it and the NPR.

T3.07.2 An empire's starships may sometimes inadvertently enter space claimed by an empire with which it has a non-intercourse relationship, as when surveying an unexplored WP that doubles back into the other empire's space. In this instance, this is not regarded as an act of war if the intruding starship(s) withdraws by the shortest possible route.

Note: This is a usually permanent situation but an intermediary negotiator may help [T3.02.1.5].

T3.08 NEGOTIATION

The state of negotiation is a tense period when the first treaty is being worked out. This state is only a stepping stone to another political state, and only indicates that the parties are willing to negotiate some form of treaty other than war (usually). If a contacted NPR goes for 10 months in the negotiation state without a treaty, they will make a RC check. If they roll under 75% of their RC they will offer non-intercourse, otherwise they will offer non-aggression.

T3.09 NON-AGGRESSION

The parties agree to peaceful but limited contact. Only single starships may enter star systems controlled by the other race (for the purposes of further negotiation) and must exit only through the entry WP. A LEL race will be unable to prevent a HEL from transiting its system in quantity until it achieves space flight, at which time the other empire must withdraw all but one unit. If it does not, a state of war automatically exists between it and the NPR.

T3.10 TRADE TREATIES

The races are on good terms and want to mutually benefit each other. There are three types of trade that can occur, each having rewards and penalties. After each party creates an economic and legal infrastructure to oversee the trading (pays the startup fee), each empire receives a trade bonus (on the month following the 2nd race to pay the startup fee) to add to its income each month. Trade bonuses are based on PU and those are updated at the beginning of the game months ending in zero (such as 10, 20, 100, etc.) (i.e., PU values at the end of month 39 are used on month 40-49). NPRs never delay in paying the start-up fee, which has priority over even EL R&D.

OPTIONALLY some SMs may wish to update the trade bonuses more often. A good compromise would be to include months which end with 5 (15, 25, 105, etc.), although some players may wish to do it every month.

T3.10.1 Game Balance When a player controls (partnership) two NPRs, any future trade agreement between those two NPRs receives zero trade bonuses. This is to prevent trade triangles as they are not only unrealistic, but provide an excessive income.

T3.10.2 Exchanging Trade Each month a FT (CFN or Imperial) must move to the trade location(s). The CFN handles this automatically and the bonus is available as income. The player can use Imperial Freighters. Except for one "negotiating" ship, a NPR will only allow units that appear to be freighters (FT) into their territory with non-FT units causing a war check. A race will not allow more than (Trade Bonus/25 (FRD)) total hull spaces of freighters to be in their space. The NPR may tolerate a certain amount of armed, military equipped FT as being normal for your fleet, but won't take chances on excessively large gatherings.

T3.10.2.1 When considering the potential information that can be gained from observing the route to and from your empire through the trade lanes, only imperial freighters can observe and report that information. Any CFN passage of trade goods has extremely low quality sensors and personnel untrained in observation, and will report only the size of the population that they traded with, and any bases or facilities that they docked with.

T3.10.3 Restricted Trade Restricted trade occurs directly between governments with no civilians being directly involved in the exchanges. The government controls prices and fees, which reduce the profits, trade volume, and also taxes the government ultimately earns. Information leaks are rare but spying is permitted as the military traders can occasionally be turned (but it costs twice as much to perform) [U6].

T3.10.3.1 On the month after getting Restricted Trade or higher, the full government type is revealed. *Exceptions*: insane or unstable governments are never reported as such only the base government type is reported, and Stalin communists and marxist-leninist communists are reported as communism.

T3.10.3.2 Each race reports its total imperial and subject race PU (conquered/slave PUs do not count). A single WP is the contact point where the military must maintain a permanent presence of at least one unit in order to "monitor" the trade. The trade bonus (in MC) is equal to 5% of other empire's reported PUs but cannot exceed 10% of your reported PUs. The Startup fee equals three times the trade value.

T3.10.3.3 Each empire has their freighters and/or CFN meet at a bordering warp point (both sides) where the cargoes are exchanged.

T3.10.4 Limited Trade Civilians are allowed to trade at a single "small" or larger population in the other empire. However, the government limits all contact to orbiting space-trading docks and monitors most transactions and randomly inspects 50% of cargo. Live cargo is quarantined and always inspected. All FTs are "escorted" by a team of onboard inspectors.

T3.10.4.1 Each race reports its total imperial and subject race PU (conquered/slave PUs do not count) and its EL but larger empire's EL will not be reported as more than 5 above the smaller empire's. The trade bonus, in MC, is equal to 10% of other empire's reported PUs but cannot exceed 20% of your reported PUs. The bonus for both races is increased by 5% per EL of the smaller (in PU) empire (max. 25% increase) if it is HEL. The Startup fee equals four times the trade value.

T3.10.4.2 Each empire must provide a route to a population of at least small size including stellar information on the systems passed through but not populations unless a direct route between WPs would take the FTs within communications range of the populations. Espionage becomes possible under limited trade [U6].

T3.10.5 Free Trade Civilians are allowed to trade at planets with populations totaling at least 25% of that empires total PU and full star maps must be provided to reach those populations. However, aliens must be registered and their movements are tracked (a few ships might get "lost" by the system). There is a right to inspect cargo but the volume is so high that it is done only 10% of the time.

T3.10.5.1 Each race reports its total imperial and subject race PU (conquered/slave PUs do not count) and its EL. The trade bonus (in MC) is equal to 15% of other empire's reported PUs but cannot exceed 30% of your reported PUs. The bonus for both races is increased by 10% per EL of the smaller (in PU) empire if it is HEL. The Startup fee equals six times the trade value (payment maybe split equally over two months). When the fee is split, the trade bonus is earned on the second month of payment.

T3.10.5.2 Each empire will learn its trading ally's EL, the population and physical layout of each system that contains the

designated 25% PU that trading occurs with (and each system in between the border of the empire and that system). Shipyard complexes and bases orbiting populated planets (not moons) will be known as to size (in HS) and quantity (of units). A fleet remaining at a planet for more than two months time, will be reported (50% chance per month) as to size and quantity (50% accurate). Espionage is much easier since aliens have the ability to move about the population and deal, and because the economies of the empires are much less resistant to money flow. All espionage has a 15% bonus [U6].

T3.10.6 Upgrading Trade Treaties When upgrading a trade treaty, discount the new startup fee by the startup fee under the old trade treaty if starting on the current month.

T3.10.7 In addition to obtaining an increase in commerce from a trade treaty, contact with both empires' people and culture is increased dramatically. Because of this the races learn the general range of ALL the racial attributes of each other (RM, RC, RD, and RO). The values are reported as follows:

- Low (01-30)
- Medium (31-60)
- High (61-100)
- Very High (over 100)

T3.11 MILITARY TREATIES

When two races want to mutually defend or expand together, they use a military treaty to organize how their forces will cooperate.

When a military treaty is obtained, if a prior trade treaty did not already exist then the races learn the general range of ALL the racial attributes of each other, as per [T3.10.7].

No NPR will accept a treaty with any military component (including partnership) if the other race (usually a player) is at war against a HEL race, unless it rolls equal to or less than its initial contact number from the Table Y3.02 NPR Government Types (roll once per war). If the two races already have an alliance with a military portion, then this restriction does not apply as the NPR already knows the risks involved.

An NPR who is at war with a HEL race (who is the same, higher, or unknown EL) will seek to offer or accept an alliance with military component, if it rolls equal to or higher than 1/2 its Warship starting fund percentage. The maximum dual treaty [T3.12] that an NPR will accept in this case is a LT&O, unless it already possesses a better trade treaty, in which case it will accept an equivalent to that treaty. NPR offers to players are not restricted by the 6-month limit.

Example T3.11 - Losing NPRs Want Aid

If race B already had a restricted trade treaty with race A, then race A will seek a RT&O or RT&D treaty with race B.

T3.11.1 An NPR who gets into a war with a enemy will attempt to increase its military treaty level with all its allies that have a restricted trade or higher relationship. It will seek alliances (or activate treaties) any time it is in danger of losing its home system or a system adjacent to the home system, or its fleet is defeated in a moderately important battle (defined as at least 20% its total fleet value or loses a system worth at least 20% the NPR empire's economic value), or a new ally joins against it in combat.

T3.11.2 When a military alliance is activated, each race must provide the other with all known information about the enemy (all known information about enemy forces, technologies, estimated EL, astrogation, etc.). Races will receive no information about the strength of the defensive allies' forces. Entry into the allies' space is only allowed with SPECIFIC permission for EACH action (once the defensive pact is initiated it is usually a good idea to provide a route that the ally can use to the combat action without specifically getting requests for all movements. NPRs will always give a route.). As a general rule NPRs will give only the minimum amount of information about its own military and star systems to an ally that is helping under a treaty. Providing military aid of any sort will give you astrogation data *only as needed* to fight the war and doesn't require exchanges.

Activation of a military treaty also entitles the aiding ally to future compensation (in captured systems, ships, etc.) in equal portion to the aid provided. In order to be eligible for future compensation, a race must put forth a good faith effort (determined by SM but a good guideline is at least 50% of the NPR's warfleet). The player can try to explain why such a level effort is not forthcoming (perhaps the race is already at war). In all cases, the SM makes the final determination of what is a fair good faith effort and compensation for such (from an NPR). Player empires always judge both the effort and the compensation themselves from and for other player empires.

T3.11.2.1 The race providing defensive aid will (or may for players) retain in its home system a percentage (by cost) of its current military forces, including the armed portions of any space stations and any other fixed fortifications equal to 2/3 its RC if actively at war [N14]. If the fighting is not intense enough to be considered an "active" war the percentage is equal to the RC.

An NPR must roll under 1/2 its RM to aid a race in a war that was in effect when it accepted the treaty. Subtract +5 from the *die roll* for each Y15 level above 4 (Militant is +10).

T3.11.3 Defensive Military Treaty This is a mutual defense pact obligating each race to come to the aid of the other against any attack initiated by third race IF the attacked ally activates the treaty; however, there is no obligation to activate a treaty (NPRs will always ask for help). This treaty may not be activated until one of the following conditions occurs:

- an enemy race enters and attacks a system controlled by the treaty race and the treaty race did not start the initial war (they may have only been a defensive ally on the losing side), or
- the treaty race's fleet is reduce to 2/3rd its starting size (from the beginning of the war) when aiding an ally under a defensive treaty but while in the ally's systems, or
- the treaty race's units, currently not designated as aiding the other race under a defensive pact, are attacked while probing or surveying a system.

This alliance may be offered and accepted even if the other race is already at war. In that case, there is no obligation to come to their aid in the current war, but aid will be given if a new war starts. NPRs will assist their defensive allies in a war the ally *starts* only if it makes 1d00 roll less than 1/3 their own RM [Y6.01.1]. This roll is made *after the war has started* and is determined to be an active war (see [N14]). Limit 1 roll per 12 months per war started. When starting a war

against a group of races, the NPR only makes a single roll. NPRs will NEVER assist a defensive ally with a sneak attack or an attack that breaks any of the NPRs own treaties.

T3.11.3.1 Military aid is defined as sending ships belonging to your empire to the aided race to be used wherever or however the race being aided believes will be of the most benefit in the current war. Whether that is defending a system or making an attack on the race with which they are at war. The ships are still owned and maintained by the aiding race.

T3.11.4 Offensive Military Treaty An offensive military alliance is one step further than a defensive military alliance, and is a pact to help each other expand into the galaxy and conquer any resistant races. This does not always mean that an NPR will help you conquer and genocide everyone else, but it does mean that if an offensive action is started for legitimate reasons, they will help. (*Exception:* players can decide on their own whether to help each other with wars they start.)

All components of a defensive alliance [T3.11.3] apply with the following additions: Both parties remain independent of one another but may participate in joint military operations. Unless the ally agrees (NPRs will not agree unless it is a war they started), you may not enter or survey any system belonging to the ally.

Prior to the start of a war, NPRs will assist their offensive military allies in a war the ally intends to start in the next 6 months only if the NPR makes a percentage roll less than or equal to their own RM. When starting a war against a group of races, the NPR only makes a single roll. If the attack will break one of the NPRs treaties, the RM is modified as follows:

- If the attack will break a non-aggression treaty (or lower level), the chance they will agree is reduced by 10.
- If the attack will break any kind of trade treaty, the chance is reduced by 25.
- If the attack is against any race they are partnered with, they will refuse and inform the partner of the intentions.
- If the attack is against any race they have a military alliance with, they will refuse. If the asking race has a higher alliance with the NPR, the NPR will inform them of the reason of the refusal but will not inform the race that was or is to be attacked. If the asking race has an equal level of military alliance, or the NPR has a trade alliance (as above) with the intended target and they refused to attack them, then if they roll under they RD, they will inform the intended target race of the upcoming attack. Naturally, they won't inform the attacker that they have tipped off the target. Under no circumstances will an NPR aid in an attack on a race with whom they have any military treaty. You can never ask more than once per 6 months for a sneak attack regardless of the number of races you may wish to attack.

T3.11.4.1 Failure to Aid Use the following 1d10 table to determine the consequences of failing to aid an NPR military ally:

<1	Treaty does not change
2	Treaty drops 1 level
3-4	Treaty drops 2 levels
5-9	All treaties dropped. Status becomes Non-Aggression.
>10	All treaties dropped. Status becomes Non-Intercourse.

+4 if ally is involved in a war with a "Strong" HEL foe (equal or higher than the NPR's EL and size)
+2 if ally is involved in a war with a "Weak" HEL foe (lower than the NPR's EL and size)

Exception: [T3.11.5]

T3.11.4.2 NPR assistance restrictions Even under partnership, an NPR will never assist another race(s) with more than 50% of their armed fleet (by MC value). Of the NPR fleet, 60% of the ships will be obsolete designs (lower tech, older) if possible. The other 40% may however be the best ships in the NPR fleet. If systems with NPRs populations above outpost are threatened (within two WP jumps of the war), then the NPR will release up to 75% of their fleet with only 50% obsolete designs. When the NPR assists another race, its ships must be combined with an equal (percentage wise, for *example*, 10% of the NPR fleet with 10% of the players fleet) amount (value in MC) of players ships when attacking. The player may not use the NPR fleet as cannon fodder.

T3.11.5 Defensive Forces See [Y12]

T3.11.6 Saving an NPR A NPR who is "saved" by another race under this provision receives a permanent -15 RC modifier towards the race that saved it! A "save" is when the NPR would have lost the war if the Quick WAR resolution chart [Y4.03.1] was used. The SM makes the secret die roll at the time the "saving" race enters the war. The RC bonus is received when a war, which at some point must have been an active war [N14], ends due to the elimination of enemy's mobile units or a peace agreement. The bonus may be received only once for a given NPR.

T3.11.7 The ally of my ally is not necessarily my friend For military alliance activation, there are situations in which the "race attacked" actually contrives a situation in which they are the defender (aiding an "at war" ally who is defending a WP). This situation is not really what the defensive pact under military alliance is about. Thus, no NPR will agree to go to the aid of an ally (hereafter referred to as 3rd party) of a military ally unless one or more of the following apply:

1. There is a direct military alliance with the 3rd party and the 3rd party did not initiate the war.
2. The military ally was attacked without provocation. Provocation includes placing ships in harms way during a war between two or more other races (*EXAMPLE*: within weapons range + 10 hexes of a WP), causing a treaty violation, entering systems *known* not to be owned by that race, etc. Exploration of systems that generates a first contact situation in which the surveying race is fired upon by the other race is not provocation.
3. The NPR rolls equal to or less than the average of its initial contact number, from Table Y3.02 NPR Government Types, and its militancy/RM (roll once per war). In this case, they will want war spoils: war spoils include sharing all tech data

that is acquired from captured ships and/or planets as well as a percentage share of other spoils. The percentage is equal to the percentage of HS of warships compared to the total warship HS contributed by all other alliance members. In this case "spoils of war" is defined as splitting the costs and income associated with capturing planets. After the war is over, both T/ST planets and star systems must be equally divided among members OR the other member's interest must be bought out. Only partners can share interest in a system. Interest cannot be shared in planets.

T3.11.7.1 Buyout cost for a conquered planet is equal to twice the income that will be gained from the conquered planet for a period of 6 months. Buyout cost for a unpopulated planet is equal to the buying race's maximum PU total times planet richness plus any asteroid bonus (for *example*, how habitable is the planet is not an issue). Buyout cost for a system is 500 MC plus 300 MC per WP. All buyout costs must be paid in 10 months of 10% payments.

Example T3.11.7.1 – Buying Systems

T3.11.7.2 Having multiple treaties with many races may lead to a situation in which a race is forced into becoming treaty breaker when such treaties overlap. A race, which breaks a treaty in order to honor another treaty, receives a permanent -10 RC (positive) bonus from each ally involved in the treaty conflict whose treaty is enforced.

Example T3.11.7.2 – Forced Treaty Breaker

T3.11.8 The whole truth Dishonest races unfortunately exist and other races can suffer because of it. A race which says it was attacked must supply proof (initial battle information logs), eventually, that they were not the initiator in combat or else suffer consequences. If a race finds out that they were duped, they will drop the treaty level by two, receive a permanent +10 RC against that race, and refuse all negotiations for 6 months. They will, if they can, negotiate a separate peace treaty with the race(s) they are at war with. Until peace is achieved, they will continue to fight because they have no choice.

T3.11.8.1 Reliable sources of information are probably hard to come by since a race would be loath to reduce a treaty without full proof. For STARFIRE purposes, this always requires confirmation of information from within the ally's government. There is always a 1% chance per month that they will learn from sources inside the allies government what happened. Otherwise, a 3rd party race (not involved in the war) may learn what happened and pass the information along (if the information turns out to be untrue, the NPR is +5 RC against that race permanently). In that case, there is a 5% chance each month that the information is confirmed by sources inside the ally's government. Confirmation does not occur in three situations:

- there was no dishonestly by the ally,
- the NPR successfully makes (or did make) the die roll under [T3.11.7],
- or the war ends (by conquest or peace treaty).

T3.11.8.2 Should a deceived race question the ally about the deception after receiving information from a 3rd party, the ally may limit the damage by owning up to the deceit. In that case, the RC penalty is only 5, treaty level is not changed, and both allies must work together to arrange a peace agreement. There is a 3% change per month of learning about 3rd party deception.

T3.12 TRADE AND MILITARY TREATIES

A trade and military treaty is a grand alliance where two empires decide to share mutual benefits to the best of their abilities short of merging their markets and economies. The benefits (and restrictions) of the particular trade and military treaties are available to both sides, and Assisted R&D [N9.03.3] is possible.

Each level of a trade and military treaty must be negotiated separately. The existence of a previous trade or military treaty does not ensure the race will sign an equal level of that treaty in a trade and military treaty. The various possibilities are listed at [Table T2.03 Political Offers Modifiers].

T3.12.1 Technology NPRs at any form of trade & military will only exchange tech items of similar type (weapons, defenses, misc., engines) and science level (within 2 SL). NPRs will sell technology information for 50 times the system cost. If the NPR rolls greater than their initial contact number on Table Y3.02 NPR Government Types, they will provide Assisted R&D for the other race provided that the other race reimburses them some of their R&D costs (RP cost + extra RP cost). Controlled NPRs must be reimbursed at 135% of their costs. Controlling NPRs need not be reimbursed. Other NPRs are reimbursed at 120% of their costs. NPRs will always accept Assisted R&D, which is provided at no cost to them. NPRs with Offensive Military or higher treaties will sell units, including larger hull for prototyping for twice their build cost.

T3.13 PARTNERSHIP

In a Partnership, both parties remain nominally independent and maintain separate economies, but the party that offered the partnership takes partial control of the economic, military, and political policies of its treaty partner. The effects of a free trade & offensive military agreement apply. In addition, military units of the two partners may be used interchangeably in peace or war, with home fleet exception [T3.11.3]. Both sides of a partnership receive full information about the partner's economic, military, and political systems. Additionally, information about warp points, NPRs, and technology is also given. Activated NPRs may control other NPRs.

T3.13.1 Player control of NPRs The controlling race may formulate the economic, R&D, military, exploration, and influences the political policies of the other partner even if the NPR signs a treaty with another race or races. If asked to participate in an attack that breaks one of their ally's treaties the NPR automatically agrees. You can ask a partner to aid in a war that will break one of their own treaties, but they may turn you down. Roll 1d100 vs. the NPR's RM modified as follows:

- When the attack will break a treaty of non-aggression or lower the chance they will agree is reduced by 5.
- When the attack will break any kind of trade treaty, the chance they will agree is reduced by 10.
- When the attack will break any kind of military alliance, the chance they will agree is reduced by 15.

If they don't agree to help AND they have any type of military alliance with the race then they must make another percentage roll. If the result is less than their 1/2 their RD they will inform intended target race of the upcoming attack. Of course they won't inform the

attacker that they have tipped off the target. You can never ask more than once per 6 months for a sneak attack against a given race, but you can ask regarding a different race without waiting 6 months.

T3.13.1.1 A partner may colonize worlds in a partner's systems.

T3.13.1.2 Partnership allows EL uplifting [N9.03.4].

T3.13.1.3 The partner of the NPR also learns the exact racial statistics (RM, RD, RC, and RO) of their new partner, and any of their LEL/HEL policies.

T3.13.1.4 The partnered races can repair, refit, and build each other's ship as per [M9].

T3.13.2 NPR Control Restrictions Even though the NPR is under the control of a player, the NPR is still a separate entity from the controlling player's empire. This means that the NPR will still behave like it did under SM control, and there are some restrictions to what the controlling player can and cannot do.

T3.13.2.1 Even a controlled NPR has an intelligent resistance to orders that have or may have a detrimental effect upon the NPR race. A player race is not allowed to run an NPR race "into the ground" for the purposes of attacking or amalgamating that NPR. Certain actions that are banned or should be closely watched by the Space Master. These actions include but are not limited to:

- Disbanding or moving large portions of the NPRs home fleet or bases away from the homeworld.
- Disbanding or moving large portions of the NPRs fleet or bases away from populated worlds.
- Disbanding or moving large portions of the NPRs fleet or bases from defensive routes to the homeworld should a player or another race attack.
- Failing to build any ships or defenses over a period of time.
- Disbanding or scrapping any shipyard modules.
- Failing to maximize research and development in accordance with [Y11.03]. This includes, but is not limited to, failing to develop weapons and defensive systems.

Ordering a NPR to do something, after it has refused, will result in the NPR preparing for a war per [T1.05.2]. This counts as the player (not the refusing NPR) starting the war AND as a treaty violation by the player against the NPR.

T3.13.2.2 One restriction is that a player may not have the NPR declare war without the player aiding in the war effort through use of his own ships and/or giving the NPR ships and/or MC. If the player chooses to not actively fight the war then, then that aid must be equal to any losses the NPR may take during the war. Ships given to the NPR count as 125% of their base cost and must contain at least an equal amount (or better) of technology (measured by SL) as those lost by the NPR. MC provided must be used to build NPR owned weapons of war. The total aid given each month must be at least equal to 10% of the outstanding balance (the war aid may be sent before the war starts if used to build weapons of war). If the aid is not equal to the minimum payment, then the NPR will drop to a T&M agreement, consider a treaty violation made, and finally try to make peace with the races attacked. An NPR will never agree to engage in a two front war against two different races.

Note: Knowing the enemy has a military agreement with another race doesn't count as a two front war. The NPR only "declares" war against a single race. Treaty repercussions are ignored.

T3.13.2.3 *OPTIONALLY* players may want partnered NPRs to be more than just an extension of their empire. To make them more interesting, player run NPRs will still use the same policies and behaviors that the NPR did while under SM control. This means that the player must follow the procedures and policies that he learned about under [T3.13.1.3] while controlling the NPR's empire and assets. Any order that breaks from these policies forces the NPR to undergo an RD check. If the NPR succeeds then it will refuse to obey the order and will ignore it.

Example T3.13.2.3 - Exceeding NPR Policies

Exception: The controlling player is not restricted to building (for the NPR) only ships that follow the NPR's ship design policies [Y19]. This is because the player's empire is considered to be educating the NPR with its design experience to build better ships than the NPR alone could build.

T3.13.2.4 Refitting a partner's ships: Ships may under go a "quick life support fit" to switch owners. This involves a simple re-labeling of controls and slight revisions to the life support/living quarters. These quick refits are done as per [M2.06] but at 4x normal build rates and at a cost of 10% the base hull cost of the ship. The design may not change during a quick refit nor may systems be repaired. A refit is REQUIRED if the ship is to be detected as the new race's ship and not the old race's ship.

T3.13.3 Political situation The normal NPR political process is done by the SM with two differences: 1. the player decides when the NPR should make offers, and 2. the player decides what the offer will be. The player may enforce a modifier of up to plus or minus 20 RC on offers to the NPR by races other than the controlling one.

T3.13.3.1 An NPR can never be controlled (have a partnership agreement) by more than one empire (be it player or NPR). A controlled NPR cannot control other NPRs. An uncontrolled NPR can control multiple NPRs.

T3.13.4 Gifts NPRs will never give a player ships, megacredits, technology, or information (astrogation and espionage in particular). They may however make equal exchanges (SM must approve these exchanges). Players who request help to defeat an invader who is threatening the player and not the NPR must pay the maintenance for the NPRs ships that are helping. Even if the player doesn't use the ships, the NPR may move ships to their own systems to be in a position to respond if they become threatened. Players may lease freighters for the cost of their maintenance plus 50% (and the player pays the maintenance) and the NPR will crew the ships.

T3.13.5 The NPR Fear factor When an activated NPR (race B) becomes a "Player (race A) Controlled NPR" (NPR race B controlled by race A via race B accepting partnership with race A), all other NPR races (called race C) must make an alliance check to see if they drop the alliance with Race B (the NPR). ALL alliances that Race B had with any race C (other NPRs) above non-aggression must be "checked" except for completed amalgamation, slave, forced ally, conquered, and subject states. See T3.13.5.2 to deal with partners of race B.

T3.13.5.1 Alliance Check : As soon as a treaty is reduced, make an immediate political offer roll using the current alliance type as both the Offered Modifier and the Current Modifier [T2.03]. If this roll

does not result in the re-acceptance of the current treaty, the treaty between the two races is reduced by three levels [Y17.02] but not lower than non-aggression.

Once this occurs, no offers can be made between the two races (B and C) for the next 6 months [T2.02].

T3.13.5.2 Race B's Controlled Races Partnerships and uncompleted Amalgamations between race B and race C are cancelled and changed to FT & O treaties between both race A and C, and between race B and race C. T3.15.5.5 applies.

T3.13.5.3 Race B's Enslaved Races Slave, conquered, subject, and forced ally races remain under the control of Race B who are then indirectly controlled via race A. T3.13.5.5 applies. The T3.13.5.4 RC modifier does not apply.

T3.13.5.4 Race B aids A Other races (race C) with whom the newly controlled NPR (race B) had any form of trade, military or better alliance (but no treaty with race A), the NPR (race B) may act as an intermediary between race C and race A. On the month of Alliance Check, race A makes an offer of "L trade" to each race C at -30 RC (use -30 RC in place of current relationship modifier). If a "L trade" agreement is reached it represents a non-aggression treaty between race A and race C (this offer cannot cause a war). Any further negotiation must be done in person by the race A's ships after full communication has been reached. This represents the unwillingness of an NPR (race C) to base its faith on a race it may never have met. Thereafter, Race C is -20 RC towards race A until a non-intercourse or war relationship occurs with either A or B.

T3.13.5.5 Full Communications between A and C
Full Communications must still be achieved before trade bonuses can begin (between race A and C) but all Initial Contact results of Rejected and Impossible are ignored. Don't reroll; just wait until next month and add the monthly +5. Initial Contact between race A and race C may be rolled for on the month the Alliance Check is made.

T3.14 AMALGAMATION

Amalgamation is the merger of the two empires into a single economic, social, and governmental structure that treats each race as an equal. Amalgamation is by far the most difficult political state to achieve, as only like races can achieve this state without degenerating or damaging the uniqueness of one or the other races (such as through conquest). Amalgamation is the ultimate prize, however, as each race becomes one and multiples the size of their empire by each other, and is no longer afraid of losing the other through actions and reactions with and from other races.

After two races have spent 6 months in Partnership, Amalgamation may be offered. In order to amalgamate, the two races must have enough similarities as to be reasonably compatible [T3.14.2]. Both parties to an amalgamation must be of the same HEL in the month in which the offer is made. Races may undergo a combination of assisted EL R&D and uplifting [N9.03.4] necessary to reach the same EL.

T3.14.1 When an amalgamation occurs, the player empire (or the larger of the two NPRs involved in an NPR amalgamation) must pay a one-time fee at its Imperial Capital equal to 1/2 the total PU of all populations controlled (including partnered NPRs) by the other partner to the amalgamation. If two player empires amalgamates, the fee is equal to 1/2 the total PU of the smaller player empire (including partnered NPRs) but it may be split, with each player paying 1/2 the total fee at his own Imperial Capital.

This payment reflects the creation of the bureaucratic and command and control infrastructure needed to integrate the smaller party into the larger party's empire. Six months after it is made, the amalgamated partner's populations become imperial populations and all economic and military resources of both amalgamation partners are merged. For simplicity, both races are considered one and the same.

T3.14.2 Restrictions to Amalgamation Two races must have at least three out nine points of similarity in order to amalgamate:

- Each stat (RM, RD, or RC) within 20 of the same stat (+1 per)
- Each success in the same stat (+1 per)
- Each non-success in the same stat (+1 per)

Since players do not start a game by defining their successes or not. Upon gaining a T&M relationship with a NPR, they may, if necessary, declare a stat to be a success or non-success (must be legally possible [Y3.03]). Once a stat is declared, its status can never change.

In addition, there are a few specific situations that will ALWAYS prevent an amalgamation:

- 0 success governments will never amalgamate with 3 success governments.
- J'Rill will only merge with J'Rill.
- Hive minds *can* only merge with other hive minds.
- AI intelligence races *can* only merge with other AI intelligence races.
- Corporate Governments will not merge with Communist Governments.
- Player races can always amalgamate with players.

T3.14.2.1 There is a saying that "time heals all wounds" -- it creates similarity (and breeds familiarity). For every 50 full game months that two races are partners, they gain one "similarity" for the purpose of amalgamation.

This rule may not be included in whether a race can amalgamate with another race for the purposes of R&D acceleration.

T3.14.3 Following amalgamation the RC, RM and RD of the original Imperial Race are modified by the RC, RM and RD of the other race. For each racial statistic, total the number of PU for each Race and multiply the statistic by this figure. Add the results for the two races together and divide the total by the new, combined population figure, rounding fractions to the nearest whole number. This is the new combined statistic.

Example T3.13.2.3 - Exceeding NPR Policies

T3.14.4 When amalgamating NPR to NPR, make one die roll:

Die Roll	New Government type
1-4	Same as the NPR offering amalgamation.
5-7	Same as the NPR with the larger income
8	Same as the NPR accepting amalgamation
9	Same as the NPR with the smaller income
10	Racial Statistics are per [Y6.01] but new racial statistic activation rolls must be made and the government type is redetermined.

T3.14.5 Benefits of Amalgamation Benefits from amalgamation (see CC.02.3) begin on the 6th month after the amalgamation offer is accepted and payments made:

- In an amalgamated race's empire, the life support can be switched as needed between any of the races within the empire. Shared-crew ships can be defined, but there is generally no effect unless semi-historical type racial modifiers (Ophiuchi pilots for example) are used. Home worlds and other populations retain their original HI for colonization purposes of other worlds.
- A NPR ships and graded leaders retain their current grade but advancement will be based on the new base grade.
- A player amalgamated NPR loses its government type.
- New race (the amalgamated one) receives the higher SL of all open trees and branches. The new race can use any technology developed by either race.
- EL RPs are averaged per R&D rules [N10.01].
- All populations of the smaller (PU wise) race receive a 10% increase in the PU size. If 90% of planet's maximum PU is exceeded, spread the extra population around in the following order (not to exceed 90% max. pop. on a body, not in extreme environments, on surveyed locations only, but otherwise at the owner's discretion): in the current system; in the next closest system already populated (only need 1 PU); in the next closest system populated by the amalgamated partner -- race's choice of where. If there is still extra, it may be place in the closest system owned by either of the two races that has a population.
- If the amalgamated race had 1,000 PU or more, its Imperial Capital [P7.01] becomes a Reserve Imperial Capital [P7.01.2] otherwise it becomes a ICC [P7.02]. Any other asset (ICC, RDS, SA, etc.) remains unchanged and available.
- The new empire receives a permanent Economic Variety Bonus (EVB), which affects all GPV throughout the empire. The EVB equals (Lower in PU of the two amalgamating races*15)/(total PU) percent, but not less than 1% (FRU). Multiple EVBs add together. The EVB applies to all income from planets (TGI) but not from other sources.
- The Trade bonus [T3.10] ends when amalgamation is completed (end of 6th month after amalgamation offer accepted).

Note: You will have a reduction in income in the short term.

T4 Player Controlled NPR Meetings

A player may serve as a intermediary between NPRs at least one of which must have a LT&D agreement or higher and the 2nd must have at least a L Trade agreement. This helps during the first contact/political offer phase. For first contact, add +10 to all die rolls. And while the player cannot determine the offer to be made nor influence the acceptance, unless a partner [T3.13.3], he can determine the "contacting race" if neither is native in the system of contact.

T5 Dueling Alliances

There are times when you may have relationships with two races that decide to go to war with each other. The following is based upon the situation involving two NPRs, because if one was a player race the players can make an equitable arrangement between themselves. A player *could* help his NPR ally hoping that the other player won't get too offended, but it is generally unwise to irritate an empire that can plot and plan against you in the long-run unless you can make it back up to him!

T5.01 Unequal Treaties

The following restrictions/options apply in various cases in which you have different alliances.

- You must always aid a race being amalgamated over one that is not.
- You must always aid a partnered race over one that is not.
- You must always aid a race with a military alliance (either T&M or military) over one which is not.
- You must be invited to aid any other race and you must announce the aid one month in advance to avoid any treaty violation.

T5.02 Equal Treaties

If you have equal treaties (T&M and Military are equal for these purposes) or both ask for aid at the same time, you may always choose to remain neutral.

- You must never aid a race being amalgamated against another race being amalgamated.
- You may choose to aid either partner but you suffer a treaty violation (you cannot avoid this).
- You may choose to aid either military ally and you must announce the aid two months in advance to avoid any treaty violation.
- You must be invited to aid any other race and you must announce the aid one month in advance to avoid any treaty violation.

T6 Child Races and Conquest

There are a number of ways that an empire can be split into multiple parts. So, when a parent race meets one of its children, what happens?

T6.01 Child Race

A Child Race is created when a portion of an empire's population, usually imperial population, is cutoff (-direct- communications lost) from the rest of the empire (the Parent Race). Usually a player will decide which part is the Parent Race (the part he runs) and which is the Child Race(s) when his empire is split apart. The population combining rule applies [V5.02] when determining the size of the political entity or entities that result. Population that is not conquered is a free Child Race.

A conquered Child Race that either is freed or gains freedom (a relationship that is not conquered, slave, forced ally, or subject with the conquering race) becomes a free Child Race.

A Child Race with a partnership is "immune" from recombining with its parent Race, unless the other race wishes to release it from its partnership to do so. Such a selfless act gains a permanent -20 RC toward the parent race.

T6.02 RECOMBINING CHILD RACES

Upon establishing direct contact (the race's own adjacent systems), a Child Race and a Parent Race must determine their relationship.

T6.02.1 Less than 20 turns If less than 20 turns have passed since the original separation, Child Race instantly rejoins Parent Race.

T6.02.2 20-50 turns have passed Treat as newly meeting races with the following exceptions:

- Full communications are automatically established.
- Only months/10+1 (FRD) are required between political offers.
- A permanent -25 RC modifier applies to this relationship.
- No amalgamation variety bonus will apply.

T6.02.3 More than 50 turns have passed Treat as newly meeting races with the following exceptions:

- A +25 modifier applies to attempts to communicate.
- A permanent -10 RC modifier applies to this relationship.

T6.03 RESTRICTIONS

A Child race which has been involved in an amalgamation no longer is considered a Child Race unless the amalgamation process started on or before the turn of separation. A parent race may amalgamate another race but may not itself be amalgamated.

Two Child Races which come from the same Parent Race may use the rules above to combine. The smaller race will join the larger one.

A race may not unamalgamate to use these rules (or ever for that matter).

Next Section: U - Intelligence Gathering

U – Intelligence Gathering

One of the most critical departments in any empire is that of intelligence. Without information on the location and strengths of your enemies, you have no way of making smart strategic combat decisions to attack your enemies and defend your empire from enemy attacks. Through the capture of enemy units and populations you can find a wealth of information about your enemy's technology, defenses, empire, and even sciences. And through observation of enemy units in action you can obtain sensor readings of their technologies and capabilities.

Captured data may be obtained from captured courier drones [U2.02], from a conquered enemy population, or from spacecraft which have failed their surrender roll [D7.04.3] and been captured. Captured data may take the form of:

- **Astrogation Data** (warp lines, system information, and pops.)
- **Military Status Data** (records describing the military forces available within star systems)
- Messages
- **Technological Data** (information on the hardware of the race and/or empire from which the data was captured)

Note that under the provisions of [D7.04.4], surrendered units have a percentage chance equal to their racial determination of destroying sensitive data before surrender. If they succeed in destroying data, no records can be captured, which means no astrogation or military data can be obtained. Technological data will still be obtainable in most cases, since no one can destroy all the tech manuals, spare parts, and actual weapon systems of their surrendered units.

U1 Sensor Data

Tech data can be obtained via [N9.03.1]. This information will give you the science information needed to develop a tech system, though one generation lower than the one scanned or alpha generation.

Imperial freighters or other units that are allowed to travel through the space of another empire may collect data on any units and populations that are at each warp point it traverses, and at any planets (and their moons) that it stops at. The CFN will typically not get close enough to other types of units, like warships, other than to know the warships are there. And at long sensor range it is nearly impossible to distinguish the CFN from other units. Because of this no other information can be gained from this type of intelligence collection. The amount of information that can be obtained depends upon the level of trade, and is detailed in the descriptions for each type of trade at [T3.10].

> ***Note:*** The CFN cannot perform the above duty when it moves through another empire's space (such as trade collection [T3.10.2.1]). This duty can only be performed by imperial units (freighters, warships, etc.).

U2 Captured Units and Personnel

A captured unit can be a boon to the capturing race. The hull can be refurbished and reused, but the real value lies in the new information that can be obtained. You can learn about the enemy from examination of their hardware as well as technical records that you can pry from a captured ship's computers.

But the steps must be performed in a certain order. Wreck units are only valuable for their hull and a few minor systems (generally holds, armor, and/or shields). Regardless of the type or how information is obtained, it must be evaluated before it can be used [U4].

U2.01 Captured Large Units

First, an space based construction facility must examine [M2.05] the non-wreck [D2.06.1] unit. The computers (always available in some form unless [D7.04.4] applies) are probed. [U4.03]

The examination may remove intact tech systems for further examination. These intact tech systems must be sent to a (RDS) for study [U4.05]. The system(s) sent back for study are shipped in cargo holds as if they were prefabricated systems [M5].

U2.01.1 Second, the unit must be refurbished [M2.06] before the capturing race can use it. Note that intact tech systems not in the tech base of the capturing race would be used as per [N14.02].

U2.02 Captured Courier Drones

Captured courier drones (a CD that is tractored has a 70% chance to destroy itself). Captured courier drones always contain both the full text of any messages recorded in their memories plus astrogation data (including WP gravity surge patterns) on all WPs they have or were to transit. Courier drones never have system information (stars, planets, etc.) in their memory banks, as it is assumed they are programmed on a linear path basis (meaning they will be told a path that will purposely avoid known obstacles).

U2.03 Captured Survivors

Personnel that escape from destroyed/wrecked/damaged ships in life pods [F3.07] and any that are rescued by the enemy become captured personnel. Captured personnel must be sent to an ICC or capital to be interrogated [U4.04]. Captured graded leaders use [U4.04.1].

U2.04 Captured (CC)

If an intact (CC) system is captured, not a (CC) buoy, there is a 5% chance you will gain the other race's encryption code book. This will allow you to decode any messages received or recovered for the next 1d6 months.

U3 Captured Populations

Captured populations are a wealth of intelligence information because they can't leave, can't hide, and can't prevent you from examining them.

U3.01 Establishing Communications

Captured populations will allow your empire to continue rolling on the first contact table if communications has not already been established. Ignore all results of "communication impossible" and "communications rejected," as the population cannot force either of those results to occur.

U3.02 THREAT RESPONSE RESEARCH

Captured populations will allow your empire to perform "threat response" research for EL if the captured population's EL is higher than your own empire's [N9.03.5].

U3.03 CAPTURED RECORDS

When a population is captured and occupied, evaluation of planetary records can occur. These records must be shipped to an ICC or Capital [U4.01]. Once evaluated, intelligence rolls are made on tables [U5.01], [U5.02], and [U5.03], with:

+10 for settlement and smaller populations,
+20 for small populations,
+30 for medium populations,
+40 for large populations, and
+60 for very large populations.

Note: U5.04 (Science) is not included.

U3.04 RECORD DESTRUCTION

Captured populations cannot attempt to "destroy their data" as there is too much to destroy. However they can be obstinate about it and evaluating a population takes a long time. The information obtained by capturing a population is evaluated over a 2 month period, at the end of the second month your empire finishes the evaluation.

U3.05 CAPTURED ICC

If the captured population ALSO has an enemy ICC, and the ICC failed to destroy its records, then all rolls on the tables [U5.01 to U5.03] are doubled (for *example*, a result of 20 becomes 40) after all population bonuses have been added to the roll. If a Capital is captured, then the maximum result for all three tables is automatically obtained (the 200+ roll).

U3.05.1 . A captured ICC takes 3 months to evaluate. The recovered information is available at the end of the third month.

U3.05.2 . A captured Capital takes 4 months to evaluate. The recovered information is available at the end of the fourth month. This rule also applies to any reserve capitals that are captured.

U3.05.3 . Once evaluated, an Imperial Capital, Reserve Capital, or ICC gives a 5% chance to gain the other race's encryption code book. This will allow you to decode any messages received or recovered for the next 1d3+1 months.

U4 EVALUATING CAPTURED DATA

Once data has been captured, intelligence personnel must evaluate it before any information is in a format that is usable for making decisions and orders. When any level other than partial or full communications exists, captured data cannot be evaluated excepting tech data and copy of item data [the language here is that of science].

If only partial communications [T1.05.5] with the source of the data, then the evaluation of the data takes an additional 1d10/2 (FRU) months.

U4.01 EVALUATION TIME

Evaluation of data takes 1d10 days before the data provides "information" that can be acted upon (the player cannot write orders based on the new information until the evaluation is complete).

U4.02 EVALUATION LOCATION

Evaluation of overt intelligence is normally done at an ICC or Capital, even though in some cases the actual collection of intelligence may be done elsewhere (captured data on units [U2], captured data from populations [U3], and sensor readings [U1]). The captured data must be sent to an ICC or Capital via a ship (communications will NOT work for transferring captured data), and once it reaches an ICC or Capital the evaluation begins.

U4.03 FROM CAPTURED UNITS

Data from an Examination of computers [U2.01] or from courier drones [U2.02] must be evaluated by an ICC or Capital before it can be used. This data generates a roll on tables [U5.01, U5.02, and U5.03].

U4.04 FROM PRISONERS

Captured personnel must be interrogated at an ICC or Capital for 1 full month before useful data is obtained.

For each battle, determine the number of captured crew that arrived at the ICC or Capital. If at least 50 HS of crew are interrogated, one roll on [U5.02] is made for a battle. For each additional full 100 HS of crew, add +10 to the roll.

Example U4.04 - Intel From Prisoners

U4.04.1 Any captured graded leaders give a roll against [U5.02] (with no modifiers) ONLY if they fail an RD check. If they make their RD check then they will not give out any information to their captors. Admirals will always know the last orders that they have been given (see the note under the [U5.02] table) or gave to other units in the last month.

Graded governors also give a roll against [U5.03] if they were captured on the planet they govern (and fail their RD check of course). Graded governors will always know any orders they have given in the last month.

Diplomats give only a [U5.03] roll.

U4.05 FROM CAPTURED ITEMS

Undamaged systems can provide two types of technological data if removed and shipped to an (RDS) for study [U2.01]. Each system takes one month to examine by an RDS before it can be used for R&D. There is a 70% chance that just tech data will be determined [N9.03.2 and N9.03], otherwise, the data is as if a Copy of the Tech Item was available [N9.03].

U4.06 KNOWLEDGE ABOUT OTHER RACES

At the end of the month that full communications are established, the Government Tendency is learned [Y21].

At the end of the month in which a Restricted Trade or higher (including Defensive military) is established, the full government type is revealed.

At the end of the month in which a Restricted Trade or higher (excluding Defensive military) is established, the race's racial statistics (modified for the particular race but not modified by political offers) reported as follows:

Low (01-30)
Medium (31-60)
High (61-100)
Very High (101+)

U4.06.1 Exceptions: insane or unstable governments are never reported as such only the base government type is reported, and Stalin communists and Marxist-Leninist communists are reported as communism.

Player race's can "imitate" NPR governments for the purpose of this rule. Players select a NPR government type to start the game and they can change it but such a change takes 10 months.

U4.06.2 Additional Trade Treaty information At Limited and Free Trade, the CFN will visit some planets of the other race. Shipyard complexes and bases orbiting populated planets (not moons) will be known as to size (in HS) and quantity (of units and modules). A fleet remaining at a planet for more than two months time will be reported (50% chance per month) as to size and quantity (50% accurate).

U4.07 CONQUERED RACES

Once sustained contact (full communications) is achieved and the peace phase entered, the conqueror will learn the exact values of all the racial attributes and the LEL/HEL policies of the conquered race.

At the end of the assault phase, government type is learned if full communications are available.

U5 CAPTURED DATA TABLES

The following tables are those referred to in the sections above.

U5.01 ASTROGATION DATA TABLE

01-20	No data recovered.
21-40	Last transit WP information recovered.
41-60	Last 2 star systems and transit WP information recovered.[a]
61-75	Last 3 star systems and transit WP information recovered.[a]
76-95	Last 4 star systems and transit WP information recovered.[a]
96-99	Last 5 star systems and transit WP information recovered.[a]
100	Last 6 star systems and transit WP information recovered.[a]
101-130	All systems and warp points in a 2 system radius recovered, and a name list of the empire.[b]
131-160	All systems and warp points in a 3 system radius recovered, and a name list of the empire.[b]
161-190	All systems and warp points in a 4 system radius recovered, and a name list of the empire.[b]
191-199	All systems and warp points in a 5 system radius recovered, and a name list of the empire.[b]
200+	All systems and warp points in a 6 system radius recovered, and a name + warp links map of the empire.[bc]

[a] If this is the result of a roll for a captured population, then the result is instead "All systems and warp points in a 1 system radius recovered, and a name only map of the empire.[b]"
[b] A name list provides the names of all systems connected via the CFN. No connection (via WPs), WP, or astrogation data is provided.
[c] The warp links map gives system names and how they are connected for all systems connected by the CFN. No WP or astrogation data is provided.

NOTE for footnotes b and c
Systems that do not have CFN traffic, even if surveyed, are not included.

U5.02 MILITARY DATA TABLE

01-20	No valuable information recovered.
21-50	Military strength[a] (if any) in the capture system (the system the unit was captured at).[b]
51-70	Military strength[a] in the capture system, and the last system transited.[c]
71-80	Military strength[a] in the capture system, and the last 2 systems transited.[c]
81-90	Military strength[a] in the capture system, and the last 3 systems transited.[c]
91-95	Military strength[a] in the capture system, and the last 4 systems transited.[c]
96-100	Military strength[a] in the capture system, and the last 5 systems transited.[c]
101-130	Military strength[a] in a 2 system radius.
131-160	Military strength[a] in a 3 system radius.
161-190	Military strength[a] in a 4 system radius.
191-199	Military strength[a] in a 5 system radius.
200+	Military strength[a] in a 6 system radius.

Any roll of 96 or higher obtains the IFF code for that month [D5.06.2].

[a] Military strength is information about: units that are present in the star system, base defenses, space stations, PDCs, army strengths, and the presence of any graded leaders. This is not precise information, simply what classes and how many. In addition any captured ships or personnel have a 10% of knowing their orders. For each "system transited" result the ship or personnel also know that many orders they've been given, starting with the most recent. (So if "2 systems transited" was rolled then the captured ship or personnel would also have the last 2 orders given to the fleet they were in.)
[b] If the battle was a warp point assault that failed (meaning captured attacking personnel or ships), then the result instead gives any military information within 1 sH of the enemy side of the warp point.
[c] If this is the result of a roll for a captured population, then the result is instead "Military strength* in a 1 system radius"

U5.03 MESSAGES TABLE

01-10	No messages recovered.
11-25	All messages[a] in the last day recovered.[b]
21-50	All messages[a] in the last week recovered.[b]
51-75	All messages[a] in the last 2 weeks recovered.[b]
76-90	All messages[a] in the last 3 weeks recovered.[b]
91-100	All messages[a] in the last month recovered.[b]
101-120	All messages[c] relayed in the last 2 weeks.
121-140	All messages[c] relayed in the last 3 weeks.
141-160	All messages[c] relayed in the last month.
161-180	All messages[c] relayed in the last 2 months.
181-199	All messages[c] relayed in the last 3 months.
200+	All messages[c] relayed in the last 6 months.

[a] Messages are the text and headers of any message sent or received.
[b] If this is the result of a roll for a captured population, then the result is instead "All messages[c] relayed in the last week"
[c] A relayed message is any message which passes through the star system, whether or not it was intended for a receiver in the star system or not. Relayed messages can only be found where an ICC or Capital has been captured, as populations do not receive military traffic relays.

U5.04 SCIENCE DATA TABLE

Note: This table is assessed from various parts of the rules. Information may be Tech Data or Copy of Tech Item, depending on those other rules.

This table may lower the Target SL [N9.03.1] or [N9.03.2]. However, it cannot increase the Target SL.

Roll 1d100 once for each group of separate tech systems (*example*, Pga is separate from Pgb) that a player has not developed. Add +5 for each additional system. Then roll 1d100 once for each separate tech item with a +5 bonus for each extra copy of the item above the first (*example*, two Pgas receive a +5 bonus, three Pgbs a + 10, etc.)

Roll	Information Available reference player's SL in the tree[a]
1-40	No valuable information recovered
41-50	at least 1 SL lower than players
51-60	equal to or less than. New system branch is opened if tree is open[b].
61-70	not greater than 1 SL above player's SL[b]
71-80	not greater than 2 SL above player's SL. New tree is opened.[b]
81-90	not greater than 3 SL above player's SL[b]
91-100	not greater than 4 SL above player's SL[b]
101+	Information always received[b].

[a] If tree/branch is not open, SL is one less than the tree/branches starting SL.
[b] Opening a Tree or Branch requires a breakthrough. A result that opens a knot must have this breakthrough verified before use.

If the player does not have the systems branch or the tree open they only receive the data if they roll equal to or above the value required to open a new branch (in an already open tree, this is 51 or higher) or the value required to open a new tree (71 or higher).

Use of information gained is limited by the Rule of 3 [N5.02].

Example U5.04 - Gaining Intel from Captured Tech

U5.04.1 For each R&D facility (SA or RDS) that was captured on the planet, randomly select one open tree or branch of the captured race (branches are separate from trees). Roll on the [U5.04] Table. VL populations add +10. This often results in getting information you already have; however, a race will always gain new and usable information for every 3rd SA or RDS captured from a single race (regardless of the span of time between those captures).

For R&D facilities in locations other than those with shipyards, only the tree/branch that R&D is, or was last going on there, is eligible to be captured. (PS: the alien can blow up the R&D facility to prevent data capture but that is the only way). R&D facilities on home worlds always have the chance to be captured for technology even if they were blown up before the invasion.

Table U5.04.1 Tech Intel from R&D Facilities

CON's situation in reference to the U5.04 SL indicated (BISL)[a]	Tech Information Gained
CON doesn't have tree/branch open but the tree/branch's first SL is above the indicated SL	information vague and difficult to understand, gain +20 free RP to the first project in that tree/branch but CON must get the breakthrough on their own.
CON doesn't have tree/branch open and the tech/branch's first SL is BISL	gain breakthrough to open.
CON doesn't have a tech item and the tech item SL is BISL	gain tech data on the item. Limited to the lowest item undeveloped.
CON doesn't have a branch/twig/linked tree open and its SL is BISL	gain breakthrough to that "branch" (highest SL branch or random).
CON gains +30 free RP to the two next projects in that tree/branch (can be applied to current projects).	

[a] Multiple situations may apply when using this table. All results for all situations are applied. I.e. a race may gain tech data on Fa, Fb, and Fe all from a single roll.

U5.04.1.1 For each captured R&D facilities, determine the SL indicated by rolling on the [U5.04] Table and adding the conquering race's SL in the randomly determined science. If the conqueror does not have the tree or branch open, use their EL -1 and apply the [U5.04] modifier. If the conquered race's SL (excluding any effective SL reductions [V5.11]) in the selected science is below this value, reduce the value to that number. This is the indicated SL of the Tech Data gained.

Results for Table U5.04.1 Tech Intel from R&D Facilities are listed in order from top to bottom. Take the first result that applies.

Example U5.04.1 - Conquest and Tech

CON = Race who conquered the planet
CAP = Race who was captured.
BISL = below or equal to the indicated SL

Note: Breakthroughs must be verified.

Note: The Captured race cannot provide assistance in the form or RP or tech data for systems and SLs that it has not researched.

U6 ESPIONAGE (OPTIONAL)

See Website for these rules.

U7 COUNTER-ESPIONAGE (OPTIONAL)

See Website for these rules.

Next Section: V - Campaign Combat Rules

V – Campaign Combat Rules

In campaigns, the battles are different than those in scenarios because you have to worry about not just winning the fight but preserving your combat forces for future operations. The difference is that you have many more choices to make because you can use anything at your empire's disposal. To make matters worse, so does your opponent, and chances are that you don't fully know what he has in store for you (of course this works both ways).

This section should cover all campaign rules relating to combat, and to give the SM a good idea of how to handle combat before and after tactical-scale fighting takes place.

V1 Combat Considerations & Scales

Combats are relatively straight forward: whenever opposing units enter your empire's star systems the SM calls for a battle and the players setup their units according to what is available. What isn't completely clear is how everything else in the game interacts with the game at this scale.

V1.01 Combat Interactions

Most of the time combat only occurs when units from two or more separate empires end up in the same system. This doesn't mean that combat will occur, but that it can occur, and so each force must be tracked to determine if they detect each other. If one side detects another, then all forces involved setup their forces on the star system map and begin play. The only forces available are only those units in the system when the enemies detect one another.

There are a few instances in which the play is interrupted, extra units become available, or when the map is altered.

V1.01.1 Units entering the system through warp points Careful attention must be paid to the length of time spent resolving possible battle situations. Sometimes other units (freighters from the CFN, other military units moving through, etc.) enter the system through a warp point on their way to another destination. These units cannot be controlled unless contacted by the owning empire's forces, and will continue on their way unless intercepted or contacted.

V1.01.2 Units exiting the system through warp points If a unit exits the system through a warp point, and the enemy forces do not follow, it is gone for the remainder of the battle. *Exception*: a unit that exits through the warp point and then waits on the other side can be contacted by: courier drone, communications platforms around the warp points [P2.04.2], or by another unit exiting through the warp point to communicate with the unit(s).

V1.01.3 System-to-system combats (WP Assaults) During a warp point assault, the forces on each side are at the tactical level unless they move out of tactical range. Either side can transit and attack the other side, but unless both sides transit only the defending side needs to be setup. *OPTIONALLY* some players like to setup both sides of the warp point and physically move the attacking units to and through the warp point, but that is not necessary unless you want to setup that way. (It helps when the defender counter-attacks, so the attacker doesn't automatically place all his units together in the best position)

V1.01.4 Planetary combats Planetary combats occur AFTER all unit-to-unit combat interactions. This is just for play balance and simplicity.

V1.01.5 Reinforcements When movement is broken down below the strategic level and to the system level, there are occasions when units from one empire or another will enter the system through warp points while performing their own strategic movements. Graded leaders and in-system populations can issue orders to these units to retreat, keep going (but be aware), or to join in the fight, and these can be considered "reinforcements." It is practically impossible for a player to be able to issue orders from a population or graded leader to units outside of the system and have them arrive before all combat interactions occur. (The only exception is units that are waiting just on the other side of a warp point.)

V2 Commerce Raiding

Commerce raiding is nothing more than the interception of monies and goods that are transferred through the CFN. The ability to intercept the CFN requires that the enemy units be armed, as unarmed units cannot destroy or capture freighters. There are three basic methods to handling this:

V2.01 Setting Up the Raid

Once raiders enter a system, they must be assigned to raiding zones (this may work for war fleets intercepting war fleets too).

Follow the steps below:

- Assign the Raiders to a zone [V2.02].
- Determine if CFN is operating in a zone with raiders [V2.03]
- Determine if raiders intercept CFN groups [V2.04]
- Determine if patrollers intercept raiders [V2.04.5]
- Fight out the battle
- Determine how long until the CFN cry for help is heard [V2.04.3]

V2.02 Assign Raiders to a Zone

Each raiding group operating in a system must be assigned to a separate zone during each strategic pulse. Groups can move to adjacent zones between each strategic pulse.

V2.02.1 Definition of Zones

- Zone 1(inner) -- All sH from the primary to range 10
- Zone 2 -- sH 11 to sH 25 between radians 1 and 3
- Zone 3 -- sH 11 to sH 25 between radians 3 and 5
- Zone 4 -- sH 11 to sH 25 between radians 5 and 7
- Zone 5 -- sH 11 to sH 25 between radians 7 and 9
- Zone 6 -- sH 11 to sH 25 between radians 9 and 11
- Zone 7 -- sH 11 to sH 25 between radians 11 and 1

The first radian listed for a zone is considered inside that zone (i.e., Zone 5 includes radian 7). Zones 2-7 extend out to 30 sH only when the raider knows a WP exists in that extended area.

V2.03 CFN OPERATIONS WITHIN ZONES

{**Editor's Note:** A more accurate method of determining the H and Qv values within each system is available from L4.02.2.6. However, more work is required because you have to calculate the values for the ENTIRE empire. When using that method, you skip all of section V2.03}

The Space Master will find it easier to only total zones where raiders are operating during a month. The raiding player is advised to do some kind of knowledge gathering to determine where the enemy's WPs are located or this could be a really wasted raiding expedition. Trade numbers are somewhat fudged to make things easier to calculate.

The amount of Qv is always equal to 1/2 the amount of H (whether it is the amount generated or moving).

V2.03.1 Internal trade H and Qv run from each populated body to the largest PU population (or equally split along populations within 10% of the largest PU population).

No in-system route will pass through more than 2 zones.

V2.03.1.1 To determine the total amount of H passing through the zone, total the income created within that zone. Multiply by the CFN effective size.

If any inner system CFN uses 2 zones, split that amount of income among the zone the income is in and the inner zone.

V2.03.1.2 H and Qv values from trade with other empires should also be accounted for. However, the formulas are hardly simple. At any trade level, the race being raided will have trade income equal to the full trade value moving from the point of entry between the empires (i.e., on the trade route which is defined as homeworld to homeworld - either homeworld may be replaced by a nearer very large population). During limited trade, the route goes homeworld--trade point--empire border--trade point--homeworld.

There may also be FT of the other trading race passing through systems of the raided empire. For Free Trade, these FT move to the homeworld/V large. For Limited trade, the route is to the specified trade planet. Restricted trade only generates trade FT for the race involved

V2.03.2 Each system has two types of external trade: into-system and through the system. An exit warp point must be known to the system owner and have a population within two StMP of this system. Both forms of external trade H and Qv run from/to an exit WP to the largest planet. Note the inner zone contains all trade passing into or through the system.

V2.03.2.1 Into-System Trade Into-system trade is when a trade route terminates in that system. A raided (or any other) system will always try to have as much trade coming into that system as it has income. The only time it will not is if the surrounding systems are not big enough.

Each exit WP out of the system qualifies for an amount of trade (EWQA = Exit WP Qualifying Amount) equal to the value of the system beyond ***THAT WP*** plus 1/2 the value of all the systems adjacent to first system beyond *that WP*. The EWQA amount is used in calculating Through Trade [V2.03.2.2].

- If the raided system's income exceeds the total EWQA of all exit WP, the EWQAs are used as is.
- Otherwise, into-system trade is pro-rated among the various Qualifying WPs and the system qualifies for through trade [V2.03.2.2]. The formula is:

$$\frac{\text{Raided System GPV}}{\text{total EWQA of all exit WP} \times \text{EWQA of that WP}}$$

Each of the two zones that into-system trade passes through receives 1/2 the EWQA of each WP in that zone.

V2.03.2.2 Through System Trade A system may have large amounts of trade passing through it from other empire locations.

To calculate the value of the through trade:

Determine each system's adjusted trade value (ATV) which is the system's WP income (EWQA) calculated in [V2.03.2.1] minus the pro-rated into-system trade for that WP (before the 1/2 reduction for zones).

First total all the adjacent system's ATV *except the largest value* (this is trade value B), then *subtract* the largest adjacent system's ATV. This number determines how to proceed.

If this number is zero or above, then trade value B is the traded amount. Then the largest system's ATV remains the same. All other ATV is pro-rated as follows:

$$\frac{\text{Adjacent system ATV}}{\text{Trade value B} \times \text{ATV of that system}}$$

If this number is less than zero, then the largest system's ATV is equal to trade value B. Each other WP has trade equal to its ATV.

The inner zone has through trade of 1/3 of the new ATV total.

Each other zone has a through trade of 1/3 of the new ATV amounts from the systems in that zone

Example V2.03.2 – Raiding

V2.03.3 CFN Effective Size Determine the CFN PCM modifier for the empire being raided [L4.02.1]. This reduces the CFN Qv and H quantities of a small empire to an appropriate level.

V2.04 INTERCEPTION OF THE CFN

The location of the interception is random but should account for the general strategy of the raiders (divided forces which spread across the zone to intercept in/out traffic or a concentrated group around a WP, or large DF down group trying to quick kill FTs before they can send a message).

The CFN player has three choices for handling CFN traffic into and out of a system: Free movement, convoys, and escorted convoys. Likewise, there are 3 methods of using warships in the system: Guarding the planets (income generators), patrolling likely zones, or escorting convoys.

The CFN may be ordered to stop serving a system but all income from that system is reduced by 15% and can only be spent on that planet.

Free Movement: The CFN ships move in small groups of 1-5 ships and generally transit a WP when they are ready.

Convoys: The CFN ships wait until there are a few large groups and then moves at full speed as a group keeping the patrollers aware of their location. This causes a minor disruption of trade and income from the system is reduced by 1%.

Escort: The CFN ships wait until there are a few large groups and then move as a group with the escorts at the escort's best speed. This causes minor to moderate disruption of trade depending on the

Table V2.04.1 Freighter Group Generation

Roll	Ships	Capacity
1	1 FT1	7
2	1 FT2	9
3	1 FT3	13
4	1 FT4	17
5	4 FT 1	28
6	3 FT1,FT 3	34
7	4 FT 1, FT 2	37
8	3 FT 2, 2 FT1	41
9	FT3, 2 FT2, 2 FT 1	45
10	FT4, 2 FT 3, FT 2	52

escorts speed. Income from system is reduced by 1% if the escorts are the same speed as the CFN, by 3% if they are 1 slower, by 6% if two slower, by 10% if three or more slower.

Guarding the income: Warships can only intercept zone 1 raiders, but they have any planetary sensors and if the raiders are detected by such, the guards can move to intercept normally and the raiders are unable to react until they detect the guards moving.

Patrolling a zone: When an interception is made, there is a chance that the patrolling ships might be close enough to react, even if they fail to save the FT, they might still catch up with the raiders.

V2.04.1 Generating Groups If using free movement, roll 1d10 on Table V2.04.1 Freighter Group Generation to determine group size. Subtract the H (or Qv) capacity from the amount of H (or Qv) in the zone (remember that Qv is always 1/2 of H). Roll for interception each time and keep determining new groups until the capacity of the zone is accounted for.

V2.04.1.1 If the groups are convoying, there will always be 1 FT4, 2 FT3, 4 FT2, and 8 FT1 in a convoy (135 capacity). If there are any fractions of 135 left after creating groups of 135 that makes a single final group made of FTs which as close as possible equal that amount.

V2.04.1.2 If the CFN is armed, grouping may be seriously affected since capacities are lower than those listed above. Space Masters will have to do their own adjustments but as long as the CFN capacity present remains the same, the spirit of the rules should work fine.

V2.04.1.3 Patrollers near the interception point

Roll	Result
1-5	With the CFN group
6-10[a]	50 + 100/2 tH from interception point (if Y equipped, the patrollers are following the CFN FT at 1 tH less than maximum range).
11-20[a]	1d4 sH (if Yc equipped, the patrollers are following the CFN FT at 1 tH less than maximum range)
21-33	1d6+1 sH
34-66	1d10+2 sH[b]
67-00	2d20+3 sH[c]

[a] Empire SOP may specify distances different from 1tH less than maximum Y or Yc range but that only applies when 6-10 or 11-20 is rolled.
[b] If patrollers are in a specifically assigned zone where the intercepted CFN group is, only results from 1-33 are valid.
[c] If FTs are in zone 1, only results from 1-66 are valid.

V2.04.2 Interception Table V2.04.2 Interception Chance gives the chance for a single group of raiders to intercept a single group of CFN in a zone. Multiply the chance to intercept by the number of raiding groups. If interception occurs, roll randomly to see which group

Table V2.04.2 Interception Chance

Sensor Range	CFN Option		Raiders [V2.04.5]
	Free	Convoy or Escorted	
1 sH	3%	7%	7%
2 sH	7%	13%	13%
3 sH	10%	20%	20%
4 sH	13%	27%	27%
5 sH	17%	33%	33%
6 sH	20%	40%	40%

V2.04.3 The Distress Call Roll 1d10 to determine how long after the CFN detects the raiders that a FT issues a distress call:

1 Next tactical turn
2-3 two turns
4-8 three turns
9-0 four turns

Roll for each FT in the group.

If a CFN ship is destroyed, crippled (drive field down), or surrendered, no distress call will be issued unless self-destruct is successfully rolled. However, the signal still must wait the valid amount of time.

V2.04.4 Intercepted CFN groups will disperse after detecting raiders but all surrender chances are rolled as if the crews were BG-3 (if possible).

V2.04.5 Intercepting the raiders Roll an interception under the raiders column of [Table V2.04.2 Interception Chance]. Roll once for each group of raiders present in the zone.

V2.04.5.1 If the defending player does not have sufficient units in the system to relay a distress call, the CFN will continue to move through this system. The same is true if all the freighter's CDs are intercepted.

V2.04.5.2 When the CFN detects or learns about the possible raiders, they will reverse course or move to the nearest fleet units, which ever gets them to friendly guns or out of the system quickest.

All remaining interception chances are halved this month.

V2.05 CAPTURED CFN UNITS

CFN units "usually" carry cargo and they are usually full. But the cargos value varies widely. Value of a CFN cargo is 2d20*2.5 MC per H capture. Qv FT cargo has almost no value as "ransoming" passengers just isn't feasible.

Such losses are covered by standard insurance, not the government, though the CFN units must still be replaced.

V2.06 THE CFN OUTSIDE YOUR EMPIRE

For various reason, you may encounter a situation where war occurs between you and a trading partnership. Here are a few guidelines to follow.

If you order your CFN ships home early, you'll give a warning to the enemy who likely has spies among your CFN.

(Optional) Instead of calculating CFN FT in each other's systems [L4.02.2.4.2] you can say that you capture as many CFN FT as they do and ignore the whole thing.

If losses do occur, you must reimburse the shipping companies for the lost vessels.

CFN vessels surrender per [D7.04.3]

V3 GROUND COMBAT PREPARATION

Ground combat is an important task for many empires. At times, it is necessary to stop the enemy's economic base and the only ways to do that are to control or destroy the population. Since genocidal policies have internal and external political costs and political means generally do not work when at war, conquering the population becomes a necessity.

During an invasion of a planet, there are three phases. First, a race must assault and secure the planet. Second, they must consolidate their victory by opening communications and mopping up enemy resistance. Finally, they need to secure a lasting peace through political means. As the enemy forces tire of waging a hopeless battle against superior space capable forces, they will be eventually been forced into peace talks.

V3.01 MILITARY COMBAT FORCES

During the assault or consolidation phases, all forces use generic military Qv and H. The Qv represents the ground troops and the H represents heavy equipment and general supplies. While some (H) will be consumed (used up) or lost during combat [V4.10], loss of (Qv) will result only from combat casualties. To perform at peak ability, a force needs the proper portion troops and equipment. "Supplied Qv" is a combination of Qv and H in a generally equal ratio -- see [V4.01] for an exception.

Qv or H forces (and Qv maintenance H) may be purchased at any habitable planet with an *imperial* population of medium or larger. Such a planet may produce up to 1 Qv and 1 H per PU of population per month. Both Qv and H cost 1 MC each and each is shipped in a single Qv or H respectively. Invasion Qv and H may be maintained on any habitable planet/moon. The cost to maintain Qv is 5% of the Qv in H per month or 10% during an invasion [V4.10]. Invasion forces may be purchased during the month in which they are shipped to and invade a planet.

Qv maintenance need not be paid on the month of creation unless sent into combat. Qv on transports still use 5% of Qv in H. If H is not present, reduce Qv by 5%.

V3.02 STEPS OF AN INVASION

1. Arrive over the planet with sufficient force
2. If full communications are available, Call for surrender (overwhelming force) [V3.03]
3. If full communications are available, Demand surrender (Demonstration strike) [V3.04]
4. Conduct bombardment prior to invasion (if desired) [V6]
5. Order the invasion and move ships and troops to land
6. Check invaded NPR reaction table [V3.05]
7. Getting Troops on the planet [V3.06]
8. Conduct Ground Assault [V4]

V3.03 OVERWHELMING FORCE

PRIOR to landing troops on a planet, a political solution may be possible if the invader can demonstrate overwhelming force. The invader may *once* offer a negotiated surrender to a target planet if it has full communications with that planet's race. The invader must have total control of space around the planet, and orbiting the planet with an invasion fleet with supplied Qv equal to at least 15% of the PU plus have at least 10 warships or 300 HS of warships. The surrender is accepted if a 1d100 roll is less than (65 – (RO/2)). Race RO is modified by -3 per governor grade [S4.03].

The surrendering race becomes a forced ally [See T3.05 for the disposition of that race's units].

If the orbiting race is not a genocidal race [V6.04.1 #2], and it is known [V6.04] to have committed genocide in the past, subtract 3 from the die roll for each HEL RACE for which it has committed genocide with a maximum subtraction of -15.

V3.04 DEMONSTRATION NUCLEAR STRIKE

Most races in the galaxy tend to have an aversion to the outright unnecessary killing of enemy civilians. Whether this qualifies them as a civilized race or not, I'll let you make the determination. In Starfire, a race that has an invasion fleet [V3.03] orbiting over an enemy's planet can request that the planet surrender [V3.03].

A known genocidal race cannot use demonstration strikes (they already know you'll kill them all anyway).

V3.04.1 After a race has refused an offer to surrender [V3.03], the orbiting enemy may drop 10 nuclear bombs on cities (-10 PU and -10 IU) in an attempt to force the enemy to change their minds. The planet must make TWO new surrender die rolls. The surrender is accepted if both 1d100 rolls are less than (75 – (RO/2)). Race RO is modified by -3 per governor grade [S4.03].

If the planet doesn't surrender, the invader only counts as having dropped 2 bombs instead of 10 on the invasion and consolidation tables.

A race which surrenders after a demonstration strike becomes conquered (peace phase); however, all revolt chances are doubled until the peace phase is exited (via revolt or improved relations).

V3.05 NPR REACTION TO INVASION

Please do not forget this rule ALWAYS applies to invaded HEL NPRs (there is a separate table for LEL NPRs). The roll on this table occurs AFTER the invaders have landed (and taken any losses due to that) but before any die rolls on the invasion or consolidation table are made.

1. Determine Racial Outlook (RO) of invaded NPR: Race RO is modified by -3 per governor grade [S4.03].
2. Roll 1d100. Record the result
3. Compare the die roll against appropriate following table:

V3.05.1 Invaded HEL NPR Reaction

If die roll	NPR reaction
<= (100 – RO)/2	The NPR realizes resistance is futile. Go to Consolidation Phase [V4.09]
> (100 – RO)/2	The NPR resists as normal. Proceed to Assault Phase [V4.08].
> 95	The NPR decides death is better than surrender. Proceed to Assault Phase [V4.08]. All losses indicated are doubled for BOTH sides.

V3.05.2 Initial Pre-IND or IND Reaction

1d10	NPR (Pre-IND or IND only) reaction
1 – 2	NPR sees the invader as superior beings (see below). Proceed to "Peace Phase," land and convert some/all invasion forces to security forces. Treat planet as conquered. Full income is available to invader.
3 – 8	NPR reacts normally, proceed to Assault Phase [V4.08]
9 – 10	NPR sees the invader as evil incarnate; proceed to Assault Phase [V4.08]. All losses indicated are doubled for BOTH sides.

V3.05.2.1 Superior Beings Although the NPR initially sees the invaders as a superior being, intentional removal of a majority of the native income may change the opinion of the NPR. While the full income of the NPR is available to the invader, if he/she continues to remove a significant portion of it, there could be detrimental affects.

For each month, the invader takes 81%-100% of the income of the NPR there is a 2% (cumulative) chance per month that the NPR will turn on the invader. (A roll of 02 or less on a 1d100 for the first month this occurs, 04 on a 1d100 for the second month this occurs, etc.). If this occurs the natives are in full revolt, go to the Assault Phase [V4.08] and proceed with normal invasion procedures.

For each month the invader takes 60% to 80% of the income of the NPR there is a 1% chance per tenth month (a month ending in "0") that the NPR will turn on the invader. (A roll of 01 on a 1d100 if during the ten months the invader took 75% of the planets income once, 02 on a 1d100 if he/she did it twice, etc.). If this occurs, the natives are in full revolt, go to the Assault Phase [V4.08] and proceed with normal invasion procedures.

V3.06 GETTING TROOPS ON THE PLANET

Before you can capture a planet, the troops must arrive safely on the planet.

> ***Note:*** Planets which are Death Environment [L1.03] to your troops can not be invaded [see also Table HH3.06.1a Life Form/Planet Environment Type].

V3.06.1 Transporting the Troops Attacker must have some means of transporting the Qv and H to the planet surface. Small craft can be used to accomplish this task, either CFN or Imperial. Although CFN shuttles will be available only in very limited quantities (1 shuttle per 50 Qv or H the CFN moved into, out of, or through the system on the month of invasion), imperial shuttles can be used to augment this number. The attacker can also use Imperial Freighters specially designed to land directly on the planet but they must be atmospheric capable (AC). There is a possibility that any type vessel used to land invasion forces can be damaged/destroyed. Landing invasion forces should be carried out using the tactical map and tactical movement. This way intact PDCs and defending forces can attempt to destroy/damage landing craft and their support ships.

ANY LOSES to CFN equipment (be it shuttles, FT damage, or whatever) ***must*** be repaid by the government up to and including the replacement cost of the FT. Payment is due on the month after the loss occurs. A government may choose to delay payment to the CFN at a 10% per month interest rate.

V3.06.2 Landing the troops Invasion forces can be landed in planetary zones (1–6). The attacker may designate a single or multiple landing zones. Invasion forces, assigned multiple landing zones, may be divided in any way. Each planetary zone not invaded (not designated as a landing zone) will have an affect on the success of the invasion. Planetary defense forces must be divided equally among the 6 planetary zones. Only those PDCs and defense forces within a planetary zone can engage invasion forces attempting to land in that zone.

During the assault phase, (H) will be consumed at a rapid rate.

V3.06.3 Defensive Troops When invaded, a percentage of the population will be called to arms (these are generally militia and National Guard type units). These are represented by PU and the PUs are equally divided among the six invasion zones (1-6). Planets can maintain Qv on the planet to assist the defense but must pay 5% of Qv in H to support them each month (10% during the invasion phase). NOTE: stockpiling H before the invasion is recommended as the planet generates no income during the invasion. When the assault phase ends, 80% of any remaining Qv on the planet disband. LEL troops (Qv and PU) are limited to moving 1 invasion zone per month but, HEL troops can move to any other zone each month as long as their side controls space (no defensive fire [V3.06.4] occurs).

The defender can maintain his own supplied Qv on planet but they are much less effective than attacking Qv. Each 5 defending supplied Qv count as 1 defending PU in the tables and defending Qv take 75% (FRU) of all non-bombardment losses (losses: 1 Qv dies in place of 1 PU).

V3.06.4 Atmospheric Defensive Forces Engagement of Transport Units Landing or airdropping small craft can be engaged by defending PDCs, PU, and Qv using BASV combat [G7.06]. A single attack occurs before the shuttle can land. A 2nd attack occurs as the shuttle is departing the atmosphere.

Assault shuttles (ast) that are air-dropping Qv can only be engaged with a single attack and that occurs after the troops are air-dropped.

V3.06.4.1 Landing assault ships can be engaged with anti-starship weapons normally (PDCs and silos). Standard defensive ground force weapons (PU and Qv) are generally ineffective against starships. However, the once per day expendable ordnance attack G7.06.1] can damage FT hulled ships in the atmosphere.

FT that remain on the planet for more than 10 minutes (20 tactical turns) may be damaged. Note that it only takes about 5 minutes (10 tactical turns) to fully unload a landed assault freighter, which may depart the next tactical turn. For every 10 minutes (20 tactical turns) that a FT remains on the planet (after the initial 10 minutes), there is a 10% chance that the FT will take 1 point of damage from defensive ground forces. PDC anti-starship weapons may not engage landed ships, but may engage as they land/lift-off.

V3.06.4.2 Gunboats Gunboats have a drive field nearly as powerful as a starship drive field and are immune to HEL ground force attacks (unless landed on the planet for an extended amount of time).

V3.06.5 Non-Atmospheric Defensive Forces Engagement of Transport Units Except that PDC weapons are not reduced in effectiveness, use the [V3.06.4] rules.

> ***Note:*** Only HEL and IND-2 troops can fight in vacuum.

V4 GROUND COMBAT

General Description: Attacker has landing forces on the enemy planet. Enemy ground forces are conducting intensive guerilla fighting with occasional major battles. Attacker forces will be stretched as he/she attempts to quell all flare-ups on the target planet. Enemy PDCs that are still functional will have some impact on invading forces attempts to land invasion forces.

Once on the ground, there are three combat phases: Assault, Consolidation, and Peace. The various tables tell you when to move to each phase. Modifiers from one phase do not carry over to the next phase. Rolls on the tables are made at the end of a month. Troops may be landed or removed at any point during the month but only troops on the planet at the end of the month get to fight.

V4.01 SUPPLIED QV

Both Qv and H must be deployed on the target planet in order to create a "supplied Qv." During the first month of invasion (either phase), each H can supply 2 Qv. During the subsequent months, each H can supply 1 Qv each month.

During the invasion and consolidation phases only, when Qv is not supplied with the proper amount of H, the Qv are not destroyed. But unsupplied Qv do not fight either. This prevents the automatic loss of the Qv, which would normally occur because of [L7.02]

V4.02 GROUND COMBAT SEQUENCE

- Month 2-6 – Determine if you will pillage the planet [V4.03].
- Month 2 or later – Check for the capture of (SA), (RDS), and ICC [V4.04].
- Month 2 or later – Roll for communications [V4.05].
- Determine Control of Space [V4.06]
- Allocate supplied Qv to and resolve PDC reduction [V4.07].
- Determine Assault [V4.08] or Consolidation Result [V4.09]
- Apply Results and Delete consumed H [V4.10]
- Conduct Reprisals [V4.11]

V4.03 PILLAGE

Many invaders pillage captured populations, either to generate income to maintain the troops or to generate fear in the local population. Pillaging is a good method to antagonize the natives and encourage them to continue fighting. As such, it plays a large part in the various phases.

An invader may pillage a planet up to 5 times, once each during months 2 – 6. To pillage, the entire planet must be under attack that month. Each pillage brings MC based on the size of the planet's population at the start of the invasion (after any bombardments) and the number of PU on the planet at the beginning of the month. Consult Table V4.03 Pillage Value, to determine the MC gained from pillaging.

Take the number of PU on the planet at the start of the month and multiply it by the 'MC produced by each remaining PU' numbers. This will give you the Pillage Value for that month. The Pillage Value is reduced by 0.2 MC for each nuke dropped on PU by the invading race (ignore nukes dropped on PDCs in this calculation). Pillage revenue, whenever earned, may buy H for the troops even if the planet is cut off and the planet is Benign or Harsh to the invading troops. H can be bought on Hostile environment planets at double

Table V4.03 Pillage Value

Population Size at the Start of the Invasion	MC Produced by Each Remaining PU
Very Large or Large	1.0 MC
Medium or Small	0.75 MC
Settlement or smaller	0.5 MC

V4.04 CAPTURING IMPORTANT FACILITIES

One of the priorities of any invader is to capture, as quickly as possible, important facilities on the planet. These facilities include SA, RDS, Training Facilities, and Interstellar Command Centers (ICC). If the invasion size is at least 15% of the PU on the planet, at the start of month 2 of the Assault phase, and each month thereafter until the Peace phase is reached determine the number of destruction rolls to be made that month:

((Supplied Qv/Pu) - 0.15 * 4 + 1 (FRD)

Resolve each destruction roll with a 1d100 roll and compare it to the destruction number. The destruction number is the largest of either the number 5 or

(RD * 0.75) - (((supplied Qv/Pu) - 0.25) * 20)

If the roll is equal to or below this number then the facility has been destroyed, if the roll is 10 or more higher than the destruction number, the facility is captured instead. If a facility is not destroyed before when Peace phase is reached, it becomes captured.

In order for the conquered race to provide assistance to the conqueror (assuming the relationship allows it), an R&D facility of the appropriate type must exist on the conquered planet.

V4.04.1 Refurbishment

Table V4.04 Captured Facility Refurbishment

EL Difference	Refurbishment	Cost in MC
1	1 month	15%
2-3	2 month	25%
4-5	2 month	40%
5+	3 month	60%

Any captured facility must be refurbished (see Table V4.04 Captured Facility Refurbishment, for time and cost) before the invader can use it. If an ICC is captured, the conquering race must ship the same number of PU's to the captured ICC as they would to a newly constructed ICC. Once the PU arrives, the conquering race must refurbish the ICC to make it usable. Refurbishment time and cost depends on the EL difference between the conqueror and the conquered. The refurbishment replaces communications equipment, installs the necessary climate control changes, and replaces other unfamiliar or outdated equipment.

Captured Ground Industry does not need to be refurbished and may be used to refurbish other facilities [M2.06.1].

V4.05 COMMUNICATION WITH INVADED RACE

Communications play an important part in any type of invasion. Fortunately, it is possible to "force" communications with captured members of the defending race. On month 2 (any phase) and thereafter, roll on the initial contact table. If in the Assault phase

apply a modifier of -25 for being at war. Add +10 to the dice roll for each successive month spent attempting to establish communications.

If "Communications Impossible" is rolled, a -10 penalty is applied and communications remain possible in the future. Communications tend to come very quickly in this situation.

Note: Negotiations Rejected has no meaning when communicating with invaded races.

V4.06 CONTROL OF SPACE

Vital to the success or failure of any invasion is the control of space surrounding the planet. A race need only control space for 22 days in order to gain the control of space bonus.

- Control of space definition: the race has at least one armed ship (at least 12 HS in size) in orbit over each of the 6 planetary zones. All enemy space borne vessels (both mobile and non-mobile) have been destroyed, neutralized, or driven away from the planet (not within 30 tH of the planet). Neutralized is defined as having no offensive capability against starships.
- Although a defender may have starships in orbit around the planet, it does not necessarily mean they control space. To control space the defender must meet the above definition also.

V4.06.1 Monthly Nuclear Strikes A race that controls space may perform nuclear strikes against the population. These may be intended to reduce either the population or the defending forces on the planet. Either way, they tend to make the population both quiescent and angry. If functional PDCs are present on the planet's surface and they have point defense systems, then Nuclear Strikes should be played out on the tactical map. If not, then the invader merely indicates how many nuclear missiles/bombs he has launched or dropped and the defender reduces the PU and IU accordingly [See V6.01].

V4.07 ATTACKING PDCS WITH INVASION (QV & H)

Invasion forces may attack PDC located on the planet prior to the determination of Invasion results. The only drawback to this is those forces committed against the reduction of a PDC may not be used in the formula when determining invasion or consolidation month results. The PDC Reduction phase comes prior to the Assault phase. The invader designates the number of invasion force Qv that will attack a given PDC. A single Qv may not attack more than one PDC in a single month. Each Qv committed to such an attack must be in supply.

Use the following table to determine the modifiers that will apply to the PDC reduction roll.

V4.07.1 PDC Reduction Die Roll Modifier

Mod	Comment
-RM/2	1/2 the Racial Militancy of the defending race
-RD/2	1/2 the Racial Determination of the defending race
-75	Attacker does not control space around the planet
-75	If the defender controls space around the planet
+ 10	Each previous month the PDC was attacked (This indicates the bonus for additional intelligence gathered on the attacked PDC by the attackers (PDC weak points).
+/- 25	Subtract (invader EL - defender EL) and then multiply by 25. Treat IND-2 as EL 0, IND-1 as EL –1, and Pre-IND as EL –2. Negative numbers possible.
+ 30	Defender is IND-2
+ AtF	AtF = Attack Factor. Computed as follows: (((committed Qv/PDC Value) - 0.25) * 55) This can be a negative number.
	PDC VALUE* --- PDC Value is computed as follows: + 1 for each offensive weapon of the PDC + 3 for each point defense system of the PDC + 2 for each Qv of the PDC (garrison troops)
+ 15	For each consolidation phase that has passed including the present month. (During the consolidation phase, the defender is attempting to negotiate with the invader and the general population is less likely to give support (supplies and equipment) to such holdout PDCs)
	Final Modifier to PDC Reduction Die Roll:

V4.07.2 PDC Reduction Die Roll Results

1. Roll 1d100. Record result.
2. Apply the Final Modifier computed in V4.07.1.
3. Consult the following to determine the PDC Reduction results for this month:

Final Die Roll	Q&H losses based upon PDC value (FRU)	PDC HS Lost (FRD)
126 +	20% of PDC value	40% of Committed Qv
110 – 125	21% of PDC value	38% of Committed Qv
90 – 109	22% of PDC value	36% of Committed Qv
70 – 89	24% of PDC value	34% of Committed Qv
50 – 69	26% of PDC value	32% of Committed Qv
30 – 49	28% of PDC value	30% of Committed Qv
20 – 29	30% of PDC value	28% of Committed Qv
0 - 19	32% of PDC value	26% of Committed Qv
-20 to -1	34% of PDC value	24% of Committed Qv
-40 to -21	36% of PDC value	22% of Committed Qv
-60 to -41	40% of PDC value	20% of Committed Qv
-80 to -61	44% of PDC value	18% of Committed Qv
-100 to -81	48% of PDC value	15% of Committed Qv
<-100	53% of PDC value	12% of Committed Qv

V4.07.3 PDC Losses: PDC losses from ground forces are treated as a special case because the systems are so spread out among the planet-side. The attacker can choose to destroy any one system (per PDC) that he knows the location of, and any remaining damage is applied to the systems at the discretion of the defender.

V4.08 ASSAULT PHASE

V4.08.1 Assault Phase Die Roll Modifiers Regardless of the number of zones occupied, there is only one die roll on the table per month. Total all supplied Qv on the planet and pit them against all defending troops (PU and/or Qv) in the zones that supplied Qv are in.

Note: regardless of the result, no change of phase can occur unless all defending troops are being engaged.

Modifier	Comment ---- PU, Qv and H losses are to the nearest 10th unit
- RM	The Racial Militancy of the defending race
- (RD/2)	1/2 the Racial Determination of the defending race
- 75	If the attacker does not control space around the planet; the defender's losses are halved (FRU)
- 75	If the defender controls space around the planet; the attacker's losses are doubled.
+ 20	For each completed month of invasion. (On month 1 there will be no completed invasion month).
+ ELM	ELM = EL Modifier. Subtract (invader EL - defender EL) and then multiply by 25. Treat IND-2 as EL 0, IND-1 as EL –1, and Pre-IND as EL –2. Negative numbers possible. *Example*: Defender is EL 5, Invader is EL 3. Difference is -2, so the modifier is – 50.
+ 30	Defender is IND-1 or IND-2
+ 50	Defender is Pre-IND
+ IF	IF = Invasion Factor. Computed as follows: (((supplied Qv/Defenders total PU) - 0.25) * 250) Number can be negative.
- 20	For each month in which the planet was pillaged.
+ 5	For each nuke used in a Monthly Nuclear Strike
+10	If Demonstration Nuclear strike was used (+5 if Graded Governor present [S4.03]).
- 0.25	For each nuke used against a planet based PDC. Nukes stopped by point defense do not count.
- 5	For each PTU killed during a Reprisal on the last month, subtract 0.02% from both PU and Qv & H losses (not the die roll) for each PTU/PU killed as reprisals. The amount of losses cannot be less than half the original losses rolled on the table.
- 5	For each planetary zone the invader is not in
	FINAL MODIFIER TO ASSAULT DIE ROLL:
	Note: combat point percentage adjustments (e.g., crew grade) apply to the amount of Qv and PU, not to this final modifier

V4.08.2 Assault Results

1. Roll 2d100 and add them together. Record result: 2. Apply the Final Modifier computed in V4.08.1. 3. Determine the Assault Results for this month from the table:			If the attacker does not control space, all defender Qv & H losses are halved.	If the defender controls space, all attacker Qv & H losses are doubled.
Final Die Roll	**PU Killed Based upon Supplied Qv**	**Qv & H Losses Based upon PU**	**Assault Month Results**	
250+	1.0% of supplied Qv	0.1% of PU	Assault phase successful. Proceed to Consolidation Phase [V4.09] for the next month.[a]	
241 – 249	2.0% of supplied Qv	0.1% of PU	Rebels extremely weak. 5% (FRU) of IU lost.	
221 – 240	2.1% of supplied Qv	0.2% of PU	Rebels failing. Destroy 10% (FRU) of IU.	
201 – 220	2.2% of supplied Qv	0.3% of PU	Rebels losing. Destroy 15% (FRU) of IU.	
181 – 200	2.3% of supplied Qv	0.4% of PU	Rebels weakening. 10% (FRU) of IU lost.	
161 – 180	2.4% of supplied Qv	0.5% of PU	Rebels think they are losing. Destroy 5% (FRU) of IU.	
141 – 160	2.5% of supplied Qv	0.6% of PU	Rebels think they are losing. Destroy 5% (FRU) of IU.	
121 – 140	2.6% of supplied Qv	0.7% of PU		
101 – 120	2.7% of supplied Qv	0.8% of PU		
81 – 100	2.8% of supplied Qv	0.9% of PU		
61 – 80	3.0% of supplied Qv	1.0% of PU		
41 – 60	3.25% of supplied Qv	1.2% of PU		
21 – 40	3.5% of supplied Qv	1.4% of PU		
0 – 20	4.0% of supplied Qv	1.6% of PU		
-1 to -20	4.5% of supplied Qv	1.8% of PU	Assault is weak and the natives are unconcerned. Permanent -5 to Assault rolls[b]	
-21 to -40	5.0% of supplied Qv	2.0% of PU	Assault is weak and the natives are unconcerned. Permanent -5 to Assault rolls[b]	
-41 to -60	6.0% of supplied Qv	2.25% of PU	Assault is feeble and the natives are not concerned. Permanent -10 to Assault rolls[b]	
-61 to -80	8.0% of supplied Qv	2.5% of PU	Assault is feeble and the natives are not concerned. -Permanent -10 to Assault rolls[b]	
-81 to -100	10.0% of supplied Qv	3% of PU	Assault is pathetic and the natives are not concerned. Permanent -15 to Assault rolls[b]	
-101 to -120	10.0% of supplied Qv	4% of PU	Assault is dying out and the natives are pushing to clean it up. Permanent -15 to Assault rolls[b]	
-121 to -140	8.0% of supplied Qv	6% of PU	Assault is dying out and the natives are pushing to clean it up. Permanent -15 to Assault rolls[b]	
-141 or -200	6.0% of supplied Qv	8% of PU	Assault is about dead and the natives are beginning to produce things. Permanent -20 to Assault rolls.[b] Additionally, the planet loses only 1/2 the amount from V4.12.1.	
-200 or less	3.0% of supplied Qv	10% of PU	Invasion forces crushed. After Qv and H losses taken, the remaining Qv and H are captured. H can be sold for 1 MC each. Qv can be interrogated as if they were captured crew. Full income earned this month.	

[a] The assault phase cannot end until all PDCs are captured, destroyed, or neutralized.
[b] During current assault phase only.

V4.09 CONSOLIDATION PHASE

General Description: Fighting is limited to guerrilla attacks on invasion forces and planetary infrastructure. Attacker is attempting to establish full communications and negotiate an end to the fighting. Income from the planet is based upon the effectiveness of the consolidation.

All Qv & H landings occur without loss during the consolidation phase.

V4.09.1 Consolidation Die Roll Modifiers

Modifier	Comment
- (RM/10)	1/10 of the Racial Militancy of the defending race
- RD	The Racial Determination of the defending race
- 75	If the attacker does not control space around the planet, the attackers losses are doubled
- 75	If the defender controls space around the planet, the attacker's losses are tripled.
+100	If Full Communications have been established with the defender prior to the invasion
+10	For each month after full communications established after the invasion (max. 100)
+10	For each complete month that invading forces have been on the planet
+ELM	ELM = EL Modifier. Subtract (invader EL - defender EL) and then multiply by 25. Treat IND-2 as EL 0, IND-1 as EL –1, and Pre-IND as EL –2. Negative numbers possible. *EXAMPLE*: Defender is EL 5, Invader is EL 3. Difference is -2, so the modifier is – 50.
+ 30	Defender is IND-1 or IND-2
+ 50	Defender is Pre-IND
+ CF	CF = Consolidation Factor. Computed as follows: (((supplied Qv/Defenders total PU) - 0.15) * 150) This can be a negative number.
- 15	For each month in which the planet was pillaged.
- 1	For each planetary IU sold. Note: As another race's IU on an invaded or conquered planet will have no purchaser, the IU may only be sold as scrap (30%).
-5 per nuke plus -50	For each nuke used in a Monthly Nuclear Strike this invasion. The use of any nukes causes a -50 so the first nuke causes a -55.
-15	Demonstration Nuclear Strike used.
- 5	For each PTU killed during a Reprisal on the last month, subtract 0.02% from the result on the Consolidation table result. The result may only be reduced to one-half of the original number from the table.
	Final Modifier to Consolidation Die Roll:

V4.09.2 Consolidation Die Roll Results

1. Roll 1d100. Record result. 2. Apply the Final Modifier computed in V4.09.1. 3. Determine the Consolidation results for this month from the table	If the attacker does not control space, all defender Qv & H losses are halved.	If the defender controls space, all attacker Qv & H losses are doubled.

Final Die Roll	Qv & H losses based upon PU	Notes: IU losses for IND-1 or IND-2 planets are 25% lower than indicated. Full communications are required to end the consolidation phase!!!
250 +	0.01% of PU	Population weary or overwhelmed. Move to peace phase [V4.10] only if Full Communications established otherwise Invader gets 35% of planetary income.
241 – 249	0.02% of PU	Rebels losing support. Destroy 1% of planetary IU. Invader gets 35% of planetary income.
221 – 240	0.04% of PU	Rebels losing support. Destroy 3% of planetary IU. Invader gets 30% of planetary income.
201 – 220	0.06% of PU	Rebels losing support. Destroy 5% of planetary IU. Invader gets 25% of planetary income.
181 – 200	0.08% of PU	Rebels losing support. Destroy 3% of planetary IU. Invader gets 25% of planetary income.
161 – 180	0.1% of PU	Rebels losing support. Destroy 1% of planetary IU. Invader gets 20% of planetary income.
141 – 160	0.13% of PU	Invader receives income equal to 20% of planetary income.
121 – 140	0.16% of PU	Invader receives income equal to 15% of planetary income.
101 – 120	0.19% of PU	Invader receives income equal to 10% of planetary income.
81 – 100	0.22% of PU	Invader receives income equal to 10% of planetary income.
61 – 80	0.26% of PU	Invader receives income equal to 5% of planetary income.
41 – 60	0.3% of PU	No income generated from planet.
21 – 40	0.35% of PU	No income generated from planet.
0 – 20	0.4% of PU	No income generated from planet.
- 1 to - 20	0.45% of PU	Invading forces show weakness and natives are unconcerned. Permanent –5 Consolidation rolls.[a] There is a 20% chance the population will revolt and a return to the Assault Phase occurs.
-21 to -40	0.50% of PU	Invading forces show weakness and natives are unconcerned. Permanent –5 Consolidation rolls.[a] 40% chance of population revolt and a return to the Assault Phase occurs.
-41 to -60	0.75% of PU	Invading forces show considerable weakness and natives are unconcerned. Permanent –10 Consolidation rolls.[a] There is a 60% chance the population will revolt and a return to the Assault Phase occurs.
-61 to -80	1.00% of PU	Invading forces show considerable weakness and natives are unconcerned. Permanent –10 Consolidation rolls.[a] An 80% chance the population will revolt and a return to the Assault Phase occurs.
-81 or below	1.35% of PU	Invading forces pathetic and weak and natives have contempt for the attackers. Permanent –15 Consolidation rolls.[a] There is a 95% chance the population will revolt and a return to the Assault Phase occurs.

[a] During current Consolidation phase only.

V4.10 APPLY THE RESULTS

Apply the results from V4.08.2 or V4.09.2 immediately upon determination. After all results have been applied, H is reduced by 10% during assault phase (5% during the consolidation phase) of the remaining Qv on the planet (FRU).

V4.11 CONDUCT REPRISALS

After results are applied, the invader can act to reduce the number of invasion force Qv destroyed during the next month. An invader does this by conducting reprisals against the planetary population. Reprisals can be conducting against any population size but they have different effects against smaller population enclaves. Reprisals consist of using terror to reduce guerrilla activity against invading forces (Reprisals reduce the intensity of combat for all sides on the next month.)

For every Qv destroyed via the guerrillas in V4.08.2 or V4.09.2, the invader may elect to execute 1 PTU (for any size population) or 1 PU (for medium or larger populations only). On the next month, subtract 0.02% from both PU and Qv & H losses (not the die roll) for each PTU/PU killed as reprisals. No more than 50% of the Qv losses can be stopped by reprisals. On the next month, a – 5 modifier, for each PTU/PU executed this month only, applies to the invasion or consolidation chart.

If reprisals or bombardment occurs during the consolidation phase, there is a chance the population will revolt. Multiply the total number of PU eliminated during the current consolidation phase (all months) by 2%. At the end of each month, roll 1d100. If the die roll is less than the percentage return to the Assault Phase [V4.08].

V4.12 ADDITIONAL FACTORS DURING INVASION

V4.12.1 Economics During Invasion Invading Qv on a planet will disrupt the planets economics. For each invading Qv on the surface, the planet loses income of 0.5 MC times the number of planetary zones invaded. PDCs are never out of supply due to invasion/consolidation.

If no invading Qv remain on the surface after combat resolution, the planet receives full income for that month, which may be spent immediately. While being invaded, the planetary populations EL, SL and tech R&D projects receive 8 RPs per month (4 RPs per month during consolidation phase), at no cost assuming that SA and RDS facilities remain intact and uncaptured to conduct the R&D. A captured R&D facility loses all R&D data on current projects. New SL & tech R&D projects cannot be started, nor can breakthrough R&D be conducted, while enemy Qv remain on the surface, however the research of new EL levels is allowed. While enemy Qv are on the planetary surface, the defender cannot sell IUs.

LEL population RP gain is limited by N12.

V4.12.2 Outside Assistance To completely throw an invader off one's planet (as opposed to the invader voluntarily leaving) usually requires outside assistance from another HEL race. Planets in the assault or consolidation phases will always want help. If in the peace phase (or slave status), once that help is available, make a 1d100 roll and consult the following chart to determine if the race still WANTS help.

1. Roll 1d100 and record the result
2. Apply the following modifiers (if applicable) to the 1d100 roll
   - 2 per month since the Peace Phase started
   +1 per nuke used on PU (does not include nukes used against PDCs)
   + 2 per month pillaging was conducted
3. If the modified 1d100 is less than the race's RC *no* help is wanted.

If help does arrive, the supplied Qv of the aid is added to the defender PU total. The aiding troops (and defender Qv), being regulars, take 75% (FRU) of all casualties.

If no help is wanted, then the planet will fight the "help" if it lands. If the help is the same race as the planet, add +100 to the invasion die rolls

V4.12.3 Hive Minds Hive mind planets may raise 2 Qv per PU on a planet with a 'Small or larger' population per month. In the case of an invasion of a hive mind world, the hive mind may convert PU into guerrillas, after the die roll, such that each PU so converted increases Qv loses per PU by 0.2%.

Example V4.12.3 - Invading a Hive Mind

V4.13 GENOCIDAL GROUND ATTACKS

A genocidal ground attack is when civilians are rounded up and executed in mass numbers. Most races will never use these polities but the J'Rill always use them.

V4.13.1 Uncommitted Qv The invader can choose not to commit all of his landed Qv during a month.

V4.13.1.1 If the Final Die roll, on either the invasion or consolidation table is above 0, the extra troops can conduct a genocidal ground attack.

V4.13.1.2 If the die rolls is 0 or below, add uncommitted troops to the others until the final die roll is above 49 (not zero). This represents the rebels disrupting the uncommitted troops during the month and preventing them from engaging in a genocidal ground attack.

V4.13.1.3 If in the peace phase, supplied Qv on the planet can conduct a genocidal ground attack. If desired, Security forces [V5.03] can be converted to Qv as long as the security level is Weak or better.

V4.13.2 Eliminating PTUs Supplied Qv that remain uncommitted during a month can eliminate 1/5 PU in PTU (FRD) but not less than 1 PTU each. The elimination of any number of PU in this manner causes a Total War.

V4.13.3 Total War During total war, 100% of the population joins the rebel cause instead of 10%. Thus, the following modifications occur until one side or the other has been eliminated from the planet.

- The Assault Phase [V4.08] is used every month.
- All loses are TEN times greater for both sides.
- All H usage is five times higher.
- The invasion factor modifier counts the defenders PU as doubled (i.e., 500 PU count as 1000 PU). Note: Qv losses on the tables are still based on the ACTUAL PU amount.

V5 CONQUERED PLANETS

Now that you have successfully invaded and eliminated most resistance, you can get down to governing your new population.

Diplomats must be assigned to negotiate, ground forces must maintain security and quell rebellions and uprisings, and the integration of that planet's economy and social systems into your empire are a must.

V5.01 PEACE PHASE

General Description: Defenders have resigned themselves to a conquered status, but freedom fighters remain. Their effectiveness will diminish over time. The only way to fully eliminate the freedom fighters is to advance the political state to military alliance (any) or better. A Trade alliance is not good enough. Invasion forces are no longer required, but there is lingering animosity so security forces (SEC) must be employed. Invasion forces may be shipped to other locations or converted to security forces. The local populations supply security forces so equipment/supplies do not have to be shipped in.

When the peace phase occurs, the conqueror and the conquered enter into a political status of Conquered [T3.01].

When the peace phase occurs, the conqueror gains access to the planetary sensor net.

V5.01.1 Security Forces (SEC) Qv and H can be converted to SEC and back as needed. Each supplied Qv can be converted to 2 points of security force. A maximum of 1 SEC per 10 PU on the enemy planet can be purchased (2 MC per SEC) while the population is conquered or slave.

V5.02 COMBINED POPULATIONS

This section assumes that no PDCs are present and that the conqueror controls space over the various surrendering locations. When a planet population is conquered, all populated moons orbiting the planet surrender (no invasion necessary). When all populations above settlement in a system have been invaded and conquered, all populations of the same race in the system surrender and are treated as a single political entity. When a system contains no population above settlement, a population will surrender to the first force that controls the space surrounding the largest population in that system for 24 hours. Conquered populations of the same race in different systems (that a supply path exists to) are also combined when the same conqueror controls both systems, provided system has been in the peace phase for at least 6 months, and unblocked communications path between the systems exists. In such cases, the system or group of systems with the larger PU total determines the political relationship for the entire new group of systems. The Revolt chances are still per system with both the largest population and all populations above settlement revolting.

> ***Note:*** Advancement to the peace phase eliminates any government bonuses or penalties a race may have until the government is restored to a free status (Subject or better). Treat the government as Ordered Socialism.

For the purposes of section V and when dealing with a population on a belt or HGT;

1. The population is invaded as a single population.
2. The population size does not use PU to PTU conversion. Thus, 181 PTU in an asteroid belt is a "small" population.
3. All references in V that state PU now means PTU.

Beam weapons fired "at" HGT cause damage as if the range were two lower. Landing/takeoff is as if from a moon.

There are times when you want to destroy an enemy efficiently, rather than send in the ground troops right away. Planetary bombardment can be used to "soften" enemy defenses (by killing enemy ground troops) to make it easier on your forces, or to completely eliminate an enemy population that you are unable or unwilling to conquer.

V5.03 GARRISON STRENGTH

There is no minimum required garrison strength, but if security forces are weak, there is both a higher chance of a revolt and less income received from location. Excess Qv & H above the number needed to reach the desired security level are either disbanded (receive 0.75 MC per Qv or H disbanded), shipped elsewhere, or stationed on the planet as reserves (pay 5% of Qv quantity in H for maintenance per month). If security forces of the race or empire that defeated the population's military forces do not occupy a planet (only if all Qv & H are removed, and no security forces are purchased), the planet's population becomes free to build additional weapons and starships, and continue fighting.

The combined population(s) rule ALSO applies to the amount of SEC garrisoning that must occur in the system [V5.02]. The garrisons are assumed to have transport between various locations in the same system via shuttles and such. Thus, you just garrison per system once combined.

The planet's PU, for the purposes of determining security forces, is recorded when the Peace Phase is first achieved and does not change due to growth but would change when a population is combined.

The conquered populations during the peace phase or slave status maintain (SEC) garrisons without cost (hidden in the lost income).

V5.03.1 Orbital Garrison In addition to security forces, an orbital garrison of at least PU/10 HS must be maintained over each small or larger population. Failure to maintain this amount of *armed* starships, bases, or space stations (count only military HS) in orbit doubles the chance of revolt.

V5.04 TRIBUTE FROM CONQUERED PLANETS

During each month, use Table V5.04 Conquered Population Tribute/Revolt/Relationship Determination to determine the tribute (income) from the planet, the chance of revolt, and political state modifiers. A race giving tribute cannot generate trade bonuses for either side of a trade treaty.

Example V5.04 - Security Level

> ***Note:*** The income modifier can never be greater than -5% while using this table. This is especially relevant when a *Security Specialist* Leader is present.

Table V5.04 Conquered Population Tribute/Revolt/Relationship Determination

Security Level	Security Forces Present	Income Modifier	Revolt Chance	Political State Modifier
Ineffective	< 1/5 PU	-50%	7%	-20 RC
Slight	>= 1/5 PU	-10%	5%	-10 RC
Weak	>= 1/3 PU	-20%	3%	0 RC
Moderate	>= 1/2 PU	-35%	1%	+5 RC
Strong	>= 3/4 PU	-50%	0.3%	+10 RC
Potent	>= 1 PU	-60%	None	+15 RC

V5.04.1 Selling IU Value of IU on conquered planets (this takes into account the uncertainties of investing in factories on a planet controlled by aliens.)

Sold When	Value to the conqueror
During assault phase	illegal
During consolidation phase	20%
During peace phase	40%
By Slave race	60%
By Forced Ally	80%
By Subject Race	90%

Note: In all cases, the cost to *build* IU remains normal.

Note: IU purchased by the conquered race AFTER the invasion can not be sold by the conqueror. In that case, all income goes directly to the conquered race. A planet not invaded (no roll on the Invasion or Consolidation table) cannot have its IU sold by the conquering race either.

V5.05 NATIVE CONTROL

The necessity of maintaining a ground garrison and providing the invader with tribute is removed once a military alliance (any) or subject status is reached -- the planet is assumed to be under native control. Until partnership is reached, the race will remain in conquered status -- as long as the orbital garrison remains, no chance of revolt exists. Trade bonuses cannot be collected from a race that is providing tribute.

V5.05.1 Old Owner The population of a conquered planet hopes and prays that the race that emplaced the population will save it. If the owner returns in a timely manner and defeats the space based forces, a revolt will occur within 1d4 months or as soon as owner troops begin landing. Once the enemy security forces and Qv are defeated, the planet reverts to imperial status (full income, EL, etc. and no lingering penalties will exist). Newly developed technologies (by that planet) will be become imperial technologies and propagate throughout the empire.

A timely manner is prior to the conquered race agreeing to a limited trade or better relationship with the conquered race [Y17.02]. Subject, slave, force ally, and conquered treaties do not prevent reintegration.

Once a limited trade or better agreement is reached, the planet considers the owner race to have abandoned them to their fate. Make a die roll to determine their new attitude towards the previous race. 2d100 - RM - RD + RC.

Modified Roll	Attitude towards the Conqueror
1-50	Owner is hated; Permanent +30 RC modifier
51-100	Owner is contemptible; Permanent +15 RC modifier
101-150	Owner is treated as a new race; no modifier
151-200	Owner is respected; Permanent -15 RC modifier towards owner
201-250	Owner is honored; Permanent -30 RC modifier towards owner
251-300	All is forgiven and the population immediately becomes imperial

These "permanent" RC modifiers can only be removed by amalgamation.

V5.06 REVOLTS

Each month after a population(s) has been occupied, the SM (or the occupying player, if there is no SM) rolls 1d100 and compares the result to Table V5.04 Conquered Population Tribute/Revolt/Relationship Determination. If the result is equal to or less than the revolt chance for the current security level, both the largest population and all populations above settlement will revolt. The Revolt percentage will double if the invader does not maintain a sufficient orbital garrison. There is no way to reduce the revolt chance except to increase the security level, which reduces income and increases the political state modifier. Revolt rolls are taken by combined political entity [V5.02].

V5.06.1 Revolt Strategies If a conquered population revolts, the current amount of security force is converted (2 SEC equals 1 Qv and 1 H) and the planet reverts to the assault phase.

V5.06.2 Capturing Facilities and Spacecraft There is generally no chance of the revolt capturing orbiting starships, bases or space stations. The revolting forces could capture intact (Pre-Industrial races destroy captured equipment) any existing ground bases or grounded spacecraft. The SM rolls 1d100 against the table for the rebels once per month per facility and/or grounded spacecraft. Captured equipment can be used immediately without refit.

Roll for each facility and grounded spacecraft on Table V5.06.2 Facilities Seized During Revolt to determine if a facility or spacecraft has been taken in the revolt.

Table V5.06.2 Facilities Seized During Revolt

Rebels are...	Chance to Seize Ground Facilities on the First Month of the Revolt
IND-1	02%
IND-2	10%
HEL	25%+1% per HEL above the invader

V5.06.3 Stopping a Revolt The conqueror must follow the ground combat rules and successfully reach the peace phase with the population again. If a revolting population was receiving assisted R&D of any type there is an additional –10 to the invasion die roll.

The possibility of a planetary revolt will remain until native control [V5.05] or a slave relationship occurs.

V5.06.4 Paying for Revolts A planet in conquered status may store 10% of its normal income for use during the next "crisis." A crisis is a

slippage to invasion or consolidation phase or anything that would qualify as a war check normally.

When the crisis starts, the race can immediately buy Qv, hidden silo missiles, and hidden PDCs for use against the enemy. Until the crisis is eliminated, by regaining the peace phase, the resistance will earn 5% of the planet's normal income.

V5.07 Ending the Peace Phase

The peace phase is ended when any military alliance, slave race, subject race, or better political state is achieved. Non-intercourse is not an acceptable political offer. To attain it the occupying power would have to withdraw from the planet. Non-aggression (*peace talks*) is an acceptable political offer, but only as a means to a closer relationship. Note: offers can be made on the month after the peace phase is achieved but acceptance is unlikely [V5.08.3].

V5.08 Politics and Conquered Populations

Although conquered populations are technically at war with their occupiers, they can't exactly go anywhere, and the occupying power can always continue to pursue political options. Now that full communications have been achieved, higher relationships may be established. The RC of conquered races are modified as per [T2.02], even if this produces an RC greater than 100, but this can be reduced by an adroit occupation commander. Once the political acceptance roll is brought below 100 (but not less than 1/2 of the race's original RC), it becomes possible to negotiate a way out for all concerned.

V5.08.1 Political offers are made to combined populations [V5.02]. When two combined populations merge, if one is more than three times the size of the other, the relationship with the larger combined population is used. If neither is 3 times the size of the other, then the higher level relationship must be verified by the lower level group (this is done by rolling greater than 1/2 the current RO (current RO includes the modified RC, which can be rather high).

V5.08.2 A conquered race has its RC permanently increased by +5 RC until it is either "saved" by another race or reaches partnership/subject status with the conquering race.

V5.08.3 Political Situation When the Peace Phase is entered, the defender has a political state of "conquered" with the attacker who can immediately begin making political offers. The following political acceptance roll RC modifiers now apply (throw out all previous non-permanent modifiers) and will apply until any military treaty or subject status (or better) is reached:

- +/- Current Political State Modifier [Table T2.03 Political Offers Modifiers] (+85+(conquered race's RC/4). for conquered, +20 for slave)
- +5 for the Races modified RC [V5.08.2]
- -10 RC if nuclear weapons vs. populations were not used on the planet during this invasion.
- -5 RC if the only nuclear weapons used were a Demonstration Strike [V3.04]
- -5 RC per month (instead of the + 5 RC [T2.01]) This is restarted if an offer is not made or a revolt occurs.
- -1 RC per 2% increase in the planet's income [V5.08.4].
- -10 per effective EL/SL increased by conqueror through R&D [V5.11.5].
- +/- Security Level modifier [Table V5.04 Conquered Population Tribute/Revolt/Relationship Determination], if conquered state.
- +/- Government modifiers for the treaty offered [Table Y3.02 NPR Government Types]
- +/- Political Offer modifiers [Table T2.03 Political Offers Modifiers]
- +/- Race/Leader specific modifiers

Note: Minimum RC is 1/2 the races original RC!

With these modifiers, it would not be surprising for the conquered race's modified RC to be over 100 for 20 months.

V5.08.4 Investing to reduce RC Investment in the industrial development and resultant general improvement in the occupied population's standard of living reduces the RC of an occupied population. When a planet is conquered, record the "base conquered income" excluding any income from IU. For each 01% increase in GPV (FRD) above the base conquered income that is achieved by the occupying power's industrial investment (IU), the occupied population's RC toward the occupying power is reduced by 01. Each economic level increase caused by research reduces the RC by 20. Low tech NPRs will still advance their EL automatically under rule [N12].

Note: Income increases from PU growth and IU from Governors does NOT count.

Note: RC can never be reduced below its original number by this method, and the -5 RC per month modifier is added after this modifier!

Example V5.08.4 - Investment Reduces RC

V5.08.5 Forced Relationships After six months at conquered status (peace phase), the invader may force a status of slave race upon the conquered. There is a 10% chance (doubled if orbiting space platforms are not maintained as above) of a revolt when this relationship is demanded. However, if the revolt is put down, the status of the defending race becomes slave instead of conquered at the end of that consolidation phase.

The descriptions for each of the conquered status are: conquered [T3.01], slave [T3.04], and subject [T3.06]. The forced ally relationship is accomplished without conquering the planet first, and is explained at [T3.05].

V5.09 Blockades

Starships of the attacking force may blockade a planet by preventing all access to and from the planet. To do this the invading force must maintain control of space around the planet, but in all other aspects the planet is militarily ignored (no invasion occurs). Control of space here means that no FT are transiting between the planet and other system bodies (excepting its own moons and/or twin planet). While a blockade can be setup at any time, it must be in force (no FT moving to/from the planet) for at least 1 FULL "calendar" month before any impact on the planet's economy will occur. Note: remember that LOD FT are difficult to detect.

Blockading a planet will cause a 15% reduction in the planetary income (plus any amalgamation or trade bonus its PU would have created) as it loses trade contact with the rest of its empire. In addition, if the planet is a homeworld and the only large or very large

planet in the empire, all outside income is likewise reduced by 15%. Note: If an empire is split into multiple parts, each will have an "Economic Capital," which is the equivalent of a homeworld for that section of empire. If the split occurred due to the loss of a large or very large world, that world is considered a part of EACH section of empire that it touches for the purposes of being an economic capital.

Blockading will also produce political pressure to negotiate with the blockading race. Thus, after three continuous months of blockade, the race's RC toward the blockading race is reduced by -10. After 10 continuous months of blockading the RC modifier is reduced to -20. No further modifiers can be gained.

V5.09.1 Running the Blockade Blockade RC modifiers are removed when a single ship (or more) is able evade the surrounding force and either arrive or depart from the planets vicinity (1 tH).

The CFN can attempt to run the blockade if supporting warships will assist them. The CFN will use LOD mode in this case, as necessary.

For each H that successfully runs the blockade, 10 MC of income is earned by the side of the blockade that the FT move to. Each Qv provides 5 MC of income. The maximum amount of income that can be "Earned" in a single month by running the blockade is equal to TWICE the amount that would be lost under V5.09 (this reflects increased demand). Running the blockade does not BREAK the blockade but it may, if the blockade is still in effect, reduce the income lost on the present month and thus effectively earn income against that loss on the following month. For each MC of income earned from running the blockade that is GREATER than the amount lost on the previous month, reduce the amount lost on the present month by 1 MC.

Example V5.09.1 - Blockade Running

Remember that the total CFN is much bigger than the capacity available to the player for hire. The CFN will tend to run the blockade with its smallest ships first (especially when E beams are present).

V5.10 CONQUEST AND THE CFN

One of the great mysteries of Starfire is what happens to all those civilian (base pool) FT that are supposedly running around in an empire. The CFN is a very organized and has specific procedures designed for a mix of safely, empire security, and economic stability.

When a system is invaded, the CFN FT (including Government Pool FT) will run toward the nearest WP that leads to a portion of the empire with at least a small population. However, prior to transiting a WP, the CFN will attempt to ensure that no enemies are within range to gain WP Transit Info (multiple units will work together and most will transit before the "last screen" moves near the WP. If the system is particularly large, they may attempt to also prevent the enemy from gaining information about the location of the WP. The "last screen" will not transit. Instead they will "run for deep space" (+40 sH), and with extra maintenance collected from the other units, they will be able to survive in deep space for 8+ d10 months, after which they will return to the system and surrender. If the enemy is detected near the WP, all units will scatter and run for deep space. They will be able to survive only 4+1d10/2(FRD) months. If the enemy has not been detected near the WP, there is a 30% chance that the "last screen" will violate protocol and transit the WP anyway (+15% if the enemy has used genocidal policies). If available, the last screen will be made up of warships (and possibly a few CFN units). In this case, the last screen will only violate orders 5% of the time, but usually, warships have orders matching the ship's capabilities as to whether to transit or not. If choosing to remain in system, the warships may draw "emergency" maintenance equal to 50 MC per hold from CFN units. "Emergency" maintenance must be paid for by the government on the next month with 10% interest.

Use [V2] to determine the number and positions of the CFN in the invaded system when the attacker first enters. Note that small NPR empires do have smaller CFN sizes due to [V2.03.3].

V5.10.1 CFN and Last System Situations DEFENSE -- With no place to run, the CFN will help defend the last system (however, only 50%+plus RD/2% will fight). This will include ramming and -- when the "end is inevitable" -- it may include rearming those FT, if there is time (though be aware of the reduced CFN size via [V2.03.3] and, if the empire has lost systems, the likely large Extra CFN pool [L4.02 B].

When the last system with a small or larger population of an empire is captured, the CFN base pool must be dealt with.

FORCED ALLY -- During a forced ally situations, the CFN base pool units invisibly merge with the conqueror's CFN though you have to roll for scuttling and address armed CFN base pool units.

CONQUERED -- When all defending armed units are out of the fight, any CFN units which remain will surrender and attempt to scuttle.

V5.11 R&D AND CONQUEST

A race which is forced to serve another race will resist in small ways. One of those ways is in the area of the sciences. While a race's original SLs are not lost immediately, they are many times effectively reduced by disorganization, damage from war, fear, and lack of effort. Eventually, these things can cause a race to begin losing Science Levels and even Economic Levels.

V5.11.1 Effective EL and SL Both EL and SL can be reduced. This reduced value is called an Effective EL or SL.

Reduced SLs prevent the building and repair of developed systems that are above the effective SL. Assistance to other races is limited to the effective SL or EL minus one.

Temporary EL reductions do not affect the maximum population size of a planet.

SL and EL R&D projects, performed when an effective SL/EL is active in the particular tree/branch, are done based on the effective SL/EL and apply to the effective SL/EL (in hopes of reducing further losses).

V5.11.2 EL and SL reductions After conquest [T3.01] occurs, reduce all technologies "effective" level by 1d10/3 (FRD) and reduce effective EL by 2. Reduce any effective SL more than 3 above the effective EL to 3 above effective EL. All current R&D projects are lost (zero RP).

For every RDS and SA destroyed during the fighting, one random SL is permanently reduced by one.

After forced ally status occurs, reduce all technologies "effective" level by 1d10/4 (FRD) and reduce effective EL by 1. Current R&D projects are reduced appropriately.

EL and SL R&D projects in process, that still have facility support, may continue but apply to one above the effective SL/EL for that particular tree/branch.

V5.11.3 Permanent EL and SL reductions Each month ending in zero, check for permanent SL/EL reduction. Roll 1d10 vs. twice the amount of difference between the current EL/SL and the effective EL/SL. Subtract 1 from the difference if that EL/SL has an active R&D project underway (projects are limited by the need for intact RDS/SA; R&D RP are free for conquered status)

If the number is equal to or below the difference, that EL/SL is reduced by one. Furthermore, any developed items which are above the effective SL must roll (same number) to see if that development is permanently lost (as if it was never developed).

If EL is reduced, the maximum population level is also reduced. All extra PU become available for colonization but are lost after 1 month.

V5.11.4 Hidden Caches It is assumed that working copies of all developed systems and or blueprints, etc. are hidden by the rebels for the time when a normal relationship or freedom occurs. Until that time, there is a 3% chance each month that one of these hidden caches is discovered by the conqueror. A hidden cache will contain 1d10/3 (FRU) "usable" items.

Each item is randomized between all items that are within 5 SL of the race's current real SL excepting the following systems: Holds, Magazines, & construction facilities. It is rather likely that most of these systems will not be usable by the conqueror. The effect of the cache is that all SL below and up to the item may be researched as if the conquered race was assisting (no cost to the conquered). Additionally, the item in question can also be researched as if assistance was being given.

V5.11.5 Increasing Effective EL and SL Each time a race advances to a better relationship with the conqueror (from conquered, slave, force ally, or subject status), increase all effective EL/SLs by one to a maximum of real SL/EL.

When a race advances to a normal relationship (e.g., not conquered, slave, force ally, or subject) or is freed, increase effective EL/SLs to their normal SL/EL.

When an effective EL/SL is increased, increase the SL of any on going R&D project in that area to an appropriate level.

Example V5.11 - Effective SL

V5.12 Forced Resettlement

Forcible removal of conquered populations from their homes and resettling them elsewhere tends to make them a tad upset and will result in a permanent increase in RC. How large of an effect this has depends on the size of the population moved and the conditions to which they are moved.

Remember that in all cases the population's HI is compared to a planet's HI to determine the environment of the planet for that population.

These rules can also be used to move your own populations around though the value of this is highly questionable even though no RC penalties apply.

Change	Habitability	REI
Better or no change	+2 RC	+1 RC
1 worse	+5 RC	+2 RC
2 worse	+10 RC	+5 RC
3 worse	+20 RC	+10 RC
4 worse	+30 RC	+15 RC

Size	RC Multiplier
1-60 PU	x1.0
61-180 PU	x1.5
181-500 PU	x2.0
501-1000 PU	x4.0
1001+ PU	x8.0

Add both the habitability and REI RC modifiers then multiply by the size modifier.

For example if you move 10 PTU from a Harsh Normal world to a Benign Normal world you get (2+1)*1= 3RC. Moving a Small population 200 PU from a Benign Normal world to a Hostile Poor world gives (10+2)*2= +24 RC. Also remember that the conqueror must pay all resettlement costs.

V5.12.1 Resettlement Costs You must pay normal CFN shipping costs to move each conquered PTU. Equipment costs are a bit different. There are two methods to handling equipment costs. You can build and ship new equipment (the H component) from an appropriate planet or you can ship the existing equipment with the colonists.

V5.12.1.1 Building new equipment Equipment must be built for that population's new environment and the population shipped. The old planet is left with old equipment capable of supporting an amount of PTU equal to the amount moved. However, that old equipment will only support PTU treating the environment the same or better than the old population.

If the new population for the old planet treats the environment as worse, the difference in equipment costs must be paid and any additional H shipping requirements must be moved [Table L5.03 PTU Transport Requirements].

Example V5.12.1.1. - New Equipment for Resettlement

V5.12.1.2 Shipping the Old equipment This works similar to building new equipment but reversed somewhat.

If the conquered population's new environment is worse than the original environment, then the difference in equipment costs must be paid and (see example in [V5.12.1.1] for an idea how this works) any additional H shipping requirements must be moved [Table L5.03 PTU Transport Requirements]. Otherwise, shipping is per [Table L5.03 PTU Transport Requirements] for the environment of the arriving population.

V5.12.1.2.1 (Optional) extra equipment When the conquered population is moved to be better environment, extra equipment will not be moved with the conquered population. This can be used to reduce both the shipped amount of H and its cost.

Example V5.12.1.2.1 - Resettlement - Extra Equipment Saves

V6 Planetary Bombardment

V6.01 Orbital Bombardment

The first type of bombardment is "orbital bombardment," or using ship-mounted weapons to bomb a planet's surface. See [L1.06] on

how industry and population is split among the hexsides) See [V6.03.1] to calculate the amount of collateral damage inflicted. There are three types of targets for orbital bombardment:

V6.01.1 Weapon Damage to planetary targets Missiles and Torpedoes cause damage normally to planets. Beams must fire 20 times to cause normal damage and Kinetics must fire 10 times to generate normal damage.

Beam and Kinetic weapons have a 1% chance to burnout each time they fire 100 times in a month (NOTE: Each month each weapon is reset to zero times fired).

> ***Note:*** This rule only applies when targeting stuff other than PDCs and grounded space units. Otherwise, [D7.02] will usually apply.

V6.01.2 Bombing Ground Forces When bombarding ground forces, the troops and supplies they need are targeted. Each damage point from ship mounted weapons destroys one Qv and H (troops) at the hexside they are fired at. This is not considered genocide.

V6.01.3 Bombing Populations When bombarding populations, cities and populated areas are targeted. Energy beams are not effective when employed in this manner; but other SRWs and LRWs are very effective at mass murder. Each point of damage destroys 1/5th of a PU, in PTU (FRD) but not less than one PTU of population on the hexside they are fired at.

This type of bombardment is called "genocide," and certain diplomatic side effects occur as a result of using this brutal method of slaughter [V6.04].

> ***Note:*** that the last 200 PU on benign or harsh planets requires twice as much damage to destroy as they can spread out and live off the land.

V6.01.4 Bombing Industry There are times where you will want to target industry, in an effort to reduce the capacity of your enemy to wage war. This can also be used to inflict a minimum of civilian casualties among the population, while reducing their ability to support troops in order to soften the casualties among your invading armies. Energy beams are not effective when employed in this manner, but other weapons are effective. Each point of damage destroys one IU (must be replaced as IU [L3.03.1]) of the attacker's side on the hexside they are fired at.

V6.02 BOMBARDMENT WITH SMALL CRAFT

The second type of bombardment involves dropping nuclear bombs or firing weapons from shuttles and armed small craft (this rule section will refer to all three of these craft as "bombers"). These craft can perform precision bombing to inflict the maximum casualties on a specific target with relatively small losses compared to orbital bombardment. However it also puts these craft and their pilots at risk as they must fly into the atmosphere and within weapon's range of the planet's defenses in order to target and deploy their weapons.

V6.02.1 Bombers are able to target any of the three targets (ground troops, populations, and industry), but their application of firepower is a bit different. Shuttles used as bombers must have "nuclear bombs" placed in their cargo hold. Fighters and Gunboats can hold nuclear bombs in their external "racks" (1 per 3 DP remaining), or they can use their standard weapons.

> ***Note:*** that small craft weapons fired outside the atmosphere are used without risk to the small craft.

V6.02.1.1 To use a nuclear bomb, the bomber must enter the atmosphere (cost is 1 MP from orbit) and then on each tactical turn after entry, it can drop a single nuclear bomb on a single target (the hold can carry many bombs). 4 small craft may drop bombs in a single impulse (even though they are not technically datalinked). The bomber is vulnerable to anti-aircraft fire (+2 to hit). If enemy Qv are on the planet while in the atmosphere, there is an additional 10% chance of being shot down. If directly attacking ground troops, the chance of being shot down is increased to 30%. Nuclear bombs do a single point of damage and always hit. Damage is calculated in the same manner (per target) as in [V6.02.3]. On a single "bombing" run, a squadron of small craft may fire all weapons or drop all bombs.

Bombs may not be dropped from outside the atmosphere.

V6.02.2 Bombers can use their standard weapons, doing damage as per [V6.02.3]. While missiles and torpedoes can be fired from a range of 2 hexes, all other weapons can only be used on ground targets while inside the atmosphere of the planet.

V6.02.3 Damage from small craft weapons firing inside the atmosphere is double the amount calculated in V6.01 except for small craft beam weapons which do triple damage.

V6.03 COLLATERAL DAMAGE

Collateral damage is the damage inflicted upon the population from weapons that were directed at non-civilian targets (such as ground troops or PDCs).

V6.03.1 Collateral damage is inflicted at different rates for the different types of bombardment:

- **PDC bombardment*:** For every 5 points of damage from missiles or torpedoes, one PTU and one IU is destroyed.
- **Ground Troop Bombardment*:** For every 1 point of damage, 1 PTU of population is destroyed.
- **Industrial Bombardment:** For every 3 points of damage from missiles or torpedoes, one PTU is destroyed.
- **Small Craft Bombardment*:** All of these values are half for precision bombardment from small craft.
- These forms of bombardments also destroy 1 IU per 5 damage done.

V6.04 THE CONSEQUENCES OF GENOCIDE

Empires who go around annihilating planetary populations tend to be a tad unpopular. Even their allies may look at them with caution after such an action. To reflect this, any empire that carries out a planetary assault or bombardment particularly destructive in life will increase the Racial Chauvinism of any race with which it is in contact. This increase is directed only at the empire which carried out the attack, and word of the attack will spread along the shortest route between the site of the attack and the home world of any race in full communications with the empire at a strategic speed of "4" (the same as that of the CFN). No empire can prevent the news from reaching all of its HEL and IND-2 allies sooner or later, though LEL races will find out only if an HEL race with whom they have a treaty relationship actually tells them about it.

PTUs eliminated by attacks against PDCs do not count toward genocide. Additionally, they do not count as part of the population for determining the percentage of population eliminated. See Table V6.04 Level of Genocide.

Table V6.04 Level of Genocide

An Attack Which Eliminates at Least	And Kills at Least...	Is a Level x Genocide
25% of a population	50 PTU	Level A
50% of a population	100 PTU	Level B
75% of a population	200 PTU	Level C
95% of a population	400 PTU	Level D

V6.04.1 Reciprocal Genocide Races are exempt from this rule if:

1. They have been attacked in the last 50 months by the same race using a genocidal attack of an equal or greater level or,
2. They are a genocidal NPR (anyone allying with them knows that in the first place). Genocidal Races are Hive Mind, National Socialism, J'Rill, and all Antagonistic [Y15] races.
3. Until 3 months after full communications have been established with ANY HEL race or any LEL race with knowledge of the genocide

Table V6.04.1 Political Fallout From Genocide

DR Result	Effects
<= 15	Race offers to increase the alliance level due to the strength and determination of their ally!
Natural doubles	Ally understands, ignores future attacks of the same or lower level against the same race.
16-33	Ally is indifferent to the attack and ignores it.
34-50	Alliance is reduced 1 level.
51-66	Alliance is reduced 2 levels
67-100	Alliance is reduces 2 levels and the maximum alliance level is a Free Trade and Defensive.
101-129	Alliance is reduced 2 levels and the maximum alliance level is a Free Trade OR Defensive.
130-159	Alliance is reduces 3 levels and the maximum alliance is Restricted Trade.
160-199	Alliance is reduced 3 levels and the maximum alliance level is a Non-Aggression.
200 or more	Alliance is reduces 4 levels and the maximum alliance is Non-Intercourse.

NOTE: Free trade to limited trade is 1 level of reduction.
A treaty of non-aggression reduced two levels becomes a WAR CHECK. Reduction below a war check results in additional war checks at 1 per level below.
Non-intercourse races do not roll.
All planets in the consolidation phase increase to invasion status if a reduction occurs.
30% of all conquered planets at peace status revolt if a level reduction occurs.
All treaty violations against a genocidal race have no effect for the rest of the game. Additionally, all races in the future may use genocidal attacks (of the same level or lower against the genocidal race for the next 50 months without any penalties).

V6.04.2 What Other Allies Do For each genocidal attack, *each* of the race's non-amalgamated allies with a non-aggression or higher alliance must decide what to do.

Roll 1d100 and apply the following modifiers.

- Level A attack +5
- Level B attack +10
- Level C attack +20
- Level D attack +50
- Add the checking race's RD (reflects how willing it is to punish the aggressor)
- Subtract 1/2 the checking race's RM (FRD)
- If the checking race is an ally with the genociding race during a war against another race -15. If the roll indicated "Level A," this modifier does not count toward reaching 15 or less.

See Table V6.04.1 Political Fallout From Genocide and notes on that table.

V6.04.3 Alliances against Genocidal Races Any race that is battling a "Recent Genocidal*" race receives a +5 modifier per level of genocide [Table V6.04 Level of Genocide] to all *political acceptance* (not initial contact) rolls made by any other race involving military treaties with 3rd parties.

Recent Genocide is one that occurred in the current or last war and in which that race was the initial race in that war to use genocide (the aggressor). The purpose of this is to allow for a gathering of "good guys," including NPRs, to stop the "evil" genociding race.

Next Section: W - Galaxy Setup

W – Galaxy Setup

One of the hardest parts of a campaign game is setting up the game to begin with. What choices do you have to make to start a good game? What options do you have? This section is intended to help the SM build his game without forgetting any details.

W1 Game Setup

There are a few decisions that a SM must consider in order to setup his game. What follows is a general idea about what those decisions are, and what kind of choices the SM can make.

W1.01 Optional And Home Rules

The first thing the SM must decide is what optional rules will be used. Optional rules and references are listed in [Appendix BB].

Additionally, you need to decide if you are going to use any home rules. If using some home rules, or decide to alter some of the existing rules into a new rule for your game, you should write them all down and make sure to distribute a copy of the new or altered rules to each player.

W1.02 Universe Generation

See [W2] below.

W1.03 EL and Technologies

The starting EL is one of the most important decisions to be made, because the starting SL and technologies are determined based on the starting EL. If the starting EL is 1, then the players start with all their starting SL at 1. If the EL is more than 1, then the all the available branches have their SL at EL –1.

The players must between the starting choices given in [K2.03]. If you decide to alter the choices, it is highly suggested that the players have at least 1 LRW technology and 1 SRW technology (NPRs obviously don't have this restriction).

W1.03.1 Another important technology decision is whether to add or remove any of the technologies from the list. This is easy in 4th edition because of the tech trees. Remember that each new technology branch requires a knot to open [N2.02], and that special technologies, or significant advancements in a branch, should require a knot, critical, or hazardous project cost.

W1.04 Special NPRs

As a SM, you must setup and run any special NPRs that will be part of the game. Special NPRs should be started from the beginning of the game to present the biggest challenge possible to the players. It is also suggested that these NPRs be run intelligently within the limits of their strategy, and if too powerful, have some sort of downfall that the players can exploit if they discover it.

W1.05 Player Setup Conditions

The suggested setup conditions are explained in section [K2]. If you are going to alter any of those conditions then you need to decide ahead of time and write it out to give to each of the players. This is very important, because every player should setup with the same conditions as the other players.

W1.06 Victory Conditions

The victory conditions are "what will it take to win." These are set conditions that the players can achieve to "win" the game (which can also end the game if you choose). There are many possible victory conditions, and here are a few *examples*:

- Whoever is the last man standing (conquest victory)
- The biggest empire at the end of the game period (economic and conquest victory)
- The empire that controls most of the universe (exploration and conquest victory)
- The empire that is the richest (economic victory)
- The most advanced empire (science victory)
- The empire that has conquered a specific planet or NPR race (special victory)

W1.06.1 When making your victory conditions, make sure you have covered all the bases:

- Is there a specific ending time? (number of months until the game ends)
- Is there a specific objective? (for example, to reach a certain level, learn a certain technology, or conquer a certain planet)
- Does the empire have to achieve a certain size (population or systems)?

W1.07 Putting it Together

The best thing to do is to put all this information together into a packet that you give to the players who join your game. This way they have all the new rules, changes, setup conditions, and victory conditions right there in the same package. In addition, you can always number your package so that you can refer to it like a rulebook in the event something comes under dispute. But in the end it is all up the individual Space Master!

W2 Universe Generation

The basic building blocks of CAMPAIGN STARFIRE are the star systems that inhabit the universe. These star systems are assembled in a manner described below to make up the composition of the universe. Within this universe is where the players explore, expand, and battle. There are many different methods for assembling the universe depending upon how much time the SM wants to spend, or how closely he wants to customize his game.

W2.01 Methods of Building the Universe

The method that the universe is constructed can change how the game is played. The most common methods are below.

W2.01.1 Completely pre-generate the universe When you pre-generate the universe you decide how many systems you want, and then generate all of them. Then you connect all the WPs together, and voila! A complete universe is done and no further work is needed.

The advantages of doing it this way:

- You are done with the universe and you don't have to build any more systems during the game. (*Exception*: multi-system

NPRs may be easier in later stages of the game to add in their own new section of the galaxy. Just make sure they have more than two links into the rest of the galaxy.)

- You can pre-select where special NPRs (such as a hive mind) starts at and play them before the player locates the NPR.
- You can create special star systems or specially link warp points to any shape or plan you desire.

The disadvantages of doing it this way:

- Requires a large before game time investment so that star systems and links can be built.
- Requires an SM to build the universe, or else a player will get an unfair knowledge advantage over other players.
- Limited size. The universe will always be of a limited size and cannot be expanded further without introducing warp points that didn't exist before.

W2.01.2 Pre-Generate the Systems Only The second method of generating the universe is a mix of the two extremes – the SM pre-generates the star systems but does not link the WPs, doing that as the game goes along instead.

The advantages of doing it this way:

- Requires less of a time commitment then completely pre-generating the universe.
- Allows SM to pre-select player and NPR starting positions.
- Allows you to re-use the star systems in a different game, you just link them differently to create a new configuration.
- Generation of new systems, thus a mid-game expansion of the galaxy is possible

The disadvantages of doing it this way:

- Requires a large initial time investment.
- Requires an SM to build the systems.
- Can allow errors to creep into the universe so that areas are cut off or that unexplored warp points can remain after all the star systems have been explored.

W2.01.3 Build the Systems as You Play the Game The third method of generating the universe is to build new star systems only when a player enters an unknown warp point. This is the single best method for games where all the people are playing and nobody is an SM.

The advantages of doing it this way:

- The fair method for system generation of no SM is present. No player knows what any of the universe looks like.
- Mid-game expansion of the galaxy is easy (just increase the system numbers available to link too).
- Requires little initial time investment.

The disadvantages of doing it this way:

- A pre-generated NPR cannot start at the same time as the players, unless it essentially functions as a player.
- The SM (or appointed player) must figure out when to link the player's explored areas of the universe together.
- The SM cannot control the number of systems or the number of NPRs, and is at the mercy of the die roll.
- Players can receive highly unequal starting positions, as the initial systems in the game are very important.

W2.01.4 A Few Notes for the SM The SM is in control. If you think something in the system generation is unfair, change a die roll, recreate the system again, etc. This can make the game far more enjoyable for the players once they meet each other. Just be careful that in doing so you don't make the game unfair because one player has more or less NPRs, good systems, or warp connections.

W2.02 How to Generate the Universe

The following is a brief overview of the universe and system generation process, and an index of the sections of this document that pertain to each step in the process.

1. Assign system ID (usually sequentially)
2. Roll system type
3. If an anomaly
   Then roll for the anomaly type (and follow the directions in the description for that anomaly [W5.05]).
4. If a nomad
   Then roll the each WP's type, distance, and visibility.
5. If a system
   Roll the planet distances and mass to determine types.
   Check for AST belts due to gas giant planets [W7.05.1].
   Roll the moons and distances.
   Roll the each WP's type, distance, and visibility.
6. Link all the WPs together to form the map (if applicable)

W3 Star System Identification Number

Each star system must be assigned a unique identification number from the master systems list. This is so that the SM can track each star system and make sure that the same information is given to each player that surveys it (or otherwise gets the information on the system). The number of possible system numbers will vary from campaign to campaign, usually in direct proportion to the number of players in the game. 50 systems per player can make for a sizable universe.

Regardless of the generation method, players should have random non-sequential starting system numbers (#55, #38, #97, etc.). For example, if you had 10 players and gave them systems #1 through #10, then if you found system #8 you would know it was a player system.

W4 System Body Bearings

A system's primary (star) is always placed in the center hex of the system map. Any star is assumed to completely fill its system hex, and a distance and bearing from the primary's hex must be determined for any other system body (including companion stars and WPs) placed on the system map. Distance is computed differently for companion stars [W5.03.2] [W5.03.3], planets [W6.03], and WPs [W8.02], but *bearing* is always computed by rolling 1d12 to determine the radian on the system map upon which the body lies. If a radian lies directly along a hex side at the indicated distance from the star, the system body is

always placed to the *right* (in a clock-wise direction) of the radian. Planets may move during the course of a game (orbital mechanics [W9]), but companion stars and WPs never move. (These assumptions are unrealistic, but they simplify the game.)

W5 STAR SYSTEM TYPE

Star systems consist of WPs and possibly stars and their subordinate system bodies. The majority of the galaxy's stars are found in systems with multiple stars. But for reasons which are still only poorly understood, WPs appear to occur less frequently in star systems with lots of masses (binary systems have two stars AND sometimes planets, which for some reason lowers the chances of WPs).

WPs may be found in locations without a star in close proximity. For some reason these locations not only have WPs, but often an abundance of them, leading to the name "Starless Nexus [W5.02]"

W5.01 SYSTEM TYPE

Whenever a system is generated, roll 1d100 against Table W5.01 System Type to determine the system type:

Table W5.01 System Type

Roll 1d100	System Type
01	Anomaly System [W5.05]
02-08	Starless Nexus
09-12	Starless Nebula
13-65	Single-Star Star System
66-70	Single-Star Nebula
71-95	Binary Star System
96-97	Binary Nebula
98-100	Trinary Star System

W5.02 STARLESS NEXUS

A Starless Nexus is a grouping of Warp Points that are placed around a common center point. When dealing with a starless nexus, do *not* place a WP in the normal position for a system primary but do check for additional WPs. The WPs exit signature will point to the "center" of a starless nexus.

W5.03 NORMAL STAR SYSTEMS

For any system type [W5.01] result other than an anomaly system or starless nexus, roll against Table W5.03 Star Type. Binary and Trinary star systems roll 2 or 3 times, respectively.

The first star (System Primary) generated in a system will be Component A.

Table W5.03 Star Type

Roll	System Primary	Spectral Class[a]
01-05	Blue Giant: No planets possible	O, B
06-16	White Star	A0-A9
17-41	Yellow Star	F0-F9, G0-G9
42-66	Orange Star	K0-K9
67-85	Red Star	M0-M4
86-95	Red Dwarf	M5-M9
96-98	White Dwarf: No planets possible	
99-00	Red Giant: No planets possible	

[a] Note that this is an *extreme* simplification of the various spectral classes. Subsumed spectral class is listed in column 3.

W5.03.1 Star Size Stars have a physical size in tH that can be quite large and can affect combat in a couple of ways.

Table W5.03.1 Star Size

Star Class	Radius in tH	Star Class	Radius in tH
Blue Giant	60	Red	5
Red Giant	50	Red Dwarf	2
White	30	White Dwarf	1
Yellow	20	Neutron Star	0
Orange	10	Orange	10

Additionally, stars emit a great deal of energy in their vicinity and ships close to them can take significant amounts of damage.

Any ship inside twice a star's radius automatically takes force beam like damage every tactical turn equal to:

((Twice the star's radius) – ((tH from the star's center) –1))

Ships inside the damage area of the star are only visible at 1/10 (FRU) the normal sensor distance, and have their sensor capabilities reduced by 75%.

Example W2.05.5.1 – Star Damage

Note: Blue giants and red giants may have naturally occurring instances where WPs are formed inside the corona of the star at 1 or 2 LM distance (see [W5.05.4]). These occurrences are not anomalies, but ships emerging from them still take damage according to [W5.03.1].

W5.03.2 Star Location When a star system is mapped, the system primary (Component A) is placed in the center of the system map.

The bearing (radian) of a binary system's companion star (component B) is determined as in [W4]. STARFIRE binary stars will all lie from 7 to 29 sH apart (2d12 + 5).

W5.03.2.1 There is generally insufficient space on the system map to display all the planets of both components of most binary star systems. Component B's planets need not be displayed until such time as a starship or ships move within its outermost occupied planetary orbit. If component B has no planets, there is no need to prepare a separate system data form for it.

W5.03.3 Trinary Stars: STARFIRE Trinary stars are a binary star [as W5.03] plus a distant third star. Roll the third star type as a single star. This star orbits at 1d4+1 StMPs (each StMP is 30 sH) from the system primary (component A).

This distant star is Component C.

W5.04 NEBULA

A nebula is a system that has a high energy content and extends for 60 sH from the center of a system. Communication and sensor ranges, except scan range, are limited based on nebula type. *This includes combat ranges and severely reduces the effectiveness of LRW, thus giving SRW the advantage in such a system.* Roll 1d10 on Table W5.04 Nebula Type to determine the type of nebulosity.

Note: All nebulas disable shields (shields always fail to work).

When generating nebula systems, the nebula effects occur before the generation of moons and G/Ast belt checks.

W5.04.1 Magnetosphere Hole Some planets, with strong magnetospheres, create a "hole" where the nebulosity cannot reach. Any planet not listed below and all non-G mass 1 planets have nebula right up to their atmosphere, if any. A G planet's hole extends out to

Table W5.04 Nebula Type

Die Roll	Nebula Type	Sensor Range	Comm Range	Nebula Type Modifiers:
1-2	Dark	-15% (FRU)	100%	Starless Nexus -2
3-5	Reflective	-25% (FRU)	-50% (FRU)	Binary System +2
6-8	Emission	-50% (FRU)	-75% (FRU)	Non-Giant Star +1[a]
9-10	Maser	-75% (FRU)	1 tH	Blue/White/Red Giant +3
[a]Any result of dark nebula is instead "reflective nebula"				Any Dwarf Star +0

60 tH while I planets extend to only 20 tH. A V or O2 planet's hole extends to 40 tH from the planet. The hole for T worlds it is 30 tH and for ST worlds it is 45 tH.

Optional: Sensor range from the planets or units within two tH of the planet have their sensor ranges increased by the size of the hole * (1 – sensor range percentage). *Ultra optional:* The actual formula would be Actual Range = (Normal Range - Distance from the edge of the nebula) * (1 - reduction percentage).

W5.04.2 Dark Nebula A Dark Nebula is non-illuminated nebula and can only be found in Starless Nexus systems.

W5.04.3 Reflective Nebula A Reflective Nebula is a slightly illuminated nebula that reflects energies released inside of it.

W5.04.4 Emission Nebula An Emission Nebula is a highly excited nebula with a high enough energy profile that it creates its own light and energy emissions.

All mass 1 planets become O3, and all mass 2 or 3 planets to become V (regardless of position relative to the biosphere) unless they are a O2, T, ST, or G which have a protective magnetosphere [W5.04.1]. All unprotected (by a planet's magnetosphere) moons, HGT, and asteroids become O3, and all I planets become G planets with O2 moons.

"Asteroid and HGT belts become 'extreme populations' with normal population density. [Table L1.01b T/ST Population Limits]"

W5.04.5 Maser Nebula A Maser Nebula is a special nebula that focuses its emission energy through the center of the nebula. This creates a huge energy flow throughout the system that rivals the energy of a star. This type of nebula causes damage as per [W5.05.2] (2 E Beam damage/day).

A Maser nebula affects planet type as in [W5.04.4], but T and ST planets are not protected and get converted into Type V planets, and all gas giant moons are type O1. The protective magnetosphere [W5.04.1] is still around the type G and I planets, but the nebula is strong enough that it still affects the planet types (long term radiation effects).

W5.04.6 Nebula Special Features Roll on Table W5.04.6 Nebula Special Features to determine a nebula's special feature, if any.

W5.04.6.1 Corrosive The nebula is corrosive. Not even a drive field can hold the effects of the nebula out indefinitely, although the effect is slow. Each month, one point of damage is suffered (one point per week if the ship's drive field is down). Small Units can only survive a single day outside of a starship's bay. XO rack items only survive for 6 hours before destruction and they cannot be reloaded in a Corrosive Nebula system. Life Pods are ineffective in a Corrosive Nebula. The CFN can cross this nebula without problems (at speed 4 or greater) but cannot load or unload except in Magnetosphere holes.

Table W5.04.6 Nebula Special Features

Die Roll	Reduced Specials	Feature
Dark Nebula		
01-40	01-70	No special feature
41-52	71-75	Corrosive
53-64	76-81	Dark Pulse Nebula
65-76	82-85	Energy Absorption
77-82	86-91	Ghosts in the Mist
83-88	92-94	Mist-Wraiths
89-94	95-97	Ragged Nebula
95-00	98-00	Sargassos
Reflective Nebula		
01-40	01-70	No special feature
41-46	71-75	Datalink Useless
47-58	76-81	Destabilized Drive Fields
59-64	82-84	Ghosts in the Mist
65-70	85-87	HGT Present
71-82	88-90	Mist-Wraiths
83-88	91-93	Ragged Nebula
89-94	94-96	Reflective Flare Nebula
95-97	97-98	Sargassos
98-00	99-00	Targeting Confusion
Emission Nebula		
01-40	01-70	No special feature
41-46	71-75	Datalink Useless
47-58	76-81	Destabilized Drive Fields
59-64	82-84	Emission Flare Nebula
65-70	85-87	Ghosts in the Mist
71-82	88-90	HGT Present
83-88	91-93	Mist-Wraiths
89-94	94-96	Ragged Nebula
95-97	97-98	Sargassos
98-00	99-00	Targeting Confusion
Maser Nebula		
01-40	01-70	No special feature
41-46	71-75	Datalink Useless
47-52	76-81	Destabilized Drive Fields
53-58	82-84	Energy Spike
59-70	85-87	Ghosts in the Mist
71-76	88-90	Lightning Strikes/Energy Pulses
77-82	91-93	Radiation Pulses
83-88	94-96	Ragged Nebula
89-94	97-98	Targeting Confusion
95-00	99-00	Variable Pulse Rate

W5.04.6.2 Dark Pulse Nebula While this appears like a dark nebula, a unstable variable star causes periodic infusions of the nebula with light and radiation. Each month roll 1d10, and add one per month that has passed without a pulse (assume there was a pulse the last month from when first discovered). On 15+, there is a pulse and it becomes a REFLECTIVE nebula. At the end of the month, it reverts back to a dark nebula.

W5.04.6.3 Datalink Useless In this nebula's environment, the steady data flow required to maintain datalink's coordination is basically impossible and datalink cannot be used.

W5.04.6.4 Destabilized Drive Fields This nebula destabilizes drive fields, lowering their safe strategic movement speed (only) by one, to a minimum of one.

W5.04.6.5 Emission Flare Nebula This appears like an emission nebula, but has a maser nebula's effect on planets. Each month roll 1d10, and add one per month that has passed without a flare (assume there was a flare the last month from when first discovered). On 15+, there is a flare. It becomes a MASER nebula, but does 3 damage per day, not two, as it is very energetic. At the end of the month, it reverts back to a emission nebula. Once the flare effect is known, the CFN will NOT transit the system! (Exception: L4.02.2.5)

W5.04.6.6 Energy Absorption The nebula acts as a channel for energy, swiftly draining energy away from drive fields, they must be shut down within two tactical turns of entering the nebula, or the engines catastrophically overload shutting down all movement ability. Charged Particle drives can cross the nebula, but even they take 2 StMP to do so.

W5.04.6.7 Energy Spike There is a 1% chance per day per ship traveling through the nebula that a ship is hit with a powerful energy spike. This instantly burns out 1d6 engine ROOMS (not single engines). Hope you have a tug with you, or you may be stuck. Once the spike effect is known, the CFN will NOT transit the system! (Exception: L4.02.2.5)

W5.04.6.8 Ghosts in the Mist There is a 1% chance that any warship (or government freighter) passing through the nebula alone (and a 5% chance/month that a CFN ship) is attacked by something. The ship takes 2D10 force beam damage. Once this is discovered, CFN ships always travel in convoys across the system, but ships alone might still be attacked. Two or more ships together are totally safe.

Small craft in groups of 12 or less that move out of communication range of their parent ship must instantly roll (the 1% chance) to see if they are attacked. If they are, they are destroyed.

W5.04.6.9 HGT Present There is a habitable gas torus circling 9+1d5 Light Minutes out from the "center" of the system. Note: HGT cannot exist in a Starless Reflective nebula. Otherwise, they just appear in whatever system and in addition to the normal planets (if the exact same orbit as a normal planet, remove the planet.

W5.04.6.10 Lightning Strikes/Energy Pulses The nebula does not do the regular daily damage, but viciously powerful lightning bolts or energy pulses flare through the mists. Each ship has a 10% chance per day of being struck for 1d10+1 damage. Any other ships in the same hex take one damage. Once the strike/pulse effect is known, the CFN will NOT transit the system! (Exception: L4.02.2.5)

W5.04.6.11 Mist-Wraiths Semi-Sentient beings that live in the mists. They are playful, and add a +1 training bonus to fighter or Gunboat pilots who train within the system. They are frightened by battles, and will not be seen for the rest of that month or the next month after any battles are fought in the system.

W5.04.6.12 Radiation Pulses Each month roll 1d10, and add one per month that has passed without a flare (assume there was a flare the last month from when first discovered). On 15+, there is a pulse series. One random week in the month, there is a series of radiation pulses which will automatically kills the crews of any ships within the nebula not within a sheltering magnetosphere (within 5 tH of a G or within 2 tH * Mass of other planets) AND with shields up. At the end of the week, it reverts back to a normal maser nebula. Once the radiation effect is known, the CFN will NOT transit the system for ANY reason! (MNE) is not effective.

W5.04.6.13 Ragged Nebula The nebula is somewhat patchy and it has half that nebula's usual effect on sensors and communications. A ragged maser nebula does only one damage per month.

W5.04.6.14 Reflective Flare Nebula This appears like a reflective nebula, but has a emission nebula's effect on planets. Each month roll 1d10, and add one per month that has passed without a flare (assume there was a flare the last month from when first discovered). On 15+, there is a flare. It becomes an EMISSION nebula, but does 1 damage per day, like a maser nebula, as it is very energetic. At the end of the month, it reverts back to a reflective nebula. Once the flare effect is known, the CFN will NOT transit the system! (Exception: L4.02.2.5)

W5.04.6.15 Targeting Confusion Missiles and Plasma Torpedoes internal seekers have trouble locking onto targets in the radar and sensor reflective environment as their seekers can see just a jumble of images or are drowned out by other sources.

Drones can fly a preprogrammed course but cannot track on a single source and navigation beacons are ineffective. Reorientation [D9.03.1] also does not work.

The to-hit number is modified by the Nebula type:

- Reflective -1,
- Emission -2,
- Maser -3.

W5.04.6.16 Sargassos Sargassos are patches of space which disrupt drive fields within them. They slow any ships passing through them to a speed of just one. Such areas make up about 10% of the nebula, and drift. They double travel time through the nebula (it takes 2 StMP to cross the system), and it should be noted that LRW's cannot function within Sargassos regions as their Drive Fields collapse (combat at speed 1 with beam weapons only). The Sargassos areas are detectable at medium range and have clear boundaries. Typical patch is 100 tH by 100 tH.

W5.04.6.17 Variable Pulse Rate Damage per day is 1d3.

Table W5.05 Anomaly Systems

Roll 1d100	Anomaly Type
01	Blackhole
02-10	Pulsar
11-25	Quaternary system
26-50	Coronal Warp Point Placement
51-75	Emerges in an asteroid belt
76-100	Neutron star

W5.05 ANOMALY SYSTEM

These systems are defined as systems in which an improperly equipped survey fleet cannot hope to survive. To determine the exact anomaly, roll on Table W5.05 Anomaly Systems.

W5.05.1 Blackhole This system has a blackhole in it and for some unexplained reason warp points in a blackhole system form INSIDE the blackhole's event horizon. The end result is that all ships, no

matter how big or what technology, are destroyed when they enter this system.

W5.05.2 Pulsar The pulsars here are weak and slowly rotating (a strong pulsar is treated as a blackhole since nothing could live there). No planets can survive in a pulsar system. WPs are rolled normally. However, ships in the system take 2 points damage immediately upon transiting into a pulsar system. Each week the ship will take 1d10+6 pts of special damage. This special damage is negated by shields but if shields are exceeded then each point above the shield strength becomes 1 pt of damage. "S" cannot regenerate (nor can Sr operate) while in a pulsar system.

W5.05.3 Quaternary system This is a star system with two pairs of stars (4 total). Each pair has two stars of the same type and the orbital distance is 5 times the star's radius in tH. Roll the distance between the pairs as a normal binary [W5.03]. Quaternary systems are unusual because their gravitational fields are so turbulent that a gravitational "shroud" surrounds any WP. This causes all ships to double their transit size and limits the maximum transit size to 3x the WP's size -- anything larger that attempts to transit the WP is destroyed. The high gravity turbulence also prevents the formation of any planets or asteroid belts in this system.

The "turbulence" limits ships to 1/2 (FRU) of their maximum TACTICAL speed (strategic speed cannot exceed this value either). Ships exceeding this limit take the equivalent of 1 pt of "force beam" damage per tactical turn. *The speed reduction will make LRW more effective in such a system by reducing the closing rate of SRW ships. LRW fire is very small compared to a ship and the turbulence has a negligible effect upon them.*

W5.05.4 Coronal Warp Point Placement Roll the system as normal ignoring other anomaly results, but all WPs are at a random distance between the edge of the star, and twice the star's radius - 1 (determine which tH randomly). When exiting the WP, the ship takes normal star damage [W5.03.1] starting in the turn of the transit. Any unit smaller than an EX, like a small craft, is destroyed upon exiting the WP.

W5.05.5 Emerges in an asteroid belt This star system is rolled like normal star systems, but must have an asteroid belt (if the system has multiple belts, randomly roll for which belt). Any ship that exits the WP takes a random 1d100 damage, and any unit smaller than an EX, like small craft, is destroyed. This happens because the WP's slight gravity well causes small asteroids to gather around the WP, and anything exiting the WP hits them.

The asteroid belt is otherwise treated as a normal asteroid belt, except that there is a shroud of asteroids around the WP in a 1d10 radius. Each hex of this shroud between the firing unit and its target is a -1 to hit, and any ship traveling through the shroud has a speed-1 on 1d10 chance of taking 1d100 damage from a collision with numerous asteroids.

Because the asteroids orbit the Star and the WP does not, asteroids are constantly moving in the vicinity of the WP. And while ships with Tractor Beams can clear the "Shroud," it takes a lot of effort. Multiply the cruising speed of the tractoring ship by the number of tractor beams. Add all ships together. Every full 10 pts reduces the damage done to a exiting ship by one pt.

Note: A race that has not previously detect a WP in a cluster, or who has not transited one from the other side, will miss the significance of such a cluster. A race that has done so, will know a WP exists there, even if they can not detect that WP.

W5.05.6 Neutron star This is a single star system. Generate the system as if it had an orange star, but all the WPs in this system are 1d100 light seconds away from the star itself, and the star has a light radiation field out to a radius of 9 LM. All planetary or asteroid belt orbits below 10 LM are boiled away (removed), and all gas giants in the 10-15 LM range that are not reduced to asteroids are transformed into a "habitable gas torus" [W7.04.1]. If any ship enters the radiation field (whether from outside the field or through a WP without any active shields (also drops or loses those shields due to other reasons), then the crew on the ship dies instantly. The ship never takes any actual damage from the radiation.

NOTE TO THE SM: Players should not be told when an anomaly is responsible for the loss of their survey ships. They may be told that all communications have been lost, but not whether this is due to hostile action (like a minefield) or an anomaly. If you're feeling particularly rotten, go through the entire "survey" procedure for the player, then simply inform him his survey ships failed to return. Players have been known to mount massive invasions of black holes in the belief that hostile actions are responsible for their survey force's silence.

W6 PLANET TYPE

Blue giants, white dwarfs, and red giants have no planets, but STARFIRE assumes that all other types of stars do. For simplicity, STARFIRE divides each star system into three zones of planet formation and one additional zone: the biosphere.

W6.01 PLANETARY ORBIT LIMIT

Planetary orbits are generated out to a maximum of 300 LM for White and Yellow Stars, to a maximum of 250 LM for Orange Stars, and a maximum of 200 LM for Red Stars or Red Dwarfs. Any planet beyond a star's limit does not exist.

W6.02 BINARY STAR ASTEROID GENERATION

Any planet of a binary star system beyond 1/3 of the distance to the other component star does not exist. Any planet between 1/4 and 1/3 the distance between the components turned into an asteroid belt [W7.05.2].

W6.03 TITUS-BODE PLANET RELATIONSHIP

The radii of planetary orbits are determined using the Titus-Bode relation: $R = A + ((B - A) * 2^n)$. "R" is the distance from the primary, "A" is the orbital radius of Planet 1, "B" is the orbital radius of Planet 2, and "n" = the planet number whose orbit is being determined minus 2. (That is, "n" for planet 3 would be 3 - 2 = 1.) This may sound complicated, but the table below does all the calculations.

1. Roll 1d10 or 1d8 for the orbital radius of Planet 1 of the system in LM. Any result from "1" to "8" is acceptable.
2. Roll 1d10 for the orbital radius of Planet 2 in LM, re-roll any result that is less than 2 greater than Planet 1's orbit.

3. Using the chart below, locate the line which begins with the orbital separations you rolled for Planets 1 and 2; it will show both the maximum possible number of planets (from seven to nine) and list the orbital radii for every other planet associated with that star.

Table W6.03 Planet Orbital Distant

IF {planet I roll is} AND {planet II roll is} Then…								
I	II	III	IV	V	VI	VII	VIII	IX
1	3	5	9	17	33	65	129	257
1	4	7	13	25	49	97	193	---
1	5	9	17	33	65	129	257	---
1	6	11	21	41	81	161	---	---
1	7	13	25	49	97	193	---	---
1	8	15	29	57	113	225	---	---
1	9	17	33	65	129	257	---	---
1	10	19	37	73	145	289	---	---
2	4	6	10	18	34	66	130	258
2	5	8	14	26	50	98	194	---
2	6	10	18	34	66	130	258	---
2	7	12	22	42	82	162	---	---
2	8	14	26	50	98	194	---	---
2	9	16	30	58	114	226	---	---
2	10	18	34	66	130	258	---	---
3	5	7	11	19	35	67	131	259
3	6	9	15	27	51	99	195	---
3	7	11	19	35	67	131	259	---
3	8	13	23	43	83	163	---	---
3	9	15	27	51	99	195	---	---
3	10	17	31	59	115	227	---	---
4	6	8	12	20	36	68	132	260
4	7	10	16	28	52	100	196	---
4	8	12	20	36	68	132	260	---
4	9	14	24	44	84	164	---	---
4	10	16	28	52	100	196	---	---
5	7	9	13	21	37	69	133	261
5	8	11	17	29	53	101	197	---
5	9	13	21	37	69	133	261	---
5	10	15	25	45	85	165	---	---
6	8	10	14	22	38	70	134	262
6	9	12	18	30	54	102	198	---
6	10	14	22	38	70	134	262	---
7	9	11	15	23	39	71	135	263
7	10	13	19	31	55	103	199	---
8	10	12	16	24	40	72	136	264

W6.04 PLANET FORMATION ZONES

There are three zones of planet formation: rock, gas, and ice. These zones lie at different distances from different types of star, depending on the star's mass (and hence heat). Since each STARFIRE star type subsumes several spectral classes of stars, the planet formation zones for each star type are averages of the zones for all the spectral classes subsumed within that type.

W6.04.1 Biosphere The zone in which planetary temperatures permit water to remain in a liquid state, thus allowing life to evolve, also varies with the stellar type. Like the planet formation zones, the liquid-water zone (or biosphere) of each star type is an average of the spectral classes subsumed within that type.

Table W6.04 Planet Formation Zones

Star Class	Rocky Planets	Gas Planets	Ice Planets	Biosphere	Tidelock Zone
White	01-25	26-130	131-300	10-18	1-5
Yellow	01-16	17-83	84-300	06-12	1-3
Orange	01-09	10-38	39-250	03-05	1-2
Red	01-05	06-18	19-200	03-04	1-2
Red Dwarf	01-03	04-11	12-200	None	1 LM

Values are in LM. The Tidelock Zone refers to the Star/Planet Tidelock Zone

No biosphere is shown for blue giants, white dwarfs, and red giants, since, by definition, they cannot possess planets.

W6.04.2 Tidelock Zones A planet within a Star's Tidelock Zone [Table W6.04 Planet Formation Zones] is tidelocked to that Star (e.g., the same planetary zone always faces the star). This is called a "Star/Planet Tidelock" and may change the planet's type.

If a moon is large enough [W7.03.1], it may be Tidelocked to a planet (Called "Planet/Moon Tidelock") and this may change the moon's type.

Using W6.04.2 Tidelock Table, the star/planet and planet/moon tidelocking relationships (left of the double line) determine whether any change occurs to the planet or moon type.

W6.04.2 Tidelock Table

Star/ Planet Tidelock?	Planet/ Moon Tidelock?	Planet Type		Moon Type Based on Planet Mass	
		Mass 2/3	Mass 1	Mass 2/3	Mass 1
White, Yellow, Orange, and Red Stars					
Yes	Yes + Big	V	O3 planet	Twin[a]	O3 moon
Yes	Yes	V	O3 planet	O3 Moon	
Yes	No	V	O3 planet	O3 Moon	
No	Yes + Big	Normal planet		Twin[a]	Normal m
No	Yes	Normal Planets and Moons: Exception Mass 2 and 3 G planets make mT moons			
No	No	Normal planet		Normal Moon	
Red Dwarf Stars Only					
Yes	Yes + Big	T or ST	V	mT	mT
Yes	Yes	V	V	O2 Moon	O2 Moon
Yes	No	V	V	O3 Moon	O3 Moon
No	Yes + Big	Normal planet		Twin[a]	Normal m
No	Yes	Normal planet		Normal Moon	
No	No	Normal planet		Normal Moon	

"Yes + Big" indicates that the moon is tidelocked and it is a big moon.

[a] A twin planet is always the same type as the original planet except in two cases: 85% of T/ST twins are instead the opposite type world (Roll the habitability indexes of "twins" separately) and Gas giant twins are instead a hostile type T moon.

Die Roll	Planet Mass	Rocky Planet Located in Reference to the Biosphere			Gas Zone	Ice Zone
		Inside	Within	Outside		
01-25	Mass 1	Type O3	Type O2	Type O2	Type G	Type I
26-75	Mass 2	Type V	Type T	Type O2	Type G	Type I
76-00	Mass 3	Type V	Type ST	Type O2	Type G	Type I

Red dwarf stars have no biosphere. Therefore, any "rocky planet" *not* tidelocked to a moon [W7.03.3] is treated as "outside outer edge of biosphere."

W6.05 Classification of Planets

There are eight basic types of planets in CAMPAIGN STARFIRE: type O1, type O2, type O3, type V, type T, type ST, type G, and type I. The exact type-classification of a planet depends upon its orbital distance from its primary and its mass.

The exact distance of each planet from the primary is determined as in [W6.03], above. Once the distance has been determined, roll 1d100 for each planet against the table below to determine its mass and read across to determine planet type *at the listed distance*.

W6.05.1 Planet Mass **For Rocky Planets only:** A mass 1 planet has too little mass to attract and hold appreciable atmosphere. A mass 2 planet has mass sufficient to hold a life-supporting atmosphere, but gravity is less than 1.4 times that of Earth. A mass 3 planet is massive enough to retain life-supporting atmospheres and has a gravity of 1.4 to 2.0 times that of Earth.

W6.06 Planet Type Definitions

The following definitions describe each planet type and any relevant game information.

Type O1 planets are mass 1 planets that have no atmospheres or liquid water and are extremely cold and inhospitable. [Not used]

Type O2 planets are rocky planets, which are too cold to possess liquid water and so cannot support life. Mass 2 and 3 type O2 planets are considered to have atmospheres for purposes of firing weapons into or through an atmosphere [D7.02].

Type O3 planets are rocky planets, which are too hot to possess liquid water and so cannot support life. Mass 2 and 3 type O3 planets are considered to have atmospheres for purposes of firing weapons into or through an atmosphere [D7.02]. For campaign conversions, O1 worlds which are inside the inner edge of the biosphere become O3 planets. Moons around O3 and V planets are O3 moons. O3 bodies are HOT, while O1 are cold.

Type V planets have no liquid water but are massive enough to retain an atmosphere. Like Sol's Venus, their atmospheres are dense, poisonous, and very hot. Populations may not be placed on them.

Type T planets are life-bearing, habitable rocky planets with abundant water, oxygen-nitrogen atmospheres, and gravity is less than 1.4 times that of Earth.

Type ST planets are rocky planets with gravity from 1.4 to 2.0 times that of Earth. Type ST planets are life bearing and thus have atmospheres composed of the same gases as those of type T planets, but their atmospheres are so dense that those components are present in concentrations toxic to inhabitants of type T planets. The natives of type ST planets, on the other hand, would find the atmospheres of some Type T worlds too thin to support life.

Type G planets are gas giants with massive atmospheres of hydrogen gas (Sol's Jupiter and Saturn are examples of this type). Any planet in a star's Gas Planet Formation Zone is automatically a type G planet, which are neither habitable nor colonizable.

Type I planets are far from their stars, with vast amounts of frozen water, methane, and ammonia. They are neither habitable nor colonizable.

W6.07 Habitability Indexes

Any T or ST planet is assigned a habitability index (HI) when it is generated. This is done by rolling 1d10 for the planet and recording the number rolled. The HI is not be revealed to the surveying player until he has completed the planetary survey process [R3].

W6.08 Resource Exploitation Index (REI)

For each planet or moon in a system, roll 1d10. This is the "resource exploitation index" (REI). This number is modified by the world type in Table L3.02.1 REI Environmental Modifier, and cross-indexed on Table L3.02 Mineral/Environment Value, to determine a body's Mineral Content. There are a few rules that will change a world's REI number, so make such that the ORIGINAL roll is recorded.

W7 Other System Bodies

In addition to stars and planets, system bodies include: the asteroid belt, the Habitable Gas Torus (HGT), and the moon.

W7.01 Moons

Moons are natural satellites of planets. To fit STARFIRE's definition of a moon, a satellite must be larger than an asteroid. Satellites smaller than this are ignored.

STARFIRE assumes that V, O2, O3, T, ST, G, or I planets may have moons. To determine the number of moons a planet has, roll 1d100 against Table W7.01 Moon Quantity, applying the indicated modifier(s) for the planet's type and mass. I planets have type O1 (cold) moons. O2, T, ST, and G planets have type O2 moons. O3 and V planets have O3 (hot) moons. All moons have a mass of "0."

W7.01.1 Orbital Radii of Moons To determine the orbital radius of the first moon in tactical hexes, roll 1d10 and divide by 2 (FRU). For a Rocky Zone and Ice Zone planet, divide the roll by 3 (FRU).

To determine the distance to each moon after the first, roll another 1d10 and add that distance to the distance of the moon before it.

Table W7.01 Moon Quantity

Roll	Number of Moons	Planet Type Modifiers
less than 01	0	Mass 1 rocky planet = -50
01-55	1	Mass 2 rocky planet = -10
56-85	2	Mass 3 rocky planet = + 0
86-105	3	Type O3 planet = -15
106-126	4	Type V planet = -35
127+	5	Type I planet = +35
		Type G planet = +50

W7.02 Moon Bearing

Determine the initial bearing from the planet a moon orbits for the purposes of planet/moon system-scale movement [W9.05]. In this instance, however, 1D6 is rolled against the scattergram for each moon, using the result to determine its bearing from its planetary primary.

W7.03 Tidelocked Moons

The moon closest to a planet (any type planet), assuming the moon has sufficient mass, may be tidelocked by the planet. If a tidelock occurs, see W6.04.2 Tidelock Table to determine what the tidelocked "moon" really is.

For each planet with moons, there is a 7% chance that the planet is tidelocked to the closest moon, +1% per moon orbiting the planet.

W7.03.1 Twin Planets If the checking roll from W7.03 is 01 or lower (+1 for each moon), the moon to which the planet is tidelocked is bigger than normal (relative to the planet's mass). This is termed a "Big Moon". For mass 1 planets, a moon still results but larger planets generate a "Twin Planet" (See W6.04.2 Tidelock Table footnote).

If the tidelock table (and footnote) indicate the "big moon" is a Twin, then the moon treated as a planet, with the same mass as the other planet. The HI and REI are rolled separately.

W7.03.2 Planet/Moon Tidelock Orbital Movements The moon orbits the planet as normal, but both the planet and moon always have the same hexside facing each other. See [W9.05.1].

W7.03.3 Red Dwarf Stars Red Dwarf Stars are a special case for tidelocking and have their own section of the tidelock table.

W7.03.4 Hostile Moons (mT) A Hostile Moon is in essence a small T world, which is always of hostile environment for T/ST life forms. mT moons have low population capacity [L1.03].

Red Dwarf Stars sometimes also create mT moons and the rules are the same for them.

W7.04 ASTEROID BELTS

Asteroid belts consist of airless rocks in space, the debris of a planet that either was broken up or prevented from forming by the gravitation of a nearby gas giant or companion star. These rules assume that shuttles are readily available and that the asteroid belt can be treated as a single integrated population for growth purposes. The maximum population for an asteroid belt is 20 PU times the LM distance from the belt to the star (or roughly 2 outposts per sH of belt). They are treated as type O2 planets for colonization. Individual asteroid populations do not exceed outpost size and are centered in the sH (*OPTIONALLY* Space Masters may choose to randomly position them).

W7.04.1 Habitable Gas Torus (HGT): A Neutron Star birth can cause a gas giant to become a HGT. A reflective or emission nebula can have an HGT form in the middle of the star system. A HGT is treated as an asteroid belt, except that each outpost is a rich harsh (T or ST) environment. The maximum population is 150 x LM [L1.03].

W7.05 ASTEROID BELTS FORMATION

Asteroid belts are rubble from planets that either were prevented from forming or subsequently destroyed by the influence of nearby gas giant's gravity field, or of companion star's gravity field.

W7.05.1 Gas Giants Create AST Whenever a system contains gas giants, they may have reduced nearby planets to asteroid belts. Starting with the outermost gas giant, roll 1d100 for each planet in the orbit just inside a gas giant. Any roll of 01-20% indicates that the gas giant is so massive that it has reduced the next planet in to rubble, creating an asteroid belt. Note that this may result in the reduction of another *gas giant* to asteroids, in which case it obviously is not going to turn the next planet in from *its* orbital position into an asteroid belt.

W7.05.2 Asteroid belts may also be created by the influence of the other star in a binary system [W6.02].

Example W2.07.5.2 - Binary Stars Make Asteroid Belts

W8 WARP POINTS

Generate warp points after the rest of the system is generated but the link to another system does not have to be generated until after the warp point has been transited.

W8.01 WARP POINT QUANTITY

To determine the total number of warp points in a system, roll 1d100 against Table W8.01 Warp Point Quantity. Use the column headed by the nature of system. Warp points are positioned [W4] in reference to component A of any multi-star system. Other component stars do not roll for their own warp points unless using the optional rules at [W8.07].

W8.02 WP BEARINGS AND DISTANCES

To determine radian that a WP is on, roll 1d12. To determine the distance from the star in sH, roll 1d100 and consult Table W8.02 Warp Point Distance:

OPTIONAL: Usually WPs are directly on the radians for simplicity but you can roll 1d100/3 (FRU) and move the WP that many system hexes in a clockwise direction while remaining the same distance from the star. Starting positions for planets can also be randomized like this. Warp points are located in the exact center of their system hex.

W8.02.1 Binary WP Limits WPs cannot be placed within 2 radians of the radian a component B star lies on. For example, if a binary star component B lies on radian 3, then a WP cannot be placed on radians 1, 2, 3, 4, or 5.

Table W8.01 Warp Point Quantity

Quantity of WPs	Starless	Without Planets	With Planets
1 WP	1	1-9	1-19
2 WP	2-19	10-29	20-38
3 WP	20-58	30-67	39-77
4 WP	59-77	68-87	78-96
5 WP	78-97	88-97	97
WP Nexus	98-00	98-00	98-00
If WP Nexus rolled, reroll on a 1-10			
6 WPs	1-3	1-4	1-5
7 WPs	4-5	5-6	6-7
8 WPs	6-7	7-8	8
9 WPs	8-9	9	9
10 WPs	10	10	10

Table W8.02 Warp Point Distance

Roll	Dist	Roll	Dist	Roll	Dist
01	1 sH	16-18	11 sH	51-55	21 sH
02	2 sH	19-21	12 sH	56-60	22 sH
03	3 sH	22-24	13 sH	61-65	23 sH
04	4 sH	25-27	14 sH	66-70	24 sH
05	5 sH	28-30	15 sH	71-75	25 sH
06-07	6 sH	31-34	16 sH	76-80	26 sH
08-09	7 sH	35-38	17 sH	81-85	27 sH
10-11	8 sH	39-42	18 sH	86-90	28 sH
12-13	9 sH	43-46	19 sH	91-95	29 sH
14-15	10 sH	47-50	20 sH	96-00	30 sH

W8.02.2 WPs In The Same sH WPs are allowed in the same sH in Ultra Starfire. Such WPs are 3d10 tH apart.

Only AppHH-Co-incident WP(c) are allowed in the same tH.

W8.03 Warp Point Type

WPs may have different resistance to the passage of ships. Note that engine types, hull types, and other factors may cause a WPs resistance to change although the type remains the same. The WP type applies to both ends of the WP although the ends could be of different visibility. To determine WP type, roll 1d10 on Table C4 WP Sizes.

W8.04 Warp Point Visibility

All WPs are invisible and there are only two methods to locate the end of one: Survey or Transit through from the other side. Each WP has an "visibility" that determines both the type of survey needed to find it and the chance of finding it when the survey is completed. Once one end of a WP is of a known visibility, the other end is somewhat restricted in possible types of visibility. Roll 1d10 to on Table W8.04 Warp Point Visibility to determine visibility of the end of the WP in the current system. Remember that each end of a WP can be of a different visibility.

There are 2 methods of generating Secret and Top secret WPs. The first is covered in the normal rules and the 2nd (Computer Generation of Linking) is covered in [W8.05.2.1].

W8.04.1 Low Visibility WPs There is a one time 10% chance of a Top Secret or Undisclosed Warp point (1-7 Top secret, 8-0 Undisclosed) being generated in a system. This chance is separate from the normal WP visibility roll [Table W8.04 Warp Point Visibility] and often rolled when the first survey capable of detecting Top Secret WPs is completed. Including Top Secret and Undisclosed Warp points, a system is limited to TWELVE warp points. Top Secret WPs can connect with either Top Secret or Undisclosed Warp points (if Space Masters wish, 20% of Secret WPs will connect with Top Secret WPs but this is optional [R2.04].). Undisclosed WPs can only connect to Top Secret and Undisclosed WPs.

Table W8.04 Warp Point Visibility

Die Roll	Visibility	Can Only Connect To WPs with a Visibility of	Survey Success
1-6	Open	Open & Concealed WPs	90%
7-8	Concealed	Open, Concealed & Hidden	80%
9	Hidden	Concealed, Hidden & Secret	75%
10	Secret	Hidden, Secret & Top Secret	70%
n/a	Top Secret	Secret, Top Secret & Undisclosed	65%
n/a	Undisclosed	Top Secret & Undisclosed	60%

Table W8.03 Warp Point Type and Size

Die Roll	WP Type	Base Capacity
1	A	25
2-3	B	30
4-6	C	36
7-8	D	43
9	E	52
10	F	62

W8.05 Forming WP Links

A WP link connects two systems together but there are restrictions normally followed (Space Masters may lift these at their discretion). WP links need not be formed until the warp point passed through.

W8.05.1 Restrictions WP ends may not connect to the same system. Only a single link between two systems may exist.

W8.05.2 Determining the System that a WP links to

A. Roll randomly among all system IDs available. Note that if you are doing a [W2.01.3] "on-the-fly" generation of star systems that this method will not be available, and it will be at the SM's discretion as to how often a warp point connects back to a known star system, or to a totally brand new system. It is common to have 15-25% of the warp points connecting to known systems, and the remaining percent connect to totally new systems.

B. If that system has an unlinked WP of the proper visibility, create a link (if more than one, choose randomly the one).

C. If system has not previously been generated, generate at least the System Type, warp point quantity, and WP visibility. If one of the WPs has an acceptable visibility, create a link (for non-SM games, roll WP visibility for only the exit warp point and keep rolling until a valid visibility is determined).

D. If steps B or C do not create a valid link, add 1 to the system number and return to B. If the new system number exceeds the number of systems in the galaxy, change new system number to 1 and go to B. If no system has any unconnected WPs of the proper type (galaxy fully created), either create a dead end system (single warp point) to link to OR create a new WP, in an unsurveyed system. Such a created WP cannot exceed 10 WPs in a system, and will be a Hidden WP.

When a partially generated system (step C) is not eligible for a link, you have two additional choices instead of D: reroll all system information or reroll just WPs quantity and types.

W8.05.2.1 Top Secret and Undisclosed WPs

In this paragraph, TS=Top Secret, UD= undisclosed. TS & UD WPs do not use the above method. They roll randomly among all systems (and ignore clustering rules) to determine the exit system. If the exit location has less than 12 WPs in it, then a new WP is formed in that system.

Exit Visibility of TS WPs is (1-7 TS; 8-0 UD).

Exit Visibility of UD WP is (1-3 TS, 4-0 UD).

Computer Generation of WPs including TS & UD

Determine the number of WPs in each system. Determine visibility of WPs in the system. Roll 1d100. If (91-97 TS; 98-00 UD), add 1 new WP of that visibility to the system.

Computer Linking of WPs

Link UD WPs first by the procedure in the first paragraph. Do not link to a previously existing WP, instead create new WPs in the destination system if the WP total is less than 12.

Link Secret WPs next using normal procedures. If an unlinked TS WP exists in the destination system, roll a 20% chance to link to it.

Link all TS WPs using the procedure for UD WPs.

Now link all remaining WPs in the following order: Open, Concealed then Hidden.

W8.06 CLUSTERED WPS (OPTIONAL)

Clustering causes most WPs to connect to systems that are relatively close in system number to the current system. Clustering increases the overall distances between player empires and tends to make a few "cross galaxy" warp links highly important. This tends to add to the strategic flavor of the game.

W8.06.1 Hidden and Secret WPs are prohibited from connecting to a system number that is within 20 of the current system number. Note the quantity (20 in this rule *example*) should be 10% of the galaxy size for larger galaxies.

W8.06.2 For open and concealed WPs, to determine the system number to check, first roll 1d10. A 1-8 indicates that the system is "near" to the present system and a 9-0 is a normal random determination. For a "near" system, roll 1d10. If odd, subtract 1d20 from the current system number to determine the next system to check. If not a valid system to link to, add 1 until a valid system is found (keep adding +1 even if you pass the current system number). If the first roll was even, then add 1d20 and follow the same but reversed (subtracting instead of adding) process.

W8.06.3 Player races should start equidistant from each other to prevent early contact.

Example W2.08.6.3 - Galactic Starting Position

W8.07 MULTIPLE-WARP POINT CONFIGURATIONS (OPTIONAL)

As an option, players may allow a set of warp points to be placed around each star in a star system (including binary, trinary, and each pair of a quaternary star system). The placement of warp points must account for [W8.02.1]. This means that warp points will be placed in a crescent shape around each side of a binary system, or a pair.

This rule can generate a LOT of WPs in a system.

Optionally, you could randomize one set of WPs between each pair of stars in binary and quaternary systems with an equal chance to be around each star.

W9 ORBITAL MECHANICS (OPTIONAL, ADVANCED)

Most system bodies move. (Well, to be perfectly accurate, *all* system bodies move. But STARFIRE's need for exact orbital mechanics is minimal. The rules ignore some movement for simplicity.) Thus, the following rules are highly simplified but can provide the constantly (but slow) changing "terrain" of a deep-space battlefield.

W9.01 INITIAL POSITION

Whenever a system is generated, record the exact positions of all system bodies – companion stars, planets, moons, WPs, etc. In addition, record the exact *month* (strategic turn) the system was generated. All future movement of system bodies uses this date and time as a reference point. Stars and WPs are always placed in the exact center of their assigned system hex and *neither ever moves*.

W9.02 WHAT ORBITS?

Planets and asteroids orbit their stars, and moons orbit their planetary primaries. Spacecraft without a drivefield and SS orbit either a star or a planet and thus move as planets or moons (note that SS cannot maintain position in reference to a WP).

Bases have station-keeping drives capable of maintaining position relative to a primary or planet without orbiting if they so desire.

AP also have stationkeeping and can maintain position on relative to a primary, a planet, moon, or WP.

W9.03 ORBITAL PATH

For Starfire purposes, all orbits remain an equal number of hexes from the body they orbit. Thus, each orbit traces a hexagonal path around the body it orbits.

W9.04 ORBITAL MOVEMENT

W9.04.1 Around Star Initially, each planet begins the center of its sH and moves 1 sH clockwise every even month while remaining the same distance, in sH, from the star.

Asteroids orbit their primaries exactly as planets do.

What	Month	Week	Day	Hour	30 Sec[a]
Planet or Object around Star	1/2 **sH**	288 tH	48 tH	2 tH	(60)
Moon or Object around Planet	30 tH	5 tH	1 tH	(24)	(2880)
Standby Mode Speed (for ref.)	1/2 **sH**	288 tH	48 tH	2 tH	(60)

[a] Values in () indicate the number of time increments required to move 1 tH.

W9.04.2 Around Planet Non-tidelocked moons (and outer moons of mutually tide-locked moon(s)/planet pairs) will orbit clockwise 1 tactical hex per day around the planet (common center of mass). The moon does not rotate.

W9.05 ROTATION

Planets within the tidelocked zone of their primary do not rotate unless they are tidelocked to a moon [W7.03]. All planets outside the tidelocked zone of their primaries rotate in a clockwise direction at the rate of 1 facing 480 tactical turns (4 hours).

W9.05.1 Tidelock Movement A Tidelocked Planet or Moon moves as follows: As the moon orbits, whenever it moves onto a new Odd bearing (1-3-5-7-9-11 or 1-6 for moons or A-F), rotate the Star/planet or planet/moon one hexside in the direction the planet or moon is orbiting (clockwise or counter-clockwise).

Other moons rotate around the common center of mass of the Tidelocked pair (physics wise, this may not be likely or possible).

W9.06 COMBAT

Players and Space Masters ignoring orbital movement should note that there are two times that orbital movement may play a part during combat. If combat is to occur in the vicinity of a planet, determine the locations for all moons via calculation or randomly (random bearing on a scattergram die roll) and then keep track of their orbital movement under [W9.05]. If PDCs, SS, or other immobile objects are present, planetary and moon rotation must be tracked [W9.05].

W10 ORBITING SPACECRAFT

Units with any sort of active drive field, including Standby Mode [C1.02.5], will not orbit. However, all such units have plenty of movement to remain where they like reference a Star, Planet or Moon.

Space stations and other spacecraft in geo-synchronous orbit have an orbital radius of 1 tactical hex and are permanently located over the same point on the planetary surface (they move when the planet rotates). Spacecraft may not be placed in geosynchronous orbit around planets that do not rotate

W10.01NON-GEOSYNCHRONOUS ORBIT

Spacecraft in non-geosynchronous orbits are treated as moons are under [W9.05]. Furthermore, any spacecraft may be placed in such an orbit at distance of 1 tH.

W10.02WPS AND DRIFTING

Objects without a DF will orbit the sun moving 1 tH per half-hour away from a WP, which does not orbit.

W11 PLAYER SETUP

See section [K2]. It is recommended that unless you use a special game that this setup, or a close variant of it, be used for 4th edition.

Next Section: X - Game Operations

X – Game Operations

The most time consuming detail that the Space Master will have to deal with is the running of each game month. This involves reviewing each player's monthly turn, checking for conflicts, and then sending back to each player the results of their month and any activities that occurred during the month. Furthermore, the Space Master (or his designee) will have to operate each activated NPR, generating results and activities in addition to taking care of the players' month results and general game maintenance.

X1 Processing Monthly Turns

When processing monthly turns, following a listed sequence allows you to process months efficiently. Below is a sequence and some things to consider to decrease month processing time

- ☐ (*Optional*) Apply a penalty if the monthly turn is late. Usually done in a PBEM (play-by-email) or PBM (play-by-mail) game. Late penalties encourage players to turn in their monthly turns on time so they do not delay the game. A typical penalty is to decrease the player's available funds by 5% of their total income for every day the month is late (no more than 20% is suggested). The penalty can be waived if previous arrangements have been made, or there is some valid reason for the delay. "I just didn't feel like it," is not a good reason.
- ☐ Check that PU growth (if any) was calculated correctly.
- ☐ The balance carried over from last month should match the amount left over from last month.
- ☐ Check that income totaled is correct. Sources: imperial populations (PU and IU), trade, leased freighters, and allies.
- ☐ Ensure that the number of ships is correct and that the maintenance is paid. If it hasn't been paid apply the penalties. [L7.04]
- ☐ Check that any new ship designs are legal.
- ☐ Check to make sure that all new construction has been paid, and that all old construction has been totaled properly. Check to make sure that construction complexes are not doing more tasks than they have capacity for.
- ☐ Check the running RP totals for R&D and make sure new R&D and any R&D shortfall is paid for.
- ☐ Any CFN shipping should be paid for. Make sure that the CFN shipping has been assigned a proper route. Make sure that the destination is valid. See [L4.10.4] for how to handle shipments into or through any disputed or uncontrolled systems.
- ☐ Check political offers for legality. Make sure that they have been applied correctly, and that all the required elements are necessary (such as the messages being able to reach an ICC or a diplomat being present). Check for first contact situations.
- ☐ Check all fleet movements. First make sure that they are legal movements, and that fleets/ships don't move farther or faster than they are supposed to. Then check for "potential conflicts" where opposing enemy fleets (or potential enemies) enter a star system owned by another player.
- ☐ Generate survey results. This includes warp point surveying, planet surveying, and transits into unknown systems. Always be sure to check for potential first contact or "potential conflict" situations.
- ☐ Resolve any combats. Many "potential combat" situations are either accidentally or intentionally turned into actual combat situations. Once a warfleet has detected an enemy, or has been given an order to engage an enemy (say attack a planet), the fleet moves to that location and commences a combat situation.
- ☐ Generate R&D results. Check for breakthroughs and the result of any that occur. Check for EL advancement. Check for item development.
- ☐ Generate political results. Roll for first contact (initial or continued) results. Roll for treaty acceptance or rejection (or note delayed decisions on treaties). Resolve any results or conditions that result from accepted or rejected conditions (such as war or trade bonuses).
- ☐ Send all the results of these things (politics, R&D, surveying, combat, etc.) back to the player. Some Space Masters actually communicate with the players over a period of time through the communications that travel within the empire so that players can make important decisions when their empire finds out, rather than forcing all decisions to the beginning and end of each month. In fact, this is the recommended method of dealing with communications.

Example X2 - New Orders - Extenuating Circumstances

X2 NPR Considerations

The major factor in NPRs is that the SM or an "uninvolved player" [A6.01] (in games without an SM) will need to do all the work of running an NPR empire, but be limited in their ability to act and react by the NPR's tendencies and policies. [Y6] [Y10-Y11] [Y13-Y17]

The SM should complete the monthly orders for the NPRs he is running prior to looking at the player's orders for that month so as to be as impartial as possible.

X3 Record Keeping

The Space Master only has a few records that need to be kept, but keeping them is essential to properly tracking the game, checking for cheating, and recovering in the event that a player leaves or the game somehow gets messed up. This is, of course, in addition to the normal records that the SM will keep for any NPRs he is running.

X3.01 Master System Map

The SM needs to keep a master list of all the star systems that have been rolled (whether pre-generated or not), and any information

about those systems. This is like a "god's eye view" of the entire universe for that one campaign.

X3.02 MASTER SURVEY LIST

The SM also needs to keep a list of all surveys performed by any player or NPR empire and any warp points that have not been detected by those empires. This list should also record any system body surveys, any first-time discoveries for custom rules, and anything else that impacts the results that can be obtained later.

X3.03 MASTER TREATY LIST

A master list of all treaties that have been signed between any empires helps the SM to be able to calculate any treaty ramifications or violations between the empires.

X3.04 MASTER HISTORY

A master history list records the general information about each empire, such as total income, total population, total fleet sizes, etc. This reference is often used to recall back and get information that has been lost or to double-check for cheating. The information that is present in this record can vary, but at least the three mentioned pieces of data should be recorded.

Next Section: Y - Non-Player Race (NPR) Generation

By game definition, many planet support life, even intelligent life, but unless that intelligent life is also sufficiently numerous and advanced to generate wealth and/or ally with or resist a player race, it is disregarded. Thus, indigenous NPRs at the hunter-gatherer stage of development are ignored. Any NPR encountered will have attained at least a pre-industrial, city-oriented stage of development.

(Had an advanced alien race landed on Earth in 50,000 BC, it would probably have regarded Paleolithic humanity as an interesting species of animal.)

Y1 Presence of NPR Civilizations

When a new system is first entered by a race, there is a chance that the system will contain a native population, regardless of the presence of a native population a multi-system NPR civilization may also have a population and/or spacecraft within the system [Y8]. Multi-system NPRs are fun to operate but are time consuming since they can get as powerful as a player race.

Y1.01 NPR Generation Steps

- ☐ Generate system, if necessary, using section W.
- ☐ Check for Galactic Oddity.
- ☐ Check for the presence of life and its EL using [Y1.02] or when using the optional unusual life forms [Y1.03].
- ☐ Check for multi-system NPR [See Y8 for multi-system NPR generation].

For single system NPR(s), perform the steps in Y1.02-Y20 in order. Some steps may get skipped or referred back to.

Note: While unusual life forms [HH3.06] are addressed, their impact upon the game is great and some steps may need additional adjustment.

Y1.02 Indigenous NPR

When a star system contains a type T or ST planet, a Terran type moon, or a Habitable Gas Torus (HGT), each T, ST, mT, and HGT must be checked for the presence of an indigenous civilization by rolling 1d100 against Table Y1.02 Chance of NPR. For SMs who want a (more) colonization oriented game, use the Optional low population galaxy numbers.

Table Y1.02 Chance of NPR

Roll	Civilization	Optional
01-77	No Significant civilization	01-87
78-79	Pre-Industrial	88
80-81	IND-1	89
82-83	IND-2	90-91
84-85	Emerging HEL[a]	92
86-00	HEL	93-00
Use numbers on left if less than 50 systems per player.		

[a] Emerging HEL NPRs have a random EL between 1 and discovering race's EL-1.

Y1.02.1 HEL NPR Economic Level

To determine the Economic Level of a HEL NPR, roll 1d6 and reference Table Y1.02.1 NPR HEL Determination.

Table Y1.02.1 NPR HEL Determination

Roll	NPRs High Economic Level[a]
1	Two Economic Levels lower than the *discovering race*, but not less two from the highest player EL
2	One Economic Level lower than the *discovering race*, but not less two from the highest player EL
3	Equal to the Economic Level of the *discovering race*, but not less two from the highest player EL
4	Equal to the Economic Level of the highest *player* Economic Level in the campaign.
5	One Economic Level above the highest *player* Economic Level in the campaign.
6	Two Economic Levels above the highest *player* Economic Level in the campaign.

[a] See [Y6.02] to determine SLs for the NPR.

Y1.03 Unusual Indigenous NPR

For any system with a T, ST, G, V, I, or mass 1 O2 or mass 1 O3 planet roll 1d100 ONCE. Do not roll multiple times regardless of the number of possible locations for a race to begin on.

No. of Races	Low Pop	High Pop
Zero Races	01-80	01-60
One Race	81-92	61-84
Two Races	93-99	85-97
Three Races	00	98-00

If a race is generated, roll 1d100 for each race.

Civilization	ULTRA Standard	Favor HEL Tech
Pre-Ind	01-06	01-03
IND-1	07-18	04-10
IND-2	19-30	11-22
HEL	31-00	23-00

If the system could have multiple types of life, the SM either chooses a type or rolls on Table Y1.03.1 Unusual Indigenous Life until a valid life type for this system is generated.

Y1.03.1 Life type [AppHH-Unusual Life Forms] for Unusual Indigenous NPR or Multi-system NPR.

Roll 1d10 for each race generated to determine the type of life.

Table Y1.03.1 Unusual Indigenous Life

Recommended	Type of Life	1d6 Even Distribution
1-5	T, ST	1
6	Vacuum	2
7	Gaseous	3
8	Ice	4
9	Venusian	5
10	Thermal	6

Y2 NPR HOMEWORLD POPULATION SIZE

For many NPRs, the home world population is the majority of their economy and thus determines their strength.

Y2.01 INITIAL HOME WORLD POPULATION SIZE

It is likely most LEL home world populations would be "medium" in size and most HEL home world populations would be at least "large," but other results are certainly possible. Roll 1d100 and reference Table Y2.01 Population Size to determine the number of PU on the planet. While the final population may not exceed maximum planet population based on EL [L1.03], ignore that issue until [Y5.02.1] when final population adjustments will be made based on the results of applying [Y3] and [Y4].

Table Y2.01 Population Size

Dice Roll	Population Size	PU formula
<25	Medium	(Roll*20)+480
26-90	Large	(Roll*15)+610
91+	V. Large	(Roll*14)+726

Die roll Modifiers for population size:

HEL Civilization	+10 per EL
Pre-Ind	Divide PU by 4 (FRU) Minimum size 150 PU
IND-1	Divide PU by 2 (FRU)
IND-2	-20

Y3 HEL NPR GOVERNMENT (ADVANCED)

No two races are exactly the same. STARFIRE simulates this by giving races different types of governments based somewhat on the races racial characteristics. While some governments maintain weak and passive militaries, others have 75% of their starting capital in warships and are very aggressive. Thus each new NPR tends to be quite unpredictable. Government descriptions are located in [Y21].

A LEL NPR does not have a specific government type. If lacking space travel, treat it as ordered socialism. An IND-2 race that advances to EL1 during the campaign cannot have a "three success" government; therefore the lowest racial statistic is always a non-success even if above 75. If all racial statistics are equal pick one at random.

Optional: If the government types are not used then all NPRs use the statists on the ordered socialism line of the table below except all RC modifiers are zero.

Optional: If the Space Master is feeling nasty, advancing LEL can be any three success government, except Artificial Intelligence and Hive Mind.

Player Races have no government types, though they could, this is likely not balanced. Player races can "imitate" NPR governments for the purpose of this rule. Players select a NPR government type to start the game and they can change it but such a change takes 10 months.

Y3.01 GENERATING NPR GOVERNMENT TYPE

When a NPR is first discovered, follow the steps below to determine what type of government it has developed.

For each new NPR: Make and record three 1d100 rolls, one for each of the three racial statistics, which are RM, RD, and RC [See definitions in Y3.03].

For each HEL NPR (EL1+): Make and record three racial statistic activation rolls, one for each of the three racial statists. This die roll is (d100/2)+25 (FRU), and generates a value from 26 to 75. If the roll is equal to or less than the racial stat then that stat is "successfully" activated and is a dominant factor in the race's government. For every success, record the difference between the racial stat and the activation roll, as this determines which stat is the most dominant.

The ratings are listed in order of success from highest to lowest difference (*This is not always the highest numerical statistic*). If the difference is the same on two or more, the stat of highest value is dominant. This order determines the group that the race's government is selected from. Use this order to determine the appropriate table below and roll to determine the type of government.

No Successes		**RD/RC Success**	
01-20	Anarchy D/C [b]	01-40	Republic D/C *
21-45	Capitalist D/C [b]	41-70	Theocratic Monarchy R/I
46-70	True Democracy D/C *	71-00	Guild Syndicate D/C [b]
71-85	Theosocracy R/I *	**RC/RM Success**	
86-93	Unstable Race Global Modifier[a]	01-30	Fascism M/F
94-00	Insane Race Global Modifier [a]*	31-70	Military Theocracy R/I
RC Only Success		71-00	Military Bureaucracy M/F*
01-30	Bureaucracy D/C * [b]	**RC/RD Success**	
31-50	Communism M/F	01-30	Theocracy R/I
51-70	Theocratic Democracy D/C *	31-60	Constitution Monarchy D/C*
71-90	Theocratic Anarchy D/C *	61-80	Pedagogical Oligarchy D/C
91-00	Herd Race R/I	81-00	Corporate Government D/C [b]
RM Only Success		**RM/RD/RC Success**	
01-50	Despotism M/F * [b]	01-50	Military Empire M/F
51-90	Confederacy D/C *	51-80	Military Republic D/C
91-00	Military Anarchy D/C	81-00	Military Corporation M/F*
RD Only Success		**RM/RC/RD Success**	
01-40	Absolute Monarchy R/I [b]	01-50	Feudal Theocracy M/F
41-70	Socialism M/F	51-80	Khanate M/F *
71-00	Representative Democracy D/C*	81-00	Military Unity M/F
RM/RD Success		**RD/RM/RC Success**	
01-50	Dictatorship M/F	01-40	Imperial Monarchy R/I * [S]
51-80	Benevolent Dictatorship M/F	41-80	Stalinist Communism M/F* [S]
81-00	Military Hierarchy M/F	81-00	Artificial Intelligence D/C [N]
RM/RC Success		**RD/RC/RM Success**	
01-50	Clan D/C *	50%	Ordered Socialism D/C
51-80	Imperial Council D/C [b]	30%	Democratic Socialism D/C*
81-00	Plutocracy M/F *	20%	Hive Mind R/I [N]
RD/RM Success		**RC/RM/RD Success**	
01-30	Feudal Monarchy M/F [b]	01-40	Imperial Theocracy R/I * [b]
31-60	Oligarchy M/F *	41-80	National Socialism M/F
61-80	Marxist-Leninist Comm M/F	81-00	J'Rill R/I [N]
81-00	Group Mind M/F	**RC/RD/RM Success**	
		01-40	Federal Theocracy R/I
		41-80	Theocratic Oligarchy R/I *
		81-00	Racial Unity R/I

[a] Reroll racial statistics, successes, and government type. The new government has a unstable or insane leader/government.

See [Y20] for descriptions of governments.

Table Y3.02 NPR Government Types

Success Statistics[1]	Type and Percentage of Governments of that Success Sequence[2]		Initial Contact[3]	RC Modifiers [4] Trd/Def/Off/Prt/Amg	Spending Priority War/Def/Ind/F[5]	Free Mods Grade/SY [6]
--/--/--	30%	Anarchy D/C [B]	1/2 RC	-25/+00/+10/-10/-10	15/00/35/50	Green/-3
	30%	Capitalist D/C [B]	1/3 RC	--20/-10/+10/-05/+00	15/15/40/30	Green/+0
	20%	True Democracy D/C *	1/4 RC	+00/+00/+10/+00/+00	25/20/30/25	Average/+1
	15%	Theosocracy R/I *	1/5 RC	+00/+00/+00/+00/+00	20/05/35/40	Green/-2
	03%	Unstable Race Global Modifier	Reroll	N/A	N/A	N/A
	02%	Insane Race Global Modifier	Reroll	Random	N/A	N/A
RM/--/--	50%	Despotism M/F * [B D]	2/3 RC	+00/+20/+30/+20/+40	50/15/20/15	Crack/+3
	40%	Confederacy D/C *	1/2 RC	-10/-50/+00/-10/+25	40/15/25/20	Average/+2
	10%	Military Anarchy D/C [L]	RC	+05/-05/-10/+10/+10	55/15/15/15	Elite/+2
RD/--/--	40%	Absolute Monarchy R/I [B]	1/2 RC	+00/+00/+10/+10/+10	45/10/30/15	Average/+0
	30%	Socialism M/F	1/4 RC	+30/+00/+00/+00/+05	30/20/35/15	Crack/+1
	30%	Representative Democracy. D/C *	1/2 RC	-15/-15/+00/-10/+10	25/25/25/25	Crack/+1
RC/--/--	30%	Bureaucracy D/C * [B]	1/3 RC	-10/-10/-10/-10/-10	15/15/35/35	Average/+0
	20%	Communism M/F	1/2 RC	+35/-25/-30/-10/+00	25/20/30/25	Average/+1
	20%	Theocratic Democracy D/C *	1/3 RC	-20/-10/-20/+00/+15	20/10/35/35	Green/-1
	20%	Theocratic Anarchy D/C *	1/2 RC	-05/-05/+00/-15/-10	15/00/35/50	Green/-3
	10%	Herd Race R/I	RC	-10/+00/+40/-10/-10	05/05/40/50	Green/+3
RM/RD/--	50%	Dictatorship M/F [D]	2/3 RC	+00/+00/+00/+05/+05	60/10/20/10	Crack/+2
	30%	Benevolent Dictatorship M/F	2/3 RC	+00/+00/+00/+00/+00	50/15/25/10	Crack/+2
	20%	Military Hierarchy M/F	1/3 RC	+05/-20/-15/-05/+00	55/15/15/15	Elite/+2
RM/RC/--	50%	Clan D/C *	1/2 RC	-10/-20/-20/+00/+05	50/10/30/10	Crack/+2
	30%	Imperial Council D/C [B]	1/2 RC	-20/-10/+00/+00/+00	45/10/35/10	Elite/+2
	20%	Plutocracy M/F *	1/3 RC	-30/-15/+10/+00/+05	25/15/30/30	Average/+0
RD/RM/--	30%	Feudal Monarchy M/F [B]	1/2 RC	+00/-05/+10/+00/+00	55/10/20/15	Crack/+1
	30%	Oligarchy M/F * [L]	1/2 RC	+00/+00/+05/+00/+05	40/10/40/10	Average/+1
	20%	Marxist-Leninist Comm M/F [L]	2/3 RC	+40/-05/-15/+10/+25	40/10/40/10	Crack/+1
	20%	Group Mind M/F [L]	1/2 RC	-10/+00/+10/+00/+30	40/20/30/10	Crack/+1
RD/RC/--	40%	Republic D/C *	1/3 RC	-30/-10/+10/-15/-5	25/10/40/25	Average/+1
	30%	Theocratic Monarchy R/I	1/2 RC	+05/-05/-10/+10/+20	10/25/30/35	Average/+0
	30%	Guild Syndicate D/C [B]	1/3 RC	-25/+00/+10/+00/+00	10/30/20/40	Average/+0
RC/RM/--	30%	Fascism M/F	1/2 RC	-25/+00/+00/+10/+25	35/15/40/10	Crack/+0
	40%	Military Theocracy R/I [L]	95	+05/+05/-10/+10/+20	65/10/20/05	Average/+2
	30%	Military Bureaucracy M/F*	1/2 RC	+05/-05/-15/+10/+20	70/10/10/10	Crack/+2
RC/RD/--	30%	Theocracy R/I	1/3 RC	+00/+00/+05/+15/+30	15/25/35/25	Average/+0
	30%	Constitution Monarchy D/C*	1/3 RC	-20/-10/-10/+00/+05	20/25/30/25	Average/+1
	20%	Pedagogical Oligarchy D/C [L]	1/3 RC	-10/+00/+10/+00/+00	15/15/35/35	Green/+0
	20%	Corporate Government D/C [B]	1/5 RC	-40/-15/+10/+00/+00	25/10/35/30	Average/+1
RM/RD/RC	50%	Military Empire M/F	1/2 RC	-10/-15/-15/-10/+10	60/05/25/10	Elite/+2
	30%	Military Republic D/C *	1/3 RC	-10/-20/-15/-10/+00	50/15/25/10	Elite/+2
	20%	Military Corporation M/F *	1/3 RC	-30/-20/-10/-10/+00	45/10/35/10	Crack/+3
RM/RC/RD	50%	Feudal Theocracy M/F [L]	2/3 RC	+00/-15/+00/+00/+20	45/15/20/20	Crack/+2
	30%	Khanate M/F *	RC	+00/+00/+00/+00/+10	80/05/05/10	Elite/+0
	20%	Military Unity M/F	2/3 RC	+00/-15/-05/+00/+25	75/05/10/10	Elite/+2
RD/RM/RC	40%	Imperial Monarchy R/I * [S]	1/3 RC	-10/-10/-10/+00/+10	30/10/30/30	Crack/+3
	40%	Stalinist Communism M/F* [S]	1/2 RC	+15/-15/-25/+05/+20	80/00/10/10	Green/+0
	20%	Artificial Intelligence D/C [N]	RC	+00/+00/+00/+00/+00	75/00/00/25	Average/+2
RD/RC/RM	50%	Ordered Socialism D/C	1/3 RC	-10/-10/+00/-10/-10	30/10/30/30	Crack/+0
	30%	Democratic Socialism D/C*	1/4 RC	-30/-20/-20/-20/-30	40/20/20/20	Crack/+0
	20%	Hive Mind R/I [N]	100	+00/+00/+00/+00/+00	30/15/45/10	Average/+2
RC/RM/RD	40%	Imperial Theocracy R/I * [B]	1/2 RC	+00/+00/+00/+50/+00	30/10/30/30	Crack/+3
	40%	National Socialism M/F	2/3 RC	+10/+10/+10/+20/+30	15/25/30/30	Crack/+2
	20%	J'Rill R/I [N]	101	+10/+10/+10/+10/+50	75/00/00/25	Average/+3
RC/RD/RM	40%	Federal Theocracy R/I	1/5 RC	-20/-10/+00/+00/+20	60/00/10/30	Average/+0
	40%	Theocratic Oligarchy R/I *	1/2 RC	-10/-10/+00/+00/+20	40/10/40/10	Average/+1
	20%	Racial Unity R/I	1/3 RC	-10/-10/-10/-10/+40	25/25/25/25	Crack/+1

Y3.02 GOVERNMENT TYPE

The following are descriptions of the government types, intended to give the SM a basis for playing the race and the rules that govern their actions and activities. An important part of their "mind set" is their government tendency (D/C, R/I, M/F), which tells the SM what their most important values are. They listed in Table Y3.02 NPR Government Types.

Y3.02.1 NPR Government Types Table -- Column Descriptions

1 *Success rating* of Governments from least active to most active.

2 The percentage is the chance that type of government will form based on the success rating. This repeats the tables from Y3.01.

2a Next is the *Government Type*. Government descriptions are found in [Y20]. After the Government type is government tendency.

R = Religious: Religious beliefs guide their lives/actions.

I = Imperial: A single leader guides their lives/actions.

M = Military: The military guides their lives/actions.

F = Federal: A single unified government controls the people.

D = Democracy: The people are the government, sometimes with a central government that represents them.

C = Committee: A select committee governs the people, sometimes by representation, other times by right.

Symbols * B D L S after the government type and tendency indicates something special.

* = consideration delays [Y20.01]

B = bribes are required [Y20.04]

D = 2% chance of destabilization per month [Y20.02]

L = Bonus Leaders available [Y3.05.1]

N = No leaders available [Y3.05.2]

S = 2% chance of a special happening [See specific government's description in Y20]

3 *Initial Contact:* The initial contact number is the number the NPR must roll equal to or above to initiate contact if the surveying race does not attempt first contact. Situational modifiers may apply (FRU).

4 *Alliance RC Modifiers*

TRD (Trade)

DEF (Defensive Military)

OFF (Offensive Military)

PRT (Partnership)

AMG (Amalgamation)

The modifier is added to the race's RC if an alliance of this nature is proposed to the NPR. For a Trade & Military alliance offer add both modifiers to the RC.

5 *Spending Priority percentages*

This column is also used for Start Fund percentages

No more than 5% of any fund can be transferred to another fund.

- ***WAR*** *(Warships)* – Armed military hulled ships and survey ships. NPRs start with no more than 2d10 + (EL*3) ships with X on board as they had no reason to need them. Multi system NPRs will have 2d10 + twice the number of entered systems + (EL*4) survey ships. When building NPR survey ships from the warship start fund, the Science Instruments are free. Only 5% of the WAR fund may be used to purchase Drones.
- ***DEF*** *(Defenses)* – Non-mobile hulls, including any military systems on an SS. Only 20% of the DEF Fund may be Buoys.
- ***IND*** *(Industrial Expansion)* – The number of IU "bought" is determined by [Y5.04]. The NPR does not actually spend this fund, it is converted into IU as indicated in [Y5.04].
- ***FT*** *(Freighters)* CFN legal FT and CFN legal armed FT.

6 Free Mods - Free NPR modifiers:

- Base Crew **Grade** – All starting forces units are BG [F3.01]. See Y3.05 for Graded Leaders.
- **SY (Shipyards)** – The NPR receives a number of shipyards equal to the homeworld's GEV/400 (FRU) plus 1 per EL plus the shipyard modifier. None of these shipyards may be mobile. An NPR will never receive less than 3 (SY).

Y3.03 RACIAL CHARACTERISTICS

Racial characteristics are also termed "racial statistics" or "racial statistics."

General tendencies of successful activation rolls:

RM: (aggressive) Military Control of Government
RD: (determined) Strong Central Government
RC: (chauvinistic) Supremacist/Religious Government

Racial Outlook: All races have a racial outlook (RO) which governs the way in which that the race approaches the rest of the galaxy. A racial outlook may be thought of as a mind-set made up of a host of cultural and intellectual elements. For the purposes of STARFIRE, only three of these elements really matter: racial militancy (RM), racial determination (RD), and racial chauvinism (RC). Whenever a race/empire is generated, these three attributes are generated by rolling 1d100 once for each. The RO of any race is the *average* of its RM, RD, and RC. Each of these attributes has its own role to play in different rules sections; here we will simply define them.

Racial Militancy: RM is a quantification of a race's aptness to the use of military force to resolve difficulties. It combines ferocity, timidity, military tradition, courage, etc. The higher the RM, the more likely a race is to resort to war in a threat situation and the more willing it is to accept casualties in warfare.

Racial Determination: RD is a quantification of a race's obstinacy or how likely it is to persevere in a course of action once adopted. It may be thought of as stubbornness and may reduce the willingness of a race's military units to surrender, but should not be confused with militancy. A race need not be militant to be determined.

Racial Chauvinism: RC is a quantification of a race's views about other sentient races. It combines fear of the unknown, eagerness for new knowledge, arrogance, caution, etc. The higher the RC, the less tolerant of and less eager for contact with alien civilizations a race will be.

Y3.03.1 Player Race Characteristics SDS recommends that all players in competition games have racial statistics of RM-66, RD-66, and RC-33. Player races choose stat activations at the beginning of the game (success or non-success). This only has an effect on amalgamation and perhaps government type if using home rules.

Y3.04 NPR RACE DESIGN (OPTIONAL)

See [K4] for the ability to build races with slightly different characteristics.

Y3.05 NPR GRADED LEADERS

Some NPRs have different rules and conditions under which they can obtain or build leaders, and others cannot have them at all. All NPRs receive 2 LG+0 admirals and 1 LG+0 general unless stated otherwise.

Multi-system NPRs roll a 10% chance per system surveyed to gain extra graded leaders (1-4 Adm., 5-7 Gen., 8-0 Gov.). Roll 1d10 for the extra leader's grade: 1 = LG+2, 2-3 = LG+1, 4-0 = LG. Government type and NPR race design may affect leader numbers or grades.

Y3.05.1 Extra NPR Leaders The following NPRs get bonus leaders, in addition to the normal 2 LG+0 admirals and 1 LG+0 general, when they are activated due to their nature and abilities. Unless a special ability is listed, roll randomly to determine if special abilities exist.

Military Anarchy: 1 LG+2 Admiral (with one random special); (1d8+4) LG+1 Admirals.

Oligarchy: One LG+2 leader (1-5 Admiral, 6-7 General, 8-9 Governor, 10 Diplomat).

Marxist-Leninist Communism: They start with one LG+1 Efficient General.

Group Mind: 1 LG+1 Admiral, 1 LG+1 Governor.

Military Theocracy: 1 LG+1 Admiral, 1 LG+2 General.

Pedagogical Oligarchy: Due to their scholarly nature, they start with one LG+1 Linguist Diplomat and one LG+1 Scientist Governor.

Feudal Theocracy: To help deal with the potential converts in their conquered races, they start with one LG+1 Peacemaker Governor.

Stalinist Communism: They start with one LG+1 Security Specialist General.

Imperial Theocracy: They start with one LG+1 Soother Diplomat.

Federal Theocracy: They start with one LG+1 Peacemaker Governor.

Y3.05.2 NPRs Without Leaders The following NPRs cannot have leaders due to their nature or special government conditions.

Artificial Intelligence: This race is unable to have special leaders because all of the individuals of the race can already communicate with each other. No single individual can outperform any other individual.

Hive Mind: This race cannot have leaders because there is no such thing as an "individual"

J'Rill: The J'Rill can only get graded admirals; they are unable to form any other kind of leader due to the special nature of their command ships.

Y4 MULTIPLE NPRS IN A STAR SYSTEM

It is possible for a star system to have more than one habitable world and for each habitable world to have a native (indigenous) NPR civilization of its very own according to the initial checking dice rolls, in which case the relationship between the native NPRs must be determined. Since this relationship would (presumably) be relatively long-standing, it is determined before any interaction with a player empire is allowed. Any such situation must be resolved before consideration of the effects of a multi-system NPR on that system.

Before applying this section, you must determine the racial statistics and government type of any races present.

Y4.01 NO HEL NPRS PRESENT

If no civilization is HEL and no IND-2 has developed Cp engines then each civilization is a totally separate entity. If two IND NPRs are within 60 sH (max communication range [P3.03]), even though neither is capable of sustained interplanetary space flight (i.e., no engines) they will still open communications. As space flight is impossible the best relationship that they can have is Non-Aggression. There are two special cases. If the two NPRs are part of a "twin planet" planet-moon pair (see [W7.03.2]) and if either of those civilizations has attained IND-2, then both planets are treated as a single amalgamated civilization as in [Y4.02]. The other case is where one NPR is on a habitable moon (mT) and the other NPR is on a gas giant. As these two NPRs cannot amalgamate they will form a Partnership instead.

Y4.02 ONE HEL NPR PRESENT

If only one civilization in a star system has achieved a HEL, that race will have amalgamated any non-HEL races. In this instance, each LEL population is raised to the EL of the HEL civilization and its population level is re-determined.

For Amalgamated low-EL populations only, Reroll their "homeworld" population on Table Y2.01 Population Size with the following modifiers

- Add +20
- Add +10 per HEL of the higher race.
- If they were Pre-Ind, divide result by 2
- If they were IND-1, -50
- If they were IND-2, -20.
- If the new population result is less than the LEL's original population size, the original population size remains unchanged.

Y4.02.1 *Exceptions:* Of the unusual life form types, only Terran and SuperTerran will amalgamate each other. Otherwise, if the NPRs have a different life type and amalgamation would normally occur

under any Y4 section, the "losing" NPRs will have been genocided and the "winner" will gain PU equal to the losing race's PU total. No penalties occur because of this distant past genocide.

Hive minds, J'Rill, and artificial intelligence government will amalgamate with like type governments but will destroy other government types and replace their populations with PU equal to the LEL's original PU. A J'Rill race will "assimilate" the other population for more resources.

Y4.03 MULTIPLE HEL NPRS PRESENT

If more than one civilization has achieved HEL, things get a bit more complicated. First determine each NPR's government type. Next follow the first contact [T1] and negotiation [T2] procedures until a relationship other than negotiation has been established for all HEL races (the offered relationship is always "restricted trade" and is offered every "month"). If a restricted trade agreement is reached, roll 1d100 and check Table Y4.03 Multiple HEL NPR Relationships for the actual relationship.

> ***Note:*** If a result other than restricted trade or war results, use that relationship (i.e., a roll of 00 [T2.04] would create a partnership).

If any war relationships resulted, resolve them now and prior to generating SLs. (Optionally you may allow the players to setup and resolve a war between the two NPRs per the rules and the war may last long enough that the NPR ELs rise.) Any war between HEL NPRs in the same system is fought with each NPR using only the resources of its home world, and no system exploitation roll (Y5.01) is made until after the political relationship between all NPR civilizations has been resolved (whether by negotiation, amalgamation, or conquest).

Y4.03.1 Quick WAR resolution chart Each NPR race receives the following modifiers.

- +1d100 (die roll 1-100).
- +20 * Economic Level.
- + NPR Gov. table (Y3.02) WAR percentage as a number.
- + 20 * the Current NPR's Income divided by the Enemies' total income.
- +-7 for each grade level above or below Average (i.e., Elite is +14).

If all totals are within 5 of each other, the situation is unresolved when player/NPR enters system with both/all sides still at war. Otherwise, the larger total is the winner of the war and has conquered the other race with the current relationship being (roll 1d100 -- 01-03 Peace Phase, 04-06 Slave, 07-11 Subject, 12-25 Partnership, 25-100 Amalgamated).

Table Y4.03 Multiple HEL NPR Relationships

Roll	Political State
01-60	Full Trade
61-65	Defensive Military Alliance
66-70	Offensive Military Alliance
71-80	Full Trade and Defensive Military Alliance
81-90	Full Trade and Offensive Military Alliance
91-98	Partnership
99-00	Amalgamated -- See [Y4.04]

If the difference between the winner and loser is 6, 7, or 8, the winner's EL increases by one.

> ***Note:*** When more than two HEL NPRs are determined to have a war relationship, the largest total defeats and amalgamates the lowest total, and all remaining races roll again on the Quick WAR resolution chart [Y4.03.1].

Y4.03.2 Other situations Ignore LEL races until the situation between the HEL NPRs has been resolved. *Exception:* If a HEL NPR is in a twin planet relationship to a LEL NPR, they are amalgamated first, as per [T3.14.2].

Y4.03.2.1 After the relationship between the HEL civilizations within the system is resolved, then any remaining LEL civilizations must be dealt with. If only one independent HEL civilization remains in the system, all LEL NPRs in the system are amalgamated with that civilization, per [Y4.02]. If the relationship between the HEL NPRs in the system is war, non-intercourse, or non-aggression, any LEL NPRs in the system remain low-economic, as the opposing HEL races prohibit each other from interacting with them. If the relationship between the HEL NPRs is trade, trade & military, or military, the LEL NPRs are divided among them based on total GPVs with the richer HEL NPRs getting the most valuable LEL NPR worlds first. In a partnership relationship, any LEL NPRs in the system are divided as evenly as possible, by income, among the partners, with the richer partner getting the higher income. The LEL NPR worlds incorporated into a HEL NPR by this amalgamation will have their population size re-determined by [Y2.01].

Y4.03.2.2 If the NPRs are in a partnership relationship, then they each may colonize the moons around their home world and the rest of the system is split as evenly as possible (randomly determine who gets an odd population location). Otherwise, each race has its own populations generated under [Y3]. If a conflict of location arises, then neither race places a population on that world.

Y4.03.2.3 If the political relationship is war, non-intercourse or non-aggression, then neither race is allowed any system exploitation, except for any moons orbiting the home world.

Y4.04 AMALGAMATIONS DURING GENERATION

[Y4.02.1] covers situations that prevent amalgamation. [Y5.03] covers the income modifier. Otherwise, for all practical purposes, the amalgamated population becomes an imperial population just as if the Homeworld population or system exploitation rolls were really high. There are no extra leaders, extra facilities, or anything else special that occurs.

Y5 FINAL POPULATION ADJUSTMENTS

ULTRA Starfire is a constantly changing game and NPR need to be stronger and stronger as they start later in the game in order to be a serious challenge to a player race.

Y5.01 SYSTEM EXPLOITATION BY HEL NPRS

HEL NPRs have the capability to exploit their own star systems, despite the ignorance of warp points. Whenever a HEL NPR is generated, roll 1d100 against Table Y5.01 System Exploitation to

Table Y5.01 System Exploitation

Modified Dice Roll	Additional Population units to be placed
01-50	Only homeworld
51-60	15 PUs
61-70	40 PUs
71-80	90 PUs
81-85	150 PUs
86-90	200 PUs
91-92	250 PUs
93-94	300 PUs
95-96	350 PUs
97-98	400 PUs
99-100	450 PUs
100+	(The Modified DR minus 80 times 25 PUs; *Example:* (roll 112-80)*25 = 800 PU.

determine the extent to which the NPR has exploited its system [Y4.03.2] may limit exploitation.

- Add +10 to the dice roll for each economic level of the NPR.
- For each additional unpopulated T or ST world, add +20 to the dice roll. For unusual NPRs, the world listed is habitable, add the appropriate amount per planet {I or G planet +10; V or O2 planet +30}
- Add +10 for each population that race amalgamated in [Y4].
- Add +45 if the homeworld is a HGT.

Y5.02 STARTING POPULATION MODIFIER

Players get stronger as the game progress and so do NPRs. Starting NPR PU (both homeworld and exploitation PU) are increased by 1.5% per month of game time that has gone by.

Y5.02.1 Population Placement No system body is allowed to exceed 90% of its maximum allowable population [L1.03]. No PU is allowed to be placed in Extreme Environments. Homeworld population [Y2.01] that exceeds the 90% mark is added to exploration PU. Do not fill Benign, Harsh, and Hostile locations beyond a Small population until all other locations are filled to 90%. Then fill Benign, Harsh, and Hostile equally until they reach 90%,

If the total PU for a system fills all eligible system bodies to the 90% mark, the NPR becomes a multi-system NPR with knowledge of warp points. This will reset the amount of population they receive to 61-140% of the activating races PU [Y9].

No more than 1/2 of System exploitation PUs can be placed in a single location, unless all other system locations are already at 90%.

Y5.02.2 Forced Multi-System NPR If the entire system becomes filled to 90%, the NPR becomes a multi-system NPR and the chance of the detecting race having just entered the homeworld system is 1/(number of NPR systems + 1). A SM may handle the rearrangement of systems as he chooses including creating a special "buffer" system(s) in the galaxy just to cover this situation. Don't roll on the tables above, just generate enough additional systems (keeping all generated) until all of the PU are contained.

Normally, generate systems until all population can be emplaced with no location outside the home system containing more than 50% of its limit.

Y5.03 PERMANENT AMALGAMATION MODIFIER

Each race amalgamated into a starting NPR empire increases the ENTIRE output of the empire by 2% including trade, conquest income, and even CFN leasing income.

Y5.04 HOME WORLD INDUSTRIALIZATION

The number of IU on the homeworld (or spread among the largest population size possible -- such as V Large) equals a percentage of the homeworld PU equal to the NPR government's IND percentage. Note that the IND portion of the start fund is lost.

Example: 1200 PU and 30% IND generates 360 IU.

Y6 NPR TECH TREES

Note: For LEL NPRs, use [Technology For Low EL NPRs].

NPRs have their base allotment of (SA) as determined by the population size of the homeworld [Table N4.03 R&D Facility Limits]. There is a 20% chance per EL above 3 that there is an extra (SA) on the homeworld. HEL NPRs have double the base allotment of (RDS). There is a 10% chance per EL above 3 that there is an extra (RDS) on the homeworld.

Example Y6 - Extra (SA)

Y6.01 NPR STARTING LOCATIONS

The NPRs starting system may contain effects that would cause the NPR to (de)emphasize certain technologies.

Example: -2 SL is two levels lower or easier to get.

Note: This does not affect the [Y6.04] SL generated. Rather it shifts the entire tech tree (and branches) up or down the indicated amount.

Y6.01.1 Nebulas NPRs starting in a nebula are +2 SL for shield technology, -1 SL for armor technology, and all sensor tech is:

Dark Nebula	-1 SL
Reflective Nebula	-1 SL
Emission Nebula	-2 SL
Maser Nebula	-3 SL

In addition, certain types of nebula may have other effects.

Nebula Type	Effect
Corrosive Nebulas	No HEL NPRs form (though multi-system ones will).
Datalink Useless	No Datalink but all hulls[a] are available 2 ELs earlier.
Maser Nebula (and any oddity that does damage)	Have (MNE) tech.
Energy Absorption	Charged Particle Drives
Mist-Wraiths	If EL 4+, then they have Gunboats If EL 5+, they have fighters.

[a] The hull advantage is lost once the race develops datalink.

Y6.01.2 Habitable Gas Torus (HGT) Races that start on a HGT treat all shield, small craft bay, small craft, and small craft weapon tables as -2 SL as they are almost required to get around their "home world" system. But all armor is +2 SL.

Y6.02 EL R&D

EL R&D is continuous for most races. Thus an NPR has a random number of RP invested in the next EL equal to ((RP required for next EL+70) * 1d100 percent).

Y6.03 OPEN TREES

- A HEL NPR starts with the following trees open (Sensors, Science Instruments, Electronics, Tractors, Small Craft, Life Support, either {Ion Drive or Tactical Drive}, Commercial Engine twig, at least one SRW and at least one LRW). Minimum SL is 1 with all SL 0-1 items developed.
- The NPR has the construction tree open at their EL.
- The NPR has a number of open weapon TREES equal to 2+(its EL*1d100 percent) FRD.
- There is a 5 * HEL + 10 percent chance that any other tree (that is not specifically mentioned above), starting with a EL equal to or lower than the race's EL, is open. Shields and Armor both receive a +50 to open.
- The NPR's highest SL LRW tree is considered its main LRW, and the highest SL SRW tree is considered its main SRW. Any branch in these two trees has an additional 10% chance to be open.
- An NPR with any LRW capital branch open must have at least Yb. With any Heavy branch open, Yi

Y6.04 TREE AND BRANCH SCIENCE LEVEL

Roll 2d10 against Table Y6.04-Y6.05 Tree and Branch Development to determine the exact SL.

Note: A tree's SL cannot be below the lowest SL listed in its tree. i.e., the D tree starts at SL 3 where Da is located. The engine modulation tree (?) specifically lists SL 5 as the SL it starts at so it could be as low as SL 5.

Note: When determining a branch's SL, the EL part of the formula is equal to the SL of the tree or previous branch.

Y6.05 OPEN BRANCHES

The main tree (or branch that the checking branch comes off of) must be open at a SL equal or greater than the SL required to open the branch. To open a branch, roll d10 versus (3+ main SL - branch SL), if die roll is less than or equal to the number, the branch is open.

Each LRW branch or tree SL above 4 adds +1 to open the datalink branch and +5% to open both the Point Defense Tree, and the XO rack Tree.

Table Y6.04-Y6.05 Tree and Branch Development

Die Roll	Tree or Branch SL[a]
2-3	SL equals EL-4 3%
4-5	SL equals EL-3 7%
6-7	SL equals EL-2 11%
8-10	SL equals 1dEL 24%
11-13	SL equals EL-1 27%
14-15	SL equals EL 13%
16-17	SL equals EL+1 9%
18-19	SL equals EL+2 5%
20	SL equals EL+3 1%

[a] Main Weapon tree or branch +1 SL.

Y6.06 SL R&D

SL R&D is continuous for most races. Thus an NPR has a 50% chance of a random number of RP invested in the next SL equal to (new SL*5+30) * 1d100 percent. However this is limited to the number of (RDS) available (one per SL project). All other SLs tree and branches start with 0 RP bought.

Y6.06.1 For an item of the same SL as the SL of an open branch, there is a 50% chance that items has been developed. If the item's SL is 1 lower than the branches SL, there is a 90% chance the item has been developed. All items that are 2 or more SLs lower than the branches SL have been developed.

Y7 STARTING TREASURY

Each ***HEL*** NPR at the moment of activation is given a "starting balance" equal to six months of income (that is, a sum equal to six times the combined GPVs controlled by the NPR). This money is spent, divided between industry, FT, bases/armed SS portions, and Warships including survey ships. These percentages are either 25% each or when using NPR governments, based on NPR government type.

LEL start with no Treasury.

Y7.01 INDUSTRY PORTION DISCARDED

The industry portion is considered spent on the industry generated under [Y5.04] (so discard that money and ignore the actual cost of the Industrial Units).

Y8 MULTI-SYSTEM NPRS

Whatever the results of the die rolls for [Y1.02] (indigenous NPR) were, a check must be made to see if a multi-system NPR has had contact with the newly discovered system and/or race. For EACH new system entered (regardless of system type), there is a 1% plus (number game months/20, FRD) percent chance that a multi-system NPR has visited the system. If such a contact has occurred, roll 1d100 against the table below to determine the outcome of that contact and any forces that might be present in the system.

Note: All other multi-system NPR statistics are determined by [Y9].

Roll against Table Y8 Multi-System NPR Force to determine the NPR's forces in the system of contact.

(C) – Cloaked: If cloak technology available, 1-6 cloaked ships are present otherwise nothing is present and the NPR will return to the system in 1d20 months. At least one cloaked ship will have the best Yc, if any, available.

(B) – Buoys: Communication and sensor AP are deployed in the system if the NPR has the technology available to it

(W) – Warships: A percentage of the multi-system empire's warships equal to 1/2 of the percent of the empire's total income derived from that system.

Example Y8 - Multisystem NPR Warship Deployment

Note: These warships may be cloaked if that is the general policy of the NPR.

Table Y8 Multi-System NPR Force

Roll	Indigenous Population Type		
	None	LEL	HEL
01-04	C	CW	-
05-09	C	CW	W
10-20	C	CW	CW
21-30	C	CW	CBW
31-34	C	CW	CBP
35-40	CB	CBW	CBP
41-44	B	CBW	-
45-59	B	CBWP	-
60	BW	CBWP	-
61-64	BW	B	-
65-67	BW	C	-
68	BW	CB	-
69-72	BW	B	-
73	BW	CB	-
74-79	BW	C	-
80-82	BWP	C	-
83-84	BWP	B	-
85	BWP	BW	-
86	BWP	CBW	-
87-88	BWP	CB	-
89	BWP	B	-
90	BWP	B	P
91	BWP	-	P
92-93	BWP	-	-
94	BWP	C	-
95	BWP	CB	W
96-97	BWP	CBW	BW
98	BWP	CBW	BWP
99	BWP	CBW	BP
00	BWP	CW	BP

(P) – **Populations:** 1 to 6 populations have been emplaced in the system. Habitable worlds have 1d100*(EL+25) PU, while other system bodies have 1d100% of the maximum population. Populations are emplaced on the "best" system bodies taking into account -- habitability, richness, and size of the body. Extreme populations and non-rich desolate populations will not be emplaced.

Note: That there may be situations in which population is called for but not possible due to a lack of colonizable bodies. With unusual life forms, the habitables may not hold the generated population. Just spread it around to more habitables, if available.

Y8.01 SURVEY SITUATION

If buoys or an imperial population(s) are present or the multi-system NPR controls a populated habitable, all surveys up to the maximum ability of the NPR have been completed. However, the WP the contacting empire entered through was missed. Otherwise, roll against Table Y8.01 Survey Situation to determine which types of surveys have been completed.

Even if a warp point survey has been completed, WPs may have been missed [R2.02.4].

Table Y8.01 Survey Situation

System Contents	Survey			
	Hab.	WP	AST	Non-Hab.
Habitable planet	90%	70%	80%	70%
Desolate planets and moons	N/A	60%	N/A	N/A
Moons/Asteroid belt only	N/A	50%	N/A	N/A
Planetless system	N/A	70%	N/A	N/A
Starless Nexus	N/A	80%	N/A	N/A

-50% to all surveys if the system is at maximum distance from empire HW.
+30% to all surveys if the system is adjacent to the multi-system NPRs HW.
Note: Enough surveys and WPs must have been found for the multi-system NPR to be at maximum distance [Y9.01]
-20% to all other surveys if a non-surveyed habitable is present.

Table Y8.02 NPR Relationships

Current Relationship	Low EL	High EL
WAR	01	01-05
Conquered	02-20	06-18
Slave	21-30	19-25
Subject	31-40	26-30
Negotiation	41-50	31-40
Non-intercourse	51-56	41-45
Non-Aggression	57-72	46-55
Trade (1-3 Restr, 4-7 Limit, 8-10 Full)	73-80	56-70
Military (1-8 Def 9-10 Off)	81-85	71-80
T&M (see above)	86-92	81-90
Partnership	93-98	91-95
Amalgamated	99-00	96-00

Y8.02 RELATIONSHIP OF NPRS

The relationship of the multi-system NPR and the indigenous population needs to be determined. Roll once per population on Table Y8.02 NPR Relationships. Amalgamation here doesn't worry about areas of similarity but the "always" restrictions of T3.14.2 still apply.

If the indigenous life and the multi-system life are different, all results of amalgamation are treated as partnership.

If no indigenous population exists, roll 1d100 to see if a 00 result occurs.

Any roll of *doubles* (except 00) automatically indicates that the multi-system NPR has at least one population and some warships present in the system.

Any roll of 00 indicates TWO multi-system NPRs are in contact with each other in this system regardless of whether or not an indigenous race is/remains present. Roll on the appropriate following table.

Y8.02.1 Results for 00 roll (no indigenous race present) This table is used if no indigenous race is present in the system, roll 1d100 and reference Table Y8.02.1 00 Results (no indigenous race).

These tables are designed to allow the player to still maintain a chance in the game by generally preventing the two multi-system NPRs (both must be at least 1 success governments) from allying with each other. Space Masters can allow them to be combined (by using his own judgment of the player's position in the game and other extreme factors). The system automatically has at least three WPs.

Table Y8.02.1 00 Results (no indigenous race)

Roll	Special Result
01-30	This system is the contact point between two multi-system NPRs who are currently at peace (non-aggression treaty). Both NPRs have fought in the recent past and ownership of this particular system is in dispute. Any population of the planet is an imperial population of the NPR controlling the system. There is a 5% chance per month that war will breakout between these two multi-system NPRs. There is a 2% chance per month that a limited trade agreement will be reached. If a limited trade agreement is reached, the per-month chance of war is gone and communications revert to normal.
31-00	War between two multi-system NPRs is occurring within this system as the current main contact point (generate extra WPs if necessary).

Table Y8.02.1 00 Results (indigenous race)

Roll	Special Result
01-20	It belongs to one of these two NPRs and that is the NPR that controls the system. Fixed defenses are 1d20+5 percent of the multi-system NPRs total fixed defense fund.
21-40	It belongs to one of these two NPRs and the NPR that controls the system currently has conquered it. Fixed defenses are 1d20 percent of the multi-system NPRs total fixed defense fund.
41-60	It belongs to a third, single-system, NPR whom is "partnered" with the multi-system NPR controlling this system. Fixed defenses are 1d10+5 percent of the multi-system NPRs total fixed defense fund plus any defenses from the indigenous NPR.
61-80	It belongs to a third, single-system, NPR whom is conquered by the multi-system NPR controlling this system. Fixed defenses are 1d20 percent of the multi-system NPRs total fixed defense fund.
81-00	It belongs to a third, single-system, NPR who has an HEL income, and quality of forces that are capable of holding off each of the two multi-system NPR races. (For *example*, 70+1d10% income of the biggest of those two NPRs) Furthermore, if such income is not possible in the current system, generate a 3rd multi-system NPR and a required 4th WP in the system. The diplomatic status of each non-indigenous NPR with the indigenous NPR is indicated by the table [Table Y8.02 NPR Relationships]. While the two non-indigenous multi-system NPRs have not yet had contact, when they do (and if contact occurs in this system) war will occur with 1d10+2 months.

Y8.02.2 Results for 00 roll (indigenous race present) If there is an "indigenous" population in the system, roll 1d100 and reference Table Y8.02.1 00 Results (indigenous race).

While a multi-system NPR may be or have been "present," if the system also has an indigenous population, the fact that a multi-system NPR is present may not be discovered for a very long time by the player.

Y9 MULTI-SYSTEM NPR GENERATION

Determine EL (minimum of EL 2) normally. A multi-system NPR has a final income of 1d100+40 percent of the discovering race's income (including trade, leasing, etc.). This is its "base income" from which the start fund qualities are generated. Once this is known, the SM must determine the size of the multi-system NPR.

Y9.01 EMPIRE SIZE (OR USE Y9.04)

The *maximum distance (rolls for surveys or the Space Master may dictate less)*, from the home world to the outer most surveyed system in Warp Point Jumps/StMP is 3 + game months/20 (FRU). For each of the three following sub-rules, each result possibility always has an equal chance of occurring -- reroll any result that is not within the range listed.

Y9.01.1 Distance for maximum survey Roll the distance from the homeworld outward in all directions that all possible WP survey types have been completed (1 to maximum distance), i.e., if the race only has Xe, then only open or concealed WPs may be found. Roll for each survey to see if detects any undetected WPs that the survey could detect.

Y9.01.2 Maximum Empire Extension Roll the distance from the *maximum **survey** distance*+1 [Y9.01.1] to the *maximum distance+2*. This is the distance from the homeworld outward in all directions that only some WP survey types have been completed. Note: For empires with only Xa, this number is the same as the Y9.02.1 number so don't bother rolling. Roll once for each survey type, from the easiest to the hardest, to determine if it has been done. The chance is 50%. If a survey has been done, then check the next higher difficult survey, assuming it is not the hardest possible survey that the race can do, to see if it has been complete. There is only a 40% chance that a WP found in one of these systems has been probed.

Y9.01.3 Distance to Contact First, roll the distance from the contact system to the home world in warp links (1 to *maximum empire extension)* (i.e., you might meet them in the end of a WP chain in a system they have yet to survey for WPs).

Y9.02 EMPIRE DESIGN

The Space Master must rely heavily on his instincts from this point onward.

General thoughts for the SM (keep in mind that the SM can do this in any manner he deems fit):

Determine the Science Instruments available to the NPR so you know the types of WPs it could find. The NPR must have been able to survey from its home system to the contact world.

Determine a suitable home system that is away from any other players or protected by a difficult to detect WP, if possible.

Y9.02.1 System exploitation for multi-system NPR When the NPR expanded, it would tend to have its home system fully developed and adjacent systems would have larger populations while distant systems would have small or no population. A one level difference in maximum habitable population per warp jump from home world would work well. Use the NPR's Colonization Policies [Table Y14 Colonization Policies] to determine which worlds will be colonized. If any population remains, add a small in the next ring of system and upgrade a habitable in the closer system to the next level (medium here) and add populations to O2 R. Continue process until inner ring has all mediums. Then do the next ring following the same general pattern until all population placed. Remember you're trying to get to the income level specified in [Y9] but remember to check for NPRs under the note below. Again, the space master must use good judgment. Systems without habitable worlds only get a 1d20 PU outpost.

Note: If using pre-generated systems, the NPR will have amalgamated any LEL race. HEL races will have been dealt with depending on the NPR's government types but in general, they are conquered, or amalgamated. As an SM you should not allow this strong multi-system NPR too many allies or the players could be in real trouble (unless of course that is the point). Conquering them

allows that possibility but another race might be able to free them. Amalgamation means they count as part of the income determined under [Y9]. Everything else about a multi-system NPR is the same as regular NPR.

Y9.03 DIFFERENCES FROM OTHER NPRS

Multi-system NPRs have a greater level of safety than normal NPRs, and as such, they have fewer restrictions in certain areas. Multi-system NPRs may maintain up to 1 month's worth of income in treasury.

Y9.04 DETAILED WAY TO EXPAND (OPTIONAL)

A SpaceMaster can set up an NPR, of any type, using these optional rules. This method creates a dense empire (population is concentrated around the home system, decreasing as you move outward) much like that of a player empire. This density limit the overall number of systems needed to set up the NPR empire.

Definition: Colonization Wave -- A colonization wave occurs as an empire needs more space to place its remaining PU. All systems that are explored at this time constitute a Colonization Wave (or just wave). Once assigned to a wave, the system will never change which wave it is in.

When determining how many PU to place, remember that income cannot exceed that listed by the first paragraph of [Y9] or by [Y5]. If during any of these steps you run out of PU or get to the income limit, the creation of this NPR empire's systems is done.

Y9.04.1 Sequence of Expansion Repeat this sequence until all available PU have been placed.

Creating a new Wave
Filling a new Wave
Growth in old Waves
Growth in the current Wave

Y9.04.2 New Wave Creation A couple of factors exist when determining a new wave: Science Instruments and time. The maximum ability of Science Instruments (i.e. the type WPs that can be seen) does limit the exploration of WPs. Time references will be handled by wave designation.

Waves 1, only explore open WPs
Waves 2 and 3, explores open and concealed WPs.
Waves 4 and 5, explores open, concealed, and hidden WPs.
Other waves, explore to the max. level of Science Instruments.

Y9.04.2.1 Based on the wave, create a new system beyond each system with eligible WPs. Thus, in wave 4, you look for unexplored open, concealed, and hidden (if the NPR has Xn or better) WPs. These all these systems, even ones next to the homeworld, become Wave 4 systems.

Y9.04.2.2 Eligible WPs may be limited by rolling a chance for missed WPs. The chance for missed during a wave is: Open (5%), Concealed(10%), Hidden (15%), Secret or higher (20%)

Y9.04.3 Filling a new Wave Always fill planets in order from the richest to the poorest and then by closest to the star/planet. Fill with PU in the following order and amounts:

fill Benign, Harsh, and Hostile to 180 PU
fill Desolate VR to 20% of their max. population
fill Benign, Harsh, and Hostile from 180 PU to 500 PU
fill other Desolates to 20% of their max. population
Extreme Worlds get nothing

You may have empty systems remaining, this is ok and gives the NPR a place to expand to.

Y9.04.4 Growth in the Old Waves If not to the PU or income limit, grow the previous waves in order first to previous wave as follows:

Previous Wave - 6% growth
All other non-current wave systems grow 25%.

Y9.04.5 Growth in the Current Wave If PU remain unplaced, place PU on system bodies to increase PU by 6% on each system body. If more PU remain unplaced, create a new wave.

Y10 NPR STRATEGIES

Any NPR encountered by a player race or a previously activated NPR is "activated" (begins independent interaction with the rest of the galaxy), and the military/exploration/technical strategies that NPR will pursue must be determined. In many cases, the NPR will enter into a treaty relationship with the discovering race which will dictate at least a part of its future plans and actions, but the NPR's pre-discovery strategies determine the military and economic infrastructure of the NPR at the moment of activation. All of the NPR's decisions will continue to be made in accordance with the provisions of this rule until Amalgamation is reached. At partnership, most decisions are made by the controlling race but there are some restrictions. A NPR may not deviate from the base course laid down by its initial strategy unless and until it finds itself in a state of war. The SM (or the player running the NPR) may alter the initial strategy to meet the demands of the war, reverting to the original strategy when the war is over.

Y10.01 DEVELOPING STRATEGIES

Once it is activated, a NPR will have a set of strategies and policies that will govern its actions. There are 5 main areas to consider: R&D, economic, military, political and interstellar expansion. The Starting Fund percentages [Y3.02.1] are used to determine how a NPR spends its money. Available income is: (total income) *minus* (maintenance) and (research) spending. Spending percentages are a percentage of the available income and come from the NPR government table [Table Y3.02 NPR Government Types]. Political agreements reached with another race will have an impact on the spending choices the NPR has.

Note: Sections [Y11] through [Y19] discuss NPR strategies.

Y11 SPENDING PRIORITIES

An NPR has two types of priorities for spending its income. First income is assigned to Designated Spending. Any remaining MC becomes Available Income.

NPR Governments will adjust spending priorities during both unstable and very stable situations [Y11.06].

An NPR are not allowed to carry more than 100 MC of income in its treasury, unless the MCs are in Project Accounts or for some good reason the SM specifically allows.

Y11.01 Designated Spending

Each Designated Spending area must be 100% funded before the next area can receive funding.

An NPR's Designated Spending areas are, in order of priority:

- Maintenance
- R&D spending
- Treaty requirements (like trade or amalgamation startup)
- Project Accounts [Y11.02.1]

Y11.02 Available Income

Any MC left after all Designated Spending areas are fully funded, is called "Available Income".

Available Income is divided among the empire's remaining Spending Priorities (War, Def, FT, and Ind) by multiplying by the percentage listed in [Table Y3.02 NPR Government Types]. [Y11.04 & Y11.05] covers this.

If the NPR has insufficient MC to complete a project in an area, a small amount, no greater than 5% of the cost of that project, may be transferred in from other areas.

Y11.02.1 Project Accounts If the project requires more than 5%, then the MCs that are available are placed in an account for that project. The Project Account will receive increased spending priority until it has enough MC to be funded, at which time the project account is closed. Such monies are usually "stored" in IU that are sold as needed

Y11.03 R&D Spending

Any NPR has an assigned EL and SL in various trees at the moment it is activated [Y2]. After activation R&D has a high priority. EL research is critical to every race and "RP Rate" RPs will be purchased every month except in extraordinary circumstances. Of course, if EL aid is available the NPR will purchase as many extra EL RP as they can. If a NPR needs to pay trade startup fees and the MC cannot reasonably be taken from any other source EL RP may be reduced just enough to pay the startup costs. If the NPR is at war and has lost 80% or more of its starting fleet it may divert EL spending to military spending. Those NPRs whose RM is active will give priority to their weapon trees.

Each (RDS) and (SA) will be engaged in work each month unless all SLs of open trees/branches are equal to or greater than the EL, in which case some of the R&D money can be diverted to colonization or other investment in the economy if no good colony sites are available.

Y11.04 Military Spending

Multiply the available income by the government (war) percentage to determine how much will be spent to build warships. Multiply available income by the defense (def) percentage to determine the MC that will be spent on fixed defenses (such as bases and APs)

Y11.04.1 Exceeding of 60% of TGI in maintenance will cause the NPR to take action. Most races that feel they are spending too much on maintenance will mothball 2d10+10% of its fleet/bases, unless the race is at war.

Y11.04.2 A few not-so-friendly races will use the excessive maintenance as an excuse to enlarge their empire through war. Under these circumstances and if not already involved in a war they will engage in a restricted war [Table Y18 War Type] with whatever HEL race they think is the weakest (determined via espionage [U6] or PU totals). Only the following races will apply this policy: anarchy, communism, fascism, military corporation, imperial monarchy, and national socialism.

Y11.05 Economic Spending

In simplest terms, this is how a NPR spends its non-R&D, non-military funds. Multiply the available income by the government IND percentage; this gives the MC it will use to purchase IU. Multiply the available income by the government FT percentage; this gives the MC it will use for colonization and to purchase FT to be leased to the CFN (in that order).

Y11.06 Political Adjustments to Spending

The spending numbers given in [Y11.04] and [Y11.05] assume the NPR is in a stable, fairly safe political situation (and that their relationships with all bordering races are all some form of trade or military treaty). But there are times when a NPR will feel more or less secure.

Y11.06.1 If all their treaties are trade & military or partnership then they will feel more secure and cut both war and defense spending in half. In this case IND and FT spending will be proportionately increased.

Y11.06.2 If the NPR has a non-aggression or non-intercourse treaty with any race, they will be concerned and reduce both IND and FT spending in half, proportionately increasing war and defense spending. If the total of war and def is less than the RM then warship spending will be increased until the total is equal to the RM. MC in IND and FT Project Accounts may used for War and Def spending by closing some or all of the Accounts.

Y11.06.3 If the NPR is at war, all spending restrictions are lifted. Although it is likely the great majority of funds will go into war and defense spending.

Y11.06.4 Unless the *optional rule* in [T3.13.2.3] is being used, when an NPR accepts partnership with a player, the player decides the NPR's future economic, industrial, and military policy. With the exception that the controlled NPR may spend no less than 1/2 and no more than double the percentage amount of the available income in any of the war/def/ind/FT figures found in the government types table [Table Y3.02 NPR Government Types].

Y11.07 IND race Spending Policies

LEL pay 35% of income per month for R&D. No projects or anything else occur but that cares for all the automatic EL and SL gains that occur in N12 and N12.01 and N12.02.

LEL pay 15% of income per month for industrial upgrades. This money is effectively lost.

LEL pay 25% of income for Qv army purchase and maintenance.

The remaining 25% of income can either buy IU, buy Qv, or if IND-2 and having the technology to do so, buy hulls and systems.

These limits only apply to unconquered LEL races.

Y11.08 Pre-IND race Spending Policies

Pre-Ind lose all money generated unless controlled by a HEL race. In that case, Pre-Ind lose 50% of income to R&D.

Y12 HOME FLEET

Under any circumstances, an NPR with a Military Alliance (even a partner) not actively at war [N14] will retain in its home system a percentage (by cost) of its military forces, including the armed portions of any space stations and any other fixed fortifications, equal to (Defensive Fund% + RM/2 - RC/2) / 2.5. If the NPR is at war, the percent is halved.

Note: Minimum Home Fleet size is 1/2 Defense Fund.

Y13 EXPLORATION POLICY

When first discovered, a single system HEL NPR has no knowledge of Warp Points. However, they do have the theory of WPs and as soon as they detect an alien ship, they will begin to search for WPs on the next month.

To determine the NPR's Exploration Policy, roll 1d100 and consult Table Y13 Exploration Policies.

Table Y13 Exploration Policies

Roll	Exploration Policy
<50	Zealous - Explore any number of WPs per month.
51-80	Vigorous - Explore up to 5 WPs per month.
81-100	Moderate – Explore up to 3 WP per month.
101-120	Average - Explore up to 2 WP per month.
121-140	Cautious - Explore no more than 1 WP per month.
141-150	Circumspect - Explore no more than 1 WP per month. If in Negotiation state with a HEL race will cease exploring WPs but not surveying.
>150	No Expansion - Will stay home, either because it fears contact with other races or is so convinced of its own superiority that it sees no point in expanding.

Adjust the roll according to the modifiers below.

+RC
+20 if Militant, Hostile, or Antagonistic race [Y15]
+20 Absolute Monarchy (isolationists)
-20 Pedagogical Oligarchy [due to desire for knowledge]
-20 Corporate and Military Corporation [desire for trade]
-20 Federal Theocracy [due to desire to convert others]
-50 J'Rill or Hive Mind.

Y13.01 NON-EXPANSION RACES

If a no expansion race goes to or plans to start a war with a HEL, roll again on this table to determine an expansion policy for the war with any result over 150 is treated as 150. After the war ends, the race will revert to a no expansion policy. The race will retain ownership of any systems they gained and will need to determine a Colonization policy.

Y13.01.1 Aggressive Race Expansion

Militant, hostile, antagonistic, and multi-system races have a minimum exploration policy of circumspect. A policy of "no expansion" is always re-rolled with an additional cumulative -10 to the die roll each time "No Expansion" is rolled.

Y14 COLONIZATION POLICY

Each NPR will have a single policy on colonization. NPRs will only colonize a system that has no population of another civilization. However, conquered populations and Pre-Ind populations that are being ignored will not deter colonization. The limits of the colonization policy do not apply to the home system of any NPR.

Even if an NPR's colonization policy would normally cause them to not colonize a system they may still place an outpost to "stake a claim" or to provide a monitoring post, at the SM's discretion.

A Hive Mind or Herd Race will colonize any habitable world.

A system containing a world of medium or greater imperial population is exempt from Y14 limits.

To determine the policy, roll against Table Y14 Colonization Policies.

Table Y14 Colonization Policies indicates the type of world and minimum richness that will be colonized.

Table Y14 Colonization Policies

Roll	Colonization Policy			
	Benign	Harsh	Hostile	Desolate
<01	N/A	N/A	N/A	N/A
01-14	Very rich	N/A	N/A	N/A
15-28	Rich	N/A	N/A	N/A
29-42	Normal	Very Rich	N/A	N/A
43-54	Poor	Rich	N/A	N/A
55-71	Poor	Normal	Very Rich	N/A
72-86	Any	Poor	Rich	N/A
87-100	Any	Any	Normal	N/A
101-125	Any	Any	Any	Very Rich
>125	Any	Any	Any	Rich

Adjust the roll according to the modifiers below.

-RC/2 (FRN)
+IND plus FT numbers from the NPR's starting fund usage.
+50 if the home world is Very Poor
+25 if the home world is Poor
-15 if the home world is Rich
-30 if the home world is Very Rich
-30 if the race has or had a No Expansion exploration policy
+30 Corporate (any result over 71 is treated as 71)
+10 Military Corporation (any result over 100 is treated as 100)
+10 Pedagogical Oligarchy (somewhat curious about other worlds)
+20 Guild Syndicate (willing to make long term investments)
+30 Capitalist, Plutocracy (always want more money)
+40 Anarchy

Y15 POLICY TOWARD HEL RACES

To determine a NPR's long term policy toward other HEL races, roll 1d100 adding in the modifiers and consult Table Y15 NPR HEL Policies.

Adjust the roll according to the modifiers below.

+Initial Contact Number
+RM/5 (FRN)
+20 Artificial Intelligence, Military Bureaucracy, Insane Race, Hive Mind
+10 Unstable race, Military Hierarchy, Plutocracy, Feudal Monarchy, Oligarchy, Marxist-Leninist Communism, Stalinist Communism, National Socialism
-10 Clans, Republic, Guild Syndicate, Imperial Theocracy
-20 True Democracy, Representative Democracy
-40 Herd Race

Federal Theocracy and Military Empires will not use genocide on any race other than a Hive Mind as they cannot be converted or indoctrinated respectively

Y15.01 POLICY LEVEL ADJUSTMENTS

After 1d10+10 months without exploration, any level 3 or higher government will increase by one level. (For example, a friendly would become aggressive). After losing a war they started (being forced into peace), any level 4 or higher government will decrease by one level. Theocratic Oligarchy is 2 levels more aggressive when dealing with other theocracies.

Y15.02 UNABLE TO EXPLORE

When a race that normally would explore is unable to explore, due to low Science Instrument tech or fully surveyed systems, it will endeavor to find a new way to expand. There are two possibilities prior to starting a war: ally with a race in order to get a concession system (offer a stronger treaty or offer to accept a stronger treaty than proposed with the condition of rights to a connecting system(s) that lead to unexplored space), or buy the rights to such system(s). [T3.11.7.1] Conquest will be chosen if the other race has rejected the other options or wants to charge too great a fee AND 1d100 is less than twice RM. If RM is an active stat, do not double it.

Table Y15 NPR HEL Policies

Total	Treatment of High Tech races
<20 Level 1	**Irreproachable** - Never uses genocidal attacks. Always honors its treaties. All of the following applies to any race, even a controlling partner. Will never aid another race that is violating one of its treaties to attack. If they learn a race is a treaty breaker, they will reduce their treaty level with the violator by 2 levels for each known occurrence. If they learn a race has committed genocide, they will reduce their treaty level by 4 levels for each occurrence (if no treaty with that race, when asked they will join a war alliance to conquer the genocidal race). If the treaty level drops below Non-Intercourse, they will go to war. Never spy on another race.
20-40 Level 2	**Honorable** – Use genocidal attacks only against races that have committed level D genocide. [Table V6.04 Level of Genocide] Always honors its treaties All of the following applies to any race, even a controlling partner. Will never aid another race that is violating one of its treaties to attack. Will reduce treaties with a known treaty breaker by 1 level for each known occurrence. Will reduce treaties by 2 levels for each known occurrence of genocide that violates its own policies (such as genocide against any race that has not committed level D genocide). Never spy on another race, unless they are at war or planning to go to war.
41-60 Level 3	**Benevolent** - Use genocidal attacks only against races that has committed level C or D genocide. [Table V6.04 Level of Genocide] Always honors its treaties. All of the following applies to any race, even a controlling partner. Will never aid another race that is violating one of its treaties to attack. Will reduce treaties by 1 level for each known occurrence of genocide that violates its own policies, including a controlling partner. If unable to explore for any reason they will endeavor to expand in one of two ways. Ally with a race in order to get a concession system, or buy the rights to such system(s). [T3.11.7.1] If the other race has rejected the other options or wants to charge too great a fee they will roll versus RM with a roll less than RM meaning they will attack the weakest race (determined via espionage or PU total) with whom they do not have a treaty.
61-90 Level 4	**Friendly** – Use genocidal attacks only against races that have used any level of genocide. [Table V6.04 Level of Genocide] Always honors its treaties. If they run out of WPs to explore and cannot negotiate to own a new system(s) or path to explore, roll versus RM with less then RM meaning they will attack a race (lower PU total) they do not have a treaty with.
91-120 Level 5	**Aggressive** – If they run out of WPs to explore, they will attack whatever HEL race they think is weakest (determined via espionage or PU total) to get new territory. If they ever spot a valuable system (4+ habitables) that belongs to another race, they will work to take it by force, even if it includes getting allies to help them. Will avoid war with more than 1 HEL enemy at a time. After losing a war (being forced into peace), they become friendly.
121-140 Level 6	**Militant** – As Aggressive except a valuable system is 2+ habitables. After gaining what they want, they will try to negotiate peace. "We just want this one system, no more." Will engage in two front wars if the total strength of both enemies is less than 50% of their strength (by PU total).
141-160 Level 7	**Hostile** - Will eventually attack every HEL race they meet. They will enslave them if they are on a Poor or Very Poor world, otherwise they will genocide them and emplace their own people after they have cleared the systems next door of other races. They are willing to open communications; it makes spying easier. They will even agree to a treaty, up to a maximum of Limited Trade and Defensive Treaty, if they are at war with another HEL race; again, this will aid their espionage. However, they will ALWAYS violate any treaty once the other war is finished. Roll a War Delay [Y18.02] to determine how soon after the other war is over they will attack. They will use any trick in the book to win a war, including asking a Defensive ally for military assistance and then ambushing them. They will spy on any race with which they have full communication, but priority is given to the race with which they are at war or to their next target, if not currently at war. Will engage in a multi-front war as long as the total enemy strength is less than 60% of their strength.
>161 Level 8	**Antagonistic** - Will eventually attack every race they meet, genocide them and emplace their own population after they have cleared the systems next door of other races. Don't bother to make treaties with other races. They will act like they are trying to open communications and even allow things to go as far as Initial Communications, but this is just a ruse while they are getting their fleet ready to attack. If they are currently at war with an apparently dangerous HEL race (did not collapse after the first major attack), they will continue communications with a new race accepting the first offer, and counter offering a LT&O or LT&D treaty. In 1d5+1 months, they will claim to have been attacked and activate the defensive treaty. Upon eliminating the first race, if victory seems likely, they will immediately ambush the 2nd race's fleet. In any case, unless another war starts, the 2nd race will soon find itself at war.

Y16 POLICY TOWARD LEL NPRS

Each NPR will have a policy on how to handle encounters with Low EL NPRs. To determine a NPRs policy, roll 1d100 and consult Table Y16 NPR LEL Policies.

Adjust the roll according to the modifiers below.

+ Initial Contact Number
+ 1/2 RM (FRU)
+20 Insane Race, Military Anarchy, Stalinist Communism, Military Theocracy
+10 Unstable race, National Socialism, Marxist-Leninist Communism, Military Bureaucracy, Plutocracy, Military Hierarchy, Oligarchy
-10 Clans, Republic, Guild Syndicate, Imperial Theocracy
-20 True Democracy, Representative Democracy, Feudal Monarchy, Ordered Socialism
-40 Herd Race

Federal Theocracy and Military Empires will not use genocide.

In addition these following guidelines will always be applicable:

- The J'Rill always harvests races immediately as they might never return later.
- Maximum treaty level applies until the race becomes HEL. If the maximum is amalgamation and that is not possible (due to restrictions [T3.14.2]) then the maximum will be partnership.
- On the theory that a race that is kind and benevolent toward HEL races is not likely to simply genocide an LEL race. The maximum result for a race with an HEL policy of Level 3 or lower is "ignore as beneath their notice."
- If an NPR with an HEL policy of Level 7 or higher has an LEL policy of Level 7 or less they will not automatically genocide the LEL race when it becomes HEL. In this case they are trying to "groom" the LEL to join with them in their conquest of the universe. However, once the LEL does reach HEL any rejection of a treaty offer will cause this protection to no longer apply. Add +20 to all political acceptance rolls in this case.
- If a NPR has a non-intervention policy they will not interfere (no offers, no contact) with the normal development of the race and will not approve of any other race interfering. They will not go to war when peaceful contact is made but will, if possible, ask the other race not to contact the low-tech race. If this request is ignored they will reduce any existing treaties by one level. They will monitor the LEL race from afar with Science Instruments and combat/capital sensors. If 6 ships with any generation of X monitor a race until it reaches an EL whereupon they will be contacted, the monitoring race gets a +1 to the open communications roll for each month of monitoring. (Up to a maximum of +20) If the monitored race is IND-2, Y or Yc must be used by the monitoring ships so that they will remain undetected. Any NPR with a non-intervention policy toward another race will consider it an act of war if the low-tech race is invaded or bombed and will move to their defense.
- When an LEL race rejects an offered treaty, if the offering race has a maximum treaty level above restricted trade then they will be patient and let the low-tech cool down for a month before making another offer. However if the maximum treaty level is restricted trade, they will conquer the LEL race. If the HEL NPR has an HEL policy of Level 3 or less they must roll less than their RM to decide to conquer the LEL race.
- If an NPR is ignoring a low-tech race it will not care what happens to them. They will, however, check in on them from time to time to see if they have "matured" enough to be worthy of contacting.
- If an low-tech NPR is uplifted they will open the same engine and weapon trees as the race uplifting them. If allowed to develop on their own they will choose their engine and weapon trees randomly.

Table Y16 NPR LEL Policies

Roll	Treatment of Low Tech races
<40 Level A	Work toward amalgamation. Provide EL R&D assistance.
40-55 Level B	Maximum Offer RT&O to Pre-IND, IND-1. Work toward amalgamation. Provide EL R&D assistance.
56-70 Level C	Non-Intervention policy for Pre-IND, IND-1. Work toward Amalgamation. Provide EL R&D assistance
71-80 Level D	Non-Intervention policy for Pre-IND, IND-1 Max Restricted Trade with IND-2 Work toward Amalgamation.
81-90 Level E	Non-Intervention policy
91-100 Level F	Ignore Pre-IND, IND-1. Provide EL assistance to IND-2 when possible; Uplift if possible. Offer maximum of RT&O alliance. Work toward Amalgamation.
101-110 Level G	Ignore Pre-IND, IND-1 establish Restricted Trade with IND-2
111-120 Level H	Ignore as beneath their notice.
121-130 Level I	Survey - if at least Normal, then genocide and emplace own population; Otherwise establish trade, but never offer anything higher than Restricted Trade.
131-140 Level J	Survey - if at least Rich, then genocide and emplace own population; Otherwise conquer and enslave the natives.
>140 Level K	Genocide and emplace their own population

Y17 POLITICAL POLICIES

A contacting NPR will usually attempt to establish communications with another HEL race. See the NPR government descriptions [Y21] for exceptions. Even NPRs of the same government type may not look at the universe quite the same way. Every NPR will have certain political policies that will determine how they treat other races. If there is a conflict between the NPR government description and the policies determined below, the government description takes precedence.

Y17.01 NPR POLITICAL OFFERS

When NPRs make political offers they use a go-slow method. The current modifier plus the offered modifier cannot be greater than +5 unless there are extenuating circumstances (such as at war with a HEL race) in which case they'll be seeking military allies. This is termed as "working toward amalgamation." When an offer is rejected, the NPR will wait one month and then offer again. If the other NPR counter-offers, that counter-offer will be accepted.

Y17.02 TREATY REDUCTIONS

Partnership goes to FT&O. Military treaties go from offensive to defensive to none. When dealing with combo treaties, first military, then trade treaties are reduced. Restricted trade goes to non-aggression. A reduced non-aggression causes a war check, which results in either non-intercourse or war.

Subject goes to Forced Ally then a war check, which results in either non-intercourse or war.

Y17.02.1 Reverse the order when increasing the level.

Y18 WAR CHECKS

Treat LEL as EL Level 0.5 for this rule.

Y18.01 WAR TYPE

A war against another HEL race is a tougher proposition than bashing low-tech aborigines. War check: divide the provoked NPR's EL by the offending race's "observed/known EL" and multiply the average of the provoked NPR's RC and RM by the result (FRU). If a 1d100 roll is equal to or lower than that value, the provoked NPR will go to war against the offending race using the war type given in Table Y18 War Type and will check for war delay in [Y18.02]. Military Theocracies, J'Rill, and Hive Minds always engage in "All out War.

Table Y18 War Type

Dice Roll	War Type	Distance
<=74	Probing War	1 Warp Point
75-90	Restricted War	2 Warp Points
91-110	Limited War	3 Warp Points
111-125	Partial War	5 Warp Points
>=126	All out War	Conquer the enemy (certain government types may seek to exterminate the enemy)

+RO Racial Outlook
+25 if Full Communications not established.
+10 if the race is a known treaty breaker.
+30 if the target race is known to be at war with another race
-5 for each known military ally of the enemy
+5 for each known 20% difference in PU size (target race plus allies are smaller)
-10 for each known 20% difference in PU size (target race plus allies are larger)

Distance = Number of Warp Transits to Find and Control From the System of the Initial Meeting and/or the NPRs Home World

Y18.02 WAR DELAY

The provoked race need not go to war immediately, even if the other race continues to persist in being annoying. Roll 1d100 against the average of the discovered race's RD and RC. If the die roll is equal to or less than the average, the discovered race will delay the start of the war, otherwise it will attack immediately.

Y18.02.1 If the other race is known to have weapons of greater SL than the highest SL weapons of the provoked race, subtract 10 from the die roll for every SL of difference.

Y18.02.2 If there is a delay, the provoked race will not actually go to war for a number of months equal to the roll of 1d10 + 2. That is, a die roll of "3" would indicate that it would launch actual hostilities in 3+2 = 5 months after the initial decision to go to war was taken. The provoked race makes this die roll and determines when it will launch its attack before deciding what its preparatory military expenditures will be.

Y18.02.3 If the provoked race has decided to delay the war, they will consider how close they are to deploying new weapon tech and may decide to wait for a weapon to complete development. They may be willing to wait for one and only one new weapon, after all they don't want to delay the war forever. If the opponent is of equal, greater, or unknown EL AND the provoked race has a new weapon system already in development, they will wait until the new system is done and refitted onto their ships if they roll less than or equal to their RD.

Y18.03 ALREADY AT WAR

If the NPR is already at war with a HEL race, it will delay starting a new war until after the earlier war is resolved and will offer non-intercourse (they will still go to war eventually). If the result of the dice roll is greater than the checking value, the NPR will counter-offer Non-Intercourse and will go to war only if the other race attacks it or violates the conditions of non-intercourse by entering its space.

Note: If the offending race's EL or SL is unknown [N13], the checking NPR will assume it to be equal to their own.

Y18.04 WAR TIDBITS

HEL NPRs are intelligent and they are supposed to be played as such. An NPR at war or in a war delay situation that learns its enemy and their military allies has more income than the NPR and its military allies, will not go to war and instead will strive to increase its income. The NPR will always mistrust that race and will never enter into any sort of military alliance (or partnership) with them until the situation changes drastically.

NPRs who are losing wars may offer cease fire treaties, even if they don't think the other race understands their language.

Example Y18.04 - Improving Relations

NPRs will always pursue full communications with captured populations. They will attempt to learn everything about a race, including asking other races about that race. They will scan tech when they can without provoking other races too badly. They may sometimes try to provoke a war, and so on. The Space Master should not feel limited by government type and aggressiveness level. NPRs are willing to wait and gain offensive allies in order to attack larger races. There is no inherent limit to their deviousness; just like a player race.

If the NPR gets new information about the relative difference in PU size, current political status (military allies) with other races, or military armament, they may reconsider war or work to alleviate differences before war occurs. If the military armament of the target race is discovered to be a tactical advantage against the NPR's design philosophy, refits of 70% of the fleet may be completed (for instance, a target race who uses E beams vs. an NPR who only uses Armor).

Y18.05 WAR TYPE

NPRs may decide not to engage in a full all out war. They may limit the war to a few warp points from the system of meeting and/or their home world as a defensive tactic. After completing the objectives of the war they will advance and offer (if full communications have been established) a non-aggression treaty. If full communications haven't been established they will hold their position and attempt to establish communications with any forces that enter, with the goal of offering a non-aggression treaty. After each 10+1d10 months without a treaty or full communications make a war check to see if they continue the war. Reroll war type and use the present system as the "system of initial meeting." Roll 1d100 and compared to Table Y18 War Type.

Example Y18.05 - War Type

Y19 NPR SHIP DESIGN

Note: J'Rill do not use this section.

These "build rules" only apply to the NPRs WARSHIPS, not anything else (including support ships, PDC, AF, or bases (although survey ship fleet size is covered, the design of the survey ships themselves is not). Space Masters may choose to apply parts of this rule more broadly if they desire but it is not wise to design crappy NPR bases, AF, and PDCs.

This section is set up so that 50/51 on most tables results in a reasonably balanced fleet. A controlling partner can force a change in one table by one category per ten months, but only towards 50/51.

The quickest way to change a design strategy is battle experience. In any battle where they see a design flaw in their ships (design flaw is at the Space Master's/controlling player's discretion) and they win the battle, they can adjust one table by one category. If they lose the battle, then they can adjust TWO tables by one category.

While these adjustments do NOT need to be towards 50/51, they MUST work to rectify (at least from the NPR's perspective) the design flaws in question vs. the current enemy. For example if an NPR has taken a lot of laser damage in its last battle they might increase their Armor vs. Shields ratio by one category.

Y19.01 OLD DESIGNS

Old ship designs will be retained on the front only as long as they are needed, and will be rotated back for refit when possible. If money or a peaceful situation mean refitting at that time isn't advisable, they will be mothballed and the NPR will reactivate and refit them when it needs them.

Y19.02 DETERMINE DESIGN STRATEGY

Roll D100 on each table. Systems not mentioned such as EMS, Mx, AM will need to be added to the ships to produce reasonable designs which meet the Y19 strategy.

Roll	Hull Build Strategy
01-15	Max size hull only
16-30	Build equal quantities of largest 3 hull sizes
31-45	50% Largest, 50% Median[a] Size
46-65	Build equal HS of largest size, and the next two largest sizes with a speed increase (FRD) over the largest size (same engines).
66-80	Build equal HS of 3 random hull sizes, increase each size by one when a new hull becomes available.[b]
81-85	Build equal quantity of 3 random hull sizes, re-roll this each time an EL is gained.
86-95	Build equal quantity of 3 random hull sizes, increase each size by one when a new hull becomes available.[b]
96-99	Build CT's only[c]
100	Build fast hull CT's only[c]
101+	Subtract 20 and apply roll

Races which like big ships get -20.
Races which like small ships get +20.
Any die roll result ending in 1 means that fast hulls will be favored.

[a] Median is a statistical term meaning middle of a distribution (range). Thus, if the range of hulls you can build is BC-EX (BC,CA,CL,DD,FG,CT,ES,EX is 8 hulls), then the 4th and 5th hulls are the median or DD and FG hulls can be built.

[b] For example, a race builds BC, CA and FG hulls. When it raises its EL to 7 (and thus a new hull type becomes available), it would start building BB, BC and DD hulls.

[c] FG for J-using races.

Equal Quantity vs. equal HS -- 1 BB, 1 DD, and 1 CT verses 100 HS of BB, 100 HS of DD, and 100 HS of CT.

Races which like big ships will use the largest generational hull.

Roll	Passive Defenses	
01-03	No Passive defenses!	**Modifiers** -10 if no shields or no armor +5 per shield/armor generation developed above S/A -RM/10(FRD)
04-10	10% HS in shields/armor	
11-40	15% HS in shields/armor	
41-70	20% HS in shields/armor	
71-90	25% HS in shields/armor	
91-97	30% HS in shields/armor	
98-105	35% HS in shields/armor	
106+	40% HS in shields/armor	

Record this roll. When armor/shield modifiers apply, add them to the original roll. This can change their policy.

Roll	Armor vs. Shields
01-03	Only shields. Armor is for fools!
04-10	75% shields, 25% armor (odd number on armor)
11-25	66% shields, 33% armor (odd number on armor)
26-50	Equal armor/shields (odd number on armor)
51-75	Equal armor/shields (odd number on shields)
76-90	66% armor, 33% shields (odd number on shields)
91-97	75% armor, 25% shields (odd number on shields)
98-00	Only armor. Shields are for wimps!

+10 per shield generation developed above S
-10 per armor generation developed above A

A race shifts their initial strategy up one category if they use energy beams, and down one category if they use lasers or x-ray lasers. A race which doesn't use a passive defense will allow research in that tree to stay 4 SL below their EL, unless their strategy in this branch changes.

Record this roll. When armor/shield modifiers apply, modify the original roll with them. This can change their policy.

Roll	Engines
01-02	Use military engines, but one less than the maximum number
03-60	Use the maximum number of military engines
61-85	Use the maximum number of engines. Dedicated warp point assault/defense units will use commercial engines, while all other units will use military engines
86-99	Use the maximum number of commercial engines
00	Use commercial engines, but one less than the maximum number

Races which use commercial engines will use Gt engines on LRW designs. Races which use military engines will use Jc engines on all military-engine designs (unless they also have Gt engines, in which case they will use them on mixed/SRW designs only)

	Weapons Mounting by Ship Size[a]		
Roll	Large	Mid-size	Small
01-10	LRW only	LRW only	LRW only
11-25	LRW only	LRW only	1 LRW, rest SRW
26-40	LRW only	1 SRW, rest LRW	SRW only
41-55	LRW only	50% LRW	SRW only
56-75	LRW only	1 LRW, rest SRW	SRW only
76-90	LRW only	SRW only	SRW only
91-00	SRW only	SRW only	SRW only

[a] Each size category includes roughly 1/3 of ship hull sizes. Numerical or HS quantity is not important.

Races which start with a LRW more than 1 SL above any SRW shift their initial strategy up one category.

Races which start with a SRW more than 1 SL above any LRW shift their initial strategy down one category.

Roll	Weapon Types Mounted	
	Special SRW	Capital LRW
01-14	Only Normal	Only regular
15-30	10%	20%
31-45	20%	35%
46-75	30%	50%
76-90	35%	65%
91-98	40%	80%
98-00	50%	100%

Roll for both SRW and LRW separately on this table. "special" beam weapons include precision, heavy, rapid fire and other branch/twig beams but not capital beams.

NPR's have a 25% chance to mix capital and normal LRW on the same ships, otherwise they will mount only capital or normal LRW's on any given hull.

Special weapon percentages are mounted per ship with a minimum of 1 special per ship if any are indicated.

Roll	System Layout
1-5	All engines except one before weapons. Q last.
6-10	All engines except one before weapons. Engine last.
11-30	Weapons all between first and last engine, spread equally between engines. Engine last.
31-50	Engines before weapons except one engine which is "next to last." Weapon last.
51-70	50% of engines (FRU) before weapons. Weapons spread evenly between remaining engines. Weapon last.
71-80	Weapons spread evenly between first and last engine. Weapon last.
81-90	50% of engines (FRU) after weapons. Weapons spread evenly between remaining engines. Q last.
91-95	All weapons before engines. Engine last.
96-00	All weapons before engines. Q last.

H will always be first system after outer passive defenses (and normal Z, if any).

Q, unless specified above to be last will be 5th from the last weapon, and then left of that but at least 50% of all Q's placed like this will be before any further engines.

If a ship mounts SRW, one SRW will be last.

Roll	Qty	Point Defense
1-15	2%	min. 1 if BC+
16-35	4%	min. 1 if CA+
36-50	5%	min. 1 if CA+
51-85	6%	min. 1 if CL+
85-95	8%	min. 1 if DD+
96-00	10%	min. 1 if FG+

All percentages are FRD

Roll only if both types of point defense are available and the best developed SL of each system is within 3 SL.

Roll	Point Defense Types
01-15	Only normal.
16-25	75% normal 25% capital
26-35	66% normal 33% capital
36-65	50% normal 50% capital
66-75	66% capital 33% normal
76-85	75% capital 25% normal
86-00	Only capital

Roll	-z Module Usage
01-20	None
21-40	Dedicated escort ships only
41-60	One per 3 point defense on any given ship (FRU)
61-00	All capital point defense (if any, otherwise as per 41-60)
81-00	All point defense

Roll	Point Defense Location
01-20	PD equally distributed between weapons
21-40	PD equally distributed between right-most 50% of weapons
41-50	One PD in front of each weapon, starting at the right and working left
51-64	PD equally distributed between right-most 50% of engines
65-85	All PD just before last engine
86-95	50% PD just before last engine
96-00	PD equally distributed between engines

Roll	Survey Fleet Composition
01-04	Armed ES
05-50	Unarmed EX, no escort
51-64	Unarmed EX, escorts HS is at least 1D10*10% of total ES HS.
65-75	40% Unarmed EX, 60% armed ES
76-85	50% Unarmed EX, 50% armed CT
86-90	60% Unarmed EX, 40% armed FG
91-97	70% Unarmed EX, 30% armed DD
98-00	80% Unarmed EX, 20% armed CL

* All units above have X on board - extra funds can come from the warship fund to support this.

* Armed units use military engines unless the race only uses commercial engines. Unarmed units may use military engines only if they can cruise at MSS (maximum survey speed).

* Rolls above 50 allows the usage of Xc. But Xc should only be used for large Multi-System NPRs.

Survey Fleet Size: This table is removed. Instead, base fleet size on survey policy (e.g., aggressive policies means lots of fleets)

Y20 GOVERNMENT SPECIALS (OPTIONAL)

The description of each NPR government type contains the information needed to decide how it will behave and react to other races and governments. The descriptions are divided up by racial stat successes and contain the name, percentage chance that a race with those successes will be of that type, the government group it belongs to, and the consideration delay (if any) for that type of government. It also includes a general description of the government type and any special attributes or abilities it may have.

See [Y21] for the actual NPR government descriptions.

Y20.01 CONSIDERATION DELAY (*)

When a race is uncomfortable with a political offer, it may delay for deeper consideration of the offer. Some races always take this extra time. The offering race is told the offer is under consideration. Offers cannot be made during that time, and any attempts will be rejected automatically. Governments with automatic consideration delays always use that delay period.

Y20.01.1 A political offer roll within 10 of the number needed (either high or low) results in a 1-month consideration delay.

Y20.02 DESTABILIZATION (D)

When a race suffers destabilization all treaties except amalgamation are broken, and the government is considered to be the anarchy government type until such time as a new government is formed. Each month of anarchy results in the destruction of 1% (FRU) of PU and IU at every population *above colony* due to the ensuing chaos. There is a 10% chance per month thereafter that a new, stable government is able to take control. When that happens generate a new government type by rerolling statistics, successes and "government type." Governments with "race" or "unity" in the name must be re-rolled. It is possible (though unlikely) that the new government type be a three-success race.

Y20.02.1 If de-stabilization occurs, it happens during the "political control" pulse of the political phase. [J2]

Y20.03 GLOBAL GOVERNMENT MODIFIERS

Any race can be unstable or insane. Because global modifiers can apply to any race, it can be difficult to determine when dealing with such a modifier. When rolled, generate a new government type re-rolling any results of 'unstable race/gov/ruler'. An unstable/insane government type cannot be a three-success race (unless the SM wants to be cruel), therefore the lowest racial stat is always a non-success (even if above 75). This means that you might end up with an unstable military hierarchy.

Roll	Result[a]
01-05	NPR offers a Treaty that is 2 levels higher
06-10	NPR offers a Treaty that is 1 level higher
11-24	NPR reduces treaty by 1 level
25-50	NPR reduces treaty by 2 level
51-70	NPR reduces treaty by 3 level
71-83	NPR reduces treaty by 4 level
84-92	NPR reduces treaty by 5 level
93-00	Treaty dropped, political state becomes Negotiation

[a] a treaty reduced below Non-Aggression is dropped and the political state becomes Negotiation.

Y20.03.1 Unstable Race /Gov/Ruler -- Global Modifier A small number of NPRs have unpredictable or unstable leadership.

An unstable NPR has a 2% chance per month, that the NPR will reconsider its situation. If it does reconsider, reroll as a political offer the current political state of each race to see if the relationship continues. Otherwise, the treaty is dropped and the political state becomes negotiation.

Y20.03.2 Insane Race /Gov/Ruler -- Global Modifier This special result indicates that the race, government, or ruler is either insane or behaves in a fashion sufficiently different that other races feel they are insane. Either way, the result is the same in game terms.

Many decisions made by these rulers make little sense but they are always paranoid. Because of this, a War Check is made against each ally and enemy they have every d10+10 months based on when they first made contact with them. If the war check fails for a race they are currently at war with, they go to a state of "negotiation" and inform the other race. All treaties except amalgamation can be broken because of these checks.

Every first contact or political type roll this race makes has a modifier of (d100/2)-25 (FRD). For political acceptance rolls this roll is applied to the RC and may cause a war check. This modifier is rerolled each time an offer is checked!

Y20.04 BRIBES (B)

Some races require money (50 MC per attempt for the required bribes) to ensure that your requests actually reach their intended audience and consideration delays always occur. Bribes are requested up front as the first offer is made.

See [Y21] for all the NPR government type descriptions.

Y21 GOVERNMENT DESCRIPTIONS

The following are descriptions of the government types (Government Tendency), intended to give the SM a basis for playing the race and the rules that govern their actions and activities. An important part of their "mind set" is their government tendency, which tells the SM what their most important values are. They are as follows:

R = Religious: Religious beliefs guide their lives/actions.

I = Imperial: A single leader guides their lives/actions.

M = Military: The military guides their lives/actions.

F = Federal: A single unified government controls the people.

D = Democracy: The people are the government, sometimes with a central government that represents them.

C = Committee: A select committee governs the people, sometimes by representation, other times by right.

Y21.01 ZERO SUCCESS GOVERNMENT TYPES

These peaceful government types rarely present a problem. They are not very determined, aggressive, or chauvinistic in outlook. They are some of the easiest races to get along with, and are almost always willing to be your friends (even if sometimes for a price).

Y21.01.1 Anarchy -- Group: D/C Anarchy is a completely unstructured 'state' that exists through the concept of personal

freedom. There is no central government, as any such body would infringe on the individual rights of its 'citizens'. The peacefulness of such a society is debatable, as there nothing to keep disruptive or destructive individuals in check, other than neighbors putting a stop to his annoying or threatening activities (usually permanently).

Bribes are required to get anything done [Y20.04]

Y21.01.2 Capitalist -- Group: D/C Those persons or entities that have accumulated the greatest capital gain rule capitalist states. Because of this there can be no central government unless one person or entity manages to gain a substantial monopoly on the majority of goods.

Bribes are required to get anything done [Y20.04]

Y21.01.3 True Democracy -- Group: D/C * A true democratic state is governed by the will of the majority of the citizens. All decisions are made by citizens' vote, with the majority selection being ratified. Local leaders usually dominate the actual functions of the government.

Consideration delays always occur.

Y21.01.4 Theosocracy -- Group: R/I * A theosocracy is ruled by philosophical discussion and debate amongst whoever wishes to participate. Most of the citizenry spend their time in contemplation of something deemed worthy of deep meditative thought. This type of rule is more like debate club than a governmental body, as different forms of government are researched, tried, and debated on a regular basis.

Consideration delays always occur. Offers from this type of government are made normally as the debates were settled (if not finished) before the offer was made.

Y21.02 ONE SUCCESS GOVERNMENT TYPES

These governments are generally friendly and make good allies.

Y21.02.1 RM/--/-- These government types are usually very aggressive.

Y21.02.1.1 Despotism -- Group: M/F Despotism is a state ruled by someone that under reasonable circumstances would not be in charge. Despots either seize power by the use of force, or are placed in power by someone else through the use of force.

As the backbone of sustained rule is the military, despots spend a considerable percentage of the government's resources on the military, which is quite respectable. Nonetheless, despots always face factions supporting the 'rightful' rulers, and thus cannot be considered as unified as a dictatorship.

There is a 2% chance per month that a despotism will destabilize itself.

Bribes are required to get anything done [Y20.04]

Y21.02.1.2 Confederacy -- Group: D/C * A confederacy is usually a group of states that band together for mutual defense and trade, but still maintains relatively individual governments. The central government of a confederation only has those powers that its members grant it, thus local governments have greater authority when dealing with local issues.

Because of this, the central government is usually relatively slow to react to a crisis, while those local governments tend to react as they see fit in a timely manner. To reflect this, each small or larger population is treated as having a free (ICC) which can issue orders to units within two warp jumps of the system.

Very close to a group of clans in nature, it is usually a hotbed of political intrigue and plotting between the member states. Confederacies are always willing to add nations to their merry little club through treaties and alliances, but tend to insist upon the individual freedoms of each of their members. Because all the members must agree on any treaty negotiation, consideration delays always occur.

Y21.02.1.3 Military Anarchy -- Group: D/C * A military anarchy is a state where the strongest warlords rule. Life there is usually ugly, brutal, and short. A side effect of this lifestyle is the excellent combat skills of the inhabitants. Militarily, they are the equals of many multiple-success governments, but their Achilles' heel is their paranoia, which prevents them from forming strong alliances, even among themselves.

Because of the constant struggle for supremacy each warlord controls his own fleet of ships. When facing an outside threat, a council of the strongest warlords determines policy (through force of arms if necessary), and thus, consideration delays always occur.

A Military anarchy does not start with the normal number of graded admirals. Instead they get 1 Ultra-elite admiral, and 5 – 12 (d8 + 4) elite admirals (i.e., as many admirals as there are warlords).

Y21.02.2 RD/--/-- These government types are usually very determined.

Y21.02.2.1 Absolute Monarchy -- Group: R/I A state ruled by a single hereditary line holding absolute power. Though there is considerable court intrigue, it is not divisive, and the monarch rules supreme. Monarchies tend to be self-sufficient, and the rulers are rightfully concerned about change weakening their absolute power, so they tend to be something of isolationists.

Bribes are required to get anything done [Y20.04]

Y21.02.2.2 Socialism -- Group: M/F A socialist state is built by careful control and distribution of goods and labour. All distribution, including who gets what job, is arranged by the government in the way the it feels is most beneficial for 'the people'. To a socialist, there is no such thing as personal property, so one must be very talented indeed to initiate trade with such a state.

Y21.02.2.3 Representative Democracy -- Group: D/C * Like a true democracy, the representative democracy is a state ruled by the people. The difference is that the citizens elect a group of representatives, and these representatives are the ones who vote on important decisions. Representative democracies are adamant about personal freedom, but are more than willing to interact peaceably with other governments. In times of need, their well trained crews and quality ships make them a dangerous enemy or a useful ally.

Due to the required discussion, debate, and voting required for a decision to be finalized, consideration delays always occur.

Y21.02.3 RC/--/-- These government types are usually very chauvinistic.

Y21.02.3.1 Bureaucracy -- Group: D/C * A bureaucracy is the epitome of big government. In a bureaucratic state, nearly every citizen is a member of the government in some way, but there is no governmental accountability. It seems that the entire society has been structured around the intricate rituals of red tape. It takes a seemingly interminable amount of time for a bureaucracy to decide on anything.

To an outsider, a bureaucracy is almost indistinguishable from a theocratic anarchy.

Due to the red tape involved, consideration delays always occur.

Bribes are required to get anything done [Y20.04]

Y21.02.3.2 Communism -- Group: M/F True communism is a state where the citizens share what they have to make sure that everyone has what they need. The big difference between this and other forms of communism is that in a true communist society everyone voluntarily shares.

Communists are idealists, who do not believe in personal property. Trade suffers as a result of this. In addition, a communist society will never form a treaty greater than Non-Aggression with Capitalist, Plutocracy, Guild Syndicate, Military Corporation, or Corporate government types, who they see as the epitome of evil and will seek to eventually destroy.

Y21.02.3.3 Theocratic Democracy -- Group: D/C * Theocratic democracy is a democracy in which members of the church are the citizens. Those who do not follow the ways of the one true religion are worthy only of contempt, and are shunned. Only citizens of the one true church may participate in government.

Since review, and prayer, by Church officials is necessary, consideration delays always occur.

Y21.02.3.4 Theocratic Anarchy -- Group: D/C * An anarchic state unified by its people's love of religion, if nothing else. This government is typified either by myriad religions without enough political strength to actually take control of the government, or by sundered groups of prophets and theologians who can agree on nothing but the most basic concepts of the core religion. Theocratic anarchies tend to be very unstable and inefficient, thus, consideration delays always occur.

Y21.02.3.5 Herd Race -- Group: R/I * (aka. the Bovine Herbivoracity.) This race is just what it sounds like – a space faring species that has all the behavior and instincts of herd beasts. This means they are generally peaceful beings that would rather run from a threat than fight it, unless they are cornered and forced into combat, at which point they fight like rabid animals.

Herd races will only emplace colonies on habitable planets. However, they can emplace (or evacuate) those populations using 50% the normal Q requirements at 75% the normal cost. H requirements are at normal rates and costs. In order to compensate for losses inflicted by predators, they tend to breed faster than other races. All Herd race population growth is at 150% the normal rate (after all other modifiers).

Herd races have a great deal of social inertia. This means they are slow to make decisions or start working on something new. All research is limited to a RP Rate of 7 per month plus bonuses (if any). Despite this reduced technological capability, herd races are always able to build freighter (but not warship) hulls two sizes larger than normally allowed by their economic level.

They rarely initiate treaties with other races due to the belief (usually true) that others are out to get them and consideration delays always occur. The number of warships other races have in their system always affects the RC of the herd race towards all races that currently have ships in the system as if they were in a First Contact situation.

When another race enters a herd race system, the herd race will not initiative contact [T1.01] but will respond to first contact. If a race does not initiate first contact and does not show evidence of having "significant military capability or mindset," there is a chance that the herd race will ignore the presence of the other race, and continue on as if they were not there. When first encountering a new race, make a RC check and if the result is less than the herd races' RC they will consider this intrusion to be a threat. If the other race *does* show a "significant military capability or mindset" the herd race will think of them as a threat, and respond accordingly.

When threatened or when negotiation results indicate, a roll on Table Y18 War Type is made and the result becomes the number of warp jumps they will travel in an attempt to escape the race that threatens them (exception: the Herd race will not leave its homeworld nor jump past it). An All Out War result means they will move (d10/2)+2 systems away. After running the indicated number of warp jumps, the herd race will begin surveying for a habitable planet in which to set up a new colony, being sure *not* to go in the direction of any races they may be trying to avoid. Because a herd race may need to perform warp point surveys on short notice, all of their ships greater than 30 hull spaces must have Science Instruments.

Actions that herd races considered to be threatening:

- If more than 10% of the ships other races have in the system are warships (number of ships exceeds 2).
- If a race in a Herd system, drills ships or fires on ***any*** race's units or colonies.

If a herd race colony is attacked, it will be abandoned to its fate, and all nearby colonists will be saved if it can be safely done. Herds are willing to sacrifice a small number of their kin to preserve the existence of the rest; thus, when fleeing in a combat situation, they willingly use simultaneous transit in order to escape.

When trapped (no WPs known or in the home system), they will turn on whatever it is they consider to be threatening them. When this happens, they will attempt to perform a naval "stampede" past/though enemy fleets including ramming.

Herd races favor distant "less threatening" combat and thus receive +2 SL to any long range weapons but –2 to any short range weapons. They also receive Science Instruments at a SL equal to EL +3 and their home system is fully surveyed when first encountered.

Y21.03 Two Success Government Types

If friendly, these governments make strong allies. Otherwise, they can be tough enemies.

Y21.03.1 RM/RD/-- These government types are usually highly aggressive and very determined.

Y21.03.1.1 Dictatorship -- Group: M/F A single central point of control, often tyrannical in nature typifies a dictatorship. They are quick to respond to any threat or proposal, and maintain a strong military in order to keep order and control within the boundaries of the state. Dictatorships are often willing to sacrifice outlying colonies and the like for the preservation of the homeworld.

There is a 2% chance per month that a dictatorship will destabilize itself.

Y21.03.1.2 Benevolent Dictatorship -- Group: M/F A single central point of control typifies a benevolent dictatorship. They are quick to respond to any threat or proposal, and maintain a strong military in order to protect the populace. Benevolent dictators tend to

have policies and strategies less harsh to their subjects than a standard dictatorship, but are otherwise identical. A benevolent dictator will tend to strike hard at the first sign of threat, to better protect all his subjects.

Y21.03.1.3 Military Hierarchy -- Group: M/F Ever been in the armed forces? Imagine if all of society was like that. Always follow your chain of command! A military hierarchy is willing to hire mercenaries (how they feel of military alliances) as long as they know their place in the command structure and follow orders like proper soldiers. Usually members of a military hierarchy are extremely diligent in following through on any plan of action (as if they have any other kinds of plans).

Once engaged in a war, if they have the advantage, they will not stop until the enemy is totally defeated. But they will accept peace talks in a stalemate or losing situation.

Y21.03.2 RM/RC/-- These government types are usually highly aggressive and very chauvinistic.

Y21.03.2.1 Clan -- Group: D/C * Clans are groups of interrelated families (which can sometimes grow quite large). Among the clans strong rivalries thrive, but at the appearance of an outside threat they tend to band together for mutual defense, in a fashion similar to a confederacy or feudal system. Unlike confederacies or feudal governments, however, clans are much more likely to be friendly towards outsiders. Because of their internal squabbling, they have very respectable militaries and consideration delays always occur.

Y21.03.2.2 Imperial Council -- Group: D/C An imperial council is an empire of subject nations who have given all power to a central corps of imperial ministers and advisors. Each of these has direct control over a particular aspect of the internal workings of the empire (for instance, trade, militia, fleet, civil defense, transportation, etc.). Imperial councils answer quickly to changes in the political environment. They are, however, prone to internal squabbling over funding that never seems able to cover all of their grandiose plans.

Bribes are required to get anything done [Y20.04]

Y21.03.2.3 Plutocracy -- Group: M/F * An Plutocracy is rule by the very rich (either one must achieve a certain level of wealth before becoming a citizen, or there are only so many persons who are allowed to rule, and the richest few reign). More militant than some, mainly because the citizens are not in the military classes, these governments can be tough opponents, particularly if their rearward areas (containing their non-combatant leaders) are attacked. They are always hungry for trade to make them richer, and for militaries mightier than their own to engage their enemies far from their holdings. Consideration delays always occur.

Y21.03.3 RD/RM/-- These government types are usually highly determined and very aggressive.

Y21.03.3.1 Feudal Monarchy -- Group: M/F Delegated rule through a series of ever more localized aristocrats, who in turn rule the common serfs of their lands. Though feudal societies are prone to territorial disputes and court intrigues, they can pose a rather thorny threat to those who take them lightly. All power ultimately rests on a ruling monarch, who can levy troops to defend the kingdom. Feudal kingdoms tend to fight only defensive actions or very limited wars to expand their holdings. Because of this feudal monarchies always have a –10 modifier when making a War Check.

Bribes are required to get anything done [Y20.04]

Y21.03.3.2 Oligarchy -- Group: M/F * An oligarchy is ruled by an elite few. Existing members select new members of the government body, primarily based on how they fit in with the status quo. Due to all the administrative layers, consideration delays always occur.

Y21.03.3.3 Marxist-Leninist Comm -- Group: M/F Marxist-Leninist communism is very similar to true communism. However, instead of everyone sharing amongst themselves as needed, a central government body does the redistribution as it sees fit. While more authoritarian than a true communism, this form of government is much less totalitarian than its counterpart, Stalinist communism.

Marxist-Leninist communists frown on all aspects of capitalism, thus, they receive a +10 RC modifier for any offered treaties from Capitalist, Plutocracy, Guild Syndicate, Military Corporation, or Corporate government types, who they see as the epitome of evil. If offered a Trade treaty, the modifier is +20 RC, AND they must make a War Check as they may view this treaty as an attempt to destabilize their government.

They will only engage in Limited or Full trade with a race of equal or greater EL, as they consider lesser races to be objects of conquest. If they ever gain an advantage, they will make a war check to attack every 6 months. Advantages use EL and population to determine strength.

Comm. EL	Population
2 greater	Larger
1 greater	50% larger
Equal	100% larger
1 lower	200% larger

Population: May include Allies willing to attack but at least 60% of population must be communist and the allies must be the same or higher EL than the communist.

Strong security forces are always used; after a revolt, Potent forces always used.

Y21.03.3.4 Group Mind Government The group mind is the result of telepathy arising among a non-communal species. Individuality still exists, with the ability to go against the will of the group limited to how much mental strength the individual possesses. The effect could be referred to as "a conscience with a LOUD voice." Memories of special events or individuals may exist either when a large enough group concentrates on them or preserved by bard equivalents. This individuality allows the chance to have Graded Leaders.

Often mistaken for socialism, the group mind has industries to maintain basic living needs and a luxury market for those who wish new/exotic experiences rather than relying on memories. Such trading is done by barter, creating the bonus to trade. Group minds tend to have a "take it or leave it" bargaining ethic as both have a good idea of what they spent on the item. And having an impartial judge at hand does not hurt. The high coordination allows for very efficient industry, conferring them a +10% production bonus.

The group mind extents throughout a 60 sH sphere centered on the largest population in the system.

The group can exclude individuals as punishment or to protect itself. In combat, they will behave like other races as their sense of mortality, despite the ability to live on in memory, is as strong as any other. However, the tightness of their link allows them to have a BG of Crack. Once any non-precision internal damage occurs, a Spaceship will immediately loose 1 grade due to the damage caused by

dead or injured individuals in the group. PDCs on, and SS around, populated planets are immune to this grade loss which is in addition to the mass death penalties.

The group mind is subject to mass death as the result of genocide. If losses greater than 199 PU are destroyed by planetary bombardment, all units in that system suffer at least disorganization. Every 12 hours, the effects of the disorganization reduce to the next lower class level on the table.

Losses	Type	Initiative	Weapons Fire	Point Defense
1000+ PU	Class A	-3	-2	-1
500-999 PU	Class B	-2	-1	--
200-501 PU	Class C	-1	--	--

In most disorganization cases, ships would flee the system unless there were other colonies to protect that could be reached before the attacker could get to them.

Examples of group minds would be Weber's Treecats, Gayle Greeno's Ghatti, and many others. Note that the Racial Unity does NOT suffer Psychic Shock.

Y21.03.4 RD/RC/-- These government types are usually highly determined and very chauvinistic.

Y21.03.4.1 Republic -- Group: D/C * Each individual "state" that is part of the republic has a governor, and one or more representatives in the Senate. The Senate makes all official policy for the republic as a whole, while the individual governors set policy for their individual states.

Consideration delays always occur because, on the month a treaty is offered, acceptance is checked for normally, and may be tentatively accepted. The following month, a second check is made to see if the Senate ratifies this decision, making it official and final. This process is also used when making a War Check.

Y21.03.4.2 Theocratic Monarchy -- Group: R/I A theocratic monarchy is similar to an absolute monarchy, the main difference being that the people are more supportive of the government as THE means of communication to their god(s). A priest-king rules as head of both the church and state.

They don't normally have a large military because they have popular support. On the other hand, they will maintain a good defense in order to protect the populous (and thus maintain the goodwill of the people). Trade, industry, and the church are the primary foci of such a state.

Y21.03.4.3 Guild Syndicate -- Group: D/C Function-specific guild masters who in turn preside over the journeymen rule a guild syndicate. Every segment of society has their associated guild to which they owe fealty and gold. Guild syndicates tend to fight only defensive actions or very limited wars to expand their holdings. They have a -10 modifier when checking War Type."

Bribes are required to get anything done [Y20.04]

Y21.03.5 RC/RM/-- These government types are usually highly chauvinistic and very aggressive.

Y21.03.5.1 Fascism -- Group: M/F This government type is an ordered police state, believing in its own superiority. Fascists have a market economy, and will often willingly trade with other races. As they believe in the superiority of their race, they are highly resistant to Amalgamation, and will only do so if the offering race is a D/C type race. (i.e., willing to allow the Fascists their autonomy – in which case, it is more a partnership than an amalgamation, anywise.)

Y21.03.5.2 Military Theocracy -- Group: R/I *Jihad* or War is the religion of a military theocracy. Though they rarely fight amongst themselves, war is an opportunity to prove how they stand with their god. Although highly militant, a Military Theocracy has average crews. Due to the number of wars they fight, a Military Theocracy starts with one crack admiral, and two average admirals.

Add +20 to the war type table when dealing with this type of government.

Y21.03.5.3 Military Bureaucracy -- Group: M/F * Basically the military bureaucracy is a military hierarchy … in triplicate, submitted to the Accounting Department after being approved by the Oversight Committee for Space Expeditionary Forces Abroad, and authorized by Sector High Command. Like the military theocracy, this state is highly chauvinistic, and extremely militant. The big difference between the two is that one follows the Book, the other the Manual. Needless to say, consideration delays always occur.

Y21.03.6 RC/RD/-- These government types are usually highly chauvinistic and very determined.

Y21.03.6.1 Theocracy -- Group: R/I Priests of a single powerful religion are in control of a theocratic government through canonical law. They dislike anyone interfering in their affairs and they are disinclined to be controlled by anyone.

> ***Note:*** Don't be fooled by the apparent weakness of this government type. They have no overt advantages, but no disadvantages either. They are in essence a Player Race that is unlikely to jump into a treaty with anyone.

Y21.03.6.2 Constitution Monarchy -- Group: D/C * A monarchy having a constitution that defines exactly what powers the monarch does and does not have. With the exception of having a parliament that shares governmental powers with the monarch, this government type is essentially the same as an absolute monarchy. Consideration delays always occur.

Y21.03.6.3 Pedagogical Oligarchy -- Group: D/C Think of college. The teachers are in charge. Students are merely mentally impoverished citizens, who might one day rule if they show themselves to be intelligent enough to join the ruling class. Though the government may seem too weak to be considered a two-success race at first, think of what can occur in a society built solely on the supremacy of knowledge. Pedagogical Oligarchies research like mad. Any one facing them can expect a small and poorly trained, but scientifically advanced fleet.

To reflect their academic acumen, increase all starting SL by 1 plus all target RP are -20% and the chance of any breakthrough is doubled.

Y21.03.6.4 Corporate Government -- Group: D/C One or more major corporations rule a corporate government, the natural evolution of an unregulated capitalist government. Decisions are swift and ruthless, particularly when it comes to matters of defense and trade. They care little for low-return investments but are very open to any negotiations that will enrich the ruling corporations. Although they will honor any military alliance, the ships they send will be delayed one month due to the cost analysis and risk/benefit studies that must be done for the mission. If the cost to defend an outlying colony is more than they would get from keeping it, a corporate government is more likely to cut their losses to

better defend other, more valuable investments. They get a -20 on the Colonization Policy table with a minimum result of 1.

Bribes are required to get anything done [Y20.04]

Y21.04 THREE SUCCESS GOVERNMENT TYPES

Warning! All governments in this category are highly chauvinistic and *very* dangerous. Beware!

Y21.04.1 RM/RD/RC These government types are usually extremely aggressive, highly determined, and chauvinistic.

Y21.04.1.1 Military Empire -- Group: M/F The military empire is normally the result of a military hierarchy (or bureaucracy) that has conquered and integrated other governments into itself. Conquered states eventually become integrated into the 'chain of command'. The ties between the members of the empire are almost exclusively military, with civilian aspects of government normally left up to local officials.

A military empire will normally not attempt genocide upon their enemies, as would be a waste of potential military resources (once they have been properly indoctri … er, educated).

Y21.04.1.2 Military Republic -- Group: D/C * Each individual "state" that is part of the republic has a military governor, and one or more civilian representatives in the Senate. The Senate makes all official civilian policy and makes recommendations to the military for the republic as a whole, while the individual governors set policy for their individual states.

Consideration delays always occur because, on the month a treaty is offered, acceptance is checked for normally, and may be tentatively accepted. The following month, a second check is made to see if the Senate ratifies this decision, making it official and final. This process is also used when making a War Check but all War Checks receive a +10 modifier.

Y21.04.1.3 Military Corporation -- Group: M/F * Similar to a corporate government, a military corporation is ruled by one or more major military or defense contractors. These corporations usually came to power due to long planetary (or possibly interplanetary) conflict allowing them to slowly gain in influence and policy setting capability through successful political ballot stuffing and spin doctor lobbying. They care little for low-return investments and are very open to any negotiations that will enrich the ruling corporations.

They will happily enter into and honor any military alliance, and because of their desire to continue providing quality (expensive) military and defense products all War Checks are at +10 due to their devious diplomatic practices (remember the lobbying and ballot stuffing?). Any race that has a Military (or Trade and Military) treaty with them will receive a +5 modifier to their War Checks as well. If they possess a military system one of their allies does not, they will be more than happy to provide the information on the system … for 100x the systems price.

[Reminder: Never trust a smiling SM.]

Y21.04.2 RM/RC/RD These government types are usually extremely aggressive, highly chauvinistic, and very determined.

Y21.04.2.1 Feudal Theocracy -- Group: M/F Delegated rule though a series of ever more localized church officials, who in turn rule the faithful of their lands. Though feudal societies are prone to territorial disputes and intrigues, they can pose a rather thorny threat to those who take them lightly. All power ultimately rests with the mother church, who can levy troops from the various lords. Feudal theocracies tend to fight limited wars to spread the faith and expand their holdings. Due to the number of wars they fight, a Feudal Theocracy starts with two LG+1 admirals, one LG admiral, and they have a permanent +10 modifier for War Checks to reflect their willingness to convert their neighbors "by the sword." During these crusades, the feudal theocracy will attempt to minimize civilian losses, as they are potential converts.

Y21.04.2.2 Khanate -- Group: M/F A group of clans, unified under a single leader through the use of military force into an empire of uncompromising honor and discipline is known as a Khanate. Very impulsive, a khanate tends not to wait around to see what will happen next, but will instead take immediate military action.

They have a +20 modifier to all War Checks. When they roll "All communications impossible," they must reroll the result. If the second result is also "All communications impossible," then they will use that section of the rules. If the result of the second roll is anything but "All communications impossible," then they instead use the Negotiations rejected (but attempting communications). This is because the Khanate's prefers not to waste effort with races that don't deserve it. Thus, they will always demand a planet's surrender [V3.03], and will perform a Pre-Invasion Nuclear Strike if necessary to show their willingness to crush their enemies beneath their boot. If the population does not surrender, the Khanate will invade the planet.

When Full Communications are reached, the Khanate will request for the other race to surrender immediately and become a subject race. This will, of course, be rejected by all. Negotiations will proceed from there. If a race manages to prevent the Khanate from capturing or keeping captured the first system it attacks within 10 months after each new war starts (or is able to capture more systems from the Khanate than the Khanate captures from them), the Khanate will show great respect and have a permanent –10 RC modifier towards that race (multiple -10s up to -30 are allowed). Any act of treachery on a Khanate will result in a permanent +10 RC modifier towards the treacherous race, and the Khanate will declare all out war in an attempt to eradicate the offending government from the face of the universe. The Moral: always deal carefully and honestly with a Khanate.

Y21.04.2.3 Military Unity -- Group: M/F The military unity is a state where every person is part of the military, and they all work towards a common, united end. There is little, if any, discord within the ranks of a military unity, only single-minded pursuit of purpose.

When advancing in EL, a military unity will receive any Datalink tree/branch and item SL at EL+2 without cost or development time, as it is a natural outgrowth of their own methods and tactical abilities.

Due to their skill at arms, a military unity has no compunction against using force to achieve their goals. To reflect this they have a +20 modifier to all War Checks.

Y21.04.3 RD/RM/RC These government types are usually extremely determined, highly aggressive, and very chauvinistic.

Y21.04.3.1 Imperial Monarchy -- Group: R/I * An emperor that presides over subject kings rules an imperial monarchy. This normally hereditary 'high-king' has absolute power over all that falls under him. Society is stratified into various classes, with the ruling aristocracy being quite concerned with matters of honor and similar martial virtues, such as conquest. Negotiations can be tricky due to the large egos and intricate customs involved, and a war is often seen

as a way for the nobles to prove themselves; thus, consideration delays always occur.

If a war check fails by less than 10 then a limited "War of Honor" is declared. This war is formally announced and the challenged race is invited to attempt to defeat a portion of the imperial monarchy's fleet with an equal number of hull spaces. Normally, the best 10% of the imperial fleet is selected, and if one side is of a lower tech level it may get an additional 10% HS per tech level of difference. The winner of this high tech "joust" gets one star system (usually preselected) and war reparations from the loser equal to the trade bonus of the loser for five months. After the conclusion of this test of arms, it is back to negotiations as if nothing had happened. (Of course, if the opponent isn't "honorable" a general war could ensue.) Because this is a limited war, no increase in R&D rates is applicable.

Every month there is a 2% chance of succession. If succession occurs, there is a 10% chance there is no legal heir. If this occurs all treaties except amalgamation must be renegotiated, but with the bonus for the political state it was at still applies.

Y21.04.3.2 Stalinist Communism -- Group: M/F

* Consideration delays always occur

Stalinist communism is basically communism by the sword. It is a transition state in which a communist or socialist government is being set up. The strong military aspect is for the purpose of keeping the populace in line long enough for them to accept the 'new' government as the status quo. Because of this, a Stalinist communism tends to just as ruthless to its own people as it is towards its enemies. The military, while strong and large, suffers from a lack of morale and poor maintenance skills. They will not accept amalgamation with others, but will force amalgamation on subject races. Conquered races are handled by the slave – subject path.

While not as idealistic as true communists, or even Marxist-Leninists, Stalinist governments still frown on all aspects of capitalism, and trade suffers as a result of this. Because of this a Stalinist communist society receives a +20 RC modifier for offered treaties from Capitalist, Plutocracy, Guild Syndicate, Military Corporation, or Corporate government types, who they see as the epitome of evil. In addition to the RC modifier, they must make a War Check as they may view this treaty as an attempt to destabilize their government.

They only trade with races of equal or greater tech. If they ever gain an advantage, they will make a war check to attack every 6 months. Advantages use EL and population to determine strength.

Comm. EL	Population
2 greater	Larger
1 greater	50% larger
Equal	100% larger
1 lower	200% larger

Population: May include Allies willing to attack but at least 60% of population must be communist and the allies must be the same or higher EL than the communist.

As this is the transition state between their previous government and communism, there is a 2% chance per month that it evolves beyond its current government type. When evolving, there is a 50% chance of a Marxist-Leninist communism and a 50% chance of an Ordered Socialism government. If this happens, all existing treaties must be renegotiated, and these negotiations have the bonus for the previously accepted treaties. [Yes, it has a chance to become a two-success government.]

Y21.04.3.3 Artificial Intelligence Race -- Group: D/C An artificial intelligence race is a self-replicating group of intelligent non-living beings, usually machine, though possibly cybernetic in nature. An AI race is all that is left of a race that constructed 'servants' to help with day-to-day tasks. Eventually these beings became self-aware (if not so to begin with) and have since evolved beyond their original programming.

Since AI entities do not sleep, all income and build rates per construction facility are DOUBLED. AI races always have a crew grade of average.

AI races are never *required* to grow but if they do... They must pay 10 MC for each PU of growth and must pay 10 MC for each Bonus PTU (for colonization) grown. All emplacement costs are doubled and no colonization rebate is given. Finally, IUs cost 60 MC, not 30 MC.

All R&D is 150% normal cost, and all projects require an extra 30 RPs.

Even though they are not organic beings, their complex AI is as vulnerable to radiation as organic life forms so they have the same limits regarding the use of engine tuners and (DeC).

Y21.04.4 RD/RC/RM These government types are usually extremely determined, highly chauvinistic, and aggressive.

Y21.04.4.1 Ordered Socialism -- Group: D/C An ordered socialism consists of a strict central planning office that plans all aspects of society. This society is broadly committed to the idea of equality for all citizens. Through governmental policies collective ownership of the economy has been implemented, as well as extensive welfare measures. Being concerned with the welfare of all of its citizens this society is often reluctant to endanger its citizens with risky foreign ventures, but will defend its holding (including against economic attacks) with alacrity. All rolls on Table Y18 War Type are at –20, because war is a chaotic situation that effects an ordered society.

Y21.04.4.2 Democratic Socialism -- Group: D/C * This government type uses redistribution of goods as in Ordered Socialism, but it is ruled by the people or by representatives of the people instead of a central planning office. While nice in theory, democratic socialism tends to be tyrannical in practice. They will always refuse a treaty on the month it is offered, but will reconsider and possibly accept the following month.

Due to the efficiency of a democratic socialist state, industrial expansion is better organized, reflected by a bonus when IU are purchased. For every five IU purchased, one free additional IU is placed.

Y21.04.4.3 Hive Mind Race -- Group: R/I Hive mind races, due to their tremendous advantages, are extremely dangerous for all other forms of life they encounter. If not stopped, they can quickly become an uncontrollable juggernaut, spreading like a cancer that devours every race it chances upon.

Hive minds are usually a telepathic insectoid or arachnoid race that normally views all other races as nothing more than a somewhat challenging food source. They rarely negotiate (Why bother negotiating with food? Do you negotiate treaties with your cows?) and always attack immediately when war is indicated.

Some of their biggest advantages are that their populations grow at a greatly accelerated rate and produce a higher income compared to other races. All hive mind colonies grow at double normal rate. Very large populations produce 200% normal income (after any other modifier), large pops. produce 175% normal income, medium 150%, and all smaller populations produce normal income.

Hive minds tend to spread rapidly, primarily due to the fact that PTU transport requirements take only 25% of normal. Defense is also much easier as their PU total is doubled in the invasion and conquest steps.

Due to the lack of individuality in the race, all research and development requires +60 RP to complete and each RP costs 150%. Because of this, other races have a chance to defeat a hive mind if they can survive long enough to develop a significant technological advantage.

Lack of individuality and personal initiative cause all Hive mind crews to be average grade; however, they do not need admirals or flagships with their telepathic link. Their only initiative roll modifier is {1+EL/10 FRD}; Otherwise initiative is never increased or decreased for any reason (even CIC) excepting "telepathic trauma."

The telepathic links extends throughout an entire star system including binary and trinary worlds. Its theoretical limit is about 1/2 light-year and communication via the link is instantaneous.

Lack of individuality also means that the loss of a few thousand warriors is considered a normal and acceptable thing. Thus, the use of simultaneous transits, ramming, and genocidal policies are considered just another viable (if expensive) tactic.

The use of genocidal policies by (or against) a hive mind carries no penalties normally associated with such behavior.

Because hive minds are telepathic, the destruction of one of their colonies can have massive repercussions on any hive mind members that remain in the same system. If 750 or more PU is destroyed by planetary bombardment of a hive mind colony, all hive mind ships in the system suffer severe disorganization due to the resulting "telepathic trauma" caused by the large number of almost simultaneous deaths. During the first twelve hours of "telepathic trauma," all initiative rolls are –3, all offensive fire is –2 to hit, and all point defense rolls are –1 to hit (in addition to all other normally applicable modifiers). For the second twelve hours all initiative rolls are made at –2, all offensive fire is made at –1 to hit, and point defense rolls are made normally. For the third twelve hours all initiative rolls are made at –1, and offensive and point defense fire is rolled normally. After thirty-six hours (3 system turns) have passed all penalties caused by the "telepathic trauma" are removed.

Y21.04.5 RC/RM/RD These government types are usually extremely chauvinistic, highly aggressive, and very determined.

Y21.04.5.1 Imperial Theocracy -- Group: R/I * Consideration delays always occur

A hereditary or priestly emperor, who may be thought of as a God, rules an imperial theocracy. This emperor presides over the member nations who are in turn ruled locally by hereditary or priestly kings. In most ways, an imperial theocracy behaves in the same fashion as an imperial monarchy. Tradition, custom, and rigid formality dictate almost all aspects of life in such a society. Because of this, it is hardly noted for being adaptive, but is often known for the astuteness (not to mention deviousness) of its politicians and diplomats.

Bribes are required [Y20.04]

Any time a political offer roll ends in a natural "1" (e.g., "11," "61," etc.), then an inadvertent insult has stalled the negotiations. This means that it is possible to succeed at the political offer, but still insult the host in some way. This insult can be forgiven for 200 MC or by adding a two-month delay to the negotiations and implementation of the treaty.

Every month there is a 2% chance of succession. If succession occurs, there is a 10% chance there is no legal heir. If this occurs all treaties except amalgamation must be renegotiated, but with the bonus for the political state it was at still applies.

All NPRs treat this race as having an additional –10 RC modifier if the imperial theocracy makes an offer to them no higher than trade-and-military (those cunning, sophisticated, sneaky diplomats).

Y21.04.5.2 National Socialism -- Group: M/F A highly structured state built on the concepts of the equality and superiority of any member of the race. National Socialists operate for the good of the people at any cost, and spend great amounts of money on expansion, industry, and scientific advances. If they perceive a threat, they essentially stop colonization and industrial expansion to spend on defense. Because of their conviction of their own peerlessness they are highly resistant to alliances with all other (obviously inferior) races, and have no qualms at using genocidal strategies.

National socialist states receive a research and development bonus of +1 RP for any project that has 5 or more RP bought during a month including EL.

Y21.04.5.3 J'Rill Race -- Group: R/I See [Y22]

Y21.04.6 RC/RD/RM These government types are usually extremely chauvinistic, highly determined, and very aggressive.

Y21.04.6.1 Federal Theocracy -- Group: R/I A federal theocracy will attempt to communicate with nearly every race as they will always be seeking to convert members of your race to their religion. If you have a Trade, Trade and Military, or Partnership with this government, any population (except your home world) within three warp jumps of one of their settlements or larger will lose all population growth to the nearest federal theocracy world that can accept them as religious converts. The federal theocracy must pay for the colonization but do not have to provide the freighters required to move them. They will always engage in all-out war but will seek to limit civilian casualties so that they may convert them during the occupation.

Starting on the month after a world is captured religious conversion begins. Roll 1d10 per month to determine the number of PU that are converted. When the total equals or exceeds the number of PU (not PTU) the world is converted to a federal theocracy imperial population at their EL! Each revolt reduces the accumulated PU conversion total by 50% (FRU). All growth is counted as emplaced "converted" federal theocracy imperial population (no cost is required)!

Y21.04.6.2 Theocratic Oligarchy -- Group: R/I * This government type is ruled by a council of high church officials. These priests are absolute rulers over all that takes place in their domain. The existing members select replacements when one or more of their number need be replaced, and the replacement is always chosen from within the highest ranks of the church. Similar to an imperial theocracy, a theocratic oligarchy is known more for its political astuteness than for its ability to deal quickly with change. Ceremony,

tradition, and proper religious observances are paramount to all aspects of life in such a society.

Normally slow to move, consideration delays always occur, a theocratic oligarchy is a force to reckon with once they have decided upon a course of action.

Being sure of their infallibility, the rulers of a Theocratic Oligarchy do not tolerate the existence of other, rival, theocracies. If they discover another race to be such (theocracy in the title), they will get a +10 RC modifier towards that race. If that race ever joins the theocratic oligarchy in partnership (or higher) the modifier is removed. Anyone that breaks a treaty with the church is branded a heretical group (or worse), and the theocratic oligarchy will gain a permanent +20 RC modifier towards that race, and will make an immediate War Check.

Y21.04.6.3 Racial Unity -- Group: R/I A racial unity is a species where each person knows his place and fulfills it to the best of his ability, while at the same time knowing exactly how his work fits into the whole. This means that everyone gets along almost perfectly, thus creating an extremely efficient group capable of completing just about anything they set their minds to.

Because members of this race work so efficiently together, their ships base crew grade is crack. A racial unity will always have any Multiplex Tracking (Mx) Tech Tree/branch SL and items up to its EL available for use. No R&D costs are required.

Due to the racial solidarity, it is extremely difficult for any race (even another racial unity) to amalgamate with them.

Y21.05 Other Government Types

At higher tech levels single system NPRs, even those of high tech level, become less of a threat to expanding multi-system races. The following government types are presented to provide a challenging change to the usual single system NPRs that are normally encountered.

Y21.05.1 Multi-System NPR If single system races are no longer very much of a threat to players, any NPR that is encountered could start as a multi-system race. [Y8]

Y21.05.2 The Federation (consideration delays always occur) Another option is a group of 2 to 8 races that have explored and are exploiting a limited number of systems enclosed by unlocated/closed warp points. All warp points out of each home world(s) have been explored and are now patrolled and possibly colonized. Average the RC of all member races to determine the Federation's RC. This group of governments can include the following government types: Capitalist, True Democracy, Theosocracy, Confederacy, Socialism, Representative Democracy, Bureaucracy, Theocratic Democracy, Military Hierarchy, Clan, Plutocracy, Feudal Monarchy, Oligarchy, Republic, Theocratic Monarchy, Guild Syndicate, Fascism, Military Bureaucracy, Theocracy, Constitutional Monarchy, Pedagogical Oligarchy, Corporate Government, Military Republic, Military Corporation, Feudal Theocracy, Democratic Socialism, Federal Theocracy, and Theocratic Oligarchy.

This group will not accept partnership with a player because the player must join as an equal (which eliminates the player from the game). For players that get a Trade and Military agreement with a Federation, each member of this group will negotiate separately with the player in their race's home system (most PTUs). These negotiations are at +10 RC above normal. Success indicates that the race breaks from the Federation (drops to Trade and Military) and joins the player as a partner. Failure (exceeding 100 RC) indicates both a war check (for the entire Federation), a permanent +5 RC towards the player by the Federation as a whole, and the Trade and Military agreement with the Federation is reduced to Trade only.

An NPR will never attempt to woo another NPR from a Federation, but may join as an equal partner. An NPR joining a Federation must drop any Partnership agreement it has with other races.

Y21.05.3 The Outsiders This super high tech race visits any player who is not the strongest in the galaxy. Each month this race visits a single RANDOM star system using FTL drive. They never return to a system once visited and each month they have a 5% chance of departing the galaxy forever. In an effort toward equality, they sell technology. The cost to purchase this technology is equal to the 50 times the R&D cost but must be paid in full on the next month. The tech level of the item(s) sold varies but should be no higher than 3 tech levels above the player race and the Space Master is the person who decides what the player needs or could use. The stronger the player, the weaker the tech item(s) offered.

Y22 The J'Rill

The J'Rill race combines machine and organic parts into a frighteningly efficient being. They never negotiate and always attack immediately. They are a totally mobile race and their shipyards do not require populated planets to build ships.

J'Rill Tech Descriptions: See [J'Rill2 Race Creation] for the government (J'Rill) that uses this tech. If J'Rill technology is used by a non-J'Rill race, that race becomes J'Rill (NPR only) because no safe method exists to control J'Rill tech once introduced into society.

All J'Rill systems are a series of cybernetic (part-organic, part-mechanical) links and relays that are routed into and through every other system on board the ship, alleviating the need for a crew and Q systems. While J'Rill systems appear in the ship's control line, they are spread throughout the entire ship and not centralized in one damageable location. A J'Rill vessel is completely destroyed when the last non-J'Rill system is destroyed. Place all J'Rill systems at the end of the ship's design.

J'Rill have normal limits of exposure to radiation.

Code	Cost	Space	Notes
(Brain)	50	20%[a]	Controls other units
(Ctr)	50	5	Controls 2 + EL/2 (FRD) units or Squadrons of EAV.[b]
(Serve)	0	10%[c]	Accepts orders from (Ctr)
(Slave)	0	1	
(SrvyXx)[d]	10+X	3	Add the X versions cost
(Ground)	25	10	Controls 100 + EL*50 supplied Qv[e]
(FACT)	50	50	Mines asteroid belts and moons
Qv(j)	2	n/a	J'Rill Ground Troop

[a] Not less than 4 spaces.
[b] One squadron of EAV can be controlled in place of one large unit. Datalink, whether the inherent one with the serve-serve link or normal datalink, will ***NOT*** allow a (Ctr) to control one "datagroup" in place of one large unit. In other words, each and every non-EAV large unit MUST be controlled by some (Ctr).
[c] Not less than 2 spaces (FRU).
[d] by X type – i.e., (SrvyXa), (SrvyXb), (SrvyXe).
[e] Can control 1 smcft instead of 10 supplied Qv.

Note: All J'Rill specialty systems, except (SrvyX), receive instant free upgrades when the J'Rill increase their EL. (SrvyX) units are never refitted by the J'Rill. They instead build new units and continue to use the old ones.

J'Rill.01 Brain (Brain)

J'Rill Command ships are actually robotic vessels controlled and operated by a J'Rill Brain that has been cybernetically linked to the rest of the ship or the (Ground) system. The Brain is highly intelligent and operates the unit much as a player might. A J'Rill Brain consumes 20% of the space (FRU) on a large unit (any type) to provide for all the automation/control needs of the Brain. Each (Brain) equipped ship can only datalink with another (Brain) equipped ship. The (Brain)-(Brain) datalink acts like normal datalink except the number of linked ships is equivalent to the (Ctr) control ability formula.

Each (Brain) can also direct the actions of other ships through the (Ctr) system. A (Brain) can only operate a number of (Ctr)s equal to the J'Rill EL +1. Multiple (Brain) systems may be installed in a single unit to allow the direction of additional secondary units.

(Ctr) linked units are not consider weapons to be fired by the (Brain)'s own unit. They are separate units for the purpose of turn sequence.

J'Rill.02 Controller (Ctr)

The Controller Module (Ctr) allows a (Brain) mounted in the same unit, onboard a relatively vulnerable Command ship, to remotely direct the actions of combat units from a safe distance through a (Ctr)+(Serve) link or a (Ctr)+(slave) link. Ctr have two modes of operation: Command (only to servant units) and Guidance (only with slave units) with command being the most flexible [J'Rill.03.1 Command Mode and J'Rill.04.1 Guidance Mode]. At the beginning of a battle, each (Ctr) is placed into one of the two modes of operation and cannot change during the battle.

A (Ctr) that is not controlling any units may link to a set of uncontrolled (Serve) units but the process takes 3 consecutive tactical turns and the inherent (Serve)-(Serve) datalink will not function unless reset outside of combat. For this reason, it is necessary to indicate which (Ctr) is controlling which Server squadron on the Command Ship's Control sheet.

A (Ctr) may issue orders that cause a unit to become uncontrolled [J'Rill.03 Servant (Serve)].

J'Rill.03 Servant (Serve)

The Servant Module (Serve) utilizes a cyber-augmented, but still biologically based brain, stolen from some conquered race, to interpret and respond to the J'Rill Brain's (Ctr) transmitted instructions. Each Servant ship must mount a single (Serve) Server module. The (Serve)-(Serve) datalink acts like normal datalink except the number of linked ships is based on the (Ctr) control ability. (JAM) can jam the (Serve)-(Serve) datalink. Such jamming does not affect a (Ctr) unit's ability to give orders to its servant ships.

(Serve) units can only receive Command mode orders.

J'Rill.03.1 Command Mode Each (Ctr) system is linked to a specific group of (Serve) ships, which are datalinked to each other, but not to the command ship. While within 30 hexes, the Command ship may control these ships as if a player was controlling their actions. A Servant unit 31 to 60 tH from the (Ctr) can only receive general or delayed orders until they are within 30 hexes.

The (Ctr) may issue orders for (Serve) vessels to move through a warp point and attack [J'Rill.11.4 Warp Point Attack Orders], even though they will be Uncontrolled if their linked (Ctr) remains on the other side of the WP.

J'Rill.04 Slaver (Slave)

(Slave) equipped units, termed Expendable Attack Vessels (EAV), are used by the J'Rill as suicide attack craft. An EAV craft that ends the movement phase in the same tactical hex as its designated target craft will self-destruct during their combat pulse by overloading its drive coils in an attempt to damage its target. An EAV linked with its (Ctr) controller at the time that it self-destructs will automatically cause its target 4 pts damage for each space of any generation engine it possesses at that time. An uncontrolled EAV causes 3 pts damage per space (FRU). These EAV are not attempting to ram their target therefore, [D4.01.2] does not apply.

EAV may always attempt self-destruction and use simultaneous transit. EAVs may be ships of up to 12 spaces. Each EAV must mount a single (Slave) slaver module. Besides the (Slave), EAVs may only mount engines and defensive systems. Point defense systems may not fire in offensive mode, are -1 to interception numbers, never double or triple up and always engage each inbound in turn.

J'Rill.04.1 Guidance Mode This mode allows only simple instructions to be sent to (Slave) equipped units. Guidance mode trades complexity for numbers. The (Ctr) gives its slave charges exactly one order, which is to get within a few kilometers of a vessel and then explode.

Within 30 hexes, the EAVs being guided can maneuver as desired. From 31 to 120 hexes, minimal control is available.

A squadron of EAVs may only be assigned one target at any one time, and all members of the squadron, even stragglers, must strive to intercept that target and that target only. In order to prevent confusion, it is recommended that a list of EAV squadrons and their currently designated targets be made and maintained by the controlling player. Any squadron of EAVs that is still controlled by their (Ctr) may change their designated target vessel at the beginning of any movement phase, before any units on either side have moved.

Any EAV squadron may be voluntarily dropped (cut loose) by its (Ctr) during the J'Rill Command SubPhase, freeing that (Ctr) to take link control of a fresh squadron of EAVs still in its transit racks. A squadron of EAVs may only be controlled by one (Ctr) during a battle. However, there is no prohibition against a single (Ctr) taking control of several different EAV squadrons in a single battle, as long as each EAV squadron previously controlled is completely destroyed or cut loose before the (Ctr) assumes control of the next squadron. An EVA squadron that is cut loose is Uncontrolled.

J'Rill.05 Uncontrolled

A (Serve) or (Slave) unit becomes unlinked if it leaves the same system that the (Ctr) is in or exceeds 60 tH (Serve) or 120 tH (Slave) from it. Such units become uncontrolled. Once within proper range, the link is reestablished. Units become unlinked if the linked (Ctr) is destroyed. A Command ship may regain control of a Server ship by

re-linking a new operable (Ctr) to that vessel after the battle. If unable to regain control for whatever reasons an uncontrolled ship may be picked up by the owner with "@." Uncontrolled servant units will execute the last general orders issued.

When an enemy attempts to pick up an uncontrolled EAV, it will explode causing 2 point of damage per intact system directly to the left-most active @ and expanding in either direction from there.

J'Rill.05.1 Uncontrolled Servant (Serve) An Uncontrolled (Serve) unit immediately ceases to move and will fire at either the largest or closest enemy target (only) presented to it. (This is still the owning player's decision.)

J'Rill.05.2 Uncontrolled EAV (Slave) An uncontrolled EAV must move at top speed toward a single vessel and self-destruct. The EAVs may not perform evasive maneuvers or perform any other activities that would reduce their speed. An uncontrolled EAV that self-destructs must roll a 8 or less to inflict any damage. An uncontrolled EAV must perform one of the following actions, prioritized in the following order:

a. IF within inherent sensor range of the last designated target vessel, the EAV must proceed at top speed along the most direct course possible to intercept (enter the tactical hex of) the target.
b. IF NOT within inherent sensor range of the last designated target (including the situation where the last designated target has been destroyed), the EAV must proceed at top speed along the most direct course possible to intercept (enter the tactical hex of) either the nearest ***or*** the largest enemy vessel within 20 hexes (the owning player decides). NOTE: If two or more ships meet the chosen criteria then the targeted one is chosen randomly.
c. IF there are no enemy vessels within the 20 hexes, the EAV ceases all movement until a target does appear within 20 hexes. Note: if attacked in this situation, all uncontrolled EAV within 10 hexes of the attacked EAV and who cannot follow a) or b) will proceed in the direction the attack came from until a) or b) apply or they have traveled for 5+1d5 turns.

J'Rill.06 Ground (Ground)

The Ground Module is the device that allows a J'Rill (Brain) to direct the actions of their robotic ground forces and smcft. (Ground) systems are flexible in that they can order any units (not just specific ones) each turn up to their limit. Control range is limited to 60 tH.

J'Rill.07 J'Rill Qv Troops

J'Rill invasion troops are non-humanoid robotic war machines. J'Rill troops that find themselves no longer in contact with their (Ground) will fight as if they were 3 EL below their actual EL or as IND-2 whichever is higher. Once ANY (Ground) reestablishes a link to the troops (by moving within range) then they will return to their normal level.

J'Rill.08 J'Rill Small Craft

J'Rill small craft (st or ast) are controlled by the (Ground) to which they are linked. The J'Rill small craft function normally but have double carrying capacity since they don't need life support equipment. Thus, the st(j) is 2 Boat bay Pt in size and carries 1 Qv(j).

Uncontrolled small craft stop when they lose contact with a (Ground). Once ANY (Ground) reestablishes a link to the smcft (by moving within range) it will be controlled normally.

J'Rill.09 Survey Command Module (SrvyXx)

Survey ships are very independent units and require a Controller Brain. But since the duties are limited to a single ship, the brain does not have to be very complex. The (SrvyXx) may only be mounted on ships of 16 hull spaces or less. A (SrvyXx) equipped ship may mount weapons but may not mount (Ctr) or (Brain). In battle, the (SrvyXx) may be used just like a (Serve) if a full (Brain) ship with (Ctr) is present to take command of it. A (SrvyXx) equipped ship out of range of the (Ctr) is not subjected to the limits of being Uncontrolled, but it does lose the datalink abilities with its partnered (Serve)/(SrvyXx) ships.

J'Rill.10 Factory Module (FACT)

Each month, Factory Modules can scavenge 2 PU or 2 IU or mine 10 MC of income from an asteroid or moon. The (FACT) module contains a special brain used to control the (FACT) and the ship it is on. No other type of J'Rill tech system is needed nor allowed on a (FACT) ship. The (FACT)-(FACT) datalink acts like normal datalink except the number of linked ships is based on the (Ctr) control ability.

If not scavenging, each (FACT) can generate 10 MC of income per month from asteroids or moons. Factory ships need to be at the asteroid belt or moon for only 20 days out of the month to receive full income (they cannot earn income for the extra 10 days during the month). For every two days less than 20 that the asteroids or moons are not available, they lose 1 MC of income per factory ship. [e.g., If the factory ship is at the asteroid belt for 18 or 19 days it only earns 9 MC.]

(FACT) can only be created by scavenging PU and IU [J'Rill3.08 Scavenging].

J'Rill.11 Orders

A (Serve) vessel between 31-60 hexes from its (Ctr) must either have its actions preplanned (written down) or given a general order during the J'Rill Command SubPhase.

Any normal movement orders are legal. EX: 3L3R2R is 3 forward, left turn, 3 forward, right turn, 2 forward. EX#2 2RxRxxR is 2 forward, right turn, expend 1 MP in place, right turn, expend 2 MP in place, right turn. Combat orders are limited to fire at a single unit (regardless of where they end up which might cause the loss of fire) or a general combat order may be issued.

Combat targeting orders are pre-plotted and somewhat limited: See J'Rill.11.1 General Orders.

J'Rill.11.1 General Orders J'Rill units start with default orders (see below) but may be given a delayed specific order or general order. An order is permanent until changed. If the order is unable to be carried out, and the ship is not able to receive new orders immediately, then the order is inactive and hence the ship remains inactive but once the conditions of the order are fulfilled, the unit acts upon them.

The word "ship" in the targeting/movement orders rules means a standard sequence order of warship, carrier, base, and then freighter. The J'Rill may designate a different sequence than the standard. The progression for movement and attack may be different.

Note: Target type is more important than size.

All movement or firing orders referring to the "furthest ship" count only ships within weapons range of the firing ship. However, if no such ship exists, the "furthest ship" is the furthest ship within 60 hexes of the firing ship and within scanner range of the ship or its datagroup.

These orders severely restrict the J'Rill combat forces. At times, a ship could fly right into combat and never be shot at. Smart commanders will use this to their advantage.

J'Rill.11.2 General Movement Orders

A. Move toward ship that you engaged last turn (if not a valid target, then order B applies). [Default order]
B. Move toward closest ship.
C. Move toward furthest ship.
D. Move to range x from closest ship.
E. Move to range x from furthest ship.

J'Rill.11.3 General Combat Orders.

1. Fire at ship that you engaged last turn (if not a valid target, then order #2 applies). [Default order]
2. Fire at closest ship, then largest ship.
3. Fire at closest ship, then smallest ship.
4. Fire at furthest ship, then largest ship.
5. Fire at furthest ship, then smallest ship.
6. Fire at closest, specific sized ship (if not a valid target, then order #2 applies).
7. Fire at furthest, specific sized ship (if not a valid target, then order #4 applies).

Note: If two or more ships meet the same criteria, then the targeted one is chosen randomly.

J'Rill.11.4 Warp Point Attack Orders The (Ctr) may issue orders for (Serve) vessels to move through a warp point and attack. Any orders from J'Rill.11 may be issued in advance for up to 20 turns. Unfortunately, issuing movement orders this far ahead can be a problem as it ignores the fact of enemy ship movement. Therefore, in addition to specific orders, you may also issue generalized movement orders. Each movement order may have a delay period after entering the warp point. They may also have a "rally point" issued that is within 20 hexes of the warp point. Designated ships will proceed to the rally point, wait until all of their group arrives (or is destroyed), and then follow the movement orders. They will fire during the entire time. Rally points are issued as Radian, Distance, and Rotation (a number of hexes to the clockwise). These orders may be fairly complex.

A (Ctr) may order a (Serve) EAV carrier to transit, release EAV, and then return through the WP. The EAV must be given orders as above, including targets and rally points.

J'Rill.12 J'Rill Command Subphase

1. (Ctr) may change their controlled EAVs targets or "cut loose" controlled EAVs.
2. Write movement and firing orders for (Serve) or (Slave) equipped ships 61-120 hexes away from their controller module.

J'Rill2 Race Creation

These J'Rill race creation rules make a very strong J'Rill race with an immense and strong main body (defined as the SY and FACT ships). However, their attack fleet is limited in power to not much greater than a player's normal fleet. Thus, like the old shark wife's tale, giving them a bloody nose will make them go away – for a while.

Note: The J'Rill do not have a CFN.

J'Rill2.01 Free Units The J'Rill will receive free units both at the start and throughout the game. These units, which include Command, Ground Command, Invasion BC, (FACT), and (SY) units, are 100% free including all systems such as weapons, defenses, etc. When a free unit is built, it always has the best technologies available and all small craft necessary (excluding fighters and gunboats). The J'Rill can build additional units of those types using the normal process and at normal costs (there are some exceptions).

J'Rill2.02 Starting Tech The J'Rill treat all hull types as 6 EL below their normal level (thus, an EL 5 J'Rill gets to use MT hulls). However, the J'Rill also always start with knowledge of DNf type hulls. Furthermore, they need only see a larger hull in order to copy it (without prototyping).

The J'Rill always have both I and J engine technologies available (random SLs).

Datalink, Quarters, and Holds are not needed, nor generally used.

Other than the above, J'Rill EL, SL, and technologies are generated as if for a normal NPR [Y1.02, Y6] except that they always have both shields "S" and armor "A" available. NOTE: the J'Rill EL will be adjusted by [J'Rill2.03 R&D].

Also generate a PU total (home planet and system exploitation) as if the J'Rill were a normal race with 1 additional habitable planet in their home system. This "J'Rill PU" number is only used during the creation of the race.

If a multi-system J'Rill is generated, the J'Rill main body is in a neighboring system. The income percentage is instead used on the PU to generate a PU total for the J'Rill.

J'Rill2.03 R&D The biggest J'Rill (dis)advantage is in the area of tech research. They can never do normal R&D! However, if they capture a piece of intact technology and receive Technological Data on that system (via espionage rules), they may learn how to build, operate, and maintain that system in just four months (this destroys the original system) at zero cost. If they receive Technological Data on damaged systems, they have a 20% chance of learning that system in six months. J'Rill do not use or have EL or population, per se. Thus, they are unaffected by the Growth Bonus [L1.04.3].

After initial empire creation, J'Rill EL is adjusted to 1 less than their highest level tech system's SL. J'Rill EL will then always be 1 SL below their highest tech system's SL.

The J'Rill have a change to learn to produce technologies from scavenging medium and larger planets. They get a chance to learn something equal to the number of hundreds of PU scavenged, i.e., 2399 PU scavenged is a 23% chance per tech to learn that tech.

The J'Rill are always level 2 for anti-fighter PD mods [N10.03].

J'Rill2.04 Income and (FACT) Ships The J'Rill receives a number of (FACT) ships equal to the J'Rill PU divided by 30 (FRU). If PU is 2100, the J'Rill get 2100 / 30 = 70 (FACT) modules.

All (FACT) ships are free of charge, 100 or 130 HS in size (66% chance of 100 HS), Fast Hulled, and use the best technologies available to the race when built. All technologies listed are used on an "if available" basis. (FACT) ships must have a minimum CRUISE speed of 3 and the (FACT) module. If available, they will normally have (It), 8-11% shields, 8-11% armor, some LRW weapons (LRW are favored in the following order: Ptc, Rc, Kc, Pt, R, K), Point Defense, XO racks, and AM.

> ***Note:*** J'Rill do not have to survey to earn income from (FACT) ships.

J'Rill2.05 Shipyards As all NPRs receive free (SY) and since the J'Rill can only have mobile (SY), they get free DNf ships with military engines. J'Rill (SY) units are operated by (Serve) modules.

J'Rill2.06 Leadership The J'Rill SY ships, which are operated by (Serve) systems, must have (Ctr) around to direct them. This means these command units must also be free, in order to allow operation of the SY units. J'Rill receive a number of these Command ships with control ability equal 200% of (# of SY) (FRU). Thus, 23 SY at EL2 would be commanded by units capable of controlling 46 units at a time, which are 16 (Ctr). The extra command abilities are to handle mobile units defending the main body but more command units may be needed at times.

These command ships are restricted to the main body even though there are extra units. Leader units are BBf and DNf (in the same ratio as the FACT ships) and should be identically equipped, if possible, (same number of shields, engines, type of engines, LRW, and of the same abilities) so that enemy races cannot tell which units are the command units without destroying the shields first. Generally, a brain and 5 or 6 Ctr are equal in space to a (FACT) system.

J'Rill command units must mount, at a minimum, the maximum number of Ctr per (Brain) for their EL *or* 5 (Ctr) on a ship, whichever is fewer.

J'Rrill2.07 Ground Units and Transportation The J'Rill also receive free invasion Qv(j) equal to the J'Rill PU total. The J'Rill require no Inv H during invasion, as they are the ultimate scavengers. These troops are carried in BC Fast Hulls (military engines), which are armed. Qv(j) are transported both in H and within the landing shuttles. A J'Rill invasion ship normally carries a sizable number of shuttles, which are pre-loaded with Qv(j), and a number of reserve Qv(j), in holds, as a reloads for returning shuttles. Each H can carry 2 Qv(j).

Each J'Rill invasion ship must have at least 20 H, carry 40 Bb pts worth of shuttles (10 Bsb is normal and preferred), and have a (Serve) but are otherwise unrestricted.

J'Rill st and ast exist as st(j) and ast(j). The st(j) can carry 1 Qv(j) while the ast(j) can carry 2 Qv(j). Otherwise, they perform as normal st and ast.

Ground units are commanded by Ground Command BCf which have a (Brain), 1 (Ctr), 1 (Ground), and military engines. Ground Command BCf are unrestricted after those systems and cost nothing. The J'Rill receive a number of free Ground Command BCf, which must be capable of handling the entire amount of troops and shuttles plus 10%.

Anyone invaded by the J'Rill always engages in total war [V4.13.3].

J'Rill2.08 Warfleet Fund The J'Rill warfleet fund is 4x the J'Rill PU in MC.

J'Rill2.09 Survey Fleet The starting J'Rill survey fleet is equal to EL*25+50 ships. These units are EX size and free. Units in the starting survey fleet cannot be armed. J'Rill do not need to survey for anything but Warp Points.

J'Rill3 Race Organization

There are six parts to the J'Rill fleet.

1. (SY) ships and their command units
2. (FACT) ships
3. (Ground) ships and their command units
4. Main body defense force (or defense fleet). This is 1/4th of the starting warfleet by value. During the game if the warfleet value increases, then the defense fleet value is 20% of that. If the warfleet value decreases, the defense fleet value remains at 20% of whatever the highest warfleet value was.
5. Warfleet -- the remaining ships not in the defense fleet.
6. Survey Forces

J'Rill3.01 Ideology The J'Rill primary goal is to find new weak races to feed off of (scavenge). All races are considered weak until they prove otherwise, generally by knocking the warfleet down to or below the size of the defense fleet.

The J'Rill are somewhat sensitive to losses as they prefer that the warfleet is never of lower strength than the defense fleet. Decisions to attack, break off, or move the main body away will reflect this.

The J'Rill are not retaliatory in nature. They are utterly emotionless and will leave a stronger races or groups of races alone unless they can capture a major planet (small population or better). Once beaten, they will usually move away from/avoid the race that defeated them until the warfleet is significantly stronger (40+%) than when it was defeated.

The major advantage of the J'Rill race is that units require zero maintenance. Leave the J'Rill alone for a while and they can end up with a huge unstoppable fleet.

> ***Note:*** The J'Rill will not attack Artificial Intelligence as they have little organic material to feed off of. By the same token, an Artificial Intelligence race recognizes that the J'Rill are no threat and will not attack them in order to conserve strength.

J'Rill3.02 Main Body Movement A main goal of the J'Rill is to avoid dead systems and to keep moving until targets of opportunity (inhabited systems) are detected.

A dead system is defined as having no bodies that (FACT) can generate income from. The J'Rill will not cross two dead systems to get to a third unless they have no other options and are next to a

hostile race that has defeated their warfleet at least once. There maybe cases where races can use this fact to hide from the J'Rill

In order to move to a new system, the system must be first cleared of enemy forces. The J'Rill check a system by sending a group of survey units into that system. If the main body receives an all-clear signal, they will move the next month.

When moving the main body to a new production system, the J'Rill forces will split. The (FACT) ships with 1/2 of defense fleet will wait in the starting system, mining it, for 20 days and then move at speed 3 or better to the new system. Meanwhile, the (SY) group, the (Ground) group, and the remaining 1/2 of defense fleet will move at speed 1 to the new location.

(FACT) ships and the rest of the main body will run from a system early if a "dangerous" enemy force is sighted in the system. They will, if necessary, run to an unchecked system or one being checked. The main body will never "Assault" a warp point. The Warfleet must do that and this may cause the main body to remain in a system with hostile enemy forces.

When the warfleet is below the size of the defense fleet, the J'Rill will stop moving and probing until they can rebuild it or until they are threatened, in which case they will move the main body away (hopefully, to safety). The warfleet and if they think it is necessary, the survey fleet will join with the main body so that all units have mutual protection.

The Warfleet is usually not more than 1 system away from the main body.

J'Rill3.03 Warfleet Ship Design The warfleet is generally made of large lightly LRW armed Brain ships (BBf and larger with MTf not unknown), Huge LRW(serve) ships (max size), Mid-size SRW(serve) ships (DD-BC), Carriers (BCf), and EAV (EX-ES units). No attacking fleet group will ever have less than 2 Command Ships.

The capital ships will mount long-range weapons, I engines, and will favor (It) tech. The mid-size Serve units are the main combatants for the J'Rill and can mount any type of weapon with faster ships favoring beam weapons. Fast Hulls are not generally used on LRW combatants but are on SRW combatants.

The J'Rill favor using @ racks and EAV for many of their attacks. A carrier is a (Serve) unit that contains a sizable number of EAV (150 HS worth in the design below).

The EAV is unique, as it is built as a flying bomb. These units are EX or ES in size (typically 7 HS, though 12 HS and 5 HS have been seen). EAV use engine system that gives them the highest de-tuned speed (though they will only use Cp engines 25% of the time, if available).

The J'Rill do not use the Y19 ship design rules. All ships are the best possible designs that can be made and they have a flexible and responsive ship design process. J'Rill are also immune to New Class cost overruns [M1.03.5] and need not build prototypes.

J'Rill3.04 J'Rill Fleet Design – The Director Squadron A J'Rill Director squadron consists of 1 Brain ship and its support. This support includes one retreat ship (a CTf with 1 (Brain) and 1 (Ctr) used to guide empty (Serve) carriers away and save the director's impressions of the battle).

The support group for a director is based on how many units the Brain's (Ctr)s can operate. An EL 2 DNf (Brain) has 5 (Ctr) (plus the one on the retreat ship) and can operate 18 units. Call this value X. A Brain will be supported by (roughly) X*10% Huge LRW units, X*30% carriers, X*30% beam armed fast attack serve units. The rest of the control ability (1-2 Ctr worth) will be used to handle EAV. Remember, controller can only be in 1 mode at a time and total (Serve) large units should be a multiple of the amount that each (Ctr) can direct (in this case, 12 or 15 large units--probably 12 with 2 LRW, 5 carriers, 5 beam attack units). This allows 6 squadrons of EAV to be controlled at a time.

An EAV squadron consists no more than 50 HS of EAV. This can be 10 5-HS EAV or 4 12-HS EAV.

J'Rill3.04.1 Attacks A director squadron will nearly always attack as a combined force. The (Brain)s will remain out of weapon range of enemy units initially while directing, usually 23-28 hexes in front of them, an attack force of LRW and SRW units toward the enemy. They time the first EAV attack to coincide with the LRW and SRW units' attacks. Ideally, the first wave of EAV should pass (become closer to the enemy) the LRW units on the turn after they are first in range of the enemy.

> ***Note:*** Uncontrolled EAV always detune while within enemy weapon range and their damage output is not affected by detuning.

J'Rill3.05 Main Body Defense While defending the main body, all units will stay under the "umbrella" of LRW mounted in the J'Rill fleet. (FACT) units will fight but try to get out of enemy weapon range if their shields are breached or nearly breached. Most (SY), but not the last 6-8, and other units will fight to the death. Philosophy: If the J'Rill maintain their (FACT) and a few (SY), everything else can be rebuilt.

J'Rill3.06 Exploration After looking for enemy populations or hints of enemy populations, the J'Rill look for systems with O2 planets, O2 moons, or asteroids to move into. In those locations, the (FACT) ships can generate income for the J'Rill. If two systems are suitable, they will choose randomly. The J'Rill will not backtrack unless they find no way to go forward.

Survey forces can be up to three warp links from the main body. The J'Rill will use up to 75 survey vessels in a fleet and they are not beyond providing a few escorts. They use commercial engines on their survey vessels.

J'Rill3.07 Probing Warp Points Once a new WP is found, the warfleet will proceed to probe it. They check with a smaller unit DD-CA size to see if the WP is safe. If the unit returns, it is safe. If not, they send a big unit BB or DN. If neither returns, the WP is considered to be a black hole. If an alert about defensive forces is received, they will attempt to force the WP if they think they can do so while maintaining the warfleet's size above that of the defense fleet.

If they decide not to assault the WP or they lose the battle, they will attempt to find a different WP to pass through.

J'Rill3.08 Scavenging PU and IU destroyed from orbit cannot be scavenged.

Every (FACT) can scavenge 2 PU or 2 IU per month.

Remember that each PU or IU scavenged counts in every category.

- 1 (FACT) BBf is built free per 150+EL*15 PU/IU scavenged (no cost, best tech) (use J'Rill EL)
- 1 (FACT) DNf is built free per 300+EL*30 PU/IU scavenged (no cost, best tech) (use J'Rill EL)
- Each 300 PU/IU scavenged generates free 1 DNf (SY) (plus command ships if needed).
- Each 1 scavenged PU generates 1/2 Qv(j) and 10 MC of income

If current invader capacity cannot handle all the Qv(j), each 60 PU/IU scavenged generates 1 Invader BCf (plus Ground Command ships if needed).

Each SY captured intact becomes a 1 DNf (SY) (plus command ships if needed).

All PU/IU harvested in a system count toward satisfying the amounts listed above. Thus, 3 150 PU populations would generate 2 (FACT) DNf among other things.

Be aware that all the free ships generated by Scavenging are built with Ground Industry and thus the regular J'Rill SY are still available to build things. Free ships show up on the month after the last necessary PU/IU is scavenged.

Thus, the scavenging of a 2000 PU planet by 50 (FACT) at EL 2 would take 20 months (2000/(50*2) = 20 months) and generate 20,000 MC of income plus the following FREE stuff: 1000 Qv(j), 11 (FACT) BBf, 5 (FACT) DNf, 6 SY DNf, and up to 33 Invader BCf.

Clearly, allowing J'Rill to capture and suck down this kind of income is going to be bad for the rest of the galaxy. A good thing is that while they are scavenging, they are not moving around but their warfleet will attack other races in adjacent systems if it is strong enough (as defined above).

J'Rill3.09 Economics The J'Rill may store income and carry income without regard to needing 1 hold per 500 MC (they stuff the extra materials in the nooks and crannies of their main body ships, which are not needed for crew movement like normal units). They are limited to carrying no more MC than 10 times the HS of their DNf (FACT), BBf (FACT), and (DNf) SY units. Such MC are evenly divided among all applicable HS.

The J'Rill have essentially only one place to spend their MC, in their (SY) systems. While they can build DNf (SY), they cannot invest in (FACT) units except to replace the loss of such a unit. All other units can be built including Qv(j), st(j), and ast(j). The J'Rill will attempt to spend all but 500 MC of their income each month. If the amount of MC on the J'Rill fleet begins to get high (more than 50% of their limit), they will start building more DNf (SY) to be able to start spending that cash.

J'Rill3.10 Killing the J'Rill J'Rill warships, not EAV, are unique in the way they die. Unlike many other race's units, which are totally destroyed, the J'Rill units are not destroyed unless the extra damage beyond that needed to "destroy" them exceeds more than 25% of the ships HS. These remaining hulks are valuable as scrap and races can "mine" them for 30% of their value per [M3.08].

Energy Beam killed J'Rill hulls can be reused. J'Rill systems can even be captured intact. Unfortunately, doing so simply propagates the J'Rill race as they will take over any race that plays too much with J'Rill technology. Only J'Rill (Brain) systems can give orders to/through (Ctr) and (FACT) units. (Brain) systems built by other races (i.e., living beings) have huge specifications (250 MC and 100 HS). Furthermore, a J'Rill (Brain) is superior to a (Brain) built by living beings and has a 20% chance per month when within 30 hexes of being able to take permanent control of units. This also applies to (Ground) systems, which cost 125 MC and 50 HS.

The J'Rill are like a localized plague in the galaxy. Their reach is only a few systems; their fleet attacks are relatively small (starting game attack fleet is about 5500-6000 MC is size) and much of that is wasted in expensive carriers, unavoidable (Brain) units, and poor tactical control. But they are dangerous and attempting to wipe out a main body requires a serious effort. Thus, it tends to be that a stand off occurs as a race can stop the J'Rill warfleet attacks but cannot defeat the main body itself and thus prevent the rebuilding of the warfleet.

High Level J'Rill:

When the J'Rill reach high science levels, they operate Kamikaze [C10.04] fighters and gunboats in place of EAV, although they may choose to use both (it may weaken their attack to do this). J'Rill Kamikaze units have a (Slave) installed in place of the pilot compartment. This special (Slave) allows the normal fighter or gunboat squadron size but each (Ctr) can handle two times more Kamikaze squadrons than EAV squadrons.

J'Rill fighters and gunboats are 25% cheaper (FRD) than normal since they will not need to carry ordnance reloads but still must use hangers.

Kamikaze damage is per [D4.01.3.1] and they can fire their weapons during a Kamikaze run or at other small craft. They cannot fire weapons at any other large unit other than the one they intend to ram.

Next Section: Appendix AA - Technology Trees and Systems

CAMPAIGN STARFIRE introduces the concept of "Tech Trees," where technologies are available in clusters of related groups. This counters the problem in previous versions where all the technologies at a certain level became available all at once, and provides an opportunity for empires to be unique through their research and development selections. AppEE-Construction Tables

One of the biggest 4th edition changes is that all weapons (missiles and beams) have the cost of their munitions included in their system cost instead of buying ammo separately. Thus, missiles, kinetics, and plasma torpedo weapons *specifically* get their ammo "free," but the cost of that ammo is reflected in a higher weapon cost (and thus, higher maintenance). Eliminating ammo building and tracking eliminated a lot of paper work with these weapons.

Another complaint of players, and game balance problem, was too many missile choices at higher levels (In the old version around HL13 there were easy 100 different choices with all the missile packages because advanced launchers could fire any number of the 6 or so missiles). In 4th edition, each launcher can only fire a specific missile. Any upgrades to a missile are relatively limited.

The second biggest change is that fighters are taking a complete revamp. We revamped how small craft take damage and small craft weapons and munitions have their cost subsumed into the small craft and small craft bays instead of building and shipping them as a munitions.

All ammo is assumed to be part of the carrier's standard maintenance, and will be supplied with maintenance supplies.

Note to Owners of Previous Editions

All tech items have changed to a lesser or greater degree in order to fit them into the tech trees. Don't take anything you remember from the 3rd Revised or earlier editions for granted! Also a number of technologies are missing from this version after game balance issues or time prevented us from insuring that no problems existed. Perhaps they will make a comeback in the next product or two.

AA.01 Generational and Appended Codes

STARFIRE technologies use a generational code system for improved versions of the same technology. Each system has a basic code and to that code a small letter (or two at high levels) will be appended to represent the generation of the system. The codes used and their name, in order from worse to best:

- a Alpha
- b Basic
- e Enhanced
- i Improved
- m Modified
- n Notable
- o Outstanding
- q Quantum
- s Superior (small on Mg and H)
- u Ultra
- w Wondrous
- y mYthic

Example: Rb is a Basic Missile Launcher, Rm is a Modified Missile Launcher, and Re is an Enhanced Missile Launcher.

Ultra uses a k to note a 2nd set of generations. i.e., Fu, Fw, Fy, Fka, Fkb, Fke, Fki, and so on.

AA.01.1 Appended Code Missing When the generational code is missing, either the rule in question refers to all generations of that particular system or the system generation is unimportant.

AA.01.2 Specialized System Type Codes. These codes generally indicate a type of improvement that applies across a number of trees.

- c Capital System (a system that is roughly 50% larger)
- d Defensive system that counters something
- f Fast Hulls (avoided otherwise)
- g Anti-Matter Generator Branch
- h Heavy system (a very large system -- roughly 150% larger)
- p Precision weapon (Fp for old P, Ep for old N, and Lp)
- v Variable beam (use both normal beam and precision mode)
- r Rapid Fire weapon (fires at least twice).
- t Tiny (Used only with Mg and H)
- z Datalink capabilities (used with D)

AA.01.3 Unused or Avoided letters

- j too similar to i; avoid it
- l looks like a one
- x used as a multiplier

AA.02 Cost

Some costs are based on the cost of other items in the ship. These are usually represented as a "percentage" of the cost of the original item (such as 50% of engine cost). The following indicators are used in the tech tree tables to represent the most common costs used:

- E Engine cost {or space} is based on the total cost {or space} of the most expensive {or largest} set of engines (engine type) on the ship, excluding tug engines (i.e., 50% E)
- H hull cost (i.e., 10% H)
- A armor cost (i.e., 100% A)

AA.03 Space

Systems with "--" listed as the space are part of the entire ship or modification of other systems, like engines. These systems are not listed in the design of the ship and cannot be destroyed without destroying the entire ship.

While total ship size is always rounded up, individual systems can have fractional sizes.

ELIGIBLE SYSTEM SIZES -- A fractional denominator (the bottom number) becomes available when a matching armor or shield system with that denominator becomes available except that 1/2 is always available. Thus, when just starting, only 1/2 and 1 are available. A1 makes 1/3 and 2/3 available. A6 makes 1/6 and 5/6 available. Note that 2/6 is 1/3 and 3/6 is 1/2, so sometimes a fraction may already be active.

Optionally, you can skip rounding though that makes things a bit more complex.

"Space (i.e., 50% E; see AA.02) rounds to the next highest ELIGIBLE fractional amount in the following order (matching decimal amounts are listed below)

1/10	0.1			7/10	0.7
1/9	0.111	3/8	0.375	5/7	0.7142
1/8	0.125	4/10	0.4	3/4	0.75
1/7	0.142	3/7	0.428	7/9	0.777
1/6	0.166	4/9	0.444	8/10	0.8
1/5	0.2	1/2	0.5	5/6	0.833
2/9	0.222	5/9	0.555	6/7	0.857
1/4	0.25	4/7	0.571	7/8	0.875
2/7	0.285	6/10	0.6	8/9	0.888
3/10	0.3	5/8	0.625	9/10	0.9
1/3	0.333	2/3	0.666	1	1

Note: that individual high SL ENGINE size does not round! Total ship size does round up to the next higher fraction.

AA.04 EMPIRE WIDE ADVANCEMENTS

An empire wide advance occurs automatically throughout the empire when the advance is discovered. There is no cost to "install" or build the advance into a system/weapon/etc.

Empire wide upgrades are only available when a unit receives maintenance [L7.03] and units are checked at the end of the month the technology is completed.

AA.05 TECHNOLOGY TREES

The following is a complete list of all the technology trees, including the cost and space requirements for the systems developed from the trees. The basic descriptions and any rules are listed below the tech tree's name and initial code. Unless otherwise indicated, the trees are listed by SL with all R&D alterations (knots, critical project, etc.) listed with the SL. The tree lists the systems and branches on the right, with a tabled list of each system and their values underneath.

Abbreviations

B Branch [N2.03]
{c} Critical Project [N8.01.3]
h Hazardous [N8.01.4]
k Knot [N2.02]
[] Prerequisite Science or Technology Item
NOT:[N8.01.5]
T Twig [N2.03.1]

Example App AA1.05 - Moving through an R&D Tree

AA.06 THINGS TO REMEMBER ABOUT TREES

There is a SL at EACH level after the starting level that must be R&Ded even if that level does not have a number listed.

Any new tree or branch requires an unlisted breakthrough to open. Some trees may require a 2nd breakthrough just to get started. Additionally, trees may have special requirements to open or are opened from other trees. The first line of a new branch or tree lists any requirements or open and/or lists the tree/branch it is opened from.

The breakthrough, critical, and other project modifiers *almost always* apply to the SL, not the tech item. See (CIC) listed for an example of a critical that applies to a tech system.

AA.07 AMMUNITION

Any launcher requiring ammunition can store 10 turns, not salvos, of ammo in the launcher itself. Thus, a launcher that can fire two salvos/rounds per turn (ROF=2) would store 20 rounds of ammo internally. If additional ammunition is desired, magazines may be installed.

Launchers can only fire a specific type of ammunition unless otherwise specified (see Launcher Box system). Launchers can not fire previous generations of ammunition.

Launchers automatically reload from Mg after firing, unless the player specifies otherwise or a correct ammo type is not available.

Mg and internal launcher storage are automatically refilled when the unit receives supply each month. Mid-month refilling of Mg may only be done from other Mg (e.g., ammunition colliers) and is subject to normal cargo transfer rules [E4]. Maintenance for ammunition in the Mg or launcher is subsumed into the cost of the launcher and the Mg.

Missile sizes are rated in MSP, which are csp times 7.

Code	Cost	Space	Notes
Mg	10	1	Capacity 60 MSP
Mgs	9	1/2	Capacity 24 MSP
Mgt	8	1/3	Capacity 14 MSP

AA.07.1 Mg Development The Mg and Mgs are automatically developed when any launcher using ammunition is developed. Mgt (tiny) is developed when A1 or S1 is developed.

Only 1 magazine smaller than 1 HS is permitted per unit.

AA.07.2 Bombs Dumb nuclear bombs (dropped from st, ast, or holds) cost 1 MC per 10 bombs and take 2 csp each. Dumb bombs can be engaged by planet based point defense at +2 to engage. Dumb bombs never miss and have a range of 500 km. Each smcft (except gigs), Mg, Bs, or H can drop 1 Dumb bomb per tactical turn.

AA.08 DEFINITIONS

Passive Defenses -- These are defense that do not require the ship's crew to do anything as an enemy hit is incoming. While shields may be active (operating) or inactive (down), this does not change their status as a passive defense. Armor is also a passive defense. Point defense systems are an example of an active defense.

AA.09 RAPID FIRE WEAPONS TWIG [EL 5]

These weapons push the current technology to the limits of their ability in order to fire one additional time per turn, which costs more. The weapons code gains an "r" in front of the generational code. Frb is a double firing Fb.

The Rapid Fire twig is a special case because the twig SL cannot ever be researched. The SL that the rapid fire weapon is available from is the branch that the prerequisite system came from. Thus, Rra requires R tree SL 5 and Grn requires G tree SL 23.

Each rapid fire weapon requires as a prerequisite the system it is based on, is available at 4 SL above the prerequisite system, and must be developed separately (i.e., Frb requires Fb and is available at SL 7).

Rapid fire weapons are available for most weapons and each shot is a separate full powered salvo. A development project must be done.

Cost, Space and ROF for legal rapid fire weapons are listed at the end of individual weapons charts in AppEE-Tables.

Lj-DEC combo and W are not allowed to rapid fire.

Note: that an empire must be EL 5 to starting researching Rapid Fire Weapons. A knot must be broken to activate the availability of rapid weapons. After that, only development projects are needed.

AA.10 VARIABLE WEAPONS TWIG [EL 8]

These weapons add extra flexibility to a fleet during combat but this comes at a cost in hull spaces. Force, Energy, and Laser beams are eligible to be variable (with F varying with Fp, E with Ep, and L with Lp).

Variable weapon generation and SL are based on the PRECISION weapon part of the combination. The non-precision beam in the variable combination is the one with the highest SL equal to or lower than the precision beam's SL. EX: Lpa is SL 5, so highest L weapon of SL 5 or lower is Lb.

Note: There is only ONE legal combination for each Lv generation. i.e., Lve would be Lpe and Li.

The variable weapon twig, like the rapid fire twig, is a special case because the twig SL cannot ever be researched. The SL that the variable weapon is available from is the branch that the prerequisite system came from. Thus, Fvb requires Fp SL 13.

A variable weapon adds 15% to the size of the NON-precision weapon [See rounding under AA.03] and 20% to the its cost. Both beams are prerequisites for the variable beam which is 1 SL above precision beam SL (for our example, Lva (Lb/Lpa) is SL 6 but requires that the Variable Weapons Twig be open).

The weapons code gains a "v" in front of the generational code. Rapid fire variable weapons are not legal although they should be balanced. If used, "vr" would be the code sequence.

Capital and Heavy versions of variable weapons are possible.

Note: that an empire must be EL 8 to starting researching Variable Weapons. A knot must be broken to activate the availability of rapid weapons. After that, only development projects are needed.

TECHNOLOGIES

ENGINE ROOT [EL 1]

ENG.01 HALF SIZE ENGINES

A half size engine is developed with any full size engine. All half-size engines are 50% of the size and cost of a full engine. A half-size engine uses the same code as a full size engine but the first letter is lower case, not upper case (i.e. ia, je, icm, jcb, etc.)

ENG.02 PUSHING ENGINE R&D

While this root (not the individual Engine Trees) is based on the EL, it can be researched separate of EL as an SL (i.e., It can be pushed up to 3 above EL in order to get a new engine type sooner). In any case, this tree's SL can never be lower than EL (i.e. As EL advances, engine SL, if it would be lower than EL, will also advance to match the EL).

Note: There is no "i" generation in any Engine Tree because "i" is used to indicate a half-sized engine and "ii" would not work.

Designer Note: Ultra Engine Trees were altered from Elite to limit overall engine size and cost. In general, engines start becoming smaller after a while, with a limit of half of the original size. After that, they become cheaper.

Engine Root Technology

EL	Code	Cost	Space	Notes
Ind 2	B -- Charged Particle Drive Tree (Special)			
EL 1	B -- Ion Drive Tree _OR_ B-- Tactical Drive Tree			
EL 11	B -- gravametric Drive Tree			
EL 22	B -- Anti-Matter Drive Tree			

ENG.03 HULL TABLE TURN MODES

The Turn Modes listed on [AppEE-Construction Tables] are FRU. The smallest hull of a group of same turn mode hull size is actually -0.5 TM. (e.g., Ia TM3 group is DD, CL, CA, so the DD is TM 2.5). This has no effect on the game except when generational hulls are in use or special technologies.

ENG.04 COMMERCIAL DRIVE SPECIAL TWIG

Please note that the Commercial Drive Twig is a TWIG, and not a branch. Also note that it is a very special Twig with no breakthrough requirement to open. It opens as soon as any other Engine Tree opens.

Ic – Commercial Drive Twig

Note: From I, J, Gt, & Jc Trees.

The commercial engine, also know as the commercial drive, is designed for high reliably and superior speeds for long haul trips.

This twig needs no breakthrough to open and no SL projects are needed (Example: when I engine SL 6 is achieved, Ice can be developed).

Ic.01 Abilities and Restrictions

- Ic engine blindspot is 60 degrees (120 degrees on a Fast Hull).
- Ic engine safe cruising speed [C7] is 100% of tactical speed.
- WP transits are +2 Transit Size [C4.02.2]
- Detuning [C9] gives +1 speed.

For each generational advance, Ic engines receive:

- +1/2 maximum speed potential and
- +1/2 Turn mode.

Ic.02 Transit Racks

The rules for using Transit Racks ("@") are in [C6.02].

- Cost is 20 MC.
- Size is 6 or (3) HS where (3) applies to Fast Hulls
- Transit Racks are a military system.

SL	Code	Cost	Space	Notes
1	Ica[a]	4	2	Base speed & TM*
	@	20	6 (3)	[Ic.02]
3	Icb	5	2	+0.5 max. speed & TM
6	Ice	6	2	+1.0 max. speed and TM
9	Icm	7	2	+1.5 max. speed and TM
12	Icn	7.5	2	+2.0 max. speed and TM
15	Ico	8	1.8	+2.5 max. speed and TM
18	Icq	8.5	1.6	+3.0 max. speed and TM
21	Ics	9	1.5	+3.5 max. speed and TM
24	Icu	9.5	1.4	+4.0 max. speed and TM
27	Icw	10	1.3	+4.5 max. speed & TM
30	Icy	10	1.2	+5.0 max. speed and TM
33	Icka	10	1.1	+5.5 max. speed and TM
36	Ickb	10	1	+6.0 max. speed and TM
39	Icke	10	1	+6.5 max. speed and TM
42	Ickm	10	1	+7.0 max. speed and TM
45	Ickn	10	1	+7.5 max. speed and TM
48	Icko	10	1	+8.0 max. speed and TM

[a] Ica (Development opens Small Craft Tree)

Cp – Charged Particle Drive Tree

Cost/Space: The Cp engine costs 8 mc and is one space large.

Size: Cp engine room size is the same as the I engine size but each engine provides double the power of an I engine (divide engine power by two [AppEE-Ship Hull Tables]).

Speed: Maximum speed is 5+(EL/3)-(1 per 130.01 HS of ship) FRU [i.e., Ships of 1-130 HS have no speed reduction while 131-260 get a -1 to max. speed].

Cruising Speed: Maximum cruising for ALL Cp units is ONE.

Speed Adjustment: Cp engines are inertial type engine (which means they cannot expend movement in place [C2 point 3]) and thus have a max. speed adjustment of +1 or -1 MP per turn

Turn Mode: Cp turn mode is 1 lower than Ia (min. turn mode of 2).

Blindspot: The Cp blindspot is the single hex row directly behind the ship. One object in the blindspot has a 60% change of suffering damage equal to the number of operating non-tug engines minus 1 per hex distance to the ship. Range zero units do not suffer damage. Attack occurs in the combat phase.

Limits: Cp based units cannot use WJ, AM, EM, EMS or detuning.

Landing: Cp units need (AC) to land on planets but not moons.

Detection: Cp units are detected as if in LOD mode but have none of the penalties of LOD mode.

Tractors: Tractors on Cp units have a maximum range of 1 hex and they can not lock onto a Drive Field unit. Towing speed is always 1 and for each Cp engine present the ship can tow 100 HS.

Transit: Warp Point transit with Cp engines has a 5% chance (modified by crew function - Min. 1%) chance of utterly destroying the unit. The CFN of Cp races will not cross WPs unless the government guarantees to replace lost ships.

LRW: Cp based missile drive technology is intercepted normally because while the missile or torpedo is easier to destroy, it is also harder to detect (i.e., point defense works).
All MSP are tripled due to the charged particle type engines.
Kinetic Weapons cannot be used until another drive type is developed.

Range: Cp units gain Extended LRW range [D8] but also suffer triple damage once shields are down for not having a drive field [D4.01.2].

Note: Races with Cp drives usually have all other normal technology for their Economic/Science level. Thus, they generally have X and Y on planets and will learn quickly of drive field type engines.

CFN Adjustments: Cp CFN units are much slower (1 StMP) and therefore their CFN fleet is 1/2 a NPRs normal size PLUS it costs three times as much to "rent" space. Cp CFN units only have 1 engine room. Cp cannot be installed on bases or AF.

Hull Type Changes: Development of Cp engines moves the BS0, EX, ES, and CT hulls to EL 0, allowing them to be prototyped.

SL	Code	Cost	Space	Notes
IND-2	Cp	8	1	Safe Cruising speed = 1
Max. Speed = 5+(EL/3)-(1 per 130.01 HS of ship) FRU				

I – ION DRIVE TREE

Note: From Engine Root.

The I-drive, also termed the Ion Drive, was an invention beyond all inventions – it created a drive that formed a protective bubble around the spacecraft AND propelled it at measurable fractions of the speed of light. It works because the "drive field" bubble around the craft absorbs all the inertial motion that is imparted to the ship through propulsion or outside influences. The "drive field" also acts as a barrier that converts matter into energy when it travels through the drive field. This is not perfect however, and all forms of energy can traverse the bubble without any difficulty. I drives are military engines.

I.01 ABILITIES AND RESTRICTIONS

- I engine blindspot is 60 degrees (120 degrees on a Fast Hull).
- I engine safe cruising speed [C7] is 1/2 tactical speed (FRD).
- WP transits are +0 Transit Size [C4.02.2]
- Detuning [C9] gives +2 speed.

For each generational advance, I engines receive:

- +1 maximum speed potential and
- +1 Turn mode.

SL	Code	Cost	Space	Notes
1c	Ia	20	1	Base speed & TM
	T -- Commercial Drive Twig			
k4	Ib	22	1	+1 max. speed and TM
5	B -- Engine Modulation			
6	T – Drive Field Stabilizer Twig			
7c	B --Anti-Drive Missile [Requires XO]			
	T -- Advanced Maneuvering Twig			
k8	T -- Warp Jump Twig			
	Ie	24	1	+2 max. speed and TM
9	T -- Engine Tuner Twig			
k12	Im	26	0.9	+3 max. speed and TM
14	T -- Inertia Capacitor Twig			
16	In	27	0.8	+4 max. speed and TM
k20	Io	28	0.7	+5 max. speed and TM
24	Iq	29	0.6	+6 max. speed and TM
k28	Is	30	0.5	+7 max. speed and TM
32	Iu	28	0.5	+8 max. speed and TM
k36	Iw	26	0.5	+9 max. speed and TM
40	Iy	24	0.5	+10 max. speed and TM
k44	Ika	22	0.5	+11 max. speed and TM
48	Ikb	20	0.5	+12 max. speed and TM

J – TACTICAL DRIVE TREE

Note: From Engine Root.

The J drives, also known as Tactical Drives, operate much the same as I engines. For the advantage of faster tactical speed (and essentially controlling the fighting range), they sacrifice strategic speed, transit effectiveness, LRW range, and have a larger blindspot. J drives are military engines.

J.01 ABILITIES AND RESTRICTIONS

All LRW fire, including XO racks, from a unit with J operating are limited to 90% of maximum range (FRD).

- J engine blindspot is 120 degrees (180 degrees on a Fast Hull).
- J engine safe cruising speed is [C7] 1/3 (FRN) tactical speed.
- WP transits are -1 Transit Size [C4.02.2]
- Detuning [C9] gives +1 speed.

For each generational advance, J engines receive:

- +1 maximum speed potential and
- +1 Turn mode.

SL	Code	Cost	Space	Notes
1c	Ja	16	1	Base speed & TM
	T -- Commercial Drive Twig			
k5	B -- Engine Modulation			
	Jb	18	1	+1 max. speed and TM
6	T – Drive Field Stabilizer Twig			
7c	B --Anti-Drive Missile [Requires XO]			
	T -- Advanced Maneuvering Twig			
8	T -- Warp Jump Twig			
k9	T -- Engine Tuner Twig			
	Je	20	1	+2 max. speed and TM
k13	Jm	22	0.9	+3 max. speed and TM
14	T -- Inertia Capacitor Twig			
k17	Jn	23	0.8	+4 max. speed and TM
21	Jo	24	0.7	+5 max. speed and TM
k25	Jq	25	0.6	+6 max. speed and TM
29	Js	26	0.5	+7 max. speed and TM
k33	Ju	24	0.5	+8 max. speed and TM
37	Jw	22	0.5	+9 max. speed and TM
k41	Jy	20	0.5	+10 max. speed and TM
45	Jka	18	0.5	+11 max. speed and TM
k49	Jkb	16	0.5	+12 max. speed and TM

GT – GRAVAMETRIC DRIVE TREE

Note: From Engine Root.

Advancements in Gravity Well manipulation allow the Gt drive. While the ability to rapidly detect variations in the Gravity Well continues to elude scientists, this Drive is able to create a local gravity imbalance in the gravity well. This causes the ship's drive field to either be "pulled" forward, backward, or sideways into the hole. Its advantages are higher power ratios, faster strategic speeds, no blindspot, and quicker turning. But its maximum speed is lower than an I engine. This is somewhat compensated by the fact that its drive field is weaker and it acts like a base's drive field including gaining the extended range bonus.

GT.01 ABILITIES AND RESTRICTIONS

Gt engines have no blindspot however they do suffer a penalty for firing into some rear arcs.

- Operating unit firing in the rear 60 degree arc is at a -1
  a Fast Hull firing in the rear 120 degree arc is at a -1
- Gt engine safe cruising speed [C7] is 3/4 (FRD) tactical speed.
- WP transits are +4 Transit Size [C4.02.2]
- Detuning [C9] gives +1 speed.
- Gains Extended Range Bonus of +2 hexes [D8].

For each generational advance, Gt engines receive:

- +1 maximum speed potential and
- +1 Turn mode.

GT.02 LOWER SL TWIGS

All Non-open Engine Tree Twigs and Branches in the I Tree with a starting SL below 11 are available to be opened once Gt SL 11 is achieved.

SL	Code	Cost	Space	Notes
11h	Gta	30	1	Base speed & TM
14	T -- Inertia Capacitor Twig			
k15c	Gtb	32	1	+1 max. speed and TM
19c	Gte	34	1	+2 max. speed and TM
k23c	Gtm	35	0.9	+3 max. speed and TM
27c	Gtn	36	0.8	+4 max. speed and TM
k31c	Gto	35	0.7	+5 max. speed and TM
35c	Gtq	33	0.6	+6 max. speed and TM
k39c	Gts	31	0.5	+7 max. speed and TM
43c	Gtu	29	0.5	+8 max. speed and TM
k47c	Gtw	27	0.5	+9 max. speed and TM

JC – ANTI-MATTER DRIVE TREE

Note: From Engine Root.

After extensive development, the Anti-Matter drive was developed. These drives are designed to push a drive field equipped hull at a rapid pace for very few hull spaces. But best of all, the anti-matter drive doesn't have the range penalty of the J drive. Jc drives are military engines.

JC.01 ABILITIES AND RESTRICTIONS

The Jc engine blindspot can be fired into but the modified to-hit number is halved (FRD).

- Jc engine blindspot is 120 degrees (180 degrees on a Fast Hull).
- Jc engine safe cruising speed is [C7] 1/3 (FRN) tactical speed.
- WP transits are +5 Transit Size [C4.02.2]
- Detuning [C9] gives +1 speed.

For each generational advance, Jc engines receive:

- +1 maximum speed potential and
- +1 Turn mode.

JC.02 LOWER SL TWIGS

All Non-open Engine Tree Twigs and Branches in the I Tree with a starting SL below 22 are available to be opened once Jc SL 22 is achieved.

SL	Code	Cost	Space	Notes
22 {h}	{h} Jca	35	0.5	Base speed & TM
26	{h} Jcb	33	0.5	+1 max. speed and TM
k30	{h} Jce	31	0.5	+2 max. speed and TM
34	{h} Jcm	29	0.5	+3 max. speed and TM
k38	{h} Jcn	32	0.4	+4 max. speed and TM
42	{h} Jco	27	0.4	+5 max. speed and TM
46	{h} Jcq	25	0.4	+6 max. speed and TM
k50	{h} Jcs	25	0.33	+7 max. speed and TM

ENGINE TREE TWIGS

(AM) – ADVANCED MANEUVERING TWIG

Note: Comes from I, J, Gt, & Jc Trees. Works with all engines.

Advanced Maneuvering stores extra engine energy in order to generate quicker facing changes. Advanced Maneuvering (AM) can never lower a turn mode below 2.

SL	Code	Cost[ab]	Space	Notes
7c	AM1	10% E	0	-1 TM (minimum TM 2)
11	AM2	15% E	0	-2 TM (minimum TM 2)
k15	AM3	20% E	0	-3 TM (minimum TM 2)
19	AM4	24% E	0	-4 TM (minimum TM 2)
k23	AM5	28% E	0	-5 TM (minimum TM 2)
27	AM6	32% E	0	-6 TM (minimum TM 2)
k31	AM7	34% E	0	-7 TM (minimum TM 2)
35	AM8	38% E	0	-8 TM (minimum TM 2)
k39	AM9	42% E	0	-9 TM (minimum TM 2)
43	AM10	46% E	0	-10 TM (minimum TM 2)
k47	AM11	50% E	0	-11 TM (minimum TM 2)

[a] Advanced Maneuvering cost is based on the most expensive set (engine type) of engines on the ship, excluding tug engines.
[b] R&D costs are special See N6.04

(CAP) – INERTIA CAPACITOR TWIG

Note: Comes from I, J, Gt, & Jc Trees. Works with all engines.

The Inertia Capacitor (CAP) builds up inertia and can impart it directly upon the Drive field once per turn allowing the ship to turn 1 hexside. This is in addition to the normal method of turning.

The Capacitor can actually contain a bit more energy than necessary to turn but the minimum time between uses is one full tactical turn or 3 MP spent, whichever is sooner. Examples: A speed 1 ship can turn every other turn (full tactical Turn between). A speed 4 ship can turn at the end of turn "a" but must then wait until after the 3rd MP is spent on turn "b" before turning again.

Note: Restrictions on (CAP) use do not affect normal TM turning. Thus, a (CAP) generated turn can occur just before, during, or just after a regular turn.

A unique use of the (CAP) system is that it can be fired like a weapon (when minimum time requirements are met and use is still limited to once per tactical turn). The turn can be done before, after, or between weapons fire.

SL	Code	Cost	Space	Notes
14h	(CAPa)	30 per HS	10% HS	1 Free facing change
19	(CAPb)	55 per HS	6.66% HS	1 Free facing change
k25	(CAPe)	125 per HS	3.33% HS	1 Free facing change (Max. Improvement)

Note: When calculating the size of this system, systems based on engine size (i.e. DFS, It) are calculated first and this goes last. Size is rounded FRU to the next higher 0.5 or whole size.

(DFS) – DRIVE FIELD STABILIZER TWIG

Note: Comes from I, J, Gt, & Jc Trees. Works with all military engines.

The drive field stabilizer is a device that smooths out the power input and feedback to/from a *military* drive field. By placing less stress on the engines, they are, as a group, better able to safely maintain a higher cruising speed. Note: No extra engines need be installed to gain this extra speed.

All units using military engines and DFS have a higher safe cruising speed. DFS and Engine Tuners can operate at the same time.

A unit using DFS and suffering an engine burnout also burns out the DFS.

SL	Code	Cost	Space[a]	Notes
6	(DFSa)	30	33% E	+1 safe cruise speed
10	(DFSb)	40	28% E	+1 safe cruise speed
k15	(DFSe)	50	33% E	+1.5 safe cruise speed
20	(DFSi)	60	28% E	+1.5 safe cruise speed
k25	(DFSm)	70	33% E	+2 safe cruise speed
30	(DFSn)	80	28% E	+2 safe cruise speed
k35	(DFSo)	90	33% E	+2.5 safe cruise speed
40	(DFSq)	100	28% E	+2.5 safe cruise speed
k45	(DFSs)	110	33% E	+3 safe cruise speed
50	(DFSu)	120	28% E	+3 safe cruise speed

[a] Minimum size is 1 hull space. E = Engine Size of largest set (engine type) of engines on the ship, excluding tug engines. For fractional sizes of DFS see [Space]

IT – ENGINE TUNER TWIG

Note: Comes from I, J, Gt, & Jc Trees. Works with all engines.

Engine tuners add extra speed (which can increase the ship's speed beyond the hull's normal maximum speed). Engine tuners can only be used in tactical battles. After 15 minutes of use, they will start killing the crew with radiation and the crew turns them off or mutinies to turn them off.

IT.01 No ship can operate more than 1 (It) at a time and the 15 minute limit is cumulative among various (It) systems.

Note: Vacuum life [HH3.06.8] is not limited by radiation but the tuner system itself is limited and can only operate for 6 hours at a time and then must "rest" for 6 hours.

SL	Code	Cost	Space[a]	Notes
9	(Ita)	40	40% E	+1 speed
12	(Itb)	60	25% E	+1 speed
k18	(Ite)	100	50% E	+2 speed
24	(Itm)	150	30% E	+2 speed
30	(Itn)	180	70% E	+3 speed
36	(Ito)	240	40% E	+3 speed
k42	(Itq)	280	100% E	+4 speed
48	(Its)	420	60% E	+4 speed

[a] Minimum size is 1 hull space. E = Engine Size of largest set (engine type) of engines on the ship, excluding tug engines. For fractional sizes of It see [Space]

WJ – WARP JUMP TWIG

Note: For I, J, & Gt Trees. Works with all engines.

The "warp jump" capability is a special modification to drives that allows the ship to treat a warp point like a cone instead of a point. This means that depending upon the generation of the warp jump technology, ships can attempt to enter and exit a warp point within a certain distance of the warp point(s) instead of in the center of the warp point hex.

WJ.01 This tree allows a ship to depart or arrive within a limited random area of the WP. Warp Jump is an engine improvement (like AM) and thus takes no space. Cost is doubled if mounted on a Transit Carrier.

SL	Code	Cost[a]	Space	Notes
8	(Wja)	100% E	--	50% outside WP hex; 1-5 hexes
k11	(Wjb)	150% E	--	60% outside WP hex; 1-10 hexes
k15	(Wje)	175% E	--	70% outside WP hex; 1-15 hexes
k20	(Wji)	200% E	--	70% outside WP hex; 1-20 hexes
k26	(Wjm)	225% E	--	80% outside WP hex; 1-25 hexes
k33	(Wjn)	250% E	--	80% outside WP hex; 1-30 hexes
k41	(Wjo)	275% E	--	90% outside WP hex; 1-45 hexes
k50	(Wjq)	300% E	--	90% outside WP hex; 1-50 hexes

[a] Warp jump cost is based on the most expensive set (engine type) of engines on the ship, excluding tug engines.

Note: Entering the WP does require a die roll unless the ship is in the same tH as the WP.

The ship's facing does not matter for entry into a WP {Ed.Note - I reserve the right to alter this in the future since it may be unbalancing}

If the attempt to enter the WP fails, the ship may try again the next turn without any penalty for having previously failed.

SMALL CRAFT/SQUADRON TECH SECTION

All smcft technologies have been placed in this section.

SMCFT – SMALL CRAFT TREE

The Small Engine Tree, known as the Small Craft Tree, is an advancement that allows small drive fields to power craft under 5 HS in size. These drive fields are different from missile drive fields in that they protect the craft better and have long-term durability, but lack the incredible speed of the smallest drives.

SMCFT.01 BAY DEVELOPMENT

The first small craft developed must add +20 to the R&D cost and develops both the (Bsa) and the Shuttle Training Facility.

SMCFT.02 SENSORS

A sY generation is available to be developed 2 "Y" SL after the same generation of ship-borne Y (Yc are never available on smcft. The sYc versions listed are for AP). The large craft Y of the same generation is the prerequisite for each sY. However, small craft sensors are unique among smcft equipment in that they must be tracked and paid for like a squadron. Smcft combat sensors (sY) have 50% of the range of ship borne Y.

Smcft.02 Sensors[a]

SL	Code	Cost	R&D Cost
2	sYa	20	10
4	sYca	100	75
6	sYb	30	15
7	sYcb	175	125
9	sYe	40	20
11	sYce	260	200
13	sYi	50	25
17	sYci	300	250
	sYm	65	30
21	sYn	80	40
23	sYcm	400	300
25	sYo	95	45
29	sYq	105	50
	sYcn	460	350
33	sYs	120	60
35	sYco	500	75
37	sYu	130	65
41	sYcq	525	125
	sYw	135	70
45	sYy	145	75
47	sYcs	600	200
49	sYka	160	80

[a] This table is not a tech tree but rather a reference for R&D development cost.

SMCFT.03 LIFE SUPPORT

Each generation of quarters (Q) are available to be developed in smcft versions (sQ) 2 SL after they are available to large craft. The prerequisite for each is the large craft version. R&D cost is 10 times the generation of the sQ. I.e. sQe R&D cost is 30 MC.

To recharge any type of sQ an operable Q system is required.

Increased flight times are listed in the notes of [Table G4.01 Squadron Ordnance].

SMCFT.03.5 SY & SQ COMBO ITEMS

sY + sQ items need not be researched and cost nothing but the separate items must both have been developed before the the sY + sQ generation of that level becomes available.

The sY and sQ generation must be the same, each of those separate items must have been developed, and that generation can not be higher than the Squadron's generation.

SMCFT.04 GIG

The purchase of every large craft of 13 HS or larger includes one captain's "gig" for free. This one gig is stored in a special bay that takes no space (on 13 HS or larger craft). Any additional gig desired on a unit must be stored in Bs type bays. A replacement gig costs 5 MC.

Gigs are used for ship to shore transport for officers (like an Admiral/Captain) and are marginally useful planetary survey craft and search and rescue. Otherwise they are just there for show.

SMCFT.05 ST -- SHUTTLE

Shuttles are an unarmed small craft useful for transferring troops or cargo from ground to orbit and for helping conduct planetary surveys. They are marginally useful as assault landing-craft and light bombers.

SMCFT.06 ast -- ASSAULT SHUTTLE

Assault Shuttles are designed for use in combat situations and often become an early fighter defense. Assault shuttles have a 180 degree forward firing arc and use a weapon similar to high speed cannon. When attacking or being attacked, ast in the same hex are grouped together to form "Squadrons," which attack and are attacked as a group. For each 3 DP of damage, 1 ast is irreparably destroyed.

Assault Shuttles are useful ground to orbit troop/cargo transfer craft. Marginally useful as jump-troop launch vehicles, assault landing craft and light bombers, and planetary survey craft. They are also marginally useful anti-small craft vessels.

SMCFT.07 GB -- GUNBOAT SQUADRON

Gunboats are advanced small craft that have been specifically designed to deal long range damage to starships, as opposed to a fighter's close-in attack abilities.

A GB carries internal & external ordnance.

GB Squadron construction uses 1 HS capacity per DP built.

Gunboats, except GBa, can transit WPs [G8].

SMCFT.08 FQ -- FIGHTER SQUADRON

Fighters are highly specialized small craft that have been designed with speed and weapons delivery in mind. They are basically manned AP drones, barely big enough to hold the pilot, sensors, targeting computers, and weapons. While fighters are efficient gunboat killers, they are very weak and destroyed by the smallest amounts of damage but they can be annoying.

A Fighter carries internal & external ordnance.

Fighter Squadron construction uses 1 HS capacity per DP built.

Squadron Abilities Chart

Type	SL	DP	Cost	Maint	Spd	Base Sen.	Bay Size	Bay Cost	SRW mod	LRW mod
Shuttles and Misc. Small Craft (Repair cost 2 MC / DP) Gig, st duration (fly time) is 4 days while ast is 1 day.										
gig	1	1	5	0	2/1	4 tH	var	var	n/a	n/a
st	1	2	15	0	6/3	10 tH	var	var	n/a	n/a
ast	3	3	25	5%	7/3.5	20 tH	var	var	G7.05	n/a
Fighter Squadrons (Repair cost 4 MC / DP) Fighter duration (fly time) is 2 hours + 1 hour per fighter generation.										
FQa	7	20	200	7.5%	10/5	10 tH	6	60	+0	+0
FQb	10	24	240	7.5%	11/5	15 tH	7	70	+1	+3
FQe	13	28	280	7.5%	11/5	15 tH	8	80	+2	+6
FQi	16	32	320	7.5%	12/6	20 tH	9	90	+3	+9
FQm	20	36	360	7.5%	12/6	20 tH	10	100	+4	+12
FQn	24	40	400	7.5%	13/6	25 tH	11	110	+5	+15
FQo	29	44	440	7.5%	13/6	30 tH	12	120	+6	+18
FQq	34	48	480	7.5%	14/7	35 tH	13	130	+7	+21
FQs	39	52	520	7.5%	14/7	40 tH	14	140	+8	+24
FQu	44	56	560	7.5%	15/7	45 tH	15	150	+9	+27
FQw	49	60	600	7.5%	15/7	50 tH	16	160	+10	+30
Gunboat Squadrons (Repair cost 4 MC / DP) Gunboat duration (fly time) is 12 hours + 6 hours per GB generation.										
GBa	6	30	360	7.5%	8/6	20 tH	6	60	+0	+0
GBb	9	36	432	7.5%	8/6	20 tH	7	70	+1	+3
GBe	12	42	504	7.5%	9/6	30 tH	8	80	+2	+6
GBi	15	48	576	7.5%	9/7	30 tH	9	90	+3	+9
GBm	18	54	648	7.5%	10/7	45 tH	10	100	+4	+12
GBn	21	60	720	7.5%	10/7	45 tH	11	110	+5	+15
GBo	25	66	792	7.5%	11/8	60 tH	12	120	+6	+18
GBq	30	72	864	7.5%	11/8	60 tH	13	130	+7	+21
GBs	35	78	936	7.5%	12/9	75 tH	14	140	+8	+24
GBu	40	84	1008	7.5%	12/9	75 tH	15	150	+9	+27
GBw	45	90	1080	7.5%	13/10	90 tH	16	160	+10	+30
GBy	50	96	1152	7.5%		90 tH	17	170	+11	+33

DP = Damage points; Spd = Speed (Spd x/y where y is strategic Speed)
Development of Squadrons covered under [B?.01.1].

Base Sen. = Smcft Base Sensor Range is Medium Range.
Combat range is 1/2 base range but no less than 9 tH.
Scan range is 1/5 of Combat Range.

SW – SMCFT ORDNANCE

This is not a tree and no R&D is needed within this section.

This section limits the types of weapons available on smcft. A squadron does not have specific numbers of weapons but rather the amalgamated total effect is used for the purpose of attacks.

fG generations are developed with the Sprint Missile of the same generation. fG, like LRW, are single use.

Basic Version: Weapon generation always equals squadron generation. To use a particular type of weapon, you need only have that particular tree open and have developed any one weapon in that tree.

Small Craft Tech Tree

SL	Code	Cost	Space	Notes
1	Shuttle Training Facility [free with st]			
	gig	5	1 bb pt	free with any CT or larger hull
	st	15	2 bb pt	Carries 1/2 Qv or 1/2 H[a] or 100 csp of cargo
	(Bsa)	10	1	Carries 2 bb pts
2	(Bsb)	18	2	Carries 4 bb pts
3	ast	25	4 bb pt	Carries 1 Qv or 1 H[a], or 200 csp of cargo, can airdrop [V3.06] troops
	(Bse)	25	3	Carries 6 bb pts
4	B -- Recon Drone			
5	(Bsi)	30	4	Carries 8 bb pts
6	{k/c} Initial Gunboat Project [R&D cost 500][b]			
	(Bga)[b]	60	6	Carries 1 GB squadron
	(SqnM)	20	3	Repair 2 or 1 DP/day; 75% of DP
7	{k/c} Initial Fighter Project [R&D cost 250][c]			
	(Bfa)[c]	60	6	Carries 1 FQ squadron
9	(Bgb)[d]	70	7	Carries 1 GB squadron
10	(Bfb)[d]	70	7	Carries 1 FQ squadron
12	{c} (Bge)[d]	80	8	Carries 1 GB squadron
k13	{c} (Bfe)[d]	80	8	Carries 1 FQ squadron
15	(Bgi)[d]	90	9	Carries 1 GB squadron
16	(Bfi)[d]	90	9	Carries 1 FQ squadron
18	(Bgm)[d]	100	10	Carries 1 GB squadron
k20	{c} (Bfm)[d]	100	10	Carries 1 FQ squadron
21	(Bgn)[d]	110	11	Carries 1 GB squadron
24	(Bfn)[d]	110	11	Carries 1 FQ squadron
k25	(Bgo)[d]	120	12	Carries 1 GB squadron
k29	{c} (Bfo)[d]	120	12	Carries 1 FQ squadron
30	(Bgq)[d]	130	13	Carries 1 GB squadron
34	(Bfq)[d]	130	13	Carries 1 FQ squadron
k35	(Bgs)[d]	140	14	Carries 1 GB squadron
k39	{c} (Bfs)[d]	140	14	Carries 1 FQ squadron
40	(Bgu)[d]	150	15	Carries 1 GB squadron
44	(Bfu)[d]	150	15	Carries 1 FQ squadron
k45	(Bgw)[d]	160	16	Carries 1 GB squadron
k49	{c} (Bfw)[d]	160	16	Carries 1 FQ squadron
50	(Bgy)[d]	170	17	Carries 1 GB squadron

[a] Note: Qv and H values are higher than cargo amounts because not all equipment/personal are front line combat necessary.
[b] Initial Gunboat development project -- Once complete, this project allows the construction of the GBa, the (Bga), the (BLa), and the Gunboat Training facility [M7.03]. Until this project is completed, no other gunboat project can begin. Note that a knot is required to start the project and that it is a critical project.
[c] Initial Fighter development project -- Once complete, this project allows the construction of the FQa, the (Bfa), the (BLa), and the Fighter Training facility [M7.03]. Until this project is completed, no other fighter project can begin. Note that a knot is required to start the project and that it is a critical project.
[d] See [B?.01] for BL development.

SW.01 WEAPON GENERATION (OPTIONAL)

A smcft squadron may carry SRW (beam weapons only) up to the smcft's generation. Thus, a FQe squadron could carry weapons of up to "e" generation. In order to carry such weapons, the equivalent generation of that weapon (regular, capital, or heavy) must have been developed by that race. Thus, Fb, Fcb, or Fhb each allows a squadron to carry "Fb" generation SRW.

B? – SMALL CRAFT BAY [EL1]

All small craft require bays to be docked aboard a carrier in order to be stored, rearmed, refueled, and to load and unload cargo.

Note: In Ultra, there is no extra cost to mount bays of any type on fast or normal hulls. The cost is always the same but [BL.01] limits the quantity of BL on normal hulls.

A mothballed carrier also mothballs any small craft in their hangers. A bonus is that the mothballed small craft are automatically unmothballed with the carrier at no cost.

Note: Upgrading the hanger bays does not upgrade the small craft.

B?.01 SQUADRON BAY

Squadron Bay types are (Bf*) for fighters and (Bg*) for gunboats. Both of these types of bays are INCAPABLE of launching smcft on their own. Instead, a BL (Bay Launch) system is required. Higher generation bays may contain (or land/launch in the case of BL systems) lower generation craft of the same type but lower generation bays cannot contain higher generation smcft.

B?.01.1 Development of a Bf or Bg system also develops the same generation of BL system and the same generation of fighter or gunboat squadron (depending on bay type). R&D cost is three times the cost of the Bf or Bg bay.

B?.01.2 Each bay contains enough ordnance to supply the squadron with expendable ordnance 10 times. sQ is not counted toward this number and may be recharged by any intact Q system on the carrier.

Any used ordnance is fully replaced when the monthly maintenance is paid [L7] or can be replaced during the month by an FT or the CFN at a cost of 10% of the bay's cost.

B?.02 SHUTTLE BAY

Shuttle Bay (Bs) only carries shuttles and can, unlike BL, launch/land shuttles directly and can launch drones [D9.06.1]. However, only a BL can launch AP while moving or with the shields up and BL can launch buoys too.

B?.03 BAY MOUNTING LIMITS

BL cannot be mounted on 30 HS or smaller units.

A Warship, PDC, AF, SS, or Freighter Hull is limited to a maximum of 1 bay system (BL, Bf, Bs, or Bg) per 30 HS of ship size or fraction thereof.

A Fast, Base, or Rapid Hull can have unlimited bays (but see first sentence).

Thus, the minimum size of regular or fast hull that can mount a single squadron is 31 HS (you need both a Bf/Bg system and a BL system).

BL – LAUNCH BAY

A BL system is identical in size and cost to an equal generation of Bf/Bg system. BL can only launch or land (not both) a single squadron, either type, each turn. BL can only launch/land squadrons of the same generation or lower. Multiple BL are allowed on a carrier and can operate at the same time.

BL.01 AP LAUNCH

A Launch Bay may alternately launch one buoy or drone per tactical turn per generation of launch bay even while moving and with shields up. Launched AP may not fire on the turn of launch.

BL launched AP must be stored in Bs.

(SQNM) – SQUADRON MAINTENANCE BAY

Note: Requires [BLa].

(SqnM) can repair 2 fighter squadron DP per day or 1 Gunboat squadron DP per day to a maximum of 75% of full effectiveness. Full capacity can only be done by a machine shop or construction facility. In order to repair more than 6 DP in a month, crew points (CP) must also be available. One CP is needed for each DP above six repaired.

SL	Code	Cost	Space	Repair Rate/Day	Maximum Repair[a]
6	(SqnM)	20	3	2 or 1 DP	75% of DP
Other repair facilities and rates					
	Bf/Bg	-	-	1 DP	50% of DP
	MS	-	-	4 DP	100% of DP
	SYM	-	-	6 DP	100% of DP
	SY	-	-	8 DP	100% of DP

[a] Percentages are of the total available DP, not the just caused damage. Thus, a GBa that took 10 DP of damage could not be repaired by a Bga because it still has 66% of its DP and the Bga can only repair up to 50% of the DP.

Mid-month Repairs or Repairs during movement can only occur if the repair facility is ON the carrier the squadron is being carried on (swapping between carriers to get to the repair facility is fine).

The DP rate/day is per facility. So SY can repair 8 squadrons 1 DP, or 1 squadron for 8 DP or any combination totaling 8 or less.

LRW TWIGS

HAWK – HAWK TWIG

HAWK (Homing All the Way Killer) missiles, sprint missiles, and torpedoes can be guided into the launching units blindspot by a datalinked group member that can see the enemy in the blindspot. Such attacks are at a negative to-hit. The amount of the negative depends on the level of the HAWK. HAWK -2, is a -2 to-hit.

HAWK appears at SL 9 in the missile, sprint missile, and torpedo trees/branches, and has only two generations.

Empire wide software upgrade [AA.04].

HAWK does not work for Kinetics.

Development cost is 100 MC per level of HAWK.

SL	Code
9h	{k} HAWK-3 [SL9 in any missile or torpedo tree]
18	{k} HAWK-2

LRW ECM – LRW ECM TWIG

This is ECM for missiles, sprint missiles, torpedoes, and kinetics that makes it harder for point defense to target them. Unlike ship ECM, LRW ECM tends toward active jamming. Each point of LRW ECM gives a -1 to the intercept number against that LRW; however, Kinetic LRW ECM always ignores the first two points of LRW ECM (i.e. LRW ECM 5 on Kinetics only gives a -3 to be intercepted).

LRW ECM appears at SL 9 in the missile, sprint missile, torpedo, and kinetic trees/branches.

All LRW ECM requires that both the D and the EMS trees be open and at least one D or EMS system previously developed. Additionally, at least one LRW tree/branch must be of a sufficient science level to begin R&D on a particular LRW ECM generation.

Development cost is 100 per level of LRW ECM.

LRW ECM applies to Squadron LRW attacks.

Empire wide software upgrade [AA.04].

SL	Code
9	{c} LRW ECM 1 [requires EMSa, Da, and SL 9 in any LRW Tree]
16	{c} LRW ECM 2 [requires EMSb, Db, and SL 16 in any LRW Tree]
21	{c} LRW ECM 3 [requires EMSe, D, and SL 21 in any LRW Tree]
27	{c} LRW ECM 4 [requires EMS, D, and SL 27 in any LRW Tree]
33	{c} LRW ECM 5 [requires EMS, D, and SL 33 in any LRW Tree]
39	{c} LRW ECM 6 [requires EMS, D, and SL 39 in any LRW Tree]
45	{c} LRW ECM 7 [requires EMS, D, and SL 45 in any LRW Tree]

BOOSTER – BOOSTER TWIG

New technology appears at SL 14 and allows regular missiles (not sprint missiles), torpedoes, and kinetics to receive a to-hit bonus at shorter ranges.

Booster appears at SL 14 in the missile, torpedo, and kinetic trees/branches, and has no generations.

Booster technology does not affect AP or squadron weapons.

Empire wide software upgrade [AA.04].

Developement cost is 400 MC.

Range (FRD)	To-hit bonus
0%-20%	+2
>20%-50%	+1
>50%	+0

HARM – HARM GUIDANCE TWIG

HARM guidance is a missile software upgrade, which can be researched as a *threat response* to datalink jammers [(JAM)]. They allow missiles and torpedoes to identify and actually home in on a target using a jammer, and this gives them a +1 to hit versus targets using a datalink jammer.

HARM appears at SL 17 in the regular missile (not sprint missile) and torpedo trees/branches, has no generations

Empire wide software upgrade [AA.04].

HARM does not work for Kinetics.

Developement cost is 400 MC.

Range (FRD)	To-hit bonus
0%-20%	+2
>20%-50%	+1
>50%	+0

STANDARD SHIP SYSTEMS

A – ARMOR

Note: Available at IND-2

Armor is not just metal plating, but a system of internal dampeners, absorbers, and outer hull strengthening. Internally armor can be placed anywhere, and represents bulkheads that are designed to contain damage between sections. Armor coding is different to reflect the space requirements of the armor and starting with A2, is a direct reference to the spaces taken.

R&D costs are special See N6.04

SL	Code	Cost	Space	Notes
0	A	2	1	
k4	A1	3	2/3	
k8	A2	4	1/2	
k12	A3	5	1/3	
14	k{c} Armor Protection Layer (Ap) Project -- R&D cost 150 MC			
k16	A4	5.5	1/4	
17	k{c} Dense Armor (Ad) Project -- R&D cost 250 MC			
k20	A5	6.0	1/5	
k24	A6	6.5	1/6	
k29	A7	7.0	1/7	
k35	A8	7.5	1/8	
k40	A9	8.0	1/9	
k45	A10	8.5	1/10	

A.01 ARMOR LOCATIONS

Armor must be placed after shields but is otherwise unrestricted in placement. All armor placed before the first internal system is not treated as an internal system and is considered the outside layer of armor protecting the ship [D4.02.2].

A.02 ARMOR LAYERING (OPTIONAL)

A ship may only have a single type of armor installed unless this optional rule is in effect; However, all generations of an armor type must be the same. *I make no warranties that all the rules will work easily or correctly with this option. [See S.02 also]*

A.03 DENSE ARMOR (AD)

This armor made out of neutronim requires 3 points of damage to destroy from a single salvo of fire. It is five times as expensive and twice the size of the standard armor. All the armor on a ship must be Dense or not. Layering is not possible. EX: Ad3 would be 2/3 HS, cost 25 MC, and stop three damage.

Dense armor acts as 4 armor vs. skipping weapons but only 2 points of armor skipping damage will destroy it. It is possible that Ad will stop 1 point of damage, which would be ignored, and allow a 2nd point to do internal damage.

Once the SL 17 Dense Armor development project is completed, new versions of Dense Armor become available without development 1 SL after the regular armor they are based on (i.e., once A5 is developed, Ad5 can be built when armor SL reaches 21).

SL[a]	Code	Cost	Space	Notes
1	Ad	10	2	All Ad takes 3 pts damage from a single salvo to destroy. Acts as 4 armor vs. skipping weapons. Takes 2 pts precision armor skipping damage to destroy.
5	Ad1	15	4/3	
9	Ad2	20	1	
13	Ad3	25	2/3	
17	Ad4	27	1/2	
21	Ad5	31	2/5	
25	Ad6	34	1/3	
30	Ad7	37	2/7	
36	Ad8	40	1/4	
41	Ad9	43	2/9	
46	Ad10	46	1/5	

[a] Only available after Dense Armor Project complete.

A.04 ARMOR PROTECTION LAYER (AP)

Armor Protection (Ap) is a process where the armor plates are split in two and sandwiched with energy absorbing material. This increases the size of the armor but also improves its defense against penetrating weapons and armor skipping weapons by dispersing a beam's energy earlier. Ap armor functions as 2 armor vs. skipping weapons but is destroyed by a single pt of damage.

Once the SL 14 Armor Protection development project is completed, new versions of Armor Protection become available without development 1 SL after the regular armor they are based on (i.e., once A4 is developed, Ap4 is available when armor SL reaches 17).

SL[a]	Code	Cost	Space	Notes
1	Ap	4	1.25	All Ap acts as 2 armor vs. skipping weapons.
5	Ap1	6	1.0	
9	Ap2	8	2/3	
13	Ap3	10	1/2	
17	Ap4	11	1/3	
21	Ap5	12	1/4	
25	Ap6	13	1/5	
30	Ap7	14	1/6	
36	Ap8	15	1/7	
41	Ap9	16	1/8	
46	Ap10	17	1/10	

[a] Only available after Armor Protection Project complete.

Armor Skipping Example: Ea causing two pts of damage (to 20 armor) would destroy the 10th and 20th regular armor, the 5th and 10th Ap armor, and would destroy the 5th dense armor.

Note: If there were 3 or 4 dense armor, only 1 pt of damage would be caused to the first eligible system beyond the dense armor.

AC – ATMOSPHERIC CAPABILITY

See Construction tree [Con].

ADM – ANTI-DRIVE MISSILE

Note: Requires Missile or Torpedo SL 7 or Drone 2

The ADM is a LRW that uses a specialized warhead designed to amplify the ADM's drive-field on impact, attempting to damage the target's drives in the same manner as ramming does.

ADM.01 DAMAGE

ADM damage is applied to the shields first, and then directly to the target's left most active engine. If the target has no remaining engines, then the damage is applied as standard damage [D4.01A].

ADM.02 USAGE

ADM can only be carried on XO racks and cannot be internally launched. ADM attack on various missile charts and are limited to XO range. ADM are difficult to intercept (-1). ADM get all missile modifiers (LRW Twigs, LRW ECM, Booster, and HARM), once those technologies are developed from elsewhere.

SL	Code	Cost	Space MSP	Notes
7c	ADMa	n/a	4	4 XO racks to carry, Re to-hit
k11c	ADMb	n/a	3	3 XO racks to carry, Ri to-hit
15c	ADMe	n/a	5	5 XO racks, destroys 2 engines, Ri to-hit
19c	ADMi	n/a	4	4 XO racks, destroys 2 engines, Rm to-hit
k23c	ADMm	n/a	5	5 XO racks, destroys 3 engines, Rm to-hit
27c	ADMn	n/a	5	5 XO racks, destroys 3 engines, Rn to-hit
33c	ADMo	n/a	4	4 XO racks, destroys 3 engines, Ro to-hit
k38c	ADMq	n/a	5	5 XO racks, destroys 4 engines, Rq to-hit
43c	ADMs	n/a	4	4 XO racks, destroys 4 engines, Rs to-hit
k48c	ADMu	n/a	3	3 XO racks, destroys 4 engines, Ru to-hit

AM – ADVANCED MANEUVERING

See engine twig section [Advanced Maneuvering Twig].

AP – AUTOMATED PLATFORM

Note: Requires EL2

Automated platforms can perform many types of missions but there are only two basic types of hulls: Buoy (non-mobile) and Drone (mobile).

AP.01 DESIGNING AP PLATFORMS

Automated Platforms (AP) are designed as a mix of Small Craft and Large Units. Their hulls are bought off the shelf like Small Craft, and require that the empire building them has developed the particular AP hull it wants to use, but they are outfitted with miniature, lower-powered versions of systems that are normally used in large spacecraft or PDCs.

AP.01.1 Each type of AP hull has a fixed cost and a fixed number of "HS." They are not required to fill all available space.

AP.01.2 XO racks mounted in AP take up 0.1 AP HS *per HS of ship surface area* they would occupy on a large unit. i.e., one XOa takes 0.7 AP HS. AP with XO racks are destroyed after they fire. Fire from XO racks is -1 to-hit but Sprint Missiles (G) are -2 to-hit. Only Buoy2 and Drone2 or higher can mount XO racks.

AP.01.3 Non-Explosive Weapons are low-powered and can only be used every 5th turn. smcft weapons are not allowed on AP.

LRW can be mounted on AP but only fire every 5th turn. LRW (including K) have only 5 rounds of ammunition and on bouy2 their damage is halved as a smaller missile must be used.

AP.01.4 Explosive Weapons (APew) use a nuclear explosion to generate their power. They can cause force, energy, or laser damage. The appropriate type of ship weapons must be developed before the AP explosive version is developed. Explosive weapons are always the alpha version of the SRW weapon but cause full damage and range is not affected. APew are -2 to-hit except Pg which are -1 to-hit. Only standard size weapons (i.e., non-capital or heavy, etc.) are allowed as APew (Specifically: La, Ea, Fa, Fpa, Epa, Lpa, and Pga).

AP.01.5 Some systems allowed on AP are not listed on the AP tree. The specific list is:

> **Double Size:** Mx[1],
>
> **Normal sized:** Hardening[1] [AP.01.7], D[1], Dc[1], (JAM)[2], weapons[2], (MNE), MgD, sX, sY[1], sZ, sYc[1] [D9.08.2]
>
> **Disallowed:** Any system not mentioned here or above; including CC, Mg, H, W, S, Y, X, and A.

AP.01.5.1 D and Dc systems only have 10 turns of ammo but always fire at full power. A MgD (point defense magazine) adds 5 turns of ammo for 1 HS and 3 MC.

AP.01.6 AP must pay maintenance. Deployed buoys and all drones, except for Courier Drones, pay 4% maintenance. Mothballed drones and un-deployed buoys both avoid maintenance costs.

AP.01.7 AP may be hardened. This is similar to armor but skipping issues are ignored. Each 1 Hardening ("h") takes 1 AP HS, costs 8 MC and adds 3 DP to the buoy.

[1] indicates the system functions every turn.
[2] indicates the system functions every 5th turn.

AP.01.8 Unless specifically noted, AP versions of systems are available as soon as the ship bourne version is developed.

AP.01.9 An AP or AP datagroup requires sY [D9.08.2] to fire beyond the inherent sensor range [D9.05.1 and D9.06].

AP.02 Courier Drones

Once Drone1 and cm are developed discovered, all ships carry Drone1-cm (also termed "Courier Drone" or "CD"). This is a free and automatic empire-wide upgrade. Once developed, the CD has the best version of DEEP available. Deep distances are listed in StMP, not system hexes.

Courier Drones are launched at any time during movement like Small Craft. They are not "fired" like a weapon. Omega Buoys and Drones are fired when the unit is destroyed. A unit always has one, and only one, Omega Buoy. However, units may designate as many Omega Drones as they desire but there is a two turn delay between mode switches (from CD to Omega Drone).

AP.02.1 Each large unit carries 1 CD per 10 HS (FRD) except freighters which get 1 CD per 40 HS (FRN). Populations gain 1 CD per 50 PU (minimum of 2 CD).

AP.02.2 DEEP (Drone Endurance Enhancement Pack) allows drones to run for long distances at varying speeds [see D9.03.1]. The table below lists the speed (Tactical and Strategic) and distance (in StMP).

Note: fractions do not round.

AP.03 Decoy AP Module

This is AP module can be fitted into a buoy or a drone. It generates a drive field strong enough to rival that of a starship. You can make the setting equivalent to any size of unit from 100 HS or lower.

AP.03.1 Engine Mode The decoy module can operate in any engine mode. It allows a speed equal to that of the best engine system that the race has developed. When installed with Deep1 or Deep2, the maximum speed is per deep or the best engine system which ever is higher. While Deep1 and Deep2 have preset speeds, this system allows any speed to be selected and up to 5 times speed or course changes are allowed. i.e., run at speed 5 dir 4 for 15 minutes, then speed 2 dir 3 in LOD mode for 2 hours, then (etc.). Each change point, regardless of the number of things changed, counts as a single change.

AP.03.2 Detection At detection level D, a Decoy is indistinguishable from a normal drive field (or group of drive fields).

AP.03.3 Transit The Decoy will appear to transited units as a 5 to 100 HS ship or base, as predetermined and set by an APC. This deception lasts until the combat phase of the turn after transit (or TWO turns after transit for things that use simultaneous transit.

AP.03.4 DECOY2 This version of the DECOY also works at detection level Q.

AP.04 Thrusters

Thrusters allow boosting of AP tactical speed. They may not be combined with DEEP.

SL	Code	Cost	Space	Bb pts	Notes
2	Buoy1	5	2	1	May not carry weapons; 2 DP
	Drone1	10	2	1	Speed 7; 3 DP; no weapons
	cm	1	1		Courier Drone Memory
	n	5	1		Navigation Beacon [D9.03.1]
	sY	varies	ship[a]		Sensors - +2 SL [See smcft section for development]. See [smcft.02] for cost.
	DEEP1	1	50%		10/1 or 7/2 or 4/4 (spd/dist)
3	(NAV)	10	1/2		Ship system only [D9.03.1]
4	**Buoy2 Project:** Completion of this project opens the APC tree and develops both Buoy2 and APCa and allows XO on level 2 AP [R&D cost 200]				
	Buoy2	10	4	1	Weapons/sYc half power/range[b]; 3 DP
	APew	15	2		Destroys the unit carrying it when used; Weapons per alpha gen.; full power/range.
	c	75	2		Allows communication with another "c" on the far side of a WP or another "c" anywhere in the same system.
	sX	ship[a]	ship[a]		Science Instruments [R&D cost is 1/2 ship X; each gen. is a new project] [D9.08.3]
	XO	Varies	0.1 per HS		Cost per ship mounted version; space is 0.1 HS per ship HS used.
5	Thr1	2	1		+1 drone tactical speed
6k {c}	Drone2	25	4	1	Speed 7; 4 DP; Weapons at 1/2 power/range[b]
7	sZX	10 per X	2		Master AP Datalink; R&D cost = 100; X is the qty of AP controlled
	sZs	1 per slave	none		Slave AP Datalink (Developed with Master AP Datalink)
	DECOY	100	3		[AP.03]
8	Buoy3	30	5	2	Weapon: full power/range; 4 DP
10	Drone3	50	5	2	Speed 8; 5 DP; Wpn: full power/range
{c}	DEEP2	2	50%		12/3 or 9/6 or 6/12 (spd/dist)
12	Buoy4	40	7	2	Wpn: full power/range; 5 DP
13	Thr2	5	1		+2 drone tactical speed
14	DECOY2	130	3		[AP.03.4 DECOY2]
15	Drone4	65	7	2	Speed 8; 6 DP; Wpn: full power/range
17	Buoy5	50	8	3	Wpn: full power/range; 5 DP
19	Drone5	80	8	3	Speed 9; 7 DP; Wpn: full power/range
22	Buoy6	90	10	3	Wpn: full power/range; 7 DP
	DEEP3	3	50%		14/6 or 11/12 or 8/24 (spd/dist)
25	Drone6	110	10	3	Speed 10; 8 DP; Wpn: full power/range
Maximum level of Improvement.					

[a] Ship -- cost or space as ship borne version.
[b] Warhead weapons are never 1/2 damage. 1/2 damage points are totaled per volley of AP. Then, any fractions are lost.
The sYc penalty is in addition to the 1/2 range for sYc being on a buoy.
Fire using BASV [Section G7] is -2 damage and long range cannot be used.

AP.05 Killing AP

- A non-datalinked AP is attacked individually.
- An AP datagroup is attacked as a squadron.
- The G7.02 penalty of -1 for firing multiple times at the same target does not apply to firing at AP or AP datagroups.
- An AP datagroup does not add the individual BASV value of each AP together. They attack separately.
- Attacks against AP gain +1 damage on Table G7.03 Damage Caused to Squadron.

APC – AP CONTROL

Note: See AP tree.

The control systems are specialized communications systems and computers that are designed to give AP commands [D9].

Opens during the Bouy2 [AP tree] combined project.

SL	Code	Cost	Space	Notes
4c	(APCa)	100	8	Controls 25 Buoys or AP datagroups
7	(APCb)	125	6	Controls 50 Buoys or AP datagroups
k11	(APCe)	150	5	Controls 75 Buoys or AP datagroups
15	(APCi)	175	4	Controls 100 Buoys or AP datagroups
k19	(APCm)	200	4	Controls 125 Buoys or AP datagroups
23	(APCn)	225	4	Controls 150 Buoys or AP datagroups
k27	(APCo)	250	4	Controls 175 Buoys or AP datagroups
31	(APCq)	260	4	Controls 200 Buoys or AP datagroups
k35	(APCs)	270	4	Controls 225 Buoys or AP datagroups
k39	(APCu)	280	4	Controls 250 Buoys or AP datagroups
44	(APCw)	290	4	Controls 275 Buoys or AP datagroups
k49	(APCy)	300	4	Controls 300 Buoys or AP datagroups

ATC – ADVANCED TARGETING COMPUTER

Note: Opens from Electronics Tree.

The advanced targeting computer is an improved long range target acquisition package designed to improve the long range accuracy of direct fire weapons (kinetic and beam). The ATC system (ATC) can only assist weapons mounted on a single unit and is limited in the number of weapons that it can assist. The ATC adds 1 to the base to hit number (e.g., 9 becomes 10, 5 becomes 6).

Warp transit effects [D7.01] prevent ATC from operating.

SL	Code	Cost	Space	Notes
10c	(ATCa)	100	1	+1, max of 3 weapons
k15c	(ATCb)	125	1	+1, max of 4 weapons
20	(ATCe)	150	1	+1, max of 5 weapons
k25	(ATCi)	175	1	+1, max of 6 weapons
30c	(ATCm)	200	1	+1, max of 7weapons
k35c	(ATCn)	225	1	+1, max of 8 weapons
40c	(ATCo)	250	1	+1, max of 9 weapons
k45c	(ATCq)	275	1	+1, max of 10 weapons

(BC) – BEAM CONDENSER (TWIG)

Firing Beams through the atmosphere is impossible and forces ships to enter the atmosphere, which can be dangerous. The Beam Condenser module allows a race overcome this issue.

All power from a single unit's beam weapons, a minimum of five weapons required, are combined into a single shot. All types of beams can and must be combined. This shot causes damage as a normal version of the most numerous type of beam (lowest generation of that type beam present). Increase the damage by one per beam weapon above five. (BC) fire can only target PDCs, grounded spacecraft, PU, IU, and ground forces. The (BC) can only be used every other turn due to cooldown needs but the individual beams can fire normally.

SL	Code	Cost	Space	Notes
3	(BCa)	25	2	
7	(BCb)	30	1.5	
9	(BCe)	35	1	
11	(BCi)	40	0.5	Max improvement possible.

BS – SMCFT BAY

See B?.02 in the Small Craft tech section.

Bg and Bf are also located there

C – CUTTING BEAM

Note: Requires EL12. Weapon Table-Cutting Beam

The cutting beam fires a pulse of gravitons at the target. This pulse is very effective against non-armor based matter causing double damage. However, it is relatively ineffective against energy based defenses (shields) and armor causing only half damage (FRD at end of volley).

SL	Code	Cost	Space	Notes
12	Ca	70	5	[a]
k16	Cb	85	5	[a]
18	B -- Capital Cutting Beam			
20	Ce	105	5	[a]
k24	Ci	120	5	[a]
28	Cm	135	5	[a]
k32	Cn	150	5	[a]
36	Co	170	5	[a]
k40	Cq	185	5	[a]
44	Cs	200	5	[a]
k48	Cu	210	5	[a]

[a] x2 vs. internal HS and 1/2 damage vs. shields and armor (FRD)

CC – CAPITAL CUTTING BEAM

SL	Code	Cost	Space	Notes
18	Cca	145	8	[a]
k22	Ccb	170	8	[a]
25	B -- Heavy Cutting Beam			
26	Cce	195	8	[a]
k30	Cci	220	8	[a]
34	Ccm	245	8	[a]
k38	Ccn	270	8	[a]
42	Cco	295	8	[a]
k46	Ccq	320	8	[a]
50	Ccs	345	8	[a]

[a] x2 vs. internal HS and 1/2 damage vs. shields and armor (FRD)

CH – HEAVY CUTTING BEAM

SL	Code	Cost	Space	Notes
25	Cha	255	11	[a]
k29	Chb	290	11	[a]
33	Che	325	11	[a]
k37	Chi	355	11	[a]
41	Chm	385	11	[a]
k45	Chn	425	11	[a]
49	Cho	450	11	[a]

[a] x2 vs. internal HS and 1/2 damage vs. shields and armor (FRD)

(CLK) – CLOAKING

Note: Requires EL8.

The Cloak tree opens at SL 8 but the first item is SL 10.

LOD is a "Emission suppression" version of cloaking. Its disadvantage is that the LOD vessel is severely blinded and slowed. (CLK) is merely an extension of LOD except that instead of the engines doing much of the work, the (CLK) does the work leaving the ship to move faster. Also, the important combat sensor range is not cut in half allowing long range fire from a (CLK)ed unit.

Engines must be operating to use (CLK). "(CLK)ed" (cloaked unit) units with engines in standby mode are detected as if the DF was off. (CLK)ed units in asteroid belts are detected normally (either (CLK) or hiding [D3.03.3], which ever is better).

Shield use does not affect (CLK) operation.

(CLK) can be de-activated at the beginning of a unit's or datagroup's combat pulse. (CLK) can be activated just before movement.

Note: Excessive speed will deactivate cloak during the movement phase.

CLK.01 USAGE

LOD, EM/EMS, tractoring (either way), exceeding the Max. cloaking speed, and nebulas prevent (CLK) from working (being effective). Launched (unloaded) units are detected normally, unless they too have cloak operating. (CLK) operates normally (reduced enemy sensor range) during WP transits.

(CLK) allows units to move faster than the very low LOD speed limits without negating its stealth abilities.

(CLK) does **not** generate MPs on its own nor does it provide bonus movement points. (CLK) does not negate or change any other speed limits (i.e. (CLK)ed units cannot exceed max. hull speed and cannot exceed max. safe speed without the possibility of burnout).

CLK.02 CLKED SHIP'S SENSOR RANGE

Operating a (CLK) reduces your own sensor ranges by eliminating both the LONG and the normal MEDIUM sensor brackets. MEDIUM sensor bracket is present but at a number based on the combat range (see table). Scan, Short, and Combat sensor ranges are not affected, nor are Multiplex targeting, communications, or datalink affected. Turning off (CLK) causes a DF flash exactly as LOD does [D5.03.3].

CLK.03 SENSOR EFFECTIVENESS VS CLK

Each version of (CLK) reduces the effectiveness of enemy sensors by effectively reducing their generation. When reducing generations, a Yca reduces to Yb and Ya reduces to Standard Sensors SL 0. When reducing below standard sensors, the lines (IND-1, IND-2) are used.

AP detect CLKed units as if the CLKed unit was using LOD.

CLK.04 (T) DETECTION

Enemy sensors gain (T) at normal combat range. "Normal combat range" means the range the sensors would have had before (CLK) reduced their effectiveness but still applying all other modifiers.

(CLK)ed units which fire while inside an enemies (T) detection level are detected.

CLK.05 (T) PENALTIES

Enemy units firing at a "(CLK)ed" (cloaked) unit that is beyond their reduced combat sensor range (i.e., using the (T) [CLK.04]) are at -2 to-hit.

(CLK)ed units always fire at a -1 to-hit until they drop their cloak.

CLK.06 ATMOSPHERE

(CLK)ed units in an atmosphere, landed or hovering, are detected as large asteroids.

CLK.07 SMCFT AND CLK

Small craft may have trouble finding a (CLK)ed, or even uncloaked, carrier. Usually the player must specify a rendezvous point and time or make wide area broadcasts. Likewise, attacking small craft typically must be vectored to a (CLK)ed unit by something with more powerful sensors or using scouting units or carry good sensors themselves.

SL	Code	Cost	Space	Max Speed[a]	Enemy Sensors[b]	Medium Range[c]
8	Tree Start -- No tech item					
10	(CLKa)	100	6	Safe +1	-3 gen.	+5 tH
14	(CLKb)	125	6	Safe +1	-4 gen.	+10 tH
k18	(CLKe)	150	5	Safe +2	-5 gen.	+14 tH
22	(CLKi)	175	4	Safe +2	-6 gen.	+17 tH
k27	(CLKm)	200	6	Safe +3	-3 gen.	+19 tH
32	(CLKn)	225	6	Safe +3	-4 gen.	+22 tH
k36	(CLKo)	250	5	Safe +4	-5 gen.	+24 tH
40	(CLKq)	275	4	Safe +4	-6 gen.	+26 tH
k45	(CLKs)	300	6	Safe +5	-3 gen.	+28 tH
50	(CLKu)	325	6	Safe +5	-4 gen.	+30 tH

[a] Maximum safe cruising speed.
[b] Enemy Combat Range is (T).
[c] Medium range is combat range plus the indicated amount.

CON – CONSTRUCTION

This tree contains the hull types used for constructing ships, bases, and space stations. This tree is based on EL (not SL) since the hull limit is based on the construction capabilities of the empire. New Hulls, whether its a new size, type, improvement, or generation, must be prototyped before use, see [M1.03.4] and [Con.03]. This tree does not use any of the section N rules excepting a few knots that must be broken. See AppEE-Construction Tables for hull tables.

The "f" designator is for Fast Hulls. The "t" designator is for Thick Hulls and the "d" designator is for Dense Hulls [Con.02].

(AC) is developed with the first engine system.

(MS) is developed (free) when their EL is reached.

CON.01 FAST HULLS

Fast hulls are now designated with an "f."

These hulls are longer, thinner, and have improved engine efficiency to enhance speed and WP transit sizes. A Fast Hull costs +2 MC/HS more than their warship counter parts, are available 1 EL higher, and allow a maximum speed one higher than a warship hull with the same turn mode. Weapons and Point Defense cost +20% more on a Fast Hull and the blindspot [D3.01.4] is increased depending on the Engine Type [AppAA-Engine Types]. WP Transits are +1 Transit Size [C4.02.2].

Fast Hulls make excellent carriers of all types [Small Craft Tree] and Transit Racks [C6.02]. Statistics for "@" are in the Ic Engine Twig [Ic.02].

Note: There is no such thing as a Fast Hull freighter.

CON.02 HULL IMPROVEMENTS

Both the Thick hull (t) and the Dense hull (d) use new technologies in damage control and new stronger alloys which reduce the damage taken by internal hits. (ed. Note - the "new" alloys may just be improvements in the creation of the alloys themselves and not necessarily new alloys. A large number of various "alloys" could work, so I'm not going to define any particular one as being "the" alloy. I think that diamond based hulls would be pretty cool).

Fast Thick (+4 MC per HS) and Fast Dense (+6 MC per HS) hulls are allowed.

Hull Improvements can only be distinguished at scan range when shields are down. Hull improvements cannot be refitted.

Weak hull units cannot have hull improvements.

Note: Internal Armors do not take additional damage to destroy (i.e. they are effectively not treated as internal for the purposes of this rule).

Con.02.1 Thick Hull (t) A Thick hulled unit must suffer 3 damage to destroy 2 internal systems. At the end of a volley, the extra damage is checked. If 1 or 2 pts are leftover they destroy 1 HS. A thick hull costs +2 MC per HS to build.

Con.02.2 Dense Hull (d) A Dense hulled unit requires 2 damage to destroy 1 internal system. At the end of a volley, the extra damage is checked. If 1 is leftover, it is ignored. A Dense hull costs +4 MC per HS to build.

EL	Code	Cost	Space	Notes
EL 0	(SY)	400	80	Contains own life support
	(SYM)	150	25	Contains own life support
	H	1	1	Holds 500 MC of maintenance or 500 csp
	Hs	1	0.5	Holds 200 csp MC of maintenance or 200 csp[a]
	HULL: **SS, PDC** Misc: ICC, Capital, SA, RDS, civilian TCF			
EL 1	(Hh)	5	5	[E8.03.2] Underground Hanger
	(AC)[b]	5% H	0	Free on FT / CFN FT have it
	HULL: **EX, ES, CT, FG, DD**; BASE: **BS0, BS1, BS2** FAST: **EXf, ESf, CTf, FGf**			
EL 2	HULL: **CL**; FAST: **DDf;** Asteroid Fort: **AF**			
EL 3	(MS)	100	25	Contains own life support
	HULL: **CA**; FAST: **CLf**; BASE: **BS3**			
avail. w/ A1 or S1	Ht	1	1/3	Holds 130 csp MC of maintenance or 130 csp[a]
EL 4	FAST: **CAf** BASE: **BS0g, BS1g, BS2g**			
	HULL GENERATION: {k} Basic Hulls (b)			
EL 5	HULL: **BC**, BASE: **BS4**			
EL 6	HULL: **BB**, FAST: **BCf** BASE: **BS3g**			
EL 7	HULL: **DN**, FAST: **BBf** BASE: **BS5**			
EL 8	FAST: **DNf** BASE: **BS4g**			
EL 9	HULL: **SD**, BASE: **BS6**			
	HULL GENERATION: {k} Enhanced Hulls (e)			
EL 10	FAST: **SDf** BASE: **BS5g**			
EL 11	HULL: **MT**			
	HULL IMPROVEMENT: {k} Thick Hulls (t)			
EL 12	FAST: **MTf** BASE: **BS7**, **BS6g**			
EL 13	HULL: **MH**			
	HULL GENERATION: {k} Improved Hulls (i)			
EL 14	HULL: **SM** FAST: **MHf** BASE: **BS8**			
EL 15	FAST: **SMf** BASE: **BS**			
EL 16	HULL: **LN** BASE: **BS9**			
EL 17	FAST: **LNf** BASE: **BS8g**			
EL 18	BASE: **BS10**			
	HULL GENERATION: {k} Modified Hulls (m)			
EL 19	HULL IMPROVEMENT: {k} Dense Hulls (d)			
	BASE: **BS9g**			
EL 21	BASE: **BS10g**			
EL 22	HULL: **JG**			
EL 23	FAST: **JGf**			
EL 27	HULL: **MM**			
EL 28	FAST: **MMf**			
EL 33	HULL: **CO**			
EL 34	FAST: **COf**			
EL 40	HULL: **GN**			
EL 41	FAST: **GNf**			
EL 48	HULL: **TN**			
EL 49	FAST: **TNf**			

[a] Only 1 hold smaller than 1 HS is allowed per unit.
[b] R&D costs are special See N6.04

CON.03 PROTOTYPES

Many hull types require prototypes (see M1.03.4). Completing a prototype may negate the need for other prototypes. Bases always require their own prototypes.

Finishing a hull prototype will automatically prototype all equal or smaller size hulls of the same type, improvement, and generation (i.e., any type below the type listed in the same column on the above table) that are legal (EX: BS4bm is illegal since bases cannot have generational hulls). If the hull has multiple types (EX: a Fast Dense

Modified Hull [CAfdm]), then it prototypes all things below each of those types.

Hull Types developed separately can be used together (Example: you don't need a CAfdm prototype if you have already built a CAf prototype and a CAdm prototype.)

Hull		Generation	
Type	Improvement	Hull	Freighter Hull
Fast	Dense	Notable	Notable
Warship	Thick	Modified	Modified
Freighter	Warship	Improved	Improved
	Freighter	Enhanced	Enhanced
		Basic	Basic
		Alpha[a]	Alpha[a]

[a] See comment under the Con.04 table.

CON.04 GENERATIONAL HULLS (OPTIONAL)

Credit: Dan Preston

These hulls are built so that their engines are slightly more efficient. This allows the same engines to push more hull, but a slight loss of speed and transit ability occurs. Only warship and freighters are allowed to use generational hulls. Please note that with the recent changes, the normal designators (CA, DD, FT3 are in fact Alpha Generation Hulls {CAa, DDa, FT3a} but it is not necessary to use the Alpha Generation "a" indicator as it might be confusing for a while until people get used to the "fast hull term" replacing the "advanced hull" term. Fast hulls are now designated with an "f").

Each generation of a given hull type (DD) has the same per HS cost as the original hull (i.e., DD is always 4.90 MC).

A hull's generation is distinguishable at Q detection level.

Hull Generation descriptions

Warship Version	Freighter Version	Size Increase	Max. Speed	Transit Size
Alpha Hull[a]	Alpha Freighter[a]	none	none	0 TSA
Basic Hull	Basic Freighter	1 * (FT#+1)	-0.5	-1 TSA
Enhanced Hull	Enhanced Freighter	2 * (FT#+1)	-1.0	-2 TSA
Improved Hull	Improved Freighter	3 * (FT#+1)	-1.5	-3 TSA
Modified Hull	Modified Freighter	4 * (FT#+1)	-2.0	-4 TSA
Notable Hull	Notable Freighter	5 * (FT#+1)	-2.5	-5 TSA

[a] The Alpha generation indicator is normally dropped from the hull type; thus, DD is the same as "DDa." The Fast Hull type is indicated on the counters with as "DDa" (instead of "DDf") because the counters were made before Elite introduced generational hulls. Sorry for any confusion.

Note: See C2.02 about fractional speeds.

Example: Calculating generational size.

DD is the same size as an FT4 (indicated on the AppEE-Construction Tables by the line DD [4]). This means that a DDe has a maximum size of 30 + 2 * (4+1) = 40 HS.

Con.04.1 Upgrading hull generation Cost is 25% of the existing hull cost, plus the cost of the new hull spaces and new systems. The build capacity required is the 25% of the original hull's HS plus the new HS and systems added. If any existing systems are to be changed, they must be refitted as normal.

Crew grade returns to normal after the shakedown cruise [F3.05].

Note: Hull Type cannot be changed.

When Con.04 is being used, other undersized hulls can be increased in size as long as the Hull Type (i.e. DD, BB, etc.) and Hull Generation are not changed.

Example Con.04.1 - Expanding a Hull

CON.05 CRYSTALLINE HULLS (OPTIONAL)

Crystalline Hulls are unique in many ways and have some significant advantages. Crystalline Hulls are based on regular warship hulls with the following differences.

No Freighter, Base, Fast or Rapid hull types are available.

Generational and Hull Improvements are not available.

Minimum Hull size is 350 HS

EL available +2 ELs; Speed -1; Cost 10 MC per HS

No maintenance is paid on the hull itself.

Crystalline Hulls must be grown. Only the Hull is paid for prior to growth and no design specifics are necessary. Growth Rate is 40 HS per month. Growth Rate is increased in nebula systems as follows: Maser +40 HS; Emission +20 HS; Dark or Reflective + 10 HS.

Crystalline Hulls are strong and, like think hulls, all internal damage requires 3 damage to cause one damage (FRD).

(DAM) – ADVANCED DAMAGE CONTROL

Note: Requires EL20.

A relatively large system, which controls hundreds of big, small, and mini-robots. When activated, these robots are capable of repairing *any* system on the mounting ship and they can do it at a blindingly fast speed as long as the ship received maintenance that month. Unfortunately, they are a bit wasteful, and tend to cannibalize parts of other systems. Any ship which uses them must pay 10 MC per repaired system if the ship survives combat.

Repair rates are per tactical turn. All repairs are done from the right side of the ship design to the left side. Shields, even destroyed ones, will be repaired last.

A system cannot be repaired in the same turn that it was damaged except for shields. However, it is possible on larger ships that systems to the left of the system's damaged on the current turn could be fixed.

A single advanced damage control system cannot repair more than 12 systems per combat. This is due to combat losses of the robots and lack of parts/raw material. These combat losses can be replaced from an onboard, intact hold system if the (DAM) choose to forgo repairing systems during a tactical turn.

Advanced Damage Control Systems are (de)activated at the beginning of a turn and repairs occur in the recordkeeping phase.

SL	Code	Cost	Space	Notes
20	(DAMa)	100	5	Repairs 2 systems per turn
k25	(DAMb)	125	5	Repairs 3 systems per turn
k30	(DAMe)	150	6	Repairs 4 systems per turn
k35	(DAMi)	200	6	Repairs 5 systems per turn
k40	(DAMm)	250	7	Repairs 6 systems per turn
k45	(DAMn)	300	7	Repairs 7 systems per turn
k50	(DAMo)	350	8	Repairs 8 systems per turn

D – POINT DEFENSE

Note: Requires EL 3

Point defenses are clusters of beam weapons and small counter-missiles designed to destroy incoming objects before they can damage the defending unit. They can engage small craft and AP.

All point defense systems can intercept missiles (+0), plasma torpedoes (-1), sprint missiles (-2) and kinetic rounds (-3). ADM are -1 to be intercepted.

D.01 TARGETING BONUS

All D type systems can combine up to 3 shots on a single inbound. Each extra shot adds +1 to the intercept roll (1 roll for all combined shots). Extra shots must come from a D system with the same basic interception number.

Each additional salvo after the 1st in a single volley is engaged at an additional -1 to intercept.

D.01.1 POINT DEFENSE TYPE SPECIFIC MODIFIERS

- D type systems are -1 when engaging a capital weapon inbound, except Kc.
- D type systems are -2 when engaging a heavy weapon inbound, except Kh, which they engage at -1.
- Dc type intercepts capital weapon inbounds normally.
- Dc type systems are -1 when engaging a heavy weapon inbound, including Kh.

Example D.01 - Salvos

D.02 DATALINK POINT DEFENSE (Z)

Unlike a normal point defense system (PD hereafter), Datalink PD can defend other members of the same datagroup.

Example D.02 - Datalink

Example D.02 - Datalink and Escorting

D.02.1 Installation of z A Datalink PD module (z) can be fitted to any generation of D or Dc system and works identically for all systems. The "z" module is indicated before the generation of the system (e.g., Dczb, Dze). The z module adds 10 Mc and 1 HS to the size and cost of the point defense system.

A D system and the z module are treated as a single system except when initially added. During that refit, only the z module needs to refitted/added (10 Mc, 1 HS) but must be placed in the HS to immediate right of the PD (you still use Dczb code to replace Dcb).

Once the Datalink Point Defense module is researched, any current or future datalink point defense system becomes available when the system it is based on is researched.

D.02.2 Operation of z Any PD system with a z module (inherent or added) may engage inbounds targeted at other members of the same datagroup but additional restrictions will apply.

- All interception attempts are penalized by -1, including other modifiers except escorting [E7.08].
- The mounting and the protected unit must be in the same tH.
- Inbounds from within the blindspot of the mounting unit cannot be engaged.
- While multiple shot bonuses may apply, shots from different units cannot be combined.
- A single D installation (any type) cannot protect more than one unit per salvo.
- Important: A point defense system with datalink may always be used as a normal point defense system (I.e. Dcb instead of Dczb), ignoring the datalink.

SL	Code	Cost	Space	Abilities	Effective[a]
3	Da	15	2	3 shots at 3	3 shots at 3
5	Datalink Point Defense module [R&D 50]				
6	Db	20	2	3 shots at 4	3 shots at 4
7	B -- Capital Point Defense				
k10	De	45	2	5 shots at 5	5 shots at 4
14	Di	60	2	6 shots at 5	6 shots at 4
k18	Dm	75	2	7 shots at 6	7 shots at 4
22	Dn	90	2	9 shots at 6	9 shots at 3
k26	Do	100	2	9 shots at 7	9 shots at 3
30	Dq	110	2	10 shots at 7	10 shots at 3
k34	Ds	120	2	10 shots at 8	10 shots at 3
38	Du	135	2	10 shots at 9	10 shots at 3
k42	Dw	150	2	11shots at 9	11 shots at 3
46	Dy	170	2	10 shots at 10	10 shots at 3
k50	Dka	190	2	11 shots at 10	11 shots at 3

[a] Design Note: LRW ECM at SL 9, 16, 21, 27, 33, 39, and 45.
Effectiveness values are a bit off due to not listing the lines for LRW ECM.

DC – CAPITAL POINT DEFENSE

Note: See the D tree.

Dc gains no benefit from combining multiple shots.

SL	Code	Cost	Space	Abilities	Effective[a]
7	Dca	30	3	3 shots at 5	3 shots at 5
11	Dcb	60	3	4 shots at 6	4 shots at 5
k15	Dce	80	3	5 shots at 6	5 shots at 5
19	Dci	100	3	6 shots at 6	6 shots at 4
k23	Dcm	120	3	7 shots at 7	7 shots at 4
27	Dcn	140	3	8 shots at 8	8 shots at 4
k31	Dco	160	3	9 shots at 9	9 shots at 5
35	Dcq	180	3	10 shots at 10	10 shots at 5
k39	Dcs	200	3	11 shots at 10	11 shots at 4
43	Dcu	220	3	12 shots at 11	12 shots at 5
k47	Dcw	240	3	13 shots at 12	13 shots at 5

[a] Design Note: LRW ECM at SL 9, 16, 21, 27, 33, 39, and 45.

X-RAY LASER -- (DEC) PLUS (LJ)

Note: Opens at IND-2.

Weapon Table-X-Ray Laser -- (DeC) plus (Lj)

The X-Ray laser is powered by a nuclear detonation directed by the Detonation Chamber through lasing rods. However, this power comes at a price, as each time the ship fires it risks getting seriously damaged or even destroyed.

(DEC) - DETONATION CHAMBERS

The Detonation Chamber contains a nuclear explosion and directs the power through magnetic conduits to Laser Ejectors. When using fewer Lj than allowed, a smaller explosion is used to help prevent overloading the system.

(DEC).01 LIMITED LJ USE

A detonation chamber may only power the laser types listed beside it, and only up to that number.

(DEC).02 DETONATION CHECK

When any of the Lj associated with a single (DeC) rolls a 10 to hit, roll once on (DeC).03 to see if anything failed in that (DeC) + Lj group. Using less than the maximum number of Lj attached to the detonation chamber lowers the threat to the (DeC) itself [(DeC).03].

(DEC).03 DETONATION CHECK TABLE

Roll	Result
01-07	(DeC) and all Lj are destroyed plus damage per [(DeC).03.1]
08-25	One Lj is destroyed.
26-30	System safeties activated [(DeC).03.2]
31-00	System works just within tolerance limits. No effect.
Roll 1d100 per (DeC) check	
Add +4 to the die roll for every Lj under the maximum amount the (DeC) could fire.	
Add -5 if the system is an Lja. Destroying the Lj destroys the whole Lja system.	

(DeC).03.1 (DeC) and all associated Lj are destroyed. Also the (DeC) causes 1d10+3 explosion damage to the systems surrounding it (left of (DeC), then right, and continue alternating). If damage goes off the end of the ship, it instead causes damage in the other direction. Note: Better generations of DeC reduce the damage to surrounding systems.

(DeC).03.2 System safeties activated. The (DeC) is unusable until fixed by "Emergency Repairs" [E2]. A successful "emergency repair" of the system safeties makes the (DeC) like new. This special "emergency repair" can be attempted every 5 tactical turns (same turn that De-tune burnout rolls are made). Crew Grade does apply.

(DEC).04 NO JURY RIGGING

A destroyed detonation chamber cannot be "jury rigged" via Emergency Repairs [E2].

(DEC).05 DAMAGE BEFORE FAILURE

(DeC) and Lj failures are resolved after the Lj(s) do any damage to the enemy.

LJ - LASER EJECTORS

Laser Ejectors are the systems that deliver the actual damage from a Detonation Chamber explosion. The LWH [Lj.01] includes the throw-away warhead, which produces power, and throw-away lasing rods, in the Lj, to deliver it.

Like other lasers, the X-Ray Laser skips shields.

LJ.01 AMMUNITION

The expendable warhead and rods use the abbreviation LWH, and take up one MSP. Each Lj, like a LRW, stores 10 rounds of ammo internally.

LJ.02 CHECK FOR DAMAGE

Lj can damage itself or DeC. See [(DeC).02]

LJ.03 COMBINED SKIPPING

A DeC + Lj group may combine all damage against a single target for the purposes of skipping shields. Thus, if 2 Ljb hit, causing 4 damage, the 20th, 40th, 60th and 80th shields, not the 20th, 40th, and then the 20th and 40th again.

LJ.04 LJA COMBINATION SYSTEM

Lja is a combination laser/detonation system. It has no separate (DeC) system.

SL	Code	Cost	Space	Skips	ROF	Notes
0	Lja	30	7	10		LWH included, (DeC) included
3	(Deca)	30	5			2 Ljb
	Ljb	25	4	20		
5	(Decb)	40	3			2 Ljb or Lje, -1 explosion
7	Lje	30	3.25	30		
10	(Dece)	90	5			3 Lje or Lji, -2 explosion
12	Lji	35	3	40		
14	(Deci)	105	4			3 Lji or Ljm, -2 explosion
16	Ljm	40	2.75	50		
18	(Decm)	400	19[a]		ROF=2	4 Ljm or Ljn, -3 explosion
20	Ljn	50	3	60		
22	(Decn)	480	19		ROF=2	4 Ljn or Ljo, -3 explosion
24	Ljo	60	3.25	70		
26	(Deco)	700	22		ROF=2	5 Ljo or Ljq, -4 explosion
28	Ljq	70	3.5	80		
30	(Decq)	775	22		ROF=2	5 Ljq or Ljs, -4 explosion
32	Ljs	80	4	90		
34	(Decs)	1080	26		ROF=2	6 Ljs or Lju, -5 explosion
36	Lju	90	4	100		
38	(Decu)	1140	26		ROF=2	6 Lju or Ljw, -5 explosion
40	Ljw	110	4	110		
42	(Decw)	1435	30		ROF=2	7 Ljw or Ljy, -6 explosion
44	Ljy	130	4	120		
46	(Decy)	1435	30		ROF=2	7 Ljy or Ljka, -6 explosion
48	Ljka	140	4	130		
50	(Decka)	1880	35		ROF=2	8 Ljka, -6 explosion

[a] Yes, these are indeed this big.

ELEC – ELECTRONICS

Note: Opens at IND-2.

This base tree holds all the electronics and computer based advances that aren't directly related to one of the other trees. Usually this will deal with targeting and initiative, but anything that is primarily computer-based is found here.

ELEC.01 COMMUNICATION CENTER

Communication Centers (CC) carry specialized, reusable CDs for short-range communications through warp points. A CC chain connecting two systems with populations of 25 PU or more generates income [P8.05]. There is a buoy mounted version of the (CC) also available.

ELEC.02 MASER NEBULA EMITTER

Maser Nebula emitter (MNE) allows a ship to ignore 1 pt of damage per day from a Maser Nebula or other space emitting anomaly. This device is effective against Star damage, lightning strikes, energy spikes, laser beams, and energy beams. Note: Stars do damage once per tactical turn [W5.03.1] so it would stop the first pt of damage but nothing else until 24 hours were over. Multiple installations are allowed.

SL	Code	Cost	Space	Notes[a]
0	(CICa)	40	5	+1 initiative; control 12 AP
1	M1	10	1	+1 Target
	(MNE)	10	1.5	Damage absorber
2	B -- Datalink			
	M2 [M1]	25	1	+2 Targets
	(CICb)	50	4	+1 initiative; control 25 AP
3	(CC)	20	4	[Elec.01]
	M3 [M2]	40	1	+3 Targets
	T - Beam Condenser (Twig)			
k4	B -- Linked Weapon Targeting			
	M4 [M3]	55	1	+4 Targets
5	B -- Engine Modulation			
	{k} (CICe)	75	6	+2 initiative; control 38 AP
	M5 [M4]	70	1	+5 Targets
6	B -- Anti-Engine Modulation			
	M6 [M5]	85	1	+6 Targets
7	M7 [M6]	100	1	+7 Targets
	{k} (CICi)	110	5	+2 initiative; control 50 AP
k8	M8 [M7]	115	1	+8 Targets
9	M9 [M8]	130	1	+9 Targets
10	B -- Advanced Targeting Computer			
	M10 [M9]	145	1	+10 Targets (max. improvement)
k12{c}	(CICm)	150	5	+2 initiative and best Mx; control 62 AP
k15	(CICn)	180	6	+2 int, best Mx, Yx; control 75 AP
k19	(CICo)	210	7	+3 int, best Mx, Yx; control 88 AP
k23	(CICq)	240	9	+3 int, best Mx, Yx, Zcx; control 100 AP
k27	(CICs)	270	8	+3 int, best Mx, Yx, Zcx; control 100 AP
k31	(CICu)	300	7	+3 int, best Mx, Yx, Zcx; control 100 AP
k35	(CICw)	330	6	+3 int, best Mx, Yx, Zcx; control 100 AP
k39	(CICy)	360	5	+3 int, best Mx, Yx, Zcx; control 100 AP
Max. Improvement Possible				

[a] This table cannot be further improved. Mx -- Cost is 10 + 15 * (x-1)

ELEC.03 COMBAT INFORMATION CENTER

The Combat Information Center combines data from many forms of sensors and data communications to provide the commander of a fleet (or detachment) with an overall view of the progress of the battle. This allows him to better anticipate and out maneuver the enemy. This is represented by a bonus to the initiative roll.

Higher SL (CIC) include an embedded version of the listed items. When better versions of those systems are developed, the ability of the (CIC) to perform those systems functions is upgraded for free.

(CIC) are unable to control AP datagroups through the datagroup master and must provide direct control to each buoy. The buoys are still able to function as a datagroup. This is the only way in which (CIC)'s ability to control AP is different from APCx ability.

ELEC.04 MULTIPLEX SYSTEMS

Each level of Multiplex System is a prerequisite for the next Multiplex System. I.e. M3 requires M2.

Multiplex system (M) usage covered at [D3.02.1].

EDM – ENHANCED DECOY MISSILE

Note: Requires EL6 and any XO rack.

The EDM circles a ship at a fairly rapid pace while generating a false DF signature that is nearly identical to a ship' own DF signature. The can cause a LRW attack to misjudge where the target is and therefore miss.

An EDM can be launched after an inbound volley is detected. All LRW inbounds in that volley may be decoyed (roll once for each of them). EDM is rolled before point defense.

EDM.01 INTERCEPTION

EDM will intercept an inbound on a 1 or 2 on a 1d10. Launching additional EDM against a volley modifies the interception number by +1 per EDM but EDM generation limits the amount that are effective. Add +1 to the interception number when used against Pt family weapons.

EDM.02 EDM AND ESCORTING

EDMs fired from an escorting ship [E7.08] have three options:

1) protect the escort (normal operation)

2) protect the escorted ship (normal operation)

3) protect BOTH the escort and the escorted unit. The EDM does not protect any other units in an escort chain. EDMs used in this manner are -1 to intercept BUT an additional EDM can be launched to cancel out this -1 penalty thus allowing the same maximum interception rate to be maintained if so desired.

SL	Code	Cost	Space	Notes
6	EDMa	n/a	4 MSP	Only 1 per volley
10	EDMb	n/a	4 MSP	Two per volley
k14	EDMe	n/a	3 MSP	Two per volley
18	EDMi	n/a	3 MSP	Three per volley
k22	EDMm	n/a	2 MSP	Two per volley
k26	EDMo	n/a	2 MSP	Three per volley
(max. Improvement)				

ENGINES – See Engine Root [EL 1].

E – ENERGY BEAM

Note: Requires Ind-2 -- Weapon Table-Energy Beam

The Energy beam (an SRW) fires stream of charged particles, which build up and short out a target's electronics and systems. Energy damage skips some armor and ALL hold systems but requires 2 hits to destroy a shield (FRD at the end of a volley).

E.01 NEBULAS

When using Energy Beams in nebulas, all to-hit and damage numbers are treated as if the actual range was two greater.

SL	Code	Cost	Space	Skips To
0	Ea	35	6	5 armor
4	{k/h} T -- External Beam Weapon Twig			
	Eb	35	5	10 armor
5	B -- Needle Beam			
6	B -- Capital Energy Beam			
k8	Ee	50	4.50	20 armor
12	Ei	60	4	50 armor
k16	Em	70	4	115 armor
20	En	85	4	190 armor
k24	Eo	95	4	245 armor
28	Eq	110	4	245 armor
k32	Es	125	4	300 armor
36	Eu	135	4	365 armor
k40	Ew	145	4	430 armor
44	Ey	160	4	430 armor
k48	Eka	170	4	505 armor

EC – CAPITAL ENERGY BEAM

SL	Code	Cost	Space	Skips To
6	Eca	70	8	10 armor
10	Ecb	95	8	20 armor
k14	B -- Heavy Energy Beam			
	Ece	120	8	40 armor
18	Eci	145	8	95 armor
k22	Ecm	175	8	130 armor
26	Ecn	195	8	165 armor
k30	Eco	220	8	200 armor
34	Ecq	245	8	245 armor
k38	Ecs	270	8	245 armor
42	Ecu	300	8	290 armor
k46	Ecw	325	8	335 armor
50	Ecy	345	8	335 armor

EH – HEAVY ENERGY BEAM

SL	Code	Cost	Space	Skips To
14	Eha	180	12	15 armor
18	Ehb	215	12	35 armor
k22	Ehe	250	12	45 armor
26	Ehi	290	12	55 armor
k30	Ehm	330	12	70 armor
34	Ehn	360	12	85 armor
k38	Eho	395	12	85 armor
42	Ehq	435	12	100 armor
k46	Ehs	460	12	115 armor
50	Ehu	505	12	115 armor

EP – NEEDLE BEAM

Note: Requires E SL 5

Weapon Table-Precision Energy Beams (Needle Beam)

The Needle beam skips armor but it does not skip shields. Unlike the E-beam, it does full damage to shields. Once all shields are down and past the armor, a needle beam inflicts deep hits (i.e., damage per D4.01.1D).

EP1.01 PRECISION

In certain situations, needle beams can use type and specific targeting [Precision Weapon Summary].

SL	Code	Cost	Space	Skips To
5c	Epa	45	6	15 Armor
7	Epb	55	5	25 Armor
9	B -- Capital Needle Beam			
k11	Epe	60	4.50	80 Armor
15	Epi	65	4	170 Armor
k19	Epm	80	4	230 Armor
23	Epn	95	4	290 Armor
k27	Epo	105	4	360 Armor
31	Epq	120	4	360 Armor
k35	Eps	135	4	435 Armor
39	Epu	145	4	515 Armor
k43	Epw	160	4	605 Armor
k47	Epy	170	4	605 Armor

EPC – CAPITAL NEEDLE BEAM

SL	Code	Cost	Space	Skips To
9c	Epca	70	6	35 Armor
13	Epcb	90	6	100 Armor
16	B -- Heavy Needle Beam			
k17	Epce	110	6	170 Armor
21	Epci	130	6	230 Armor
k25	Epcm	145	6	290 Armor
29	Epcn	165	6	360 Armor
k33	Epco	185	6	435 Armor
37	Epcq	200	6	515 Armor
k41	Epcs	220	6	515 Armor
45	Epcu	240	6	605 Armor
k49	Epcw	255	6	605 Armor

EPH – HEAVY NEEDLE BEAM

SL	Code	Cost	Space	Skips To
16c	Epha	150	9	170 Armor
20	Ephb	180	9	230 Armor
k24	Ephe	205	9	290 Armor
28	Ephi	235	9	360 Armor
k32	Ephm	260	9	435 Armor
36	Ephn	290	9	435 Armor
k40	Epho	315	9	515 Armor
44	Ephq	345	9	605 Armor
k48	Ephs	370	9	605 Armor

F – FORCE BEAM

Note: Requires Ind-2 -- Weapon Table-Force Beam

The Force beam (an SRW) fires a DF-like beam to "ram" its target, instead of envelope it as the later tractor beam does, causing damage to the ship. The effect is different from standard ramming because the beam is so narrow it actually penetrates the target DF.

F.01 NEBULAS When using Force Beams in nebulas, all to-hit and damage numbers are treated as if the actual range was one greater.

SL	Code	Cost	Space	Notes
0	Fa	30	5	
3	Fb	45	5	
4	{k/h} T -- External Beam Weapon Twig			
5	B -- Capital Force Beam			
6	B -- Primary Beam			
7	Fe	50	5	
11	Fi	65	5	
15	Fm	80	5	
19	Fn	100	5	
23	Fo	115	5	
27	Fq	130	5	
31	Fs	145	5	
35	Fu	160	5	
39	Fw	175	5	
43	Fy	190	5	
47	Fka	210	5	

FC – CAPITAL FORCE BEAM

SL	Code	Cost	Space	Notes
5c	Fca	70	9	
9	Fcb	100	9	
k13	Fce	130	9	
14	B -- Heavy Force Beam			
k17	Fci	155	9	
21	Fcm	185	9	
k25	Fcn	210	9	
29	Fco	240	9	
k33	Fcq	270	9	
37	Fcs	295	9	
k41	Fcu	320	9	
45	Fcw	345	9	
k49	Fcy	375	9	

FH – HEAVY FORCE BEAM

SL	Code	Cost	Space	Notes
14c	Fha	200	14	
18	Fhb	245	14	
k22	Fhe	285	14	
26	Fhi	335	14	
k30	Fhm	370	14	
34	Fhn	415	14	
k38	Fho	455	14	
42	Fhq	495	14	
k46	Fhs	545	14	
50	Fhu	580	14	

FP – PRIMARY BEAM

Note: Requires F SL 6.

Weapon Table-Precision Force Beams (Primary Beam)

The Primary beam can skip shields and armor as long as there are not too many of them. If there are too many, then an armor or shield is destroyed depending on whether the beam got past the shields. Once past the shields and armor, primary beam does damage per [D4.01.1C]. Primary beams always skip holds.

FP1.01 In certain situations, primary beams can use numeric and specific targeting [Precision Weapon Summary].

SL	Code	Cost	Space	Skips To
6c	Fpa	35	4	30 S&A
9	B -- Capital Primary Beam			
	Fpb	50	4	65 S&A
k12	Fpe	60	4	80 S&A
15	Fpi	65	4	200 S&A
k19	Fpm	80	4	450 S&A
22	Fpn	90	4	605 S&A
k25	Fpo	100	4	770 S&A
28	Fpq	110	4	770 S&A
k32	Fps	125	4	955 S&A
36	Fpu	135	4	1155 S&A
k40	Fpw	145	4	1370 S&A
44	Fpy	160	4	1370 S&A
k48	Fpka	170	4	1605 S&A

FPC – CAPITAL PRIMARY BEAM

SL	Code	Cost	Space	Skips To
9c	Fpca	100	9	65 S&A
13	Fpcb	130	9	160 S&A
16	B -- Heavy Primary Beam			
k17	Fpce	155	9	340 S&A
21	Fpci	185	9	605 S&A
k25	Fpcm	215	9	770 S&A
29	Fpcn	240	9	770 S&A
k33	Fpco	270	9	955 S&A
37	Fpcq	295	9	1155 S&A
k41	Fpcs	320	9	1370 S&A
45	Fpcu	350	9	1370 S&A
k49	Fpcw	375	9	1605 S&A

FPH – HEAVY PRIMARY BEAM

SL	Code	Cost	Space	Skips To
16c	Fpha	230	14	235 S&A
20	Fphb	270	14	450 S&A
k24	Fphe	315	14	605 S&A
28	Fphi	355	14	770 S&A
k32	Fphm	400	14	955 S&A
36	Fphn	440	14	1155 S&A
k40	Fpho	485	14	1370 S&A
44	Fphq	520	14	1370 S&A
k48	Fphs	565	14	1605 S&A

FIGHTERS AND GUNBOATS – See Small Craft Tree

G – SPRINT MISSILE

Note: Requires Ind-2 -- Weapon Table-Sprint Missile

A sprint launcher (a SRW) fires a small, fast missile designed to quickly arrive at a target with minimal homing guidance and carrying a larger nuclear warhead than a standard missile.

G.01 DAMAGE PER MSP

Sprint Missiles cause 1 damage point per MSP of size.

SL	Code	Cost	Space	Notes
0	Ga	22	3	2 MSP; 2 Damage
3	Gb	31	3	2 MSP; 2 Damage
5	B -- Capital Sprint Missile			
k8	B -- Launcher Box			
	Ge	47	3	3 MSP; 3 Damage
9	T -- HAWK			
	T -- LRW ECM			
11	Gi	40	3	2 MSP; 2 Damage; ROF = 2
15	Gm	70	4.25	3 MSP; 3 Damage; ROF = 2
19	Gn	70	3.50	3 MSP; 3 Damage; ROF = 2
23	Go	80	3.33	3 MSP; 3 Damage; ROF = 2
26	Gq	95	3.66	4 MSP; 4 Damage; ROF = 2
30	Gs	110	4.00	4 MSP; 4 Damage; ROF = 2
34	Gu	100	3.00	2 MSP; 2 Damage; ROF = 3
38	Gw	140	4.00	3 MSP; 3 Damage; ROF = 3
42	Gy	165	4.25	3 MSP; 3 Damage; ROF = 3
46	Gka	180	4.50	3 MSP; 3 Damage; ROF = 3
50	Gkb	190	4.25	3 MSP; 3 Damage; ROF = 3

GC – CAPITAL SPRINT MISSILE

SL	Code	Cost	Space	Notes
5c	Gca	45	6	4 MSP; 4 Damage
9	T -- HAWK			
	T -- LRW ECM			
	Gcb	60	5.25	5 MSP; 5 Damage
12	B -- Heavy Sprint Missile			
k13	Gce	95	6.50	4 MSP; 4 Damage; ROF = 2
17	Gci	100	5.66	4 MSP; 4 Damage; ROF = 2
k21	Gcm	135	6.25	5 MSP; 5 Damage; ROF = 2
25	Gcn	145	6	5 MSP; 5 Damage; ROF = 2
k29	Gco	155	5.75	5 MSP; 5 Damage; ROF = 2
33	Gcq	170	5.50	5 MSP; 5 Damage; ROF = 2
k37	Gcs	225	6.66	4 MSP; 4 Damage; ROF = 3
41	Gcu	235	6.50	4 MSP; 4 Damage; ROF = 3
k45	Gcw	240	6	4 MSP; 4 Damage; ROF = 3
49	Gcy	280	6.50	4 MSP; 4 Damage; ROF = 3

GH – HEAVY SPRINT MISSILE

SL	Code	Cost	Space	Notes
12c	Gha	120	9	4 MSP; 4 Damage; ROF = 2
16	Ghb	145	9	5 MSP; 5 Damage; ROF = 2
k20	Ghe	175	9	6 MSP; 6 Damage; ROF = 2
24	Ghi	210	9	7 MSP; 7 Damage; ROF = 2
k28	Ghm	250	9.50	7 MSP; 7 Damage; ROF = 2
32	Ghn	275	9.33	7 MSP; 7 Damage; ROF = 2
k36	Gho	295	9.25	5 MSP; 5 Damage; ROF = 3
40	Ghq	360	10.25	5 MSP; 5 Damage; ROF = 3
k44	Ghs	440	11.66	6 MSP; 6 Damage; ROF = 3
48	Ghu	480	11.66	6 MSP; 6 Damage; ROF = 3

(GvD) – GRAVITY DESTABILIZER

Note: Requires EL 24.

This massive system is capable of destabilizing a WP. All units transiting a WP which is within 6 tH of an operating (GvD) suffer class A effects [D7.01]. The (GvD) can only operate for 30 minutes before needing to be reset, which takes 1 hour.

SL	Code	Cost	Space	Notes
24{h}	(GvDa)	500	30	

(JAM) – JAMMER

Note: Requires EL 13.

This weapon fires an intense and persistent ball of energy at a target. This energy causes the target's drive field to temporarily disrupt the target's data communications including datalink. Voice communications will still work.

A jammed unit is out of datalink for the rest of the current combat phase. A roll on the force beam to-hit chart is necessary to jam a unit. The type of Jammer and type of datalink being jammed both affect the jammer to-hit roll.

Smcft squadrons are immune to jamming as they use a lower level datalink (basically just a "fire" signal for LRW launch timing).

JAM.01 THE JAM ATTEMPT

The base to-hit number is gathered from the top table and uses the Force Beam tables to-hit number, which is sometimes modified. In addition, two other modifiers will apply: The target's datalink generation (target just specifies the modifier, not the actual generation), and the Jammers Generation (which is specified). This results in a to-hit number for the Jammer to be successful. Once a player says he is going to attempt to Jam a target, he cannot later change his mind.

SL	Code	Cost	Space	Max. Range	ROF	Jam Attempt
13c	(JAMa)	70	4.5	6	1	F Beam -2 to-hit
17	(JAMb)	80	4	7	1	F Beam -1 to-hit
k21	(JAMe)	90	3.5	8	1	F Beam -1 to-hit
25	(JAMi)	100	3	9	1	F Beam -1 to-hit
k29	(JAMm)	120	5	9	2	F Beam -1 to-hit
33	(JAMn)	150	4.5	10	2	F Beam to-hit
k37	(JAMo)	175	4	10	2	F Beam to-hit
41	(JAMq)	200	3.5	11	2	F Beam to-hit
k45	(JAMs)	225	3	11	2	F Beam to-hit
49	(JAMu)	275	5	12	3	F Beam to-hit

Target's Datalink Generation is	Jammer To-hit[a]		Jammer's Generation	Jammer To-hit[a]
a or b	+1		a or b	-2
e or i	0		e or i	-1
m or n	-1		m or n	0
o or q	-2		o or q	+1
s or u	-3		s or u	+2
w or y	-4		w or y	+3
ka or kb	-5		ka or kb	+4

[a] Add -2 to-hit if target using capital datalink. J'Rill (Serve)-(Serve) datalink generation is based on the highest datalink gen. the J'Rill have developed.

K – KINETIC WEAPON

Note: Requires Ind-2 -- Weapon Table-Kinetic Weapon

A kinetic weapon (a LRW) fires a small solid rounds, much in the manner of a railgun. Old railguns were obsolete after the drive field because the rounds would be vaporized upon contact with the drive field. Kinetic weapons are a clever invention working around that problem; they fire the rounds and impart a drive field to the rounds which protects them long enough to turn into a jet of plasma as they hit the enemy drive field.

Kinetic weapons have unlimited ammunition.

K.01 SPINAL MOUNTS

Kinetic weapons often must be mounted spinally [H1.06].

K.02 SINGLE USE XO

The latest generation of each K, but not Kc or Kh, weapon is available in a single use XO version that uses 3 XO points.

SL	Code	Cost	Space	Notes
0	Ka	45	7	
2	Kb	40	6	
k6	Ke	55	5	
7	B -- Capital Kinetic Weapon			
9	T -- LRW ECM			
10	Ki	105	7.5	ROF = 2
k14	B -- Heavy Kinetic Weapon			
	T -- Booster			
	Km	125	7	ROF = 2
18	Kn	120	5.5	ROF = 2
k22	Ko	155	6	ROF = 2
26	Kq	175	6	ROF = 2
k30	Ks	290	9	ROF = 3
34	Ku	320	9	ROF = 3
k38	Kw	360	9	ROF = 3
42	Ky	420	9.75	ROF = 3
k46	Kka	445	9.75	ROF = 3
50	Kkb	470	9.33	ROF = 3

Kc – Capital Kinetic Weapon

SL	Code	Cost	Space	Notes
7c	Kca	245	21.5	ROF = 2
9	T -- LRW ECM			
11	Kcb	250	16	ROF = 2
14	T -- Booster			
k15	Kce	270	14	ROF = 2
19	Kci	290	12.66	ROF = 2
k23	Kcm	325	12	ROF = 2
27	Kcn	365	12	ROF = 2
k31	Kco	395	12	ROF = 2
35	Kcq	410	11	ROF = 2
k39	Kcs	695	17	ROF = 3
43	Kcu	765	17	ROF = 3
k47	Kcw	810	17	ROF = 3

Kh – Heavy Kinetic Weapon

SL	Code	Cost	Space	Notes
14c	T -- Booster			
	Kha	375	24	ROF = 2
18	Khb	375	19.5	ROF = 2
k22	Khe	470	21	ROF = 2
26	Khi	800	31	ROF = 3
k30	Khm	890	30	ROF = 3
34	Khn	945	28	ROF = 3
k38	Kho	960	27	ROF = 3
42	Khq	1080	27	ROF = 3
k46	Khs	1130	26	ROF = 3
50	Khu	1200	25.5	ROF = 3

Designer Note: For clarification, Kh *is* supposed open from K tree and not Kc branch. This is uniquely different from the R and Pt trees.

L – Laser Beam

Note: Requires Ind-2 -- Weapon Table-Laser Beam

A laser is a SRW that specializes in focusing broad-band electromagnetic radiation against a single target. Lasers skip shields.

L.01 Focused Attack

Laser beams can make a focused attack that allows it to trade damage for penetration of armor. If a laser forgoes all damage above one, it can penetrate 10 armor per point of damage forgone and use damage type C 1d5 (FRU) [D4.01.1C]

SL	Code	Cost	Space	To
0	La	27	4	5 Shield
2	Lb	34	4	8 Shield
4	{k/h} T -- External Beam Weapon Twig			
	B -- Capital Laser Beam			
5	B -- Precision Laser Beam			
k6	Le	41	3	15 Shield
10	B -- Heavy Laser Beam			
	Li	40	3	25 Shield
14	Lm	50	3	60 Shield
18	Ln	60	3	145 Shield
22	Lo	70	3	190 Shield
26	Lq	80	3	245 Shield
30	Ls	90	3	300 Shield
34	Lu	100	3	365 Shield
38	Lw	110	3	365 Shield
42	Ly	120	3	430 Shield
46	Lka	125	3	505 Shield

Lc – Capital Laser Beam

SL	Code	Cost	Space	To
4c	Lca	50	7	5 Shield
8	Lcb	75	7	15 Shield
k12	Lce	95	7	35 Shield
16	Lci	120	7	75 Shield
k20	Lcm	140	7	130 Shield
24	Lcn	165	7	165 Shield
k28	Lco	185	7	165 Shield
32	Lcq	205	7	200 Shield
k36	Lcs	230	7	245 Shield
40	Lcu	250	7	290 Shield
k44	Lcw	270	7	290 Shield
48	Lcy	290	7	335 Shield

Lh – Heavy Laser Beam

SL	Code	Cost	Space	To
10c	Lha	130	11	10 Shield
15	Lhb	175	11	20 Shield
k18	Lhe	195	11	35 Shield
22	Lhi	230	11	45 Shield
k26	Lhm	265	11	55 Shield
30	Lhn	300	11	70 Shield
k34	Lho	335	11	85 Shield
38	Lhq	365	11	85 Shield
42	Lhs	400	11	100 Shield
46	Lhu	430	11	115 Shield
50	Lhw	465	11	115 Shield

LP – PRECISION LASER BEAM

Note: Requires L SL 5 --Weapon Table-Precision Laser Beam

The precision laser beam skips shields and armor as long as there are not too many of them [D4.01.1B]. Both the Precision Laser and the Capital Precision Laser were designed to burn through even the heaviest armor on capital ships and still do a point or two of internal damage. Once past the armor and shields, a precision laser beam inflicts deep hits (i.e., damage per D4.01.1D).

LP1.01 PRECISION TARGETING

In certain situations, precision laser beams can use numeric and specific targeting [Precision Weapon Summary].

SL	Code	Cost	Space	to	to
5c	Lpa	50	6	15 Shield	5 Armor
8	B -- Capital Precision Laser Beam				
9	Lpb	70	6	35 Shield	10 Armor
k12	Lpe	85	6	80 Shield	25 Armor
15	B -- Heavy Precision Laser Beam				
	Lpi	100	6	170 Shield	55 Armor
k19	Lpm	115	6	230 Shield	75 Armor
23	Lpn	140	6	290 Shield	95 Armor
k27	Lpo	155	6	360 Shield	120 Armor
31	Lpq	175	6	360 Shield	120 Armor
k35	Lps	195	6	435 Shield	145 Armor
39	Lpu	210	6	515 Shield	170 Armor
k43	Lpw	230	6	605 Shield	200 Armor
47	Lpy	245	6	605 Shield	200 Armor

LPC – CAPITAL PRECISION LASER BEAM

SL	Code	Cost	Space	to	to
8c	Lpca	100	10	35 Shield	10 Armor
12	Lpcb	135	10	80 Shield	25 Armor
k16	Lpce	165	10	170 Shield	55 Armor
20	Lpci	195	10	230 Shield	75 Armor
k24	Lpcm	225	10	290 Shield	95 Armor
28	Lpcn	260	10	360 Shield	120 Armor
k32	Lpco	290	10	435 Shield	145 Armor
36	Lpcq	320	10	435 Shield	145 Armor
k40	Lpcs	350	10	515 Shield	170 Armor
44	Lpcu	380	10	605 Shield	200 Armor
k48	Lpcw	410	10	605 Shield	200 Armor

LPH – HEAVY PRECISION LASER BEAM

SL	Code	Cost	Space	to	to
15c	Lpha	215	14	170 Shield	55 Armor
19	Lphb	260	14	230 Shield	75 Armor
k23	Lphe	300	14	290 Shield	95 Armor
27	Lphi	340	14	360 Shield	120 Armor
k31	Lphm	385	14	360 Shield	120 Armor
35	Lphn	430	14	435 Shield	145 Armor
k39	Lpho	470	14	515 Shield	170 Armor
43	Lphq	510	14	605 Shield	200 Armor
k47	Lphs	550	14	605 Shield	200 Armor

Note: NOTE: Yes, Lph and Lh are supposed to open from Lp and L tree unlike most other SRW techs.

LNK – LINKED WEAPON TARGETING

Note: See Electronics tree.

Linking allows multiple beam weapons to fire as one, to increase the number of shots in each pattern for either more range, or a better chance of hitting. Linked beams MUST be of the same type and generation to be linked during the same shot. Lnk ability is an empire wide computer upgrade. No code is used on a unit's design as Lnk takes no damage, costs nothing, and takes no space.

LNK.01 EXTRA DAMAGE & RANGE

Damage as a single weapon, but for each added weapon firing, range is +1 (at 1 damage) OR to-hit is +2 (max to-hit of 8) OR damage is +1. EX: 3 linked beams could be +1 range and +2 to hit OR range is +1 and damage is +1.

Lnk.01.1 Linked weapons can fire through the atmosphere of a planet at -2 damage. Before fire through atmosphere, the ship must not have fired the involved beams during the previous 2 turns.

LNK.02 MAXIMUM LINKAGE

(Lnk-x) limits linking to no more than X weapons. Each unit can use Lnk multiple times during a combat phase.

LNK.03 R&D

Lnk R&D x cost (per RP) is lnk quantity times 10+10, i.e., Lnk 2 is 30 per RP or 300 for 10 RP. Lnk improvements are empire wide software upgrades [AA.04].

SL	Code	Notes
4	Lnk2	Links up to 2 weapons
7	Lnk3	Links up to 3 weapons
k11	Lnk4	Links up to 4 weapons
15	Lnk5	Links up to 5 weapons
k19	Lnk6	Links up to 6 weapons
23	Lnk7	Links up to 7 weapons
27	Lnk8	Links up to 8 weapons
32	Lnk9	Links up to 9 weapons
37	Lnk10	Links up to 10 weapons
42	Lnk11	Links up to 11 weapons
47	Lnk12	Links up to 12 weapons

MG – MAGAZINES

See AA.07

(MNE) – MASER NEBULA EMITTER

See Electronics Tree [AppAA-Elec.02]

(NAV) – NAVIGATION

See [Automated Platform tree and D9.03.1]

PG – PLASMA GUN

Note: Opens from Pt tree. Weapon Table-Plasma Gun

A plasma gun is a SRW. Plasma guns fire packets of highly charged plasma surrounded in a drive field bubble, and are optimized to punch the plasma through the drive field and towards the target ship. While highly inaccurate and very short ranged, they are capable of great damage.

PG.01 EM/EMS REDUCTION

Pg ignore the first two points of EM/EMS modifiers. Furthermore, Pg are less affected by other types of modifiers, including crew grade and transit effects [D7.01]. Total all such modifiers and then divide by 2 (FRU).

SL	Code	Cost	Space	Notes
2c	Pga	28	3	
4	Pgb	30	2.5	
5	B -- Capital Plasma Gun			
k8	Pge	35	2	
12	Pgi	44	2	
k16	Pgm	40	2	
20	Pgn	45	2	
k22	Pgo	50	2	
26	Pgq	55	2	
k30	Pgs	60	2	
34	Pgu	70	2	
k38	Pgw	75	2	
42	Pgy	80	2	
k46	Pgka	85	2	
50	Pgkb	95	2	

PGC – CAPITAL PLASMA GUN

SL	Code	Cost	Space	Notes
5c	Pgca	40	4.5	
9	Pgcb	45	4	
k12	B -- Heavy Plasma Gun			
	Pgce	50	3.5	
16	Pgci	60	3.25	
k20	Pgcm	65	3	
24	Pgcn	75	3	
k28	Pgco	85	3	
32	Pgcq	95	3	
k36	Pgcs	105	3	
40	Pgcu	115	3	
k44	Pgcw	120	3	
48	Pgcy	130	3	

PGH – HEAVY PLASMA GUN

SL	Code	Cost	Space	Notes
12c	Pgha	85	6	
17	Pghb	90	5	
k20	Pghe	95	4.5	
23	Pghi	95	4	
k27	Pghm	105	4	
31	Pghn	120	4	
k35	Pgho	135	4	
39	Pghq	145	4	
k43	Pghs	155	4	
47	Pghu	170	4	

PT – PLASMA TORPEDO

Note: Requires Ind-2 -- Weapon Table-Plasma Torpedo

The plasma torpedo tree is a LRW that is a specialized missile-like torpedo, which generates a drive field for propulsion. Most of the weapon is converted to plasma just before hitting the target.

PT.01 SIZE

Plasma Torpedoes use the code PT and are 3 MSP each. They are often just referred to as "Torpedoes".

PT.02 TM TO-HIT BONUS

Base to-hit is increased by target's TM/3 (FRU). BS, SS, Units without a Drive Field, and station keeping drives add +2. There is no Maximum to-hit number. Maximum turn mode modifier is +3. Plasma torpedoes are less affected by EM/EMS, which is always 1 lower (i.e., -1 becomes -0).

PT.03 INTERCEPTION

PT are interceptible by point defense at -1 modifier. Pt suffer a +1 intercept against EDM.

SL	Code	Cost	Space	Notes
0	Pta	40	6	
2	B -- Plasma Gun			
4	Ptb	50	5.5	
7	B -- Capital Plasma Torpedo			
k9	T -- HAWK			
	T -- LRW ECM			
	Pte	75	5.66	
13	Pti	135	8	ROF=2
14	T -- Booster			
16	B -- Launcher Box			
k17	T -- HARM			
	Ptm	200	10	ROF=2
21	Ptn	245	10.50	ROF=2
k25	Pto	390	15	ROF=3
29	Ptq	460	15	ROF=3
k33	Pts	525	15.25	ROF=3
37	Ptu	545	15	ROF=3
k41	Ptw	615	15	ROF=3
45	Pty	680	15	ROF=3
k49	Ptka	685	14	ROF=3

PTC – CAPITAL PLASMA TORPEDO

Capital plasma torpedoes (CPT) are 4 MSP.

SL	Code	Cost	Space	Notes
7	Ptca	90	8.25	
k9	T -- HAWK			
	T -- LRW ECM			
k11	Ptcb	110	7.25	
13	B -- Heavy Plasma Torpedo			
14	T -- Booster			
15	Ptce	245	13.66	ROF=2
17	T -- HARM			
k19	Ptci	290	13.5	ROF=2
23	Ptcm	330	13	ROF=2
k27	Ptcn	385	13	ROF=2
29	Ptco	390	13	ROF=2
k33	Ptcq	430	12.5	ROF=2
37	Ptcs	465	12	ROF=2
k41	Ptcu	810	20	ROF=3
45	Ptcw	855	20	ROF=3
k49	Ptcy	860	18	ROF=3

PTH – HEAVY PLASMA TORPEDO

Heavy plasma torpedoes (HPT) are 5 MSP.

SL	Code	Cost	Space	Notes
13	Ptha	145	9	
14	T -- Booster			
k17	T -- HARM			
	Pthb	355	18	ROF=2
21	Pthe	450	19	ROF=2
k25	Pthi	490	18	ROF=2
29	Pthm	520	17	ROF=2
k33	Pthn	560	17	ROF=2
37	Ptho	610	16	ROF=2
k41	Pthq	1075	27	ROF=3
45	Pths	1145	27	ROF=3
k49	Pthu	1145	25	ROF=3

Q – LIFE SUPPORT

Note: Requires Ind-2

This is the quarters and regenerative life support that provides the atmosphere and gravitational conditions required by a particular race. The "capacity" is the number of crew points that a particular quarters can provide life support for. See [F3.07.1] for overcrowding.

Q.01 FT TRIPLE LIFE SUPPORT

Q systems mounted on freighters provide triple crew support.

Q.02 NO LIFE SUPPORT

A crew without any life support will die within 12 hours. Damaged ships with less life support than undamaged HS can operate for 1 week but die rolls are made at –1. The "no life support" -1 must be in effect at the start of a battle for it to apply during a particular battle.

Q.03 LUXURY CRUISE SUITE (LQV)

This system contains a casino, pools, zero gravity gym, theater, and 500 luxury suites. R&D cost is 50. Each (LQv) earns 50 MC per turn when leased to the CFN. An empire is limited to 1 (LQv) per 1,000 MC of income from all sources. The (LQv) takes 20 hits to destroy (10 on a weak hull). (LQv) FT only travel between Large and Very Large worlds.

SL	Code	Cost	Space	Notes: supports x crew
0	Qv	5.5	1	Civilian[a]; 0 crew support
	Qa	10	1	15; 16 on CT only
3	Qb	15	1	20; 22 on FG only
k5	Qe	20	1	25
6	(LQv)	250	25	[Q.03]
7	Qi	25	1	30
k10	Qm	37	1	40
13	Qn	50	1	50
k16	Qo	62	1	60
19	Qq	93	1	80
k22	Qs	125	1	100
25	Qu	150	1	125
k29	Qw	185	1	150
35	Qy	225	1	200
k40	Qka	300	1	250 (Maximum Improvement)

[a] Qv is also used in a military role. In this role it can transport troops, also called Qv as 1 troop formation fits in a single Qv. Once EL 5 is achieved, troops can use Drop-Pods directly from the Qv if the ship is in the same tH as the destination body.

RD – RECON DRONE

Note: Opens from Small Craft tree.

Recon drone groups use large numbers of small "mini-drones" to overwhelm enemy targeting and get back through the WP. Unfortunately, their small size and weak drive field mean that many mini-drones are lost on the return trip back through the WP.

After an RD group transits the WP, the surviving individual mini-drones can be targeted as a squadron with each x DP destroying one mini-drone. Higher generation RD mini-drones are stealthy such that they require more damage pts to actually destroy.

RD can maneuver as pre-programmed and a tactical speed is listed for them. RD programming cannot have any conditional instructions.

RD.01 RETURN DELAY

The RD group must be programmed for a 0 to 3 turn delay. The delay does not count the turn of transit in either direction. So a 0 turn delay is transit in, and on the next turn, transit out.

Amount of Information Gathered[a]					
Delay in system	Large Units	Small Units	AP	Transit Info	Grav Surge
0 Turn[b]	4 tH	no	no	no	no
1 Turn	10 tH	no	no	no	no
2 Turn	20 tH	10 tH	WP hex	yes	no
3 Turn	20 tH	10 tH	3 tH	no	yes

[a] Data on units detected is Q level [D5.02.2]. Information is learned at the beginning and during the movement phase.

[b] 0 turns of delay would be enter one turn and exit the next.

Large units must have an active DF to be detected.

Data is only collected on the turn of the delay listed. Thus, even if the RD stays in system for a 2 turn delay, only movement on the 2nd turn of delay (and the turn of transit out) will detect AP in the hexes the RD moves through.

Note: If RD transit a WP in which the exit locations transit information is not known, the RD group must wait the 3 turns until it can detect both the Grav Surge and the WP transit information in order to return. The delay on the WP transit information is due to the weak protection of the RD mini-drones computers and the processing power to calculation the transit info.

RD.02 RD GROUP

Each RD group of contains a number of mini-drones that must be launched and moved as a group. RD groups must be purchased and transported similar to AP. Yard space to build a RD group is listed in the table below. An RD group is launched directly from the hold they are stored in but the drive field must be down.

RD.03 TRANSIT LOSSES

When a recon drone group transits a WP (in both directions) it will lose mini-drones based on the RD group's generation. The mini-drones surviving the 1st transit is listed under the "1st SR" column.

Surviving mini-drones can be shot at by activated enemy units.

As the mini-drones transit the WP a 2nd time, they have a low percentage chance of surviving ("2nd SR" column). Only one mini-drone needs to return to provide the sensor information in table [RD.01]

RD.04 TRANSIT SIZE

Each RD group counts as a 1 HS unit for transit purposes and this number is never doubled by [C4.03]. Any unit that is transiting in the same pulse as one or more RD must roll for interpenetration with EACH drone group. Each interpenetration causes one point of damage to the unit. The RD loses one mini-drone.

SL	Code	Cost [a]	HS to Build	Storage Space [a]	Speed	DP	1st SR	2nd SR
4	RDa	30	2.5 HS	200 csp	1 tH	2	5	5%
7	RDb	50	2.5 HS	200 csp	1 tH	3	6	8%
k11	RDe	70	2.5 HS	200 csp	2 tH	3	7	10%
15	RDi	90	2.5 HS	200 csp	2 tH	4	8	11%
k19	RDm	110	4.0 HS	200 csp	3 tH	4	9	13%
23	RDn	130	4.0 HS	200 csp	3 tH	5	10	15%
k28	RDo	150	4.0 HS	200 csp	4 tH	5	11	17%
33	RDq	170	4.0 HS	200 csp	4 tH	6	12	20%
k38	RDs	190	5.0 HS	200 csp	5 tH	6	14	23%
43	RDu	210	5.0 HS	200 csp	5 tH	7	17	25%
48	RDw	230	7.0 HS	200 csp	6 tH	7	20	25%

[a] Price and space are for a recon drone group of x mini-drones. Gen a-i (10), gen m-q (15), gen s-u (20), gen w (25)

R – REGULAR MISSILE

Note: Requires Ind-2 -- Weapon Table-Regular Missile

The missiles in STARFIRE utilize the drive-field not only as their propulsion, but also as a focusing mechanism in order to focus a nuclear blast towards their target. These missiles are far more capable than their reaction drive counterparts of the industrial levels, who have a range less than a single hex (effectively non-existent). The regular and capital missile weapons are LRW.

R.01 SIZE

Missiles use the code RM and are 1 MSP [AppAA-Ammunition].

SL	Code	Cost	Space	Notes
0	Ra	30	4	
k3	Rb	34	3	
5	B -- Capital Missile			
k7	Re	50	4	ROF = 2
8	B -- Launcher Box			
9	T -- HAWK			
	T -- LRW ECM			
k11	Ri	55	3.33	ROF = 2
14	T -- Booster			
15	Rm	65	3.33	ROF = 2
17	T -- HARM			
k19	Rn	105	4.5	ROF = 3
23	Ro	120	4.33	ROF = 3
k27	Rq	135	4.33	ROF = 3
31	Rs	145	4	ROF = 3
k35	Ru	150	4	ROF = 3
39	Rw	290	7.2	ROF = 3
k43	Ry	285	6.5	ROF = 3
47	Rka	300	6.25	ROF = 3

RC – CAPITAL MISSILE

Capital missiles were a breakthrough allowing for larger missiles to be built with better drives. This in turn allowed larger warheads that could do more damage at a longer range.

RC.01 SIZE

Capital Missiles are coded CM and are 2 MSP.

SL	Code	Cost	Space	Notes
5h	Rca	60	6	
9c	T -- HAWK			
	T -- LRW ECM			
	Rcb	70	5.25	
12	B -- Heavy Missile			
k13	Rce	135	8	ROF = 2
14	T -- Booster			
17	T -- HARM			
	Rci	170	8	ROF = 2
k21	Rcm	195	8	ROF = 2
25	Rcn	200	7.25	ROF = 2
k29	Rco	210	6.66	ROF = 2
33	Rcq	230	6.5	ROF = 2
k37	Rcs	370	9.5	ROF = 3
41	Rcu	395	9.5	ROF = 3
k45	Rcw	420	9.5	ROF = 3
49	Rcy	420	8.5	ROF = 3

RH – HEAVY MISSILE

Heavy missiles were an improvement on Capital Missiles. With heavier payload, better inherent ECM, better to-hit numbers and more range, these weapons are a real threat to those without them.

RH.01 SIZE

Heavy Missiles are coded HM and are 5 MSP.

SL	Code	Cost	Space	Notes
12	Rha	295	19	ROF = 2
14	T -- Booster			
k16	Rhb	355	19	ROF = 2
17	T -- HARM			
20	Rhe	410	18.5	ROF = 2
k24	Rhi	450	17.5	ROF = 2
28	Rhm	490	17	ROF = 2
k32	Rhn	475	14.5	ROF = 2
36	Rho	840	23	ROF = 3
k40	Rhq	940	24	ROF = 3
44	Rhs	960	22	ROF = 3
k48	Rhu	910	20	ROF = 3

S – SHIELD

Note: Requires EL1.

Shields are actually generators that create a magnetic bubble around the ship to divert weapons fire from penetrating the drive field. All shield systems must be the left most mounted systems on a unit's design. Shield regeneration (damage control) occurs in the record-keeping phase [E1.01].

R&D costs are special See N6.04.

S.01 GENERATION CODE

Shield generations are numbered and, starting with S2, is a reference to the spaces taken. Shield advances, not new systems such as S#, are automatic empire-wide software upgrades [AA.04].

SL	Code	Cost	Space	Notes
1	Shields regenerate 1 hour after damaged [R&D cost 5].			
	S	4	1	[R&D cost 16]
3	1 shield regenerates per 3 turns (if not hit) [R&D = 8]			
k5c	1 shield regenerates per turn (if not hit) [R&D = 10]			
	S1	6	2/3	[R&D cost 36]
k9c	B -- Shield Regenerator			
	S2	8	1/2	[R&D cost 64]
12	1 HS of shields regenerates per turn (if not hit) [R&D = 50]			
k13c	S3	10	1/3	[R&D cost 100]
14	k {h} Positronic Shields -- R&D cost 150 MC			
k17c	S4	12	1/4	[R&D cost 144]
18	1 HS of shields regenerates each turn [R&D cost: 100]			
19	k{c} Dense Shields [R&D cost: 200]			
k21c	S5	14	1/5	[R&D cost 196]
24	2 HS of shields regenerates each turn [R&D cost: 225]			
k25c	S6	16	1/6	[R&D cost 256]
k30c	S7	18	1/7	[R&D cost 324]
32	3 HS of shields regenerates each turn [R&D cost: 400]			
k35c	S8	20	1/8	[R&D cost 400]
k40c	S9	22	1/9	[R&D cost 484]
	4 HS of shields regenerates each turn [R&D cost: 600]			
k45c	S10	24	1/10	[R&D cost 576]
48	5 HS of shields regenerates each turn [R&D cost: 900]			

S.02 SHIELD LAYERING (OPTIONAL)

A ship may only have a single type of shield installed unless this optional rule is in effect; however, all generations of a shield type must be the same. *I make no warranties that all the rules will work easily or correctly with this option. [See A.02 also]*

S.03 DENSE SHIELDS

These shields have heavy duty circuit breakers made out of expensive material and require 3 points of damage to destroy from a single salvo of fire. It is five times as expensive and twice the size of a standard shield. All shields on a ship must be Dense or not. Layering with other types of Shields is not possible.

Dense shields acts as 4 shields vs. skipping weapons but only 2 points of shield skipping damage will destroy it. It is possible that Sd will stop 1 point of damage, which would be ignored, and allow a 2nd point through.

Once the SL 19 Dense Shields development project is completed, new versions of Dense Shields become available without development 1 SL after the regular shield they are based on (i.e., once S5 is developed, Sd5 is available when shield SL reaches 22).

Each Dense shield counts as 3 shields to regenerate.

SL[a]	Code	Cost	Space	Notes
2	Sd	20	2	All Sd takes 3 pts damage from a single salvo to destroy. Acts as 4 shields vs. skipping weapons. Takes 2 pts precision shield skipping damage to destroy.
6	Sd1	30	4/3	
10	Sd2	40	1	
14	Sd3	50	2/3	
18	Sd4	54	1/2	
22	Sd5	62	2/5	
26	Sd6	68	1/3	
31	Sd7	74	2/7	
36	Sd8	80	1/4	
41	Sd9	86	2/9	
46	Sd10	92	1/5	

[a] Only available after Dense Shield Project complete.

S.04 POSITRONIC SHIELDS

Positronic Shields (Sp) gives the shields a greater response to pin point attacks by allowing the shields to force extra energy on an area that is weakening (being hit). Unfortunately, this extra power requires larger shield systems.

Sp functions as 2 armor vs. skipping weapons.

Once the SL 14 Positronic Shield development project is completed, new versions of Positronic Shields become available without development 1 SL after the regular shield they are based on (i.e., once S4 is developed, Sp4 is available when shield SL reaches 18).

SL[a]	Code	Cost	Space	Notes
2	Sp	8	1.25	All Sp acts as 2 shields vs. skipping weapons.
6	Sp1	12	1.0	
10	Sp2	16	2/3	
14	Sp3	20	1/2	
18	Sp4	24	1/3	
22	Sp5	28	1/4	
26	Sp6	32	1/5	
31	Sp7	36	1/6	
36	Sp8	40	1/7	
41	Sp9	44	1/8	
46	Sp10	48	1/10	

[a] Only available after Positronic Shield Project complete.

Example S.04 - Shield Skipping

SR – SHIELD REGENERATOR

Note: Opens from S tree.

A shield regenerator can reset shields to working order. All shields affected by Sr are in addition to any reset by damage control.

S and Sp are reset on a 1:1 basis. See Sr.04 for dense shields.

SR.01 X MODE

In the record-keeping phase, "X" shields are reset without hurting the Sr.

SR.02 Y MODE

In addition to the "X" amount, the Sr can "burn out" while resetting an additional "Y" amount of shields. Burning out the regenerator (treat as damaged) can occur *during combat*, even between enemy salvos and volleys, or during the record keeping phase.

SR.03 Z LIMIT

All Sr aboard a ship, whether used in X or Y mode, can not reset more that Z amount of shields in an entire month. Triple the Z value when dealing with Dense Shields.

SR.04 DENSE SHIELDS

Each dense shield counts as 3 shields when being reset by Sr.

Examples: A ship with 20 Sri could reset 20 S per turn without using burnout. It could get a maximum of 100 shields fixed (perhaps it burns out 4 Sri to reset an additional 80 shield beyond the normal 20 reset free for a total of 100 shields during a month).

If the ship had dense shields, it could reset 6.66 dense shields (18 value) without damage, could burnout 14 Sri to reset an 93 dense shields (279 value). Since there is a bit of free (2 value) and burnout (1 value) left over, 1 additional dense shield could also be reset.

SL	Code	Cost	Space	X/Y/Z
9h	Sra	40	1	1/5/25
k12c	Srb	70	1	2/10/50
k16c	Sre	110	1	3/15/75
k20c	Sri	155	1	4/20/100
k24c	Srm	200	1	5/25/125
k29c	Srn	265	1	6/30/150
k34c	Sro	340	1	7/35/175
k39c	Srq	430	1	8/40/200
k44c	Srs	540	1	9/45/225
k49c	Sru	700	1	10/50/250

T – TRACTOR

Note: Requires EL 1.

A tractor beam is a device that extends a drive field bubble on a tether, and attempts to enclose a target within the field with the purpose of moving that target. This can be used to move immobile objects such as asteroids or bases, or it can be used in battle to capture enemy units so they can't move away.

T.01 PRESSOR MODE

A Tractor draws or tows other ships; a higher SL version also can push ships away. See [E5] for complete rules.

T.02 TRACTOR LINK GUIDANCE [R&D COST IS 50]

Once developed, any seeking warhead (R/Pt/G) can use an existing tractor or presser link between two units to guide it to the target. Warheads fired by a unit on one end of the link automatically hit the connected unit. Because of the seeking design, link polarity does not affect fire. However, the link makes the weapon more predictable giving a +1 to intercept numbers.

Note that this system supersedes E5.02.2.

SL	Code	Cost	Space	Notes
1	Ta	8	4	Max range 0
k2	Tb	8	2	Max range 3
4	B -- Tractor Disrupter			
5	Te	10	2	Max range 5
7	{k} Tractor link guidance [T.02]			
8	Ti	15	2	Max range 5, pressor
11	Tm	20	2	Max range 7, pressor
15	Tn	25	2	Max range 9, pressor
19	To	30	2	Max range 11, pressor
23	Tq	30	1.5	Max range 7, pressor
k27	Ts	35	1.5	Max range 9, pressor
31	Tu	40	1.5	Max range 11, pressor
35	Tw	35	1	Max range 7, pressor
39	Ty	40	1	Max range 9, pressor
43	Tka	45	1	Max range 11, pressor

Pressor indicates that the pressor mode [T.01] is available to that generation of tractor. Ta is a mainly a civilian version.

TD – TRACTOR DISRUPTER

The tractor disrupter can cause a tractor to lose its lock. [E5.01.4]

SL	Code	Cost	Space	Notes[a]
4	Tda	8	1	BDN is 3; MA = 2
7	Tdb	15	1	BDN is 4; MA = 2
k10	Tde	18	1	BDN is 4; MA = 3
14	Tdi	21	1	BDN is 5; MA = 3
k18	Tdm	25	1	BDN is 5; MA = 4
22	Tdn	30	1	BDN is 6; MA =4
k26	Tdo	35	1	BDN is 6; MA = 5
30	Tdq	40	1	BDN is 7; MA = 5
k34	Tds	45	1	BDN is 7; MA = 6
38	Tdu	50	1	BDN is 8; MA = 6
k42	Tdw	55	1	BDN is 8; MA = 7
46	Tdy	60	1	BDN is 9; MA = 7
k50	Tdka	65	1	BDN is 9; MA = 8

[a] BDN is Base Disruption Number; MA is max. # of disruption attempts [E5.01.3].

W – Launcher Box

Note: Opens from Pt, R, or G trees.

A box launcher fires a single salvo of ordnance as if it were a number of XO racks equal to its MSP capacity. Unlike XO racks, W are easily reloaded during combat. Like XO racks, W is a SRW or a LRW depending on the type of weapon it launches.

W.01 Limitations

A W fires ordnance at a minus -1 from the internal launcher. Missiles specifically prohibited from internal launch (i.e., ADM but not EDM) cannot be used.

W.02 Firing and Loading Limits

During a single combat phase, a box launcher can either fire OR (un)load.

W.03 Loading

W loads ammunition via internal feed from a magazine. (Un)Load rate is 1 MSP per turn. Multi-MSP missiles take more than one turn to load; a partially loaded missile can be reversed (unloaded prior to complete loading or the reverse). Box launchers do not carry additional ammunition per [AA.07] but instead have only their own much smaller MSP capacity. A missile must be carried entirely in a single launcher box.

W.04 Ammunition

Each box launcher is limited in the generation of missile it can handle. Generations below the listed generation are also usable, if they are small enough. i.e., Rb means the launcher can use Rb or Ra missiles.

SL	Code	Cost	Space	MSP	Ammo Allowed
8	Wa	50	2	2	Rb, Rca, Gb
12	Wb	80	2	3	Re, Rcb, Ge
k16	We	110	2	4	Ri, Rce, Pti, Gi, EDMe
20	Wi	160	2	6	Rm, Rci, Ptm, Gm, EDMi, Ptci
k24	Wm	210	2	8	Rn, Rcm, Ptn, Gn, EDMm, Ptcm
28	Wn	250	2	9	Ro, Rcn, Pto, Go, Ptcn
k32	Wo	300	2	10	Rq, Rco, Ptq, Gw, Ptco
36	Wq	350	2	12	Rs, Rcq, Pts, Gs, Ptcq
k40	Ws	400	2	14	Ru, Rcs, Ptu, Gu, Ptcs
44	Wu	450	2	17	Rw, Rcu, Ptw, Gw, Ptcw
k48	Ww	500	2	20	Ry, Rcw, Pty, Gy, Ptcy

X – Science Instruments

Note: Requires Ind-2

Science Instruments are simply collections of computers and information gathering instrumentation to make scientific evaluations.

The Planet Surveyor (Xp) is not a Science Instrument and can ONLY generate survey points toward System Body Surveys.

See R2.04 for Top-Secret and Undisclosed WPs.

X.01 Maximum Survey Speed (MSS)

MSS is the maximum speed allowed while surveying. This is based on the time spent surveying and any speed changes during the month must be cautiously approached.

Example X.01 - Maximum Survey Speed

SL	Code	Cost	HS	MSS[a]	Points per StMP	WP Types Located[b]
0	Xp	20	1	3	1	***None*** -- Planet Surveyor
1	Xa	30	1	3	1	Only Open WPs
3	Xb	40	2	4	1	Open or concealed WPs
4	Xe	50	2	4	1.25	Open or concealed WPs
k6	Xi	60	3	4	1.5	Open or concealed WPs
7	B -- Capital Science Instruments					
8	Xm	75	3	4	2	Open or concealed WPs
k10	Xn	80	3	5	2	Op, con, or hid
13	Xo	90	4	5	2.5	Op, con, or hid
k17	Xq	100	5	5	3	Op, con, hid, or sec
21	Xs	110	6	6	3	Op, con, hid, or sec
k25	Xu	120	7	6	4	Op, con, hid, sec, or ts
29	Xw	140	7	6	5	Op, con, hid, sec, or ts
k33	Xy	160	7	7	5	Any type
37	Xka	180	7	7	6	Any type
42	Xkb	200	7	8	6	Any type
47	Xke	220	7	8	7	Any type

[a] MSS: Maximum Survey Speed

[b] Op= open, con= conceal, hid= hidden, sec= secret, ts= top secret, un= undisclosed

Xc – Capital Science Instruments

Capital Science Instruments work by determining very slight variations between many points on a starship. Because full effectiveness depends significantly on the distance between the various points on the ship, ships smaller than 52 HS receive 1/4 (FRD) the survey points.

SL	Code	Cost	HS	MSS[a]	Points per StMP	WP Types Located
7	Xca	100	5	4	8	Open or concealed WPs
k11	Xcb	120	6	5	8	Op, con, or hid
k16	Xce	140	7	5	10	Op, con, hid, or sec
20	Xci	160	7	6	10	Op, con, hid, or sec
k24	Xcm	180	8	6	11	Op, con, hid, sec, or ts
28	Xcn	200	8	6	13	Op, con, hid, sec, or ts
k32	Xco	230	9	6	15	Any type
36	Xcq	260	9	7	18	Any type
40	Xcs	290	10	7	22	Any type
44	Xcu	330	10	8	26	Any type
49	Xcy	360	10	9	28	Any type

[a] and [b)] See previous table for notes.

XO – EXTERNAL ORDNANCE RACKS

Note: Tree can be opened when EL 3 is reached (at SL 3, not SL 2), or when any enemy uses an XO against you (at SL 2). This unique tree requires no breakthrough to open.

External Ordnance Racks are outer hull attachment points that allow missiles/torpedoes to be attached. The XO is a SRW or a LRW depending on the type of weapon it launches.

XO.01 USAGE

Each XO rack can carry 1 MSP. Racks can be added together to carry larger ordinance.

XO rack launch of weapons with internal launchers is -1 to hit.

XO.02 SMALL CRAFT ON XO RACKS

XO or aXO racks can be combined to carry small craft and squadrons after the SL 6 Initial Gunboat Project or Initial Fighter Project is completed {empire wide upgrade}. XO Racks can only carry smcft for 10 minutes before the DFs radiation kills the smcft's crew. This is just enough time to transit a WP and release into battle [D7.01.2].

Individual smcft can be carried by two XO racks per Boat Bay point in size. Loss of an XO rack holding any part of a smcft causes the destruction of the small craft.

FQ and GB Squadrons must be carried as full size squadrons and each squadron requires 6 + 2 XO Racks per GB/FQ generation. EXAMPLE: It takes 8 XOa to hold a GBa squadron.

Each XO rack lost while holding a squadron causes 3 DP damage.

While loaded XO racks are normally destroyed first, those carrying FQ or GB squadrons are destroyed last after empty XO and after XO loaded with other things.

XO racks of any sort can not carry Drones or Buoys.

XO.03 DAMAGING XO

Each non-shield non-precision damage point destroys 1 XO rack in addition to any other system(s) damaged. The ship's owner chooses which XO rack to destroy but he must choose loaded XO racks before empty ones. Note: 3 pts damage from a single weapon will destroy 3 objects loaded on XO racks, not one large object loaded on 3 XO racks.

XO.04 XO MOUNTING

Freighters, PDCs, and non-military SS cannot mount XO racks.

For XO rack mounting purposes, round hull size up.

For mounting, a HS can only count toward one type of XO.

XO.05 ARMORED XO (AXO)

Armored XO (aXO*) are only destroyed after so many hits inside the shields. Further, empty XO racks are destroyed first.

SL	Code	Cost	Space	Notes
2	(XOa)	2	0	1 XOa per 7 HS
5	(XOb)	3	0	1 XOb per 6 HS
6	Carry smcft	0	0	complete squadron project
k8	(XOe)	4	0	1 XOe per 5 HS
k11	(aXOa)	6	0	1 aXOa per 6 HS, 2 hits [A2]
12	(XOi)	6	0	1 XOi per 4 HS
k15	(aXOb)	9	0	1 aXOb per 5 HS, 3 hits [A3]
17	(XOm)	10	0	1 XOm per 3 HS
k19	(aXOe)	12	0	1 aXOe per 4 HS, 4 hits [A4]
k23	(aXOi)	12	0	1 aXOi per 3 HS, 4 hits [A5]
k28	(aXOm)	12	0	1 aXOm per 3 HS, 5 hits [A5]
k33	(aXOn)	10	0	1 aXOn per 3 HS, 5 hits [A5]
k38	(aXOo)	10	0	1 aXOo per 3 HS, 6 hits [A5]
k43	(aXOq)	8	0	1 aXOq per 3 HS, 6 hits [A5]
k48	(aXOs)	8	0	1 aXOs per 3 HS, 7 hits [A5]

XO.06 COMMON BUOY AND XO COMBINATIONS

Buoy	HS	XO	Quantity	Notes
Bouy2	4	XOa	5	1 XOa per 7 HS
		X0b	6	1 XOb per 6 HS
		XOe	8	1 XOe per 5 HS
		XOi	10	1 XOi per 4 HS
		XOm	13	1 XOm per 3 HS
Bouy3	5	X0b	8	1 XOb per 6 HS
		XOe	10	1 XOe per 5 HS
		XOi	12	1 XOi per 4 HS
		XOm	16	1 XOm per 3 HS
Bouy4	7	XOe	14	1 XOe per 5 HS
		XOi	17	1 XOi per 4 HS
		XOm	23	1 XOm per 3 HS
Bouy5	8	XOe	16	1 XOe per 5 HS
		XOi	20	1 XOi per 4 HS
		XOm	26	1 XOm per 3 HS
Bouy6	10	XOe	20	1 XOe per 5 HS
		XOi	25	1 XOi per 4 HS
		XOm	33	1 XOm per 3 HS

XOB – External Beam Weapon Twig

Note: Requires EL 4, any Beam Weapon, and any XO rack.

A scientist took the concept of a missile battery to the next level and developed a single use beam weapon system that could be mounted to XO racks. A battery, similar to one a missile uses, powers the weapon and contains enough juice for one turn of firing. While having nowhere near the accuracy of a normal beam weapon, these weapons greatly aided a WP assault ships first attack if the defender was close aboard. The battery is wired into the ship's engines and the weapon may be recharged during battle. As a long-term result of this development, many races began to build WP defense beams with heavy laser armament.

XOB.01 Usage

(XOB) cost 2 MC to put on a ship (debit the maintenance fund for next month) but if you take them off, without them being destroyed, you get 2 MC in return. An (XOB) is "y" XO in size, where "y" equals the normal amount of HS of the firing weapon. An (XOB) functions normally EXCEPT it treats all ranges as two higher than normal (actual range 0 uses the range 2 to-hit and damage numbers). All weapons from the E, F, C, and L tree are eligible to mount on XOB racks.

It takes 1 hour per XO weapon to load the XO racks with an XO beam and must be done with the DF down (in order to hook up the engines to recharge).

XOB.02 Recharging

To recharge an (XOB), you must siphon power from the engines. Engines used to recharge (XOB) must be declared before that unit's first movement pulse. Engines so engaged cannot be used for anything else including detuning, towing, etc. Each HS of engines can recharge 2 XO spaces worth of (XOB). Thus, a Fb based XO weapon (4 XO in size) would require 2 HS of engines in order to recharge.

Non-operating engine rooms cannot recharge External Weapons and damaged engine rooms can only contribute undamaged engine systems.

Note: Ships are not allowed to mount extra engine rooms for the sole purpose of avoiding speed loss while charging weapons. However, a TUG engine room [E5.03.4] is allowed to recharge External Weapons.

XOB.03 R&D

XO Beams are a single R&D development project with a cost of 150 MC. Once that project has been completed and one SL after each beam weapons is eligible to be developed and if it has already been developed, that specific beam is allowed as an XO beam. Rapid fire and variable weapons cannot be XO beams.

No knot prevents access to this Project.

Y – Sensor

Note: Requires Ind-1.

STARFIRE assumes that sensors are special passive devices combined with extremely capable filtering and analysis computers, allowing for extremely fast resolution of unnatural objects in the environment around the ship.

Standard sensors come with the EL or SL they are associated with are listed below just for reference.

See [smcft.02] for AP and smcft version of sensors.

SL	Code	Cost	Space	Notes
IND-1	Standard Sensor IND-1			
IND-2	Standard Sensor IND-2			
0	Standard Sensor SL0			
	Ya	20	1	
2	B -- Capital Sensor			
4	Yb	35	2	
k7	Standard Sensor SL 7			
	Ye	55	2	
11	Yi	75	2	
k15	Standard Sensor SL 15			
	Ym	95	2	
19	Yn	120	3	
k23	Yo	140	3	
25	Standard Sensor SL 25			
27	Yq	160	3	
k31	Ys	180	4	
35	Standard Sensor SL 35			
	Yu	200	4	
k39	Yw	220	5	
43	Yy	240	5	
45	Standard Sensor SL 45			
k47	Yka	260	6	

Sensor table located at [AppEE-Sensor Tables] and in [D5].

Yc – Capital Sensor

Capital Sensors are in many respects an operational level ship system. Their great size and extreme long sensor range allows the pin-pointing of enemy fleets hours and sometimes days before engagement could occur allowing avoidance or surprise attacks.

Do not under estimate the importance of Capital Sensors reference LOD, Cloak, and Drive Field down ambushes.

SL	Code	Cost	Space	Notes
2c	Yca	150	10	
5	Ycb	250	15	
k9	Yce	400	20	
15	Yci	500	25	
k21	Ycm	600	30	
27	Ycn	700	35	
k33	Yco	750	40	
39	Ycq	800	45	
k45	Ycs	900	50	

NOTE: Fleets move from center of system hex to center of system hex. Other movement options are not allowed at the system scale (just like you cannot move 1/2 tactical hexes at the tactical level). Thus, in order to detect all units in the six adjacent sHs (Yca), you need only be able to see the **center** of the adjacent system hex and that is a distance of 2880 tactical hexes.

Z – DATALINK

Note: Requires EL 2.

Datalink provides special synchronized short-range communications between a group of starships that connects their targeting and acquisition computers. This allows the group to fire simultaneous shots in the same salvo (e.g. during the same combat pulse/volley) instead of firing individually in separate combat pulses [D1.01 & E6.01 & E7.02]. In order to fire with a group, a unit must be within 2 hexes of the lead unit of its group.

Any datalink system, capital or not, can link any x ships or any number of ships whose total HS do not exceed y HS (i.e., Za can link 2 JG or 5 ES)

Z.01 MOUNTING

Datalink must be the first internal (non-shield, non-armor) system. Only one Z* type system per unit is allowed.

SL	Code	Cost	Space	Notes: x ships or y HS
2	Za	30	--	2 ships or 60 HS max
4c	Zb	40	--	3 ships or 120 HS max
6	B -- Internal Datalink			
k7c	Ze	50	--	4 ships or 200 HS max
k10c	Zi	60	--	5 ships or 360 HS max
k14c	Zm	70	--	6 ships or 500 HS max
k18c	Zn	80	--	7 ships or 780 HS max
k22c	Zo	90	--	8 ships or 1250 HS max
k26c	Zq	100	--	9 ships or 1500 HS max
k30c	Zs	110	--	10 ships or 1750 HS max
k34c	Zu	120	--	11 ships or 2000 HS max
k38c	Zw	130	--	12 ships or 2500 HS max
k42c	Zy	140	--	13 ships or 3000 HS max
k46c	Zka	145	--	14 ships or 3750 HS max
k50c	Zkb	150	--	15 ships or 4500 HS max

ZC – INTERNAL DATALINK

These are identical to the original datalink except that improvements to the system made it less vulnerable to damage.

When the lead unit's Zc goes down, the "net" goes down for the rest of that turn and all of the next turn [E6.06].

In order to fire with a group, a unit must be within 2 hexes of any member of its group.

ZC.01 MOUNTING

Internal datalink can be placed anywhere.

SL	Code	Cost	Space	Max Datagroup Size
6c	Zca	60	3	2 ships or 60 HS max
k9c	Zcb	80	3	3 ships or 120 HS max
k12c	Zce	100	3	4 ships or 200 HS max
k16c	Zci	120	3	5 ships or 360 HS max
k20c	Zcm	135	3	6 ships or 500 HS max
k24c	Zcn	150	3	7 ships or 780 HS max
k29c	Zco	170	3	8 ships or 1250 HS max
k34c	Zcq	185	3	9 ships or 1500 HS max
k39c	Zcs	200	3	10 ships or 1750 HS max
k44c	Zcu	225	3	11 ships or 2000 HS max
k49c	Zcw	250	3	12 ships or 2500 HS max

? – ENGINE MODULATION

Note: Opens from Electronics Tree.

EMS is a system that has extra generators to provide engine modulation without the ship needing to forego movement. EMS is effective as long as a drive field is present (even in standby mode). Tree starts at SL 5.

EMS can be used on the turn the drive field is raised.

?.01 R&D

All *science levels* (5, 6, 7, 8, 9, etc.) are critical {c} projects!

SL	Code	Cost	Space	Notes
5c	Tree Start -- No tech item			
6c	?a	30	1	See Table EM/EMS Modifiers [C8], [?], [?d]] R&D costs are special See N6.04
k11c	?b	60	2	
k16c	?e	100	3	
k21c	?i	150	4	
k26c	?m	200	5	
k31c	?n	225	6	
k36c	?o	250	7	
k41c	?q	275	8	
k46c	?s	300	9	

?D – ANTI-ENGINE MODULATION

Note: Opens from Electronics Tree.

Anti-EM increases weapon fire effectiveness when the enemy is using EM and or EMS. The modifier applies only to weapons mounted on the ship using ?d. Tree starts at SL 6.

SL	Code	Cost	Space	Ability[a]
6c	Tree Start -- No tech item			
8c	?da	75	2	Cancels 1 pt; 2 units
11c	?db	90	2	Cancels 1 pt; 3 units
k15	?de	120	2.5	Cancels 2 pt; 3 units
19	?di	150	2.5	Cancels 2 pt; 4 units
k22	?dm	180	3	Cancels 3 pt; 4 units
25	?dn	210	3	Cancels 3 pt; 5 units
k29	?do	240	4	Cancels 4 pt; 5 units
33	?dq	270	4	Cancels 5 pt; 6 units
k37	?ds	300	5	Cancels 6 pt; 6 units
41	?du	330	5	Cancels 7 pt; 7 units
k45	?dw	360	6	Cancels 8 pt; 7 units
49	?dy	400	6	Cancels 9 pt; 7 units

[a] Cancels up to x pts (minuses) of EM/EMS on up to y enemy units.

OPTIONAL TECHNOLOGY – TWIGS

Alternative Technologies are those that sounded interesting but are/were rather difficult to balance. Some will undoubtedly move from the optional section to the official technology section as I become more convinced of their balance and or game usefulness.

A note on different missiles and magazines:

Special warheads can ONLY be carried in supplemental magazines, and unless otherwise noted those magazines are the usual size and cost. Before the battle begins, each player must write down the missile load in each magazine and stick with that during the battle. Essentially, these warhead twigs are not much more effective than normal warheads (or at least they are not blatantly broken) and work when handled this way. If you wish to load XO racks with this style of weapon, it must also come from the magazine capacity.

A unit can, in effect, fire a missile (warhead) directly from the magazine as needed without needing to pre-load or any other such thing.

LW – LASER WARHEAD TWIG

Appears: LW branches at SL 7 from the R, Rc, G, Pt, and Ptc tree/branches [req: SL3 Laser or X-ray Laser Tree].

Laser warheads receive a minus to-hit and are harder to intercept because they detonate further away. Otherwise they are exactly the same as a regular missile/torpedo excepting that the damage caused is laser damage, which skips "the weapon's SL * 3" shields.

If the to-hit number is 5 or greater, reduce it by 2. If the to-hit number is 4 or less, reduce it by one.

Point defence interception attempts are -1 vs. Laser Warheads.

{Ed. Note: Balance on the various types of missiles and torpedoes is questionable. The firer is sacrificing about 1/3 of his damage with the to-hit penalty. But point defence effectiveness may be greater due to fewer hits. Still Laser damage is a plus at times.}

ITW – ION TORPEDO WARHEAD TWIG

Appears: ITW branches at SL 12 from the R, Rc, G, Pt, and Ptc tree/branches [req: E SL 12].

The Ion Torpedo Warhead mounts on a normal Capital Plasma Torpedo. The warhead is a specialized form of ion technology. Due to the need for an accurate hit, it is -1 to hit. While the torpedo does only two points of energy damage, it also knocks the ship out of datalink for the rest of the turn, disrupting its communications with other ships.

AFW – ANTI-FIGHTER WARHEAD TWIG

Appears: R and Pt tree/branches at SL6 [Req: Lvl 2 PD mods N10.03]

AFW's require the full lvl2 point defence anti-small craft modifications before they can be developed. AFWs increase the anti-smcft value of the weapon by +1 but cannot damage large units.

MIW – MULTIPLE INDEPENDENT WARHEADS TWIG

Appears: Rc and Ptc tree at SL12.

MIW is 50% larger than a normal capital LRW (i.e., Ptc version is 9 MSP each). A MIW splits into a number of mini-missiles/torpedoes (similar to smcft missiles) equal to one less mini-missile than the damage that the weapon would normally have caused at that range. The large number of inbounds is intended to overwhelm point defence at ranges where that is normally not an issue. Each mini-missile causes 1 damage and is +1 to hit using the normal capital missile/torpedo to-hit chart (the Ptc version ignores the first point of EM/EMS) and -1 to be engaged by point defence (Pt does not cause a minus).

g - ANTI-MATTER GENERATOR BRANCH

Coded as {*system code*}g{*gen*} -- Note: rapid comes before "g"

Appears: Various LRW trees/branches at SL 13 with first system available at SL 16 [NOTE: When this technology is in use, the Jc branch requires anti-matter generator SL 17]

The development of anti-matter generators occurred well before the ability to contain and fully control an anti-matter reaction for smooth power generation required to create engines and fire beam weapons based on anti-matter. Once developed, the anti-matter technology was rapidly applied to every LRW weapon system in the game. Shortly thereafter, it became available for every SRW weapon and changed the face of galaxy.

Of key importance in using anti-matter on units was the need to minimize the risk of the ship blowing up. While not 100% accomplished, it was reduced to tolerable levels.

An anti-matter generator is an extension to a weapon system, which causes that system's missiles, torpedoes, beam hits, etc. to cause *double damage*. "g" increases a weapon's size by 10% (FRU to the nearest fraction listed in [AppAA-Space]). The new weapon, with the added g code, costs 250% of the original price (FRD).

Example g - Anti-Matter System

Each SL and each development in the anti-matter twig is a hazardous project and costs triple.

SL	Development
13{h}	Branch start from missile, torpedo, and kinetic trees/branches
16k{h}	{h} Development of anti-matter missile, torpedo, and kinetic systems allowed.
19k{h}	{h} Development of anti-matter Beam and other SRW systems allowed.

Development projects: if the "normal" system has been developed, the R&D cost of RP is reduced by 50%.

"g" boosted missiles, torpedoes, and k rounds are the same size and are stored normally. The only difference is the last moment creation and injection of anti-matter before firing. g boosted LRW are not allowed on XO racks.

When a "g" boosted system is damaged/destroyed, roll 1d10. If a "1" occurs, a small bit of anti-matter explodes causing 1d10 damage.

OPTIONAL SYSTEMS

SC – SCAN SHIELD

Appears: Shield branch at SL6 [req: electronics SL5]

Scanning ships are fully aware they have data holes in their scan, but have no data on what they are missing!

When you are scanned, roll 1d10. On a 1-9, the scan fails to pick up the shielded item. Note: An unscanned item cannot be targeted specifically by precision weapons -- numeric, deep hits, and type hits can hit an unscanned item.

SL	Code	Cost	Space	Notes
6	(SCa)	25	0.5	system to immediate right may
12	(SCb)	15	0.5	not be scanned

{Ed. Note: As the creator says "Not cheap, not perfect, and uses space, but when you REALLY don't want the enemy getting scans on your ?a, Kca or similar..."}

MN – NETWORK MULTI-TARGETING

Appears: Electronics tree at SL 4

Network Multi-Targeting helps a large number of units (swarms) to have large multiplex targeting capacity without a great deal of cost. Each unit can mount only one Mn. A unit/datagroup can only use the dataleader's Mx or the datagroup's combined Mn ability during a turn.

Mn gives tracking of x/y extra targets (FRN), where x is the number of Mn units in the datalink in question, firing together, and y is per system generation as below. Note: in groups with multiple generations of Mn, use the highest y value.

SL	Code	Cost	Space	Notes: x Mn / y
4k	Mna	10	1	y=4 [req: M2]
7	Mnb	20	1	y=3 [req: M4]
k10	Mne	15	1/2	y=4 [req: M6]
14	Mni	20	1/2	y=3 [req: M7]
k18	Mnm	25	1/2	y=2 [req: M8] (max. Improvement)

Example: A group of 8 datalinked ships has 1 Mnb unit among them. This allows them to target up to 1+8/3 = 1 + 3 = 4 units.

{Ed. Note: Shrug, do we need more powerful swarms? Maybe. You choose.}

(ST) – STEALTH TUNERS TWIG

Appears in all Engine Twigs at SL 15 or the Engine twig's first SL, whichever is higher. [Req: Electronics SL 9]

Stealth Tuners cut sensor ranges slightly, but also reduces the ship's vulnerability to detection by the same amount. They can be used - unlike LOD mode - with shields on, and at full speed. Their bonus is NOT cumulative with LOD. (St) and (It) will not work simultaneously though both can be installed.

SL	Code	Cost	Space	Notes
15{h}	(Sta)	50/HS	ER+1	-20% detection/sensor ranges
19	(Stb)	60/HS	ER+0	-20% detection/sensor ranges
k23{h}	(Ste)	75/HS	ER+1	-30% detection/sensor ranges

ER = size is equal to one of the ships normal engine rooms. May include a plus x HS factor also.

While expensive, and uses space, it allows a LOD-like (although not as extreme) reduction in detectability (and sensor range), but unlike LOD it allows you to move at full speed and use shields, and thus the ship is combat-worthy when using stealth tuners. It should be noted that even combat and scan ranges are affected by stealth tuners.

{Ed. Note: I'm not sure about the values on this one and I dislike variable sized systems in general. Still, this should be balanced and in fact might be a bit weak.}

?F – DECEPTION ECM

appears: Electronics Branch SL 10

Deception ECM is a way to disguise yourself as a different type or size of ship. This deception only works at medium and long sensor range. LOD and Deception ECM both work and, in effect, cut the enemy's medium sensor range to 1/2 its norm.

Each increment of n can either change the type of the unit (to any other large spacecraft type) or can change the apparent size of the unit by one hull class. To appear as a base, a ship must have its engines in station keeping mode. Once the enemy enters their sensors' combat range, your ships will appears as they actually are. Only if the enemy totally loses sensor contact will ?f again fool them.

Starts at SL 10

SL	Code	Cost	Space	Notes
11{c}	(?fa)	40	3	n=2
k14{c}	(?fb)	60	4	n=3
18{c}	(?fe)	90	3	n=3
k22{c}	(?fi)	120	4	n=4
28{c}	(?fm)	150	3	n=4
k34{c}	(?fn)	180	4	n=5
39{c}	(?fo)	210	3	n=5

(DFE) – DRIVE FIELD EXPANDER

Appears EDM branch at SL9 [Reg: EL 9]

Maximum one DFE per ship and their effects cannot combine with normal EDM.

SL	Code	Cost	Space	Notes
9	(DFEa)	40	3	Acts as 1 EDM vs. one salvo per turn
k13	(DFEb)	60	2	Acts as 1 EDM vs. one salvo per turn
17	(DFEe)	80	3	acts as 2 EDM vs. one salvo per turn
k21	(DFEi)	100	4	acts as 2 EDM vs. two salvos per turn
26	(DFEm)	150	3	acts as 2 EDM vs. two salvos per turn
k31	(DFEn)	200	2	acts as 2 EDM vs. two salvos per turn

This allows the ship to extend its drive field suddenly and briefly in the direction of an incoming LRM salvo. It can prematurely detonate missiles, much like an EDM does.

EDM's are nice, but they also use plenty of XO racks each, and are one shot. This allows you to not carry large amounts of EDM's, and still help resist a large amount of enemy LRM fire. Useful if you expect relatively large salvos, but it is not small or especially cheap.

(TEV) – TRANSIT EFFICIENCY UNIT

Note: Requires ?a or better. Appears on the J branch at SL6

Transit Efficiency units are for J drives - they are somewhat expensive pieces of equipment which alter their drive field "pitch" as they enter the warp point. They are active only on the turn of transit, and the J-equipped ship loses 1 from its speed that turn. They have no effect on any other type of engine.

SL	Code	Cost[a]	Space	Notes
k6	(TEVa)	10% E	2	+1 TSA
k10	(TEVb)	15% E	2	+2 TSA
k14	(TEVe)	17% E	1.5	+2 TSA
k18	(TEVi)	19% E	1	+2 TSA

[a] TEV cost is based on the most expensive set (engine type) of engines on the ship, excluding tug engines.

While costly, it allows J ships to partly or wholly negate their inherent penalty to transit, and even the slower generational advance they suffer compared to I engines.

{Ed. Note: This should be a viable though expensive method to redress the transit problem that J ships have.}

(ESP) – ENGINE SURGE PROTECTOR

Appears: ADM branch at SL8

This engine upgrade protects the ship against ADM's. When shields-down and hit by an ADM, on the listed roll on 1D10, the ADM hit is ignored.

SL	Code	Cost	Space	Notes
k8	(ESPa)	50	4	ignore ADM hits on 1-3
k13	(ESPb)	80	5	ignore ADM hits on 1-4
19	(ESPe)	100	4	ignore ADM hits on 1-4
k25	(ESPi)	120	5	ignore ADM hits on 1-5
31	(ESPm)	150	4	ignore ADM hits on 1-5
k37	(ESPn)	200	3	ignore ADM hits on 1-5

{Ed. Note: Helps protect large units against the nasty ADM. While it could go on smaller units, it is not space efficient.}

r - RAPID HULLS

Rapid Hulls are a type of fast hull with the same weapon cost adjustments. Each Rapid Hull becomes available 3 Construction Tree SLs above when a fast hull of the same size becomes available. Rapid Hulls have the following characteristic differences from normal warship hulls.

+2 speed maximum speed
+5 cost per HS
+0.5 TM

BSxg - MOBILE BASE HULLS

Appears: Construction EL 4

These hulls, suffixed g, (e.g., BS1g) are a type much as warships and freighters are. They may ONLY mount commercial engines, engine power the same as a ship of the same max. size, and have a maximum speed of one (engine generations can increase the speed but the extra engine rooms will really eat into their effectiveness).

They cost +1 MC/HS to buy and cost 10% maintenance.

Mobile Bases cannot be carried in @ racks.

When moving, a Mobile Base functions like a ship (with a facing and blindspot). Turn Mode for all Mobile Bases is 1 + Speed/2 (FRD). Mobile Base turn mode can be reduced by Advanced Maneuvering (AM) but AM can never lower a turn mode below 2.

When stopped (not moving) during a whole turn, they get an extended range bonus, have 360 degree arc, and can change facing at will (which is a big difference from a ship).

Mobile bases can transit WPs but only one per turn can enter.

Mobile base hulls must be prototyped normally, and at all sizes.

Each Mobile Base is available +3 EL after the non-mobile base of the same size. I.e. BS4g requires BS4.

{{{Balance should be ok. Low maintenance means lots of them but low speed makes them vulnerable to swarms. Hull cost is higher than a ship of the same type.}}}

(WPF) – WARP POINT FLUCTUATER

SL	Code	Cost	Space	Notes
22{h}	(WPFa)	1500	200	Random WP exit
k27{h}	(WPFb)	1500	175	Random WP exit
32{h}	(WPFe)	1500	150	Random WP exit
k37{h}	(WPFi)	1500	125	Random WP exit
42{h}	(WPFm)	1500	100	Random WP exit
k47{h}	(WPFn)	1500	80	Random WP exit

(WPF) takes 50 hits to destroy but 1 hit is sufficient to cause it to cease working (repair cost is 7 per hit and 2 HS of capacity)

When a ship enters a WP with an active (WPF), the exit point is randomized for the rest of that tactical turn.

Procedure

a. Roll 1d12 to determine the starting radian of the exit point.
b. Roll 1d100 on the table below to determine the distance from the center of the system (or Star the WP is associated with)
c. Roll 1d100/2(FRU). Count that many sH clockwise from the starting point, while remaining the same distance from the WP.

That sH is the exit point for that Starship. All star ships will likely exit in different sH. The exit point tH within a sH is also randomized. So it is basically impossible for a fleet to "defend" an exit system hex. There is no warning to system defenders that the WP has temporarily shifted/split to a different location for enemy ships to exit (i.e., Raiding very possible with this system).

Note: To EXIT the system, a ship must get to the WPs "original" exit location, which may be heavily defended.

EXPANDED MISSILE TECHNOLOGY TREE

SL	Req.	Opt.	Item			Notes	Base RP	
			Code	Cost	Space		X Cost	Req.
	◇		--	--	--	Open Tree {Ø indicates the need for a knot before advancement}	--	--
0	□		--	--	--	{Once the tree is open, the first SL, SL 0 in this case, must be researched.}	2.0	20
		○	Ra	30	4	{Normally. This would be on the first line of the table. Note that as the first line of a tree, a combined project [N9.06] with Ra is not allowed.}	3.0	20
1	□		--	--	--	{The R tree display "jumps" from SL 0 to SL 3. But SL 1 and SL 2 are still present, just hidden to	2.5	25
2	□		--	--	--	save space in the document}	3.0	30
	◇		SL 3 knot			{A breakthrough [N11] is required to get past a knot}.	--	--
3	□		--	--	--	{Once the breakthrough is achieved, the SL, SL 3 in this case, must still be researched before advancement can continue.}	3.5	35
		○	Rb	35	3	{A combined project is allowed [N9.06]}	3.5	35
4	□		--	--	--	{Hidden SL}	4.0	40
5	□		--	--	--		4.5	45
		○	B	--	--	Branch -- CAPITAL MISSILE (Rc) {Like most branches, a breakthrough is required to open the Capital Missile branch. This is part of opening the Capital Missile tree.}	--	--
6	□		--	--	--	{Hidden SL}	5.0	50
	◇		SL 7 knot				--	--
7	□		--	--	--		5.5	55
		○	Re	50	4	ROF = 2 {a Note about the Re indicating a Rate Of Fire (ROF) of 2 per turn}	5.0	55
8	□		--	--	--		6.0	60
		○	B	--	--	Branch -- LAUNCHER BOX (W)	--	--
9	□		--	--	--		6.5	65
		○	T	--	--	Twig -- LRW Twigs {Twigs, like Branches and Trees, require a Knot to open}	--	--
10	□		--	--	--	{Hidden SL}	7.0	70
	◇		SL 11 knot				--	--
11	□		--	--	--		7.5	75
		○	T	--	--	Twig -- LRW ECM {Because they are optional, either the Ri or the Twig could be listed before the other.}	--	--
		○	Ri	55	3.5	ROF = 2	5.5	75
12	□		--	--	--	{Hidden SL}	8.0	80
						{Rest of table is skipped for the sake of space}		

Trees progress from top to bottom, then left to right along each line as comparing the trees will show. The above expanded missile tree shows this but everything has been separated onto its own line and it stops short of SL 25. Normally in a tree, SL without other projects are skipped in order to compact the trees. Additionally, things are compacted onto same line when feasible.

SL	Code	Cost	Space	Notes
0	Ra	30	4	
k3	Rb	35	3	
5	B -- CAPITAL MISSILE (Rc)			
k7	Re	50	4	ROF = 2
8	B -- LAUNCHER BOX (W)			
9	T -- HAWK			
	T -- LRW ECM			
	Ri	55	3.5	ROF = 2
14	T -- Booster			

Boxes £ and Diamonds Ø in the example indicate mandatory things that must be accomplished before further progress is allow in the tree. A Diamond Ø also indicates a Knot is required [N2.02] before further advancement in the tree. Circles represent optional things that are not required before advancement. Some trees, but not the missile tree, have items in parenthesis [*requirement*] next to an item or SL. This indicates a mandatory requirement of a particular development or SL before further advancement in the particular tree is allowed. Some trees have these requirements listed as part of the technology sections title, which indicates that the requirement must be met before the tree can be opened (Note: A knot is often also required). Words in violet are comments.

Next Section: Appendix BB - Optional Rules

Appendix BB – Optional Rules

The following is a complete list and description of every optional rule in 4th edition. This is intended as a checklist for SM's so they can be sure to decide on every optional rule available.

- ☐ A2.02 Hidden Movement: Using hidden movement for units that your opponent cannot detect. Use of simultaneous written orders [HH3.08] is recommended.
- ☐ B2.03.1.1 Each admiral rolls initiative for his assigned hull spaces, of which 66+% must be within 30tH
- ☐ C2.02.1 Using Fractional Strategic Speeds (Optional)
- ☐ C2.03 Pulsed Movement Chart for Tactical Movement: Alternate movement that is more realistic.
- ☐ C4.04.2.2 Simultaneous Transit Simplicity: If more than 19 units transit, just destroy X%.
- ☐ C10 Ramming (Optional): Whether or not to use ramming.
- ☐ D4 End of Turn Status: All status changes [D4.02] announced at "end of the turn" instead of "end of combat pulse."
- ☐ D4 Recording Damage: All damage is recorded at "end of the combat phase" instead of "end of pulse."
- ☐ D5 Sensors and Detection: scanning only after expenditure of at least half available movement points
- ☐ D7.04 Break-Off and Surrender Rules: Whether or not to use break off and surrender.
- ☐ D9.06.3 Drone WP Transits: If more than 19 AP units transit, just destroy X%.
- ☐ E5.03.1.1 : Optional method of determining towed size.
- ☐ F3 Average Grade Simplification: Player crew grade is always average. (no grade tracking)
- ☐ F3.07.4 Crew Rescue: Actual search and rescue with crew recovery.
- ☐ F3.07.4.1 Random Survivors: Randomized number of escaped crew from destroyed ships.
- ☐ F3.08 Crew Transfers (Optional): Whether or not to allow crew transfers.
- ☐ F3.09.6 Search and Rescue (optional)
- ☐ G1.02.2 Crew Grade by Squadron (optional, recommended): Whether or not squadrons have independent grade from their carriers.
- ☐ K2.01.3 Extra Governor: Players start with a BG+1 governor on their homeworld.
- ☐ K2.02.2 Combined Funds: Combine the war and survey fleet funds
- ☐ K2.03.1.1 Variable Startup: Campaigns may start at any EL/SL.
- ☐ K2.03.6 Pre-Game Prototypes
- ☐ K2.04 Player Race Protection (Optional)
- ☐ K2.06 Racial Traits (players may us K3, K4).
- ☐ K3 Player Race Design (Optional): Custom racial traits.
- ☐ K3.01.2 Alternate Levels (Optional): Custom racial trait levels.
- ☐ K4 NPR Race Design (Optional): Custom racial traits for NPRs.
- ☐ L1.04.4 10th-Month Growth (Optional, not recommended): Populations growth occurs on every month ending on zero.
- ☐ L1.06 Population Density: Players choose the planet facing of populations and track their location.
- ☐ L4.02.1 Pool Capacity Modifier (PCM): Players must also use PCM.
- ☐ L4.02.2.4.2 Where is it now?: Optional more realistic method of locating CFN units.
- ☐ L4.12 Arming the CFN (Optional): Whether or not to allow armed CFN units.
- ☐ M1.03.5 Class Fee Avoidance: Whether or not to allow class fee avoidance.
- ☐ M1.03.5.1 New Class: Alternate new class fees.
- ☐ M1.04.2 Combat Using Uncompleted Units (optional): Allows incomplete units to be used in combat.
- ☐ M1.04.3 Combat Using Repairing/Refitting Units (optional): Allows ships undergoing repairs to be used in combat.
- ☐ M2.01.2 Early Completion (optional): Large and Small units being completed in the current month may be available earlier than the beginning of next month.
- ☐ M9.01 Trade and Military Allies: T&M Allies can build units for each other.
- ☐ N - Propagate Research: All research results must be transmitted to each planet before they can be used at that location.
- ☐ N5.03 Whether or not to allow R&D shortfalls.
- ☐ P4.01.1 Quick Communications Resolution: Ignoring communications lag for nearby units.
- ☐ R2.02 Longer Surveys: Increase survey points to make exploration slower, and make the game longer.
- ☐ R2.02.6 Approximate WP Location (optional): Allows warp point locations to be estimated before survey is complete.
- ☐ R2.04 Top Secret and Undisclosed WPs: 20% of Secret WPs connect to Top Secret WPs.
- ☐ S - Graded Leaders (Optional): Whether or not to include graded leaders.
- ☐ S1.03.3 Leader Death: Leaders have to roll for Death every 10 months.
- ☐ T - Advanced Political Offers: Political offers can be sent and received as long as the communications are tracked from empire to empire using communications lag.
- ☐ T1.01.2 Activating an NPR: Without being contacted by an NPR or player.
- ☐ T1.05.7 Player and Player First Contact: Ignoring results of communications impossible between player races.
- ☐ T2.01.1 Player's Decision: Players do not have to roll political acceptance rolls for treaties between themselves.
- ☐ T3.02.1.2 Intermediary Negotiators: Can charge money for their services.
- ☐ T3.10 Increased Trade Recalculation: Increase the rate at which trade bonuses are reviewed for empire growth.

- ☐ T3.13.2.3 NPR Policy Extension: NPRs still use their own policies even though controlled by their player partner.
- ☐ U6 Espionage (Optional)
- ☐ U7 Counter-Espionage (Optional)
- ☐ V1.01.3 Warp Point Assault Setup: Whether or not both sides of a warp point need to be set up before combat begins.
- ☐ V2.06 Trade CFN Surrenders: Simply trade out CFN freighters for surprise attacks on trade partners.
- ☐ V5.12.1.2.1 (Optional) extra equipment: Reducing the cost of relocating captured populations.
- ☐ W5.04.1 Magnetosphere Hole: A unit's sensor range is increased such that it extends beyond the edge of a planet's Magnetosphere hole. A formula is involved.
- ☐ W7.04 Asteroid Colonies are randomly positioned rather than placed in the center of the asteroid sH.
- ☐ W8.02 WP Bearings and Distances: WPs are not placed on radians.
- ☐ W8.06 Clustered WPs (Optional) Warp point locations: Whether or not to vary the sH location of warp points.
- ☐ W8.07 Multiple-Warp Point Configurations (Optional) More Warp Points: All stars in a star system roll separately for warp points.
- ☐ W8.04.1 Secret to Top Secret Warp points: Whether or not to link Secret to Top Secret warp points.
- ☐ W8.06 Clustered Warp Points: Linking warp points using the cluster method.
- ☐ W9 Orbital Mechanics (Optional, Advanced) Whether or not to use Orbital Mechanics.
- ☐ X1 Late Monthly Turn Penalty: Whether to use penalties for players submitting their monthly turn late.
- ☐ Y1 Chance of NPR: Whether or not to use the lower population chances on Table Y1.02.
- ☐ Y3 No Governments: If government types are not used then all governments use the "ordered socialism" statistics and rules.
- ☐ Y3 Low Tech Menace: If LEL turning HEL can be three success governments or not.
- ☐ Y3.04 NPR Race Design (Optional): Whether or not to allow NPRs design choices of K4.
- ☐ Y4.03 NPR System Control Resolution: Players can setup and resolve NPR conflicts from starting in the same star system.
- ☐ Y20 NPR Government Descriptions: Whether or not to use governments. If no, then should use [Y6].
- ☐ AA.03 Space: Don't round systems sizes.
- ☐ Sw.01 Smcft have Weapon Generations.
- ☐ A.02: Multiple Armor Generations allowed.
- ☐ Con.04 Generational Hulls
- ☐ S.02: Multiple Shield Generations allowed.
- ☐ Optional Technology - Twigs
  - ☐ LW-Laser Warhead TWIG
  - ☐ ITW-Ion Torpedo Warhead TWIG
  - ☐ AFW-Anti-Fighter Warhead TWIG
  - ☐ MIW-Multiple Independent Warheads TWIG
  - ☐ g-Anti-Matter Generator Branch
- ☐ Optional Systems
  - ☐ Sc-Scan Shield
  - ☐ Mn-Network Multi-Targeting
  - ☐ (St)-Stealth Tuners TWIG
  - ☐ ?f-Deception ECM
  - ☐ (DFE)-Drive Field Expander
  - ☐ (TEV)-Transit Efficiency Unit
  - ☐ (ESP)-Engine Surge Protector
  - ☐ r-Rapid Hulls
  - ☐ BSxg-Mobile Base Hulls
  - ☐ (WPF)-Warp Point Fluctuater
- ☐ Appendix HH1 - Galactic Oddities
  - ☐ HH1.01 Oddity Tourist Traps (Optional)
  - ☐ HH1.04.5 Remnant Units: Remnant units can become J'Rill.
- ☐ Appendix HH2 - Random Events – ULTRA Style
- ☐ HH2.02 Call For Help (Optional)
- ☐ HH3.01 Race Specific Tech
- ☐ HH3.02 NPRs with Armed CFNs
- ☐ HH3.03 Admiral's Grade Limited
- ☐ HH3.04 Nukes Reduce Maximum Population Limit
- ☐ HH3.05 Survey Crew Experience
- ☐ HH3.06 Unusual Life Forms
- ☐ HH3.08 Simultaneous Written Movement: Whether or not to use written simultaneous movement.

Next Section: Appendix CC - Play Advice and Example Month

The following is some advice from testers in the 4th playtest campaign, and an example finance sheet for a fictitious empire. If you are a new player, you should review this section and see what these experienced players have to say.

CC.01 Initial Setup Decisions (Strategies)

While these rules will tell you everything you need to know to run your empire, no where is there any information on important decisions to make or pitfalls to avoid. Each player needs to have a strategy for the various parts of his empire, and then write out the tactics and procedures that will be used so the Space Master knows what to do. For example, a Space Master can ask the player each time he needs information about what a survey captain does. However, this does not really give the player the feel of being an "emperor" and thus the lack of direct control that an Emperor experiences.

4th-Edition STARFIRE was designed so that no single strategy has an advantage over every other strategy. In previous editions of STARFIRE one or two strategies dominated all the others. This is no longer the case, so a brief overview of strategies is appropriate, as there are now many more choices than were previously available.

It should be noted that Startup rules effect not only month zero but into the game for the first 10 months. This is a critical period of the game when economic expansion has a tremendous amount of importance. Therefore, a small mistake or misjudgment can an enormous impact. Also, taking a risk can yield immense benefits. The question then becomes, which calculated risks should I take?

A player may be tempted by the *Optional* "Special player race protection rule" to take a unusually large risk during the first 10 months but let us take a close look at what that rule really does and doesn't do for the player. The first thing that it does not do, is given the player total immunity. Survey fleets, warfleets, and captured/conquered/allied systems outside the home system are all at risk. And while it is unlikely the player will have many of these things early in the game, loss of any of them in any amount is going to hurt a great deal due to the compounding effect of things.

The second thing that rule does not do, is make the nasty NPR go away. In fact, it doesn't even end the war with a peace treaty! Worse, the NPR is free to explore the galaxy and GROW just like the player. Any player having to invoke the special rule is going to be in tough shape for a long time due to the possibility of either the player OR THE NPR survey fleets locating each other later in the game.

What the rule does do, is allow a player to continue in the game without having to re-setup his entire race (although sometimes this is preferable as the Space Master may note. A multi-planet HEL 3 NPR is going to be tough to beat no matter when the player must fight him). I think that most of you will agree that a player having to invoke the special rule is going to have a rough game of it and strategies that count on this rule to prevent early defeat are unlikely to be all that successful.

One of the most critical things to understand is that CAMPAIGN STARFIRE is above all other things an economic wargame. You will tend to lose the game if you fall too far behind in economics. Just like money makes the world go around, income makes a STARFIRE empire strong. Without a doubt one of the most important ideas in economics in the understanding of "compounding," which basically means that the value of your investment will determine the rate of growth. The more valuable an investment of your money is, the faster it grows. The faster it grows, the more you can invest. If you master this concept, you can make your income and treasury grow at a faster rate than an empire that has a higher income to begin with.

Of course not all investments are directly related to income. Survey expeditions cost money, but their reward is the discovery of NPRs to ally with and habitable planets to colonize. Research costs a lot of money, but as your Economic Level goes up so does the amount of money you make per PU. And don't forget, that investing in a fleet of ships to protect you will prevent you from losing colonies or potential colony worlds, or allow you to conquer an NPR and take his money from him. Just be careful not to make too much investment into these types of things, as most of them require a maintenance fee which is a loss of money with no direct return. If something (such as a warship) costs you maintenance for an extended period of time (more than 10 months) but does not accomplish any goal or perform a duty, then that investment may have been wasteful.

CC.01.1 Colonization Strategies

Colonization is one of the best forms of investment as it produces viable income generating worlds that grow without further investment, and create population to send to new worlds. The following chart is a simple "Rate of Return" indicator for the various worlds that can be colonized. Industrial Units (IU) have a "Rate of Return" of about 3.7% with 1 ast belt in the system, and you only get a 2% return on money sitting in the treasury. Distance is calculated in STMP [Q1].

With 1 ast Belt	Distance of Colonization				
Environment Same	0	1	2-4	5-8	
Benign (normal)	17.7%	11.3%	7.8%	4.8%	3.4%
Harsh (normal)	11.1%	7.8%	5.6%	3.7%	2.7%
Hostile (normal)	8.1%	5.9%	4.4%	3.0%	2.2%
Desolate (rich)	6.0%	4.7%	3.6%	2.5%	1.9%
Extreme (V.Rich)	3.9%	3.1%	2.5%	1.8%	1.4%

As you can see there are some obvious investments that aren't worth as much as investing in IU on your existing worlds. Those should be done only if needed for non-economic reasons (such as a sensor outpost), or when you have already filled all your worlds with the maximum amount of IU they can have. And you can see that there are actually worlds which are less valuable then simply letting money sit in your treasury and collecting interest.

CC.01.2 Exploration Strategies

You should have the maximum number of 60 Survey ships allowed in the standard campaign setup (or more if allowed). This will mean stripped out survey EX, but unless your SM lets you have more money for the survey fleet that will be all you can build. Consider building them with I type engines (J type are too slow strategically) so

that they can run away. Divide your unarmed survey forces as evenly as possible but try to retain multiples of 5 (actually any number evenly divisible into 200 is best). At the start of the game, go out each warp point with a survey group on month 1.

After that, you have three choices:

1. *Fast approach:* Probe each warp point as you find it in hopes of finding new races and starting communication efforts so that you can finish them quicker. Your only caution is that you might find dangerous NPRs faster.
2. *Slow approach:* Only probe one warp point per month in the same system. The advantage is that it prevents multiple wars from starting next to the same system and, perhaps, allows a smaller ready warfleet. The disadvantage of course is that it delays meeting some friendly NPRs.
3. *Cautious approach:* Probe one warp point only if no NPRs who are not in full communications are adjacent to the system. The advantage over #2 is that it prevents multiple wars in same part of galaxy. It does however have the same disadvantage, in that it delays meeting friend NPRs also.

For maximum OVERALL survey rate, split you survey fleets every time you find a new warp point even if it means only 4-5 ships in a group. New survey vessels can be built to increase the groups and you have a "wall" of picket ships to detect any enemy unit entering your outer systems. It also lessens your overall risk by limiting the number of survey ships that can be killed at a time.

CC.01.3 RESEARCH STRATEGIES

This is the one of things that money alone cannot buy. Time is always required and to fall behind means that you are always behind. This is always a top if not the number one priority. Development of systems can wait but researching your economic levels is a must! Otherwise, your research will be delayed.

When researching science levels and developing technologies, it is important to remember what branches you have available, and where you plan on focusing your development. When your military finds a race with other technologies you have to first defeat them before you can steal their technology and open up new tech trees. Keep your technology development at an even pace across your tech trees so that you can build balanced fleets. This is important, because many times technology can fall behind and your military may be unable to build fast enough to compensate for the loss in technological edge.

CC.01.4 MILITARY STRATEGIES

Military strategies are particularly tricky because sometimes you don't have a choice. However, military strategies are one of the most fun parts of campaign battles. The majority of players use the campaigns only to setup battles and wars so that they can stretch their military might and show their military mind. There are a ton of individual strategies and tactics, but in general you need to decide on one of a few different overall strategies for your empire:

CC.01.4.1 Stay at home I'm not coming out to play! Lock up the warp points and make sure nobody comes in until I'm good and ready to explore. While this strategy will certainly keep you alive, it will also keep your income from expanding too much. This will give other players who use more aggressive strategies the advantage to build a bigger income faster.

If you use this strategy, you will need a strong base defense at your warp points, and at least a mothballed fleet to activate after your warp point gets hammered for the first time. In general few people use this strategy, so it is difficult to say exactly what needs to be done to make it work.

CC.01.4.2 Aggressive Defense This is similar to the isolationist "Stay at home" strategy, but allows you to do some exploration first. The way you do this is to expand as fast as possible, but then when you meet NPRs close off the warp points and don't let anybody in… The advantage to this strategy is that you can gain some ground and colony worlds first, and then stop expanding when you find other races who might be unfriendly.

If you do this then you will want to keep a fair sized mothball fleet, and a ton of pre-fabricated bases for quick construction when you find your stopping point. When you do meet an NPR, stall for time while you de-mothball your fleet and then unless they want to be friendly quickly close the warp point and tell them to go away.

The only disadvantage is that in the long run the other players with more aggressive styles of play will get bigger through NPR alliance, conquered worlds, and more colonization. But if the game is a short game, this becomes a viable strategy.

CC.01.4.3 Standard Stance The standard stance is where you stand in the middle ground: your empire expands at a consistent rate, allies with friendly NPRs, and fights only when forced to. This is the best of both worlds, as you are not neglecting exploration for the sake of safety, and your not actively going out and starting wars. This is what the typical STARFIRE campaign player does.

The recommended strategy for this is to reserve half of your fleet and keep at least a few bases at your home system's warp points for a quick defense. Then as you expand protect only your best investments (benign worlds and large asteroid colonies) with extra fleet elements and bases. You might lose a little bit of ground if an NPR decides to full out war with you, but with ample mothballed ships you should be able to pump out the fleets to take the ground back.

Be warned that this strategy will take some heavy initial losses against super-bad NPRs like hive minds or J'Rill, and it will require some strategy to delay them for the few months it takes to de-mothball your fleet. But with some careful maneuvering, and careful placement of base defenses, this strategy will likely be one of the best.

CC.01.4.4 Conquering This strategy involved conquering any race that doesn't agree to be your friend. You have to be careful if also using a fast exploration rate, as you might get into too many wars at once, but usually you should be able to make up for losses with the huge incomes from NPR homeworlds and colonies.

This strategy requires large fleets of warships and troop-transports to blast through the NPR's defenses and quickly land a ton of ground troops to conquer his homeworld. With proper planning and a touch of luck, a "conquer-strategy" empire should be able to conquer a number of beginning NPRs and add significant digits to the bottom line.

CC.01.4.5 GFFP "Genocide For Fun and Profit." This term was coined by our own Dan Preston, to indicate a strategy where your

empire simply blows away all opposition, all low tech races, and colonizes the world as their own. This strategy is particularly violent, but creates a clean new path for your empire to work in. Very similar to how the Rigellians and Arachnids operate, this strategy has the distinct disadvantage in that everyone will dislike you.

What can we say? Build LARGE fleets of warships and hope you don't encounter anyone larger and stronger than yourself. Just have those colony ships close behind your warfleet so you can colonize each world the instant you sterilize it. Try to keep your wars to one at a time, and negotiate only to buy time to build a fleet or finish a different war. Then blows to bits and colonize their worlds.

CC.01.5 General Strategy Thoughts

This is an example strategy layout complete with treasury and spending for the startup month. The standard setup gives you the following in MC.

The balance sheet:

	Income (MC)	w/AST (MC)
2,000 PU on rich habitable world 2,400		2,640
100 IU	100	110
100 PTU on asteroids	105	115.5
	Total income	2,865.5

Expenses (fixed)	
R&D EL and SL est. 30% of income	860
5,000 MC of survey ships (maint)	750
5,000 MC battle fleet	750
2,000 MC of FT (leased to pay for themselves)	0
Free SS SY1x10	40
Total normal expenses	2,400
Total income	2,865.5
Total expenses	-2,400.0
Minimum Disposable income	466
Mothball 50% of warfleet	+375
Normal Disposable income	840

The minimum disposable income is based on maintaining a full warfleet and represent that the player will be using a military strategy. Mothballing a ship for as little as 4 months is a break-even situation. If you mothball longer that, then you will be ahead in the long runs as long as you not short of shipyards. Mothballing half of your warfleet provides an extra 375 MC per month to invest in economics.

CC.01.5.1 The Stay at Home Strategy The "Stay at home" strategy was mentioned in the Military Strategies [K1.03], but really has a much more profound effect upon the economy than just the military. This is an overview of those effects.

This strategy involves building your home system up to full industrial power. This is done by colonizing asteroid belts, moons, and building IU. Rough cost of this is 950 IU * 30 = 28,500 MC for just the IU. Add another 11,500 MC for colonization and you get 40,000 MC needed for the full stay home version. This level of effort will increase home system income by about 1,613 MC, roughly a 50% increase.

VERSION 1 (Total): Mothball most units, starships, survey ships, FTs, bases, and much of SSs except those cheap to maintain SY. Instead of 840 MC of disposable income you would have 2,000 MC with a de-mothballing fee of 4,875 MC. Based on that you could build about 770 IU by the start of month 11 when income would be (with Growth)

Income Month 11	
2,231 PU on rich world	2,945
870 IU	957
111 PTU on asteroids	146
	4048 MC

Meanwhile, our normal race (50% mothball) would have been able to build 330 IU for an income of 3,546 MC. After 1 months of de-mothballing (only 50% of battle fleet) at 3,750 MC (480 HS per month) during which the normal race can build 118 more IU the races remain the same except for the following advantages.

Stay Home advantages

- No risk of war.
- A maximum of 500 MC higher income production (12% higher).

Note: that this could be less if the exploring race has found good colonization sites, which is likely.

- Increase in production is easy to defend as it is all in the home system.

Normal Advantages (50% mothball of battle fleet)

- Possibly located better colonization sites and hence investment sites for months 11-15 which the stay home people might not have.
- Faster exploration
- Possibly located trade allies to increase income. A trade alliance is the BEST possible investment as long as it lasts for at least 10 months.

Aggressive Defense Strategy

Same as total version but you take a chance by leaving X survey ships unmothballed and jumping out all X warp points on the first month hoping to locate better colonization sites. After that those survey ships are mothballed. The risk of war is there but the protection rule would "save" you (if active). Still, you strategy would be screwed up anyway by having a race so close.

CC.01.6 The Funds

- Survey Fleet: Build as many as you can.
- Warfleet: Build what ever you like. Consider mothballing some of them.
- Other Fund: Maybe bases or more SY. Perhaps armed survey vessels? How about planetary survey FT loaded with (Bse) and ct?

CC.01.7 COMMENTS

Buying more survey ships: A lot of exploration is likely to get you into a war faster when you need the warships you didn't buy.

War: At HEL 2, any HEL NPR is going to be a dangerous threat. Your total loss of income from a lengthily war will far exceed any amount you might have hoped to gain. On the other hand, if you have the warships available, you might be able to crush the NPR quickly before his building program gets underway. In which case, another planet makes a huge difference in the game.

The odds of a system containing a HEL NPR are 10.5%

The protection rule [K2.04]: The 10 month limit only applies if the NPR you activated on month 3, finds and destroys your homeworld by month 10. If it takes it until month 11 (destroyed your survey ships and didn't locate the warp point when you entered), then the NPR would be lucky to find you by month 10 considering the small number of survey ships they have available.

The protection rule will rarely come into play unless the NPR is in the adjacent system. Even then, the chance for a quick victory and conquering of an NPR on month 2 or 3 more than makes up for the minor income increases from massive mothballing or base building with the warfleet fund.

Mothball methods: There are many variables around this whole situation and I think that over a couple of years we will find out which is a better method overall. Certainly, we can each pick a situation in which our strategy is best. The real question is which is best most of the time. BTW: I expect that most player races will be at war or have finished a war by month 15-20. Based on standard survey and expansion rates. Those are not good numbers for a risky type strategy.

Final Note about NPRs: I have stated a number of times that I feel that NPRs will no longer be pushovers. However, it does need to be pointed out that NPRs are still crucial to winning (whether you conquer or ally with them). The trick is going to be picking a level of interaction between foolhardiness and over cautious.

Final comment about investments: When building (SY) or making other big investments, a player should remember that the real cost of operating something is usually considerably higher than just paying maintenance on it. The reason this is true is that whenever the player spends money, he must consider the money he would have made had he invested in something else.

Example: At very low economic levels (when ships are cheap) if a player builds additional shipyards to build warships (rather than using planetary industry), the money saved by the shipyard (compared to planetary construction) will in most cases be less than the money that could have been earned had it been invested in colonization or IU.

CC.02 PLAYER ADVICE

The following are some hints and pieces of advice that have been given by some of the playtesters from the 4th edition campaign. Because of the number of changes from ISF to 4th edition, we feel that it will take some getting used to. Hopefully this advice from the players will alert you to the biggest changes so you don't have to relearn the major parts of the game.

CC.02.1 GENERAL ADVICE

- It is best to determine your overall strategies [K6] and stick to them unless there is some compelling reason to change.
- Keep a decent sized war fleet for defense (maintenance equal to about 40% TGI) or at least a large mothballed fleet.
- Remember that a NPR can betray you, don't trust them anymore than you would another player.

CC.02.2 TIPS FROM MIKE GOLDWEBER

Don't forget about purchasing additional chances for a focused or random breakthrough. It requires an unused (SA) for each roll.

Don't try to develop more than one long range and one beam weapon tree early in the game. It is a waste of good R&D money. Develop the LRW and SRW systems that fit your style of fighting the tactical game, and run with it.

Capturing enemy ships can't be done enough. It not only provides a free hull for your fleet's own use, but it can also provide valuable astrogation data quicker than doing a WP survey. In a multiple WP system, this data will provide you the correct WP to go through. In addition to astrogation data, capturing a ship with a hull size greater than what you can build is a cheap way to build the prototype hull/new class ship.

Build small, cheap survey vessels. They never go to waste, and you can never have enough of them. You need your eyes and ears everywhere. The survey ships do the job.

Start building troops with support H early in the game. You may not know when you will invade a planet, but when the time comes, you want to have enough ground units landing to finish the enemy quickly. Too few ground units drags the conquest/consolidation/peace phase(s) out. The longer it takes to get through these phases, the longer it takes you, the conquering hero, to get your rewards!

Once you've conquered someone, don't hesitate to provide EL research assistance. The single month bonus (of -1/2 RC per 10 RP bought) may not seem like much. However, as long as it takes to get a conquered race from slave status to an Amalgamated relationship, this bonus will make a big difference.

If you are following the colonization strategy, make sure to colonize early in the game, and often. Spread your race across the galaxy like a pestilence across the plains!

If you need to defend a system with multiple WPs, and you are not sure where the attack is going to come from, then don't spread out your forces by defending all of the WPs. Consolidate your forces around a key point (like a planet), and make the enemy come to you. Keep only survey/scout units (like the ones I encouraged you to build above) by the WP to alert you to the enemy's presence in the system. If the enemy decide to avoid you, then harass and destroy his supply ships. If he does come to fight you then use the PDC's extra range bonus to damage his ships before he gets a single shot off.

Keep tugs handy (especially if following the advice in number 8) to move bases around the system. Bases also get a range bonus. So if you know the direction the enemy is coming from (which you should by following #4 and #8), then you can place your bases in a position to coordinate fire with the planet's PDCs.

Remember the AF gets the same +7 to range as a PDC. It is a very valuable WP defense unit.

CC.02.3 BENEFITS OF AMALGAMATION.

Unrestricted control of the NPR via the lifting of:

a. T3.13.4 (Gifts allowed)
b. T3.13.1 (Freedom to sneak attack NPR allies without restriction and to not have that NPR squeal on you)
c. T3.13.1.3 (Freedom from restrictive LEL/HEL NPR policies)
d. T3.13.3 (Freedom from random die rolls when determining whether to accept or reject other race's offers -- Think 01, 02, and 03 rolls)
e. The "paperwork burden" is reduced. No matter how you process your months, it takes more effort to keep separate empires than a larger unified one.
f. You now have two Imperial Populations that may treat differing worlds as benign thus boosting significantly long term colonization.
g. Potentially increased trade income from all other trade treaties (the new empire has more PU and T3.13.3.1 no longer applies to the NPRs PUs)
h. An Imperial Reserve Capital allows better response times to events in that section of the galaxy.
i. Partnered NPRs may not count toward victory conditions if "Imperial PU" are a factor (or Imperial fleet size, Imperial income, etc.).
j. To advance SL and do tech development, only 1 RDS or 1 SA part is needed for the whole empire. Thus, research can proceed quicker in more areas because of the lack of duplication. Remember that the NPR is restricted from sandbagging on R&D by T3.13.2.1.

CC.03 EXAMPLE MONTH OF THE CRESCENT EMPIRE

Below is an example month for the Crescent Empire. This is the minimum information that you need to send to the Space Master in order to have a complete month.

CC.03.1 EMPIRE SUMMARY

2.00	Treasury balance from last month
10695.72	Income from Crescent Empire PU
4193.16	Income from trade
100.00	10 IU sold (at war and need cash to build ships)
860.00	Income from FT leased to CFN
15850.88	**Total MC available**
3248.15	Maintenance
3593.59	EL R&D
3600.55	SL and Development R&D
5029.00	Construction
375.00	CFN Costs
15846.29	**Total spent**
15850.88	TGI
-15846.29	Total spent
4.59	Treasury Balance

CC.03.2 RESEARCH AND DEVELOPMENT

10 RP for EL Research to EL 5 3555.60

SL Research	SL	RP	Facility	Cost
Kinetic	6	25	RDS1+SA1	1056.0
AP	5	12	RDS2+SA1	192.0
Lasers	6	15	RDS3+SA2	375.0
Electronics	5	25	RDS4+SA2	330.0
Small engines	4	25	RDS5+SA3	154.0
Shields	4	25	RDS6+SA3	154.0
Life Support	4	25	SA4+SA4	308.0
			Subtotal	2569.0

Development

Item	SL	RP	Price	Facility	Cost
c (for AP)	4	10	50	RDS7	123.95
Ta	2	10	8	RDS8	81.95
Zb (critical)	4	25	40	RDS9+10	626.7
ast	3	10	25	RDS11	98.95
				Subtotal	931.55

Random Breakthroughs	Cost
Science Academy 5	100

Total R&D cost: 3600.55

CC.03.3 CONSTRUCTION

1068.00	Build 1 Death CA at Alpha 1 SY
1514.00	Build 2 Doom CL at Alpha 1 SY
497.00	Build 1 Destruction DD at Alpha 2 SY
371.00	Build 2 Reliant FG at Alpha 2 SY
265.00	Build 1 Scout CT at Alpha 1 SY
30.00	Build 1 Probe FT0 at Beta 4 SY
300.00	Build 2 Harrier CT at Beta 4 SY
684.00	Build 2 1 Assault CLf at Beta 4 SY
300.00	Build 150 Q+150H at Alpha 1

CC.03.4 CFN

375.00	ship 150 Q and 150 H to Delta system (2 jumps)

CC.03.5 UNIT MOVEMENTS

Order 1 – On StMP 3 move 3rd fleet (currently in system Delta at the entry WP) to the ST world. Our troops will be waiting on our side of the WP until they get word to proceed. Have the 6 Scouts 1 SH from the fleet on all sides to avoid ambush. The fleet will attack the ST world concentrating on taking out mobile defenders first then any PDC then bases and armed SS. After all resistance has been crushed a CD will be sent back to the troop ships telling them to land their troops on the ST world.

Order 2 – Move the 2nd fleet from alpha system (StMP 1), to the echo system (StMP 2), to the zeta system (StMP 3). From there proceed to the T world and wait (StMP 4).

CC.03.6 OTHER

In addition to the above information, each player should have all of the records listed in [K5]. If any of the information on these forms change, the player should send a copy of the form with the information changes highlighted, so the SM has the same information that the player does.

CC.04 STANDARD OPERATING PROCEDURE EXAMPLES

The following are examples of "standing operating procedures" as described in [K6.01]. These are the most common situations and some recommended SOPs for those situations that your empire will NEED.

CC.04.1 WARP TRANSIT SOP

Many people like to have a standard SOP that all their military ships will only transit undefended warp points at general quarters [F1.02] readiness. Some will have military ships transit ALL warp points at GQ. Some only have their survey ships transit at GQ. But this is an important one to note, as your empire's ships should transit at GQ just in case they run into bad guys on the other side.

CC.04.2 EXPLORATION SOP

The first policy choice that a player must make is whether each newly found warp point is to be probed to see if other races exist beyond it. This is an important question because the probing of a warp point can generate new wars and enemies.

CC.04.2.1 Newly Found Warp Points On the month after new warp points are found: (player should choose one option)

1. Report newly found warp points to the nearest control center. Take no other action.
2. Probe newly found warp points but only one warp point per month.
3. Probe all newly found warp points as soon as possible.
   a. Probe a maximum of 1 warp point per StMP. Stop probes from this system if a HEL race is found.
   b. Probe a maximum of 1 warp point per StMP.
   c. Probe as many warp points as possible while still following the standard probe procedure.

The goal of probing a new warp point is to locate any possible dangers that may exist, to find new short cuts through your empire, expand your borders, and to locate new races to befriend or to conquer. In probing a new warp point, the number one priority is that word of the probe and its result, no matter how bad, reach the nearest control center.

CC.04.2.2 Probes - Phase I (getting a report back) All probes shall use a minimum of three ships for each phase. These ships are designated A, B and C. A and B should be the smallest warp capable ships in survey or supporting fleet and A will have a Y aboard if possible.

Ship C is to wait one sH from the warp point while ships A and B make the initial transit. Ships A and B are to transit the warp point on different consecutive pulses.

After transit:

Ship A shall turn to face the warp point and shall await orders from ship C.

Ship B shall turn around and re-transit the warp point back to ship C's location. Ship B shall also fire a CD back to ship C as soon as possible. This increases the odds that the ship C receives the information that there is not a blackhole on this side of the warp point.

Note: By the time ship B reenters the warp point, it should have basic information from ship A's Y about any nearby enemy ships.

If a ship B's CD is received but ship B doesn't report back on the same pulse, ship C is to turn and run for the nearest high speed communications point in an effort to warn the empire of an invading hostile empire. Ship C is to use all available methods of communication.

Once ship B reports to ship C, ship C shall initiate communications with the control center. Use the following method if available (in order of preference).

1. By ICN
2. By long range ship-ship communications
3. By Courier Drone
4. By sending a runner ship if available

After this is accomplished, ship B is to re-transit the warp point. Note: At this point, a warship could be substituted for ship B.

CC.04.2.3 Probes - Phase II (is the enemy near) Checking space near the warp point:

If ship A has Y, ship A scans the surrounding area and transits to the original system to reports its findings to ship C.

If ship A has no Y, then ship A is to move toward the primary star in the system until it reaches a distance of 30 tH from the warp point. Then the ship is to move clockwise around the warp point at a distance of 30 hexes until it has completed a 360-degree circle of the warp point. (This makes sure there are no enemy ships hiding just outside sensor range of the warp point). Time to complete at speed 4 - 22.5 minutes.

Once ship A has completed this check, it proceeds back to the warp point and transits to report to ship C.

Again, a small (max size DD) maximum speed Y equipped ship can be substituted for ship A, however, such a ship is better used as ship D in phase III.

CC.04.2.4 Probes - Phase III (the check for life) If the warp point is within sensor range of any system bodies, those bodies must be checked for populations before the main body of the survey fleet, or escorting warships, can be brought into the system without being detected. Thus, ship A is to proceed to and check those planets for life. Ship B shall remain between ship A and the warp point at a distance of 1-2 tH short of maximum ship-to-ship communications from Ship A. This may allow ship B to remain at the warp point which is ok. If ship A's movement causes ship B to have to leave the vicinity of the warp point to remain within communications distance, a possibility of the enemy sneaking in behind ship's B and destroying ship B or C before a warning can be given may occur. However, if the fourth ship is available on the far side of the warp point, then that ship (designated ship D and preferably having Y) shall transit and remain at the warp point while ship A and B continue checking for life.

> ***Note:*** That ship B, the trailing communications link, still has its Courier Drone, if it started with one and it should use this CD if A or B detect any other Spaceships.

Once the area of the warp point can be reasonably considered safe from enemy detection, the main body of survey fleet or any escorting warships can transit and move around the system, including starting survey operations as long as the following rules are followed:

Do not get within 6 sH of any planet, moon, or asteroid.

At least one ship, preferably a very large warship, remains near the warp point.

It is also not a bad idea to have a couple of Y ships do a sweep of near ships at 60 and 120 tH.

Ship A shall move toward any T or ST planet, with ship B following at a distance just below maximum communication range. A string of ships from B to the warp point would allow lightspeed communications between the warp point and ship A and this procedure is recommended. Ship A should check each T and ST planet, plus any O2 moons for populations. (Note: At this point ship A becomes the contact ship and should be prepared for long sustained negotiations if another race is found. It may be preferable that this ship has more than a single courier drone. It should still have Y however, it should not be expensive to maintain).

CC.04.3 COMMUNICATIONS SOP

Communication messages have four priority levels: Routine, Military, Priority, and Emergency. Players may alter the types of messages in any category if they desire.

CC.04.3.1 Emergency Messages:

- Invasion Warnings
- Hostile Contact
- Contact with unknown spaceship or race
- Space battle defeat
- Revolt or general uprising on a conquered planet

Emergency messages have the highest priority of any message and their delay will likely impact any strategic decisions. Send Emergency messages immediately via the fastest two methods of communication available.

Emergency communication methods in preferred order of use and any restrictions on their use:

1. Light speed communications: Via AP-c, (CC), Ship-to-ship, or ship-planet communications.
2. High-speed CD: Set the CD for the highest speed possible that allows the CD to reach its destination. When passing a message via CD, fire numerous CDs to insure delivery. It is recommended that half of the remaining CDs in a fleet be fired with this type of message with the exception of revolt and general uprising messages that should not exceed 6 CDs launched. Do not rely solely on the use of CDs for the passing emergency messages, send a courier ship in addition.
3. Courier Ship: The ship is to use all possible speed even if at the risk of burnt-out engines, no matter how great, to reach its destination. Send at least two courier ships in order to reduce the chance of burnout from delaying the message. Recruit any other ship to replace a ship slowed by burnout.
4. CFN: Use the CFN to pass the message around in order to get it to the homeworld. However, this runs the risk of allied nations finding out about the message (this will be covered under Intelligence Rules at a future date).

CC.04.3.2 Priority Messages

- Treaty Level reductions
- Newly signed Treaties
- Space combat won or any ground combat outcome
- Major allied fleet sited
- Any CFN Raiding

Priority messages are of significant importance to the empire that their delay may impact strategic decisions. Sent Priority messages immediately via the fastest communication method available.

Priority communication methods in preferred order of use and any restrictions on their use:

1. Light speed communications: Via AP-c, (CC), Ship-to-ship, or ship-planet communications.
2. High-speed CD: Set the CD to the highest speed possible that allows the CD to reach its destination. A ship or datagroup may not fire its last CD in order to pass along a priority message. In addition, no more than 6 CDs should be launched at a time to pass along a priority message. Recruit any other ship to replace a ship slowed by burnout.
3. Courier Ship: The ship is move at a speed 1 greater than normal cruise speed even at the risk of burnt-out engines, no matter how great, to reach its designation. Recruit any other ship to replace a ship slowed by burnout.
4. CFN: Use the CFN to pass the message around in order to get it to the homeworld. However, this runs the risk of allied nations finding out about the message (this will be covered under Intelligence Rules at a future date).

CC.04.3.3 Military Messages

- Ship movement order completion
- Standard fleet arrival/location information
- Shipyard orders (including construction, repair, refit, mothball, etc.)
- Political Offers
- Survey progress and results

Military messages are the routine day to day messages of the military. They include the above plus maintenance and personnel needed, etc. Any message that deals with ship location, political alliances, or any information about surveys is considered and cannot be classified as a higher priority message is considered a routine military message. Note that the CFN is not normally relied upon to carry these types of messages.

Military communication methods in preferred order of use and any restrictions on their use:

1. Light speed communications: Via AP-c, (CC), Ship-to-ship, or ship-planet communications.
2. High-speed CD: Set the CD to the highest speed possible that allows the CD to reach its destination.
3. Courier Ship: The ship is not to exceed safe cruising speed to reach its designation.
4. CFN: Only the Home World can order military messages to be passed via the CFN due to the need for security.

CC.04.3.4 Routine Messages

Anything not defined above. Send these messages via the CFN. Remember that these are still security-coded messages that are transported in-groups via special courier and implanted encrypted messages and thus are hard to obtain.

Control Center = The homeworld or an ICC capable of making major decisions.

CC.04.4 Diplomatic SOP

All ship captains train as initial contact specialists and negotiators. Upon contacting a new race:

- Make no aggressive movement.
- Communicate with the control center about all stages of contact and negotiations.
- Attempt to establish communications.

CC.04.4.1 Once communications are established: (player should choose one option)

1. Offer a non-aggression treaty followed by L trade, LT&D, FT&O, then partnership treaties (*Default*).
2. Offer a non-aggression treaty followed by D military, LT&D, FT&O, then partnership treaties.
3. Offer a L trade treaty followed by LT&D, FT&O, then partnership treaties.
4. Offer a D military treaty followed by LT&D, FT&O, then partnership treaties.
5. Offer a RT&D treaty followed by FT&O, then a partnership treaty.
6. Offer a partnership treaty.

CC.04.4.2 When making subsequent offers: (player should choose one option)

a. Make offers as soon as possible unless the government type is known to have an annoyance factor. (*Default*)
b. Make the offers as soon as possible.
c. Always wait one month between offers (to avoid the annoyance factor penalties)

CC.05 Racial Design General Analysis (From EC 49)

Regardless of your choices, the more you use something the more value it will have. If you like big fleets, get low maintenance. If you get reduced colonization costs, colonize like crazy.

Combining bonuses can make for a really powerful race design. Low maintenance (big fleet) and high crew grade can make for a strong fleet even if R&D abilities must be sacrificed.

The best thing to do is to design your race to fit your style of play or at least the style of play you intend to use in the game.

Income

This modifies all income from PU and IU (after the asteroid bonus). It does not increase revenue from trade, leasing, or any other source.

Analysis: Income is the do all modifier. It is the one thing that is utterly flexible to anyone's strategy regardless of what the other races do or what your current situation is. However, because it is the do all modifiers, its cost per MC gained are higher than any other area.

Maintenance

This modifies a race's final maintenance cost each turn. In addition, because section M8 is based on the maintenance cost, mothballing and demothballing costs are reduced. Lowered maintenance means a race can support more ships for the same cost or have more MC for other parts of the economy. Either way, it is helpful as a typical race has around 40% of its income tied up in maintenance every turn.

Analysis: This is valuable but not terribly so during peacetime. In order to best use this modifier, you have to be expending MC into ship building and maintenance which means that you'll have less money available for increasing your empires income. However, during a war, the large fleet that you can maintain means that each battle will go a little bit more your way since you'd have a few more ships than the other guy. Believe it or not, having more firepower during a battle is a compounding factor just as "spending more money on income growth means you have more money to spend on income growth" is a compounding factor.

One affect of this modifier is to allow ships to maintain a higher grade level since you'll be a bit less likely to mothball units.

EL R&D

This modifies the total cost of EL R&D during a month. It does not affect SL R&D nor breakthrough attempts.

Analysis: You'll do EL R&D every turn for the rest of the game. However, you cannot change the amount put into EL R&D, which limits the effectiveness of this modifier. Still, more income is always good.

SL R&D

This modifies the total cost of SL and development projects plus breakthrough attempts.

Analysis: With a 50% reduction in cost, maintaining your SL TWO levels about your EL becomes reasonable thus giving you a 1 SL advantage on most other races. Also crash and other types of accelerated R&D take a much smaller bite out of your budget. In essence, this gives the race a very nice flexible technology department.

CONSTRUCTION

This modifies all construction costs for ground facilities [M7] and all M4 projects and tasks EXCEPT for reactivating a mothballed unit, which is covered under maintenance. This modifier does not affect the list price of a unit and thus does not impact maintenance cost or scraping.

Analysis: You may think I'm out of my mind allowing a 50% reduction to the cost of a unit but this ability has a self-limiting factor called maintenance. During a war is when this ability really becomes helpful as you can fill a lot of shipyards with cheap to build ships. In a long drawn out war, you'll be able to trade ships at 2 for 1 with the enemy and still maintain your fleet size.

COLONIZATION

This modifier affects all colonization costs including the CFN transportation fee.

Analysis: With reduced costs and thus increased ROR from your investments, more locations can be considered for colonization at reasonable rates. This is a powerful ability that should be used heavily in the early and perhaps later stages of a game.

GROWTH RATE

This modifier affects the growth rate of all populations.

Analysis: Your planets will get to maximum size much sooner with this modifier and you'll get more graded governors earlier not to mention income that increases quicker too. But this is self-limiting by the maximum size of the planet and a 1% increase in growth represents only a maximum of a 1% increase in income, which is far below the 5% income modifier possible. To consider, a growth rate reduction also reduces the ROR for colonization.

I think that the negative options are far more punishing than the positive options.

INITIATIVE

This modifies all fleet initiative rolls.

Analysis: Having initiative can be critical in battle. I've seen in make a difference in dozens of battles.

CREW GRADE

This modifies the base crew grade of your entire race EXCEPT for graded leaders. Thus, BG+1 fleet will gain a +1 initiative during combat if no leader is present but will NOT gain that +1 modifier when a graded admiral is present.

Analysis: Base crew grade is vastly important. It affects everything a ship does. Even a +1 to base grade means that your once crack crews become elite crews and gain that all important +1 to hit modifier. Having a BG of BG+2 makes even your SS, bases and average crews have a +1 to hit!

TRAINING ADJUST

This modifies the Crew Grade advancement number that results from the F3.04 table. Both standard training and combat intensity advancement rolls are affected. If a number is reduced below 1 (or above 9), use D2.03 to see if the ship advances (or not).

Numbers in () are reduced by 1 point per -1 (with zero being no chance to advance) but are increased by 10 pt per +1 [i.e. (04) becomes (14) or a 14% chance of advancement].

> ***Note:*** Positive training adjustments also apply to graded leader creation and promotion!

Analysis: This is much less powerful than a straight crew grade increase for all units. However, the new bracketed {} numbers help somewhat and it is the only thing that can generate a lot more leaders and better-graded leaders.

GROUND COMBAT

This is a modifier to the Invasion table [V3.03.3.2], Consolidation table [V3.04.1.2], and PDC Reduction table [V3.06.0.2]. In addition for the purposes of V3.05.2, subtract the modifier from the enemy RD. I.e. a +20 modifier from the table reduces the enemy RD by 20.

Analysis: Invasions go smoother, quicker, and you have a better chance of capturing faculties. Of course, you have to be invading someone in order to use this modifier.

ADVANCED TECH

This modifier applies to SL within a single tree and a single branch of that tree. Both of which must be specified at the beginning of the game. Example: If a -2 SL applied to the Fp branch, then the Fp branch would start at SL 4 and all SL and items available in the Fp branch would be reduced by 2 SL while the F tree itself would be unaffected. Or the F tree could be improved but not the Fp or Fc branches.

Note: When reducing a tree/branch with other branches attached, those branches must remain at the same nominal level. Thus, a -2 to the F tree would reduce Fb to SL 1 but would leave the Fc branch at SL 5.

Analysis: This modifier can make a player look a lot more powerful in a particular area. In general, consider using this in the main body of a tree but look for other areas to use it also. For example, getting Rca at SL 2 could be rather interesting from a game standpoint. Another possibility is starting the game with the Fb or Eb already developed and deployed (-2 or -3 SL respectively). Remember, weapon power is based on the original SL level. Getting them earlier can make a sizable difference.

RP NEEDED

This modifies the amount of RP needed to complete any SL or development project. It does not affect EL R&D.

Analysis: This modifier reduces both the amount of time and money needed to complete a project. This is very handy for staying ahead of the Jones of the galaxy.

RP PER MONTH

This modifies the maximum amount of RP that can be applied to any project, including EL projects each month.

Analysis: This ability is very important in that it is the only way to increase your EL rate in the empire.

BUILD RATE

This modifies the build rate of all construction facilities of any type.

Analysis: Like construction costs, build rate is not terrifically important because of the self-limiting factor of maintenance and the removal of income from the economic growth of the empire in order to use the ability. Still, you'll need less SY throughout your empire with this ability and it doesn't cost a lot.

INITIAL CONTACT

This modifies die rolls on the initial contact table.

Analysis: Don't under estimate how important a -3 is on that table. I estimate that you'll get 10% more wars with as small a modifier as -3. Conversely, not fighting is a very good thing and this helps out. If you want to be peaceful, this is the way to go.

POLITICAL OFFER

This modifies all die rolls on the political acceptance table.

Analysis: Having allies is important to your overall strength in GSF. This will help you every time you attempt to cement a new relationship or improve an old relationship.

SURVEY POINTS

This modifies the number of survey points required to complete any type of survey.

Analysis: With this ability, you complete every survey faster and thus cheaper. You'll likely need fewer ships to explore with and you'll have more potential colonization sites, allies, and enemies to deal with. If you get this, consider getting Initial Contact and Political Offer abilities too.

CC.06 ULTRA FLEET DESIGNER'S GUIDE

by Marvin Lamb

I suspect nothing could be more frustrating that getting a new edition and the mis-designing your new super ship only to find out about the problem on the battle field.

FLEET DESIGN

ULTRA is geared more towards fleet design instead of individual design. A fleet of "well-designed ships" can be defeated by a "well-designed fleet" of ships. ULTRA was designed with a paper-rock-scissors mentality, although it is nowhere near that simple. Thus, no particular design type will dominate against all types of units. Of course ULTRA's a paper-rock-scissors game involves dozens of versions of the paper (and other things) and is far more complex.

The composition of your fleet will change constantly throughout the game, as will your ship designs. While almost any type of ship design can work in ULTRA, there are a few particular ones that you should watch for and integrate into your fleet: The large LRW platform, the small SRW platform, and the medium mixed platform.

While there are exceptions, in general, the large platform has the size to carry enough weapons to saturate point defense systems. Point defense systems only stop 30%-50% of missiles early in the game, so you might not think this is too important. And you'd be wrong. [Assuming 100% hits for a moment] One Da will stop 50% of all single missile shots, so shooting from large numbers of craft armed with a single launcher will take a while to destroy the protected unit. A larger unit with three launchers will only lose 30% of its shots thus causing 3 * 0.7 = 2.1 damage vs. 1.5 damage expected from 3 single shots. This is a 40% increase in damage done just by designing to contend with point defense. Further increases in the volley size, such that the point defense cannot engage all LRW, increases this damage percentage even more. Note that without point defense, the unit suffers an additional 42% damage from large ships. Further, the vessel is extremely vulnerable to the fast CT with one launcher.

So now that the large LRW seems to dominate open space, how do we deal with them? The answer comes in the form of the dangerous small SRW craft (commonly termed a swarm unit). Typically, the swarm unit is +2 MP on the larger craft. Adding the +2 DeTuning bonus gives a closing speed of +4 per turn. However, that is not even close to the real situation. Because the swarm will move no less than 4 times after the large unit stops moving, it is nearly impossible to keep the swarm out of the blindspot when it is closing *if* it starts close along an in-blindspot/out-of-blindspot hex spine. There are only two solutions to this problem, turn so that the blindspot is fully safe but let the swarm close even faster *or* turn half of the fleet the other way so that at least half the fleet gets to fire. Either way, there are going to be a lot of swarm units surviving to point blank range. After all is said and done, not much will be left of either fleet.

Test the theories. Take 6 Bullies and 23 Swarmers. Run away with the CLs and work to damage the Swarmers so they cannot keep

pace. When the swarm gets close, divide your ships and cover each other from about 10 hexes away. Who survives?

Bully-class CL 45 Hull TL4
[3] SSSSAAAAAHQbQbMg(Ib)(IbIb)(Ib)M1QbRbx7 (IbIb)Rb [4/2]
45 RCP Trg:2 PV=45 Cost= 884/132.6
29 HTK Sx4 Ax5 Rbx8 Mgx1

Swarmer-class CT 16 Hull TL4
[2] SAAHQb(Ib)(Ib)Fb(Ib)Fb [6/3]
16 RCP Trg:1 PV=12 Cost= 230/34.5
10 HTK Sx1 Ax2 Fbx2

Note: Values are not correct and are for GSF.

DEALING WITH THE SWARM

The swarm is quite dangerous (even more so once it gets point defense but it really doesn't need point defense). What you likely found in the test battle was that the large ships did ok for a while but then the swarm got into a blindspot and stayed there. Likely, a few swarmers survived (some damaged). The battle can be won if a slight change to the order of battle is added, the medium ship (slightly faster).

Try again but this time trade 1 Bully for 2 Protector class DDs. Use the same tactics but keep the DDs close to the Bullys until the Swarmers get within weapons range of the Bullys. Then, use the protectors to take out targets of opportunity with high damage force beams.

Protector-class DD 30 Hull TL4
[3] SSSAAHQb(Ib)(Ib)(Ib)(Ib)QbM1FbFbFb(Ib)Fb [5/2]
30 RCP Trg:2 PV=24 Cost= 467/70.1
18 HTK Sx3 Ax2 Fbx4

Note: Values are not correct and are for GSF.

This time, something of the fleet should survive. Note that substituting 2 Rb for 2 Fb & 2 A should make the DDs even stronger when dealing with swarms.

DEALING WITH THE MIXED SHIP

Unlike 3rd edition designs, where pure units (all one weapon type) tended to dominate, ULTRA's significant reductions to point defense should make the mixed unit an important piece of the anti-swarm defense. Utilizing its long-range weapons and higher speed, the mixed ship will be able to engage swarm units earlier and longer before the range between the large units and the swarm closes. Once close range is achieved, the mixed ships can move to engage with both LRW and SRW. Their larger size will make them effective against the swarm. The mixed unit's weakness is in directly attacking the large LRW unit. They don't have the speed to effectively engage them before too many of their ships are closed. And their LRW shots will be less effective vs. the large units heavier point defense suites.

THE FINAL PIECES OF FLEET DESIGN

The designs above are focused on winning a deep space battle. Winning a WP battle is a bit of a different story and one design type in particular may function well, that of the large SRW unit. However, this unit is only effective during a few situations:

1. WP assault in which the defender is closely defending the WP,
2. during a massive battle where it plays a minor role in the battle (gunning down swarm units),
3. defending against swarming fighters and gunboats.

Each of these situations can be mitigated by factors controlled by the other races, and thus, they may not be entirely effective.

FLEET DESIGN CONCLUSIONS

Each element of fleet design is vulnerable to a different element. Thus, the safest fleet is one that contains all elements *or* a whole lot more money.

DEALING WITH THE MIXED FLEET

Dealing with the mixed fleet, requires a mixed fleet. During GenCon and Origins of 2000, mixed fleets were the norm. Each fleet was unique in its weapons mix and both fleets required some precision maneuvering to win. But one common theme persisted throughout most battles…the side that destroyed the other sides swarm units first, won the battle. Both fleets lacked a medium mixed ship but likely that might have altered the outcome.

I felt while watching numerous battles that the SharpShooter fleet had a significant advantage but that was only displayed on the battle fleet a single time as that fleet beautifully ran across the map leaving trailing enemy ships behind. However, the K fleet actually won more combats (by 1) during the course of the two conventions.

CC.07 ULTRA SHIP DESIGNER'S GUIDE

One of the major keys to winning battles is ship design. A poor design, like many 3rd edition KON designs, can reduce the effectiveness of the ship by almost 50%. So just how should ships be designed? What are important factors to consider? Does the order the systems are placed in matter? I will try to deal with these issues and more.

This article will specifically deal with the design of a HEL 4 CA using the new GSF hull table. For the purposes of this article, cost will not be a major factor since most races are limited by production capacity on any particular turn and not by the amount of cash available. The most important thing to remember is that the most expensive technologies available are usually also the most cost-effective (except possibly on the very smallest ships).

SPEED IS VALUABLE

There is little more valuable than maximum speed on a STARFIRE ship. Even if you don't think you need the maximum speed in combat, it is important to have a high strategic movement value. Speed lets you move last, and thus pick (to a minor degree) the range bracket. Faster ships can maneuver into the blindspot of slower ships.

Even so, GSF contains important changes that alter entire concepts of the game. First, is a higher speed worth the turn mode penalty plus the cost and size penalties. In many cases, yes but there are other cases where the choice may not be as clear as it once was.

Second, Engines are no longer cheap armor. They are very expensive armor and should be treated with care.

WEAPONS VS PASSIVE DEFENSES (SHIELDS AND ARMOR) HOW MUCH?

The amount of hull spaces that shields and armor take up should never exceed 20% of the hull spaces on a ship unless your planning to have that ship lead a warp point assault and "soak up fire". A weapon is far more valuable space for space than passive defenses. Below we examine why that is the case.

Example ship:

Bayonet-class CA 10 XOb 60 Hull TL5
[3] SSSSSAAAAA+ZaHQaQa(IaIa)(IaIa)(IaIa)+QaQa(4)(4)(4)M1DaDa(4)(4)+(4)DaDa(IaIa)(4) [4/2]{Base}
[3] SSSSSAAAAA+ZaHQaQaQaDa(IaIa)(4)(4)+QaDa(IaIa)(4)(4)Da(IaIa)M1+(4)(4)Da(IaIa)(4) [4/2]{Mix}
[3] SSSSSAAAAA+ZaHQaQaQaDaM1QaDa(4)+(4)(IaIa)(4)(4)(IaIa)Da(4)(4)+(IaIa)(4)Da(IaIa) [4/2]{Flee}
60 RCP Trg:2 PV=36 Cost= 701/105.2
36 HTK Sx5 Ax5 Dax4 (4)x7

**The + in the designs are placed after every 10 hits.

Note: Total Passive Defense is 10/60 = 16%

Let's assume that we have Fb beams installed in the (4) modules. If we are firing at a range of four, the 6 Fb would, on average, do 11.2 pts of damage (0.8*7*2). Firing against a ship of equal design, {Base} model, let's look at how the damage would be applied if the two identical ships were firing simultaneously.

{Base Design} attacks {Base Design}

Base Design					
Turn	Wpn Left	Dmg Done	Total Dmg	Dmg Left	Comments
0	7	0.8	0.0	36.0	x
1	7	11.2	11.2	24.8	3 weapons destroyed
2	7	11.2	22.4	13.6	1 weapon destroyed
3	4	6.4	28.8	7.2	2 weapons destroyed
4	3	4.8	33.6	2.4	x
5	1	1.6	35.2	0.8	Ship destroyed

An interesting table but let's look at that design vs. the following design in which 1 weapon was removed for 2 shields and 2 armor. This will increase the Hit To Kill (HTK) to 39 instead of 36.

SSSSSSSAAA+AAAAZaHQaQa(IaIa)+(IaIa)(IaIa)QaQa(4)(4)M1Da+Da(4)(4)(4)DaDa(IaIa)(4) {Heavy Passive}
39 HTK Sx7 Ax7 Dax4 (4)x6

Note: Total Passive Defense is 14/60 = 23.3%

Note: In the following tables, the numbers below each design name are for the opponent design, not that design. Thus, dead means that the ship listed at the top of those columns is the winner.

{Base Design} attacks {Heavy Passive Design}

Base Design						Heavy Passive Design				
Turn	Wpn Left	Dmg Done	Total Dmg	Dmg Left		Turn	Wpn Left	Dmg Done	Total Dmg	Dmg Left
0	7	0.8	0.0	39.0		0	6	0.8	0.0	36.0
1	7	11.2	11.2	27.8		1	6	9.6	9.6	26.4
2	7	11.2	22.4	16.6		2	6	9.6	19.2	16.8
3	7	11.2	33.6	5.4		3	6	9.6	28.8	7.2
4	3	4.8	38.4	0.6		4	2	3.2	32.0	4.0
5	1	1.6	40.0	Dead		5	1	1.6	33.6	2.4

The advantage is slight but does favor the heavier armed design, in this case the base design.

Let try a heavy weapon design vs. our {Base} design.

[3] SSSAAAZaHQaQa+(IaIa)(IaIa)(IaIa)QaQa(4)(4)+(4)(4)M1DaDa(4)(4)(4)DaDa+(IaIa)(4) {Weap}
33 HTK Sx3 Ax3 Dax4 (4)x8

Note: Total Passive Defense is 6/60 = 10%

{Base Design} attacks {Heavy Passive Design}

Base Design						Heavy Weapon Design				
Turn	Wpn Left	Dmg Done	Total Dmg	Dmg Left		Turn	Wpn Left	Dmg Done	Total Dmg	Dmg Left
0	7	0.8	0.0	33.0		0	8	0.8	0.0	36.0
1	7	11.2	11.2	21.8		1	8	12.8	12.8	26.4
2	7	11.2	22.4	10.6		2	8	12.8	25.6	16.8
3	4	6.4	28.8	4.2		3	4	6.4	32.0	7.2
4	1	1.6	30.4	2.6		4	1	1.6	33.6	4.0
5	1	1.6	32.0	1.0		5	1	1.6	35.2	2.4
6	1	1.6	33.6	Dead		6	1	1.6	36.8	Dead

The weapons seem much more balanced against defenses in GSF than they were in the last edition.

Let say that the range was 8 instead of 4. Does that make a difference?

After review, the answer is No, the range does not seem to make a great deal of difference. So let's go back to range 4.

So what have we learned from all this? Weapons are slightly superior to shields and armor up to about 16% or so of the designs total spaces. What this analysis fails to account for is the ability of the *enemy* to maneuver slightly faster/better due to the use of "Engines as Armor" which is what you do when you mount so few passive defenses on a ship. Restated, the lower the shields and armor, the quicker you take engine damage, which effects the combat ability of the ship. Also, the heavy weapons design costs more due to the higher cost per space of weapons.

It seems that the optimal amount of passive defense is somewhere around 13-16% of the ship's spaces as shields and armor.

But you may ask, "What about better armor and shields?"

Let take our same designs but replace the shields and armor with the next generation.

{Heavy Passive}
S1x11A1x10ZaHQaQa(IaIa)(IaIa)(IaIa)QaQa(4)(4)
M1DaDa(4)x3DaDa(IaIa)(4) [4/2]
46 HTK S1x11 A1x10 Dax4 (4)x6 [Old HTK 39]

Note: Total Passive Defense is (21 * 0.67)/60 = 23.3%

{Base}
[3] S1x7A1x8ZaHQaQa(IaIa)(IaIa)(IaIa)QaQa(4)x3M1
DaDa(4)x3DaDa(IaIa)(4) [4/2]
41 HTK S1x7 A1x8 Dax4 (4)x7 [Old HTK 36]

Note: Total Passive Defense is (15 * 0.67)/60 = 16%

{Heavy Weapon}
S1x4A1x5ZaHQaQa(IaIa)(IaIa)(IaIa)QaQa(4)x4
M1DaDa(4)x3DaDa(IaIa)(4) [4/2]
36 HTK S1x4 A1x5 Dax4 (4)x8 [Old HTK 33]

Note: Total Passive Defense is (9 * 0.67)/60 = 10%

In each case, the spaces used for shields and armor have been replaced with S1 and A1. Notice the big increase in HTK for the earlier ships.

To avoid a bunch of tables, I'll just provide the comparison between the two best designs.

{Heavy Passive Design} vs. {Base Design}
HEAVY PASSIVE DESIGN WINS but just barely. Note that the heavy passive design is now equal to the base design rather than the heavy weapon design. This leads me to a conclusion.

As the generation of shields improves, the amount of them as a percentage of the ships total HS should increase.

{Base Design} attacks {Heavy Passive Design}

Heavy Passive Design					Base Design				
Turn	Wpn Left	Dmg Done	Total Dmg	Dmg Left	Turn	Wpn Left	Dmg Done	Total Dmg	Dmg Left
0	7	0.8	0.0	46.0	0	6	0.8	0.0	41.0
1	7	11.2	11.2	34.8	1	6	9.6	9.6	31.4
2	7	11.2	22.4	23.6	2	6	9.6	19.2	21.8
3	7	11.2	33.6	12.4	3	6	9.6	28.8	12.2
4	5	8.0	41.6	4.4	4	5	8.0	36.8	4.2
5	1	1.6	43.2	2.8	5	1	1.6	38.4	2.6
6	1	1.6	44.8	1.2	6	1	1.6	40.0	1.0
7	1	1.6	46.4	Dead	7	1	1.6	41.6	Dead

So let's try a super passive design such as.

{Super Passive}
[3] S1x14A1x13ZaHQaQa(IaIa)(IaIa)(IaIa)
QaQa(4)M1DaDa(4)x3DaDa(IaIa)(4) [4/2]
51 HTK S1x14 A1x13 Dax4 (4)x5

Note: Total Passive Defense is (27 * 0.67)/60 = 30%

{Heavy Passive Design} attacks {Super Passive Design}

Heavy Shield Design					Super Passive Design				
Turn	Wpn Left	Dmg Done	Total Dmg	Dmg Left	Turn	Wpn Left	Dmg Done	Total Dmg	Dmg Left
0	7	0.8	0.0	51.0	0	5	0.8	0.0	41.0
1	7	11.2	11.2	39.8	1	5	8.0	8.0	33.0
2	7	11.2	22.4	28.6	2	5	8.0	16.0	25.0
3	7	11.2	33.6	17.4	3	5	8.0	24.0	17.0
4	7	11.2	44.8	6.2	4	5	8.0	32.0	9.0
5	4	6.4	51.2	Dead	5	2	3.2	35.2	5.8

Even if the Super Passive design had won (it will at the higher SLs), the problem with a Super Passive type design is that they are not all that effective against ships with weapons which skip Shields, Armor, or both. If you know the types of weapons your friend likes to use, go the high route and take a extra weapon's worth of the spaces in Shields and Armor slanted toward stopping those weapons. If you don't know or are unsure, perhaps sticking with 16-20% of the ship in basic Shields and basic Armor is a better idea.

WEAPONS VS ACTIVE DEFENSES -- HOW MANY D SYSTEMS ARE ENOUGH?

Adjusting the level of D system defenses on a ship is certainly not an exact science and depends on too many factors to address easily. Those factors include; Your economic level, expected enemy economic level, the enemies standard type of design, the percentage of LRW ships they normally include in a fleet, the type of battle expected (Warp point defense/attack vs. open space), and so on.

For D systems, I like to take enough D systems so that a volley from a datalinked group of the same size ship at the best range for that weapon is not going to overwhelm my point defense by more than a missile or two. In checking the volley size from a competing datagroup, I always assume that the enemy will try to go very heavy on the missile launchers and light on the magazines. Below is the Weapon Heavy CA from above and the 2nd design was altered to handle the 3 space missile weapons.

{weapon}
[3] SSSAAAZaHQaQa(IaIa)(IaIa)(IaIa)QaQa(4)x4M1
DaDa(4)x3DaDa(IaIa)(4) [4/2]
33 HTK Sx3 Ax3 Dax4 (4)x8

Note: Total Passive Defense is 6/60 = 10%

(Missile Heavy}
[3] SSSSAAAAZaHQaQa(IaIa)(IaIa)(IaIa)QaQa(3)x6M1
DaDa(3)x3DaDa(IaIa)(3) [4/2]
37 HTK Sx4 Ax4 Dax4 (3)x10

Note: Total Passive Defense is 8/60 = 10%

This makes the volley size for Rb 20 shots needing 6 to hit which is 20 * 0.6 = 12 hits per turn. Therefore, I need 12 point defense shots to be able to engage all those missiles. This means I need 12/3 shots = 4 D systems. Note that these levels are not meant to handle a volley enhanced by XO launched missiles.

The best method is a formula:

TH * HS/2/LS * Z where

TH is the best to hit number of the weapon

HS is your HS

LS is the expected enemy weapon launcher size

Z is the expected enemy datalink ability (in number of ships)

D systems allow extra shots to reduce damage. While these extra shots are helpful, they in no way make up for the loss of weapon space needed to install them. In general, you want to stick with the minimum number of D systems that you can get away with that will handle the expected volley size.

WHAT SHOULD BE THE LAST SYSTEM

There are many different philosophies about this particular designer's choice. There are advantages and disadvantages to each. I have my own preferences. One very critical point to remember is that any ship surviving a combat can use E2 Emergency Repairs to jury rig the ship. With a 30% chance to get each system working you will have a chance to get each system working. For CL and smaller, you almost always will receive a fully working engine room to use. Above that size ship, you run a much lower chance of getting ALL the engines in a single engine room to operate. All engines must be operable in an engine room for it to remain operational above the tactical level [see C1.03 Operation of Damage Engines].

Engine Last Many people like to leave an engine at the back of the ship so that the ship can make it home on its own power. Of course, it will be months before it actually arrives at a system with shipyards (forget about repairs at ground facilities, they are too expensive to reasonably consider when your trying to save money). Sometimes it is worthwhile to repair the engines and maybe one Q at a nearby world if you can get the ship back to a shipyard QUICKER for real repairs. Remember, all the time this expensive ship is trying to get home, your paying the full maintenance cost on it. If it takes longer than about 5 turns (75% of original cost), and you have a bit of spare shipyard space, shoot the thing right after the battle and be done with it. The rub there is losing a really high crew grade, but remember the crew will likely have already lost one crew grade when the ship was crippled.

The second problem is that the ship isn't likely to have life support systems to actually travel more than a short distance anyway. The advantage is that a crippled warship can try to pull away from the fighting thus becoming less of a threat (and thus a target). This may make the difference between the ship being destroyed and survival

Life Support Last Here the idea is that the ship (and crew) can survive on its own until someone gets around to picking it up for repairs. I do not advocate that method as it makes the ship immobile and weaponless rendering it very vulnerable to boarding and capture. And of course there is that maintenance issue in repairing it.

Point Defense Last Again the idea is survivability even when at a distance from the enemy. Also the enemy may have to use multiple missiles to finally destroy the ships. However, once again the ship becomes an easy mark for boarding operations at the end of the battle.

Magazine Last This is a terrible idea under ULTRA. Don't do it!!!

In each of the four cases above, your ship is more likely to survive the battle (and be cheaply repaired) IF you win the battle and IF the enemy doesn't make sure that his last few shots finish off those wounded ships, and if a shipyard is near enough. That's a lot of ifs and I prefer the method below.

Beam Weapon (or perhaps missile weapon) Last The idea here is two fold. First, a weapon allows the ship to continue to damage the enemy either in the middle of combat or when they approach for boarding and capture. This may cause the enemy to divert fire from the battle (often "over-killing" the crippled ship) and allow the rest of the fleet to go onto eventual victory. While this is only generally true in very close battles, it is those types of battles that can mean the difference between victory and defeat during major battle campaigns. Another point is that if you out number the enemy significantly, the last system on the ship will not matter because each damaged ship can withdraw once it begins taking engine damage or even when it loses its shields and armor. When you withdraw the ship is going to depend on the amount by which you overpower the enemy fleet.

The second point that it becomes difficult to capture the ship and hence its technologies. Therefore, it is partly a way to help protect those technologies that you build from becoming captured.

In a *close battle*, I prefer to have maximum firepower for as long as possible because I already expect the majority of my ships to die and I'd rather take as many as his with me. This means that I put most of the weapons near the back of the ship.

THE PLACEMENT OF CRITICAL SYSTEMS IN WARSHIPS

Certain systems are crucial to the fighting ability of a starship. Placing these systems at the proper location in a ship can make a difference in a close battle. While the exact location of such systems will vary somewhat depending on the designer's views and type of mission the ship is designed for, here are my thoughts on generalized design rules. Many of the rules can be skipped because the technology is lacking. In such a case, just move all the other rules up one. The rules are presented as I design ships, from RIGHT to LEFT.

1. The Last system should be a non-precision weapon. **
   I tend to use a single Force Beam weapon on all larger ship missile designs mounting Rc. Never mount a precision beam at the last system on a ship.
2. The second to the last system(s) should be an engine room.**
   This is solely to avoid a single enemy missile from doing 3x damage to the ship and wiping out multiple systems.
3. In front of the last engine room, I place my ECM system.**
   That minus makes my ships at least 12% tougher to hit.
4. Next is a single point defense system.**
5. Next is the Zc **
   With command datalink, the ship and some of its systems take on a role more important than normal in a TEAM setting. Command datalinked ships should always be designed with the team concept in mind.
6. 1/2 of the remaining weapon systems go here. These are intermingled with the rest of the point defense systems.
   Almost always all other types of weapons should be placed after precision-type beams.

7 If I have ATC, it goes before the 3rd weapon system from the right (usually between number 6).

You can fight without ATC but not quite as well. Also, the blasted thing costs a lot to repair if the ship survives.

8 The Combat Sensor is the next thing.

Placed here to protect the ATC, which is more important. Yx is an important system but only during the early stages of the battle when the range is long. If my weapons do not have a range of more than 10 hexes (15 hexes at sensor SL 7+), I place Yx even further forward (If I bother to mount it). Location tends to vary somewhat but is in the middle of the engine rooms.

9 Your Mx if needed goes here.

You should not worry too much about Mx on smaller ships or even mid sized Missile armed ships. Large ships, CA+, should usually mount a Mx. I generally put the Mx after the location of the middle weapons system.

10a A number of weapon systems go here so that the total placed in 1, 6, and at this location is 7 or 8 weapons.

10b A single Q system goes here.

While this may not seem like an important system or combo of systems, the lost of the last Lh or the last Q causes your ship to fight at a -1 penalty. My feeling has always been that a weapon, even at -1, is better than no weapon at all. This is true up to the point of where you have more than 8-9 weapons because the -1 applies to them all. Once the penalty exceeds the value of an extra weapon, then the need for Q becomes more important.

If the to hit number is 8, then a -1 on a weapons causes a 1-(7/8)=14.2% reduction in effectiveness of the weapon. This means that 7 weapons are more important than a single Q.

If to hit is 6, then a -1 on a weapons causes a 1-(5/6)=20% reduction in effectiveness of the weapon. For a to hit of 8, it is a 12.5% reduction. As you can't know exactly what range is important, you must assume that you will be fighting at an effective range, thus I use 7 or 8 weapons.

11 The remaining weapon systems not previously placed go here.

12 Engine Rooms

While engine rooms are important, you tend to lose them at two points. Either early in the battle when you might yet have a chance to retreat if the enemy is running (despite the loss of speed) OR when you are joined in close combat in a fleet action, in which case your weapons are already in range and the need to move to combat range in unnecessary. Of course, you might have the enemy end up in your blind spot however that is only effective if the entire enemy fleet ends up in that ship's blind spot. This enemy tactic can be reduced by using your maneuverable ships to plan to be in the enemy fleet's blindspot if he moves to a location to be in the crippled ships blind spot.

12a Intermixed with the engine rooms, at the designers whim, place the following

(CIC) - This system has changed significantly in GSF. I place it here only during the earliest generations (a and b). Later version move backward in the ship as the importance of the system increases.

As to why the system is this far forward to begin with -- The reason is the morale penalty for the LOSS of a flagship is much stiffer than just the loss of the (CIC) itself. The -2 difference in initiative bonuses is important but it is not critical unless the battle is going to be REALLY close. In any case, it is pure luck if the enemy hits the flagship in the first place. So the actual location in the ship really doesn't seem to matter that much. Something to consider on a ship designed to be a fleet flagship is the placement of a (BbS) well behind the location of the (CIC) so that the flag ADMIRAL can be transferred more safely!!! You really don't want to lose those Crack and Elite Admirals. They are important. That (Bbs), or larger, can fan out a large number of captain's gigs (or st) and the enemy cannot easily figure out which of the 6 ships the gigs go to is the one with the Admiral. TIP: When a (CIC) is destroyed, the enemy has no clue whether or not that was the ship with the Crack/Elite ADMIRAL. Send out those gigs and sandbag (don't use) your initiative bonuses on the next turn unless its really important. Perhaps you can get the enemy to waste some fire at the gigs flying around!!! And don't forget to launch a LOT of gigs to confuse things <Grin>.

(CC) - This system is very expensive but even so place it in front of most if not all engine rooms. It doesn't help you at all during a combat.

(APC) - Like (CIC) this is a non-critical system and other ships can use theirs to control all those buoys/minefields.

Td - Tractor disrupters are nice but weapons do damage and engine rooms help them to do it.

T - This type of system should be near the back of the entire ship if your mounting precision Beams (Tractors only, of course). Otherwise it is not a critical system and thus should be placed somewhere among the engines. Mount the T before the last precision beam.

13 {blank}

14 Quarters, Holds, Boat bays, and even Science Instruments despite their expense should go in front of the engines. Few of these systems help the ship fight in combat.

15 Z is a critical systems on almost all ships. Mount one or two extra S and A to protect them or don't bother with the datalinks. Instead build an extra ES per 3 Zb+ saved.

16 Armor

Above we looked at the amounts of armor to mount. With tech trees, you have no idea of what the enemy will have. So keep the amounts between shields and armor about the same but favor the armor when you have an extra space as it costs less.

17 Shields

Mount heavy shielding on missile armed ships. Their main competitors are other missile armed ships and both sides will try to knock out the others datalinks. This should allow time for the shields to at least begin regenerating.

THE ADVANTAGES OF SIZE

Just how many advantages are there to having bigger ships? Well, there are many but let just look at this from the perspective from inside a campaign.

Perhaps the biggest one revolves around the use of SY capacity to build ships. I don't think many would argue with the fact that a 100 space ship is more than a match for five 20 space ships despite both having the same amount of hull spaces. And while the new hull table changes this somewhat, three 100 space ships should always defeat fifteen 20 space ships. So if the restriction to building is the number of SYx available and not cash, then you should build larger ships most of the time.

A second thing is that most people don't consider the full cost of actually building a ship. A SY costs 400 MC to build. If that 400 MC was instead invested in income production, you would be making at minimum 16 MC per turn instead of having the SY. Plus you have 4 MC per turn in maintenance on the SS the SYx is installed in. If the build rate (HEL 5) is 20 hull spaces per turn, that means that your ship really costs and extra 20 MC per turn to construct. This flat rate increase again strongly favors larger ships as this is a significant amount of increase. Even here the rest of the SDS tells me that I'm low on the extra cost involved because it takes SY to build SY (at least, after the start of the game), which makes the cost of using SYx even higher. TIP: If your low on cash, then you should at least fill your shipyards with SOME sort of building because your paying a bunch to keep that shipyard around and you might as well get your moneys worth. At least, you should plan to do this. But regardless, you should NEVER mothball an SY unless you have a LOT too many. It is only 4 MC per month to maintain and it would cost 120 MC to pull it out of maintenance.

Third, Assaulting a warp point generally requires that you transit as many hull spaces as possible to the other side of the warp point each impulse. This means larger ships will do better when attacking a warp point. Defending a warp point, small ship are equally capable as large ships. NOTE: That with Jump Carriers, the size of the carried ship does not matter in getting the ship through the warp point in a warp assault.

Fourth, large ships armed with missiles are much more effective than small ships with missiles. However, swarm type tactics may be enough to overcome larger missile ships.

However, per MC, small ships with beams seem to be more effective than larger ships. The extra speed that the hull table adds plays a big part in that effectiveness as does new smaller systems designed to improve small ships.

So even if you have unlimited cash, large ships may still be better. One situation that may change this is wartime. During war, the faster you produce ships, the better you may do. This would mean constructing small ships as the war starts so that they are available for combat when they are needed.

Some Jeff Jones thoughts on small vs. large.

One person noted: Most recently, I've gotten advice (from two separate sources) that a game-winning tactic (Ed: BYO Scenario) would be to build CTs or EXs and swarm my opponent.

Jeff's response: This may be a battle-winning tactic but I can't imagine it would ever be a campaign-winning strategy. The dynamics of WP combat will always demand that a player keep a powerful assault force of his largest available hull type on any front where he expects to conduct offensive operations. A swarm of ES will just get picked off one at a time by any credible WP defense fleet. Larger ships can perform fixed point defenses (where swarm tactics are admittedly effective) and conduct WP and planetary assaults. The added flexibility should make the best build strategy something that goes beyond just building ships of a single class.

Maintenance cost is a factor in the longer run during a campaign game which may favor smaller ships. Even with unlimited cash, the big ships are relatively more expensive than smaller ones. Sure, you can only build as many ships as can fit into your shipyards, but you must maintain them afterward. You can selectively mothball ships, however, in order to keep your actively maintained force as cheap as needed for their mission.

HOW MUCH IS ENOUGH AMMO?

In my past experience, it seems rare that a battles lasts more the 15-20 turns. So I try to design my ship with that in mind even though I'm conservative. For smaller ships, I tend to go even lighter.

ARE TRACTORS GOOD?

I have mixed feelings about this now that the new hull table is out. Before, I never bothered since too many ships carried missiles and tractors are missile attractors. However with the new hull table, the balance of designs is changing and therefore the value of tractors has increased. I have seen the use of tractors win a battle in a tournament game as the ship tractored was unable to turn properly to avoid some range one blind spot fire with force beams. One turn of this was enough to swing the battles tide and the side with the bigger ships to achieve a bloody victory.

FROM DIETER.ROHFLEISCH@MCKESSON.COM

Subject: How to save critical MC during the early portion of the game.

We are playing in a (very) low-income campaign (REI/10). The end result is that every MC counts (and then some). Now some of these are obvious, but I'm amazed at how often others do not use them. Note: these are also basically LOW-tech hints -- many don't apply at higher economic levels.

1. For a ship with both shields and armor, when the total count of combined shields and armor is an odd number and there are no other specific reasons to do otherwise, increase the number of "A" over the number of "S". Each one saves 2 MC plus the maintenance.
2. Remove an "A" and add an "H" (save 1 MC) you can usually tweak the SSD to put the extra "H" at the end of the "A"s, followed by anything other than another "H" {ed. note: Or any other collapsible system) and the battle worthiness is not effected (except for the placement of "Z" !!)
3. Don't always max load your magazines, some units with larger stores will actually be able to carry more ammunition than they can fire in combat.

FROM JOSH ON AOL

I'm a big believer in unbalanced ship design. Each unit should have a clearly defined role in the battle. If your unit is supposed to fight a defensive missile duel across a system, then design your defenses

accordingly. Shields and heavy point defense. If you are assaulting a WP, it gets more complex. You can expect all manners of weapons to be targeted on you. Generally at lower TO's I prefer A over S in WP assaults, simply due to their lower cost and better defense against lasers. But if you happen to jump into a system defended by Energy Beam ships then you are in really big trouble. So at about EL 4 you need to switch to the shield armor combination. Point defense is complex with WP assault ships, because you never know when or how many you will really need. The defender will usually be able to pick the ships he wants dead anyway. I usually use any hull spaces left over at the end of the design, and if that looks a little thin then take away one or two weapons systems and use the HS for D's.

Exploration ships and some WP assault ships should be balanced. Ships that should always be unbalanced are Carriers and missile ships.

MORE FROM JEFF JONES

As a believer in unbalanced design who has dealt with a lot of players who prefer balanced designs, I can cover a lot of reasons for going with balanced ships. The new hull table makes it even more important, since it is quite difficult to have bigger missile ships keep range against smaller beam ships.

1 Every ship as a "vote" at any range.
Place a single beam or missile weapon on a ship dominated by the other type of weapon. That way even if a ship's shot isn't all that powerful, it isn't out the fight because it has no weapon of use in the current combat situation. This is especially important to beam ships closing on missile ships, as without the ability to shoot into the blind spot, the missile ships are at no disadvantage to maneuvering their blind spot toward you, whereas you are vs. them.

2 Your entire navy is useful in most combats.
For a smaller empire, it may be hard to fight effectively if you cannot use your entire fleet against a given opponent well Let's say you have only 30 warships. If all of them have missiles and lasers, for example, you can use any of them for any fight, any range. But instead, let's say you split your force, 15 ships specialized into each weapon. You are going to make a WP assault. If your enemy uses a purely close-in defense, those missiles (R launchers, remember) will be almost useless, so taking them in would be pointless. In effect, you only have 15 ships, not 30, which you can use. If the enemy uses a long ranged defense strategy, again, only half your ships can be used. Sure, you can take in the wrong kind of ship, but your opponent may be clever enough to realize that they are less dangerous, and your losses will be higher in the other type as they are concentrated on. Even if you should manage to win, your losses will be disproportionately high in the type of weapon that was most effective in that fight. In the next fight, you may not have the forces available needed to win, even though your surviving ship numbers are quite good. A mixed-weapon balanced fleet loses its weapon types evenly, and doesn't suffer from the loss of key elements in this way.

3 It is tactically less complex to handle a force of balanced ships in combat than a mixed force of specialists.
If you can manage campaign economics well, but aren't as sure of your tactical genius, a balanced fleet is much harder to make major tactical blunders with (such as losing your entire missile complement, rendering your ability to fight at range nil). If you have more ships than your opponent, it may not matter that his are individually superior to yours.

Point 1 is a reason to slightly balance all designs. If you are building a short-range slugger, putting on one long-range weapon gives it a value to bringing it along for a longer-range fight. If you are chasing an opponent, it will get its chance to rip apart enemy vessels that slow due to damage. You don't need more than one, but sometimes the ship seems more effective in this mixed-duty role if it has enough weapons of each type to do something. I don't think that the "one of each" designs, as some KON ships seem to be, with a wide variety of weapons are especially effective. But some weapons are somewhat specialized themselves. Primaries and Needle beams, for example, if installed as the only weapon on a ship (other than an ES), don't hit hard enough by themselves to make that ship very effective. But if installed in small numbers on a ship with other weapons, they can improve its own combat impulse action by their precision fire, damaging crucial systems before the rest of the fire hits. In a specialized fleet design, a separate ship mounting these weapons does all of the precision firing, but should the enemy cleverly target these units and eliminate them, your precision attack ability is completely gone.

If you are going to use unbalanced, specialist-design ships in your fleets, you must take great care not to lose key units containing systems which you need in order to win. A smart opponent can take advantage of your specialization, depriving you of much of your effective firepower more quickly than you can remove a comparable part of his. A specialist fleet divides up the different weapon technologies among several ship classes, rather than installing a mix on each ship, and it takes less damage for an opponent to eliminate your entire stock of a certain type of system.

As Josh points out, missile ships, due to the value of achieving higher salvo sizes against point defense, and carriers, due simply to the cost per fighter delivered into combat being lowest if the carrier has no other function "wasting" space, are always worth building as specialists. But I wouldn't want to base an entire fleet on just one type of specialized unit.

Throwing sand in the enemy's "tactical intelligence" gears: A smart enemy can figure out a lot about your ship designs from your ship's actions, and the effects of damage scored on them. If your enemy knows that a given type of ship only needs 10 points of damage to render it useless in the current fight, rather than 15 needed to kill it, he can take advantage of this knowledge when allocating fire to it. If all of your fleet command ships possess a certain number of shields unique to that class, then it is pretty easy to spot a potential flagship design when its shields go down.

You can make it harder for your opponent if you avoid homogenous ship classes. Even in datagroups, using different classes can make it difficult to know what ship to shoot for. You can have classes which are identical in components, but differ in order, and that too can confuse your enemies. It does cost more in campaigns to set up mass production for different types, but it can lead to less effective

fire against you from enemies, and they can really wonder what class of ship they are up against this time!

1 You don't have to use all the same designs. A few defense-heavy ships in the mix can alter the pattern of damage taken, if the enemy goes after them. A smart enemy can make good guesses though, and negate this, based on what you shoot, and you simply cannot match the offensive firepower of high-offense ships with high-defense ships.
2 Missile salvo sizes, datalink, and point defense. The _ideal_ offensive design leaves off defenses, and really hits hard. However, the enemy blows away the datalink quickly and vaporizes the ships lacking point defense, so the offensive advantage is quickly reduced. Unfortunately, the permutations here are affected by relative size of ship and weapon arrays in a non-linear fashion, which makes figuring optimum results tricky. Empirically, take a given design, and keeping adding weapons, dropping defenses, and see what design does best. Each new weapon type changes this.
3 Command and initiative. Initiative results have more impact when the damage done is higher, and when it will remove weapons from the other side. Range 0 F fire from a offensive-heavy datagroup in a duel situation (3 on 3) can decide the battle outcome on initiative alone. Defensive oriented designs can't compete, unless the defenses are enough to stop a losing roll attack. {Ed Notes: Many times you should consider whether or not to close with the enemy (range less than 6) based on whether you won or lost initiative. If you lost, you're going to get hurt worse than the enemy does if fleet combat power is about equal. I've seen tournament scenarios lost because of this.}

Credit for the design article idea goes to a couple hundred frustrated Space Masters. I think Jeff Jones originally mentioned this years ago.

Next Section: Appendix DD - Campaign Ideas

Appendix DD – Campaign Ideas

This appendix is intended to give the SM a number of ideas and considerations to help him make his campaigns unique. While most of the elements of a campaign are the same for most campaigns, there are a few elements that can be done differently to make each game unique.

DD.01 Campaign Theme

One of the most important parts of a campaign is the "theme." This is the backdrop or story behind the campaign, if any exists. The typical campaign is just a "free-for-all" with no real story or background, and often the players expect to create the story out of the events of the game. But that isn't the only option.

Some stories can be used to create a campaign with specific objectives or considerations, such as a story where several fledging player empires are in an area where a large evil empire is extending its power. The most common themes center around: fighting a large and evil NPR empire, capturing specific and valuable planets in the galaxy, teams of empires against each other, or a game with alternate victory conditions and planets or events that can give the player points towards those objectives.

This is something that only the SM and players can decide. But to aid new SMs and players, the following are a couple of campaign ideas that have been in STARFIRE products.

DD.01.1 New Empires

A new galactic era has dawned! Several technologically advanced races have discovered space travel and are poised to erupt from their isolation. Along the way they will contact less advanced races, create new empires, and forge mighty navies to control the stars. But danger lurks in the stars – the danger of other equally advanced races bent upon stellar conquests of their own!

The New Empires game is the standard STARFIRE campaign. In the New Empires game, each player starts as a brand new empire at EL2 (EL2 is suggested, but EL1 is also good for longer games), just yearning to reach out into space and begin a new age for his empire. The New Empires games are intended to be just a generic game designed to be played continuously with or without victory conditions. Often these games end up being the source of many stories and histories of their most impressive empires.

Each player in the game takes the role of one new race that has just achieved space travel. The races have explored and developed their own star system, developed long-range space drives, and discovered warp point travel.

DD.01.1.1 Setup Each player should use the basic setup from [Section K], which gives them a home system and three surrounding unsurveyed systems.

DD.01.1.2 Universe Generation The universe can be constructed in any manner, using any generation method. Often New Empires games are generated with "on the fly" universe generation [W2.01.3] because these games are intended to be completely random with no limit on the size of the universe.

If the size of the universe is to be limited, then 50 systems are recommended per player empire. This is not a rule, and the SM can have any number he wants. However the SDS has found that no less than 10 systems per player, and no more than 100 systems per player is a good rule of thumb, with 50 systems per player turning into a game of at least a hundred months before you run out of space to explore.

DD.01.1.3 NPR Races It is recommended that NPRs be generated randomly, however a New Empires game does not require NPRs. If the SM wants to play a game with a pre-generated NPR to fight the players, then we recommend the SM runs a Barbarian Campaign [DD.01.2] or a Holy War game [DD.01.4], as listed below.

DD.01.1.4 Victory Conditions Many New Empire games do not have victory conditions or a month limit. Unless the intent is to create a game that has no ending, the suggested victory conditions in [2.00] below are recommended.

DD.01.2 Barbarian Campaign

The Galactic Imperium has met many challenges as it reached out to the stars: hostile aborigines, civil war, and even unknown plagues. None have defeated the Imperium. Though the Imperium has met the test of time, it may be about to become time's victim! It has grown old and lost the vital spark of aggressive expansion and growth. Complacency, a belief in its own invincibility, and a loss of interest has blinded the Imperium to an internal weakness. This might not have mattered so much if there was not peril in the stars. Just beyond the Imperium's borders lie new races that have recently discovered the secrets of interstellar travel. Young and aggressive, more innovative and quicker to respond, these races are eager to expand – at the expense of the Imperium if they must!

The new races are the barbarians banging at the doorstep of the Imperium, threatening to take its riches and glories for their own benefit. While the new races are ready to make their move, they must be cautious. The Imperium may be old, but it is also vast and powerful. If they push to hard, they may awaken a sleeping giant…

DD.01.2.1 Setup Each player should use the basic setup from [Section K], which gives them a home system and three surrounding unsurveyed systems.

DD.01.2.2 Universe The universe can be built in any shape or by any method of generation. One of the recommended methods is to build a pre-generated universe with 15 systems per Player Empire on the outskirts of a core [DD.03.4] or star [DD.03.5] shaped universe. Galactic Imperium [DD.01.2.5] starts in the center of the core or star with a large number of systems. It is strongly suggested that the universe be a maximum size with the players on the outside edges of the universe.

DD.01.2.3 NPRs It is highly recommended that any NPRs, if any are present, be randomly generated OUTSIDE the Galactic Imperium. The Imperium will have long since amalgamated any NPRs that would have normally been inside their sphere of influence.

DD.01.2.4 Victory Conditions The victory conditions are simple: the last man standing (or the largest empire at the end of any month limit) wins. If a month limit is imposed, the recommended limit is 20 years (200 months).

DD.01.2.5 The Galactic Imperium The Imperium needs to be constructed in complete detail even if the universe is not pre-generated. This is so that the Imperium's systems, populations, and units can be placed before the game begins. The Imperium is dormant until a player (or NPR) empire contacts them.

DD.01.2.5.1 Setting up the Imperium: The Imperium should have 6 systems with at least an O2 or better planet for every player race in the game. All connecting systems between these systems will also become property of the Imperium. The Imperium has the maximum population that can be granted for each O2, T, ST, asteroid belt, and O2/O1 moon around any O2/T/ST world. Because of the immense number of amalgamated populations, and for simplicity, the Imperium is considered to have a base HI of 5 for T worlds. Every small or larger population has the maximum number of IU built, and all smaller populations have none.

The Imperium should be at least 2-3 EL higher than the player races, with a single LRW tree and a single SRW tree. No SL is higher than the Imperium's EL. The Imperium has surveyed all the warp points that they are capable of surveying. The Imperials RM should be no more than 60.

The Imperium has a communications base (BS0 with (CC)) at every single warp point between their populated systems, and they have 1 ICC for every 15 systems they possess (not including the homeworld and capital ICC). Each ICC controls as many systems as the starting amount indicated (X per player), and can only give orders to units that are under their control. The only exception is the capital ICC, which can give orders to any unit and reassign units to other sectors if needed. Each of these ICC controlled areas are called a "sector."

The Imperium has a single month's income worth of warships (100-RM percent are mothballed around the homeworld), which must be evenly distributed among all settlement or larger populations (including asteroid belts). The Imperium has 1,000 MC of survey ships, all mothballed around the homeworld. The Imperium also has a single month's income worth of bases and space stations. There must be one space station at every medium or larger population (with at least one full size shipyard), and the bases must be distributed equally among the outer-most star systems in the empire. 50% of the bases in each system will be placed with any population, and the other 50% will be distributed among all warp points that the Imperium has not yet explored.

Every world starts with the normal limit of SA and RDS.

If graded leaders are being used [Section S], the Imperium starts with a single BG+1 admiral for every ICC, a BG+2 admiral for the capital ICC, a BG governor for every very large population, and a BG+1 governor for the homeworld. There are no other graded leaders in the empire. Roll once for each (BG+1 or +2) leader for a chance of special abilities. The graded admirals are randomly placed in any system with a small or larger population (maximum 1 per system), and in control of all the warships in that system.

DD.01.2.5.2 The Imperium's Weakness: The Imperium is a large overgrown empire that has a tremendous amount of bureaucracy and political fighting. The Imperium's subjects are no longer happy with the stagnant government, and the Imperium has fragmented into a number of powerless shards fighting against each other (in politics, not literally).

1. The Imperium has a sluggish R&D system. The Imperium will continue EL research at 3 EL RP per month, and research with only 10% of the (SA) and (RDS) they possess. The Imperium cannot conduct TR research, crash R&D, and each tech item requires 50% more RP to complete.
2. The Imperium is not interested in further expansion. The Imperium does not send out survey fleets unless it is attacked, and then they will only send out those fleets to find and destroy the barbarian empire that attacked them. The mothballed survey fleet is split up into as many groups as the number of ICC, and no more than one group can operate within the confines of a single ICC's systems at any time. If the Imperium does explore beyond its boundaries, it will not colonize and instead builds bases and ships to reinforce the border between their systems and the outside systems.
3. The Imperium faces internal politics and threats that limit the ability for sectors to help each other. Each sector is on its own and can only use one group of up to 50 survey ships and any units in their sector. In addition, the mothballed warships are broken into a number of groups equal to the number of ICC with one group mothballed at each ICC. Any ICC can only issue an order to de-mothball and command the group mothballed at its location.

   When a population of at least small or an ICC is conquered. That sector is transferred to the command of the capital ICC, and the capital ICC can command that sector's units, and any units inside the home system (including mothballed units). The capital ICC can command up to the RM% of warships from any sector that isn't under attack by a player or NPR race to transfer to the capital ICC's command for the purpose of aiding the sector(s) that needs help.
4. The Imperium's subjects are restless and eager to break away from the Imperium. If full communications have been established, any captured population *smaller than* medium size automatically becomes a subject race of the capturing empire. Under the same conditions, any medium or larger population has its RC reduced by 20 for the purposes of negotiation, and once captured moves directly from the conquered state to the negotiation state (treat each planet in a system separately during negotiations.

   There is an additional chance of a governor of a star system deciding to rebel against the Imperium. When a system will at least a small population is first invaded, the governor rolls against 1/2 his RM. If it is a success, then the governor initiates first contact and once full communications is reached, offers to be a partner of the invading race. This system rolls a d100-1/2 RM and randomly removes that percent of warships, bases, and that much damage to the shipyard, caused by fighting between rebelling units and loyal Imperium units. Regardless of whether the rebels succeed or not, news of the intrusion and succession are always relayed to the sector ICC.

   All graded leaders in the Imperium fight to the death and any system with a graded leader does not rebel.

5. The Imperium's graded admirals must prove that they are the still lean and mean. Any graded admiral is within 2 transits of a system that is intruded upon by barbarians MUST request the survey group be demothballed (if available to his sector) and immediately move to engage. If the barbarian's retreat from the system, the admiral will either follow the barbarians and carry the war to them, or if the warp point has not been discovered, wait in that system until the barbarians appear again (or another intrusion occurs within 2 transits). These admirals will commandeer any available units while they move towards the intrusion, and will ignore any orders from the sector ICC.

   If a graded admiral has been ordered towards an intrusion that is further than 2 transits from his position, then he will move to that system and then proceed as if he was within 2 transits.

DD.01.3 MARDUKAN REBELLION

Long ago the worlds of many newer races were invaded by monstrous beings who rained fire from the heavens and flew in huge winged beasts. These worlds were made slave races, and for hundreds of years labored for the beasts. This was in the prime of the Mardukan Empire, who once reigned over dozens of smaller races and held many worlds under their cruel fist.

Each of the slave worlds was forbidden to gain power and knowledge, yet because the technologies of the Mardukans were so great each of the worlds was slowly advanced through association. The knowledge of space and basic technologies for building and construction were gained in order to better service the Mardukan Empire. While the Empire didn't want the races on those worlds to obtain enough knowledge to become dangerous, the Empire also needed those worlds to be able to use basic mining and farming equipment, power supplies, and other technologies so the Empire could use its people for better duties.

Then one day the fire from the skies returned. Mardukan fought Mardukan and killed each other, raining fire and death upon Mardukan installations and bases, and many ships fell from the skies and blew up on the surface of the young worlds. The races were horrified – what are we supposed to do? Many weeks crept by with no word from the Empire. The Mardukans appeared to have killed themselves in some horrible civil war.

Over the next year the races labored to learn the sciences and technologies they did not yet know, using the remains of the Mardukan wrecks and installations to aid them in their research. They slowly learned how to build space stations, then probes, and finally the fusion reactors and space drives needed to carry them into the stars. It was time to expand and never again be slaves to anyone. But what happened to the Mardukan Empire? Obviously there was a war fought recently, but no survivors are discovered on any of the ruined planets nearby the worlds.

No survivors, no, but something of vital importance remains: the remnants of the Mardukan's technology, which is far advanced over that of the fledgling races. Despite the dangers created by automated warp point defenses and other automatic defenses that still linger in the Mardukan systems, these technologies can make the race that finds it supreme over everyone else…or make another supreme over it. The prospects are dazzling, the risks are terrifying, yet the empires race to pick the bones of the smashed Mardukan civilization. But one by one each race has one lingering fear – that the Mardukans will one day return. Will they be ready?

DD.01.3.1 Setup Each of the empires should use the basic setup from [Section K], with the following exceptions:

- Each empire only has 600 MC for the warship and survey funds, and 200 MC for the other fund.
- R&D is normal, but the races must start at EL 1/SL 1.
- The races have only exploited their home world and moons, all with full populations. No other planet in their home system has any colonies, but all of the worlds have been surveyed, and the home system has its first open WP survey completed.
- The free space station can only have the free shipyards plus anything that can be added from the other fund. The players cannot use the warship or survey funds to expand the space station.

This setup is to simulate the fact that these worlds are just getting off their feet. While it makes for a slower start, the scenario rules below quickly change that.

DD.01.3.2 Universe The universe is best built pre-generated, with the Mardukan systems on one side of the map. The only requirement is that the Mardukan Empire has at least 5 systems with O2 or better populations for every player race in the game. The player races are 1-2 transits from the border of the old Empire, but any additional warp points can lead away from the Empire and into unexplored space (this is the preferred universe configuration).

If not using a pre-generated configuration, then only the Mardukan Empire's systems need to be generated. Beyond that, the unexplored space can be generated "on the fly."

DD.01.3.3 NPRs The Mardukan Empire has NO NPRs inside of it. The SM can choose to have other previous slave races be along the outside edge of the Empire, starting with the same conditions as the players, but as NPRs. In the unknown space beyond the pre-generated systems NPRs could be randomly generated, although it is suggested that they be reduced in number by at least 50%.

This setup could easily have no NPRs, as it would make the player's situation easier to handle so they aren't fighting the Mardukans AND a hostile NPR.

DD.01.3.4 Victory Conditions There are two victory conditions in this game. The first is to survive the Mardukan return and then destroy the Mardukan worlds that remain. After that, any or all of the [DD.02] victory conditions can apply. If the players are just playing to fight the Mardukans, then a group victory can be declared if they are defeated.

DD.01.3.5 The Mardukan Empire The Mardukan Empire suffered a tragic civil war when the monarch's brother attempted to rise to the throne. The monarch escaped with his life, but the brothers fought each other to the bitter end and destroyed much of the empire. In the end only a handful of worlds survived under the monarch's control as his brother made one last ditch attempt and died in the last space battle around the Mardukan homeworld.

Build the Mardukan Empire with the home system being the farthest system from all the players as possible. Then in each of the

Mardukan owned systems, all T, ST, asteroid, and O2 planets (and their moons) were fully populated. Roll a d10 for each O1 world (not moon), and if a 1 was rolled then that world was once populated too. After determining which planets had populations – destroy them. All of the systems except the homeworld are utterly devastated and all of the populations are just ruins. The homeworld has only the home planet and any O2 and asteroid worlds colonized, and every other planet and moon has its populations destroyed.

The Mardukans should be at least 5 EL/SL higher than the players, and have 1 LRW tree and at least 2 SRW trees. The Mardukan fleet has been torn to ribbons but there are still 1 month's income worth of warship and survey fleets remaining, and 1 month's income worth of bases and space stations around the home world. The first thing the Mardukans will do is secure all their home system's warp points and rebuild their fleet, and then begin to colonize their old empire again, starting with the closest systems and colonizing all old colonies before moving to the next system. The Mardukans will expand their CFN and ICN at the same rate they colonize, and never put any money into IU.

Recolonization of a world is emplacing either 180 PTU OR 1/2 the total PTU allowed on the planet, whichever is smaller. 10% of income will be put into ship building and the rest into colonization. Mothballs will be used to avoid the fleet exceeding 40% of maintenance. The Mardukans do not have to resurvey their empire but expansion (including scouting) is still limited by the recolonization rule (they are very cautious).

Research and development is put on hold until re-colonization has been accomplished. Once the Mardukans run into a player empire they will begin to conduct research. If the Mardukans lose a colony of settlement or larger they will conduct crash research if they qualify as being in an "active war." The Mardukans will focus upon gaining any new technologies that the previous slave races possess first, attempting to capture ships if possible. When they are not expanding their research into new trees and branches THEN they will continue to research deeper into the trees and branches that they already have available.

Should the Mardukans re-colonize their entire old empire, then they will seek to conquer their previous slave races (the player races and NPRs if any) and make them slaves again. When a player race has lost all of his colonies then he is removed from the game. The Mardukans will NOT colonize beyond their original border, and will only seek to enslave other races.

If graded leaders [Section S] is used, then the Mardukans have a BG+1 governor on their homeworld, a BG+1 general, and a BG+2 admiral, all with special abilities (roll randomly).

DD.01.3.6 Mardukan Defenses Around each warp point in the empire, roll a d10. On a 1-3 there are 1d10x10 armed buoys (equal amount of all weapon branches) around the warp point. On a 4-6 there are 1d10/2*100 armed buoys (equal amount of all weapon branches) around the warp point. On a 7-10 there are no buoys. Around each world of small or larger population, roll the same die for buoys again.

For every T or ST world, roll a d10. On a 1-4 there is a 100 HS PDC that is loaded with weapons on a random hexside. On a 4-6 there are 2 on opposite hexsides of the world from each other. 7-10 there are none. These PDCs are on automatic defense and will shoot at any unit (Mardukan or not) that moves within range. These PDCs are 75% LRW and 25% mixed SRW, and will withhold their fire until the unit is within 50% their maximum LRW range.

DD.01.3.7 Special Rules There are a few special rules due to the nature of this game.

1. All of the previous slave worlds have debris lying around that they can study. Consider this as forced assistance research up to the beginning EL of the Mardukan Empire [N9.03.5] (if the Mardukans achieve a higher EL the debris does not allow the slave races to continue forced assistance beyond the Empire's original EL).
2. Each of the worlds that a Mardukan population was destroyed upon costs 50% less H to colonize for the Mardukans.
3. Each of the worlds that a Mardukan population was destroyed upon costs 25% less H to colonize for the previous slave races.
4. When a previous slave race surveys a world that a Mardukan population was destroyed upon, roll a d10. On a 1, the world has a destroyed base hulk that has one random tech system that can be used as a "copy" for tech research, based on the original EL/SL of the Mardukan Empire. [N9.03.2]

DD.01.4 HOLY WAR

God has blessed the Holy Empire and given it the instruments and knowledge to carry his wisdom to the stars! God has deemed that it is time to spread his gospel to nearby star systems and to educate all the galaxy's life forms on how they can redeem their wicked ways and turn to him for mercy. But God is not a patient God! Rebuke him and he has given the Holy Empire the authority to smite you from the galaxy. The galaxy is the Empire's to command, and you'd better not challenge their authority.

Despite these facts there are always a few races who are obstinate and refuse to believe the Empire's God. They must be punished, and stricken from the galaxy to make room for the followers of the Empire. Is the Empire's God that strong to enable them to conquer the galaxy?

DD.01.4.1 Setup The players should use the standard setup rules in [Section K], which gives them a home system and three surrounding unsurveyed systems.

DD.01.4.2 Universe The universe can be made using any method of generation, but there must be at least 10 transits between any player race and the "Holy Empire."

DD.01.4.3 NPRs We know the players are going to resist, but NPRs might not! This game just wouldn't be the same without random NPRs to spice up life. We recommend that all three-success NPRs be re-rolled for this game.

DD.01.4.4 Victory Conditions The victory conditions are simple: survive. The largest player at the time the Holy Empire is defeated is the winner in this game. This is calculated using an average of ALL of the victory conditions in [2.00].

DD.01.4.5 The Holy Empire The Holy Empire is a Military Theocracy [Y21.03.5.2], but they are out for blood! They will initiate first contact, and then proceed to offer their religion. They give the

race 3 months to consider (rolling each month), and the race must roll higher than against their RC/2 +50 to accept it. If they do not accept it, then the Holy Empire must purge the race from the galaxy. If the race does accept the Holy Empire's religion, then the race immediately becomes a partner to the Holy Empire.

The Holy Empire starts with 3 systems with at least 1 T world (convert ST to T so the systems are close together), and they have 3 months income for their warship and survey funds, and 1 months income for the other fund. Each of the star systems that they possess (including any without T worlds) are fully exploited and there are communications bases at every warp point. The empire must maintain defense bases or warships along any warp points in their star systems, split as equally as possible among all systems. The Empire will explore as many warp points each month as it has complete survey fleets (with supporting war fleets), and will colonize any T, ST, O2, or asteroid worlds that it finds as soon as it can pay to do so. Colonization will always take priority over research.

The Empire will maintain up to their RM% (against their total income) in maintenance for warships, and mothball any warships that would make the maintenance total any higher. They are fanatical, and they have one unique advantage: somehow they have the ability to research significantly faster than other races and have an RP Rate of 13 [K4]

The Holy Empire will attempt to limit the number of wars they are involved in by using diplomacy to make as many non-aggression pacts as possible. They will randomly select one "unholy" empire that they can attack immediately, and will genocide that empire's populations. Once the "unholy" empire is destroyed, the Holy Empire will rest for as many months as it needs to bring its war fleets back to full strength, and then randomly attack another "unholy" empire. An unholy empire is any empire that rejects the Holy Empire's religion.

DD.01.5 VARIANTS

There are a couple of interesting variants to the above scenarios that can be played, mostly dealing with different NPR governments. The most obvious variants are for [DD.01.4], substituting a hive mind [App7-4.04.3], J'Rill [App7-4.05.3], or AI race [App7-4.03.3] for the Holy Empire. These races will not communicate at all with the players and other NPRs, and will instead simply genocide them or use them (in the J'Rill's case).

Another interesting variant would be for [DD.01.3], substituting a herd race [App7-2.03.5], and changing the victory conditions so that the winner is the person who kills the most PU and units of the herd race.

Under any of these variants, it is recommended that the special rules for both [DD.01.3] and [DD.01.5] are removed and these races are used as described in [Appendix 7]. Some of these races are extremely nasty in their own right, and others are perfectly suited for their part of the game.

DD.02 ALTERNATE VICTORY CONDITIONS

Sometimes the players get bored of the most traditional victory condition: be the last person standing. While most STARFIRE players are playing to enjoy the battles, sometimes basing all victory upon whom wins the most limits the game substantially. So what are the possible victory conditions?

There are two types of victory conditions. There are "victory only" conditions, where a single victory condition is used to determine the winner. These types of victories are completely balanced and have a separate method of determining the victory. The "counted as a point value" victory is where there are multiple victory conditions, or when calculating the value of an empire against all of the victory conditions. These are intended to produce point values, and the empire with the highest total point value is the winner. This type of victory is best used when counting the "total value" of several victory conditions together. If each victory condition is going to be scored alone, then the "victory only" scoring should be used instead.

DD.02.1 CONQUEST

There are two kinds of conquest only victories. The first victory is a "Last Man Standing" victory, where your race is the only player race left in the game (the others would either be eliminated or have accepted partnerships that end the player's control over the race). The second victory is simply a "largest military" victory, having the largest navy in combined HS than anyone else in the game. For the second kind of victory, Qv troops do not count.

When counting the conquest victory as a point value:

Unit type	1 Victory point per
Warship or Fast Hull	1 HS
Freighter	2 HS
Base	2 HS
SS	5 HS
PDC	3 HS
Small Craft	1 squadron

DD.02.2 ECONOMIC

An economic victory is one that involves building the economy of your empire so strong that other empire's economies pale in comparison. An economic only victory is calculated by the pure MC value of the empire's economy, including PU, IU, and all trade. The player with the highest MC value is the winner.

When counting the economic victory as a point value, take the total MC value and divide by 15. This is the economic score in points.

DD.02.3 SCIENTIFIC

A scientific victory is about being the most advanced and knowledgeable race. To calculate the scientific victory only, simply add up all the science levels in every branch, and then add the EL x 20. The player with the highest total score is the winner.

When counting the scientific victory as a point value, the player earns 1000 points per EL, and each SL is worth 25 points.

DD.02.4 EXPLORATION

The exploration victory is about surveying and exploring more of the universe than anyone else has. At the end of the game, the player that has surveyed, obtained astrogation data, or been informed about the most systems wins the exploration only victory.

When counting the exploration victory as a point value, the player earns 50 points for entering a system, 10 points per warp point discovered in a single system (both ends of a warp point are separate), and 5 points per planet or moon surveyed in a system (excluding

asteroid belts and asteroids). Any system that the player has astrogation data for but has not entered is worth 30 points. Warp points found in astrogation data DO count for additional points.

DD.02.5 Diplomatic

The diplomatic victory goes to the empire that has the most number of treaties. The diplomatic only victory is the only victory condition that uses a point value to determine the winner. For both diplomatic only and point value victories the points are determined as follows: amalgamations are worth 50 points, partners are worth 25 points, T&M treaties are worth 15 points, trade or military treaties are worth 10 points, and slave/subject/forced ally treaties are worth 5 points.

DD.02.6 Colonization

The last victory condition is the colonization victory, and is won simply by having the most population. For a colonization only victory, the largest number of aggregate PU is the winner. For counting the colonization victory as a point value, the PU are divided by 10 to determine the points obtained.

DD.02.7 Capture And Hold

And interesting "only" victory is the Capture and Hold, where the SM designates a special star system(s) or planet(s) and the players must capture that objective and hold it for a specific amount of time. It is recommended that the time limit be 3-5 months per player in the game. See [5.00] for some ideas on special planets that would make good objectives.

DD.03 Universe Configuration

Sometimes a universe's shape and configuration can drastically change how the game is played. By changing the shape of the universe you alter how the players can reach each other, and how focuses or unfocused their forces must be.

DD.03.1 Random

This is the most basic and common type of universe configuration. To make a random universe, all that is done is randomly connect the warp links without caring about position or configuration. This is how nearly all "on the fly" generated universes are configured.

DD.03.2 Ring

The ring configuration is where you place all the star systems so that they connect in a big circle, with no warp links through the center or edges of the ring. This can be done with 2 or more systems wide, but the important thing is that the player must go around the ring to reach another part of it.

DD.03.3 Wall

The wall configuration is made so that there is only one set of warp links between the 2 sides of the map. Generally for visual reference the systems that are "in the middle" are placed in a line, but the important thing is that there are only a few ways across which turn into a conglomerate of systems once you "get over the wall."

DD.03.4 Core

The core configuration is very similar to the ring, but the center of the core has a bunch of systems tightly linked together with only a few links out to the outer edge of the ring. This enables players to stay in the outer edge of the ring or attempt to control the inner area, often making for some interesting maneuvers and battles.

DD.03.5 Star

The star configuration stars with a conglomerate of systems like in the core configuration, but instead of an outer ring the star configuration has "fingers" of systems lined up like spikes away from the core. These fingers are not connected, and the players would ideally start with one at the end of each finger. This creates a nice playing area in the center, but also provides a safe haven for a player to retreat to when he's losing, giving him a chance to prevent his elimination by providing a couple of solid warp points that he can defend.

DD.03.6 Islands

The island configuration is an interesting variation where you have some bundles of connected systems with only one to three warp links which extend to another bundle of connected systems. This makes it so that the players can fight over the "islands" but still have to overcome a warp point defense in order to move to the next "island."

DD.04 Unique NPRs

Unique NPRs are simply NPRs that do not fit any of the normal NPR governments or that have special powers or abilities. The only reason they are mentioned here is because many campaigns have been built in STARFIRE's past that included unique NPRs, and many of them have been tremendously enjoyable games to play. More often than not the unique NPR(s) have been evil and corrupt, seeking to destroy all of the player races, but sometimes there are also good NPR(s) that aid the players against another evil NPR (such as a hive mind, or another unique NPR). One such campaign even pitted the good and bad NPRs against each other and the players were to choose sides and help one or the other.

When building unique NPRs, always remember to give them a weakness equal to their strength so that the players are not overcome by an NPR they cannot beat. Often the NPR does not need their strength to be the reason they start better than players, as simply giving them more than a single world will give them a good boost. And if you want to build an NPR that is impossible, always build another NPR that is equally impossible but that is on the player's side. Imagine like dueling fates, with the players trying to carve out their own little empire in the middle.

DD.05 SPECIALS

A few special worlds can be used to spice up a game. Often these worlds are tied to the victory conditions, with the player needing to capture and hold these worlds in order to win. Surveys of special worlds require twice the normal survey pts.

DD.05.1 ARTIFACT WORLDS

An ancient world has been discovered with the remnants of a long-dead alien society. On this world are scraps of technology and materials, and further study could boost the empire's R&D! The artifact world is old enough that individual tech systems have not survived, but the world is a treasure house of little bits and pieces of knowledge that point to solutions to problems the empire has not yet even dreamed of. If a population is placed upon one of these worlds the empire can buy two extra RP towards EL research, and any SL or tech item research conducted ON the artifact planet (by building (RDS) here) can buy two extra RP towards their specific project. Any (SA) conducting breakthrough research can purchase up to 15%.

If the world is colonized or conquered, there is a 1-month delay before bonuses are available. So the second month after colonization or conquering, the bonuses apply to the new owner of the planet.

DD.05.2 GAIA WORLD

A world lush with life has been found, and what a find it is! This is the Gaia world, and due to some unknown factor any life that grows on this planet does so at an increased rate, and is healthier and happier than normal. Could it be some emission from inside the planet? Maybe something filters down with the light through the atmosphere? Nobody is sure. But what they do know, is that ALL population growth on this planet is DOUBLE the normal rate, and the maximum PU for a very large population is increased to 4000+400*EL PU (due to the abundant food sources and such).

DD.05.3 RINGWORLD

Surrounding a gas giant, there is a tremendous artificial ring built in the 1 tH orbit. This ring has been built to house T life forms, and the gas giant provides all the heat necessary for the ring to survive. All moons in the 1 tH range of the gas giant are removed, and the ring extends in a full circle in the orbit of the gas giant. Each of the ring's 6 tH provides a harsh colonization area equal to a mass 2 world with poor mineral content

DD.05.4 MACHINE WORLD

A vast metallic world has been found that is teaming with machinery run by a a central computer core under the surface of the planet. The world is a very rich mineral content and the machines DOUBLE the MC output of the planet. In addition, the population that occupies the world lives in underground complexes and takes half damage from any collateral attacks.

No amount of bombardment can destroy the machine world special as there are too many machines and the world keeps building more. Machine worlds can also be artifact worlds.

DD.05.5 PLANETARY COMPLEX

A normal looking world has been discovered that has part of its crust hollowed out and a tremendous network of factories and construction platforms has been built inside! In addition, there are remnants of a long-deceased civilization on the surface of the planet, and the planet provides a bonus to allow a +1 RP to the EL research of the empire.

The construction platforms inside the planet allow the planetary construction to occur without any price increases for planetary construction, and to occur at the normal (SY) rates. The build bonus only applies to the construction of PDCs on the planet, and to any mobile unit or base built at the planet (including pre-fabricated parts). Additionally, any repair or refit job done at the planet takes 1/2 the (SY) time due to the built-in factories at the planet.

Next Section: Appendix EE - Tables

These are referenced from the rules and the table number will be the rule number that the table came from so you can find the exact spot the table is referenced from if you need to read the rules again.

INITIATIVE MODIFIERS

Initiative Bonus	CIC [Elec]	Crew F3.03	[S6.02] Leader	[S6.02] Decisive	Admiral's Crew [B2.03.1.1]
+0		avg.	LG		poor, avg.
+1	a, b	crack	+1, +2	LG	crack, elite
+2	e, i, m, n	elite	+3	+1, +2	ultra, hero
+3	o to y	ultra	+4, +5	+3, +4	legendary
+4		hero		+5	

RANGE MODIFIERS [D8]

Unit	Extra range
Drive field down unit	3 hexes
BS, SS	5 hexes
PDC, AF	7 hexes

TO-HIT MODIFIERS [D2.04]

Table D2.04 Hit Effectiveness Number

Total of All To-Hit Modifiers	HEM
-7 or more	-4
-4 to -6	-3
-2 to -3	-2
-1	-1
0	0
+1	+1
+2 to +3	+2
+4 to +6	+3
+7 or more	+4

Crew To-Hit Modifiers [F3.03]

Table F3.03 Crew Grade Abilities

Grade	Inept	Poor	Green	Avg	Crk	Elite	Ultra	Hero	Lgnd
To Hit/Activation	-2	-1	-1	0	+0	+1	+1	+2	+2
Crew Function	-3	-2	-1	0	+1	+2	+3	+3	+4
Squadron / Anti-Squadron combat -- See [G7 Squadron Combat]									
To-hit is for units attacking large units. Activation is used in the Surprise rules [F2] Crew Function includes emergency repairs and engine malfunction rolls.									

Advanced Targeting Computers [ATC]

Code	Notes
(ATCa)	+1, max of 3 weapons
(ATCb)	+1, max of 4 weapons
(ATCe)	+1, max of 5 weapons
(ATCi)	+1, max of 6 weapons
(ATCm)	+1, max of 7weapons
(ATCn)	+1, max of 8 weapons
(ATCo)	+1, max of 9 weapons
(ATCq)	+1, max of 10 weapons

EM/EMS Modifiers [C8], [?], [?d]

Table C8. EM/EMS Modifiers

EM Level or EMS [a]	Starship Weapons		Code	Ability[b]
1 or ?a	-1 to-hit		?da	Cancels 1 pt; 2 units
2 or ?b	-2 to-hit		?db	Cancels 1 pt; 3 units
3 or ?e	-3 to-hit		?de	Cancels 2 pt; 3 units
4 or ?i	-4 to-hit		?di	Cancels 2 pt; 4 units
5 or ?m	-5 to-hit		?dm	Cancels 3 pt; 4 units
6 or ?n	-6 to-hit		?dn	Cancels 3 pt; 5 units
7 or ?o	-7 to-hit		?do	Cancels 4 pt; 5 units
8 or ?q	-8 to-hit		?dq	Cancels 5 pt; 6 units
9 or ?s	-9 to-hit		?ds	Cancels 6 pt; 6 units
6 or ?n	-6 to-hit		?du	Cancels 7 pt; 7 units
7 or ?o	-7 to-hit		?dw	Cancels 8 pt; 7 units
8 or ?q	-8 to-hit		?dy	Cancels 9 pt; 7 units

[a] All fire modifiers are affected by HEN [D2.04].
[b] Cancels up to x pts (minuses) of EM/EMS on up to y enemy units.

OTHER MODIFIERS

Jammer (Hits as Force Beam) [(JAM)]

SL	Code	Max. Range	ROF	Notes
13c	(JAMa)	6	1	Beam -2 to-hit
17	(JAMb)	7	1	Beam -1 to-hit
k21	(JAMe)	8	1	Beam -1 to-hit
25	(JAMi)	9	1	Beam -1 to-hit
k29	(JAMm)	9	2	Beam -1 to-hit
33	(JAMn)	10	2	Beam to-hit
k37	(JAMo)	10	2	Beam to-hit
41	(JAMq)	11	2	Beam to-hit
k45	(JAMs)	11	2	Beam to-hit
49	(JAMu)	12	3	Beam to-hit

Jammer To-Hit Modifiers

Target's Datalink Generation is	Jammer To-hit[a]		Jammer's Generation	Jammer To-hit[a]
a or b	+1		a or b	-2
e or i	0		e or i	-1
m or n	-1		m or n	0
o or q	-2		o or q	+1
s or u	-3		s or u	+2
w or y	-4		w or y	+3
ka or kb	-5		ka or kb	+4

[a] Add -2 to-hit if target using capital datalink.
A hit with a jammer knocks a unit out of datalink for the rest of the turn.

Regular Missile	Plasma Torpedo	Kinetic Weapon
Sprint Missile	Plasma Gun	Cutting Beam
Precision Weapon Summary	X-Ray Laser -- (DeC) plus (Lj)	
Energy Beam	Force Beam	Laser Beam
Precision Energy Beams (Needle Beam)	Precision Force Beams (Primary Beam)	Precision Laser Beam

EE.01 WEAPON TO-HIT AND DAMAGE TABLES

Note: The tables in this section always contain the most current and accurate data and thus, in case of conflict, these tables super-cede both the Summary Tables and the actual App-AA data.

SPRINT MISSILE

Gun Missile 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			Gun Missile Table		
SL	HS	Cost	Skip	Wpn	ROF	7	6	5	4	3	2																		ROF	Wpn	SL	HS	Cost
0	3	22	none	Ga	1	2	2	2	2	2	2																		2	Gra	4	3.5	39
Gb and higher to-hit chart						8	7	7	6	5	4	3	2	2																			
3	3	31	none	Gb	1	2	2	2	2	2	2	2	2	2															2	Grb	7	4	40
8	3	47	none	Ge	1	3	3	3	3	3	3	3	3	3															2	Gre	12	4	55
11	3	40	none	Gi	2	2	2	2	2	2	2	2	2	2															3	Gri	15	3.7	65
Gm and higher to-hit chart						8	7	7	7	6	6	5	4	4	3	3																	
15	4.25	70	none	Gm	2	3	3	3	3	3	3	3	3	3	3	3													3	Grm	19	5	105
19	3.5	70	none	Gn	2	3	3	3	3	3	3	3	3	3	3	3													3	Grn	23	4.8	110
23	3.33	80	none	Go	2	3	3	3	3	3	3	3	3	3	3	3													3	Gro	27	4.3	115
26	3.66	95	none	Gq	2	4	4	4	4	4	4	4	4	4	4	4													3	Grq	30	5.5	155
Gs and higher to-hit chart						8	7	7	7	6	6	6	5	5	4	4	3																
30	4	110	none	Gs	2	4	4	4	4	4	4	4	4	4	4	4	4												3	Grs	34	5.5	170
34	3	100	none	Gu	3	2	2	2	2	2	2	2	2	2	2	2	2												4	Gru	38	3.7	130
38	4	140	none	Gw	3	3	3	3	3	3	3	3	3	3	3	3	3												4	Grw	42	5	190
Gy and higher to-hit chart						8	7	7	7	6	6	6	6	5	5	4	4	3	3														
42	4.25	165	none	Gy	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3										4	Gry	46	5	210
Gka and higher to-hit chart						8	7	7	7	6	6	6	6	5	5	5	5	5	4	4	3												
46	4.5	180	none	Gka	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3								4	Grka	50	5.5	235
50	4.25	190	none	Gkb	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3								4	Grkb	54	5	240
Cap Gun Missile Table						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22					
SL	HS	Cost	skip	Wpn	ROF	8	7	7	7	6	6	5	4	4	3	3																	
5	6	45	none	Gca	1	4	4	4	4	4	4	4	4	4	4	4													2	Gcra	9	8.3	90
9	5.25	60	none	Gcb	1	5	5	5	5	5	5	5	5	5	5	5													2	Gcrb	13	8	110
13	6.5	95	none	Gce	2	4	4	4	4	4	4	4	4	4	4	4													3	Gcre	17	7.8	140
Gci and higher to-hit chart						8	7	7	7	6	6	6	5	5	4	4	3																
17	5.66	100	none	Gci	2	4	4	4	4	4	4	4	4	4	4	4	4												3	Gcri	21	7.8	165
21	6.25	135	none	Gcm	2	5	5	5	5	5	5	5	5	5	5	5	5												3	Gcrm	25	8	190
Gcn and higher to-hit chart						8	7	7	7	6	6	6	6	5	5	4	4	3	3														
25	6	145	none	Gcn	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5										3	Gcrn	29	8.3	225
29	5.75	155	none	Gco	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5										3	Gcro	33	8.3	245
33	5.5	170	none	Gcq	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5										3	Gcrq	37	7.5	240
Gcs and higher to-hit chart						8	7	7	7	6	6	6	6	5	5	5	5	5	4	4	3												
37	6.66	225	none	Gcs	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4								4	Gcrs	41	8	300
41	6.5	235	none	Gcu	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4								4	Gcru	45	8	305
45	6	240	none	Gcw	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4								4	Gcrw	49	7.3	305
Gcy and higher to-hit chart						8	8	8	7	7	7	6	6	6	6	5	5	5	5	5	4	4	3										
49	6.5	280	none	Gcy	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4						4	Gcry	53	7.7	350
Heavy Gun Missile Table						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22					
SL	HS	Cost	skip	Wpn	ROF	8	7	7	7	7	6	6	6	5	5	5	4	3	3														
12	9	120	none	Gha	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4										3	Ghra	16	11	170
16	9	145	none	Ghb	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5										3	Ghrb	20	11	220
20	9	175	none	Ghe	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6										3	Ghre	24	12	275
24	9	210	none	Ghi	2	7	7	7	7	7	7	7	7	7	7	7	7	7	7										3	Ghri	28	13	330
Ghm and higher to-hit chart						8	8	7	7	7	7	6	6	6	5	5	5	5	4	3	3												
28	9.5	250	none	Ghm	2	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7								3	Ghrm	32	14	395
32	9.33	275	none	Ghn	2	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7								3	Ghrn	36	12	390
36	9.25	295	none	Gho	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5								4	Ghro	40	12	400
Ghq and higher to-hit chart						8	8	8	7	7	7	7	6	6	6	6	6	5	5	5	4	3	3										
40	10.3	360	none	Ghq	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5						4	Ghrq	44	13	470
44	11.7	440	none	Ghs	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6						4	Ghrs	48	14	560
Ghu and higher to-hit chart						8	8	8	7	7	7	7	6	6	6	6	6	6	5	5	5	5	4	3	3								
48	11.7	480	none	Ghu	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6				4	Ghru	52	14	605
SL	HS	Cost	skip	Wpn	ROF																								ROF	Wpn	SL	HS	Cost
Gun Missile 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			Gun Missile Table		

G missiles are intercepted at -2.
If launched from XO or W, -1 to-hit.
G type weapons have nuclear warheads.

Triple damage vs. units without either shields or an active Drive Field [D4.01.2].

CUTTING BEAM

Cutting Beam 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	32	33	34	35	Cutting Beam Table				
SL	HS	Cost	Skip	Wpn	ROF	9	8	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	ROF	Wpn	SL	HS	Cost
12	5	70	none	Ca	1	5	5	4	4	3	3	3	2	2	2	2	1	1																								2	Cra	16	8.5	145
16	5	85	none	Cb	1	5	5	5	4	4	4	3	3	3	2	2	2	2	1																							2	Crb	20	8.75	175
20	5	105	none	Ce	1	6	6	5	5	4	4	4	3	3	3	2	2	2	2	1	1																					2	Cre	24	9	205
24	5	120	none	Ci	1	6	6	6	5	5	4	4	4	3	3	3	3	2	2	2	2	1																				2	Cri	28	9	235
28	5	135	none	Cm	1	7	6	6	5	5	5	4	4	4	4	3	3	3	3	2	2	2	2	1																		2	Crm	32	9	270
32	5	150	none	Cn	1	7	7	6	6	5	5	5	4	4	4	4	3	3	3	3	2	2	2	2	1																	2	Crn	36	9	300
36	5	170	none	Co	1	8	7	7	6	6	5	5	5	4	4	4	4	3	3	3	3	2	2	2	2	1	1															2	Cro	40	9.5	330
40	5	185	none	Cq	1	8	8	7	7	6	6	5	5	5	4	4	4	4	3	3	3	3	2	2	2	2	1	1														2	Crq	44	9.5	365
44	5	200	none	Cs	1	8	8	8	7	7	6	6	5	5	5	4	4	4	4	3	3	3	3	2	2	2	2	1	1	1												2	Crs	48	9.5	395
48	5	210	none	Cu	1	8	8	8	7	7	7	6	6	5	5	5	4	4	4	4	3	3	3	3	2	2	2	2	1	1	1											2	Cru	52	9.5	415
18	8	145	none	Cca	1	9	8	8	7	7	6	6	5	5	4	4	3	2	2	1	1																					2	Ccra	22	14	295
22	8	170	none	Ccb	1	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2	2	2	1																			2	Ccrb	26	14	340
26	8	195	none	Cce	1	10	9	9	9	8	8	7	7	6	6	5	5	4	3	3	2	2	2	1																		2	Ccre	30	14.5	395
30	8	220	none	Cci	1	10	10	9	9	9	8	8	7	7	6	6	5	5	4	4	4	3	3	2	2																	2	Ccri	34	14.5	440
34	8	245	none	Ccm	1	11	10	10	9	9	9	8	8	7	7	7	6	6	5	5	4	4	3	3	2	2																2	Ccrm	38	15	485
38	8	270	none	Ccn	1	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	3	2	2	2														2	Ccrn	42	15	535
42	8	295	none	Cco	1	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	3	2	2	2													2	Ccro	46	15	580
46	8	320	none	Ccq	1	13	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	3	3	2	2	2											2	Ccrq	50	15	630
50	8	345	none	Ccs	1	13	13	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	3	3	2	2	2										2	Ccrs	54	15	675
25	11	255	none	Cha	1	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	3	3	3	2																2	Chra	29	20	510
29	11	290	none	Chb	1	13	12	12	11	11	10	10	9	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2														2	Chrb	33	20	575
33	11	325	none	Che	1	14	13	13	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2													2	Chre	37	20.5	640
37	11	355	none	Chi	1	14	14	13	13	12	12	11	11	10	10	9	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2											2	Chri	41	20.5	705
41	11	385	none	Chm	1	15	14	14	13	13	12	12	11	11	10	10	9	9	9	8	8	8	7	7	6	6	5	5	4	4	3	3										2	Chrm	45	20.5	760
45	11	425	none	Chn	1	16	15	15	14	14	13	13	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	5	4	4	4	3	3								2	Chrn	49	21	830
49	11	450	none	Cho	1	16	16	15	15	14	14	13	13	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	5	4	4	4	3	3							2	Chro	53	21	880
SL	HS	Cost	skip	Wpn	ROF	9	8	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	ROF	Wpn	SL	HS	Cost
Cutting Beam 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	32	33	34	35	Cutting Beam Table				

C type weapons do 1/2 damage against shields and armor (FRD at end of Volley).
C type weapons do x2 damage vs internal systems.

ENERGY BEAM

Energy Beam 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	32	33	34	35		Energy Beam Table			
SL	HS	Cost	Skip	Wpn	ROF	7	7	7	6	6	6	6	5	5	5	5	5	4	4	4	4	3	3	3	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1	1	1	ROF	Wpn	SL	HS	Cost
0	6	35	5	Ea	1	3	3	2	2	2	1	1																														2	Era	4	8	60
4	5	35	10	Eb	1	4	3	3	2	2	2	1	1																													2	Erb	8	7.5	80
8	4.5	50	20	Ee	1	4	3	3	3	2	2	2	2	1	1																											2	Ere	12	7.5	100
12	4	60	50	Ei	1	4	4	3	3	2	2	2	2	1	1	1																										2	Eri	16	7	115
16	4	70	115	Em	1	4	4	4	3	3	2	2	2	2	2	1	1	1																								2	Erm	20	7	140
20	4	85	190	En	1	5	4	4	4	3	3	2	2	2	2	2	1	1	1	1																						2	Ern	24	7.25	165
24	4	95	245	Eo	1	5	5	4	4	4	3	3	2	2	2	2	2	1	1	1	1																					2	Ero	28	7.25	190
28	4	110	245	Eq	1	5	5	5	4	4	4	3	3	2	2	2	2	2	1	1	1	1	1																			2	Erq	32	7.25	220
32	4	125	300	Es	1	6	5	5	5	4	4	4	3	3	2	2	2	2	2	1	1	1	1	1																		2	Ers	36	7.5	245
36	4	135	365	Eu	1	6	6	5	5	4	4	4	4	3	3	2	2	2	2	2	1	1	1	1	1																	2	Eru	40	7.5	265
40	4	145	430	Ew	1	6	6	5	5	5	4	4	4	4	3	3	2	2	2	2	2	1	1	1	1	1																2	Erw	44	7.5	285
44	4	160	430	Ey	1	6	6	6	5	5	5	4	4	4	4	3	3	2	2	2	2	2	1	1	1	1	1															2	Ery	48	7.5	310
48	4	170	505	Eka	1	6	6	6	6	5	5	5	4	4	4	4	3	3	2	2	2	2	2	1	1	1	1	1														2	Erka	52	7.5	335
6	8	70	10	Eca	1	7	6	5	5	4	3	2	1																													2	Ecra	10	13	150
10	8	95	20	Ecb	1	8	7	6	5	5	4	3	3	2	1																											2	Ecrb	14	13.5	195
14	8	120	40	Ece	1	9	8	7	6	5	5	4	3	3	2	2	1																									2	Ecre	18	14	245
18	8	145	95	Eci	1	9	9	8	7	6	5	5	4	3	3	2	2	2	1																							2	Ecri	22	14.5	295
22	8	175	130	Ecm	1	10	9	9	8	7	6	5	4	4	3	3	3	2	2	2	1																					2	Ecrm	26	14.5	345
26	8	195	165	Ecn	1	10	10	9	9	8	7	6	5	4	4	3	3	3	2	2	2	1																				2	Ecrn	30	14.5	390
30	8	220	200	Eco	1	11	10	10	9	9	8	7	6	5	4	4	3	3	3	2	2	2	1																			2	Ecro	34	14.5	440
34	8	245	245	Ecq	1	11	10	10	9	9	8	8	7	7	6	5	4	4	3	3	3	2	2	2	1																	2	Ecrq	38	14.7	485
38	8	270	245	Ecs	1	12	11	10	10	9	9	8	7	7	6	5	5	4	4	4	3	3	3	2	2	2	1															2	Ecrs	42	15	535
42	8	300	290	Ecu	1	12	12	11	10	10	9	9	8	7	7	6	5	5	4	4	4	3	3	3	2	2	2	1														2	Ecru	46	15	585
46	8	325	335	Ecw	1	13	12	12	11	10	10	9	8	8	7	7	6	5	5	4	4	4	3	3	3	2	2	2	1													2	Ecrw	50	15	640
50	8	345	335	Ecy	1	13	13	12	11	11	10	9	9	8	8	7	7	6	5	5	4	4	4	3	3	3	2	2	2	1												2	Ecry	54	15	680
14	12	180	15	Eha	1	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2																				2	Ehra	18	23	385
18	12	215	35	Ehb	1	10	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2																			2	Ehrb	22	21	430
22	12	250	45	Ehe	1	11	11	10	10	10	9	9	8	8	7	7	6	6	5	5	4	3	3	2	2																	2	Ehre	26	21.5	500
26	12	290	55	Ehi	1	12	12	11	11	10	10	9	9	8	8	8	7	7	6	6	5	5	4	3	3	2	2															2	Ehri	30	22	575
30	12	330	70	Ehm	1	13	13	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	3	3	2	2														2	Ehrm	34	22.5	645
34	12	360	85	Ehn	1	14	13	13	12	12	11	11	10	10	9	9	8	8	7	7	7	6	6	5	5	4	3	3	2	2												2	Ehrn	38	22	715
38	12	395	85	Eho	1	14	14	13	13	13	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	3	3	2	2											2	Ehro	42	22	785
42	12	435	100	Ehq	1	15	15	14	14	13	13	12	12	11	11	10	10	9	9	8	8	7	7	7	6	6	5	5	4	3	3	2	2									2	Ehrq	46	22.5	860
46	12	460	115	Ehs	1	15	15	15	14	14	13	13	12	12	11	11	10	10	9	9	8	8	7	7	7	6	6	5	5	4	3	3	2	2								2	Ehrs	50	22	910
50	12	505	115	Ehu	1	16	16	15	15	14	14	13	13	12	12	12	11	11	10	10	9	9	8	8	7	7	7	6	6	5	5	4	3	3	2	2						2	Ehru	54	22.5	990
SL	HS	Cost	skip	Wpn	ROF	7	7	7	6	6	6	6	5	5	5	5	5	4	4	4	4	3	3	3	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1	1	1	ROF	Wpn	SL	HS	Cost
Energy Beam 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	32	33	34	35		Energy Beam Table			

1/2 damage against shields (FRD at end of Volley).
E type damage skips armor and holds.
Add +2 to actual range if in a Nebula.
Add +2 to actual range if fired from XOB.

PRECISION ENERGY BEAMS (NEEDLE BEAM)

Precision Energy 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	32	Precision Energy Table				
SL	HS	Cost	Skip	Wpn	ROF	8	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	2	2	2	2	2	1	1	1	1	1				ROF	Wpn	SL	HS	Cost
5	6	45	15	**Epa**	1	3	3	3	2	2	2	1	1																										2	**Epra**	9	9.25	100
8	5	55	25	**Epb**	1	3	3	3	2	2	2	1	1	1																									2	**Eprb**	12	8.25	110
11	4.5	60	80	**Epe**	1	3	3	3	2	2	2	2	1	1																									2	**Epre**	15	7.5	120
15	4	65	170	**Epi**	1	3	3	3	2	2	2	2	2	1	1																								2	**Epri**	19	7	135
19	4	80	230	**Epm**	1	4	3	3	3	2	2	2	2	2	1	1																							2	**Eprm**	23	7.25	160
23	4	95	290	**Epn**	1	4	4	3	3	3	2	2	2	2	1	1	1																						2	**Eprn**	27	7.25	185
27	4	105	360	**Epo**	1	4	4	3	3	3	3	3	2	2	2	2	1	1																					2	**Epro**	31	7.25	210
31	4	120	360	**Epq**	1	4	4	4	3	3	3	3	3	2	2	2	2	1	1																				2	**Eprq**	35	7.33	235
35	4	135	435	**Eps**	1	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1																			2	**Eprs**	39	7.5	260
39	4	145	515	**Epu**	1	4	4	4	4	4	3	3	3	3	3	3	2	2	2	2	1																		2	**Epru**	43	7.5	280
43	4	160	605	**Epw**	1	5	4	4	4	4	4	3	3	3	3	3	3	2	2	2	1	1																	2	**Eprw**	47	7.5	310
47	4	170	605	**Epy**	1	5	4	4	4	4	4	4	3	3	3	3	3	3	3	2	2	1	1																2	**Epry**	51	7.5	335
9	6	70	35	**Epca**	1	4	3	3	3	2	2	2	2	2	2																								2	**Epcra**	13	10	140
13	6	90	100	**Epcb**	1	4	4	3	3	3	3	2	2	2	2	2	2																						2	**Epcrb**	17	10.3	180
17	6	110	170	**Epce**	1	4	4	4	3	3	3	3	3	3	2	2	2	2	2																				2	**Epcre**	21	10.5	220
21	6	130	230	**Epci**	1	4	4	4	4	4	3	3	3	3	3	3	3	3	2	2																			2	**Epcri**	25	11	255
25	6	145	290	**Epcm**	1	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	2	2																	2	**Epcrm**	29	11	285
29	6	165	360	**Epcn**	1	5	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	2																2	**Epcrn**	33	11	325
33	6	185	435	**Epco**	1	5	5	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2														2	**Epcro**	37	11	365
37	6	200	515	**Epcq**	1	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	2													2	**Epcrq**	41	11	395
41	6	220	515	**Epcs**	1	6	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2											2	**Epcrs**	45	11	435
45	6	240	605	**Epcu**	1	6	6	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	2										2	**Epcru**	49	11	465
49	6	255	605	**Epcw**	1	6	6	6	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3								2	**Epcrw**	53	11.3	505
16	9	150	170	**Epha**	1	5	5	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3																2	**Ephra**	20	16	300
20	9	180	230	**Ephb**	1	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3														2	**Ephrb**	24	16	355
24	9	205	290	**Ephe**	1	6	6	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3													2	**Ephre**	28	16	415
28	9	235	360	**Ephi**	1	6	6	6	6	6	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	3	3	3											2	**Ephri**	32	16.5	465
32	9	260	435	**Ephm**	1	7	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	3										2	**Ephrm**	36	16.5	520
36	9	290	435	**Ephn**	1	7	7	7	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	4	**4**	3	3	3								2	**Ephrn**	40	16.5	570
40	9	315	515	**Epho**	1	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	4	4	4	3	3	3							2	**Ephro**	44	17	620
44	9	345	605	**Ephq**	1	8	8	7	7	7	7	7	7	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	3	3	3					2	**Ephrq**	48	17	675
48	9	370	605	**Ephs**	1	8	8	8	8	7	7	7	7	7	7	7	6	6	6	6	6	6	6	5	5	5	5	5	5	5	4	4	4	3	3								
SL	HS	Cost	skip	Wpn	ROF	8	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	2	2	2	2	2	1	1	1	1	1				ROF	Wpn	SL	HS	Cost
Precision Energy 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	32	Precision Energy Table				

Ep type damage skips armor and holds.
Ep type damage destroys shields on a 1:1 basis.
Ep type internal damage causes deep hits [D4.01.1D]
Add +2 to actual range if in a Nebula.
Add +2 to actual range if fired from XOB.

FORCE BEAM

Force Beam 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	32	33	34	35	Force Beam Table				
SL	HS	Cost	Skip	Wpn	ROF		8	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	ROF	Wpn	SL	HS	Cost
0	5	30	none	Fa	1		3	2	2	2	1	1	1	1																													2	Fra	4	6.66	45
3	5	45	none	Fb	1		3	3	3	2	2	2	1	1	1	1																											2	Frb	7	7.5	70
7	5	50	none	Fe	1		4	4	3	3	3	2	2	2	1	1	1	1																									2	Fre	11	8	105
11	5	65	none	Fi	1		5	5	4	3	3	3	2	2	2	1	1	1	1	1																							2	Fri	15	8.5	135
15	5	80	none	Fm	1		5	5	5	4	4	3	3	3	2	2	2	1	1	1	1																						2	Frm	19	8.5	165
19	5	100	none	Fn	1		6	5	5	5	4	4	4	3	3	2	2	2	1	1	1	1																					2	Frn	23	9	195
23	5	115	none	Fo	1		6	6	5	5	5	4	4	4	3	3	3	2	2	2	1	1	1	1																			2	Fro	27	9	225
27	5	130	none	Fq	1		7	6	6	5	5	5	4	4	4	3	3	3	2	2	2	1	1	1	1	1																	2	Frq	31	9	260
31	5	145	none	Fs	1		7	7	6	6	5	5	5	4	4	4	3	3	3	2	2	2	1	1	1	1	1	1															2	Frs	35	9	290
35	5	160	none	Fu	1		7	7	7	6	6	5	5	5	4	4	4	3	3	3	2	2	2	1	1	1	1	1	1														2	Fru	39	9	315
39	5	175	none	Fw	1		7	7	7	7	6	6	5	5	5	4	4	4	3	3	3	3	2	2	2	1	1	1	1	1	1												2	Frw	43	9.33	345
43	5	190	none	Fy	1		8	7	7	7	7	6	6	5	5	5	4	4	4	3	3	3	3	2	2	2	1	1	1	1	1	1											2	Fry	47	9.33	375
47	5	210	none	Fka	1		8	8	7	7	7	6	6	6	5	5	5	5	4	4	4	3	3	3	3	2	2	2	1	1	1	1	1	1									2	Frka	51	9.5	410
5	9	70	none	Fca	1		6	5	5	5	4	4	4	3	3	2	2																										2	Fcra	9	14	150
9	9	100	none	Fcb	1		7	7	6	6	5	5	4	4	4	3	3	2	2																								2	Fcrb	13	15	205
13	9	130	none	Fce	1		8	8	7	7	6	5	5	5	4	4	4	3	3	2	2																						2	Fcre	17	15.5	260
17	9	155	none	Fci	1		9	8	8	7	7	6	6	5	5	5	4	4	4	3	3	2	2																				2	Fcri	21	15.5	310
21	9	185	none	Fcm	1		9	9	8	8	8	7	7	6	6	6	5	5	5	4	4	3	3	2	2																		2	Fcrm	25	16	370
25	9	210	none	Fcn	1		10	9	9	9	8	8	7	7	7	6	6	5	5	5	4	4	4	3	3	2																	2	Fcrn	29	16.5	415
29	9	240	none	Fco	1		10	10	9	9	9	8	8	8	7	7	7	6	6	6	5	5	5	4	4	3	3	2															2	Fcro	33	16.5	470
33	9	270	none	Fcq	1		11	11	10	10	9	9	9	8	8	8	7	7	6	6	5	5	5	4	4	4	3	3	2	2													2	Fcrq	37	16.5	530
37	9	295	none	Fcs	1		12	11	11	10	10	9	9	9	8	8	8	7	7	6	6	6	5	5	5	4	4	4	3	3	2	2											2	Fcrs	41	17	575
41	9	320	none	Fcu	1		12	12	11	11	10	10	10	9	9	9	8	8	8	7	7	6	6	5	5	5	4	4	4	3	3	2	2										2	Fcru	45	17	630
45	9	345	none	Fcw	1		13	12	12	11	11	10	10	10	9	9	9	8	8	8	7	7	6	6	5	5	5	4	4	4	4	3	3	2	2								2	Fcrw	49	17	675
49	9	375	none	Fcy	1		13	13	12	12	11	11	10	10	10	9	9	9	9	8	8	8	7	7	6	6	5	5	5	4	4	4	4	3	3	2	2						2	Fcry	53	17	735
14	14	200	none	Fha	1		12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2																	2	Fhra	18	26	435
18	14	245	none	Fhb	1		13	13	12	12	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2															2	Fhrb	22	25	505
22	14	285	none	Fhe	1		15	15	14	14	13	12	12	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3														2	Fhre	26	28	650
26	14	335	none	Fhi	1		15	15	14	13	13	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3													2	Fhri	30	26	660
30	14	370	none	Fhm	1		16	15	15	14	14	13	12	11	11	10	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3												2	Fhrm	34	26	735
34	14	415	none	Fhn	1		17	16	16	15	14	14	13	12	12	11	11	10	10	10	9	9	8	8	7	7	6	6	5	5	4	4											2	Fhrn	38	26	815
38	14	455	none	Fho	1		17	17	16	16	15	15	14	14	13	12	12	11	10	10	10	9	9	9	8	8	7	7	6	6	5	5	4	4	3								2	Fhro	42	26	900
42	14	495	none	Fhq	1		18	18	17	16	16	15	15	14	14	13	13	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3						2	Fhrq	46	26	975
46	14	545	none	Fhs	1		19	19	18	17	17	16	16	15	15	14	14	13	13	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3				2	Fhrs	50	27	1060
50	14	580	none	Fhu	1		20	20	19	18	18	17	16	16	15	15	14	14	13	13	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3			2	Fhru	54	26.5	1140
SL	HS	Cost	Skip	Wpn	ROF		8	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	ROF	Wpn	SL	HS	Cost
Force Beam 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	32	33	34	35	Force Beam Table				

Add +1 to actual range if in a Nebula.
Add +2 to actual range if fired from XOB.

PRECISION FORCE BEAMS (PRIMARY BEAM)

Precision Force 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
SL	HS	Cost	Skip	Wpn	ROF	8	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1
6	4	35	30	**Fpa**	1	2	2	1	1	1	1																									
9	4	50	65	**Fpb**	1	2	2	2	1	1	1	1																								
12	4	60	80	**Fpe**	1	2	2	2	2	1	1	1	1																							
15	4	65	200	**Fpi**	1	2	2	2	2	2	1	1	1	1																						
19	4	80	450	**Fpm**	1	3	2	2	2	2	2	1	1	1	1																					
22	4	90	605	**Fpn**	1	3	2	2	2	2	2	2	1	1	1	1																				
25	4	100	770	**Fpo**	1	3	2	2	2	2	2	2	2	2	1	1	1																			
28	4	110	770	**Fpq**	1	3	2	2	2	2	2	2	2	2	2	1	1	1																		
32	4	125	955	**Fps**	1	3	3	2	2	2	2	2	2	2	2	2	1	1	1																	
36	4	135	1155	**Fpu**	1	3	3	3	2	2	2	2	2	2	2	2	1	1	1	1																
40	4	145	1370	**Fpw**	1	3	3	3	2	2	2	2	2	2	2	2	2	2	1	1	1															
44	4	160	1370	**Fpy**	1	3	3	3	3	2	2	2	2	2	2	2	2	2	2	1	1	1														
48	4	170	1605	**Fpka**	1	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	1	1	1													
9	9	100	65	**Fpca**	1	3	3	3	3	3	2	2	2	2	2	2																				
13	9	130	160	**Fpcb**	1	4	3	3	3	3	3	3	3	3	2	2	2																			
17	9	155	340	**Fpce**	1	4	4	4	3	3	3	3	3	3	3	2	2	2	2																	
21	9	185	605	**Fpci**	1	4	4	4	4	4	3	3	3	3	3	3	3	3	2	2																
25	9	215	770	**Fpcm**	1	5	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3															
29	9	240	770	**Fpcn**	1	5	5	5	4	4	4	4	4	3	3	3	3	3	3	3	3	3														
33	9	270	955	**Fpco**	1	5	5	5	5	5	4	4	4	4	4	3	3	3	3	3	3	3	3													
37	9	295	1155	**Fpcq**	1	5	5	5	5	5	5	5	4	4	4	4	4	4	3	3	3	3	3	3												
41	9	320	1370	**Fpcs**	1	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	3	3	3											
45	9	350	1370	**Fpcu**	1	6	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	3										
49	9	375	1605	**Fpcw**	1	6	6	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4									
16	14	230	235	**Fpha**	1	5	5	5	5	5	4	4	4	4	4	3	3	3	3	3	3	3	3													
20	14	270	450	**Fphb**	1	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	3	3	3											
24	14	315	605	**Fphe**	1	6	6	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4										
28	14	355	770	**Fphi**	1	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4								
32	14	400	955	**Fphm**	1	7	7	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4							
36	14	440	1155	**Fphn**	1	7	7	7	7	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5	5	5	**4**	4	4	4					
40	14	485	1370	**Fpho**	1	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5				
44	14	520	1370	**Fphq**	1	8	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5		
48	14	565	1605	**Fphs**	1	8	8	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
SL	HS	Cost	skip	Wpn	ROF	8	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1
Precision Force 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

Fp type damage skips shields and armor - then they hit the 1d10th or 1d10/2 th (FRU) eligible system [D4[D4.01.1C]
Add +1 to actual range if in a Nebula.
Add +2 to actual range if fired from XOB.

Precision Force Table				
ROF	Wpn	SL	HS	Cost
2	Fpra	10	6.33	75
2	Fprb	13	6.66	100
2	Fpre	16	7	115
2	Fpri	19	7	135
2	Fprm	23	7.33	160
2	Fprn	26	7.33	180
2	Fpro	29	7.33	200
2	Fprq	32	7.33	215
2	Fprs	36	7.5	240
2	Fpru	40	7.5	265
2	Fprw	44	7.5	285
2	Fpry	48	7.5	310
2	Fprka	52	7.5	335
2	Fpcra	13	15	205
2	Fpcrb	17	15.5	260
2	Fpcre	21	16	315
2	Fpcri	25	16	365
2	Fpcrm	29	16.5	425
2	Fpcrn	33	16.5	480
2	Fpcro	37	17	525
2	Fpcrq	41	17	580
2	Fpcrs	45	17	630
2	Fpcru	49	17	685
2	Fphra	20	25	455
2	Fphrb	24	25	545
2	Fphre	28	26	625
2	Fphri	32	26	705
2	Fphrm	36	26	785
2	Fphrn	40	26	870
2	Fphro	44	26	960
2	Fphrq	48	26	1025
2	Fphrs	52	26	1120
ROF	Wpn	SL	HS	Cost
Precision Force Table				

LASER BEAM

Laser Beam 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	32	33	34	35	Laser Beam Table				
SL	HS	Cost	Skip	Wpn	ROF	8	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	ROF	Wpn	SL	HS	Cost
0	4	27	5	La	1	2	2	2	1	1	1	1																														2	Lra	4	5.5	40
2	4	34	7	Lb	1	3	2	2	1	1	1	1	1	1																												2	Lrb	6	5.66	50
6	3	41	15	Le	1	3	2	2	1	1	1	1	1	1	1																											2	Lre	10	4.66	60
10	3	40	25	Li	1	3	3	2	2	2	1	1	1	1	1	1																										2	Lri	14	5	80
14	3	50	60	Lm	1	3	3	3	2	2	2	1	1	1	1	1	1	1	1																							2	Lrm	18	5.25	100
18	3	60	145	Ln	1	3	3	3	3	2	2	2	2	1	1	1	1	1	1	1																						2	Lrn	22	5.25	115
22	3	70	190	Lo	1	4	3	3	3	2	2	2	2	2	2	2	1	1	1	1	1	1																				2	Lro	26	5.5	135
26	3	80	245	Lq	1	4	3	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	1																			2	Lrq	30	5.5	155
30	3	90	300	Ls	1	4	3	3	3	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	1																	2	Lrs	34	5.5	175
34	3	100	365	Lu	1	4	4	3	3	3	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	1																2	Lru	38	5.5	195
38	3	110	365	Lw	1	4	4	4	3	3	3	3	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1	1														2	Lrw	42	5.66	210
42	3	120	430	Ly	1	4	4	4	4	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	1													2	Lry	46	5.66	230
46	3	125	505	Lka	1	4	4	4	4	4	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1											2	Lrka	50	5.66	245
4	7	50	5	Lca	1	4	4	3	3	3	3	3	3	2	2																											2	Lcra	8	10.8	110
8	7	75	15	Lcb	1	4	4	4	4	4	4	4	3	3	3	3	3																									2	Lcrb	12	11.5	150
12	7	95	35	Lce	1	5	5	5	4	4	4	4	4	4	4	3	3	3	3																							2	Lcre	16	12	195
16	7	120	75	Lci	1	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	3																					2	Lcri	20	12.3	240
20	7	140	130	Lcm	1	6	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4																			2	Lcrm	24	12.5	280
24	7	165	165	Lcn	1	6	6	6	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4																	2	Lcrn	28	12.5	325
28	7	185	165	Lco	1	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4															2	Lcro	32	13	365
32	7	205	200	Lcq	1	7	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5													2	Lcrq	36	13	405
36	7	230	245	Lcs	1	7	7	7	7	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5	5												2	Lcrs	40	13	450
40	7	250	290	Lcu	1	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5										2	Lcru	44	13	490
44	7	270	290	Lcw	1	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5								2	Lcrw	48	13	535
48	7	290	335	Lcy	1	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6							2	Lcry	52	13	575
10	11	130	10	Lha	1	8	7	7	6	6	6	5	5	5	4	4	4	3	3	3	2																					2	Lhra	14	18.5	265
15	11	175	20	Lhb	1	9	8	8	8	7	7	7	6	6	6	5	5	4	4	4	3	3	3																			2	Lhrb	19	19	355
18	11	195	35	Lhe	1	9	9	8	8	8	8	7	7	7	6	6	6	5	5	4	4	4	4	3																		2	Lhre	22	19.5	395
22	11	230	45	Lhi	1	10	9	9	9	9	8	8	8	7	7	7	6	6	6	5	5	4	4	4	4	3																2	Lhri	26	20	460
26	11	265	55	Lhm	1	11	10	10	10	9	9	9	8	8	8	7	7	7	6	6	6	5	5	5	4	4	4															2	Lhrm	30	20	530
30	11	300	70	Lhn	1	11	11	11	10	10	10	9	9	9	8	8	8	7	7	7	6	6	6	5	5	5	4	4	4													2	Lhrn	34	20	595
34	11	335	85	Lho	1	12	11	11	11	11	10	10	10	9	9	9	8	8	8	7	7	7	6	6	6	5	5	5	4	4	4											2	Lhro	38	20.5	655
38	11	365	85	Lhq	1	12	12	12	12	11	11	11	10	10	10	9	9	9	8	8	8	7	7	7	6	6	6	5	5	5	4	4										2	Lhrq	42	20.5	725
42	11	400	100	Lhs	1	13	13	12	12	12	11	11	11	11	10	10	10	9	9	9	8	8	8	7	7	7	6	6	6	5	5	5	4	4								2	Lhrs	46	20.5	790
46	11	430	115	Lhu	1	13	13	13	12	12	12	12	11	11	11	11	10	10	10	9	9	9	8	8	8	7	7	7	6	6	6	5	5	5	4	4						2	Lhru	50	20.5	850
50	11	465	115	Lhw	1	14	14	13	13	13	12	12	12	12	11	11	11	11	10	10	10	9	9	9	8	8	8	7	7	7	6	6	6	5	5	5	4	4								
SL	HS	Cost	Skip	Wpn	ROF	8	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	ROF	Wpn	SL	HS	Cost
Laser Beam 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	32	33	34	35	Laser Beam Table				

L type damage skips shields.
Add +2 to actual range if fired from XOB.
L type weapons can forgo all damage above one and instead penetrate 10 armor per point of damage forgone and use damage type C 1d5 (FR[D4.01.1C] [illegible] C]

PRECISION LASER BEAM

Precision Laser 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	Precision Laser Table				
SL	HS	Cost	Shld	Arm	Wpn	ROF	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	3	2	2	ROF	Wpn	SL	HS	Cost
5	6	50	15	5	Lpa	1	2	2	2	2	1	1	1																				2	Lpra	9	9.33	100
9	6	70	35	10	Lpb	1	3	2	2	2	2	2	1	1																			2	Lprb	13	10	140
12	6	85	80	25	Lpe	1	3	3	2	2	2	2	2	1	1																		2	Lpre	16	10.3	170
15	6	100	170	55	Lpi	1	3	3	3	2	2	2	2	2	1	1																	2	Lpri	19	10.5	200
19	6	115	230	75	Lpm	1	4	3	3	3	2	2	2	2	1	1	1																2	Lprm	23	10.7	235
23	6	140	290	95	Lpn	1	4	4	3	3	3	2	2	2	2	1	1	1															2	Lprn	27	11	275
27	6	155	360	120	Lpo	1	4	4	4	3	3	2	2	2	2	2	1	1	1														2	Lpro	31	11	305
31	6	175	360	120	Lpq	1	4	4	4	4	3	3	2	2	2	2	2	1	1	1													2	Lprq	35	11	340
35	6	195	435	145	Lps	1	4	4	4	4	3	3	3	3	3	2	2	2	1	1	1												2	Lprs	39	11.3	380
39	6	210	515	170	Lpu	1	4	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1											2	Lpru	43	11.3	415
43	6	230	605	200	Lpw	1	5	4	4	4	4	4	3	3	3	3	2	2	2	2	2	1	1										2	Lprw	47	11.3	455
47	6	245	605	200	Lpy	1	5	4	4	4	4	4	4	3	3	3	3	2	2	2	2	2	1	1									2	Lpry	51	11.5	485
8	10	100	35	10	Lpca	1	4	3	3	3	3	3	2	2	2																		2	Lpcra	12	16	210
12	10	135	80	25	Lpcb	1	4	4	4	3	3	3	3	3	3	2																	2	Lpcrb	16	17	275
16	10	165	170	55	Lpce	1	4	4	4	4	4	3	3	3	3	3	3	2															2	Lpcre	20	17.5	330
20	10	195	230	75	Lpci	1	5	5	4	4	4	4	3	3	3	3	3	3	2														2	Lpcri	24	18	385
24	10	225	290	95	Lpcm	1	5	5	5	4	4	4	4	4	3	3	3	3	3	3	2												2	Lpcrm	28	18	455
28	10	260	360	120	Lpcn	1	5	5	5	5	5	4	4	4	4	4	3	3	3	3	3	3											2	Lpcrn	32	18	515
32	10	290	435	145	Lpco	1	6	5	5	5	5	5	4	4	4	4	4	3	3	3	3	3	3	3									2	Lpcro	36	19	570
36	10	320	435	145	Lpcq	1	6	6	5	5	5	5	5	4	4	4	4	4	4	3	3	3	3	3	3								2	Lpcrq	40	19	625
40	10	350	515	170	Lpcs	1	6	6	6	5	5	5	5	5	4	4	4	4	4	4	4	3	3	3	3	3	3						2	Lpcrs	44	19	685
44	10	380	605	200	Lpcu	1	6	6	6	6	5	5	5	5	5	5	4	4	4	4	4	4	4	4	3	3	3	3					2	Lpcru	48	19	745
48	10	410	605	200	Lpcw	1	6	6	6	6	6	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	3	3	3	3							
15	14	215	170	55	Lpha	1	6	5	5	5	5	5	4	4	4	4	3	3	3														2	Lphra	19	20	360
19	14	260	230	75	Lphb	1	6	6	5	5	5	5	5	5	5	5	4	4	4	4													2	Lphrb	23	21	440
23	14	300	290	95	Lphe	1	6	6	6	6	5	5	5	5	5	5	5	4	4	4	4	4											2	Lphre	27	22	520
27	14	340	360	120	Lphi	1	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4										2	Lphri	31	22.5	605
31	14	385	360	120	Lphm	1	7	7	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4								2	Lphrm	35	23	685
35	14	430	435	145	Lphn	1	7	7	7	7	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5							2	Lphrn	39	23.5	765
39	14	470	515	170	Lpho	1	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5					2	Lphro	43	24	845
43	14	510	605	200	Lphq	1	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6				2	Lphrq	47	24	925
47	14	550	605	200	Lphs	1	8	8	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	5		2	Lphrs	51	24	1010
SL	HS	Cost	Skip	Skip	Wpn	ROF	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	3	2	2	ROF	Wpn	SL	HS	Cost
Precision Laser 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	Precision Laser Table				

Lp type damage skip shields and some armor.
Skips column is shields/armor.
Add 2 to actual range if fired from XOB

X-RAY LASER -- (DEC) PLUS (LJ)

X-Ray Laser 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	32	33	34	35
SL	HS	Cost	Skip	Wpn	ROF	9	8	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1
0	7	30		Lja	1	3	3	2	2	2	2	2	1	1													Number and Gen of Lj can can be utilized by a single Dec													
3	5	30		Deca	1	4	3	3	3	2	2	2	2	2	1	1																			2 Ljb					
5	3	40		Decb	1	4	3	3	3	2	2	2	2	2	1	1																			2 Ljb or Lje					
10	5	90		Dece	1	4	4	3	3	3	3	2	2	2	2	1	1	1																	3 Lje or Lji					
14	4	105		Deci	1	4	4	3	3	3	3	3	2	2	2	2	1	1	1																3 Lji or Ljm					
18	19	400		Decm	2	4	4	3	3	3	3	3	2	2	2	2	1	1	1																4 Ljm or Ljn					
22	19	480		Decn	2	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1	1														4 Ljn or Ljo					
26	22	700		Deco	2	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1	1												5 Ljo or Ljq					
30	22	775		Decq	2	5	5	4	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1	1											5 Ljq or Ljs					
34	26	1080		Decs	2	5	5	5	5	4	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1	1									6 Ljs or Lju					
38	26	1140		Decu	2	6	5	5	5	5	4	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1	1								6 Lju or Ljw					
42	30	1435		Decw	2	6	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1	1						7 Ljw or Ljy					
46	30	1435		Decy	2	6	6	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1	1					7 Ljy or Ljka					
50	35	1880		Decka	2	6	6	6	6	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1	1			8 Ljka					
3	4	25	10	Ljb																																				
7	3.25	30	20	Lje																																				
12	3	35	30	Lji																																				
16	2.75	40	40	Ljm																																				
20	3	50	50	Ljn																																				
24	3.25	60	60	Ljo																																				
28	3.5	70	70	Ljq																																				
32	4	80	80	Ljs																																				
36	4	90	90	Lju																																				
40	4	110	100	Ljw																																				
44	4	130	110	Ljy																																				
48	4	140	120	Ljka																																				
SL	HS	Cost	Skip	Wpn	ROF	9	8	8	8	7	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1
X-Ray Laser 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	32	33	34	35

X-ray Laser Damage and ROF are determined by the Dec that fired.
L type damage skips shields.
Add +2 to actual range if fired from XOB.
L type weapons can forgo all damage above one and
instead penetrate 10 armor per point of damage forgone
and use damage type C 1d5 (FRU) [D4.01.1C]

There are no X-Ray Laser rapid fire weapons.

(DEC).03 DETONATION CHECK TABLE

Roll	Result
01-07	(DeC) and all Lj are destroyed plus damage per [(DeC).03.1]
08-12	One Lj is destroyed.
13-30	System safeties activated [(DeC).03.2]
31-00	System works just within tolerance limits. No effect.

Roll 1d100 per (DeC) check
Add +4 to the die roll for every Lj under the maximum amount the (DeC) could fire.
Add -5 if the system is an Lja. Destroying the Lj destroys the whole Lja system.

(DeC).03.1 (DeC) and all associated Lj are destroyed. Also the (DeC) causes 1d10+3 explosion damage to the systems surrounding it (left of (DeC), then right, and continue alternating). If damage goes off the end of the ship, it instead causes damage in the other direction. Note: Better generations of DeC reduce the damage to surrounding systems.

(DeC).03.2 System safeties activated. The (DeC) is unusable until fixed by "Emergency Repairs" [E2]. A successful "emergency repair" of the system safeties makes the (DeC) like new. This special "emergency repair" can be attempted every 5 tactical turns (same turn that De-tune burnout rolls are made). Crew Grade does apply.

KINETIC WEAPON

						Ranges 10 to 19										Ranges 20 to 29										Ranges 30 to 39										Ranges 40 to 49									
Kinetic Weapon 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**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
SL	**HS**	**Cost**	**Skip**	**Wpn**	**ROF**	7	7	7	7	6	6	6	6	6	6	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	7	45	none	**Ka**	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2																																					
2	6	40	none	**Kb**	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2																																			
6	5	55	none	**Ke**	1	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2																																		
10	7.5	105	none	**Ki**	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2																																
14	7	120	none	**Km**	2	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2																														
18	5.5	120	none	**Kn**	2	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2																												
22	6	155	none	**Ko**	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2																										
26	6	175	none	**Kq**	2	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2																								
30	9	285	none	**Ks**	3	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2																						
34	9	315	none	**Ku**	3	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2																				
38	9	355	none	**Kw**	3	5	5	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2																			
42	9.75	415	none	**Ky**	3	5	5	5	5	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2																
46	9.75	440	none	**Kka**	3	5	5	5	5	5	5	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2														
50	9.33	465	none	**Kkb**	3	5	5	5	5	5	5	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2												
7	21.5	245	none	**Kca**	2	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3																								
11	16	250	none	**Kcb**	2	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3																							
15	14	270	none	**Kce**	2	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3																					
19	12.7	290	none	**Kci**	2	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3																			
23	12	325	none	**Kcm**	2	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3																	
27	12	365	none	**Kcn**	2	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3															
31	12	395	none	**Kco**	2	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3													
35	11	410	none	**Kcq**	2	8	8	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3										
39	17	695	none	**Kcs**	3	8	8	8	8	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3									
43	17	765	none	**Kcu**	3	8	8	8	8	8	8	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3					
47	17	810	none	**Kcw**	3	8	8	8	8	8	8	8	8	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3			
51	17	845	none	**Kcy**	3	9	9	8	8	8	8	8	8	8	8	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3		
Kha and higher to-hit chart						9	9	9	9	8	8	8	8	7	7	7	7	7	7	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	1
14	24	375	none	**Kha**	2	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3																			
18	19.5	375	none	**Khb**	2	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3																	
22	21	470	none	**Khe**	2	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3															
26	31	800	none	**Khi**	3	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3												
30	30	890	none	**Khm**	3	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3										
34	28	945	none	**Khn**	3	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3								
38	27	960	none	**Kho**	3	8	8	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3						
42	27	1080	none	**Khq**	3	8	8	8	8	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3			
46	26	1130	none	**Khs**	3	8	8	8	8	8	8	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	
50	25.5	1200	none	**Khu**	3	8	8	8	8	8	8	8	8	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3
SL	**HS**	**Cost**	**Skip**	**Wpn**	**ROF**	9	9	9	9	8	8	8	8	7	7	7	7	7	7	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	1
Kinetic Weapon 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**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
																Ranges 10 to 19										Ranges 20 to 29										Ranges 30 to 39										Ranges 40 to 49										

K type weapons are intercepted at -3.
Each additional salvo is -1 to be intercepted.
Triple damage vs units without either shields or an active Drive Field [D4.01.2].

Rapid Fire Kinetic Weapons and other LRW statistics are located at [Table LRW Statistics Summary].

PLASMA GUN

Plasma Gun Table				Range>		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Plasma Gun Table			
SL	HS	Cost	Skip	Wpn	ROF	5	4	4	3	3	2	2	1	1	1												ROF	Wpn	SL	HS	Cost
2	3	28	none	Pga	1	5	4	3	2	1																	2	Pgra	6	4.33	40
4	2.5	30	none	Pgb	1	5	4	3	2	1																	2	Pgrb	8	4	45
8	2	35	none	Pge	1	5	4	3	2	2	1																2	Pgre	12	4	60
12	2	44	none	Pgi	1	5	4	4	3	3	2	2															2	Pgri	16	4	70
16	2	40	none	Pgm	1	5	5	4	4	3	3	2	2														2	Pgrm	20	4	85
20	2	45	none	Pgn	1	6	5	5	4	4	3	3	3														2	Pgrn	24	3.75	90
22	2	50	none	Pgo	1	6	5	5	5	4	4	3	3	2													2	Pgro	26	4	100
26	2	55	none	Pgq	1	6	6	5	5	5	5	4	4	4													2	Pgrq	30	4	115
30	2	60	none	Pgs	1	7	6	6	5	5	5	5	4	4	4												2	Pgrs	34	4	125
34	2	70	none	Pgu	1	7	7	6	6	6	5	5	5	4	4												2	Pgru	38	4	140
38	2	75	none	Pgw	1	8	7	7	6	6	5	5	5	5	4	4											2	Pgrw	42	4	150
42	2	80	none	Pgy	1	8	8	7	7	6	6	5	5	5	5	4											2	Pgry	46	3.75	155
46	2	85	none	Pgka	1	8	8	8	7	7	7	6	6	6	5	5											2	Pgrka	50	3.5	160
50	2	95	none	Pgkb	1	9	8	8	8	7	7	7	6	6	6	5															
Pgc beam Table				Range>		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Pgc beam Table			
SL	HS	Cost	skip	Wpn	ROF	6	5	5	4	4	3	3	2	2	1	1	1										ROF	Wpn	SL	HS	Cost
5	4.5	40	none	Pgca	1	5	5	4	4	4	3	3	2														2	Pgcra	9	7	80
9	4	45	none	Pgcb	1	6	5	5	4	4	4	3	3														2	Pgcrb	13	6	100
12	3.5	50	none	Pgce	1	6	5	5	4	4	4	4	3	3													2	Pgcre	16	6	105
16	3.25	60	none	Pgci	1	6	5	5	5	5	4	4	4	3													2	Pgcri	20	5.5	115
20	3	65	none	Pgcm	1	6	6	5	5	5	4	4	4	3	3												2	Pgcrm	24	5.5	125
24	3	75	none	Pgcn	1	7	6	6	6	5	5	4	4	4	3	3											2	Pgcrn	28	5.5	145
28	3	85	none	Pgco	1	7	7	6	6	6	5	5	5	5	4	4	3										2	Pgcro	32	5.5	165
32	3	95	none	Pgcq	1	8	7	7	7	6	6	6	5	5	4	4	4										2	Pgcrq	36	5.5	185
36	3	105	none	Pgcs	1	8	8	7	7	7	6	6	6	6	5	5	4	4									2	Pgcrs	40	5.5	200
40	3	115	none	Pgcu	1	9	8	8	7	7	7	7	6	6	6	6	5	5									2	Pgcru	44	5.66	220
44	3	120	none	Pgcw	1	9	9	8	8	8	7	7	7	6	6	6	6	6									2	Pgcrw	48	5.66	240
48	3	130	none	Pgcy	1	10	9	9	8	8	8	7	7	7	7	7	7	7									2	Pgcry	52	5.66	255
Pgh beam Table				Range>		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Pgh beam Table			
SL	HS	Cost	skip	Wpn	ROF	6	6	5	5	5	4	4	3	3	2	2	1	1	1								ROF	Wpn	SL	HS	Cost
12	6	85	none	Pgha	1	8	7	7	7	6	6	6	5	5	5												2	Pghra	16	10	170
17	5	90	none	Pghb	1	8	7	7	7	6	6	6	5	5	5												2	Pghrb	21	8.75	180
20	4.5	95	none	Pghe	1	8	7	7	7	6	6	6	5	5	5												2	Pghre	24	8	185
23	4	95	none	Pghi	1	8	7	7	7	6	6	6	5	5	5												2	Pghri	27	7.5	190
27	4	105	none	Pghm	1	8	8	7	7	7	6	6	6	5	5	5											2	Pghrm	31	7.5	210
31	4	120	none	Pghn	1	9	8	8	8	7	7	7	6	6	5	5											2	Pghrn	35	7.5	230
35	4	135	none	Pgho	1	9	9	9	8	8	7	7	7	6	6	5	5										2	Pghro	39	7.5	260
39	4	145	Skip	Pghq	1	10	9	9	9	8	8	8	7	7	7	6	6	5									2	Pghrq	43	7.5	285
43	4	155	none	Pghs	1	10	10	10	9	9	8	8	7	7	7	6	6	6	5								2	Pghrs	47	7.5	305
47	4	170	none	Pghu	1	11	11	10	10	9	9	8	8	7	7	6	6	6	5	5							2	Pghru	51	7.5	335
SL	HS	Cost	Skip	Wpn	ROF	6	6	5	5	5	4	4	3	3	2	2	1	1	1								ROF	Wpn	SL	HS	Cost
Plasma Gun Table				Range>		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Plasma Gun Table			

Pg type weapons ignore the first two pts of EM/EMS modifiers.
Pg type weapons total all non-EM/EMS modifiers and then divide by 2 (FRU) [Pg.01] before applying them.

PLASMA TORPEDO

Plasma Torpedo 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	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
SL	HS	Cost	Wpn	ROF												Ranges 10 to 19										Ranges 20 to 29										Ranges 30 to 39										Ranges 40 to 49									
0	6	40	**Pta**	1	to-hit	3	3	3	4	4	4	5	5	5	4	3	3	3	2	2	1	1	1																																		
			Pta		Dmg	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1																																				
4	5.5	50	**Ptb**	1	to-hit	3	3	3	4	4	4	4	4	5	5	5	5	4	4	3	3	2	2	1	1	1																																	
			Ptb		Dmg	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2																																		
9	5.66	75	**Pte**	1	to-hit	3	3	4	4	4	4	4	4	4	5	5	5	5	5	4	4	3	3	2	2	1	1	1																																
			Pte		Dmg	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3																																		
13	8	135	**Pti**	2	to-hit	3	3	4	4	4	4	4	4	4	5	5	5	5	5	5	5	4	4	3	3	2	2	1	1	1																														
			Pti		Dmg	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2																																
17	10	200	**Ptm**	2	to-hit	3	3	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	4	4	3	3	2	2	1	1	1																												
			Ptm		Dmg	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3																												
21	10.5	245	**Ptn**	2	to-hit	3	3	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	4	4	3	3	2	2	1	1	1																										
			Ptn		Dmg	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3																										
25	15	390	**Pto**	3	to-hit	3	3	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2	2	1	1	1																								
			Pto		Dmg	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	2	2																								
29	15	460	**Ptq**	3	to-hit	3	3	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2	2	1	1	1																						
			Ptq		Dmg	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3																						
33	15.25	525	**Pts**	3	to-hit	3	3	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2	2	1	1	1																				
			Pts		Dmg	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3																				
37	15	545	**Ptu**	3	to-hit	3	3	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2	2	1	1	1																		
			Ptu		Dmg	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	2	2																			
41	15	615	**Ptw**	3	to-hit	3	3	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2	2	1	1	1																
			Ptw		Dmg	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3																			
45	15	680	**Pty**	3	to-hit	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2	2	1	1	1												
			Pty		Dmg	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3											
49	14	685	**Ptka**	3	to-hit	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2	2	1	1	1												
			Ptka		Dmg	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3											
7	8.25	90	**Ptca**	1	to-hit	2	2	3	3	3	3	3	3	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1																								
			Ptca		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2																								
11	7.25	110	**Ptcb**	1	to-hit	2	2	3	3	3	3	3	3	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1																								
			Ptcb		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2																								
15	13.66	245	**Ptce**	2	to-hit	2	2	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1																								
			Ptce		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2																								
19	13.5	290	**Ptci**	2	to-hit	2	2	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1	1	1	1	1																				
			Ptci		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2																						
23	13	330	**Ptcm**	2	to-hit	2	2	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	2	2	2	2	1	1	1	1	1																				
			Ptcm		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2																				
27	13	385	**Ptcn**	2	to-hit	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1	1	1	1																		
			Ptcn		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3	3	2																		
29	13	390	**Ptco**	2	to-hit	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	2	2	2	2	2	1	1	1	1	1														
			Ptco		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3																	
33	12.5	430	**Ptcq**	2	to-hit	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1											
			Ptcq		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3										
37	12	465	**Ptcs**	2	to-hit	2	2	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1							
			Ptcs		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3								
41	20	810	**Ptcu**	3	to-hit	2	2	2	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	5	5	5	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1						
			Ptcu		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3								
45	20	855	**Ptcw**	3	to-hit	2	2	2	2	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	5	5	5	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1				
			Ptcw		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3							
49	18	860	**Ptcy**	3	to-hit	2	2	2	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	
			Ptcy		Dmg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3							
13	9	145	**Ptha**	1	to-hit	2	2	3	3	3	3	3	3	4	4	4	4	4	4	4	4	3	3	3	3	2	2	2	2	2	1	1	1	1	1																								
			Ptha		Dmg	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	4	4	4																								
17	18	355	**Pthb**	2	to-hit	2	2	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1																						
			Pthb		Dmg	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	4	4	4																					
21	19	450	**Pthe**	2	to-hit	2	2	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1																				
			Pthe		Dmg	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	4	4	4																				
25	18	490	**Pthi**	2	to-hit	2	2	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1																
			Pthi		Dmg	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	4	4	4																			
29	17	520	**Pthm**	2	to-hit	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	5	5	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1															
			Pthm		Dmg	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	4	4	4														
33	17	560	**Pthn**	2	to-hit	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	5	5	5	4	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1												
			Pthn		Dmg	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	4	4	4											
37	16	610	**Ptho**	2	to-hit	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	5	5	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1									
			Ptho		Dmg	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	4	4	4									
41	27	1075	**Pthq**	3	to-hit	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	5	5	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1							
			Pthq		Dmg	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	4	4	4							
45	27	1145	**Pths**	3	to-hit	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	5	5	5	4	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1				
			Pths		Dmg	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	4	4	4						
49	25	1145	**Pthu**	3	to-hit	2	2	2	3	3	3	3	3	2	3	3	3	3	4	4	4	4	4	4	4	4	4	5	5	5	4	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1		
			Pthu		Dmg	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	4	4	4			
Plasma Torpedo 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	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
SL	HS	Cost	Wpn	ROF												Ranges 10 to 19										Ranges 20 to 29										Ranges 30 to 39										Ranges 40 to 49									

Pt type weapons: to-hit bonus equal to:
enemy TM/3 (FRU) (max. +3)
or +2 vs. BS, SS, or units Stationkeeping
or +2 vs units without a drive field.
Pt type weapons ignore the 1st point of enemy EM/EMS modifiers.
-1 to-hit when fired from XO racks or W.
Pt type weapons are -1 to be intercepted.
Each additional salvo in the same volley is -1 to be intercepted.

REGULAR MISSILE

Missile Weapon Table						Range>										Ranges 10 to 19										Ranges 20 to 29										Ranges 30 to 39										Ranges 40 to 49										
SL	HS	Cost	Wpn	ROF	Dam	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	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
0	4	30	Ra	1	1	6	6	6	6	6	6	6	6	6	6	6	6	5	5	4	4	3	3																																			
3	3	34	Rb	1	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	4	4	3																																
7	4	50	Re	2	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	4	4	3	3																															
11	3.33	55	Ri	2	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	4	4	3	3	3																											
15	3.33	65	Rm	2	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	4	4	3	3																									
19	4.5	105	Rn	3	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	4	4	3	3																							
23	4.33	120	Ro	3	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	4	4		3	3																					
27	4.33	135	Rq	3	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5		4	4	3	3																			
31	4	145	Rs	3	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		5	5	4	4	3	3																	
35	4	150	Ru	3	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		6	6	5	5	4	4	3	3															
39	7.2	290	Rw	3	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		6	6	6	6	5	5	4	4	3	3													
43	6.5	285	Ry	3	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		6	6	6	6	6	6	5	5	4	4	3	3										
47	6.25	300	Rka	3	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		6	6	6	6	6	6	6	6	5	5	4	4	3	3								
5	6	60	Rca	1	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	3	3	2	2																									
9	5.25	70	Rcb	1	3	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	5	5	5	5	4	4	4	4	3	3	2	2																									
13	8	135	Rce	2	3	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	4	4	4	4	3	3	2	2																							
17	8	170	Rci	2	3	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	4	4	4	4	3	3	2																					
21	8	195	Rcm	2	3	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	4	4	4	4	3	3	2																			
25	7.25	200	Rcn	2	3	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	4	4	4	4	3	3	2																	
29	6.66	210	Rco	2	3	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	4	4	4	4	3	3	2															
33	6.5	230	Rcq	2	3	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	4	4	4	4	3	3	2												
37	9.5	370	Rcs	3	3	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	4	4	4	4	3	3	2										
41	9.5	395	Rcu	3	3	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	4	4	4	4	3	3	2								
45	9.5	420	Rcw	3	3	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	4	4	4	4	3	3	2					
49	8.5	420	Rcy	3	3	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	4	4	4	4	3	3	2			
12	19	295	Rha	2	5	5	5	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	4	4	3	3	3	2	2																			
16	19	355	Rhb	2	5	5	5	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	4	4	3	3	3	2	2																	
20	18.5	410	Rhe	2	5	5	5	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	4	4	3	3	3	2	2															
24	17.5	450	Rhi	2	5	5	5	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	4	4	3	3	3	2	2													
28	17	490	Rhm	2	5	5	5	5	5	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	4	4	3	3	3	2	2											
32	14.5	475	Rhn	2	5	4	5	5	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	4	4	3	3	3	2	2									
36	23	840	Rho	3	5	4	4	5	5	5	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	4	4	3	3	3	2	2							
40	24	940	Rhq	3	5	4	4	5	5	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	4	4	3	3	3	2	2					
44	22	960	Rhs	3	5	4	4	4	5	5	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	4	4	3	3	3	2	2			
48	20	910	Rhu	3	5	4	4	4	5	5	5	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	4	4	3	3	3	2	2			
SL	HS	Cost	Wpn	ROF	Dam	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	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Missile Weapon Table						Range>										Ranges 10 to 19										Ranges 20 to 29										Ranges 30 to 39										Ranges 40 to 49										

-1 to-hit when fired from XO racks or W.
Each additional salvo (same volley) is -1 to be intercepted.
Triple damage vs units without either shields or an active Drive Field [D4.01.2]

Rapid Fire Missile Weapons and other LRW statistics are located at [Table LRW Statistics Summary].

PRECISION WEAPON SUMMARY

Table D4.01.1E Precision Targeting Summary

Weapon	Weapon Skips	Normal Weapon Damage Type	Tractored w/Shields	Tractored, no Shields
Focused attack only [L.01]	S & a few A	(C) 1d5[a] (FRU)	(C) 1d5 (FRU)	(C) 1d5 (FRU)
Lp	Shields	(D) Deep hit	Numeric	Specific
Ep	Armor	(D) Deep hit	n/a	Specific
Fp	S and A	(C) 1d5 (FRD) or (C) 1d10	Numeric	Specific

- Letters in () indicate the type of damage done [D4.01.1]
- [See D4.01.1.E1] Specific targeting requires combat or capital sensors.
- Normal Precision damage cannot be done until shields and/or armor are down or skipped

[a] 1d5 is 1d10/2 (FRD), i.e., 1-3 hits the 1st system.

Table D4.01.1D Deep Hit Resolution

Roll	Damaged System[a]
01-03	Any Datalink
04-05	Crew Quarters
06-10	EMS/(Ita)/(DFS)/(CAP) (random)
11-18	Magazine
19-23	Shield Regenerator
24-29	Any SRW
30-33	Other[b]
34-39	Any LRW
40-42	Any Tractor/Presser/@
43-46	Cargo Hold (destroys contents)
47-48	Multiplex Tracking
49-58	Any Point Defense
59-60	Any Sensor or Science Instrument
61-72	Any Weapon
73-80	Any Bay or (SqdM)
81-90	Any Point Defense
91-00	Any Engine

[a] Multiple points of damage from a single weapon will hit the rolled (or cascaded system), then each point after that will cascade to the next eligible system listed.

[b] Any system normally enclosed in () excluding small craft bays. Examples: (CIC), (DEC), (APC), (SY), etc.

ACTIVE DEFENSES

AppA-Point Defense

Code	Cost	Space	Abilities
Da	15	2	3 shots at 3
Db	20	2	3 shots at 4
De	45	2	5 shots at 5
Di	60	2	6 shots at 5
Dm	75	2	7 shots at 6
Dn	90	2	9 shots at 6
Do	100	2	9 shots at 7
Dq	110	2	10 shots at 7
Ds	120	2	10 shots at 8
Du	135	2	10 shots at 9
Dw	150	2	10 shots at 9
Dy	170	2	10 shots at 10
Dka	190	2	10 shots at 10
Capital Point Defense			
Dca	30	3	3 shots at 5
Dcb	60	3	4 shots at 6
Dce	80	3	5 shots at 6
Dci	100	3	6 shots at 6
Dcm	120	3	7 shots at 7
Dcn	140	3	8 shots at 8
Dco	160	3	9 shots at 9
Dcq	180	3	10 shots at 10
Dcs	200	3	11 shots at 10
Dcu	220	3	12 shots at 11
Dcw	240	3	13 shots at 12

- All point defense systems can intercept the following (intercept modifier): missiles (+0), plasma torpedoes (-1), sprint missiles (-2), kinetic rounds (-3), and ADM (-1).
- Point defense is -3 to intercept during Class B transit effects.
- D are -1 vs. capital inbounds, except Kc, but get +1 per extra shot fired at an inbound (max. +2).
- Dc are normal vs. capital inbounds but get no extra shot bonus.
- Each additional salvo after the 1st in a single volley is engaged at an additional -1 to intercept. Example: Rn fires 3 salvos. The 1st salvo is engaged normally; the 2nd salvo is engaged at a -1; and the third salvo is engaged at a -2.
- Datalink Point Defense (z) is -1 to intercept inbounds targeted on other units.
- Missile ECM reduces PD interception numbers by -1 per level.

Crew Point Defense Modifiers

Table F3.03 Crew Grade Abilities

Grade	Inept	Poor	Green	Avg	Crk	Elite	Ultra	Hero	Lgnd
Point Defense shots	-1	-1	0	0	+1	+1	+2	+2	+3
Point Defense Shot modifies the number of shots per point defense system.									

AppA-EDM

Code	Space	Notes
EDMa	4 MSP	One EDM per volley
EDMb	4 MSP	Two EDM per volley
EDMe	3 MSP	Two EDM per volley
EDMi	3 MSP	Two EDM per volley
EDMm	2 MSP	Two EDM per volley

- EDMs affect whole volleys.
- Intercept on a 1 or 2 for a single EDM volley.
- Intercept on a 1, 2, or 3 for a two EDM volley.
- EDM add +1 to intercept against Pt family weapons.

EE.02 NON-COMBAT TABLES

WARP POINT TRANSITS

Table C4.02.2 WP Transit Size Adjustment

Table C4.02.2 WP Transit Size Adjustment

TSA[a]	Transit Size[b]	TSA[b]	Transit Size[a]	Engine Gen.	TSA[b]	Engine Type	TSA[b]
-6	300%	16	5.41%	a	+0	I engines	+0
-5	245%	17	4.51%	b	+2	Ic engines	+2
-4	205%	18	3.76%	e	+4	J engines	-1
-3	172%	19	3.13%	m	+6	Gt engines	+4
-2	144%	20	2.61%	n	+8	Jc engines	+5
-1	120%	21	2.17%	o	+10	**Hull Type**	**TSA[b]**
0	100%	22	1.81%	q	+12		
1	83%	23	1.51%	s	+14	Fast hull	+1
2	69%	24	1.26%	u	+16	B Gen. Hull	-1
3	57%	25	1.05%	w	+18	E Gen. Hull	-2
4	48%	26	0.87%	y	+20	I Gen. Hull	-3
5	40%	27	0.73%	ka	+22	M Gen. Hull	-4
6	33%	28	0.61%	kb	+24	N Gen. Hull	-5
7	28%	29	0.51%	ke	+26	Loaded Transit Carrier	-3
8	23%	30	0.42%	ki	+28		
9	19%	31	0.35%	km	+30		
10	16%	32	0.29%	kn	+32		
11	13.5%	33	0.245	ko	+34		
12	11.2%	34	0.2%				
13	9.3%	35	0.17%				
14	7.8%	36	0.14%				
15	6.5%	37	0.12%				

Warp Point Transit Modifiers [D7.01]
Defensive Fire at transited units (same turn): -2 to-hit
On the turn of an "in a line" transit -- class B transit effects.
On the turn of a simultaneous transit -- class A transit effects ***and*** on the turn ***after*** a simultaneous transit -- class B transit effects.
Class A Transit Effects: No offensive fire plus Class B effects
Inherent sensors are -50% range and XOg can not launch.
Class B Transit Effects: All offensive fire is at a -3 to hit.
Point defense intercepts at -1. Non-inherent sensors, datalink, EM, and EMS systems are inoperable.
Multiplex tracking treats the first target as four units.
Launch facilities are inoperable except for XOg.
WP transit is not possible.
Designated flagships cannot assume command [B2.03].

[a] TSA = transit size adjustment (FRU)
[b] All fractions are rounded up.

Table C4 WP Sizes

Die Roll[a]	WP Type	Base Capacity
1	A	25
2-3	B	30
4-6	C	36
7-8	D	43
9	E	52
10	F	62

[a] The die roll is made during system generation, found in section [W8.03]

Table C4.04 Interpenetration During Simultaneous Transits

Amount vs. WP Capacity	Interpenetration Chance	Average Surviving HS
1x	0%	1.0x
2x	25%	1.5x
3x	30%	2.1x
4x	35%	2.6x
5x	40%	3.0x
6x	45%	3.3x
7x	50%	3.5x
8x	55%	3.6x
9x	60%	3.6x

Table C4.05 Jump Transit Arrival

Jump Type	Outside WP Hex	Arrival Range
Wja	50%	1-5 tH
Wjb	60%	1-10 tH
Wje	70%	1-12 tH
Wji	80%	1-15 tH
Wjm	90%	1-20 tH

CREW MODIFIERS

Table F3.03 Crew Grade Abilities

Grade	Inept	Poor	Green	Average	Crack	Elite	Ultra	Heroic	Legendary
Initiative	-3	-2	-1	0	+1	+2	+3	+4	+5
To Hit/Activation	-2	-1	-1	0	+0	+1	+1	+2	+2
Point Defense shots	-1	-1	0	0	+1	+1	+2	+2	+3
Crew Function	-3	-2	-1	0	+1	+2	+3	+3	+4
Breakoff/Surrender	-30	-20	-10	0	+10	+20	+28	+35	+40
Combat Points adj.	-33%	-20%	-10%	0%	+10%	+20%	+28%	+35%	+40%
Rearming	+3	+2	+1	0	-1	-2	-2	-3	-3

Squadron / Anti-Squadron -- See [G7 Squadron Combat].

To-hit is for units attacking large units. Activation is used in the Surprise rules [F2]
Point Defense Shot modifies the number of shots per point defense system.
Crew Function includes emergency repairs and engine malfunction rolls.
Breakoff/Surrender modifier is explained elsewhere [D7.04.1.1]
A fleet's Combat Points are adjusted if the grade is different from average.
Rearming modifies the amount of turns required to rearm smcft. This modifier also applies to the time needed to reset datalink [E6.06].

EE.03 SENSOR TABLES

System	SL	HS	MC	Scan	Short	Combat	Medium	Long	Note
Standard Sensors {Ranges (in tH)}									
IND-1	-2	n/a	0	-	3	5	9	-	
IND-2	-1	n/a	0	-	5	8	14	-	
Standard	0	0	0	-	10	10	20	-	
Standard	7	0	0	-	10	15	30	-	
Standard	15	0	0	-	13	20	40	-	
Standard	25	0	0	-	15	25	50	-	
Standard	35	0	0	-	17	30	60	-	
Standard	45	0	0	-	20	35	70	-	
Smcft	0	0	0	1	5	10	20[a]	-	
Drone2+	0	0	0	2	10	20	40	-	
Buoy or Drone1	0	0	0	-	4	7	10	-	
Combat Sensors {Ranges (in tH)}									
Ya	0	1	20	2	10	21	30	60	
Yb	4	2	35	3	12	26	45	240	1 LM
Ye	7	2	55	3	15	30	60	480	2 LM
Yi	11	2	75	4	17	35	75	720	3 LM
Ym	15	2	95	6	20	40	90	960	4 LM
Yn	19	3	120	7	22	45	105	1200	5 LM
Yo	23	3	140	8	25	50	120	1440	6 LM
Yq	27	3	160	9	27	55	135	1680	7 LM
Ys	31	4	180	10	30	60	150	1920	8 LM
Yu	35	4	200	11	32	65	165	2160	9 LM
Yw	39	5	220	12	35	70	180	2400	10 LM
Yy	43	5	240	13	37	75	195	2640	11 LM
Yka	47	6	260	14	40	80	210	2880	12 LM
Capital Sensors {Ranges (in tH)}									
Yca	2	10	150	3	15	25	60	2880	1 sH
Ycb	5	15	250	4	20	35	90	5760	2 sH
Yce	9	20	400	5	25	40	120	8640	3 sH
Yci	15	25	500	6	30	45	150	11520	4 sH
Ycm	21	30	650	7	35	50	180	14400	5 sH
Ycn	27	35	700	8	40	55	200	17280	6 sH
Yco	33	40	750	9	45	60	225	20160	7 sH
Ycq	39	45	800	10	50	65	250	23040	8 sH
Ycs	45	50	900	11	55	70	275	25920	9 sH
System	SL	HS	MC	Scan	Short	Combat	Medium	Long	Note

Sensor Range Modifiers/Notes

Adjusted sensor ranges are always FRU, unless noted. All additions/subtractions to range occur before any percentage increases or decreases are applied.
-50% range for units using LOD [D5.03.2.1]
-50% Smcft Combat Sensor (sY) [smcft.02].
AP mounted Combat sensors (sY): 100% range; sYc on Buoy2 -50% range.
Class A transit effects (Simultaneous Transit) -50% sensor range [D7.01.1].
Class B transit effects ("In a Line" Transit) Y, sY, Yc, and sYc inoperable [D7.01.2]
Enemy operating with CLK reduces your effective sensor generation [(CLK)].
Buoys only detect LOD mode units at 4 tH [D9.05.1].

Terrain

An asteroid belt hex reduces sensor range by 50%.
Nebula: Dark -15%; Reflective -25%; Emission -50%; Maser -75%
Extended Range [D8.01], Drive Field down unit +3 hexes;
BS or SS +5 hexes; PDC or AF +7 hexes

Populations: Free Sensor ability

20-60 PU -- 100% of best sensor available; [D5.03]
61-1000 PU -- 200% of best sensor available;
1000+ PU -- 300% of best sensor available

Scan Range

Determine enemy class (target must be shields down).
Detect Buoys.
Scan for Tech Data (target must be shields down and using item).
Identify hull improvements.
Detect WP transit disruption (gives WP size at end of turn).
Detect RDS, SA, ICC, Training Facility.

Short Range

Target nationality identified.
Detect tractor link between targets.
Determine SL of any active tech item.
PU and IU quantity detected at 50% short range.
Scan for tech data (scanning ship must have X on board and target must be shields down and using item). [N9.03.1]
Detect PDCs at 30% short range.
May ask for how many of ONE general type of system is operable.

Combat Range

Detect active scanning.
Detect WP transit of large units (gives transit information).

Medium Range

Detect population of 60 PU or less.
Detect WP transit of large units (identify tH of WP), learn WP visibility from transiting unit.
Detect APC emissions (not which ship).

Long Range

Detect population of 61 to 1000 PU.

Twice Long Range

Detect population of 1000+ PU

Sensor Range Modifiers/Notes

[a] Smcft inherent sensor ranges vary by generation. Base Range (from the smcft abilities Chart [Small Craft Tree] is Medium Range. Combat Range is 50% Base Range. Short range is 50% of combat range. Scan range is 20% (FRD) of Short Range.

DETECTION TYPE [D5.02]

Detection Type (Type of unit you are trying to detect)	Long	Med.	Combat	Short[a]	Scan[b]
Large ship generating MP (no LOD or CLK)	D	Q	T	T	S
Large ships using LOD with shields down or CLK or with engines in standby mode including BS, AF, and SS.	-	D	T	T	S
Small Mobile Units (Small Craft, Drones, and CC mini-drones) or Explosions	-	D	Q	T	S
Small Mobile Units using LOD; with engines in standby mode; Large Ast.; or Recon Drones	-	-	DP	T	S
Buoys, small asteroids (less than 1 Bb point in size)	-	-	P	P	S
DF down (any) or units hiding in AST belt D3.03.3.1]	-	-	P	T	S
Small (<31 HS) units hiding in asteroid belt [D3.03.3.2]			P	10 tH or P	S
PDCs & landed units [D5.05.2]			P	P and 30%T	S
Populations [D5.05.1] Detect 1000+ PU at twice long range	61-1000 PU	0-60 PU			

For the purposes of detection:
DF down (any) includes large units, small units, and anything else at least 1 Bb point in size including significant space-junk, life pods, small asteroids, etc.
WP transits of large units can be detected at medium range, and the tH of the WP determined. Survey information allowing transit can only be detected at combat range.
Units which fire while outside enemy's combat range for detecting them can always be engaged by the enemy at a -2 to-hit as long as their weapons have the range [CLK.05]

[a] *Short range:* Racial (nationality) information available [D5.07].
Operational Detection Possible [D3.03.3.2].
[b] *Scanning range:* Can Reveal systems on shields down craft [D3.03.3.2].
Can scan for buoys.
Can use precision fire.
Can scan for tech data.

Game play note: Standard ship sensors, which have no scan ability, cannot detect buoys!

Presence (D) Active DFs and or shields are detectable. All contacts within 15 LS of each other are reported as a single contact. WP location information might be available [D5.04.1].
Quantity (Q) In addition to D, Q indicates quantity and size of unit. A unit's shield and drive field status can be detected (up/down) [D4.02]. Detect active navigation beacons, responding IFF signals, and large unit WP transit signature (Unit gains the knowledge that a (dis)appearing unit just used a WP and knows the tH the warp point is in. The unit does NOT know how to use the WP.)
Target (T) In addition to Q, T indicates weapons can target unit. Unit type (warship/FT/advanced/etc.), Steaming Atmosphere, Drive Field fluctuations, and EMS/EM level can be detected [D4.02]. When units fire, weapon type, generation, and quantity including number of weapons launched from XO can be detected. Point defense usage including numbers can be detected. Small unit warp transit signature is detectable [D5.04.1]. AP type is detected, but not their generation, contents, or mounted systems. If X operating, WP transit information gained (Unit gains the knowledge to USE a WP that it has seen another unit use, even if it has not surveyed for this WP.)
Possible Target (P) A unit may possibly (P) be in T detection. A unit may fire at an enemy in P detection range only if the enemy has previously been detected at T detection (which would be broadcast to the whole fleet) and that detection has not been lost. P detection is lost as soon as the unit moves beyond P range from all enemies. Lost detection must be redetected normally. Units remaining at P detection ranges are detected after 10 minutes.
Once detected, P detection is the same as T detection, other than the above limitations.
Scan (S) A scan is necessary to detect buoys and planetary facilities [D5.02.2]. Against a shields up unit, it allows for a prototype hull to be made of the scanned vessel [M1.03.4.1] and provides information for R&D purposes [N9.03.1]. Against a shields down unit, scanning identifies the enemy class [A6.02], identifies active technology [D5.03.3], and hull improvements [Con.02]. Specific weapon information gained on each system as it fires.

WARP POINT INFORMATION [D5.04]

Detection level	WP Data Detected
D	WP location only (sH)
Q	WP transit signature
T	WP transit signature, WP Visibility
T with X operating	WP Transit info gained
1/2 T range (FRD)	WP Transit info gained (always), WP size

CLOAKING

SL	Code	Max Speed[a]	Enemy Sensors[b]	Medium Range[c]
10	(CLKa)	Safe +1	-3 gen.	+5 tH
14	(CLKb)	Safe +1	-4 gen.	+10 tH
k18	(CLKe)	Safe +2	-5 gen.	+14 tH
22	(CLKi)	Safe +2	-6 gen.	+17 tH
27	(CLKa)	Safe +3	-3 gen.	+19 tH
32	(CLKb)	Safe +3	-4 gen.	+22 tH
36	(CLKe)	Safe +4	-5 gen.	+24 tH
40	(CLKi)	Safe +4	-6 gen.	+26 tH
45	(CLKa)	Safe +5	-3 gen.	+28 tH
50	(CLKb)	Safe +5	-4 gen.	+30 tH

[a] Maximum safe cruising speed.
[b] Enemy Combat Range is (T).
[c] Medium range is combat range plus the indicated amount.

EE.04 CONSTRUCTION TABLES

SHIP HULL TABLES

Ship Type	Req. EL	Range in Hull Spaces	Cost per HS	I/Jc/Ic/ J Eng. Power	Maximum Speed (Turn Mode)					Gt Eng. Power	Generational Hull Maximum Size					FT Hull Cost
					Ia	Ja	Ica	Gta	Jca		B	E	I	M	N	
EX [0]	1	5-7	3.50	1/4	6(2-)	8(3-)	4(2-)	8(3-)	14(8-)	1/8	8	9	10	11	12	2.75
ES [1]	1	8-12	3.85	1/3	6 (2)	8 (3)	4 (2)	8(3)	14 (8)	1/6	14	16	18	20	22	3.00
CT [2]	1	13-16	4.20	1/2	6 (2)	7 (3)	4 (2)	7(4-)	14 (8)	1/4	19	22	25	28	31	3.33
FG [3]	1	17-22	4.55	2/3	5 (2)	7(4-)	4 (2)	7(4)	13 (8)	1/3	26	30	34	38	42	3.40
DD [4]	1	23-30	4.90	1.0	5(3-)	6 (4)	4 (2)	6(4)	13 (8)	2/5	35	40	45	50	55	3.65
CL [5]	2	31-45	5.25	1.5	4 (3)	6 (4)	3 (2)	6(4)	12 (9-)	1/2	51	57	63	69	75	3.70
CA [6]	3	46-60	5.60	2.0	4 (3)	5 (4)	3 (2)	6(5-)	12 (9)	3/5	67	74	81	88	95	3.70
BC [7]	5	61-80	5.95	2.5	4(4-)	5(5-)	3(3-)	5(5)	11 (9)	2/3	88	96	104	112	120	3.75
BB [8]	6	81-100	6.30	3.0	3 (4)	5 (5)	2 (3)	5(5)	11 (9)	1	109	118	127	136	145	3.80
DN [9]	7	101-130	6.65	4.0	3 (4)	4 (5)	2 (3)	5(5)	11 (9)	1.5	140	150	160	170	180	3.90
SD[10]	9	131-165	7.00	5.0	3(5-)	4(6-)	2 (3)	4(5)	10(10-)	2	176	187	198	209	220	4.00
MT[11]	11	166-200	7.35	6.0	2 (5)	4 (6)	1 (3)	4(5)	10 (10)	2.5	212	224	236	248	260	4.10
MH[12]	13	201-250	7.70	7.5	2 (5)	3 (6)	1(4-)	4(6-)	10 (10)	3	263	276	289	302	315	4.20
SM[13]	15	251-350	8.05	9.0	2(6-)	3(7-)	1 (4)	3(6)	9 (10)	5	364	378	392	406	420	4.30
LN[14]	18	351-500	8.40	10.0	1 (6)	2 (7)	0 (4)	3(6)	9(11-)	7	515	530	545	560	575	4.40
JG[15]	22	501-750	8.50	14.0	1 (6)	2 (7)	0 (4)	2 (7-)	9 (11)	10	766	782	798	814	830	4.50
MM[16]	27	751-1000	8.50	20.0	1(7-)	2 (8-)	0 (5-)	2 (7)	8 (12-)	12	1017	1034	1051	1068	1085	4.60
CO[17]	33	1001-1300	8.50	30.0	0 (7)	1 (8)	-1 (5)	1 (7)	8 (12)	15	1318	1336	1354	1372	1390	4.70
GN[18]	40	1301-1600	8.50	35.0	0 (7)	1 (8)	-1 (5)	1 (8-)	8(13-)	17	1619	1638	1657	1676	1695	4.80
TN[19]	48	1601-2000	8.50	40.0	0 (8-)	1 (9-)	-1 (5)	1 (8)	7 (13)	20	2020	2040	2060	2080	2100	4.90

Note: Number in [] after Ship Type is the type of FT hull.
The speeds listed are FRD. The smallest hull of a group of same speed hull sizes, excepting EX, is actually +0.5 speed (dark shade). See [Con.03].
The Turn Modes listed are FRU. The smallest hull of a group of same TM hulls is actually -0.5 TM(-). See [Eng.03].
For the engine power column, the number listed is the amount of engines required per MP (see [C1.02] for engine mounting).
Maintenance: Warships and Fast Hulls - 15%, FT hull - 7.5%, Bases - 5%. Any FT hull with X is 15% maintenance.
Fast Hulls are +2 MC per HS, +1 speed, +1 EL [Con.01]. Rapid Hulls are +5 MC per HS, +2 speed, +0.5 Turn Mode, and +3 EL [Rapid Hulls]
Thick Hulls are +2 MC and Dense Hulls are +4 MC [Con.02].
Blindspots: **Cp -** blindspot is single hex row, no DF, damage to blindspot; **Gt -** no blindspot, -1 to-hit/intercept from within rear 60°; **I or Ic -** 60° blindspot; **J -** 120° blindspot, LRW limited to 90% of max. range; **Jc -** 120° blindspot (180° on Fast hull), fire into Jc blindspot is at 1/2(FRD) to-hit.

BASE HULL TABLE

Type	EL	Range in HS	Hull Cost	Maint. Cost
Bases				
BS0	1	5-15	3.5	5%
BS1	1	16-30	4.0	5%
BS2	1	31-50	5.0	5%
BS3	3	51-80	5.25	5%
BS4	5	81-130	5.5	5%
BS5	7	131-200	5.75	5%
BS6	9	201-300	6.0	5%
BS7	12	301-400	6.5	5%
BS8	14	401-500	7.0	5%
BS9	16	501-625	7.5	5%
BS10	18	626-750	8.0	5%
Special				
PDC (Any)	IND-2[a]	1-500	3.0	3%
AF (Asteroid Fort)	EL 2	1-1000	4.0	3%
SS Module	IND-2	1-1000	3.0	2%
SS core (non-military)	IND-2	unlimited	3.0	2%

[a] See section M for exact rules for PDC construction. See section H and M for other construction restrictions and rules.

TABLE H1.06 RESTRICTED ARC WEAPONS

Hull Type +weapon	Turret	Side Arc	Forward or Rear
Any + Homing weapon	Never restricted	N/A	N/A
Normal Hull + SRW	More than x3	More than x2	x2 or less
Fast Hull + SRW	More than x5	More than x3	x3 or less
Normal Hull + Kinetic	More than x50	More than x5	x5 or less
Fast Hull + Kinetic	More than x100	More than x7	x7 or less
Base + SRW	More than x2	N/A	N/A
Base[a] + Kinetic*	More than x3	N/A	N/A

[a] Bases must be more than double the size of a kinetic weapon to mount it.

AUTOMATED PLATFORM HULL TABLE

Hull	Cost	HS	Bb pts	SL	Notes
Buoy1	5	2	1	2	May not carry weapons; 2 DP
Buoy2	10	4	1	4	Weapons half power/range*; 4 DP
Buoy3	30	5	2	8	Wpn: full power/range; 5 DP
Buoy4	40	7	2	12	Wpn: full power/range; 6 DP
Buoy5	50	8	3	17	Wpn: full power/range; 6 DP
Buoy6	90	10	3	22	Wpn: full power/range; 8 DP
Drone1	10	2	1	2	Speed 7; 3 DP; no weapons
Drone2	25	4	1	6	Speed 7; 5 DP; Wpns at 1/2 power/range
Drone3	50	5	2	10	Speed 8; 6 DP; Wpn: full power/range
Drone4	65	7	2	15	Speed 8; 7 DP; Wpn: full power/range
Drone5	80	8	3	19	Speed 9; 8 DP; Wpn: full power/range
Drone6	110	10	3	25	Speed 10; 10 DP; Wpn: full power/range

EE.05 SYSTEM GENERATION TABLES

ASSIGN SYSTEM ID

Cluster method - Roll 1d10

1-8 Close system, Roll 1d10
Even roll - Add 1d20 from current system number
Odd roll - Subtract 1d20 from current system number
Add 1 to a new system number which cannot be connected to until a valid connection can exist. (Note: Warp point connect restrictions must be obeyed.)

9-10 Far system
Roll system number randomly

Random method - Roll 1d10 for each digit in system number.

ROLL FOR GALACTIC ODDITY (OPTIONAL)

Roll 1d10, 1-2 oddity present

ROLL SYSTEM TYPE

Table W5.01 System Type

Roll 1d100	System Type
01	Anomaly System (roll anomaly)
02-08	Starless (roll WPs)
09-12	Starless Nebula (roll nebula, WPs)
13-65	Single-Star Star System (roll star type, planets, WPs)
66-70	Single-Star Nebula (roll star type, nebula, planets, WPs)
71-95	Binary Star System (roll star types, planets, WPs)
96-97	Binary Nebula (roll star types, nebula, planets, WPs)
98-100	Trinary Star System (roll star types, planets, WPs)

ANOMALIES.

Table W5.05 Anomaly Systems

Roll 1d100	Anomaly Type
01	Blackhole
02-10	Pulsar (roll WPs)
11-25	Quaternary system (roll star types, WPs)
26-50	Coronal WP Placement (roll system type)
51-75	Emerges in asteroid belt (roll system type)
76-100	Neutron star (roll planets, WPs)

NEBULAS

Table W5.04 Nebula Type

Die Roll	Nebula Type	Sensor Range
1-2	Dark	-15% (FRU)
3-5	Reflective	-25% (FRU)
6-8	Emission	-50% (FRU)
9-10	Maser	-75% (FRU)

Nebula Type Modifiers:
Starless -2
Binary System +2
Non-Giant Star +1[a]
Blue/White/Red Giant +3
Any Dwarf Star +0

[a] Any result of dark nebula is instead "reflective nebula"

Roll for nebula special feature

Table W5.04.6 Nebula Special Features

Die Roll	Feature
Dark Nebula	
01-40	No special feature
41-52	Corrosive
53-64	Dark Pulse Nebula
65-76	Energy Absorption
77-82	Ghosts in the Mist
83-88	Mist Wraiths
89-94	Ragged Nebula
95-00	Sargassos
Reflective Nebula	
01-40	No special feature
41-46	Datalink Useless
47-58	Destabilized Drive Fields
59-64	Ghosts in the Mist
65-70	HGT Present
71-82	Mist-Wraiths
83-88	Ragged Nebula
89-94	Reflective Flare Nebula
95-97	Sargassos
98-00	Targeting Confusion
Emission Nebula	
01-40	No special feature
41-46	Datalink Useless
47-58	Destabilized Drive Fields
59-64	Emission Flare Nebula
65-70	Ghosts in the Mist
71-82	HGT Present
83-88	Mist-Wraiths
89-94	Ragged Nebula
95-97	Sargassos
98-00	Targeting Confusion
Maser Nebula	
01-40	No special feature
41-46	Datalink Useless
47-52	Destabilized Drive Fields
53-58	Energy Spike
59-70	Ghosts in the Mist
71-76	Lightning Strikes and Energy Pulses
77-82	Radiation Pulses
83-88	Ragged Nebula
89-94	Targeting Confusion
95-00	Variable Pulse Rate

SYSTEM TYPE

Roll for Primary type. Depending on system type, roll for:
Roll for Binary type, radian (1d12), and distance (2d12 + 5 sH).
Roll for Trinary type, radian (1d12), & distance (1d4 + 1 StMP).

Table W5.03 Star Type

Roll	System Primary	Spectral Class[a]
01-05	Blue Giant: No planets possible	O, B
06-16	White Star	A0-A9
17-41	Yellow Star	F0-F9, G0-G9
42-66	Orange Star	K0-K9
67-85	Red Star	M0-M4
86-95	Red Dwarf	M5-M9
96-98	White Dwarf: No planets possible	
99-00	Red Giant: No planets possible	

[a] Note that this is an *extreme* simplification of the various spectral classes. Subsumed spectral class is listed in column 3.

Roll for planets {1d8 (column I) and 1d10 (column II)
Column II must be two or more larger than Column I}

Table W6.03 Planet Orbital Distance

IF {planet I roll is} AND {planet II roll is} Then…								
I	II	III	IV	V	VI	VII	VIII	IX
1	3	5	9	17	33	65	129	257
1	4	7	13	25	49	97	193	---
1	5	9	17	33	65	129	257	---
1	6	11	21	41	81	161	---	---
1	7	13	25	49	97	193	---	---
1	8	15	29	57	113	225	---	---
1	9	17	33	65	129	257	---	---
1	10	19	37	73	145	289	---	---
2	4	6	10	18	34	66	130	258
2	5	8	14	26	50	98	194	---
2	6	10	18	34	66	130	258	---
2	7	12	22	42	82	162	---	---
2	8	14	26	50	98	194	---	---
2	9	16	30	58	114	226	---	---
2	10	18	34	66	130	258	---	---
3	5	7	11	19	35	67	131	259
3	6	9	15	27	51	99	195	---
3	7	11	19	35	67	131	259	---
3	8	13	23	43	83	163	---	---
3	9	15	27	51	99	195	---	---
3	10	17	31	59	115	227	---	---
4	6	8	12	20	36	68	132	260
4	7	10	16	28	52	100	196	---
4	8	12	20	36	68	132	260	---
4	9	14	24	44	84	164	---	---
4	10	16	28	52	100	196	---	---
5	7	9	13	21	37	69	133	261
5	8	11	17	29	53	101	197	---
5	9	13	21	37	69	133	261	---
5	10	15	25	45	85	165	---	---
6	8	10	14	22	38	70	134	262
6	9	12	18	30	54	102	198	---
6	10	14	22	38	70	134	262	---
7	9	11	15	23	39	71	135	263
7	10	13	19	31	55	103	199	---
8	10	12	16	24	40	72	136	264

Table W6.04 Planet Formation Zones

Star Class	Rocky Planets	Gas Planets	Ice Planets	Biosphere	Tidelock Zone
White	01-25	26-130	131-300	10-18	1-5
Yellow	01-16	17-83	84-300	06-12	1-3
Orange	01-09	10-38	39-250	03-05	1-2
Red	01-05	06-18	19-200	03-04	1-2
Red Dwarf	01-03	04-11	12-200	None	1 LM

Values are in LM. The Tidelock Zone refers to the Star/Planet Tidelock Zone

Roll 1d100 for planet Mass and determine type.

Die Roll	Planet Mass	Rocky Planet Located in Reference to the Biosphere			Gas Zone	Ice Zone
		Inside	Within	Outside		
01-25	Mass 1	Type O3	Type O2	Type O2	Type G	Type I
26-75	Mass 2	Type V	Type T	Type O2	Type G	Type I
76-00	Mass 3	Type V	Type ST	Type O2	Type G	Type I

Red dwarf stars have no biosphere. Therefore, any "rocky planet" *not* tidelocked to a moon [W7.03.3] is treated as "outside outer edge of biosphere."

DETERMINE GRAVITY WELL INTERACTIONS

Each G world has a 20% chance of turning the planet just inside its orbit into an asteroid belt. Start with outmost G world, roll once for each G world. (Note: G worlds turned to asteroids do not affect the planet inside their orbit.)

Binary stars affect certain orbits according to the following formula:

Planets > (Distance between stars/3) are removed

Planets > (Distance between stars/4) become asteroid belts

Trinary stars do not affect orbits or planets of its companion stars.

ROLL THE MOONS AND DISTANCES (EACH PLANET)

Table W2.07.1 Moon Quantity

Roll	Number of Moons		Planet Type Modifiers
less than 01	0		Mass 1 rocky planet = -50
01-55	1		Mass 2 rocky planet = -10
56-85	2		Mass 3 rocky planet = + 0
86-105	3		Type O3 planet = -15
106-126	4		Type V planet = -35
127+	5		Type I planet = +35
			Type G planet = +50

First moon orbit is 1d10/2 (FRN) tactical hexes. Each successive moon is +1d10 tactical hexes (+1d10/3 (FRU) for Rocky and Ice worlds). Moon radians are rolled on a 1d6 and use the scattergram. Rocky worlds inside the biosphere have O3 moons, all other rocky worlds and gas giants have O2 moons, and ice worlds have O1 moons.

TIDELOCKS

A planet within the W6.04 Tidelock Zone is tidelocked to the Star (Star/Planet Tidelock).

Roll 1d100 for each planet with moons to determine if a Planet/Moon Tidelock exists. The chance for a tidelocked moon is 7% + 1% per additional moon. If this roll is a 01 + 1 per additional moon, then the tidelocked world is "Big Moon".

Depending on the star type, the two tidelock types and the moon size, determine planet type and moon type,.

W6.04.2 Tidelock Table

Star/ Planet Tidelock?	Planet/ Moon Tidelock?	Planet Type		Moon Type Based on Planet Mass	
		Mass 2/3	Mass 1	Mass 2/3	Mass 1
White, Yellow, Orange, and Red Stars					
Yes	Yes + Big	V	O3 planet	Twin[a]	O3 moon
Yes	Yes	V	O3 planet	O3 Moon	
Yes	No	V	O3 planet	O3 Moon	
No	Yes + Big	Normal planet		Twin[a]	Normal m
No	Yes	Normal Planets and Moons: Exception Mass 2 and 3 G planets make mT moons			
No	No	Normal planet		Normal Moon	
Red Dwarf Stars Only					
Yes	Yes + Big	T or ST	V	mT	mT
Yes	Yes	V	V	O2 Moon	O2 Moon
Yes	No	V	V	O3 Moon	O3 Moon
No	Yes + Big	Normal planet		Twin[a]	Normal m
No	Yes	Normal planet		Normal Moon	
No	No	Normal planet		Normal Moon	

"Yes + Big" indicates that the moon is tidelocked and it is a big moon.

[a] A twin planet is always the same type as the original planet except in two cases: 85% of T/ST twins are instead the opposite type world (Roll the habitability indexes of "twins" separately) and Gas giant twins are instead a hostile type T moon.

DETERMINE REI FOR PLANETS AND MOONS

To determine REI, roll 1d10 for each planet and moon applying any modifiers from Table **L3.02.1**.

Table L3.02.1 REI Environmental Modifier

World Type	Bonus to REI Roll
T, ST, V, mT	+0 REI
G	+1 REI
O2	+3 REI
O1, I, O3	+5 REI
Asteroid Belt or HGT	Rich

Record REI, and Mineral value (Table **L3.02**)

Asteroid Belts are rich unless a Galactic Oddity modifies them.

Note: Environment type depends on the life type, so the income modifier may change.

Table L3.02 Mineral/Environ Value

REI Value	Mineral Content	Income modifier		
		Habitable	Desolate	Extreme
1	Very Poor	60%	60%	60%
2-3	Poor	80%	75%	70%
4-7	Normal	100%	90%	80%
8-9	Rich	120%	105%	90%
10+	Very Rich	140%	120%	100%

WARP POINTS

Roll for WP Quantity [**W8.01**], Distance [**W8.02**], Radian (1d12), Size [**C4**], and Visibility [**W8.04**]. (Note: WP may not lie within 2 radians of a Binary Component radian).

Table W8.01 Warp Point Quantity

Quantity of WPs	Starless	Without Planets	With Planets
1 WP	1	1-9	1-19
2 WP	2-19	10-29	20-38
3 WP	20-58	30-67	39-77
4 WP	59-77	68-87	78-96
5 WP	78-97	88-97	97
WP Nexus	98-00	98-00	98-00
If WP Nexus rolled, reroll on a 1-10			
6 WPs	1-3	1-4	1-5
7 WPs	4-5	5-6	6-7
8 WPs	6-7	7-8	8
9 WPs	8-9	9	9
10 WPs	10	10	10

Table W8.02 Warp Point Distance

Roll	Dist	Roll	Dist	Roll	Dist
01	1	16-18	11	51-55	21
02	2	19-21	12	56-60	22
03	3	22-24	13	61-65	23
04	4	25-27	14	66-70	24
05	5	28-30	15	71-75	25
06-07	6	31-34	16	76-80	26
08-09	7	35-38	17	81-85	27
10-11	8	39-42	18	86-90	28
12-13	9	43-46	19	91-95	29
14-15	10	47-50	20	96-00	30

Table C4 WP Sizes

Die Roll	WP Type	Base Capacity
1	A	25
2-3	B	30
4-6	C	36
7-8	D	43
9	E	52
10	F	62

Table W8.04 Warp Point Visibility

Die Roll	Visibility	Can Only Connect To WPs with a Visibility of	Survey Success
1-6	Open	Open & Concealed WPs	90%
7-8	Concealed	Open, Concealed & Hidden	80%
9	Hidden	Concealed, Hidden & Secret	75%
10	Secret	Hidden, Secret & Top Secret	70%
n/a	Top Secret	Secret, Top Secret & Undisclosed	65%
n/a	Undisclosed	Top Secret & Undisclosed	60%

TABLE LRW STATISTICS SUMMARY

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
0	7.00	45	Ka	1	13	Kra	2	4	9.00	75
2	6.00	40	Kb	1	15	Krb	2	6	8.00	85
6	5.00	55	Ke	1	17	Kre	2	10	7.00	100
10	7.50	105	Ki	2	19	Kri	3	14	9.50	160
14	7.00	120	Km	2	21	Krm	3	18	8.00	170
18	5.50	120	Kn	2	23	Krn	3	22	8.00	200
22	6.00	155	Ko	2	25	Kro	3	26	8.50	220
26	6.00	175	Kq	2	27	Krq	3	30	8.50	270
30	9.00	285	Ks	3	29	Krs	4	34	11.00	380
34	9.00	315	Ku	3	31	Kru	4	38	10.66	415
38	9.00	355	Kw	3	33	Krw	4	42	11.50	500
42	9.75	415	Ky	3	35	Kry	4	46	13.50	540
46	9.75	440	Kka	3	37	Krka	4	50	12.00	590
50	9.33	465	Klb	3	39					
7	21.50	245	Kca	2	27	Kcra	3	11	23.00	385
11	16.00	250	Kcb	2	29	Kcrb	3	15	22.00	420
15	14.00	270	Kce	2	31	Kcre	3	19	20.00	450
19	12.66	290	Kci	2	33	Kcri	3	23	19.50	515
23	12.00	325	Kcm	2	35	Kcrm	3	27	19.00	565
27	12.00	365	Kcn	2	37	Kcrn	3	31	19.00	620
31	12.00	395	Kco	2	39	Kcro	3	35	17.00	595
35	11.00	410	Kcq	2	41	Kcrq	3	39	16.00	665
39	17.00	695	Kcs	3	43	Kcrs	4	43	23.00	995
43	17.00	765	Kcu	3	45	Kcru	4	47	22.00	1015
47	17.00	810	Kcw	3	47					
14	24.00	375	Kha	2	33	Khra	3	18	30.00	575
18	19.50	375	Khb	2	35	Khrb	3	22	31.00	690
22	21.00	470	Khe	2	37	Khre	3	26	29.00	745
26	31.00	800	Khi	3	39	Khri	4	30	40.00	1145
30	30.00	890	Khm	3	41	Khrm	4	34	36.00	1200
34	28.00	945	Khn	3	43	Khrn	4	38	35.00	1250
38	27.00	960	Kho	3	45	Khro	4	42	35.00	1380
42	27.00	1080	Khq	3	47	Khrq	4	46	34.00	1450
46	26.00	1130	Khs	3	49	Khrs	4	50	34.00	1555
50	25.50	1200	Khu	3	50					

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
0	4.00	30	Ra	1	17	Rra	2	4	4.00	48
3	3.00	34	Rb	1	21	Rrb	2	7	4.20	50
7	4.00	50	Re	2	22	Rre	3	11	4.33	70
11	3.33	55	Ri	2	25	Rri	3	15	4.50	85
15	3.33	65	Rm	2	27	Rrm	3	19	4.25	95
19	4.50	105	Rn	3	29	Rrn	4	23	5.25	140
23	4.33	120	Ro	3	31	Rro	4	27	5.20	160
27	4.33	135	Rq	3	33	Rrq	4	31	4.75	160
31	4.00	145	Rs	3	35	Rrs	4	35	4.50	175
35	4.00	150	Ru	3	37	Rru	4	39	5.00	210
39	7.20	290	Rw	3	39	Rrw	4	43	8.25	365
43	6.50	285	Ry	3	41	Rry	4	47	7.50	355
47	6.25	300	Rka	3	43					
5	6.00	60	Rca	1	26	Rcra	2	9	8.50	110
9	5.25	70	Rcb	2	27	Rcrb	2	13	7.50	125
13	8.00	135	Rce	2	29	Rcre	3	17	11.00	215
17	8.00	170	Rci	2	31	Rcri	3	21	11.50	280
21	8.00	195	Rcm	2	33	Rcrm	3	25	10.50	290
25	7.25	200	Rcn	2	35	Rcrn	3	29	10.00	310
29	6.66	210	Rco	2	37	Rcro	3	33	9.66	340
33	6.50	230	Rcq	3	39	Rcrq	3	37	9.66	365
37	9.50	370	Rcs	3	41	Rcrs	4	41	12.00	495
41	9.50	395	Rcu	3	43	Rcru	4	45	12.00	525
45	9.50	420	Rcw	3	45	Rcrw	4	49	11.00	520
49	8.50	420	Rcy	2	47					
12	19.00	295	Rha	2	32	Rhra	3	16	30.00	545
16	19.00	355	Rhb	2	34	Rhrb	3	20	29.00	635
20	18.50	410	Rhe	2	36	Rhre	3	24	28.00	700
24	17.50	450	Rhi	2	38	Rhri	3	28	27.00	765
28	17.00	490	Rhm	2	40	Rhrm	3	32	25.00	805
32	14.50	475	Rhn	3	42	Rhrn	3	36	22.00	795
36	23.00	840	Rho	3	44	Rhro	4	40	33.00	1245
40	24.00	940	Rhq	3	45	Rhrq	4	44	30.00	1255
44	22.00	960	Rhs	3	47	Rhrs	4	48	27.00	1230
48	20.00	910	Rhu	3	48					

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
0	6.00	40	Pta	1	18	Ptra	2	4	6.50	55
4	5.50	50	Ptb	1	20	Ptrb	2	8	8.00	100
9	5.66	75	Pte	1	22	Ptre	2	13	9.00	150
13	8.00	135	Pti	2	24	Ptri	3	17	10.00	210
17	10.00	200	Ptm	2	26	Ptrm	3	21	13.50	320
21	10.50	245	Ptn	2	28	Ptrn	3	25	13.00	360
25	15.00	390	Pto	3	30	Ptro	4	29	19.00	570
29	15.00	460	Ptq	3	32	Ptrq	4	33	20.00	665
33	15.25	525	Pts	3	34	Ptrs	4	37	18.00	670
37	15.00	545	Ptu	3	36	Ptru	4	41	19.00	745
41	15.00	615	Ptw	3	38	Ptrw	4	45	20.00	850
45	15.00	680	Pty	3	40	Ptry	4	49	19.00	875
49	14.00	685	Ptka	3	42					
7	8.25	90	Ptca	1	28	Ptcra	2	11	11.00	165
11	7.25	110	Ptcb	2	29	Ptcrb	2	15	11.50	215
15	13.66	245	Ptce	2	31	Ptcre	3	19	20.00	420
19	13.50	290	Ptci	2	33	Ptcri	3	23	20.00	500
23	13.00	330	Ptcm	2	35	Ptcrm	3	27	20.00	580
27	13.00	385	Ptcn	2	37	Ptcrn	3	31	17.00	590
29	13.00	390	Ptco	2	39	Ptcro	3	35	17.00	595
33	12.50	430	Ptcq	2	41	Ptcrq	3	39	20.00	770
37	12.00	465	Ptcs	3	43	Ptcrs	3	43	18.00	745
41	20.00	810	Ptcu	3	45	Ptcru	4	47	23.00	1020
45	20.00	855	Ptcw	3	47					
49	18.00	860	Ptcy	1	48					
13	9.00	145	Ptha	2	30	Pthra	2	17	15.00	305
17	18.00	355	Pthb	2	32	Pthrb	3	21	29.00	650
21	19.00	450	Pthe	2	34	Pthre	3	25	28.00	715
25	18.00	490	Pthi	2	36	Pthri	3	29	27.00	790
29	17.00	520	Pthm	2	38	Pthrm	3	33	26.00	845
33	17.00	560	Pthn	2	40	Pthrn	3	37	25.00	915
37	16.00	610	Ptho	3	42	Pthro	3	41	25.00	995
41	27.00	1075	Pthq	3	44	Pthrq	4	45	34.00	1450
45	27.00	1145	Pths	3	46	Pthrs	4	49	32.00	1465
49	25.00	1145	Pthu	3	48					

TABLE SRW BEAM WEAPON STATISTICS

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
0	5.00	30	**Fa**	1	7	**Fra**	2	4	6.66	45
3	5.00	45	**Fb**	1	9	**Frb**	2	7	7.50	70
7	5.00	50	**Fe**	1	11	**Fre**	2	11	8.00	105
11	5.00	65	**Fi**	1	13	**Fri**	2	15	8.50	135
15	5.00	80	**Fm**	1	14	**Frm**	2	19	8.50	165
19	5.00	100	**Fn**	1	15	**Frn**	2	23	9.00	195
23	5.00	115	**Fo**	1	17	**Fro**	2	27	9.00	225
27	5.00	130	**Fq**	1	19	**Frq**	2	31	9.00	260
31	5.00	145	**Fs**	1	21	**Frs**	2	35	9.00	290
35	5.00	160	**Fu**	1	22	**Fru**	2	39	9.00	315
39	5.00	175	**Fw**	1	24	**Frw**	2	43	9.33	345
43	5.00	190	**Fy**	1	25	**Fry**	2	47	9.33	375
47	5.00	210	**Fka**	1	27					
5	9.00	70	**Fca**	1	10	**Fcra**	2	13	15.00	205
9	9.00	100	**Fcb**	1	12	**Fcrb**	2	17	15.50	260
13	9.00	130	**Fce**	1	14	**Fcre**	2	21	15.50	310
17	9.00	155	**Fci**	1	16	**Fcri**	2	25	16.00	370
21	9.00	185	**Fcm**	1	18	**Fcrm**	2	29	16.50	415
25	9.00	210	**Fcn**	1	19	**Fcrn**	2	33	16.50	470
29	9.00	240	**Fco**	1	21	**Fcro**	2	37	16.50	530
33	9.00	270	**Fcq**	1	23	**Fcrq**	2	41	17.00	575
37	9.00	295	**Fcs**	1	25	**Fcrs**	2	45	17.00	630
41	9.00	320	**Fcu**	1	26	**Fcru**	2	49	17.00	675
45	9.00	345	**Fcw**	1	28					
49	9.00	375	**Fcy**	1	30					
14	14.00	200	**Fha**	1	19	**Fhra**	2	18	26.00	435
18	14.00	245	**Fhb**	1	21	**Fhrb**	2	22	25.00	505
22	14.00	285	**Fhe**	1	22	**Fhre**	2	26	28.00	650
26	14.00	335	**Fhi**	1	23	**Fhri**	2	30	26.00	660
30	14.00	370	**Fhm**	1	24	**Fhrm**	2	34	26.00	735
34	14.00	415	**Fhn**	1	25	**Fhrn**	2	38	26.00	815
38	14.00	455	**Fho**	1	28	**Fhro**	2	42	26.00	900
42	14.00	495	**Fhq**	1	30	**Fhrq**	2	46	26.00	975
46	14.00	545	**Fhs**	1	32	**Fhrs**	2	50	27.00	1060
50	14.00	580	**Fhu**	1	33					

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
0	6.00	35	**Ea**	1	6	**Era**	2	4	8.00	60
4	5.00	35	**Eb**	1	7	**Erb**	2	8	7.50	80
8	4.50	50	**Ee**	1	9	**Ere**	2	12	7.50	100
12	4.00	60	**Ei**	1	10	**Eri**	2	16	7.00	115
16	4.00	70	**Em**	1	12	**Erm**	2	20	7.00	140
20	4.00	85	**En**	1	14	**Ern**	2	24	7.25	165
24	4.00	95	**Eo**	1	15	**Ero**	2	28	7.25	190
28	4.00	110	**Eq**	1	17	**Erq**	2	32	7.25	220
32	4.00	125	**Es**	1	18	**Ers**	2	36	7.50	245
36	4.00	135	**Eu**	1	19	**Eru**	2	40	7.50	265
40	4.00	145	**Ew**	1	20	**Erw**	2	44	7.50	285
44	4.00	160	**Ey**	1	21	**Ery**	2	48	7.50	310
48	4.00	170	**Eka**	1	22					
6	8.00	70	**Eca**	1	7	**Ecra**	2	10	13.00	150
10	8.00	95	**Ecb**	1	9	**Ecrb**	2	14	13.50	195
14	8.00	120	**Ece**	1	11	**Ecre**	2	18	14.00	245
18	8.00	145	**Eci**	1	13	**Ecri**	2	22	14.50	295
22	8.00	175	**Ecm**	1	15	**Ecrm**	2	26	14.50	345
26	8.00	195	**Ecn**	1	16	**Ecrn**	2	30	14.50	390
30	8.00	220	**Eco**	1	17	**Ecro**	2	34	14.50	440
34	8.00	245	**Ecq**	1	19	**Ecrq**	2	38	14.66	485
38	8.00	270	**Ecs**	1	21	**Ecrs**	2	42	15.00	535
42	8.00	300	**Ecu**	1	22	**Ecru**	2	46	15.00	585
46	8.00	325	**Ecw**	1	23	**Ecrw**	2	50	15.00	640
50	8.00	345	**Ecy**	1	24					
14	12.00	180	**Eha**	1	16	**Ehra**	2	18	23.00	385
18	12.00	215	**Ehb**	1	17	**Ehrb**	2	22	21.00	430
22	12.00	250	**Ehe**	1	19	**Ehre**	2	26	21.50	500
26	12.00	290	**Ehi**	1	21	**Ehri**	2	30	22.00	575
30	12.00	330	**Ehm**	1	22	**Ehrm**	2	34	22.50	645
34	12.00	360	**Ehn**	1	24	**Ehrn**	2	38	22.00	715
38	12.00	395	**Eho**	1	25	**Ehro**	2	42	22.00	785
42	12.00	435	**Ehq**	1	27	**Ehrq**	2	46	22.50	860
46	12.00	460	**Ehs**	1	28	**Ehrs**	2	50	22.00	910
50	12.00	505	**Ehu**	1	30					
58	12.00	575	**Ehy**	1	33					

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
0	4.00	27	**La**	1	6	**Lra**	2	4	5.50	40
2	4.00	34	**Lb**	1	8	**Lrb**	2	6	5.66	50
6	3.00	41	**Le**	1	9	**Lre**	2	10	4.66	60
10	3.00	40	**Li**	1	10	**Lri**	2	14	5.00	80
14	3.00	50	**Lm**	1	13	**Lrm**	2	18	5.25	100
18	3.00	60	**Ln**	1	14	**Lrn**	2	22	5.25	115
22	3.00	70	**Lo**	1	16	**Lro**	2	26	5.50	135
26	3.00	80	**Lq**	1	17	**Lrq**	2	30	5.50	155
30	3.00	90	**Ls**	1	19	**Lrs**	2	34	5.50	175
34	3.00	100	**Lu**	1	20	**Lru**	2	38	5.50	195
38	3.00	110	**Lw**	1	22	**Lrw**	2	42	5.66	210
42	3.00	120	**Ly**	1	23	**Lry**	2	46	5.66	230
46	3.00	125	**Lka**	1	25	**Lrka**	2	50	5.66	245
4	7.00	50	**Lca**	1	9	**Lcra**	2	8	10.75	110
8	7.00	75	**Lcb**	1	11	**Lcrb**	2	12	11.50	150
12	7.00	95	**Lce**	1	13	**Lcre**	2	16	12.00	195
16	7.00	120	**Lci**	1	15	**Lcri**	2	20	12.33	240
20	7.00	140	**Lcm**	1	17	**Lcrm**	2	24	12.50	280
24	7.00	165	**Lcn**	1	19	**Lcrn**	2	28	12.50	325
28	7.00	185	**Lco**	1	21	**Lcro**	2	32	13.00	365
32	7.00	205	**Lcq**	1	23	**Lcrq**	2	36	13.00	405
36	7.00	230	**Lcs**	1	24	**Lcrs**	2	40	13.00	450
40	7.00	250	**Lcu**	1	26	**Lcru**	2	44	13.00	490
44	7.00	270	**Lcw**	1	28	**Lcrw**	2	48	13.00	535
48	7.00	290	**Lcy**	1	29					
10	11.00	130	**Lha**	1	15	**Lhra**	2	14	18.50	265
15	11.00	175	**Lhb**	1	17	**Lhrb**	2	19	19.00	355
18	11.00	195	**Lhe**	1	18	**Lhre**	2	22	19.50	395
22	11.00	230	**Lhi**	1	20	**Lhri**	2	26	20.00	460
26	11.00	265	**Lhm**	1	21	**Lhrm**	2	30	20.00	530
30	11.00	300	**Lhn**	1	23	**Lhrn**	2	34	20.00	595
34	11.00	335	**Lho**	1	25	**Lhro**	2	38	20.50	655
38	11.00	365	**Lhq**	1	26	**Lhrq**	2	42	20.50	725
42	11.00	400	**Lhs**	1	28	**Lhrs**	2	46	20.50	790
46	11.00	430	**Lhu**	1	30	**Lhru**	2	50	20.50	850
50	11.00	465	**Lhw**	1	32					

TABLE SRW PRECISION BEAM WEAPON STATISTICS

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
6	4.00	35	**Fpa**	1	5	**Fpra**	2	10	6.33	75
9	4.00	50	**Fpb**	1	6	**Fprb**	2	13	6.66	100
12	4.00	60	**Fpe**	1	7	**Fpre**	2	16	7.00	115
15	4.00	65	**Fpi**	1	8	**Fpri**	2	19	7.00	135
19	4.00	80	**Fpm**	1	9	**Fprm**	2	23	7.33	160
22	4.00	90	**Fpn**	1	10	**Fprn**	2	26	7.33	180
25	4.00	100	**Fpo**	1	11	**Fpro**	2	29	7.33	200
28	4.00	110	**Fpq**	1	12	**Fprq**	2	32	7.33	215
32	4.00	125	**Fps**	1	13	**Fprs**	2	36	7.50	240
36	4.00	135	**Fpu**	1	14	**Fpru**	2	40	7.50	265
40	4.00	145	**Fpw**	1	15	**Fprw**	2	44	7.50	285
44	4.00	160	**Fpy**	1	16	**Fpry**	2	48	7.50	310
48	4.00	170	**Fpka**	1	17	**Fprka**	2	52	7.50	335
9	9.00	100	**Fpca**	1	10	**Fpcra**	2	13	15.00	205
13	9.00	130	**Fpcb**	1	11	**Fpcrb**	2	17	15.50	260
17	9.00	155	**Fpce**	1	13	**Fpcre**	2	21	16.00	315
21	9.00	185	**Fpci**	1	14	**Fpcri**	2	25	16.00	365
25	9.00	215	**Fpcm**	1	15	**Fpcrm**	2	29	16.50	425
29	9.00	240	**Fpcn**	1	16	**Fpcrn**	2	33	16.50	480
33	9.00	270	**Fpco**	1	17	**Fpcro**	2	37	17.00	525
37	9.00	295	**Fpcq**	1	18	**Fpcrq**	2	41	17.00	580
41	9.00	320	**Fpcs**	1	19	**Fpcrs**	2	45	17.00	630
45	9.00	350	**Fpcu**	1	20	**Fpcru**	2	49	17.00	685
49	9.00	375	**Fpcw**	1	21					
16	14.00	230	**Fpha**	1	17	**Fphra**	2	20	25.00	455
20	14.00	270	**Fphb**	1	19	**Fphrb**	2	24	25.00	545
24	14.00	315	**Fphe**	1	20	**Fphre**	2	28	26.00	625
28	14.00	355	**Fphi**	1	22	**Fphri**	2	32	26.00	705
32	14.00	400	**Fphm**	1	23	**Fphrm**	2	36	26.00	785
36	14.00	440	**Fphn**	1	25	**Fphrn**	2	40	26.00	870
40	14.00	485	**Fpho**	1	26	**Fphro**	2	44	26.00	960
44	14.00	520	**Fphq**	1	28	**Fphrq**	2	48	26.00	1025
48	14.00	565	**Fphs**	1	29					

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
5	6.00	45	**Epa**	1	7	**Epra**	2	9	9.25	100
8	5.00	55	**Epb**	1	8	**Eprb**	2	12	8.25	110
11	4.50	60	**Epe**	1	8	**Epre**	2	15	7.50	120
15	4.00	65	**Epi**	1	9	**Epri**	2	19	7.00	135
19	4.00	80	**Epm**	1	10	**Eprm**	2	23	7.25	160
23	4.00	95	**Epn**	1	11	**Eprn**	2	27	7.25	185
27	4.00	105	**Epo**	1	12	**Epro**	2	31	7.25	210
31	4.00	120	**Epq**	1	13	**Eprq**	2	35	7.33	235
35	4.00	135	**Eps**	1	14	**Eprs**	2	39	7.50	260
39	4.00	145	**Epu**	1	15	**Epru**	2	43	7.50	280
43	4.00	160	**Epw**	1	16	**Eprw**	2	47	7.50	310
47	4.00	170	**Epy**	1	17					
9	6.00	70	**Epca**	1	9	**Epcra**	2	13	10.00	140
13	6.00	90	**Epcb**	1	11	**Epcrb**	2	17	10.25	180
17	6.00	110	**Epce**	1	13	**Epcre**	2	21	10.50	220
21	6.00	130	**Epci**	1	14	**Epcri**	2	25	11.00	255
25	6.00	145	**Epcm**	1	16	**Epcrm**	2	29	11.00	285
29	6.00	165	**Epcn**	1	17	**Epcrn**	2	33	11.00	325
33	6.00	185	**Epco**	1	19	**Epcro**	2	37	11.00	365
37	6.00	200	**Epcq**	1	20	**Epcrq**	2	41	11.00	395
41	6.00	220	**Epcs**	1	22	**Epcrs**	2	45	11.00	435
45	6.00	240	**Epcu**	1	23	**Epcru**	2	49	11.00	465
49	6.00	255	**Epcw**	1	25					
16	9.00	150	**Epha**	1	17	**Ephra**	2	20	16.00	300
20	9.00	180	**Ephb**	1	19	**Ephrb**	2	24	16.00	355
24	9.00	205	**Ephe**	1	20	**Ephre**	2	28	16.00	415
28	9.00	235	**Ephi**	1	22	**Ephri**	2	32	16.50	465
32	9.00	260	**Ephm**	1	23	**Ephrm**	2	36	16.50	520
36	9.00	290	**Ephn**	1	25	**Ephrn**	2	40	16.50	570
40	9.00	315	**Epho**	1	26	**Ephro**	2	44	17.00	620
44	9.00	345	**Ephq**	1	28	**Ephrq**	2	48	17.00	675
48	9.00	370	**Ephs**	1	29					

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
5	6.00	50	**Lpa**	1	6	**Lphw**	1	55	14.00	635
9	6.00	70	**Lpb**	1	7	**Lpra**	2	9	9.33	100
12	6.00	85	**Lpe**	1	8	**Lprb**	2	13	10.00	140
15	6.00	100	**Lpi**	1	9	**Lpre**	2	16	10.33	170
19	6.00	115	**Lpm**	1	10	**Lpri**	2	19	10.50	200
23	6.00	140	**Lpn**	1	11	**Lprm**	2	23	10.66	235
27	6.00	155	**Lpo**	1	12	**Lprn**	2	27	11.00	275
31	6.00	175	**Lpq**	1	13	**Lpro**	2	31	11.00	305
35	6.00	195	**Lps**	1	14	**Lprq**	2	35	11.00	340
39	6.00	210	**Lpu**	1	15	**Lprs**	2	39	11.33	380
43	6.00	230	**Lpw**	1	16	**Lpru**	2	43	11.33	415
47	6.00	245	**Lpy**	1	17	**Lprw**	2	47	11.33	455
8	10.00	100	**Lpca**	1	8	**Lpcra**	2	12	16.00	210
12	10.00	135	**Lpcb**	1	9	**Lpcrb**	2	16	17.00	275
16	10.00	165	**Lpce**	1	11	**Lpcre**	2	20	17.50	330
20	10.00	195	**Lpci**	1	12	**Lpcri**	2	24	18.00	385
24	10.00	225	**Lpcm**	1	14	**Lpcrm**	2	28	18.00	455
28	10.00	260	**Lpcn**	1	15	**Lpcrn**	2	32	18.00	515
32	10.00	290	**Lpco**	1	17	**Lpcro**	2	36	19.00	570
36	10.00	320	**Lpcq**	1	18	**Lpcrq**	2	40	19.00	625
40	10.00	350	**Lpcs**	1	20	**Lpcrs**	2	44	19.00	685
44	10.00	380	**Lpcu**	1	21	**Lpcru**	2	48	19.00	745
48	10.00	410	**Lpcw**	1	23					
15	14.00	215	**Lpha**	1	12	**Lphra**	2	19	20.00	360
19	14.00	260	**Lphb**	1	13	**Lphrb**	2	23	21.00	440
23	14.00	300	**Lphe**	1	15	**Lphre**	2	27	22.00	520
27	14.00	340	**Lphi**	1	16	**Lphri**	2	31	22.50	605
31	14.00	385	**Lphm**	1	18	**Lphrm**	2	35	23.00	685
35	14.00	430	**Lphn**	1	19	**Lphrn**	2	39	23.50	765
39	14.00	470	**Lpho**	1	21	**Lphro**	2	43	24.00	845
43	14.00	510	**Lphq**	1	22	**Lphrq**	2	47	24.00	925
47	14.00	550	**Lphs**	1	24					

TABLE SRW OTHER WEAPON STATISTICS

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
0	3.00	22	Ga	1	6	Gra	2	4	3.50	39
3	3.00	31	Gb	1	9	Grb	2	7	4.00	40
8	3.00	47	Ge	1	9	Gre	2	12	4.00	55
11	3.00	40	Gi	2	9	Gri	3	15	3.66	65
15	4.25	70	Gm	2	11	Grm	3	19	5.00	105
19	3.50	70	Gn	2	11	Grn	3	23	4.75	110
23	3.33	80	Go	2	11	Gro	3	27	4.33	115
26	3.66	95	Gq	2	11	Grq	3	30	5.50	155
30	4.00	110	Gs	2	12	Grs	3	34	5.50	170
34	3.00	100	Gu	3	12	Gru	4	38	3.66	130
38	4.00	140	Gw	3	12	Grw	4	42	5.00	190
42	4.25	165	Gy	3	14	Gry	4	46	5.00	210
46	4.50	180	Gka	3	16	Grka	4	50	5.50	235
50	4.25	190	Glb	3	16					
5	6.00	45	Gca	1	11	Gcra	2	9	8.25	90
9	5.25	60	Gcb	1	11	Gcrb	2	13	8.00	110
13	6.50	95	Gce	2	11	Gcre	3	17	7.75	140
17	5.66	100	Gci	2	12	Gcri	3	21	7.75	165
21	6.25	135	Gcm	2	12	Gcrm	3	25	8.00	190
25	6.00	145	Gcn	2	14	Gcrn	3	29	8.33	225
29	5.75	155	Gco	2	14	Gcro	3	33	8.25	245
33	5.50	170	Gcq	2	14	Gcrq	3	37	7.50	240
37	6.66	225	Gcs	3	16	Gcrs	4	41	8.00	300
41	6.50	235	Gcu	3	16	Gcru	4	45	8.00	305
45	6.00	240	Gcw	3	16	Gcrw	4	49	7.25	305
49	6.50	280	Gcy	3	18					
12	9.00	120	Gha	2	14	Ghra	3	16	10.50	170
16	9.00	145	Ghb	2	14	Ghrb	3	20	11.33	220
20	9.00	175	Ghe	2	14	Ghre	3	24	12.00	275
24	9.00	210	Ghi	2	14	Ghri	3	28	12.66	330
28	9.50	250	Ghm	2	16	Ghrm	3	32	14.00	395
32	9.33	275	Ghn	2	16	Ghrn	3	36	12.00	390
36	9.25	295	Gho	3	16	Ghro	4	40	11.66	400
40	10.25	360	Ghq	3	18	Ghrq	4	44	12.50	470
44	11.66	440	Ghs	3	18	Ghrs	4	48	14.00	560
48	11.66	480	Ghu	3	20					

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
2	3.00	28	Pga	1	4	Pgra	2	6	4.33	40
4	2.50	30	Pgb	1	4	Pgrb	2	8	4.00	45
8	2.00	35	Pge	1	5	Pgre	2	12	4.00	60
12	2.00	44	Pgi	1	6	Pgri	2	16	4.00	70
16	2.00	40	Pgm	1	7	Pgrm	2	20	4.00	85
20	2.00	45	Pgn	1	7	Pgrn	2	24	3.75	90
22	2.00	50	Pgo	1	8	Pgro	2	26	4.00	100
26	2.00	55	Pgq	1	8	Pgrq	2	30	4.00	115
30	2.00	60	Pgs	1	9	Pgrs	2	34	4.00	125
34	2.00	70	Pgu	1	9	Pgru	2	38	4.00	140
38	2.00	75	Pgw	1	10	Pgrw	2	42	4.00	150
42	2.00	80	Pgy	1	10	Pgry	2	46	3.75	155
46	2.00	85	Pgka	1	10	Pgrka	2	50	3.50	160
50	2.00	95	Pglb	1	10					
5	4.50	40	Pgca	1	7	Pgcra	2	9	7.00	80
9	4.00	45	Pgcb	1	7	Pgcrb	2	13	6.00	100
12	3.50	50	Pgce	1	8	Pgcre	2	16	6.00	105
16	3.25	60	Pgci	1	8	Pgcri	2	20	5.50	115
20	3.00	65	Pgcm	1	9	Pgcrm	2	24	5.50	125
24	3.00	75	Pgcn	1	10	Pgcrn	2	28	5.50	145
28	3.00	85	Pgco	1	11	Pgcro	2	32	5.50	165
32	3.00	95	Pgcq	1	11	Pgcrq	2	36	5.50	185
36	3.00	105	Pgcs	1	12	Pgcrs	2	40	5.50	200
40	3.00	115	Pgcu	1	12	Pgcru	2	44	5.66	220
44	3.00	120	Pgcw	1	12	Pgcrw	2	48	5.66	240
48	3.00	130	Pgcy	1	12					
12	6.00	85	Pgha	1	9	Pghra	2	16	10.00	170
17	5.00	90	Pghb	1	9	Pghrb	2	21	8.75	180
20	4.50	95	Pghe	1	9	Pghre	2	24	8.00	185
23	4.00	95	Pghi	1	9	Pghri	2	27	7.50	190
27	4.00	105	Pghm	1	10	Pghrm	2	31	7.50	210
31	4.00	120	Pghn	1	10	Pghrn	2	35	7.50	230
35	4.00	135	Pgho	1	11	Pghro	2	39	7.50	260
39	4.00	145	Pghq	1	12	Pghrq	2	43	7.50	285
43	4.00	155	Pghs	1	13	Pghrs	2	47	7.50	305
47	4.00	170	Pghu	1	14					

SL	HS	Cost	Wpn	ROF	Max Rng	Wpn	ROF	SL	HS	Cost
12	5.00	70	Ca	1	12	Cra	2	16	8.50	145
16	5.00	85	Cb	1	13	Crb	2	20	8.75	175
20	5.00	105	Ce	1	15	Cre	2	24	9.00	205
24	5.00	120	Ci	1	16	Cri	2	28	9.00	235
28	5.00	135	Cm	1	18	Crm	2	32	9.00	270
32	5.00	150	Cn	1	19	Crn	2	36	9.00	300
36	5.00	170	Co	1	21	Cro	2	40	9.50	330
40	5.00	185	Cq	1	22	Crq	2	44	9.50	365
44	5.00	200	Cs	1	24	Crs	2	48	9.50	395
48	5.00	210	Cu	1	25					
18	8.00	145	Cca	1	15	Ccra	2	22	14.00	295
22	8.00	170	Ccb	1	17	Ccrb	2	26	14.00	340
26	8.00	195	Cce	1	18	Ccre	2	30	14.50	395
30	8.00	220	Cci	1	19	Ccri	2	34	14.50	440
34	8.00	245	Ccm	1	20	Ccrm	2	38	15.00	485
38	8.00	270	Ccn	1	22	Ccrn	2	42	15.00	535
42	8.00	295	Cco	1	23	Ccro	2	46	15.00	580
46	8.00	320	Ccq	1	25	Ccrq	2	50	15.00	630
50	8.00	345	Ccs	1	26					
25	11.00	255	Cha	1	20	Chra	2	29	20.00	510
29	11.00	290	Chb	1	22	Chrb	2	33	20.00	575
33	11.00	325	Che	1	23	Chre	2	37	20.50	640
37	11.00	355	Chi	1	25	Chri	2	41	20.50	705
41	11.00	385	Chm	2	26	Chrm	2	45	20.50	760
45	11.00	425	Chn	2	28	Chrn	2	49	21.00	830
49	11.00	450	Cho	2	29					

TABLE SRW X-RAY LASER STATISTICS

SL	HS	Cost	Wpn	ROF	Max Rng
0	7.00	30	Lja	1	8
3	4.00	25	Ljb	n/a	n/a
7	3.25	30	Lje	n/a	n/a
12	3.00	35	Lji	n/a	n/a
16	2.75	40	Ljm	n/a	n/a
20	3.00	50	Ljn	n/a	n/a
24	3.25	60	Ljo	n/a	n/a
28	3.50	70	Ljq	n/a	n/a
32	4.00	80	Ljs	n/a	n/a
36	4.00	90	Lju	n/a	n/a
40	4.00	110	Ljw	n/a	n/a
44	4.00	130	Ljy	n/a	n/a
48	4.00	140	Ljka	n/a	n/a

3	5.00	30	Deca	1	8
5	3.00	40	Decb	1	10
10	5.00	90	Dece	1	10
14	4.00	105	Deci	1	12
18	19.00	400	Decm	2	13
22	19.00	480	Decn	2	13
26	22.00	700	Deco	2	15
30	22.00	775	Decq	2	17
34	26.00	1080	Decs	2	18
38	26.00	1140	Decu	2	20
42	30.00	1435	Decw	2	21
46	30.00	1435	Decy	2	23
50	35.00	1880	Decka	2	24

Next Section: Appendix FF - Examples

EXAMPLE A1.02.3 – MOVEMENT TO WEAPONS RANGE

Force A and force B have detected each other at a range of 240 tH, and want to engage. (240 / 4 = 60) so the fleets are placed on the map at a range of 60, with each hex equal to 4 tH. A range of "60 tH" would be a distance of 15 tH on this map, so movement is continued until the fleets close to a distance of 15 tH on this map.

At this point the fleets are moved so that the closest elements are at range 60, with all the other fleet units in relation to each other * 4. (So if you had two cruiser groups at a range of 2 on the enlarged map, they would be 2*4=8 hexes apart on the new tH resolution map).

Note: This is only for this *example*. If the detection ranges had been 120 tH, then the enlarged map's hexes would only equal 2 tH, and combat range would be 30 hexes on the enlarged map, and the multiplier would be *2 when resolving the map into the tH resolution.

EXAMPLE A4.01 – STARSHIP CONTROL SHEET EXAMPLES

Master Control Sheet (for recording unit class designs)

Spearer-class DD	AM1 6-XOe	30 HS/ 21 TS	
[3] SSSAZaHQb(Ib)(Ib)(Ib)(Ib)De(Ib)DeQb?aFbDe(Ib)Fb [6/3]			
Trg:1	Def-1	PV=37	Cost= 660/99
SL10 20 HTK Sx3 Ax1 Dex3 Fbx2			

Simplified Starship Control Sheet (suggested format for combat records of multiple ships of the same class)

Spearer DD2	(AM1) 6 XOe	21 TS	#1 2 3 4 5 6 7 8 9
[3] SSSAZaHQb(Ib)(Ib)(Ib)(Ib)De(Ib)DeQb?aFbDe(Ib)Fb [6]			

Explanation in order top to bottom, left to right:

Spearer - Name or Class of the starship.
DD2 - Starship type and ID number of the individual ship.
AM1 - Advance Maneuvering One.
6 XOe - The ship mounts 6 external enhanced ordnance racks.
HS: 30 - Size of unit in hull spaces.
TS: 21 - Transit Size of unit in hull spaces [C4.02.2].
[3] - Turn mode requirement of the ship [C3].
SSS - Three units of shields.
A - One unit of armor.
Za - Alpha datalink system.
H - Cargo hold.
Qb - Basic crew quarters.
(Ib) - One basic engine in an engine room [C1].
De - Enhanced point defense system.
Fb - Basic force beam.
?a - Alpha EMS system.
[6/3] - Maximum tactical/strategic speed in movement points [C2].
Trg:1 - Ship can target 1 ship without penalties [D3.02].
Def -1 - Ship is minus 1 to be hit by large unit weapons fire.
PV = 37 - Ship has a point value of 37.
660/99 - Ship cost to construct followed by the unit's maintenance cost each month (strategic turn) [L7.02].
20 HTK - Ship can withstand 20 points of "normal" damage, called "hit to kill," before it is totally destroyed. HTK in ULTRA and Shipyard assumes force beam damage and does account for weak hulls.
Sx3 Ax1 Dex3 Fbx2 - This is just a quick combat reference section to which tells the total numbers of important system on the ship, generally defenses, weapons, and storage systems.

EXAMPLE A4.02 – FIGHTER SQUADRON CONTROL SHEET

Blue Squadron (FQb-L) -- K 24
Spd: 11/5 Mod: +1/+3 Sen: 15 tH

Explanation:

Blue Squadron = Squadron Designation
(FQb) = The type of squadron (FQ/GB/ast) and generation of small craft in it.
L = Internal Weapons; like L (Lasers).
K = External (single use) Weapon; like K (Kinetic).
24 = Squadron takes 24 DP {damage points} before death.
Spd: = Tactical/Strategic Speed {Optional}.
Mod: = SRW/LRW combat modifiers {Optional}.
Sen: = Maximum Sensor Range {Optional}.

Note: When using [Sw.01] include the gen. of weapon in Int: and Ext: and adjust Mod: to reflect.

EXAMPLE A4.02 – GUNBOAT SQUADRON CONTROL SHEET

Gunboats use the same type sheet as fighters above.

EXAMPLE A4.02 – SMALL CRAFT CONTROL SHEET

Astx4 -- 12
Astx4 is the TYPE and NUMBER of craft in the squadron
12 is the damage capacity of the squadron, to be altered as needed

Note: It is usually not necessary to make a sheet for small craft unless they are armed or carrying passengers or cargo.

EXAMPLE: MAXIMUM SPEED DEFINITION

A BC's maximum hull speed with "Ie" is 6, calculated by the number of engine rooms on the ship (6 engine rooms). This ship can move at its maximum speed of 6 at the tactical level. However, if the ship moves faster than 1/2 its "maximum hull speed" when moving at the strategic level (called the "maximum safe speed"), by using more than THREE engine rooms (half of speed 6 is speed 3), it can burn out engines [C7]. Likewise, if 1 engine room had failed under [C7], then the maximum speed is 5 and exceeding a speed of 2 (half of speed 5 is 2.5, FRD to 2) would cause more rolls under [C7].

EXAMPLE C – MOVEMENT

The Terran player begins the turn with three starships on the map: DD SCIPIO in hex 0624 (facing [1] or hex 0623); DD LIN BAO in hex 0626 (facing hex 0625) and SD CROMWELL in hex 0825 (facing hex 0824). The Terran ships are using Ib type engines. Both DDs are speed 6 ships with a turn mode of 3 since they have AM1 [I engine tree]; CROMWELL has a speed of 4 and a turn mode of 6. The Orion player also has three starships: BC PARZH in hex 0419 (facing hex 0519), BC VALKHA in hex 0318 (facing hex 0418), and CA DELGOR in hex 0218 (facing hex 0318). The Orion player is using Jb type engines. All have a speed of 6 and a turn mode of 6.

The Terran player won initiative, so the Orion player begins movement by moving each starship straight ahead one hex (PARZH to 0519; VALKHA to 0418; DELGOR to 0318). The Terran player then expends the first movement point for each of his ships, moving LIN BAO to 0625, and CROMWELL to 0824 but leaving SCIPIO motionless (that is, expending one movement point in place).

The Orion player begins the second movement pulse by expending a second movement point for each ship. He moves straight ahead once more: PARZH to 0618, VALKHA to 0519, and DELGOR to 0417. The Terran player then moves his second pulse. This time, both CROMWELL and SCIPIO remain motionless (expending one movement point each in place) while LIN BAO moves to join SCIPIO in hex 0625.

In pulse 3, the Orion player continues to move straight ahead: PARZH to 0718, VALKHA to 0619, and DELGOR to 0517. The CA DELGOR has now satisfied its turn mode of 6 by expending 6 movement points on the same facing (3 of the 6 movement points were spent on the last turn of movement), and elects to turn 60° right (facing [3] or hex 0617). The Terran player responds by moving SCIPIO and LIN BAO forward into 0623 and moving CROMWELL forward into 0823. Both Terran DDs have now satisfied their turn modes by expending 3 movement points on the same facing, and the Terran player elects to turn them 60° right to face hex 0723, completing the third pulse of the turn.

The Orion player begins pulse 4 by moving his ships forward (PARZH to 0817, VALKHA to 0720, and DELGOR to 0617). The Terran player moves SCIPIO and LIN BAO forward to 0723. CROMWELL moves forward into 0822.

The Orion player begins pulse 5 by moving all three ships straight ahead 1 hex (PARZH to 0917, VALKHA to 0820, and DELGOR to 0718). The Terran player cannot move CROMWELL (she expended her last movement point in the preceding pulse) and holds SCIPIO and LIN BAO motionless in hex 0723, expending one movement point each in place.

The Orion player now expends the sixth and final movement point of each of his ships, moving PARZH to 1016, VALKHA to 0921, and DELGOR to 0818. The Orion player turns the PARZH to face hex 1117 to avoid having the Terran ships in her blindspot. The Terran player moves SCIPIO forward to hex 0823. The LIN BAO expends a movement point to remain in place. As this is their sixth movement point, they have satisfied their turn mode yet again, and the Terran player turns SCIPIO to face hex 0822 and LIN BAO to face hex 0722.

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 SCIPIO or LIN BAO before VALKHA and DELGOR can fire at them.

EXAMPLE C1.02 – FRACTIONAL ENGINE POWER

The hull table [Construction Tables] under Ia engine power and ES sized ships lists the number 1/3. This means that each 1 movement point requires one-third (1/3) of an engine. Thus, a full sized I engine provides 3 MP. An ES with a single (iI) engine room would have a speed of (1.5 engine systems divided by engine power 1/3 equals 4.5). As fractions are dropped when determining movement speed, this ES would have a speed of "4."

EXAMPLE C1.02.1 – ENGINE ROOM SIZE

A speed "7" DD, which receives 1 movement point per "Ie," would have seven engine rooms, each coded "(I)," and would lose 1 movement point for each "Ie" 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.

EXAMPLE C1.02.2 – SINGLE HALF-SIZE ENGINE

A speed "5" CT, which receives 2 movement points per "I," (1/2 engine power) would have 2 engine rooms, coded "(iI)" and "(I)." If the "(iI)" was lost, the speed would be 1 engine remaining divided by 1/2 engine power equals 2 movement points.

EXAMPLE C1.02.3 – FRACTIONAL ENGINE POWER ABOVE ONE

A speed "6" BC's engines (engine power 2.5) can only be arranged as "(IeIe)(IeIeIe)(IeIe)(IeIeIe)(IeIe)(IeIeIe)." Non-Engine systems could be intermingled in a design as desired. The first MP of the BC requires 2.5 engines and the right most (first) engine room has 3 engines as the half-size engine must be in the left most engine room.

The second MP requires 2.5 * 2 = 5 engines and the second engine room, from the right of the design, contains 2 engines Thus, the first pair of rooms, from the right, contain 5 engines which divided by engine power (2.5) gives a speed of 2.

EXAMPLE C1.03 – DAMAGED ENGINE ROOM OPERATION

A CA engine room with two "I" has a 50% chance of remaining operational if a single "I" is destroyed. An DN engine room with 4 "I" has a 75% chance of remaining operable with one engine damaged, or a 25% chance of remaining operable if 3 of its 4 "I" were destroyed.

EXAMPLE C2.02 – USING FRACTIONAL SPEEDS

The use of Fractional Speeds during Strategic Movement (an Optional Rule) can be complex but will add to the game. The following general principles should be followed.

1/2 StMP movement is from a Star to a WP or from a WP to a Star. If attempting to move WP to WP, the ship will end a month halfway between the WP. Probing cannot be done with a 1/2 StMP

A ship with a 0.5 Strategic Movement Speed (like 2.5 or 3.5) will move on the Table C2.03 Pulsed Movement one extra point every other month with the first month of this movement being at the slower speed. I.e Speed 2.5 moves two the first month and 3 the 2nd month.

Excess speed for engine burnout [HH3.08] purposes is calculated from the rounded speed. Thus, a speed 7.5 ship with a true speed of 3.75 cruising would, moving at speed 4, would have 0.5 excess speed and would be at risk of engine burnout.

Example #1 A Ia equipped FG (smallest of the speed 5 "I" hulls) is actually speed 5.5. A ship with an extra 0.5 speed has no impact on any phase of the game, so installing an engine to gain it would be pointless. But, because Generational hulls reduce speeds by 1/2 point per generation, this extra 0.5 speed still can play a factor as FGa is speed 5, not 4.5 like the DDa.

Example #2 A Jb equipped DD (smallest of the speed 6 "J" hulls) would be speed 7.5. J strategic speed is 1/3 of tactical. So strategic speed would 2.5. A Ja equipped DD would be 6.5 or speed 2.166 (FRN to speed 2) strategic.

EXAMPLE C4.03.1 – TRANSIT "IN A LINE"

A DN equipped with (Im) engines wishes to transit through a WP.

DN is 130 HS.

An Im engine adjusts a ships transit size by 6 levels [C4.02.2].

Six levels on that table is 33%. This makes the new transit size 33% of what is was. So 130 * 0.33 = 43.3 or a transit size of 44 for the example DN.

Taking the largest WP size "F", which is 62 HS in size, we see that 1 DN per transit pulse can transit with 18 HS left over.

An Im equipped FG would also fit in single transit pulse without rolling for interpenetration. The FG's transit size is doubled since it is transiting on the same pulse as another ship (TS of (22 * 0.33) *2 = 16 TS.

Taking the smallest WP size "A", which is 25 HS in size, we divide 44 by 25 and get a number between 1 and 2. Thus, it will take 2 transit pulses for the DN to transit with (25*2 - 44) = 6 TS left over.

An Im equipped size 9 ES would also be able to safely transit on the 2nd pulse). The ES's transit size is doubled since it is transiting on the same pulse as another ship (TS of (9 * 0.33) *2 = 6 TS.

EXAMPLE C7 – PULSED MOVEMENT AND BURNOUT

A speed "5" BC with 12.5 "Ib" in 5 engine rooms is moving toward a threatened system at full speed on the strategic scale. For "Ib" engines, cruising speed for the BC is only 5/2=2.5 (FRD) so it is exceeding its maximum safe cruising speed by 2.5 MP. Accordingly, after its first StMP is used, the owning player makes three checks (1 for each excessive movement point or fraction thereof), and any result of 01-06 (30/5=6 days or 1 StMP) indicates an engine has failed (the 3rd roll fails on only 01-03). He rolls a "10," a "05," and a "87," so one engine has failed and must be marked off the engine room of his choice. The BC's 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 "4" (his new maximum possible speed) and continue checking for additional engine failures.

He decides to slow to speed 2. Looking on the pulse movement chart [C2.03], we see that the 1st StMP occurred during the 2nd strategic pulse. At speed 2, there is only a 2 during the 3rd or greater pulses, so the unit will move only once more.

If the unit had survived its first set of burnout checks, it would continue rolling 3 more checks after each StMP was used until the unit failed or ran out of StMP.

EXAMPLE C8 – ENGINE MODULATION

If an ES with "Ib" engines and turn mode "3" used 4 MP on Engine Modulation, all starship weapons shooting at it would have their hit probabilities reduced by 1. The 4th MP is wasted. If the ES has turn mode "2" and uses 4 MP on Engine Modulation, the reduction is 2 (the first EM level costs 2 MP, the second 2 MP). In addition to the MP used for EM, the ES must also spend 1 MP to move to a new hex in order to receive any benefit from the EM.

EXAMPLE C10 – RAMMING

A badly damaged BC is cornered by a hostile SD and attempts to ram. The BC's turn mode is "3," but its speed has been reduced to "3" by battle damage. The evading SD's turn mode is "4," 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, because you must roll 3 greater than the ship you attempt to ram, 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 "+3," which would have given it a 5+3=8. If the BS had rolled a "5" or less, the BC's roll would have exceeded its roll by at least 3, and the ramming attempt would have succeeded.

EXAMPLE D3.01.4 – RESTRICTED ARCS VS. BLINDSPOTS

If a weapon was mounted in the rear arc of a ship with J drives, the weapon would be rendered inoperable when the engines are active because it cannot fire through the blindspot.

EXAMPLE D3.02.1.2 – MULTIPLE MULTIPLEX SYSTEMS

An EL 10 space station may have 6 installations of M6, 8 installations of M3, which provides (6x6) + (8x3) = 60 additional targets, allowing 61 units to be fired on without penalty. Note that if this space station fires at 62 units it suffers the penalty (-1) to all 62 targets it fires at, not just to the 62nd target.

EXAMPLE D4.01.1B – SKIPPING TO (HOW SKIPPING WORKS)

A weapon type is listed as skipping 10 shields (or skipping to 10 shields). If that weapon (or two weapons) did 2 damage points, then the first point of damage would skip up to nine shields. If the target had ten or more shields, then the tenth shield would be destroyed. The 2nd point of damage would then skip up to nine more shields -- thus, if the target had 10-19 shields, then 1 shield would be destroyed and one system beyond the shields would be destroyed. If the target had 20 or more shields, then two shields would be destroyed. Note: As long as all the shields are the same type, it really doesn't matter if you mark the 1st or 10th one, so make it easy on yourself.

EXAMPLE D4.01.1B – SKIPPING SPECIALS

5 points of laser damage are done to a dense shield. 3 points hit the dense shield and the remaining 2 points continue skipping.

EXAMPLE D4.01.1C – PRIMARY BEAM SKIPPING

Primary beams can hit one of the first 1d10/2 (FRD but counting 0.5 as 1) or first 5 systems OR 1d10th system In addition, primary beams also skip some shields, some armor, and all holds. Upon reaching internal systems (i.e. all shields and armor have been bypassed, including if some primary damage was stopped by shields and/or armor), to apply internal damage from a primary beam, count the internal intact eligible systems from the left, skipping shields, armor, and holds until you reach the generated number.

Example: A Fpa does 2 pts of damage to DN with 20 shields and 20 Armor. As Fpa 30 shields/armor, the first point of damage hits the 10th armor after skipping all 20 shields and 9 armor. The 2nd point continues by skipping the remaining 20 armor and striking an internal system. As the DN is a big ship, the attacker chooses to roll 1d10 and rolls a 6. The six eligible internal system will be destroyed. The first part of the DN design is "ZaHMgsHDbDcaFbEbRa" Since the Holds are ineligible, the Eb is the 6th eligible system and is destroyed. If 3 pts of damage had been done, the Eb and the Ra (the next system) would be destroyed.

EXAMPLE D4.01.3 – RAMMING DAMAGE

An ES with 3 engine systems/rooms rams a CA with 6 engine rooms. The CA would lose 2 engine systems (the first engine in 2 engine rooms) because the ES has 3 engines, and 20% of 12 HS damage is 2.4 (FRD to 2.0). The ES would lose 5 engine systems (it only has 3 such systems) because the CA has 5 engine rooms and 20% of 60 HS of damage is 12. Note that the CA would also take 12 points damage minus any shield reduction. If rammed by a FG with 5 engine rooms of 1 "I" each, the CA's first 4 (20% of 22 HS) engine rooms would lose 1 "I" each. If rammed by any starship with 6 or more operable "I" or "Ic," the CA would lose 1 "I" in each engine room.

EXAMPLE D5.07 – NATIONALITY DETECTION

Race A detects Race C's nationality and then communicates to learn they are Terrans. However, Race B cannot learn how to detect Terrans from race A. So until B gets a partnership with Race A, communications with Race C, or race C will remain an unknown race to race B.

EXAMPLE D7.01 – SENSOR DETECTION

An AF is 12 hexes from a Warp Point.

Turn 1, two enemy units moving speed 6 exit the warp point (transit in a line) on a direct course toward the AF. The first has Standard SL 0 Sensors, the other Ya Sensors and sensor range is reduced by 1/2 on this turn due to WP transit, Class B effects

- Turn 1, 1st Impulse - WP transit, range 12
  1st unit can not detect the AF
- Turn 1, 2nd Impulse - range 12
  2nd unit enters; 1st unit sits; neither unit detects the AF
- Turn 1, 3rd Impulse - range 11
  Neither unit detects the AF
- Turn 1, 4th Impulse - range 10
  The Standard sensors still do not detect the AF. The Ya now has a P detection level but this is not enough to fire weapons at it.
- Turn 1, 5th Impulse - range 9
  The Standard sensors: no detection. Ya sensors: P detection level.
- Turn 1, 6th Impulse - range 8

The Standard sensors: no detection. Ya sensors: P detection level. Neither vessel can fire on the AF, even if the AF fires on them.

- Turn 2, 1st Impulse - range 7

Since the Transit Effects are no longer in effect, the Standard sensors now detect the AF with P detection and the AF is at combat range. The Ya has a detection level of T and the AF is at short range. At this point, either unit (or any other unit in the fleet with P detection) can fire on the AF.

EXAMPLE D7.03 – LARGE EXPLOSIONS

A ship filled with 400 1 pt warheads will only cause 2x7=14 points of damage when it rams. If exploded without a successful ram, then the damage is only 2 points.

If 75 Rbm and 130 Rca are detonated. Average strength is (75*1+130*3)/(75+130)=2.26 or 3. From the table, 205 warheads have a 6 multiplier and the total damage is 3*6 or 18 points damage, if the ram was successful. If the ram attempt was unsuccessful, damage would only be 3 points damage.

EXAMPLE D7.04 – BREAKOFF AND SURRENDER

Losses are 50% and 23%. RM is 63. RD is 54. 50-23=27; 27 - ((63+54)/10+5) = 27 -17 = 10 or a 50% chance of Breakoff.

EXAMPLE D9.02 – SAMPLE PROGRAMS

EXAMPLE WP ASSAULT POD PROGRAM

Engagement Zone: All hexes at range 2-10 and within the fire arc.

Target Type: All non-friendly large units.

Timer: May fire on the 3rd and later turns after activation.

EXAMPLE ARMED BUOY PROGRAM

For Mines with Basic Sensors in Hex 4229 (WP in Hex 4232):

Engagement Zone: Hexes 4130, 4131, 4230, 4231, 4232, 4330.

Target Type: All non-friendly units the AP can detect.

Timer: May fire on turn 3 after target type and engagement zone were first satisfied. Reset timer every 5th turn.

Note: If these buoys are moved (for example, by tractor beams), the EZ will change to cover the same hexes relative to the mines. This EZ has such an irregular shape that it is easiest to define it as the specific hexes it covers, but the hex the buoy is in must be recorded together with the Engagement Zone in this case. It could also be drawn on a small hex-map.

F1.01 EXAMPLE OF COURIER DRONE PROGRAM

Engagement Zone: All hexes within 20 TH of the drone

Target Type: Any friendly unit

Timer: May act as soon as the target type and engagement zone are satisfied.

Action: Send recorded message: -

Movement order (not part of the Targeting Program): -

EXAMPLE E5.02 – TRACTOR CONFLICTS

Unit A currently has two tractor locks on units B and C, which it is towing. Enemy Units D and E choose to fire tractors at unit A. Unit D fires two attractors at unit A and rolls an 8, which is successful. Unit E fires and also is successful. This results in multiple conflicts. Unit A rolls for its two tractors and only the one to unit B is maintained. Unit D maintains its tractor attempt but Unit E fails. Since Unit A cannot be tractoring and be tractored at the same time, conflicts still exist. Then, Unit A maintains its link but Unit D doesn't. No further conflicts exist anymore.

EXAMPLE E5.01 – TRACTOR DISRUPTION

An enemy unit fires 3 tractor beams at the "Excelsior," a destroyer in the Terran navy, 2 of those beams finding their target. The "Excelsior" activates its 2 Tda to disrupt the tractor beams. The chances of success are (3 (base disruption number) + 2 (the number of Tda) - 4 (2 tractor hits, doubled) = 1). A single roll of 1 or less will stop all of those tractor attempts.

Assuming that the tractor beams are disrupted by a miraculous roll, another unit targets the "Excelsior" with 3 presser beams, all three hitting. Since the maximum number of disruptions that the Tda can handle is 2, there is a –2 penalty applied. [E5.02] The chances of success are (3 + 2 – 2 (the penalty) – 6 (3 presser hits, doubled) = -3). The Tda are unable to block the presser beams.

EXAMPLE E5.03.3 – TOWING & CHAIN SPEED

A speed 5 DDf tug (Ica engines with 3 Ica tug engines) is towing a BS3 (60 HS). The Tug is effectively size 60 and the BS3 is size 60 for a -1 speed. That would be speed 4 but a BS3 Maximum Hull Speed (CA Hull with Ica engines = 3) is only three and thus the chain is limited to speed three.

EXAMPLE E5.03.6 – CHAIN MOVEMENT

The "Sherpa," a destroyer tug of the Terran navy, is tractoring 2 friendly DD that have been heavily damaged earlier. Her tug room contains 6 additional engines, giving her a towing strength of (30 + 6*10 = 90) HS. Since the two DD are cooperating, the towed size is (30/2 + 30/2 = 30) HS, less than 1/2 the "Sherpa" towing strength. The "Sherpa" will move at its full speed of 4. At the start of the turn, the "Sherpa" is in hex 1217-A, tractoring the 2 DD "Excelsior" (hex 1518-B) and the "Enterprise" (hex 1215-D). The "Sherpa" being the primary ship, it is the only one expending MPs. On the first MP, she moves forward to hex 1216-A, the 2 DD following (1517-B, 1214-D). On the second MP, she moves forward and turn left to 1215-F (1516-B, 1213-D). On the third MP, she moves forward to 1115-F (1415-B, 1113-D). On the last MP, she moves forward to 1014-F (1315-B, 1012-D).

EXAMPLE E5.03.7 – TRACTORING AND TURN MODE

Example #2: A BB tractors a CA making its turn mode increase from 4 to 7. The CA has not turned in the previous 5 pulse and must expend 2 more MP before it can turn.

EXAMPLE E5.05 – TRACTOR BEAM MOVEMENT

During the Tractor Beam Phase, the "Sherpa" (hex 1014-F) (Ex: E5.03.6) will pull both DDs it is tractoring. The "Excelsior" (hex 1315-B) has 2 choices: hex 1214 or 1215. The player controlling the "Excelsior" selects to move to hex 1214-B. The "Enterprise" (hex 1012-D) has no choice and must move to hex 1013-D.

EXAMPLE E7 – INTERCEPTING MISSILES

Three ADMa and seven RMb are about to hit a shields-down ship with five Db. The defender has a total of 15 shots available, and wishing to maximize his chances of stopping the ADM, 'triples up' against them, using 9 of his shots. He now has only 6 shots left, so one of the RM must be let through without an interception attempt. His chance to intercept each ADM is 5: 4 (basic intercept number of Db) - 1 (targeting ADM) + 2 (three shots vs one missile) = 5. He rolls a 4, 5, and 6, resulting two interceptions and one 'leaker'. His chance to intercept each RM is 4 (basic intercept number of Db, with no modifiers). For the RMb the rolls are 1, 2, 3, 6, 7, and 7, resulting in three more RMb slipping past the point defense to join the RMb that was not engaged. The results of the attack: the target ship loses its four left-most systems (from the RMb) and its left- most engine system (from the ADMa).

EXAMPLE F2.05 – COMBAT SPACE PATROL

Review of Restrictions:

1) No more than 1/4 of the fleet's small craft can be on CSP at a time (one exception is listed in F2.05)
2) No unit can exceed GQ status for more than 8 hours of each day.
3) A carrier must commit all its squadrons for CSP or none of them.
4) A carrier providing CSP must be at GQ.

EX #1 A fleet of 4 identical carriers is providing CSP.

The schedule would be each carrier is at GQ and providing CSP for 6 hours and then resting for 18 hours. Each carrier could be at GQ an extra 2 hours per day but without their small craft in space.

EX #2 A fleet of 3 identical carriers is providing CSP.

The schedule would be each carrier is at GQ and providing CSP for 8 hours and then resting for 16 hours. This is legal because F2.05 says that 1/4 CSP restriction can be exceeded by no more that one carrier's compliment of CSP. Since only one carrier is on duty, this is not a problem. Further F2.04 is not violated because each carrier is only on duty (GQ) for no more than 1/3 of the time.

EX #3 A fleet of 23 identical carriers (3 squadrons each) is providing CSP. The 1/4 restriction is 17.25.

The schedule could be 4 shifts of 5 carriers each with 3 shifts having an extra carrier. Thus, shift one would have 15 squadrons and shifts 2, 3, and 4 would have 18 squadrons. 18 squadrons exceeds the limit of 17.25 but not by more than the smallest carriers 3 squadron capacity -- so all is legal.

EXAMPLE F3.09.5 – AVERAGING SQUADRON GRADE

A BG+3 FQa squadron took 11 of 20 DP in damage. The owner decides to fully repair the squadron and assigns his (MS) to repair 11 DP and adds 5 BG-1 CP replacements (first damage to this squadron this month). The new crew grade is (9 * 6 + 5 * 2) / (20 - 6) = (54+10)/14 = 4.57. A 1d10 rolls is then made against the 10ths digit. If the d10 roll vs. 5 (tenth's place) is 5 or less, the squadron's crew grade will be BG+2 otherwise it will be BG+1.

EXAMPLE G2.04.2 – LANDING SMALL CRAFT

The Terran BCf NIMITZ, with 4 squadrons of FQb, begins the movement phase in hex 0729 headed into hex 0728. 3 squadrons of fighters from the carrier ARGUS which NIMITZ wishes to recover and rearm start in hex 1026, facing [5] or hex 0927.

On the first movement pulse, NIMITZ moves one hex straight ahead into 0728, and ARGUS'S fighters move to 0927 and turn right to face 0826.

On pulse 2, NIMITZ moves into hex 0727 while the fighters move to 0826.

On pulse 3, NIMITZ moves to 0726 and simultaneously launches her fighters, each with fully loaded external ordinance, facing into hex 0626. NIMITZ has expended a total of 3 movement points to get into hex 0726, "using up" 3 points of her fighters' movement, and the act of launching uses up an additional point. FQb with fully loaded external ordnance have a movement of 9 (11 - 2). So NIMITZ'S fighters have a total movement allowance of 9-3-1=5 movement points which they may begin expending in pulse 4 of the current movement turn. Meanwhile the ARGUS's fighters move into 0726, same hex as the NIMITZ.

On pulse 4, NIMITZ may recover the ARGUS's fighters as both are in the same hex. We will ignore the rest of movement to save space.

EXAMPLE G4.01 – SQUADRON ENDURANCE

A GBb with sQi gains a flight time of 12 hr + 6 * 2 for the squadron's internal life support. The sQ adds 12 hr + 6 * 4 for a total of 24 hr + 36 hrs or 60 hrs total.

EXAMPLE G7.01 – ANTI-SQUADRON COMBAT

4 DD are firing at a fighter squadron (Med range, Lix3, Dbx1)

4 DD (assuming Zi) is 72 base value (18 each *4) which is +8 damage (Step 2). Die roll of 48 gives total damage of 6+8 = 14.

If each DD was Elite, 72 base value would be 79, or +9 damage.

EXAMPLE G7.05 – SQUADRON COMBAT

Squadron SRW attack

A Green Fighter squadron attacks with Le at Med Range and rolls a 8. Beam at Mid Range reduces this to a 7.

L modifier makes this a 6 but the generation increases it to 8. The green crew grade modifier reduces the 8 to a 7.2. 7.2 is divided by 2, 3.6 which is rounded up to 4 damage (or 4 DP vs a squadron/AP).

If it was against a gunboat, 7.2 would become 14.4 divided by 2 to 7.2 and rounded to 8.

EXAMPLE G7.06 – LANDING INVASION TROOPS

A HEL 3 attacker is invading a planet inhabited by a HEL 2 defender. There are 1500 PU on the planet and no defensive Qv or PDCs. Each facing of the planet has a defensive fire of BASV 6 (1500/50 is 30 BASV, +10% for EL 2 is 33 BASV, 33/6 rounds up to 6). Once per day per facing, the defenders will have a shot at BASV 60 attack using expendable ordnance.

The attacker has three options for getting his troops on the ground. If he has ast in sufficient numbers, he can air-drop his troops to limit the number of defensive shots. The initial wave of ast on each facing of the planet meets the external ordnance, the BASV of 60 results in a damage modifier of +6 on Table G7.02 Anti-Squadron Damage Adjustment Table to be applied to a roll on Table G7.03 Damage Caused to Squadron. Assuming a roll of 51, his attack wave will suffer 13 points of damage, destroying 4 ast, and damaging one. Any follow-up waves the same day will only face a BASV attack of 6, meaning a damage modifier of -7, and the defender has to roll 62+ on Table G7.03 Damage Caused to Squadron to damage an ast and 87+ to destroy one outright.

If the attacker does not have ast, then he can use shuttles to land the troops, but each wave will be attacked on their way in (before landing troops), and again on the way out. Each 2 points of damage destroys a st.

If the attacker chooses not to use small craft, but instead risks his freighters to land the troops, the defenders only get 1 attack per day (the expendable ordnance attack), and with the roll of 51 above on Table G7.03 Damage Caused to Squadron resulting in 13, that attack will do 3 points of damage to one landing freighter.

EXAMPLE H1.03 – INSTALLING ENGINES

A race wishes to build a BC with Ie engines. AppE-Ship Hull Tables gives the statistics we need to install engines. From the table, we see that a BC with Ia engines has a maximum speed of 4, turn mode of (4), and requires 2.5 engines per MP. Ie engines increase the maximum speed to 6, the turn mode to (6) while still requiring 2.5 engines per MP [References are AppA-I.01 Ion Drive Tree & AppA-Eng.03 Hull Table Turn Modes]. Since we want the BC to go maximum speed, we'll need 6 MP * 2.5 engines = 15 engines to go speed 6. These engines will be mounted in 6 engine rooms according to [C1.02] and in the order (II)(III)(II)(III)(II)(III). Each Ie engine takes 1 space so 80-15 = 65 spaces remain to be filled.

EXAMPLE L1.02 – POPULATION CONVERSIONS

EXAMPLE L1.02 – PTU TO PU CONVERSION

73,253 PTU is in the Large Bracket. So 73,253-5,820=67,433 PTU which is divided by the Large bracket conversion factor of 70. 67,433/70=963.32 which rounds to 963.3 PU plus 1,000 PU from the medium bracket equals 1,963.3 PU.

EXAMPLE L1.02 – ADDING PTU TO PU USING THE SAME CONVERSION FACTOR

A Small population with 182 PU has 121 PTU added to it. The 121 PTU are divided by 2, the conversion factor, yielding 60.5, or 60.5 PU after rounding. As 182 + (121/2) is 242.5 and that remains in the starting bracket of small, this constitutes a small addition and the simplification method worked. The new size is 242.5 PU.

EXAMPLE L1.02 – ADDING PTU TO PU USING A DIFFERENT CONVERSION FACTOR

A Small population of 355 PU has been established on your Partner's Large population world with 1595 PU. You are now amalgamating, and wish to combine these populations into a single total but you cannot just add them together because the conversion factors are different.

The Small population converts to PTU as 355-180 = 175; 175x 2 = 350, and 350+180 = 530 PTU. The Large population coverts to PTU as 1595-1000=595; 595x70 = 41650, +5,820 yields 47470 PTU.

Adding these together produces a population of 48000 PTU, which falls into the size of Large. Subtracting the 5820 PTU that is the beginning size for Large, we have 42720 left that when divided by 70 leaves 610.28 to add to the basic PU of 1000. The population, after combination and rounding, has become a large population of 1610.2 PU. (Note that 355 PU added to 1595 PU produced an increase of only 15.2 PU. Two Amalgamated populations cannot remain segregated.)

EXAMPLE L3.01 – GPV CALCULATION

100.2 PU, HEL 18, on a Hostile Very Rich world with 24 IU.

(Income mod = 140%) * (Pop = 100.2) = 140.28

(140.28 + (IU = 24)) = 164.28 MC of income (FRU to 165).

Example 2: Pre-I, 150 PU on Benign Rich world:

(Income mod = 120%) * (Pop = 150) = 180.0

(180.0 + (IU = 0)) * (Pre-I = 0.3) = 54.00 MC of income.

EXAMPLE L4.03 – SPEED AND POOL CAPACITY

A speed 5 freighter provides 5/4 = 1.25 H per H mounted. So this freighter, if it had 20 H, would effectively provide 20*1.25 = 25 H worth of capacity.

EXAMPLE L4.09.1 – CAPACITY USAGE

Example: An empire with access to speed 5 CFN wants to ship 10 Qv to a planet 5 hexes away. The shipment uses 12.5 Qv of capacity for the month.

If the CFN was only speed 4, the 2nd month of transport would be at a discounted capacity rate as the distance is only 1 StMP.

Table L4.14 Shipping Form Example

Shipment	Start Loc	End Loc	Dist	Spd	H Capacity Used	Qv Capacity Used	PTU Equipment Cost
10 PTU	#756	#823	2	4	200 H	100 Q	200 MC (Harsh)
10 PTU	#756	#823(#205)	7	4	200 H	100 Q	100 MC (Benign)
10 PTU	#823	#205	3	4	200 H	100 Q	Paid last month
17 Qv + 20 H	#756	#542(#132)	6	4	20 H	17 Qv	
TOTALS					620 H	317 Q	300 MC

EXAMPLE L4.14 – SHIPPING FORM

See Table L4.14 Shipping Form Example

- The **shipment** is what is being shipped: Some Examples are PTUs, Qv, Wealth, admirals, etc.
- **Start location** is for the *current* month BUT **End location** may have TWO systems listed for a long shipment that will still be in progress next month. EX: #352(#241)
- The **1st number** is the start location for THIS month and the **2nd number** is the final destination. *Use caution:* The end location for PTUs cannot change unless the PTU is sent to a planet with the same planetary Environment [L1.03]. Lines with two numbers on them transfer to the next month as the shipment continues
- Distance may be greater than the distance between the Start and final end location due to the necessity of finding a large enough CFN terminal to end at (Requires a population, see [L4.06]).
- Speed is the speed you wish the shipment to move at. Faster speeds (if available) use 25% extra capacity per point of speed above 4 [L4.10.1].
- Capacity is determined by [L4.08]. Don't forget that in system transfers [L4.11] use no capacity.

EXAMPLE L7.01 – MAINTENANCE

In month 5, you complete a unit build project. The maintenance cost for that unit is added to the maintenance fund. But this takes place after month 5's maintenance costs are paid, so maintenance for this unit starts being paid on turn 6 since maintenance is one of the first things paid for.

On turn 9, at the beginning of the turn, maintenance is paid on the unit. Later during the month, the unit is destroyed in battle. The maintenance cost is deducted from the fund, and maintenance on that unit is no longer paid from month 10 on. Note that the maintenance paid on the destroyed unit is not rebated to the treasury. It is lost.

EXAMPLE M – CONSTRUCTION EXAMPLES

The following are simple examples to help you understand the new construction rules.

EXAMPLE M1.03.1 – CAPACITY USAGE

The Zoran Hemogeny (EL 2) has 10 SYs in their only facility. The total capacity of the yard is (10 + 2 * 2) * 10, or 140 total. They wish to use up all their build capacity building DDs. Because their build limit is 14 HS, they can start building 10 DDs (140 capacity used). At the end of the turn, each of the 30 HS DDs will have 14 HS completed. At the end of turn two, each of the 10 DDs will have 28 HS completed (140 capacity used on turn 2). On turn 3, all 10 DDs will be completed with each DD using up 2 HS of capacity (120 capacity remaining). As each DD is a new build, the construction facility gains +4 HS for each completed DD [M2.01.1] (160 capacity remaining). The Zoran could then decide to build more DDs or more of something else. But they can only have 10 uncompleted units at the end of the turn [M1.03.1], so in order to use all the capacity, they will have to build a number of units that are smaller than 14 HS in size. Of course, completing some of those units could give another capacity bonus and more capacity to be used up.

EXAMPLE M1.03.4.2 – PROTOTYPE – LATE SYSTEM INSTALL

The Frenar Democracy has begun to prototype their first CL, but expects to have several new technologies that will affect the final design. They decide to finalize the design later, but start building the hull now. They pay 503.5 MC (236.25 MC * 2 for the prototype hull + 1 MC for the hold + 30 MC for 3 Qa) and construction of the hull begins. Several turns later, but before the 33% deadline, they finalize the design and pay 370 MC for all the internal components (paying again for the H and Qa) plus 20% of the total regular cost for the prototype class fee (which is 121 MC).

EXAMPLE M2.02 – REPAIR UNIT

An (AC)-equipped DD has taken damage to AH(Bsa)(Ia)(Ia). The list cost for these systems is 53 MC for the systems and 5 HS at 2 MC per HS repaired or 10 MC. If repaired at a space complex, the total repair cost would be (53/3) + 10 = 27.66 MC and would use 5 HS of capacity.

2nd Example including zero space systems

A DD has had the following systems damaged
AAZaHsMgs(Ia)(Ia)Ya (XOa)x4
HS which need repairing are
(Ax2) + (Za) + (Hs+Mgs) + (Ia)x2 + Ya + (XOa)x4
2 + 1 + 1 + 2 + 1 + 2 = 9 HS (cost 18 MC)
Cost to repair systems is
(Ax2) + (Za) + (Hs+Mgs) + (Ia)x2 + Ya + (XOa)x4
4 + 30 + 10 + 40 + 20 + 8 = 112/3 HS (cost 37.33 MC)
Totals are 37.33 + 18 = 55.33 MC and 9 HS of shipyard capacity.

EXAMPLE M3.06 – REPAIR/REFIT HULL

Another DD has suffered exactly the same damage as the one in the previous example, but the repairing space construction complex has has two spare Ia in storage. This is a Custom project consisting of the following tasks:

1. Repair 5 HS; cost 5 * 2 MC = 10 MC, capacity 5/2 = 2.5 HS
2. Repair AH(Bsa); cost (2+1+10) / 3 = 4.33 MC, capacity 3/2 1.5 HS
3. Install the stored Ia into the 4th and 5th HS; costs nothing, capacity (1+1)/4 = 0.5 HS

Total cost is 14.33 MC, and the capacity used is 4.5 HS

EXAMPLE M3.06 – REFIT UNIT

A player wants to refit an old DD with more modern weapons. The old design is:

[3] SSSSAAAAAHRaRaMg(Ia)(Ia)(Ia)(Ia)QbQb(Ia)La [5/2.5]
and he would like to refit it to
[4] SSSAAAZaH(Ib)(Ib)(Ib)(Ib)(Ib)Rbx3MgQbDaQbLb [5/3]

Comparing these two sheets HS for HS and marking the ones which differ between the two designs:

SSS [S]AAA[AA]H[RaRa]Mg[(Ia)(Ia)(Ia)(Ia)]Qb Qb[(Ia)]La
SSSAAA{Za}H{(Ib)(Ib)(Ib)(Ib)(Ib)RbRbRb}Mg{Da}QbQb{Lb}

Examining the two designs, he finds that he has to refit 27 of the DD's hull spaces. The Za counts as 10 more HS to refit, for a total of 37. He can re-install one "H" one "Qb", and one "Mg" in their new places, but the rest of the systems (5 "Ib", 1 "Za", 1 "Da", 3 "Rb" and 1 "Lb") must be built before they can be installed. In addition, he will have 1 "S", 2 "A", 2 "Ra", 4 "Ia", and one "La" left after the refit is finished.

The custom project consists of:

1. Refit 37 DD HS (includes removing already installed systems): cost 1 * 37 = 37 MC, capacity 37/2 = 18.5 HS
2. Build the new systems: cost (24 * 5) + 30 + 15 + (35 * 3) + 35 =305 MC, Capacity used (5 + 1 + 2 + 9 + 4)/4 = 5.25 HS
3. Install the systems into the refitted HS at the normal rate: cost 0 MC, capacity used = 37/4 = 9.25 HS

The total refit would therefore have a base cost of 342 MC, and use up 33 HS of build capacity.

If the player was in a hurry he could split the refit up into three projects: One to refit the HS and remove the old systems, one to build the new systems at the same time as the hull was being refitted, and finally a Fast Installation project to install the new systems. This would cost an additional 331 * 0.5 = 166 MC (total cost of the new systems plus the ones that are just being moved), but would only take 3 HS of build capacity. Since the first two projects are done simultaneously, the job will get done in 21.5 HS of time. If the player is EL 5, this means that the entire refit can be done in a single month instead of stretching it over two months.

EXAMPLE M3.03 – ASSEMBLY WITH COMPLICATIONS

The Haterakan Empire (EL4) has conquered several systems from their arch-enemies, the Ar'Evin. In order to secure their conquests, the Emperor decides to build bases at the WP to the remaining Ar'Evin territories.

This can be done in two ways:

1. Send mobile shipyards (SYM, since the Empire is unable to build ships large enough to carry SY) to the border system and use freighters (Imperial or CFN) to ship enough resources to build the bases from scratch (Build Unit projects) in that system. The total build capacity used for each BS is equal to its size in HS (less the Capacity Bonus, [M2.01.1]). This would take very long, since the SYM build rate is only 6 HS/month.
2. Ship out unassembled hulls and stored systems, and use SYM4 or (preferably) MS4 to assemble them. The assembly itself is free and uses up a build capacity equal to HS/2 per base (and can be done at the MS4 build rate of 18 HS/month), unless the Emperor orders a Fast assembly in which case it takes only a build capacity of HS/4 per base but costs 50% of the bases' list cost.

Since the Empire has no unassembled BS hulls stored, it must first manufacture them. It has enough uninstalled weapons stored to arm all of the new bases, but it must still Build the BS hulls and all non-weapon systems. To save time, the Emperor decides to build each base as two projects: one with a "Build Hull" task, and one with all the "Build System" tasks. This uses the same build capacity and costs just as much as doing it in a single project per BS, but takes less time since 18 HS of work can be done on *each* project every month. The drawback is that the Empire's shipyards can do less work on other projects - like all those units crippled in the recent fighting - in the meantime.

The plan is to ship the bases and assemble them (using a custom project of "Hull Assembly (Fast)" and "Install System (Fast)" for each base). This would cost an extra 50% of the bases' list cost, but it would be *really* fast - the MS4s can assemble 72 HS of empty hull or install 144 (!) HS of systems into each base each month. Just to be on the safe side, the Emperor also sends a couple of SYM4 and a wad of extra MC. It is as well he does, for a raiding Ar'Evin squadron left behind in one of the conquered systems manages to intercept the convoy carrying the bases and savages one of the freighters. Half of an unassembled BS hull is destroyed in the cargo holds. Since the hull is incomplete the machine shops can't assemble it as it is, so an SYM4 must build replacement parts using a "Build Hull" custom project first. The SYM *could* handle the entire replacement + assembly itself (a custom project combining "Build Hull" for the missing HS parts, "Assemble Hull" and "Install Systems"), but again this would be done at the SYM4 build rate so it is split up into two: one project for the SYM4 to Build the replacement parts, and once that has been done an MS4 can assemble the base as described above.

EXAMPLE M7 – BUILDING A GROUND FACILITY

The player has decided to build a new RDS on a planet that has just grown to Medium size. The player pays the 400 MC cost and transports 10 PTU to the planet to serve in the RDS. Because the planet only has two shipyards for planetary industry (as determined in [M1.02.1]), and the empire's build rate is only 14 HS, only one more uncompleted project can be built this month.

EXAMPLE N – RESEARCH AND DEVELOPMENT

MONTH 1

Race A decides to begin an R&D project on EL3. For the project startup, he must add 10 RPs for a cost of (100 MC + 20% * 3547 = 809 MC). The EL2 project now has 10 RPs. The player notes that the project's target RP is (50 + 20*3 = 110 RPs). A few Science R&D projects are also started, but they will not be shown in this example. The player decides to forego any colonization this month, putting the amount in an emergency fund.

MONTH 2

Race A continues his R&D project on EL3, adding another 10 RPs for the same cost since his TGI hasn't changed. Race A now has 20 RPs in EL2 project. Race A also starts a AP-SL2 project. Because the cost of the 10 RPs required for startup is doubled, fee is (2 * (20 + 2*2) = 48 MC). The AP-SL2 project has 10 RPs. The player notes that the project's target RP is (20 + 5*2 = 30 RPs). Because his initial exploration didn't yield any habitable worlds, the player decides to add 10 PTUs to his asteroid population. This will increase his TGI to 3559 MC for next month.

MONTH 3

Race A continues adding 10 RPs to his EL3 project. Because his TGI has changed, the cost is now (100 MC + 20% * TGI = 811 MC). Project has reached 30 RPs. Its AP-SL2 project gains 5 RPs at 12 MC, for a total of 15 RPs. Note that since player decided to forego any shortfall on this project, it is not calculated. The player adds another 10 PTUs to his asteroid population. This will increase his TGI to 3570 MC for next month.

MONTH 4

Having discovered a habitable world nearby, the player wishes to delay his R&D spending to concentrate on colonization. By using his emergency fund and limiting his other spending, he is able to keep his EL research project on track for this month. He spends (100 + 20% * TGI = 814 MC) and increases the project to 40 RPs. The AP-SL2 project only gains 1 RP at 2.4 MC, total 16 RPs. Breaking up a PU, he sends 30 PTUs to colonize the planet. Accounting for the 10 free PTUs, the Homeworld is left with 1999 PUs and 430 PTUs.

MONTH 5

The colonization has increased Race A TGI to 3622 MC, putting the cost of the EL project's 10 RPs at 824 MC. Only 5 RPs are added to the project at a cost of (824 * 5/10 = 412 MC). This creates a shortfall of 5 RPs having a cost of (824 - 412 = 412 MC). Project now has 45 RPs. The AP-SL2 project only gains 1 RP at 2.4 MC, total 17 RPs. Another 30 PTUs are sent to the new planet, for a total of 60 PUs.

MONTH 6

TGI increases to 3676 MC, bringing full EL cost to 835 MC. EL shortfall incurs its 10% penalty, putting cost at (412 * 1.1 = 453 MC). Another 5 RPs are added for 417 MC. EL project now has 50 RPs and a 10 RPs shortfall worth (453 + 418 = 871 MC). The AP-SL2 project only gains 1 RP at 2.4 MC, total 18 RPs. Another 30 PTUs are sent to the new planet, for a total of 90 PUs.

MONTH 7

TGI increases to 3730 MC, bringing full EL cost to 846 MC. EL shortfall compounds to 958 MC. Another 5 RPs are added for 423 MC. EL project now has 55 RPs and a 15 RPs shortfall worth (958 + 423 = 1381 MC). The AP-SL2 project only gains 1 RP at 2.4 MC, total 19 RPs. Another 30 PTUs are sent to the new planet, for a total of 120 PUs.

MONTH 8

TGI increases to 3784 MC, bringing full EL cost to 856 MC. EL shortfall compounds to 1519 MC. Another 5 RPs are added for 428 MC. EL project now has 60 RPs and a 20 RPs shortfall worth (1519 + 428 = 1947 MC). The AP-SL2 project only gains 1 RP at 2.4 MC, total 20 RPs. Another 30 PTUs are sent to the new planet, for a total of 150 PUs.

MONTH 9

His colonization effort being over, Race A can resume his R&D at full speed. TGI increases to 3838 MC. EL shortfall compounds to 2141 MC. The EL project receives 10 RPs for 867 MC, bringing it to 70 RPs and keeps its shortfall of 20 RPs worth 2141 MC. The AP-SL2 project gains 1 RP at 2.4 MC, total 21 RPs. The player adds 20 PTUs to his asteroid population.

MONTH 10

Growth occurs, increasing TGI to 4860 MC. EL shortfall compounds to 2355 MC. In order to buy back this shortfall, Race A uses the growth month opportunity to sell his 100 IUs. The EL project receives its usual 10 RPs for 1072 MC and the 20 RPs from the shortfall for 2355 MC, for a total of 30 RPs and 3427 MC. The AP-SL2 project gains 1 RP at 2.4 MC, total 22 RPs. The player decides to forego any colonization this month, as all remaining funds were spent buying shortfalls on the various other projects.

MONTH 11

Race A having sold its IUs, TGI drops to 4728 MC. EL project receives 10 RPs for 1045 MC, bringing it to 110 RPs. The AP-SL2 project gains 1 RP at 2.4 MC, total 23 RPs. The player resumes local asteroid colonization, adding 5 PTUs.

MONTH 12

TGI increases to 4734 MC. EL project receives 10 RPs for 1046 MC, bringing it to 120 RPs. This is more than the 110 RPs base requirement, giving the project a (120 - 110 = 10%) chance of success this month. The R&D roll is made, for a result of '07': the EL3 project is completed. The AP-SL2 project only gains 1 RP at 2.4 MC, total 24 RPs. The player adds another 10 PTUs to his asteroid population.

MONTH 13

Race A is now EL3, increasing TGI to 5141 MC. This also drops the AP-SL2 project target RP to (30 * 80% = 24 RPs) because EL is one above SL. The player decides to give 6 RPs at 14.4 MC to the AP-

SL2 project, increasing the total to 30 RPs. This gives a (30 - 24 = 6%) chance of success. The R&D roll is made, for a result of '47': still more work required.

And so on.

EXAMPLE N2.03 – FREE TWIG SL

Completion of I-engine SL 15, completes all Engine Tuner Twig SL of SL 15 or lower without items. Since SL 9 and SL 12 of the engine tuner twig do have items, those SL must be researched normally. If later on, J-engine SL 16 is completed, then SL 16 engine tuner would also be completed (if engine turner SL 12 is completed) even if I-engine branch remains at SL 15.

EXAMPLE N5.03 – SHORTFALL

The selected project has shortfall totals of 31 RPs and 6231 MC, for a cost of 201 MC per RP. The empire may choose to keep only 10 shortfall RPs costing 2010 shortfall MC (10/31*6231 = 2010).

EXAMPLE N8 – R&D PROJECT SUCCESS CHANCE

Researching tech item of SL 6 (adjustment is 120%), and the empire is EL5. The base RP is 20+ (5*6) = 50 RP [N7.02]. The adjusted RP is 50*120% = 60 RP. Say that 81 RP have been completed. The chance of success is 81-60 = 21% Thus, a die roll of 21 or less on a 1d100 roll will succeed.

EXAMPLE N9.03.1 – TECH DATA BENEFITS

Race A has not opened the force beam tree. Race A gains tech data on the Fb tech item. Fb is SL3 so the target SL is 3-3 = 0. Thus, the knot to open the force beam tree is gained. Once verified, SL 0 and then Fa can be developed with those R&D projects gaining Free RP.

(10,000*1%) = 950 MC.

EXAMPLE N9.03.4 – UPLIFTING AN EL

An NPR race of EL 1 has become a partner of a player race at EL 3. The player wants to uplift the NPR so that they can amalgamate. The NPR has a population of 700.0 PU when the uplift starts, on a benign world with very poor mineral wealth. They have 140 IU. So, that makes their GPV ((700 * 0.6) + 140) = 560 MC.

To pay for uplift, the NPR buys 25 EL RPs each month for 2 months. 1 such RP costs them (10 + (0.02 * 560)) = 21.2 MC. Therefore, they pay (21.2 * 25) = 530 MC per month.

The uplifting partner (Player EL 3) must pay 80% of the cost of 25 RP each turn [N9.03.4] (0.80 * 21.2 *25) = 424 MC. Over two months, this is 848 MC, while the NPR paid 1020 MC.

After two months, the NPR will be EL 2 but will not get a growth bonus. At that point, a 2nd uplift can occur to bring the NPR up to EL 3.

EXAMPLE N9.04.2 – COUNTER TR

A EL 5 race, income of 10,000 MC, has just learned that another race has fighters and decides that a defense is necessary. The defense is the Initial Gunboat Project, which is SL 6, costs 500, and the race has no previous SL in the defense tree (gunboat).

As the race has no SL in gunboats or fighters, N9.04.2.2.1 does not apply. Thus, the RP cost 170% of normal (SL one more than race's EL). Normal cost, for 10 RP, would be 500 * 170% + (10,000*1%) = 950 MC.

EXAMPLE N11.03.2 – SL NEEDED BEFORE BREAKTHROUGH

There is a knot at SL4 in the I engine tree and this knot cannot be removed (nor placed on the Breakthrough Objectives List) until the race has completed SL3 research in the I engine tree.

EXAMPLE N9.05.3 CRASH R&D ELIGIBILITY

A race uses Ptca against you and your best weapon is Rcb or Fe. As Ptca does 5 points which is more than Rcb (3 pts) and more than Fe (4 damage maximum), you'd be eligible. You would also be eligible because Ptca out ranges Rb by one hex.

EXAMPLE P3 – MESSAGE FORMAT

The Empire of the Omnivoracity is under attack by an unknown enemy who has begun operations by raiding the Omnivoracity's CFN. A freighter courier drone has arrived at the Hanak System ICC at 22:30 on the 30th day of the 21st month, announcing the attack.

The ICC assigns it the ID number "FCD-204" (since it is the 204th freighter CD of the game for this empire) and notes its arrival time, then formulates his response and sends the following order to one of his fleets:

To: Fleet 178

Proceed immediately to System 1009 via Systems 0023-1079-0102-0091 at strategic speed 6 to respond to unknown hostile incursion in System 1009 reported by freighter courier drone received here 21 30 | 22:30:00. Send units to General Quarters for each warp transit. Engage and repel attackers unless present in overwhelming force. If outnumbered by 2-to-1 or greater, fall back to closest system not yet invaded and defend entry warp point pending additional reinforcements.

In addition to writing the order, of course, he must assign it its own message number and enter it in his message log. There is no fixed format for this, but something like the following is recommended:

Message ID: ICC-04-22-01

From: Hanak System (ICC 04)

To: Fleet 178

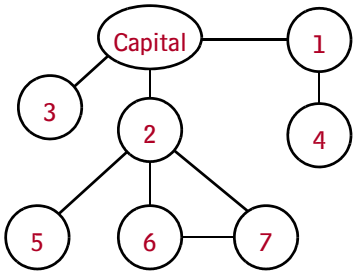
Response To: FCD-204

Message Sent Date/Time: Month 22 01 | 13:30:30

Message Arrival Date/Time: Month 22 04 | 06:25:00

EXAMPLE P8.05 – (CC) CAPACITY LEASING

A (CC) network exists with the following structure:



An Imperial Capital has 3 WP and 3 CC but its PU doesn't matter because it has the largest population in the (CC) Network.

System 1 has 25 PU in the asteroid belt and 2 CC (to Capital & System #4). Value is 1 MCr

System 2 has is a blue giant and has no population. It has 4 CC, leading to Capital, #5, #6, and #7. Value is 0 MC.

System 3 has 3000 PU from a V Large population and numerous colonies and 1 CC. Value is 120 MCr.

System 4 has a population of 1000 PU from a Lg population and 1 CC, leading to System 1. Value is 40 MCr

System 5 has a population of 15 PU and a CC leading to System 2. Value is 0.

System 6 has a population of 1250 from three small populations and 2 CC to #2 and #7. Value is 50.

System 7 does not have a CC, and thus is not in the (CC) network, even though systems #2 and #6 both have CC at the WP leading to system 7.

Total Value from Capital to #7: 0 + 1 + 0 + 120 + 40 + 0 + 50 + 0 = 211.

Eligible (CC) involved (from Capital to #7) are 3 + 2 + 2 + 1 + 1 + 0 + 1 + 0 = 10. Thus, the maximum income is limited to 200 MC (10 * 20).

Comments: System #5 is ineligible because it has less than 25 PU, thus the (CC) in #5 and one (CC) in #2 do not count as Eligible (CC). Likewise, the (CC) in #2 and #6 leading to #7 also are ineligible because the (CC) link to system #7 is incomplete. Had there been any extra (CC) in any system except #7, they would also be ineligible because extra (CC) in a link are not needed or they would not be in an complete (CC) link.

EXAMPLE Q – STRATEGIC MOVEMENT FORM

Suppose the Khanate of Orion chose to send a task force from Aeolus (ID# 02) to Khalkfontein (ID# 25) via Nyaza (ID# 38) and Rigel (ID# 45), departing on Day One, Hour One (1st StMP available), of the current month. The actual warp point number will only be needed if the force encounters the enemy. He would begin entering the move on his strategic movement orders like on Table Q Strategic Movement Form Example.

- "**Force Designation**"-- the designating number or name of the force from the Fleet Roster.
- **"Speed"** -- This force's speed during the month.
- "**Starting System**"-- the system # from which the force begins movement (name is optional).
- "**Starting Location**"-- the location or number of the system hex in the system from which the force begins movement.
- "**Time of Departure**"-- the StMP first expended. The StMP number may be skipped if movement begins with the 1st StMP.
- **"Movement Route"** -- the route the force taken, in system numbers, to reach its destination. System names are not recommended as they clutter the form.
- **"Ending Location"** -- the system occupied and the end of the current months movement. (This will also be the starting location for this fleet on the next month.

Table Q Strategic Movement Form Example

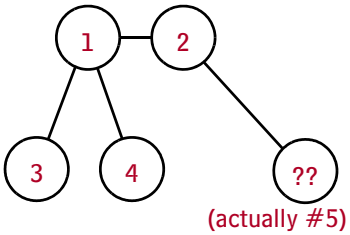
Force Designation	Speed	Starting System	Starting Location	Time of Departure	Movement Route	Ending location
BG Aeolus	3	Aeolus (#02)	Star	StMP #1	#38 > #45 > #25	#25 (Khalkfontein)

EXAMPLE Q2.02 – PROBING MOVEMENT

Typical way things occur.

- Survey (system #1) -- with a prober ending at each WP found.
- Probe [next pulse] -- the probe is done to a single star (system #2) ending back at the WP that was found.
- Probe Again (optional) [2nd pulse probing] -- probe done to other Star of binary ending back at the WP that was found.
- Movement after Probe --
  - Starting in system #1 -- Options
    - prober moves to anywhere within system #2 (1 StMP)
    - prober moves to anywhere within system #1 (1 StMP)
    - prober moves to anywhere within system #3 (1 StMP) with system #3 being attached to system #1
- Special Binary Probe (optional, instead of bullets #2 and #3 above) [takes 2 pulses] -- Probe Comp A, Probe Comp B with the first probing pulse ending at Comp B. 2nd Pulse of probe is spent moving back to System #1 (This movement can be reversed (probe B, then A)

EXAMPLE R2 – WP SURVEY POSSIBILITIES



Systems #1 and #2 have been surveyed. A survey fleet, speed 4, is in System #2. A new month is beginning.

Three main types of operations.

A.The fleet wishes to probe system ?? and if there is a blue giant and no NPR, survey that system. The probe is sent out (while the fleet waits in #2) and reports no aliens plus a blue giant. This uses the first StMP of the month for both the probe and the survey fleet. The survey fleet enters the new system (#5) and begins surveying on StMP #2 and will if they have enough ships be able to complete the survey by the end of the month. Note: That the movement from #2 to #5 did not cost the survey fleet a StMP because the survey operation in system #5 began immediately and spread out from the warp point.

B. The fleet wishes to probe system #5 and move to survey #3. The survey fleet moves to #1 using 1 StMP and enters #3 and begins surveying on StMP #2. The probe enters #5 (StMP#1), completes the probe, and ends in #2 (it could end in #5). The probing units may begin adding to the survey operation in #3 on StMP #3 after moving through #1 on StMP#2.

C. The fleet may enter #5 and begin surveying at the same time the probe is being carried out. This will complete the survey one pulse earlier (on StMP #3) but carries the risk of meeting a HEL alien during the probe with lots of survey ships in the system.

EXAMPLE T2.05 – TREATY VIOLATIONS

Situation: Race A and Race B have a limited trade arrangement. Race A has a LT&D treaty with Race C and a FT treaty with Race D. Race B has a FT&O treaty with Race D and a RT&D treaty with Race C.

Race A decides to attack Race B without warning. Race B, and Race D know that Race A is a treaty violator. Race C has a better treaty (LT&D) with Race A than with Race B (RT&D) and thus believes Race A (i.e. Race A didn't violate the treaty).

Thus, Race A will suffer a +10 RC penalty during future dealings with Race B and Race D. Note that Race D would also have to make a war check die roll to see if it joins the war. If Race D "fails" the war check (doesn't go to war), then Race B could demand that it assist by invoking the FT&O treaty defensive provisions. If race D refused, it would violate that treaty. However, Race C (no treaty with D) would not know and Race A (now at war with B) would not know about the treaty violation either.

EXAMPLE T2.05.1 – AVOIDING TREATY VIOLATIONS

You notify a race that you are declaring war at the end (or Beginning) of month 16. You may not violate the current treaty restrictions during month 17 or the declaration of war is meaningless. On month 18, you may go to war without a treaty violation.

EXAMPLE T3.02.1.1 – INTERMEDIARY NEGOTIATORS

Race A and race B are warring with each other, and they ask Race Z to intermediate for them. Race Z will be sending its offers to race A and race B simultaneously. It takes 11 days to receive a response from race A, but it takes 14 days to receive a response from race B. Thus race Z is limited to attempting to negotiate an offer once every 14 days.

Due to the destruction from their war, race A and B have cut off each other's ICN to race Z and they are unable to communicate their responses to race Z's offers. Race Z asks them to bring an envoy to system #334, which is an empty system owned by race Z right between their two empires. Both race A and B show up with a single unarmed freighter, and begin to negotiate with the mediator. It takes 9 days for race A to get an answer from the nearest ICC, but it still takes race B 11 days to get an answer. Thus race Z is limited to attempting to negotiate an offer once every 11 days.

If either race had showed up with armed ships then race Z would have called the whole thing off and left. Of course either race A or B could get mad and leave as well. And if any of the ships run out of maintenance supplies then an unarmed logistics ship could come and resupply them.

EXAMPLE T3.02.1.2 – INTERMEDIARY NEGOTIATORS

NPR "A" with a RC 60 is at war with NPR "B" who has a RC 75. Player race "John" wishes to negotiate a truce and has at least limited trade with both NPRs. The unmodified RC of "A" is 90 and the RC of B is 100, modified to 105 and 115 respectively for a cease-fire offer from the intermediary (+30 for war, -15 for the cease-fire offer). This means that five months of negotiations must occur before there is a chance of a settlement (bringing race B's RC down to 100). However, if on the 4th month, John gets a cease-fire agreement with A by rolling an 83 or higher, and rolls a 93 or higher for negotiation with race B, then a truce has been arranged for the *NEXT* month. On the 5th month the adjusted RC of race A will be 90, and the adjusted RC of race B will be 100 for the cease-fire offers, so it will be possible (although very unlikely) that a cease-fire treaty can be arranged.

EXAMPLE T3.11 – LOSING NPRS WANT AID

Race A is an NPR that has been attacked by race L, and is starting to lose. It is negotiating with race B for a treaty, and will offer or accept any treaty up to LT&O (limited trade and military offense). If it cannot get LT&O, it will try to obtain a treaty with at least a military defense, with or without the trade component.

EXAMPLE T3.11.7.1 – BUYING SYSTEMS

After calculating the base number of habitable planets and systems an NPR is due (say 2.4 systems of 5 total and 1.44 habitable planets of 3 total), an NPR will not allow its interest to be bought out when:

1. It will be bought out of a whole system or planet. This assumes that it currently borders or is due enough systems that could buyout enough systems to trace a control path to the systems that it would own.
2. Another race could be bought out of ownership of an uninhabited system(s) that would allow it to meet the conditions above (this assumes the NPR knows of the system and its WPs). These do not have to be systems captured during the war. The race providing the NPR with the extra systems then assumes the NPRs interest in the captured systems on a one for one basis. EX: the above NPR receives 1 system with an habitable T world. The transferring race gets +1 system and +1 T/ST interest. The NPR must be bought out of its remaining interest of 1.4 systems and 0.44 habitable planets.

The above NPR is two systems from a system with 2 T/ST worlds. The other race borders a system with 1 T/ST world. The NPR is due 2.4 systems and thus would need to buyout only 2 T/ST system. That cost would be: 3 WPs = 900 MC times 60% (it already was due 40% of the system) for a total of 540 MC. Plus 3000 times 1.2 (a rich planet which is the richest of the two planets) plus 20% (2 AST belts) times 56% for a total of 2419.2 MC. Thus, the NPR must pay 295.92 MC in each of the next 10 months. Note that allowing the player to buyout the 2 T/ST system would be unacceptable since the NPR would then not receive any T/ST and they are due at least 1. If the two races were partners, the NPR could be bought out of one of the planets.

EXAMPLE T3.11.7.2 – FORCED TREATY BREAKER

Race A has a defensive treaty with race B of an allied group of races B, C, and D; however, it does not know about races C or D. Race A finds a new race, race E which it gets an offensive treaty with. Race E, previously unknown by B, C, or D, is located by a survey fleet of race C. Race E, an NPR, reacts poorly to the invasion and chooses to attack race C. Race E asks race A for help under the offensive alliance it has, which is accepted by race A. Meanwhile Race C activates the defensive treaty it holds with B and D. Since B is not yet physically attacked, it cannot yet activate its defensive treaty with race A, however, in the long term, it is likely that race A will be encountering race B in combat. At that time, race A will be forced to violate either the treaty with race B or the one with race E. If the one with race E is broken, the race B will receive a permanent -10 RC reduction when dealing with race A (they will be favorably inclined toward race A).

Possible alternative note: In the situation above, race A has an activated treaty with race E against race C and its allies which unknowingly includes race B. Since A's treaty with B has not been activated, that treaty is overridden by the activated treaty with Race E when the ships come into contact and race A is obligated to fight race B ships while they are along side race C ships. However, once either side has eliminated the other ships of the alliance, they could release their inactive ally's ships as a gesture of peace. E and A wipe out race C's and race D's ships first and then allow the remaining race B's ships to retreat. This would eliminate the war check that B would normally take for being attacked by race A. Additionally, since race A had no choice, it does not suffer treaty breaker penalties. An alternative for B and A is that B and A could fight the battle but refuse to engage each other's ships. Of course, one race could see the size of the enemy fleet and choose to avoid battle thus breaking a treaty in order to side with the other side. Even worse is breaking the treaty and attacking ones allies. There are many possibilities.

It is also possible that races A and B could learn they are on the opposite sides of a war during negotiations or by simply informing the other race that they are at war and may need to activate a treaty. Once known, the SM may allow some sort of a diplomatic solution along the lines of the above or B and A could serve as intermediaries in order to end the war started between C and E.

EXAMPLE T3.13.2.3 – EXCEEDING NPR POLICIES

A player orders an NPR to explore more warp points per month than its exploration policy indicates. If the NPR makes its RD check, then it will perform only as many explorations as its policy indicates. If it fails the RD check, then it will obey the orders from the controlling player.

EXAMPLE T3.14.3 – AMALGAMATION & STATISTIC AVERAGING

Player Race "A" with RC of 60 and 200 population units is combining with Race "B" with RC of 43 and 100 population units. (60 x 200) + (43 x 100) = 12000 + 4300 = 16300. 16300 divided by the new total population of (200 + 100) = 16300 / 300 = 54.33 rounds to 54 RC. "A"s RD is 23 and "B"s is 67. (23 x 200) + (67 x 100) = 11300, divided by 300 = 37.67 rounds to 38 RD.

EXAMPLE T3.14.5 – TRADE VARIETY CALCULATION

Race A's PU total is 1675, Race B's PU total is 20163. The TVB is 1675*15/(20163+1675) = 1.15. The final EVB is 2%.

EXAMPLE U4.04 – INTEL FROM PRISONERS

Race A has defeated race B in 3 battles this month. After those battles, race A captured 73 HS, 244 HS, and 49 HS of crew (per battle respectively). Race A makes 1 roll (+0) against [U5.02] for the first battle, 1 roll (+10) for the second battle, and because the amount of recovered crew is less than 50 HS, no rolls for the third battle. Had Race A picked up another 1 HS of crew from battle three, they would have been able to make a roll.

EXAMPLE U5.04 – GAINING INTEL FROM CAPTURED TECH

A player with Force Beam SL 3 captures 6 Fe systems. In order to understand the Tech Data received, about the Fe system, the roll must be 91 or greater because Fe is SL 7 and that is 4 SL above the players current SL of 3.

However, unless the player is EL 4 or better, he could not understand and thus use the Tech Data free RP because of the rule of 3 [N5.02]. Once he achieves SL 4 in Force Beam or EL 4, he will begin to receive free Tech Data RP in the Force Beam Tree.

In Force Beams, SL 7 would be the "indicated SL" for the purposes of [U5.04.1].

EXAMPLE U5.04.1 – CONQUEST AND TECH

CON = Race who conquered the planet

CAP = Race who was captured.

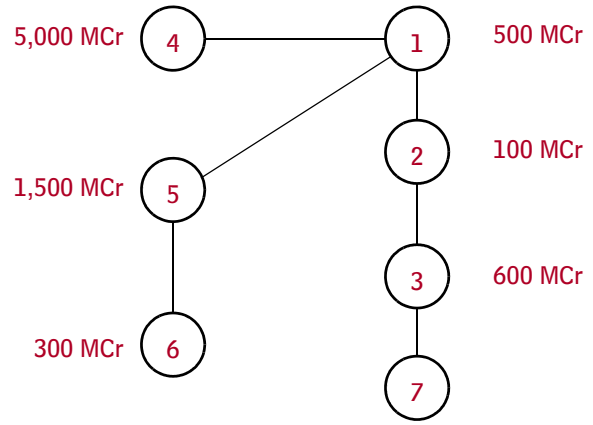
BISL = tech item or tech SL is below or equal to the indicated SL

CON is SL 4 in force beam. A captured R&D facility random rolls the force beam tree. Table U5.04 is consulted and the die roll is 74. The World is V. Large so add +10 and look up 84 in the table (+3 SL above). The CON gains Tech Data on Force Beam Tech and Science Levels up to SL 4+3= 7. The Tech Data cannot exceed the CAP SL in the Force Beam Tech.

If CON didn't have the Force Beam tree open, the Indicated SL would be EL -1 + 3.

EXAMPLE V2.03.2 – RAIDING

Example Map: (Income)



Commerce raiders have entered system 1 undetected and are preparing to prey on the unsuspecting shipping. The raiders have captured astrogation data on this system and know the locations of the WPs to system 2, 4, and 5. They choose to raid zone 2 that contains the WP to system 4.

The income of system 1 is 500 MC due to a Small population and some outposts. System 2's income is only 100 MC, but system 4 has an income of 5,000 MC. System 5 has an income of 1,500 MC. System 3 has an income of 800 MC and system 6 has an income of 300 MC. System 7 is too far away to be included in the calculations. This empire has 2 large planets and 1 very large planet for a CFN modifier of 50%.

With only zone 2 being raided, there is no internal trade since all populations are within zone 1 in this system.

To determine the into-system trade, we must look at the EWQA for each exit WP with value beyond it (Systems 2, 4, and 5). System 2 EWQA is 400 (100+600/2); System 4 EWQA is 5,000; system 5 EWQA is 1,650 (1,500+300/2).

Since the raided system income (500) does ***not*** exceed the total of the EWQA (400+5000+1650=7050), through trade will need to be calculated and the trade in zone 2

The into-system trade value from the WP to system 4 is equal to 500/(400+5000+1650) *5,000 = 354.6 MC. Zone 2 gets 1/2 that amount, or 177.3 MC.

For through trade, we must calculate the ATV of each WP. System 2's ATV is 400-(500/(7050) *400) = 371.6

System 4's ATV is 5000-(500/(7050) *5000)=4645.3

System 5's ATV is 1650-(500/(7050) *1650)=1532.9

Next: system 4's ATV is the largest so we add systems 2 and 5 ATV together and subtract system 4' ATV. 1532.9+371.6 (trade value B is 1904.5)-4645.3 is certainly less than zero (-2740.8). Thus, the following applies "<u>If this number is less than zero</u>, then the largest system's ATV is equal to trade value B. Each other WP has trade equal to its ATV."

Thus, System 4's ATV is 1904.5 (trade value B)

System 2 ATV (371.6) and system 5 ATV (1532.9) remain unchanged.

The final value of zone 2 is

Into trade = 177.3

Through trade = 634.8 (system 4's ATV divided by 3)

For a total of 812.1

After multiplying by the CFN modifier of 50%, the result is that 407 H and 204 Qv can be intercepted by the commerce raiders in the first strategic pulse of the month.

The freighters are using normal free movement and the raiding player has a sensor range of 4 sH. This results in a 13% chance that the raiding player will be able to intercept any single group of freighters. The Space Master now rolls on the chart in V2.04.1. The result is a 6. Thus the first group that can be intercepted is a group of 3 FT1 and 1 FT3. The die roll for interception is a 52 so the first group gets by the raiders successfully. No warning chance is allowed because the CFN sensor range is too poor to detect the raiders except at combat range.

The capacity of the first group is subtracted from the 407 H and 204 Qv and a new roll is made on V2.04.1. This roll is a 10 and the intercept roll is a 04 meaning the raiding player has intercepted this large group of freighters. Zone 2 is not being patrolled so the raiders are able to attack the freighters successfully. Each freighter rolls a 1d10 and unfortunately for the raiders, one of the freighters rolled a 1. The freighter was not captured or destroyed before it was able to get off a distress call and signal the planet in the system. The raiders quickly deal with the freighters in combat and start packing up to leave the area before the defending navy shows up.

If the raiders had selected zone 6, which contains the WP leading to system 5, instead of zone 2, then the amount of CFN available to be intercepted would change. The into-trade for zone 6 would be 500/(7050) * 1,650/2 = 58.5. Through trade is 1532.9/3 = 511.0 (ATV previously calculated above). The total value of the trade in zone 4 is 58.5 + 511.0 = 569.5, or 285 CFN H and 143 CFN Qv.

EXAMPLE – V3 GROUND COMBAT PREPARATION

All space-based resistance has been eliminated

Attacker is EL 3 and their victim is EL 2. There is 1700 PU on the planet, no PDCs are present, and no defending Qv are present.

No communications have been established, which prevents a call for surrender because of overwhelming force [V3.03] and makes a demonstration nuclear strike [V3.04] pointless.

With no PDC or Qv, a pre-invasion bombardment [V6] would merely killed future income potential, so the attacker decides no to bother with that.

The attacker lands troops [V3.06] with CFN hired FT (which he will have to replace if lost). But with no PDCs or hidden facilities, he lands safely.

The victim reacts normally [V3.05] to the invasion and conducts normal resistance.

See next example.

EXAMPLE – V4 GROUND COMBAT

Note: {continued from previous example}

1st Month -- Initial Troop landings

The attacker lands 1000 Qv and 500 H (to supply them on the first turn) on the planet, and spread them around all sides of the planet.

The attacker does not know what the RM & RD are, but we'll set them at 75 and 50 to get an example value.

So far, we have the following modifier calculated from [V4.08.1]: -75 (RM), -25 (RD/2), + 25 (EL 3 attacker vs EL 2 defender) = -75

1000 Qv generates an IF (invasion factor) of (1000/1700) -.25 * 250 = 85 (84.55). This is modified by the previous modifiers to get a total of +10 (85-75).

We'll assume an average roll of 101 on the 2d100 roll for V4.08.2. This gives a result of 111 (after mod), which means the attacker kills PU equal to 2.7% of Qv (27 PU) and the defender kills a number of Qv equal to 0.8% of the PU (13.6 Qv). This Qv loss is not rounded.

The attacker uses 1000 * 10% = 100 H of equipment/ammo leaving 400.

2nd Month

This month, the attacker needs H equal to Qv. Assuming the attacker lands no additional troops, he will need (1000-13.6)-400 = 586.4 H which need to be shipped. The attacker ships 600 H so that he has a small reserve. This large number of H, and other commitments prevent him from landing additional Qv and H to support the invasion.

The attacker could choose to conduct reprisals and execute up to 14 PU, but by doing so, he would gain a negative modifier to the attack.

The attacker could also choose to drop some nukes to kill off some PU, gaining a +5 modifier per nuke dropped. Unfortunately this generates a huge negative modifier during the consolidation phase (-50 - 5/nuke), so the attacker avoids that option.

The attacker gets the same -75 from before but also get a +20 modifier for the 2nd month of combat, can roll for attempted communications, and try to capture some facilities.

The attacker can also decide to pillage the planet, gaining money, but creating a -20 modifier, which he doesn't do.

The Invasion Factor is now (986.4/1673)-.25*250 = 85 (8489)

Assuming he rolls well (total 150), the total is 150+85-75+20 = 180. 8.365 Qv are killed (0.5% * 1673) and 24 PU are killed (2.4% * 986.4).

EXAMPLE V4.12.3 – INVADING A HIVE MIND

400 Qv invades A 2000 PU hive mind world. The adjusted die roll is 71; the PU is reduced by 3% of the supplied Qv. Normally the Qv are reduced by 1% of the PU on the planet. The hive mind decides to convert 95 PU to guerillas. The 1% losses of Qv are increased to 20% of PU. Final results 400 Qv lost, 107 PU lost.

EXAMPLE V5.04 – SECURITY LEVEL

200 Qv & 200 H are converted plus 20 SEC bought (420 security points) divided by 840 native PU (in an entire system if combined populations applies) would equal 1 security force for every 2 PU or 1/2. This would result in a Moderate Security Level. The security

forces are maintained by the income modifier, which is deducted from the planets normal income before the conqueror gets it.

EXAMPLE V5.08.4 – INVESTMENT REDUCES RC

581 EL 3 PU and 0 IU remain on a normal mineral hostile planet. Therefore, the base conquered GPV for the conquered planet is 581. For each 5.81 MC of increase in GPV through industrial investment, the RC would be reduced by 01. If the conqueror spent 3,000 MC on 100 factories, the RC would be reduced 100/5.81 = 17.21 or 17 RC.

EXAMPLE V5.09.1 – BLOCKADE RUNNING

Empire income is 3000 MC
Month 35 day 2 blockade begins
Month 36 full income earned
Month 37 income reduced by 450 MC.
Month 38 income reduced by 460 MC. Blockade run by 64 H which earns 640 MC. This amount, is 190 MC above the amount lost on month 37. So on month 38, the amount really lost is 460 - 190 = 250 MC. Next month, month 39, that 190 MC will be earned by the empire, which, still blockaded will also lose 470 MC (note: the increasing losses are due to population growth).

EXAMPLE V5.11 – EFFECTIVE SL

Current effective SL in Force Beams is 5 but the real SL is 7. An R&D project in force beams (SL 6) is occurring. When the race becomes a partner, the effective SL becomes the real SL (7) and the R&D project becomes an R&D project into SL 8 force beams).

EXAMPLE V5.12.1.1. – NEW EQUIPMENT FOR RESETTLEMENT

Race #1 (conquered) is to be moved from planet A. Race #1 colonized the planet as Harsh but the new population treats the planet as Hostile. Race #1 is being moved to Planet B, which it treats as Benign. New equipment is bought for Race #1 to live on planet B and that costs 6 MC per PTU [Table L5.03 PTU Transport Requirements]. The new equipment is 12 H - 8 H = 4 H per PTU in size that must be shipped.

Race #2 (the conqueror) now wishes to move PTU onto Planet #1, which it treats as Hostile. The difference between Harsh and Hostile emplacement (equipment) costs is 14-10 = 4 MC per PTU [Table L5.03 PTU Transport Requirements]. Of course, shipping costs to move both the old and the new population must be paid.

EXAMPLE V5.12.1.2.1 – RESETTLEMENT – EXTRA EQUIPMENT SAVES

Race #1 is moved from a Harsh (8 H per PTU) to a Benign (4 H per PTU). The remaining 4 H cost 6 MC (10 MC for 8 H or 1.5 MC per H). If the newly arriving population treats the planet as Hostile, the equipment in place will save them 4 H of shipping and 6 MC per PTU.

EXAMPLE W2.05.5.1 – STAR DAMAGE

A corvette transits a warp point and enters the system at a range of 85 tH from a blue giant star. The corvette takes damage equal to ((60*2) – ((85)-1)) or (120 – 84) which equals 36 points of damage. Needless to say the corvette doesn't make it home.

EXAMPLE W2.07.5.2 – BINARY STARS MAKE ASTEROID BELTS

If the components of a binary are 158 LM apart, any "planet" between 39 LM and 52 LM inclusive from *either* component becomes an asteroid belt. Any planetary orbit more than 52 LM from either component is simply ignored.

EXAMPLE W2.08.6.3 – GALACTIC STARTING POSITION

6 players in a 700 system galaxy would each be 700/6=116.6 systems apart (roughly 116, 233, 349, 466, 583, 699). While this does not guarantee anything, it will tend to prevent early contact. However, be cautious to use some method to avoid the problems discussed in W2.02.

EXAMPLE X2 – NEW ORDERS – EXTENUATING CIRCUMSTANCES

Player A has a patrol fleet on the edge of his empire when he discovers his next door unfriendly neighbors are coming for a visit, intending to take over some of his star systems. His fleet sends courier drones on day 5 of the month, and his nearest ICC receives the communications on day 14. The Space Master may decide to let that player issue new orders and commands at that time.

In addition whenever any graded leaders find any such communication or are directly involved in a new situation the player should be informed and allowed to make new decisions at that time as well.

EXAMPLE Y6 – EXTRA (SA)

A HEL 7 race makes 4 rolls (at 20%) and could receive up to 4 extra (SA)s. That same race makes 4 more rolls (at 10%) and could receive up to 4 extra (RDS) as well.

EXAMPLE Y8 – MULTISYSTEM NPR WARSHIP DEPLOYMENT

If the system provides 1500 MC of a 7500 MC total income (not counting trade), then 10% of the multi-system empire's warships are present in the system.

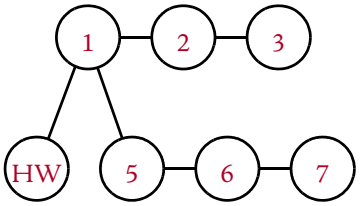
EXAMPLE Y14 – COLONIZATION POLICY

Ordered Socialist race with a RC of 60, native to a Poor world, rolling a 23 results in 23-(60/2)+30+30=78. So they will only colonize rich Hostile and better worlds and poor or better Harsh world.

EXAMPLE Y18.04 – IMPROVING RELATIONS

Perhaps the NPR is involved in a war that it is losing, it might ask the mistrusted race to aid it as part of a defensive pact. After the successful aid, the NPR would then treat future offers normally.

EXAMPLE Y18.05 – WAR TYPE



Example Map:
Race A enters the NPR home world (HW) from system 1. The NPR gets restricted war against race A. They would seek to control systems 1, 2 and 5. However if they get limited war, they would seek to control systems 1, 2, 3, 5, and 6. If the home world of race A is within one of those systems, then the war will likely cripple that race if they lose and non-aggression may not be an option for them.

EXAMPLE APP AA1.05 – MOVING THROUGH AN R&D TREE

To develop (Ita), you must first complete the I engine SL 7 project. Then the Engine Tuner SL 7 project becomes available (a breakthrough is needed on twigs). After completing the It SL 7 project, (Ita) can be developed. Then to develop (Itb), you need to research It SL 11 followed by (Itb), or you could just do a combined project. In either case, note that you get to skip It SL 8, 9, and 10 because with twigs, there are no intermediate SL projects needed.

EXAMPLE CON.04.1 – EXPANDING A HULL

An existing DD design prior to Basic Hulls:
Sx3Ax5QaHQa(Ia)(Ia)Rbx3* *(Ia)(Ia)YaMgRb(Ia) 30 HS
The existing hull is cut in half (as close to 50% HS on either side of the cut point) at the * * and with the new section of hull inserted becomes:
Sx3Ax5QaHQb(Ib)(Ib)Rbx3 *DaRb* (Ib)(Ib)YaMgRb(Ib) 35 HS

Note: all engines refitted, plus 1 Qa refitted to Qb.

EXAMPLE D.01 – SALVOS

Rn fires 3 salvos. The 1st salvo is engaged normally; the 2nd salvo is engaged at a -1; and the third salvo is engaged at a -2.

EXAMPLE D.02 – DATALINK

Note: Doubling issues are not addressed by this example since they are salvo size dependant.

Datagroup of Ships A, B, and C, whom all have De*2 and Dze*2

Note: De and Dze abilities -- 5 shots at 5 -- Ships B and C are a disadvantage engaging attacks against themselves whereas without Escorting, they are not.

Note: If the player chooses B or C to protect A, A cannot fire its own De or Dze via the Escorting rules (only datalinked ESCORTS can protect the escorted units) but Ship A can use its own Dze, via the datalink rules to protect itself (no minus since only Escorting units suffer a penalty).

NON-Escorting Example of Dz operation

	Target		
	Ship A	Ship B	Ship C
Ship A De	10 shots at 5	none	none
Ship A Dze	10 shots at 5	10 shots at 4	10 shots at 4
Ship B De	none	10 shots at 5	none
Ship B Dze	10 shots at 4	10 shots at 5	10 shots at 5
Ship C De	none	none	10 shots at 5
Ship C Dze	10 shots at 4	10 shots at 4	10 shots at 4

A salvo at A or B (or C) would be engaged by:

- 20 shots at 5 and
- 20 shots at 4

EXAMPLE D.02 – DATALINK AND ESCORTING

Escorting is a totally different animal than normal Dz operation. As a general rule, do not use ESCORTING when you have datalinked point defense UNLESS your attempting to protect units not within your own datagroup.

Note: Doubling issues are not addressed by this example since they are salvo size dependant.

Datagroup of Ships A, B, and C, whom all have De*2 and Dze*2
Ship B and C are escorting ship A
De and Dze abilities -- 5 shots at 5
Escorting Example of Dz operation (ship B chosen to protect A)

	Target		
	Ship A	Ship B	Ship C
Ship A De	none	none	none
Ship A Dze	10 shots at 5	10 shots at 4	10 shots at 4
Ship B De	10 shots at 4	10 shots at 4	none
Ship B Dze	10 shots at 4	10 shots at 4	10 shots at 4
Ship C De	10 shots at 4	none	10 shots at 4
Ship C Dze	10 shots at 4	10 shots at 4	10 shots at 4

So a salvo at A would be engaged by:
10 shots at 5 and
40 shots at 4
But a salvo at B would be engaged by:

40 shots at 4

So, A would gain a bit of protect via Escorting but B and C would suffer some loss of protection.

EXAMPLE S.04 – SHIELD SKIPPING

La causing two pts of damage would destroy the 10th and 20th regular Shield, the 5th and 10th Sp Shield, and would destroy the 5th dense Shield. NOTE: If there were 3 or 4 dense Shields, only 1 pt of damage would be caused to the first eligible system beyond the dense Shield.

EXAMPLE X.01 – MAXIMUM SURVEY SPEED

For an MSS of 3, a StMP spent surveying must be at least 10 days long (30 days/3 MSS). Thus a ship with a speed of 5 StMP, could move once (30 days/5=6 days per StMP) and survey twice (dropping to the lower speed only in the last 20 days with 4 extra days to spare). A speed 6 ship could move twice (10 days) and survey twice (20) days. Thus, with a MSS of 3 and StMP of 4, you cannot move 1 StMP and then survey for 3 StMP. This would only allow 21.5 days surveying instead of 30 days surveying.

EXAMPLE G – ANTI-MATTER SYSTEM

If Em costs 115 and is 4 HS large, then Egm costs 115*2.5 = 287 and is 4.4 HS in size. If Kci costs 135 and is 25 HS large, then Kcgi costs 337 and is 27.5 HS in size. If Rn costs 105 and is 4.5 HS large, then Rgn costs 262.5 and is 4.95 FRU to 5.0 HS in size since there are no fractional systems that are between 4.95 and 5.0 in size.

{Ed. Note: I thought quite a bit on how to best do this anti-matter thing and determined there is not a good way unless all systems have the opportunity to be boosted. Partial damage increases also have issues with the large number of system sizes and damage ratios. So, I used a simple doubling and a small size increase. The cost is perhaps a bit high but considering that the effectiveness of the system per HS is very nearly doubled, with a corresponding improvement in overall combat effectiveness make this a valuable addition to any combat effect.}

Next Section: Appendix GG - Acknowledgements

Galactic Starfire Acknowledgements

SDS has some grateful acknowledgements to make. It would be impossible mention everyone, who has helped, sacrificed, and contributed to the development of this edition of STARFIRE but I am going to acknowledge certain individuals and express our profound gratitude and appreciation for their efforts.

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ULTRA Starfire Editing Credits:
Primary Editor: James Yanchak
Review and Other Miscellaneous helpers:
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Next Section: Technology Table of Contents

Appendix HH – Optional Rules Section

Introduction: The rules below here are all optional (excepting those within the technology section). Most are recommended or highly recommended. Most spice up game play and add interesting interactions and effects to the game. While most are well balanced and should cause no serious game imbalances, there are a few random events and/or Galactic Oddities that can cause major headaches for players. Whenever using optional, or even normal rules, a Space Master must use good judgment in allowing certain game happenings from overly aiding or diminishing a player empires chances for final success. There can never be hard and fast "rules" to account or adjust for these types of things. In one game, a Space Master might allow a player to amalgamate a multi-system NPR early in the game and then spend many months adjusting for the huge boost that the one player received. Perhaps that player later suffers an internal revolution or is constantly meeting other dangerous NPRs such that their opportunity to grow is limited by constant fighting. Perhaps a Berserker base shows up nearby and started wrecking systems. Perhaps that race starts finding a lot of junky systems while all the other player races start finding quality systems, Space Masters must use their own judgment in allowing or adjusting for very lucky or unlucky situations.

Even within the "optional" rules below, Space Masters are welcome to adjust the rules as necessary to accommodate their and their players styles of play. Some might dislike the 20% occurrences of Galactic Oddities. Some might like more random events than the 10% generated by the listed rule. Please feel free to adjust as you like but there is one rule to this. Either every player must know the changes or no player must know about the changes. Changes to technology trees are encouraged to be shared as soon as one player learns about them but it maybe that all players choose to be surprised by such things.

If a NPR exists in the same system as a Galactic Oddity and could reasonably have found and be using it, it is assumed that the NPR is using it. Furthermore, the NPR generation process should favor actions, rolls, policies, and R&D that would help to utilize the oddity. i.e., a system that favors large ships would encourage large hull development so the race might treat hulls as up to 3 EL lower than normal (i.e., BB available at EL 5).

HH1.01 Oddity Tourist Traps (Optional)

Some things in the Galaxy just have to be seen and visited. The following Galactic oddities become tourist traps and generate income for that system. Ringworlds, Rosetta planets, Solar cities, Megalopolis World, Orbital Elevator(s), Gaia World, and Habitable Paradise. For every NPR with whom you have a relationship of Free Trade or better (including Amalgamated), the system, if colonized by a 200 PU or more gains income from tourists. This income increases by 100 Mc per month to a maximum of 100% of base income of the colony.

HH1.02 Creating the Oddity

The first time (only) that a system is entered by a race (any race), roll 1d10. On a 1 or 2, the system contains a galactic oddity. Space Masters can use higher or lower oddity rates.

HH1.03 Detecting the Oddity

Some oddities are detectable as soon as a system is entered (system bodies changes and such). Unless otherwise stated, other oddities are located during the survey process (roll at the end of each month).

Items/devices located in space or in/on a system body have a chance of being found equal to one fourth the total number of Warp Point survey points completed. i.e., if 100 WP survey points have been completed, there is a 25% chance of the artifact being found. Survey points acquired from previous surveys count toward the total completed (i.e., a detailed survey has 100 competed points, thus a total of 300 survey points (75% chance) have been completed).

If located on a system body, an additional chance of being found is equal to twice the number of survey points expended on a survey of that system body. i.e., An asteroid survey has 30 SP completed, the chance to detect a object on an asteroid would be 60%.

HH1.04 Determining the Type of Oddity:

Note you may occasionally have to reroll (or choose a different one) if the oddity doesn't fit the system generated.

1d100	Type of Galactic Oddity
01-10	Ancient Artifact
11-20	Leftover Facilities
21-50	Miscellaneous Oddities
51-60	Planetary Destruction
61-69	Remnant Units
70-79	System Destruction
80-89	Unusual Society
90-99	Warp Point Oddity
00	Multiple Oddities (roll twice more)

HH1.04.1 Ancient Artifact

These artifacts are located somewhere in the system. They might be in a dead ship, on a planet/moon, or anywhere else. Regardless where located, these devices are ancient and powerful. Some may take the form of helmets, amulets, rings, or anything else the Space Master wants to make them. Artifacts cannot be destroyed and have a minor defense system (this defense system will even cause it to be repelled or ejected from a Star). Artifacts on system bodies are found when that body is surveyed. Artifacts on dead ships are located during a WP survey but have a 20% chance of being missed.

Ship mounted artifacts must go at the end of the design and the ship is considered destroyed if, excepting the artifacts presence, the ship would normally be destroyed. The artifact then becomes separated from the ship and is clearly visible as a strange undamaged item. Any weapons fire hitting the artifact itself is absorbed, doubled, and unerringly emitted back at the originator causing, normally, force beam type damage to the emitting ship. Laser damage is emitted back as laser damage, precision damage as precision, and energy damage as energy.

Artifacts with sizes require a number of consecutive holds equal to 120% of its size to move. All artifacts are resistant to tractors unless they are installed.

Ancient Artifact Table

1d100	Type of Ancient Artifact
01-09	Alchemy Lead to Gold
10-18	Admiral's Cap
19-27	Admiral's Holotank
28-37	Automated Repair Unit
38-46	Blackhole Drive
47-55	Blackhole Power plant
56-64	Deflector Screen
65-73	Efficiency Ring
74-82	Gravity Well Analyzer
83-91	Leaders Baton
92-00	Quantum Computer

Alchemy Lead to Gold - Unfortunately, it only does 500 MC worth of Gold per Month (the lead costs nothing) [25% chance of Alchemy Lead to Gold (improved) – this one creates 1000 MC worth of Gold per Month]

Admiral's Cap - This seemingly innocuous cap gives a single admiral a +2 Drilling Bonus.

Admiral's Holotank - This gives a Graded Leader Admiral (not a leader acting as an admiral) a +6 initiative regardless of his grade (the admiral's grade is NOT applicable). 1 HS to install

Automated Repair Unit - (25 HS) Repairs 1d4 destroyed systems each tactical turn but only on the ship it is installed on.

Blackhole Drive - (40 HS) No other engines are allowed. Regardless of ship size, speed is [10/5], Transit size is 50, and turn mode is 4.

Blackhole Power plant - (10 HS) All warhead weapons fire at double rate, all other weapons do double damage.

Deflector Screen - 50% of all shots (including tractors) that hit the ship are deflected (5 HS to install).

Efficiency Ring - This changes one person into the empire's best efficiency expert. His brilliant policies have the effect of adding +1 EL RP rate to your R&D total. This bonus costs nothing. [25% chance of Pair of Efficiency Rings – A matching pair does the same thing but for a couple (+2 EL RP rate)]

Gravity Well Analyzer - (30 HS) After 5 months in a system, all WPs (any type) have a 95% chance to be detected. This system must sit within 1 sH of the center of the system during the 5 months. It does not need to be installed on a ship to work and may be left alone once switched on.

WP size, type, special, etc. are unknown. You only get the information necessary to transit the WP.

Leaders Baton - This jeweled artifact increases a single leader's effective grade by one.

Quantum Computer - Once installed in an SA or RDS (cost 1000 MC, 10 HS of capacity), this gives any one non-EL project +5 RP rate at normal cost. [25% chance of Improved Quantum Computer – Gives any one non-EL project +10 RP rate at normal cost.]

HH1.04.2 LEFTOVER FACILITIES

These facilities were left by an ancient race and are located on a habitable planet or moon (those terms are interchangeable in this section). Orbital Elevators or Megalopolis World can be detected from space at short detection range.

Definition: - X generations -- Xa counts as one, Xb counts as two, and so on. Unlike surveys, multiple X per ship can be used.

Core Tap(s) - 1d3 Core Taps are located on random habitable(s). These relics have several effects, if crewed with 5 PTU each. They allow 100 PU to settle on the planet each at -1MC/PTU settlement cost, as ample power is available. They are 50 HS each (10 damage to destroy), and PDC beam weapons built in that zone have 3 hexes of extra range (with the exception of X-ray lasers, which can fire double the amount of lasers per DeC instead!). A Core Tap costs 500 MC for maintenance purposes.

If a Core Tap is destroyed, its explosion will kill 20+2D10 PU.

Leftover Facilities Table

1d100	Type of Leftover Facilities
01-10	Core Tap(s)
11-20	Computer Complex
21-30	Dangerous Artifact
31-40	Deep Core Mine(s)
41-50	Ground Based Industry
51-60	Hidden Data Core
61-70	Megalopolis World
71-80	Orbital Elevator(s)
81-90	Planet Bound Zero-Gravity Lab
91-00	Planetary Fallout Shelters

Computer Complex - Studying the Computer Complex with 10X generations for 1 month gives you its "information". The information must be taken to an RDS to be analyzed. However, the "information" is not always helpful (and your scientist may waste time discovering this)... Roll 1d10

1-3 Research Boost -- For the next five months, 1 additional EL RP can be purchased at normal price every month. Also, two random SL projects currently being researched gain +20 RP at no cost.

4-5 Research Dead End -- For the next five months, 1 EL RP less than normal can be purchased. Also, two random SL projects currently being researched have their current RP totals halved (location of projects is not important as long as they are not "cut off" [P7.01.1]).

6-8 Software Upgrades -- Software upgrades derived from the complex allow any and all projects except EL research to purchase 13 RP at normal cost for the next 5 months. Also, SA's breakthrough attempts have a 1% bonus for those 5 months.

9-10 Computer Virus -- A pernicious, semi-sentient virus infects the data gained from the complex. Containment efforts limit all projects except EL research to purchasing 1 less RP than normal for the next 5 months. Also, SA's breakthrough attempts have a 1% penalty for those 5 months.

Dangerous Artifact - When the planet is surveyed, 1d10 small craft and 1 starship are destroyed when they first probe the structure. Once it has "fired," it self-destructs and is no further threat, unfortunately, there is no real way to counter the threat, it cannot even be detected before it activates.

Deep Core Mine(s) - 1d3 vast deep core mines are located on a random habitable world. It requires 10 PU to man the drill, and at least a colony in the system to handle the products. Each drill produces 20+4D10 (roll once) MC per month.

Ground Based Industry - An Ultra-High Tech industrial complex is present. This is detectable as a Settlement sized population. After setting up a colony and completing an R&D development project (Use same SL as discoverers EL, cost 50 MC), the race's build rate

is permanently increased by +1 HS per EL. The R&D project destroys the industrial complex.

Hidden Data Core - This data core is detected at twice the normal chance (its homing beacon may be triggered by the survey activity). It contains data on what happened in the system and has the location, gravity surge, and transit info for almost all warp points in the system (10% chance it is missing a WP, including secret or other very hard to detect WPs).

Roll 1d10 minus two to determine the number of months before the data can be used.

Megalopolis World - This world once was a planet-spanning Mega-City. Colonization requires half the normal amount of H per 1 Qv of colonist rather than 10, and double the usual population can be settled. However, only 90% of the usual income is earned by the planet, as the infrastructure is both essential, extensive and hard to maintain.

Making other Megalopolis Worlds -- To increase a Habitable World's Maximum PU total by this method costs 100 MC per PU. Double the PU total is the limit.

WARNING: Use caution when allowing a Hive Mind race to get a hold of Megalopolis World technologies. A planet with 4 times population and income might be a problem.

Orbital Elevator(s) - The planet has six Orbital Elevators. These huge structures allow the planet to increase its wealth as they allow goods to be shipped up and down the elevators with ease. Only one can be counted per 200PU - or fraction of that – and each will generate 25 MC of extra income.

If attacked, they effectively have 10 HTK and their built-in defenses act as two of the best standard point defense units the owner has. Severing them will cause a cable-fall, which will kill 1d50 PU on the world below. Per orbital elevator severed, over the next few days.

Planet Bound Zero-Gravity Lab - This allows + 1 RP per month to be bought for EL R&D for their owner, at base cost. Any research actually done ON the planet allows +1 RP to be bought for both SL and item research. SA's can buy another 2% towards breakthroughs. The world must be settled for three full months by a colony or greater population before the benefits begin.

Planetary Fallout Shelters - These protect the population; a maximum of 80% of the population can be killed by bombardment (taken from the pre-bombardment population). Also, they give the defenders +5 in ground combat, since they have an extensive set of tunnel linked ready-made underground defensive bases.

A race may build these normally but they cost 10 MC per PTU protected.

HH1.04.3 MISCELLANEOUS ODDITIES

1d100	Type of Miscellaneous Oddity
01-04	Alien Headgear
05-08	Close Binary
09-12	Close Star System
13-15	Collapsing Star
16-18	Dense Asteroid Belt
19-22	Derelict Ship
23-25	Gaia World
26-29	Habitable Paradise
30-33	High Resources
34-37	Hostile O2
38-41	Lagrange Asteroids
42-45	Low Resources
46-48	Machine World
49-52	Nearby Star System
53-56	O2 Environmental Change
57-60	Plague
61-63	Planetary Complex
64-67	Ringed Gas Giant
68-70	Ring World
71-74	Rosetta Planets[a]
75-78	Rogue World
79-82	Solar Cities
83-86	Star Systems Bunch
87-89	Thin Asteroid Belt
90-93	Unique Resource
94-96	Unstable Star
97-00	Wrecked Starship

[a] Roll for Survivor Civilization

Alien Headgear - Someone in the discovering fleet uses a learning tool from an ancient empire. The effect, permanent, is to make him/her a Graded Leader. Roll 1d10 to determine the leader type (1-2 Admiral, 3-5 General, 6-8 Governor, 9-0 Diplomat). The graded leader is LG+1; the subtype and any specialization are determined randomly. It takes 3 months (in the hospital) for the leadership qualities to manifest. Alien Headgear is only usable once.

There is a 30% chance the Headgear is Defective.

Defective Alien Headgear - As Alien Headgear BUT if, after the new leader manifests, the empire is ever at peace for 20 consecutive months (planets in the consolidation phase do not count as a war, nor do "wars" that have not had an attack in the last 5 months by either side, nor wars that the empire doesn't know about [i.e., reject but communicating or delayed war situations with NPRs]), then an empire wide revolt occurs. The graded leader gets 1/3rd of all fleet units (in HS) and 1/3rd the income of the empire. Both fleet units and systems (income) are those that are closest to the system the leader is in. Neither side will use orbital bombardment and all planets surrender rather than fight a ground combat. Captured units do not have to be refitted. The winning side of the empire receives a +150 EL RP bonus to reflect the increased R&D effort by two sides. The attack is a total surprise to the player and a large number of "surprise" combat and system takings are possible.

Should another race attack either side, there is a 20% chance per month that both will turn to attack that race in cooperation with the "revolt" forever forgotten. Of course, after another 20 months at peace...

Close Binary - Two Red Dwarf stars are orbiting at 4d6tH distance at the center of the system. No planets possible.

Close Star System - A Single-Star system (W2.05.1 die roll of 13-65 only) exists a moderate distance away (2d4+2 StMP). The 2nd Star system will usually, but need not, have WPs associated with it (depending on how flexible the WP generation system that is being used is).

If this system has a Giant star, then it has intense magnetic fields which effect just about everything IN BOTH systems. All communication distances are reduced by 90% (FRD). All to-hit numbers, multiplex abilities, and LRW ranges are reduced by 50% (FRU). Long, short, and scan sensor ranges remain the same but medium sensors are reduced to combat range, combat range is reduced to short range. Precision targeting and shield regeneration is impossible in this system. The speed of any ship in this system is reduced by [4 - (distance from Star in system hexes/7 (FRD))].

Collapsing Star - Realism Note: The events of Star Collapse are "greatly" speeded up even at the average time of 50 years. This is merely a version that is playable within game constraints (realistically, the system would forever, game wise, be unusable).

A scientists dream site: if a SS or base is constructed at 1 LM from the star, and contains 5 X generations (5 Xa, or 2 Xb and 1 Xa, etc.), plus 12 st for field studies, the empire will gain 1 EL RP every month for 50 months. This amount is not modified by anything and is free of charge and in addition to any limits. Only 1 site may add at a time per empire and each site is only usable for 50 months per empire.

Collapsing Stars eventually become dangerous but there is only a two month warning before something bad happens. On month 1d1000 (roll 1d10 for each of three digits), the collapsing Star will (roll 1d10).

1-2 Pulsar forms [W5.05.2]
3 Neutron star forms [W5.05.6]
4 Blackhole forms (See Black Sun Oddity)
5-9 NOVA (Unit's and populations are destroyed – Also see Sun Went Nova Oddity).
10 Supernova (Unit's and populations are destroyed – Also see Sun Went Super-nova Oddity)

Both the nova and supernova may affect WPs (roll once for each WP and see what happens in EACH category – i.e., a WP may emit an energy blast and then shift or disappear)

Nova -- 1d10 Supernova 1d10+3	1	2	3	4-7	8	9	10	11	12	13
Nothing happens				x						
Energy blast					x	x	x	x	x	
WP disappears	x					x			x	x
Both ends shift		x					x			
New WP forms			x					x	x	x

If multiple things happen, the upper item occurs first, then the lower (things never occur simultaneously but will all occur within 1d6 days of the "nova.")

Energy blast: Energy blast shoots out the far side of the "old" WP causing 2d20+5 minus tH distance from WP of damage. Supernova adds +20 to the damage.

WP disappears: The WP is gone, period.

Both ends shift: Both ends of the old WP shift to random new systems.

New WP Forms: A new warp (both ends new) forms. The other end may go to any system.

Note about shifting or newly created WPs – No system can contain more than 10 WPs. Warp Points appearing in a system (after moving or being created) have a 40% chance of "reforming" [See Forming WP(n)]. For either non-forming WPs or after a WP has formed, there is no warning in the new system and only a survey can possibly detect the new WP.

Example: On the month of collapse you roll a 1d10 and get a 10 resulting in a supernova. For each WP, roll a 1d10 (adding 3 because of the supernova), read down the column with your resulting number and apply the results with an x. For example: For the first WP, you roll a 9 and add 3 for the supernova resulting in a 12. On the chart, look down column 12 and apply the results for those rows with an x. The 12 means the first WP has an Energy blast, then it disappears and later a new WP forms. For the 2nd WP, a 5 is rolled and that WP produces an energy blast but nothing else happens to it.

Dense Asteroid Belt - System contains a dense asteroid belt. In effect, there are twice as many asteroids in this belt as a normal asteroid belt. Treat the belt as two belts in the system for maximum population purposes [table L1.03] and for the income modifier [L3.01]. In addition, [D3.03.3] is modified such that units in the asteroid belt cannot be detected at medium detection range regardless of location in the belt. Roll 2d10 for the number of ships that can hide in a tactical hex [D3.03.3.1]. And ships of up to 45 hull spaces can use rule [D3.03.3.2]. If system doesn't have an asteroid belt, replace the innermost G planet with an asteroid belt of the indicated nature.

Derelict Ship - This is an unarmed science vessel from a nearby system, which has passed through a warp point, and the crew was unable to figure out what has happened. Roll (1d10) -4 +your EL to determine the ship's EL level. Ship is ES sized and contains Shields, Armor, Commercial Engines, Science Instruments, and Quarters. The SL of each system is determined by Y6.04 table with the ship's EL treated as the highest EL in the campaign. 5% chance the crew is still alive. If crew is alive, their rescue counts as eliminating one current or one future treaty violation (SM option for live crew -- Generate the crew's NPR empire on the other side of one of the WPs in this system -- or treat them as lost in space and start an NPR far off in the galaxy or use a current NPR in contact with another race).

Gaia World - A world lush with life has been found, and what a find it is! One habitable planet (or O2 planet if present) becomes a Gaia world [note: when unusual life forms are present, any home world type might become Gaia]. Due to some unknown factor any life on this planet is healthier and happier than normal. Whatever

the reason, ALL population growth on this planet is +1% above the normal rate, the maximum PU for a very large population is increased to 4000+400*EL PU (due to the abundant food sources and such), all T and ST populations treat this world as Benign.

Uniquely, the population of a Gaia surrenders when space borne and planetary defenses (other than PU) are gone and also JOINS the conquering race as IMPERIAL citizens (except J'Rill). This joining is not considered to be an amalgamation. Populations joining provide no technologies to the race joined.

Gaia worlds are never Very Rich.

Habitable Paradise - A T/ST is an environmental paradise for your race and everyone wants to live there (best planet for the discovering race). Every month, if within 4 StMP of a medium or greater populated world of your empire, the population on this planet will grow by Growth Rate+1% of its total PU (minimum +2 PU total growth), by free emigration, once you establish a colony sized population on it.

High Resources - 2d10 items in the system are increased by +1 Resource Level (i.e., poor to normal)

There is a 30% chance that the increase is +2 levels.

Hostile O2 - Treat the environment of one O2 planet as Hostile not desolate. The adjusted O2 is either, the innermost O2 planet, or the innermost moon of the first gas Giant. If using a moon, this moon is also super large and is treated in all ways as a planet. However, all other moons of that gas giant are destroyed.

Lagrange Asteroids - A T/ST planet has 1d10 asteroids in orbit which are easily made into asteroid forts. If there is a moon(s) orbiting the planet, they are instead distributed between the moon(s) Lagrange point. These points are +1 and -1 facings from the facing from the planet. i.e., a moon 3tH from the planet in direction 1 creates Lagrange points 3 tH from the planet in directions 2 and 6.

Low Resources - 2d10 items in the system are decreased by 1 Resource Level (i.e., poor to normal) (70%) or two levels (30%).

Machine World - A vast metallic world has been found that is teaming with machinery run by a central computer core under the surface of the planet. The world is a very rich mineral content and the machines DOUBLE the MC output of the planet. In addition, the population that occupies the world lives in underground complexes and takes half damage from any collateral attacks.

No amount of bombardment can destroy the machine world special as there are too many machines and the world keeps building more. [Detected at Long Range].

Roll 1d100 to determine the STATUS of the Machine World (this occurs prior to rolling for races on other habitable worlds).

1-50 Vacant
51-80 Normal HEL NPR
81-100 Unusual Society (roll on unusual Society table)

Nearby Star System - A star system is part of a pair of nearby star systems. The other member of the group is 10-40 StMP from the rest. Both will have WPs rolled normally. No WP will exist between these two systems. Note that both star systems would gain the designation of having a nearby Star System.

O2 Environmental Change - Scientists observe an O2 planet in the midst of a climatic change. The process will take 11-20 months to complete. If 20 X generations are kept within 1 LM of the new O2 for at least 10 months, Scientists will then theorize that terraforming an O2 PLANET (planets only) in the outer edge of the Biosphere of a star is possible (i.e., biosphere max. distance + 1LM). First, The O2 must be mass 2 or 3. Second, a colony of at least 25 PU is emplaced to manage the project (income is earned). 100 H must be shipped to the O2 every month at a cost of 3 mc per H (includes CFN charges). This is maintained for 24 months (2 years). The environment is now treated as Hostile. After this the planet will continue to improve on its own and 3 years later will improve to Harsh. The project is then complete. Editors Notes: Total cost is (300)*24 = 7,200 MC. Advantages: Max size and income permanently increased. Overall, this is a very expensive long term project which will pay off after about 8.0 years or so (this includes extra colonization costs to boost planet to max. quickly and assumes normal minerals).

Plague - A virus with a long term incubation bypasses all safety procedures. After 1d10+3 months of incubation, the plague breaks out causing a 20% reduction to all growth for 1d10+5 (FRD) months. After that the virus burns out and the race is now immune to the NEXT plague it might have contracted (note: the race can still be a CARRIER during the incubation period). All allies and trade partners have a 50% chance of contracting the plague during the incubation period. A race increases its RC by 10 towards the race that infected them for twice the duration of the plague. [Plague is not contagious between unusual life forms].

Planetary Complex - A normal looking world has been discovered that has part of its crust hollowed out and a tremendous network of factories and construction platforms has been built inside! In addition, there are remnants of a long-deceased civilization on the surface of the planet, and the planet provides a bonus to allow a +1 RP to the EL research of the empire.

Construction platforms inside the planet allow Ground Based Industry to build without any price increases. Additionally, any repair or refit job done at the planet takes 1/2 the (SY) time due to the built-in factories at the planet.

The planet can hold 2000 HS of ships internally, which will be undetectable. These ships can exit 6 at a time (one from each area on a different facing).

Ringed Gas Giant - A gas giant has a ring belt of valuable minerals (40% chance of 1 other Gas Giant having this). All the moons of this planet are very rich!

Ring World - Surrounding a gas giant there is a tremendous artificial ring built in the 1 tH orbit. This ring has been built to house T or ST (or a specific unusual) life form, and the gas giant provides all the heat necessary for the ring to survive. All moons around that gas giant are removed, and the ring extends in a full circle at a 90 degree angle to the star. Each of the ring's 6 tH provides a harsh colonization area (T or ST or unusual) equivalent to a mass 2 world with poor minerals content. Each "world" must be surveyed and colonized separately.

PDCs are not usable on ring worlds.

Rosetta Planets - The system contains 2-6 planets in the same (randomly rolled) orbit -- the orbit must be within the rocky planet zone [W6.04]. For two planets orbit 180 degrees from each other, for 3 they orbit 120 degrees from each other, 4 orbit 90 degrees from each other, 5 orbit 72 degrees, and 6 orbit 60 degrees from each other. Moons, mass, richness, and (if applicable) habitability are rolled separately. [Usual Life Forms: all planet types are possible and the orbit is where those planets form.]

As Rosetta Planets are not naturally occurring, also roll for Survivor Civilization.

Rogue World - *Starless Nexus* -- A normally planetless system has one planet and a brown dwarf star. Roll d10 (rerolling any 10's) to determine which orbit the rogue can be found in. The table below determines the planet's type.

1-4 Ice (i.e., Rocky with no Heat)
5-8 Gas
9 Ice

Calculate mass and mineral value (REI) normally. This planet will never have moons.

Single-Star system -- The Rogue world was caught gravitationally by the Star and has remained in an odd orbit (options: Rotates in the opposite direction of all other planets [Any planet type possible depending on distance]; elliptical orbit [any survivable planet type possible depending on distance])

Rogue world in a binary, trinary, or quaternary system -- The Rogue world is located at the gravitational center between two stars (trinary--between the binary pair [W5.03.3]) (Quaternary--between the pair of stars). This is located on the line connecting the 2 stars. Using chart W2.05.5.2, star diameters, divide the diameter of the smaller star by the diameter of both stars and place the planet that percentage, of the distance between the stars, from the larger star. Use just one of each pair of stars in the Quaternary system. The planet type [W6.05] is determined by 2/3rds distance to the larger star because planet receives extra heat from the 2nd star (use 1/3rd distance for Quaternary systems).

Solar Cities - This population lives in "Solar City"s above the Star at three times Star's radius in tactical hexes. Generate the NPR normally except increase its PU by 75%. Each PU generates only 0.5 MC each - the other half is consumed in maintaining the "solar city." The cities are considered O2 planetoids with a maximum population of 1500 PU each. Each city can build SS military modules to defend it (two per side, instead of one). Planetary "Ground based" industry functions as orbital SY instead; thus, the need to build SY is greatly minimized. Each 5 pts of damage to the "core" of the city destroys 1 PU and the ability to support 1 PU and replacing the ability to support 1 PU of population costs 100 MC each. Such a civilization never uses bases. All other races treat solar cites as Harsh Environment.

Star Systems Bunch - The System is part of a bunch of 4-6 systems, each of which is connected to each of the others. This is not immediately obvious but will become so as the WPs are explored. The knot as a whole has at least 1 exit WP other than the one by which it was found. {Ed note: If using a pre-generated galaxy, just generate a few extra systems and arrange as necessary.}

Thin Asteroid Belt - System contains a thin asteroid belt (max. pop. LM*10). There is no [L3.01] income bonus for this belt. Furthermore, the number of ships that can hide per hex is 1 and detection at long range is always possible [D3.03.3]. If the system doesn't have an asteroid belt, replace the innermost G planet with an asteroid belt of the indicated nature.

Unique Resource - A T/ST planet has a unique resource [Unusual Life: any type planet]. When the inhabiting race forms its next trade agreement, the new trade ally finds it can't do without the resource. Increase the trade income bonus the occupying race gets (but not trade allies) by up to 50% of the income of this planet. The trade bonus cannot increase by more than 100%.

There is a 40% chance that the Unique Resource is duplicable in factories when researched. The project has a base requirement of 50 RP and 2% of GPV per month as development cost. It will increase all trade income with all alien races by 10% for the empire; the other races don't get this bonus.

There is an additional 25% chance that the Unique Resource, duplicable or not, has bad long-term effects on the trade ally race(s). After 20 months, each trade ally rolls 1d10. These effects DO apply to player races.

1-3 Race accepts that it can't live without it, and its RC is lowered by 10 towards your race as long as the trade is in effect UNLESS owning race agrees to the split of extra trade income.

4-6 Race cancels trade agreement, and will not accept a new trade agreement until the resource is banned.

7-9 Race believes it must destroy the resource at the source and declares war with the goal of destroying 50% of GPV on this planet via bombardment. If the goal is accomplished, via war or owning empire allowing them through to the planet to bombard it, the resource is permanently destroyed and the race offers peace. Regardless of the current level of treaty, the declaration of war in this case does not cause a treaty violation, and the current treaty level may be reinstated after the war if both sides agree (war check for NPR with a non-success indicating the NPR will reinstate). Races which are at war or in the process of amalgamation will not go to war.

10 The race believes this was an intentional effect designed by the player's empire. Declares war with the goal of eliminating the empire but no penalties will apply. Treat as total war with no surrender possible. The attacking race MUST use Genocidal bombardment (conquering colonized planets is not permitted) and the other side may then respond in like kind. As long as only the unique resource owning race is genocided, Genocidal Penalties will only apply DURING the war or until the unique resource owning race is eliminated. After the war, all others will see the necessity of Genocide.

Unstable Star - One star in this system is unstable! This is discovered 6-10 {1d10/2 (FRU) +5} months after initial survey. 11-20 (1d10+10) months after discovery the star will go nova destroying everything inside of 100 LM. If 30 X generations are kept in the system until the last safe minute, for each 1 month of

records, 2 RP are earned towards developing the next generation of fighter/bomber/gunboat.

See Collapsing Star oddity for Nova effects.

Wrecked Starship - An ancient wrecked starship is found on a desolate system body during the survivable body survey. The wreck is so ancient that only 1 thing may be determined from it. 1 ship with X must study the wreck for 3 months. Analysis of fragments of the ship allows: (Roll 1d10)

1 *Hull* the next hull size (that the race does not have available) becoming immediately available for prototyping.
2 *Armor* the next undeveloped generation of Armor to be treated as 2 SL lower for everything. Example A2 would be available at SL 6 (tech line becomes effectively -- 6k{c} A2).
3 *Commercial engine* the next undeveloped commercial engine to be treated as 2 SL lower for everything.
4 *Military engine* the next undeveloped military engine to be treated as 2 SL lower for everything. (use the race's original engine generation tech)
5 *SRW* the next undeveloped generation of SRW (from the SRW tree/branch with the highest SL) to be treated as 2 SL lower for everything.
6 *LRW* the next undeveloped generation of LRW (from the LRW tree/branch with the highest SL) to be treated as *one* SL lower for everything.
7 *Datalink* the next undeveloped generation of datalink system (from the tree/branch with the highest SL) to be treated as 2 SL lower for everything.
8 *Defense* the next undeveloped generation of one defensive technology (D, Dc, Sr, T, or Y) to be treated as 2 SL lower for everything. (SM choice but stick with the highest SL first) ECM is disallowed.
9 *RP bonus* the player gets to apply 25 free RPs for to any current or upcoming SL research or development project.
10 *Big RP bonus* the player gets to apply 50 free RPs for to any *current* SL research or development project.

HH1.04.4 PLANETARY DESTRUCTION

Note: planetary may refer to the planetary disk, not specifically planets themselves.

1d100	Planetary Destruction Oddity
01-08	Atmospheres Burned Off (or similar)
09-16	Glassed
17-21	Leftover Facilities[a] (HH1.04.2)
22-25	Moon shattered habitable
26-29	Moons Shattered
30-37	Planetary Environment(s) Damaged
38-45	Planetbusters
46-50	Remnant Units[a] (HH1.04.5)
51-58	Second Sun
59-63	Survivor Civilization[a] (Survivor Civilization)
64-71	System Debris
72-79	Uninhabitable
80-85	Virus Dusted Planet(s)
86-89	Von Newman Machines
90-95	Warp Point Oddity[a] (HH1.04.9)
96-00	Once fired, a non-destructing buoy type will continue to fire as often as it can.

[a] Roll again on this table event

Atmospheres Burned Off (or similar) - Some of the habitables in the system are altered to O2 worlds. One random habitable is automatically affected, and others have a 50% chance of being affected.

Glassed - Some of the habitables in the system have been "glassed" with nuclear or worse anti-matter weapons. They are treated as TWO habitability levels below their nominal ones. One random habitable is automatically affected, and others have a 50% chance of being affected.

Leftover Facilities - Reroll on this table AND Roll on the Leftover Facilities Table.

Moon shattered habitable - A moon is missing from the outer system. One random habitable is now an asteroid belt around its sun. The moon was slammed at massive velocity into the habitable, destroying it.

Moons Shattered - 1d10 random moons in the system are shattered. They are left as small rocky belts around their planet. Any settlers on the planets or on other moons of that planet gain 5% income from each of these belts. They are too small to support a population.

Planetary Environment(s) Damaged - Some of the habitables in the system have their ecosphere damaged. Damaged planets have their habitability stepped down by one grade automatically. One random habitable is automatically affected, and others have a 50% chance of being affected.

Planetbusters - Some of the habitables in the system are reduced and replaced by … Roll 1d10 (1-3) O2 planet; (4-7) asteroid belt; (8-10) nothing, destruction is total. One random habitable is automatically affected, and others have a 50% chance of being affected.

Remnant Units - Reroll on this table AND Roll on the Remnant Units Table.

Second Sun - One gas giant (the largest - chose randomly if there are multiple ones of the largest size) is transformed into a tiny star. Destroy any moons, and it has a radius of 2 tactical hexes.

25% of the time, the sun is a brown dwarf with a rocky planet orbiting it. Roll 10+2d10 to determine the distance in tH. Roll for the mass of the planet as normal then use the table below to determine the type. This planet will not have moons.

Distance	Planet Type
12-14	Inside Inner Edge of Biosphere
15-21	In Biosphere
22-30	Outside Outer Edge of Biosphere

Survivor Civilization - Reroll on this table AND Roll on the Survivor Civilization Table.

System Debris - The system is littered with small, dangerous debris. Ships need two shields per speed they wish to use above 1, tactical or strategic. Otherwise, there is a 5% chance per StMP used in the system that the ship is destroyed.

Uninhabitable - Some of the habitables in the system have been made totally non-habitable, either by Nova Bombs, Anti-Matter Planet Killers, Crust-Busting Kinetic strikes or similar weapons. One random habitable is automatically affected, and others have a 50% chance of being affected.

Virus Dusted Planet(s) - Some of the habitables in the system have their ecosphere dusted with a virus. One random habitable is automatically affected, and others have a 50% chance of being affected. Roll 1d10 to determine the virus type.

1-3 Weak Virus Dead -- The virus killed all the higher life-forms - and a fair number of others - on the planet. The planet is now safe to survey, although the poor ecosystem means that +2 MC/PTU emplaced must be spent on building up the biosphere for colonization purposes.

4-5 Weak Virus Encysted -- The virus is still dangerous. There is a 75% chance that this will be determined by the planetary survey team, otherwise the virus will be considered dead. Any colonists who are transported to the planet are infected, and after a 1d10 month incubation period 10% die each month. Twenty X generations in the system can search for a cure, if 100MC are spent per month; there is a 40% chance of finding a cure and ending the death of the PU's. If the virus IS detected, then twenty X generations can research for 100MC per month, but with only a 20% chance of making the planet safe. The extra cost to settle on the planet still applies.

6-8 Deadly Virus Dead -- The virus killed every living thing on the planet. While population limits are as-per a harsh world, the colonization cost is for O2 worlds. (Unlike most O2 worlds, it CAN be settled by T/ST races!)

9-10 Deadly Virus Encysted -- The virus is still dangerous. There is a 50% chance that this will be determined, otherwise the virus will be considered dead. Any colonists who are transported to the planet are infected, and after a 1d5 month incubation period 20% die each month. Twenty X generations in the system can search for a cure, if 100MC are spent per month; it has a 20% chance of finding a cure and ending the death of the PU's. If the virus IS detected, then thirty X generations can research for 100MC per month, but with only a 10% chance of making the planet safe. In any case, the world is settled as an O2 with harsh PU limits.

Von Newman Machines - Roll 1d10 to determine what the Von Newman Machines have stripped.

1-3 Stripped Planet(s) -- Some of the habitables in the system have been mined heavily by self-replicating robots in the past. Affected planets drop one mineral category. Very Poor is the lowest that minerals can go. One random habitable is automatically affected, and others have a 50% chance of being affected.

4-7 Used Moon(s) -- 1d10 random moons in the system are dropped two classes in terms of mineral richness, mined by self-replicating robots in the past. Very poor is the lowest minerals can go.

8-10 Totally Used Moon(s) -- 1d10 random moons are removed; they were destroyed and converted into raw materials by self-replicating robots in the past.

Warp Point Oddity - Reroll on this table AND roll on the Warp Point Oddity Table.

HH1.04.5 REMNANT UNITS

A system may have a multitude of remnant units (base amount is 500 HS plus 25 HS per game month). They can be mothballed, wrecked, or automated. Roll 1d100 to determine the percentage of wrecked units [D5.02.1]. Of the unwrecked units, 1d100 percent are automated and will actively shoot at anything except a survivor civilization. If no survivor civilization present, there is a 5% chance of recognizing any race as the "returning civilization." Remnants will ignore returning civilizations but if another race is recognized as a returning civilization, then the first race now the enemy and will be fired upon. Once an automated remnants detects a non-remnant race, they become active (inactive remnants become active when "enemies" reach medium range). Once active, they will activate one additional automated unit per day per active remnant. Remnants will often "play dead" to lure enemies to their doom. A race must be within 10 tH to roll for recognition, thus, attacks upon "returning civilizations" can and do happen before their nature is discovered. Returning races in the same tH as a automated remnant will be fired upon (prevents boarding).

If an automated unit with an MS, SYM, or SY becomes active, it will be able activate up to 1/2 of non-wreck units. Each activation of a non-wreck takes two months.

Once an enemy has been identified, there is a 30% chance that the remnants will seek to destroy them outside their starting system. In each system they "capture" they will exterminate all life. Once a number of PU equal to 1d6 times their starting HS have been destroyed, they will believe that the enemy is destroyed and return to their starting system. Survey of a new system takes 2-4 turns and is handled automatically by hidden units.

Optional: 4d10 months after the remnants activate, they convert to J'Rill with an income of at least 1000 MC

Remnant Units Table

Roll 2d10	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Warships	x	x	x	x				x		x		x	x			x		x	x
Carriers	x		x					x				x	x			x	x		x
Freighters	x		x		x														x
PDC/AF (50%/50%)	x			x					x									x	x
Defense Silos	x			x			x											x	x
Bases around planet(s)	x	x			x		x			x		x		x					x
Minefield Around Planet	x			x			x							x	x	x			x
Bases at Warp Point(s)	x					x		x	x										x
Minefield at Warp Point(s)	x				x	x									x		x		x
Fleet Base*	x	x																	
One of the 10 above types											x								

An x on the Remnant Units Table indicates that those types of units are present. All units are the probing race's EL + 1d10 (add 4 ELs if this event was referenced by another planetary or system destruction tables) WARNING: Space Master should use his discretion in allowing very large differences between remnant and player ELs. If the player is huge, a bigger difference MAY be ok as long as the new tech he may gain is not going to make the player unstoppable by the other players. In any case, the player should have a "difficult to impossible" fight to gain any new technologies and as such, the amounts of HS listed are only minimums and may not translate well in late game encounters.

REMNANT TABLE NOTES: A Fleet Base is a SS with 10 MS, 3 SY, and 3 military SS modules of at least 200 HS each.

PDCs, Silos, and Bases around planets only apply when habitable planets are present.

Non-Wrecked Ships are located around, if present, a habitable planet, moon, or WP. Wrecks are generally drifting in one area of the system (leftovers from a big battle). This might be a WP battle, battle in deep space, or a battle around a planet.

Minefields - Remnant Minefields are ultra high tech, always active and do not degrade over time. Worse, the minefield is self-sustaining and over time will regenerate and increase in size.

MINED AREA - Mines exist in a 2 hex radius around WPs (and in the WP's hex) and 3 hex radius around planets.

QUANTITY - The mined area contains 1d100+1 per game month active mines. Double that amount for planet areas.

ATTACK - Roll 1d30 plus twice the invader's EL (FRU) to determine how many active mines fire each turn but no more than 10 mines will engage a single target. Double that amount for planet areas.

DENSE - There is a 30% chance that the minefield is dense. If so, there are 1d100/2 (FRU) active mines (buoys) PER HEX (roll each hex separately). *Roll 1d10 for each hex* to determine how many remaining mines fire each turn.

MINE DESIGN - Possible Buoy designs (player EL 1-3 Buoy2 {5 XOa-5 RbM}]; EL4-6 Buoy2 {6 XOb-4 GbM}; EL7-9 Buoy3 {Fe, 2 XOe-1 GbM}. [SM may use other buoy designs]

REPLACEMENT - Destroyed mines are replaced at 2 buoys per game month. This is in addition to the normal 1 buoy per game month always received. Double that amount for planet areas.

Note: Once fired, a non-destructing buoy type will continue to fire as often as it can.

HH1.04.6 SYSTEM DESTRUCTION

Events which basically destroy the system, or at least large parts of it.

1d100	System Destruction Oddity
01-06	All Planets Missing
07-12	Black Sun
13-18	Dust Belts
19-24	Fragmented Planets and Moons
25-30	Giant Star
31-36	Missing Moons
37-42	Missing Planet(s)
43-48	Missing Star(s)
49-54	Planetary Asteroid Belt
55-61	Remnant Units[a] (HH1.04.5)
62-67	Shattered Planets
68-73	Sun Went Nova
74-79	Sun Went Super-nova
80-86	Survivor Civilization[a]
87-92	System Displaced
93-99	Warp Point Oddity[a]
00	Roll twice ignoring 00

[a] Roll again on this table event.

All Planets Missing - There is nothing left of any planets, although the star still exists. Moons orbit the star in place of the planets they would normally orbit.

Black Sun - The Sun is replaced with a miniature black hole. Anything within 2d10 system hexes of the black hole are destroyed. Gravity effects within the system mean that all ships and small craft are -1 to their movement, -2 for J engines. This reduction applies to tactical speed. A lowered tactical speed may affect a ship's Strategic speed too.

Any V or habitable planets are converted into I planets, any O2 moons become O1, O1 moons have a 50% chance of being destroyed. Asteroid belts break up and are considered destroyed. The system is not habitable, since no sun exists.

Any warp point's capacity into this system are doubled.

Dust Belts - There is a 50% chance that each planet is destroyed. All that is left are billions of sand-sized particles slowly dissipating. This also applies to asteroid belts. Sensor are only 20%(FRU) effective within, into, or out of a dust belt.

Fragmented Planets and Moons - Only non-habitable fragments are left of ANY planets or moons. Because of the debris-strewn environment, treat as System Debris oddity.

Giant Star - The star has been artificially inflated into a giant - remove any planets inside 10 system hexes as tidal forces will have torn them apart. Any other planets within fifteen system hexes are converted into V-type planets destroying their moons.

There is a 25% chance that 1d5 Solar Cities float above the sun (see Solar Cities oddity). These cites are inhabited by a HEL race 50% of the time.

Missing Moons - The system has no moons. Period.

Missing Planet(s) - Roll 1d10 for each planet in a system. On a 1 the planet (and its moons) are just... missing! If the random process doesn't remove any planets, roll for each planet a second time... and so on until at least one is removed.

Missing Star(s) - The systems star(s) are...gone. Rocky Zone planets are Ice Planets (I) and moons are O1 (cold). Due to minor heating from Gas Giants, their moons can be settled as normal.

Planetary Asteroid Belt - A T/ST planet had a moon which has shattered (-1 moon max.). Treat as a 1 tactical hex wide asteroid belt but with no colonization possible, add 5% income bonus to this planet only.

Remnant Units - Reroll on this table AND Roll on the Remnant Units Table.

Shattered Planets - V and I planets are removed. T and ST planets have a 50% chance of becoming asteroid belts, G planets always become one. 25% of the moons still exist, floating in the rubble.

Sun Went Nova - Everything out to 100 system hexes is destroyed. Only a brown dwarf is left at the center of the system. 10% chance that a dark nebula - the gas from the nova - now engulfs the system.

Sun Went Super-nova - Everything out to 200 system hexes is destroyed. Only a brown dwarf is left at the center of the system. 20% chance that a dark nebula - the gas from the nova - now engulfs the system.

Survivor Civilization - Reroll on this table AND Roll on the Survivor Civilization Table.

System Displaced - The actual system itself has somehow become displaced from its warp points - the warp points exist around an empty patch of space 1 StMP (40-45 sH) away from the system. If the system has a native race, they will never find these displaced warp points unless guided.

An open survey determines this situation and a 2nd concealed survey is needed to find the area to survey in. Then surveying can begin normally.

Warp Point Oddity - Reroll on this table AND roll on the Type of Warp Point Oddity

HH1.04.7 SURVIVOR CIVILIZATION

All survivor civilizations will have colonized all habitables unless otherwise specified (roll populations as home worlds).

1d100	Type of Survivor Civilization
01-08	IND-2 (Cp Drives)[a]
09-15	HEL (SS I/J DF and Cp drives)*
16-24	HEL (normal engines #)*
25-40	HEL (Cp Drives)*
41-98	Unusual Society (normal engines)
99-100	Multi-System Unusual Society

[a] Generate normally except for engine types

HH1.04.8 UNUSUAL SOCIETY

These society tend to fit in narrowly defined situations. As such, the space master may have to roll multiple times to get a satisfactory result. After the type of society and in {} is listed the type of situation necessary for the race to exist.

1d100	Type of Unusual Society
01-04	Absolute Pacifist {h}
05-09	Anti-Tech Fanatics {h}
10-14	Degenerating Civilization {h}
15-18	Dormant Berserker Base {n}
19-23	Dormant J'Rill {a}
24-28	Energy Absorbing {n}
29-32	Escaped Sentient "Herd Beasts" {h}
33-37	Geneered "Hive" Creatures {h}
38-41	Geneered Hunter Society {h}
42-46	Megalopolis World Civilization {h}
47-50	Hunted remnants - Natural {h}
51-55	Hunted remnants - Geneered Beasts {h}
56-59	Nation States {h}
60-63	Population in Stasis {a}
64-68	Practical, ruthless society {h}
69-72	Religious society, doctrine about space {h}
73-76	Remnant Populations {n}
77-80	Ship-Hydroponics Based {h}
81-84	Society Run by Geneered "Superiors" {h}
85-88	Strict, Formal society {h}
89-92	Tech-freak, cy-hybrid society {h}
93-96	Terraformed-Moon Base {n}
97	Unusual Life Forms -- random type {s}
98	Unusual Life Forms -- Venusian {s}
99	Unusual Life Forms -- Gaseous {s}
00	Unusual Life Forms -- Ice Life {s}
Key -- {h} habitable, {n} survivable, {a} any, {s} special	

Absolute Pacifist - (by Dawn Falcon) Re-roll RM as 1d10. These people are a zero-success government. They are basically as inoffensive as can be. For reasons either philosophical or physiological, they could have set examples for Gandhi. They will happily trade with other races, but never develop, use or otherwise have direct contact with weapons. Their usual response to being

fired on is to either run away in blind panic or drop their drive field and broadcast a surrender.

Their War and Defense funds are thrown out and the money is lost. They will typically only use freighter hulls, and if enemy troops land, they will simply practice complete non-cooperation. They will effectively produce 0.5MC for each PU. They will shrug and take pillaging and the like, and while they will hold mass vigils if any are killed, they will not fight back or otherwise respond.

They are NOT beyond attempting non-aggressive tricks such as slipping some freighters loaded with maintenance and colonists out the system to set up elsewhere if they think they can get away with it. Even if amalgamated, they simply will not produce or crew weapons or warships themselves.

Because they are known to be harmless in the military sense, when they negotiate between warring or non-intercourse factions, all involved are treated as having RC's five lower for all purposes.

Anti-Tech Fanatics - 75% Pre-Ind, 25% IND-1

These people - likely as a result of the devastation brought in the fall - have either ethical or religious problems with technology. Violent ones, in fact. They will never negotiate with any HEL civilization (and even if conquered they have double the usual chance to rebel). Buying IU or research does nothing to calm them down - indeed reverse the usual effects of buying research.

Roll D100 for Government type:

Roll	Government Type	RM	RC	RD
01-15	Theosocracy	Mx 50	Mx 75	Mx 75
16-30	Socialism	Mx 75	Mx 75	A Mi 50
31-45	Communist	Mx 75	Mx 75	A Mi 50
46-60	Theocratic Democracy	Mx 75	A Mi 40	Mx 75
61-80	Nation States*	Mx 75	A Mi 60	Mx 75
81-00	Absolute Pacifist*	1d10	Mx 40	Mx 75

(A= active, Mx = Max, Mi = Min)

Degenerating Civilization - Generate a normal HEL civilization including system exploitation. Then kill 40+(1d100/2) percent of PU's on survivable worlds first. Then destroy 75+(1d100/4) (max 100) percent of their CFN, the rest lose 20% of their systems. They have a 25% chance of having 1d5 warships, also with 20% of their systems decayed to uselessness. There is another 25% chance they have 1d5 similar warships in mothballs, in any case.

As a note, re-settling where PU's that were "destroyed" in this way takes only 5H per PU, not 10, if you are at or below the initial HEL level of the degenerating civilization.

The civilization is in a sorry state, they will lose another EL (and one from every SL) every 2d10+10 months after contact, unless they make at least a limited trade treaty with a HEL race, and spend MC equal to their PU*HEL. This will stop them from degenerating below the HEL of the race they have a treaty with. If that race is their current HEL or higher, another MC per PU will cancel their degeneration.

If they hit IND-2, they will have to mothball any surviving CFN ships and retreat onto habitable worlds, although they stop degenerating at that point. Because they are so desperate, they have a -20 RC (worst modifier possible +0) to any trade treaty offers, even if they are communist-type government.

Dormant Berserker Base - Oops, you found a dormant Berserker Home Base!!! Closer investigation will activate the base, which built into a moon, "contains" a berserker defensive squadron in underground hangers [E8.03.1]. See random event berserker. There are 1d4 + (game month/40) (FRU) Berserkers. The home base has the equivalent of 100 HS of shields and 100 HS of armor plus 25 LRWs and requires 200 damage to destroy (it can repair 1 damage per day) and the base will create a new berserker warship every 10 months! The new berserker will first replace any losses to the defensive squadron and then move randomly out of the system in search of prey.

Once destroyed, the Berserker base contains 10,000 MC worth of raw materials and a complete WP map of all open, concealed, and hidden WPs in this system and any surrounding systems. It also contains the basic layouts of any systems connected to adjacent systems (no planetary survey info though). Also, galactic oddity changes to systems will not be known. [See the Berserker random event for more information about berserker ships].

Dormant J'Rill - Well done - your entry has activated a dormant J'Rill society. Initially, its ships are split equally (and DF-down for sensor purposes) between the orbits of the habitable planet(s), but are instantly in full working condition as soon as anything moves within sensor range. It will always be HEL, and it WILL be hostile. Determine HEL normally and income will be 1d100/2+25% of a player races income.

Energy Absorbing - This race, whether plant based or something else, does not need "food" to eat. Instead, they live by absorbing energy from some source, such as radiation (be it light, gamma, etc.) from a Star. A few rather obvious benefits are that food doesn't need to be shipped and many times a fusion reactor's output can be converted to the proper energy type. Also, the population need not "farm" and thus is more productive (+10% income) and colonization is easier (all Hold requirements are halved). However, the easy food source has made them less determined (reduce RD by 30% (FRD) i.e., RD of 78 is reduced by 78 * 0.30 = 23.4 or 23 points to 55) and RD is never an active stat. All crew grades are 1 lower than normal for the government type and all crew grade advancement rolls are 1 lower.

Escaped Sentient "Herd Beasts" - It is a single-system herd race. With its own language, it bootstrapped itself to sentience shortly after the civilization was destroyed. RC is 1d50+50, RM and RD are both 1d50, and only RC is active.

Geneered "Hive" Creatures - It is a single-system BUG race. It bootstrapped itself to sentience shortly after the civilization was destroyed, and it wants lunch. All statistics are 1d50+50, and they'll all active.

Geneered Hunter Society - Sentient beasts engineered to be hunted that have turned around and made a society of their own. All starts are 1d50+50, and they'll all active. They are not ALWAYS hostile, but with their starts will likely be so. They are considered a three-success RM/RC/RD government type, militaristic and

working in perfect harmony with one another - they have the special advantages of both a racial and a military unity.

They get +10 to all war checks. Their language will be different from any "common" ones. Thus all initial contact checks are vs. their RC to determining initial, partial and full communications. However, their RC is normal (per government type) for determining comm. impossible or negotiations rejected. If none of those five states occur, then the result is communications not established.

Megalopolis World Civilization - The race is HEL. Any and all habitable worlds in the system are covered by vast spires and buildings, spanning the world. They have a 50% chance of having drive fields, otherwise they have charged particle drives.

ALL survivable bodies are totally full, and habitable bodies have DOUBLE the usual limit of PU. (In the wrong system they can have a MASSIVE amount of PU!).

In all other ways, this race is normal and they will colonize normally - it took them centuries of building to make the worlds into "Mega-World" types, which is not doable within the Starfire timescale. They will still get the double capacity on their homeworld(s) even when their EL increases, however. Their only limit has been the inability to get out of their home system, and you have just provided them with the idea that will let it occur. This race does NOT have Science Instruments developed (other than for planetary survey) and must first R&D Science Instruments SL1, develop Xa, and build survey craft. Then they can survey. All non-home system habitable worlds do NOT have doubled population size.

Hunted remnants - Natural - The remnants of this population are planet bound and have reverted to IND-1 but with half the normal IND-1 population. While some items of hi-tech may remain, they are scarce and treasures - esp. weapons. The world itself is hostile to non-native life. While fully-functioning HEL civilizations have no problem with it, the shattered remnants of the survivors cannot grow, and are threatened by the very world. They are at -20 RC while they are in this desperate condition.

They cannot make any HEL items while they are stranded. While they can perform EL research, it is at 1/2 (FRU) normal rate. Once they reach HEL 1, they manage to rebuild enough of their resources to make a space station (HQa(SY)), and can then build ships and grow as normal, having rebuild enough technology to brush back the jungle. Alternatively, if they are donated a shipyard, then spending 2MC per PU does much the same thing.

Of course, there is also the risk factor. Each month, there is a 1% chance of an incursion. This will kill (1d100)/2 percent of the population, which they may NOT get back. They lose EL RP equal to half the number of PU killed. If they fall below 20PU, they are overrun and destroyed.

Hunted remnants - Geneered Beasts - The remnants of this population are planet bound and have reverted to IND-1 but with 1/3rd the normal IND-1 population. While some items of hi-tech may remain, they are scarce and treasures - especially weapons. The world itself either had genetically engineered death-beasts planted on the surface by an enemy, or they escaped from a lab during the fighting. The shattered remnants of the survivors cannot grow, and are threatened by the very world. They are at -30 RC while they are in this desperate condition.

The nature of the beasts mean that the population is constantly at risk, and indeed is dying out. Each month, there is a 5% chance of an incursion. This will kill (1d100)/2 percent of the population, which they may NOT get back. If they fall below 20PU, they are overrun and destroyed.

The beasts are a problem even for HEL troops. They must be fought in a ground war - treat them as three times the INITIAL PU of the survivors in PU of beasts. These must be reduced by at least 90% by external troops before the restrictions on growth and risks of the beasts are removed. It is considered total war, and the beasts are considered to have an IND-2 EL for purposes of resolving ground combat.

Nation States - The world has 1d10+1 large "Nation-States," which between them control the world. While this state will not persist once the race becomes HEL, it makes dealing with them a pain. Each nation must have separate treaties formed with it. Once you form a treaty with one nation, the RC of the other nations goes up by five, for good (increase only once).

The nation states will not form any treaties between each other, and threats and posturing are perfectly normal, although their low weapons capacity limits their ability to threaten off-worlders. However, it is not atypical for a number of smaller nations to form voting blocks vs. larger nations. Each nation will begin building a space station when they reach IND-2, although there is only a 75% chance that any given nation's space station actually gets finished (otherwise it has an accident blows up or something). Each space station is as follows: HQa(SY).

Each Nation State has its own government type (no three success governments) even if still LEL. Multiple governments of the same type are allowed.

Nation State PU Size: Roll 1d4 for each nation. Total the 1d4 rolls and divide each nations roll by the total to determine the percentage of the planet's PU that the nation controls. If only two governments exist, the larger will have 50+1d10 percent.

When the "Nation State" becomes HEL, roll 1d100 vs. the original RC. If lower or equal to RC, then a brief but nasty "War of Unification" is fought, and 1d5 of the Nation-States and 50+2d20% of their populations are destroyed. Surviving population (or all if dice roll is above RC), re-roll government type as per-normal for their active statistics.

If a nation becomes involved in a war, roll 1d100 for each other nation.

1-60	Nation aids the first nation
61-80	Nation is neutral
81-00	Nation declares war on the first nation

Population in Stasis - A crude stasis method was worked out by the civilization - which is HEL. Halve the PU generated, but five times that PU is in stasis in orbiting colony ships - they will be CFN designs and carry colonists in 9 Qv rather than 10. The system must have no habitable planet. If the civilization ever

discoverers a habitable planet, they will immediately ship the colonists there - 90% of the colonists will survive being woken up.

The stasis technology can only be gained by amalgamation, and the risks and such associated with it mean that its effect is slight - colonization becomes 1% cheaper.

Practical, ruthless society - This society has a breathtaking ruthlessness brought on by shortages after the destruction. Halve their PU and subtract one from their EL (min EL1) - they suffered a LOT before they got things sorted out, and add 10 their RD. Add +20 to their Y15 policy, and they get +10 on their Y16 policy. They do not have to roll to use tactics such as ramming and ST until they have at least twice their initial PU on habitable planets in systems other than those they began in. When this happens, they also get -5 to their RD, and become less driven. If they are ever subjected to genocide (any class), they never have to roll to use ramming, ST and the like against the race doing it, and have an extra +20 RC against the genocidal race for good.

Religious society, doctrine about space - The society is dominated by a religion which has a strong doctrine about space (or the stars if they are HEL (20% chance) and can thus move around their system) being the home of the righteous, and that they were banished from the heavens for their sins. This gives them +10 (max 100) to their RC for good, and MAY have unfortunate effects when they are contacted by spacefarers.

Roll RC. If they fail, then they decide that they have been saved. They get a -10 RC modifier and ignore the first war check indicated against their saviors.

If they pass...bad things happen. Roll 1d100

01-20 Declare war on the demons -- They immediately go into a total war against the "demons" who have contacted them. Obviously, if they are non HEL, they won't be able to act on it instantly.

21-30 Decide to backstab the demons -- As per negotiations rejected (but attempting communication).

31-45 Civil War, Religious Win -- There is a secular/religious struggle over the next month. 10% of all PU's die in this struggle, as do 10% of all ships. The religious faction wins; the race gets another +5 RC (max 100) immediately, and continues with their old government type as a normal race.

46-60 Civil War, Secular Win -- There is a secular/religious struggle over the next month. 10% of all PU's die in this struggle, as do 10% of all ships. The race gets -5RC, and if RC is an active stat, it re-rolls to see if it still is. They get a -10 RC permanently to the race who contacted them, and their government type must be re-rolled as per their (new) active statistics.

61-80 Ignore them -- The race totally ignores the invaders, refusing to talk, although they will fight back if invaded. They will defend their world (system if HEL), but will never leave their planet (their system) voluntarily. When generating this race, re-roll statistics and government type until you get a religious-type government.

81-90 Demand the stars -- They demand instant access to drive field (X if HEL) technology. If obliged, they get -5RC permanently to that race. If refused, they instantly go into a total war mode against the "infidels denying them the stars," and try to capture a starship (X system if HEL).

91-00 Seem alright, become unstable -- They will negotiate as normal. However, they become unstable as per the political modifier, until have an attack of instability, due to the long-term side-effects of contact with outworlders.

Remnant Populations - Remnants of populations, degenerated to IND-2 are JUST barely hanging on. 1d20 random moons will have 1d20 PU each on them. An asteroid belt will have 1d20 percent (FRU) of the maximum population possible. They will immediately amalgamate (changing no statistics of the amalgamator) with any HEL entity which moves PU at least equal to the total PU of the remnant population into the system.

Ship-Hydroponics Based - To this day, the society depends on the hydroponics selections in several starships. They have an SS core or freighter with a single engine, minimum of hold space and life support, and Qv's. In this case, the Qv's represent the hydroponics, and there is one Qv per 10 PU in the system. If these Qv are lost, then they must be replaced (and a surviving hydroponics Qv can be used to "produce" two new hydroponics Qv per month, assuming a shipyard is present for the cost of a single Qv!) or the (unsupplied portion of the) population will die out over the next 1d10 months (during race creation, these FT are free but must be maintained)

Needless to say, any form of attack on the hydroponics triggers an immediate war check. This race may, if the SM desires, colonize other systems normally.

Society Run by Geneered "Superiors" - Unknown to the general populace, the real driving force behind the race is a clique of near-immortal genetically engineered beings. They are arrogant, adding 5 to the RC of the race. Any successful political acceptance roll must be roll a second time to see if it passes the clique's scrutiny. Only then will it be accepted.

Only via espionage can their existence be uncovered, and this both makes the race unstable until they are rooted out (they will go to ground), via more espionage, and negated their +5 on the race's RC. They must also make a RD roll. If they pass, then they are pleased with the race that found the clique and get a -10 permanent RC to them. If they fail, they cancel all agreements with them and roll a war check at once.

Strict, Formal society - The society which has formed in the absence of interstellar travel is highly formal, very strict and very, very brittle when external forces are applied to it. It is considered automatically unstable, as per the government type. In addition, both when contact is first made (20%) and when communication is established (20%), and with each treaty offer (10%), there is the indicated chance of a full-fledged breakdown in society. This effectively paralyses the society for 1d5 months, and 5% of the PU's are killed each month. After the breakdown is over, each racial stat changes by (1d00/2)-25.5 (FRU) with a min of 10 and

a max of 90. Reroll stat activation and randomly generate a new government without an unstable modifier. That government is at a -5 RC permanently to the people who caused the breakdown because they are grateful to them for breaking down the old social order.

Tech-freak, cy-hybrid society - While stranded in a single system, this race has got an extremely high grasp of technology - add two to their EL and one to all their SL's (they are always HEL). They have a 10+5% chance per EL to have I or J engines; otherwise they have charged particle engines.

They have, regardless of their government type, definite technophile tendencies, and subtract 10 from their RC when dealing with HEL races. Because of little items such as neural links, they interface with their computers well and get a +1 bonus on initiative rolls. This ability is gained by another race that amalgamates with them.

At the end of each tenth month (month numbers ending in 0), there is a 5% chance they become J'Rill. Immediately. Say ouch? If amalgamated, only the original worlds become J'Rill.

Terraformed-Moon Base - The inner moon of a random gas giant (re-roll if no Gas Giants), has been Terraformed into a small but viable ecosphere. It, itself, can support (and requires) no more than 20 PU, but all the other moons in the system will be fully settled. 25% of the time, this society is considered a "Strict, Formal society," as per those rules. The moon is hostile for other races to colonize.

Unusual Life Form (Any) - See HH3.06 Unusual Life Forms Rules. The random type cannot be the same type as the discovering races type. T and ST are treated as the same for this purpose.

HH1.04.9 WARP POINT ODDITY

1d100	Type of Warp Point Oddity
01-05	Atmospheric WP(a)
06-10	Co-incident WP(c)
11-15	Clustered WP(b)
16-20	Cyclic WP(y)
21-25	False WP(f)
26-30	Forming WP(n)
31-35	Gentle WP(g)
36-40	Huge WP(h)
41-45	Looping WP(L)
46-50	Nexus(x)
51-55	Nodal WPs(nn)
56-60	Rosette WPs(r)
61-65	Temporal Delay WP(t)
66-70	Ultra-far WP(u)
71-75	Unstable WP(uf)
76-80	Unusual Visibility(uv)
81-85	Variable WP(v)
86-90	Variable Visibility WP(vv)
91-95	Wide-mouthed WP(wm)
96-00	Wide Open WP(w)

In () is a method of indicating the oddity type on a map.

Atmospheric WP(a) - A warp point is associated with a gas giant or habitable planet in its outer atmosphere. Only ships with atmospheric capacity can transit the warp point, all others will not be able to escape the gravity field of the planet.

Co-incident WP(c) - Two WPs exit at exactly the same point.

On entering the WP you go to one of the two destinations - At random. {Ed note: In ULTRA, WPs can exist in the same sH. This also places them in the same tH. This could occur whenever two WPs roll the same position or perhaps 50% of the time}

Clustered WP(b) - A single (random) warp point has a small cluster of asteroids around it, as per the rules for emergence into an asteroid belt. However, because of the relatively small scale of the belt, damage is only 1d50, and 500 T generations of work will clear the warp point.

Note: A race that has not previously detect a WP in a cluster, or who has not transited one from the other side, will miss the significance of such a cluster. A race that has done so, will know a WP exists there, even if they can not detect that WP.

Cyclic WP(y) - One random warp point in the system is cyclic, and is only present for two (random) weeks of the month - for the other two weeks it simply does not exist. Study with 10X generations for three full months gives the X branch an automatic boost of 30 RP (If no X project is currently in progress, then once 10 RP are bought on an X project, the bonus applies). This bonus will only ever apply once.

False WP(f) - An open WP calculated from a survey as being present at a given point is, in fact, a False WP and cannot be transited to anywhere. In subsequent surveys, there is a 50% chance that the

error in the understanding of WP mechanics that caused this point to be 'found' will be resolved, otherwise the point's existence is re-confirmed but all attempts to transit that WP will fail.

Forming WP(n) - The system contains a forming WP that will be found after 100 open survey points have been generated in that system. Process will take 11-20 months to complete. If 20 X generations are kept within 1 LM of the new WP for at least 10 months of WP formation (player has one month to round up the Science Instruments), the amount of survey points to find all future Warp Points will be cut by 10% (10% is the maximum bonus). Where the WP goes is up to the Space Master. (PS: This would really be a double event and would also occur in the exit system of the new WP. But without a survey, the new WP may go unnoticed for a long time.)

Gentle WP(g) - These warp points are unusually gentle in terms of gravity stress. Transit effects [D7.01] are reduced: for type B effects, a mere -2 to hit and point defense is not affected, and the first target acts as three. All the other effects are as normal, and type A effects are as normal, and will be followed by reduced type B effects.

Huge WP(h) - This WP has a diameter larger than the standard A-F types. Roll for Size (1-4) WP type G 80; (5-7) type H 100; (8-10) type I 120

Looping WP(L) - By whatever freak of physics, this WP is actually one which passes into deep space and directly into the mouth of another WP, straight back into the system which the first WP left in a different location! Because of the double-transit, type B effects always apply to transiting ships, and ships which make a ST must roll TWICE for interpenetration. Recon Drones are plain destroyed. Generate both ends of the loop as additional WPs.

Nexus(x) - Due to quirk of nature, (a black hole nearby, 75 sH), the system is automatically a WP nexus [W8.01]. However, all WP have double base capacity [Table C4 WP Sizes]

Nodal WPs(nn) - All the warp points in the system are based around one location. Unless studied (25 SP per exit), entering the WP will take you randomly to one of the system's warp point connections. Study can determine the right entry location to always enter your target destination system. Scatter these entries around the node as if they were exits of an alpha warp point jump from the central (random) warp point location.

Rosette WPs(r) - This system has exactly six WPs. They are all located in a single sH with each WP being 20 tH from the center of the sH in a different Scattergram direction [A2.01]. There is a 10% chance that the system has 10 WPs, each located on different radian. WPs can have different visibilities.

Temporal Delay WP(t) - The WP transit time is 1 StMP instead of instantaneous. This delay time is not seen by the transiting vessel, but is seen relative to the rest of the universe. Needless to say, the first transit of such a warp point will temporarily appear to be a deadly system, at least for a while.

Ultra-far WP(u) - One WP is not the usual 0-30 sH from the star but is 1 to 6 StMP (45 to 270sH) out instead. Surveys will miss this warp point twice as often as normal (the R2.03.4 table values become 80%, 60%, 50%, 40%). The detection of the WP only gives its bearing but not its distance. The distance is determined by a separate, additional survey of 50 SP (or by arriving in-system by that WP).

Unstable WP(uf) - This triple capacity WP is unstable on both ends. During the recordkeeping phase of any tactical turn in which a unit exits or enters the WP, the WP moves (both ends). Using C4.05.1.1 and an arrival range of 10, determine the new position of the WP. Once the original WP location is known, a spacecraft with X within 20 tH of the WP may determine its new position at the next recordkeeping phase. Alternately, a spacecraft with X starting in the hex of the WP before it moves, may locate it 3 tactical pulses after it moves. This has no real effect upon strategic movement if a mobile ship with X is station on both sides, but fixed defenses become pretty worthless as the WP could eventually even change system hexes over time.

Unusual Visibility(uv) - The far end of the warp point (looking from the initial transit) has an unusual visibility. Re-roll the warp point's visibility, discarding any visibility which would usually be possible. Thus, you could have for example a warp point which was open on one end, and secret on the other.

Variable WP(v) - This WP's profile varies slightly over time, throwing ships that transit it off course. Every month, the WP transit data for the WP must be determined again, or ships passing through the WP will have to determine their heading randomly! One random warp point is automatically affected, and the others have a 25% chance of being variable.

Variable Visibility WP(vv) - A WP varies in visibility over a long-cycle (10s of months). Because the WP must be capable of connecting to the far end in all phases, the far end of the WP limits the two extremes. Thus, if the far side WP is concealed, on months 1-10 this WP is open, 11-20 it is concealed, 21 to 30 hidden, 31-40 it is concealed, 41-50 it is open again, etc.

Note: such a WP can be easily be missed during surveys.

Wide-mouthed WP(wm) - These warp points have an imprecise exit area caused by a strange anomaly in its interface with time/space, Ships exiting it automatically act as if they have alpha warp jump drives, whether they wish to or not. Activated warp jump drives are increased in generation by one when they transit this warp point instead. Note that the warp point can still only be ENTERED in a single hex. One random warp point is automatically affected, and the others have a 25% chance of being wide-mouthed. A WP with a wide mouth affects both ends of the WP.

Note: Units without X cannot determine where the entrance is just by transiting the WP. Units with X must spend 2d10 days localizing the WP. Once localized, this never needs to be done again by this race. Of course, moving to the WP entrance is still an issue.

Wide Open WP(w) - These *look* like a standard warp point. However, when transited it has twice the usual capacity BUT it automatically inflicts class A transit effects [D7.01], even on a normal transit! One random warp point is automatically affected, and the others have a 25% chance of being wide open.

APPENDIX HH2 – RANDOM EVENTS – ULTRA STYLE

Game Balance and the Current Event Modifier (CEM): The CEM from multiple events is cumulative. If the CEM is negative, add 1 at the start of each month; if it is positive subtract 1, until 0 is reached.

Continuing Events: Some random events are described as *"continuing."* At the start of each month after a continuing event is generated, the player rolls 1d10 for that event. On a roll of "1," the event is over at the end of that month.

Generating Random Events: At the start of each month before income is calculated, each player race (or possibly each NPR also) should have a 1d10 rolled. On a roll of 1 or 2, there is a possibility of a random event occurring for that race during the current month. If a possible random event occurred, roll 1d100 against Table 1 adding (or subtracting) the Current Event Modifier.

Table 1: Random Events

01-05	Roll on Table 2c: Major Disastrous Events (roll 1d100)
06-13	Roll on Table 2b: Minor Disastrous Events (roll 1d100)
14-25	Roll on Table 2a: Unpleasant Events (roll 1d100)
26-75	No random event occurs on this month.
76-87	Roll on Table 2d: Pleasant Events (roll 1d100)
88-95	Roll on Table 2e: Minor Benign Events (roll 1d100)
95-100+	Roll on Table 2f: Major Benign Events (roll 1d100)

Table 2a: Unpleasant Events (roll 1d100)

01-04	Accident CEM+3
05-08	Asteroid collision CEM +2
09-12	CFN Incompetence CEM +3
13-16	Cosmic Rainbow - Continuing Event CEM +0
17-20	Development Fumble CEM +5
21-24	Failed Mutiny CEM -2
25-28	Incompetent Promoted CEM +5
29-32	Industrial Disaster CEM +2
33-36	Lawsuit CEM +8
37-40	Leader Exiled - Continuing Event CEM +2
41-44	Leader Stumbles CEM +4
45-48	Mechanical Failure (CFN) (CFN) CEM +3
49-52	Media Mania - Continuing Event CEM +5
53-56	Militancy Decreases - Continuing Event CEM +4
57-60	New Drug Discovered CEM +3
61-64	Pilot Strike - Continuing Event CEM +4
65-68	Poor Construction CEM +5
69-72	Racial Turmoil CEM+3
73-76	Sabotage CEM +2
77-80	Shipping shortage - Continuing Event CEM +2
81-84	Shipyard Explosion CEM +4
85-88	Small-Craft Crash CEM +2
89-91	Space Master Fun CEM +3
92-94	Stock Market Crash CEM +3
95-97	Warp Point Change CEM +3
98-00	Warp Point Missed CEM +5

Table 2b: Minor Disastrous Events (roll 1d100)

01-03	Accidental Atrocity CEM +7 (+12)
04-06	Bad Software CEM +12
07-10	Coronal Expulsion CEM +15
11-13	Defection CEM+12
14-17	Development Impossible CEM +15
18-20	Diplomatic Incident CEM +10 when event occurs.
21-24	Economic Recession - Continuing Event CEM +8
25-27	Emigration Boom CEM +10
28-31	Engine Overload at WP at WP CEM +6
32-35	Funding Shortage - Continuing Event CEM +10
36-39	Inefficient Minor Bureaucracy - Continuing Event CEM +10
40-42	Leader Dies CEM (varies)
43-46	Lousy Design Approved - Continuing Event CEM +15
47-49	Mechanical Failure (Warship) (Warship) CEM varies
50-53	Military Unrest - Continuing Event CEM +8(+16 war)
54-57	Mineral Depletion CEM +10
58-60	Mutiny CEM +8
61-64	Peculation CEM +6
65-67	Pirate Hideout CEM +8
68-70	Pirates Raid CFN CFN CEM +6
71-73	Pirates Raid Colony Convoy CEM +7
74-76	Research Fumble CEM +8
77-79	Slave Revolt CEM +8
80-82	Space Moths CEM +10
83-85	Unnecessary Contract Approved CEM +10
86-89	Warp Point Instability CEM +6
90-92	Weapons Shortage - Continuing Event CEM +8
93-96	World Government Upheaval CEM + 10
97-00	Y3K virus CEM +10 or - Continuing Event CEM +20

Table 2c: Major Disastrous Events (roll 1d100)

01-10	Berserker CEM +20
11-17	Colonization Fleet CEM +20
18-24	Design Recall CEM +20
25-31	Economic Depression - Continuing Event CEM + 15
32-38	Environmental Disaster CEM +15
39-44	Government Shutdown - Continuing Event CEM +35
45-51	Isolationism - Continuing Event CEM +20
52-58	J'Rill production CEM +35
59-65	Military Command Scandal CEM +10
66-72	Plague CEM +35
73-79	Rebellion CEM +30
80-86	Subject Race Revolt CEM +20
87-93	Unavoidable War - Continuing Event CEM +25
94-00	Warp Flare CEM +15

Table 2d: Pleasant Events (roll 1d100)

01-06	Business Opportunity CEM -3
07-12	Cosmic Rainbow - Continuing Event CEM +0
13-18	Crack Leader Discovered CEM -3
19-23	Development Advance CEM -5
24-29	Donation CEM -6
30-35	Economic Boom CEM -7
36-41	Efficient Project CEM -7
42-47	Environmental Upheaval CEM -3
48-53	Leader Improves CEM -3
54-59	Leader Retires CEM -9
60-65	Loan CEM -3
66-71	Low Shipping Demand - Contin. Event CEM-2
72-77	Militancy Increases - Continuing Event CEM -4
78-82	Smuggler CEM -4
83-88	Warp Point Discovered CEM -4
89-94	Warp Point Forms CEM -5
95-00	World Sold! CEM -6

Table 2e: Minor Benign Events (roll 1d100)

01-04	Accidental Transit CEM -8
05-08	Armistice/Trade Agreement CEM -15
09-12	Bond Sale CEM -5
13-17	Civilian SY shortage CEM -5
18-21	Deep Mining CEM -7
22-26	Desirable Colony CEM -6
27-30	Economic Upswing - Continuing Event CEM -8
31-34	Efficient Minor Bureaucracy - Continuing Event CEM -15
35-38	Elite Leader Discovered CEM -5
39-43	Immigration Boom CEM -7
44-48	Local Initiative CEM -7
49-52	Mineral Discovery CEM -10
53-57	Moral Boost CEM -10
58-61	Off Course CEM -7
62-65	Peace Treaty/LT&M Agreement CEM -30
66-69	Political Appointment CEM varies
70-74	Public Subscription CEM -6
75-78	Research Advance CEM -6
79-82	Slave Race Calms CEM -7
83-86	Survey Brilliance CEM -6
87-91	Tourist Trap CEM -6 (permanent)
92-96	Unexpected Breakthrough CEM -5
97-00	Venus Cools CEM -20

HH2.01 Event Descriptions

Note: All events that are restricted from occurring on a homeworld may occur on the homeworld starting with month 200.

If an event conflicts with a continuing event, attempt to move it to a different game location. If both are empire wide, then the most recently occurring event has priority but only in its area. While multiple continuing events are in effect, they may logically cancel each other out in overlaying areas making game play normal in that area (i.e., Efficient Bureaucracy and Inefficient Minor Bureaucracy

Table 2f: Major Benign Events (roll 1d100)

01-07	Brilliant Researcher - Continuing Event; CEM -6
08-13	Conditional Surrender/Partnership Agreement CEM -40
14-20	Efficient Bureaucracy - Continuing Event CEM -30
21-26	ESP Success CEM -40
27-33	Governor Thwarted CEM -25
34-39	Heroic Leader CEM -15.
40-46	Innovative Fleet Commander CEM -10
47-53	Population Boom - Continuing Event CEM -30
54-59	Public Subscription (Major) CEM-18
60-66	Radical Discovery CEM -20
67-73	Secret Ally CEM -40
74-80	Subject Race Calms CEM -20
81-87	Technological innovation CEM -15
88-93	Terraforming Success CEM -10
94-00	Weapons Cache CEM -15

[Survey] will cause the survey command to be normal while every other area gets the Efficient Bureaucracy bonus. Isolationism would be canceled while Efficient Minor Bureaucracy [survey] was in effect.)

In general try to apply all the effects that you can and cancel those where you cannot logically do that.

Accident - While docking at a shipyard, a vessel accidentally hits the space-station core. 1d10 points of damage (inside shields) are caused to both the SS and the vessel. *CEM +3*

Accidental Atrocity - Military units mistakenly fire on civilian shipping or planetary targets. There is a 50% chance of either event occurring. Either one CFN FT3 or FT4 is destroyed (must be replaced by the government per L4.10.4.3) or 1d10 + 10 IU are destroyed and must be replaced. Either way, the government must pay 500 extra MC to the families of those killed.

Bonus disaster! Accidental Atrocities are draw to Tourist Trap systems like tornadoes are drawn to mobile home parks. Each accidental Atrocity has a 60% chance of canceling one Tourist Trap event. *CEM +7 (+12 if it gets a tourist trap too)*

Accidental Transit - In a random non-fringe system (surveyed previously and, preferably, all current WPs lead to friendly or allied systems), a patrolling ship or CFN ship inadvertently transits a WP that has yet to be discovered. The WP will be the easiest type to detect out of the undetected WPs in that system. NOTE: This event can allow transit of a WP with a WP visibility type that cannot yet be surveyed for. As this event is always good, the transiting ship will never be detected by any civilization on the other side IF it immediately transits back to system this event occurs in. *CEM -8*

Armistice/Trade Agreement - One NPR that you are currently at war with informally agrees to end the war. They will not move into any of your systems, though they will continue to hold any they held on the month the Armistice was rolled, and they will not attempt to retake any system you currently hold. They will pay the equivalent of 3 month's income from any world they take, and require you to pay them the equivalent of 2 month's income of any world they surrender. If you accept this offer, you are at a state of Non-Aggression with them for a minimum of the next 6 months

(This can be broken with the usual penalties, or negotiations can be made to better your treaty relationship.).

If you are not at war with any NPR, one randomly selected NPR, without a treaty of restricted trade or better with you, agrees to make a Limited Trade agreement with you. If you have not met any NPRs, or have restricted trade or better agreements with all NPRs that you have met, then the next NPR you establish full communications with will immediately offer a Limited Trade Agreement. *CEM -20*

Asteroid collision - 5 PU in an asteroid belt are lost as two asteroids collide. *CEM +2*

Bad Software - one random type of system gets a bad software upgrade (only applicable to seldom used systems like weapons, active defenses and combat AP). Every tactical turn the system is used, there is a 1-in-10 chance (roll a zero to hit or intercept) it crashes and has to reboot (takes 1d10/3 turns (FRU)), AP must be rebooted by an (APCx).

It costs 500 MC to develop a software fix but this takes 1 month to achieve. *CEM +12*

Berserker - An automated ancient warship (berserker) is discovered in deep space during a WP survey (either this month or the next). Unfortunately, the berserker was just hibernating and activates when a ship comes into its detection range. The berserker is highly intelligent and its main purpose is to destroy any other life form. Berserkers will join/aid machine races and J'rill races so long as they are pure (not partnered or amalgamated with non-machine, non-J'rill races). Once a race becomes unpure, the berserker will turn on them.

The berserker software has been damaged. Once victorious in a system (all populations wiped out and all ships that it can catch destroyed), it will wait until the first day of a new month to transit to the next system. Thus, the berserker never moves more than one system per month. Berserker choice of system to move to occurs in the following order: most enemy HS known to transit a WP, most enemy HS suspected to have transited a WP (left sensor range headed toward a WP), then random. The berserker can transit back to the same system randomly but once it has "cleaned" a system, it will not return there unless following KNOWN ships with HS totaling at least 50% of its HS or it is the shortest way to an unclean or unknown system.

The berserker is 3 hull sizes larger than the largest ship the discovering race could build and all generational ship systems average three SLs above the player's EL. The berserker has one LRW type and one SRW type in a 70%/30% mix (the LRW type includes both fighters and gunboats). The rest of the design is up to the space master but the ship has a control module that consumes 20% of the total HS available. In addition to controlling the berserker, this control module can maintain the ship at full capacity; build expendable weapons (10/hour) and small units (1/hour) (e.g., fighter/GB but not AP); fully repair 1 HS every 1 day (maintenance robots); acts as a M10; is immune to both deep hits and precision weapons; and contains a complete WP map of the galaxy (including ALL types of WPs). Berserker engines are able to move +1 MP above and beyond normal (both tactical and strategically) since they don't have to worry about radiation killing the crew. Any boarders of a berserker would be subject to death within 5 minutes due to high radiation levels (PS: Machine races are not immune to radiation). Berserkers have the equivalent of elite crews and will drop the DF if all targets (or most) are in the blindspot in order to effectively fire weapons). A berserker will normally have jump transit abilities but will suffer transit effects normally.

Once it is disabled (all systems destroyed which does not make the ship explode), the player may loot the berserker ship under [U4.03]. The berserker hull can be refitted and repaired but the control system is far beyond any technology a player can devise. Note: all units attacking a berserker receive TWO grade increase rolls [F3.04] instead of one.

The control system can never be copied, studied, used nor can any information be gained from it (particularly astrogation data). The computing and storage technologies are incomprehensible. Further, the Controller is treated like a J'Rill system during combat (App1 -- Pg 35 -- 2nd paragraph)

Each 40 months of game time adds 1 berserker to the fleet.

A note to space masters: If an empire needs to be cut down a bit, the berserker is an excellent method (if strong enough) and nothing says that multiple berserkers cannot show up in the same location (or adjacent systems over a few months and join together in a squadron). Berserker crew grade can also be increased as necessary <evil grin>. *CEM +20*

Bond Sale - A group of civilians sell bonds to build a new capital ship (cannot be a prototype nor a new class unit). This ship is fully funded by the civilians but you still have to build and maintain it. Hundreds of volunteers enlist just to serve on this ship and they are far above the normal quality of recruits. After shakedown, crew grade is BG+1. *CEM -5*

Brilliant Researcher - The new teenage researcher you've hired is incredibly insightful. All breakthrough purchases [N11.02] have a 50% (FRD) greater chance of success. Unfortunately, the kid's mind is out of control and burning itself out. When that happens (i.e., event ends), he will die. *Continuing Event; CEM –6.*

Business Opportunity - A shipping cartel goes out of business, and its assets are auctioned off. Player has the option to buy up to 2d10 CFN-legal [L4.04] freighters of various sizes (FT1 - FT4), and up to 3d10 shuttles for 80% of "book" value. Any freighters not purchased next month are bought by other cartels. *CEM -3*

CFN Incompetence - The new CFN shipping computer system has a lot of software bugs. During this month 33% of your non-homeworld imperial income is lost. Fortunately it was only delayed and arrives next month (no interest earned though). *CEM +3*

Civilian SY shortage - Your civilian sector has a shortage of ship building capacity and wants to buy excess government build capacity. For every unused point of build capacity, you earn 5 MC (i.e., your shipyards do nothing and still earn money). *Continuing Event; CEM –5.*

Colonization Fleet - An active NPR long ago surveyed a system in the galaxy. The colonization fleet and its defenders are just arriving from deep space after years of slow transit! Target system

always contains a habitable planet that is benign to them (no need to roll, they adjust to fit the planets available in the target system).

The colonization fleet contains colonization equipment and people (in suspended animation, of course) for 500 PU on a benign world. Theirs is a race of small mammals which are only 1/4 the size of a normal being and thus 4 times more fit in Qv (H is also 1/4 requirements). 500 PU is 820 PTU which requires 137 Far Rider FTs. They also breed at 5 times normal rate (5% growth rate). Their EL is two above the highest player. All units have engines capable of sustained speed 4.

Far Rider-class FT4 [2] Qvx15Hx6Qa(Ica)(Ica)(Ica)(Ica) [4/4] -- Cost= 228/17.1 Carries 6 PTU.

Their escort fleet is 8000 MC in size, plus a 1% increase per game month elapsed. Their government type must be a 2 success government. Their fleet also contains 10 SY FT and 200% of their fleet's value in MC aboard additional FTs. They will be highly aggressive, including genocidal policies, in defeating any race in the system and emplacing the population (Increase Y15 by three levels.

Far Rider and MC FTs will form the CFN (get 1/2 lease income) and will be scrapped as necessary. This race will ram with even FT to protect the planet.

Additional reinforcements may ALREADY be in route! Each month roll 1d10.

1d10	Occurrence
1	Event Ends -- cease further reinforcement rolls
2-3	nothing happens
4	More colonists arrive 1d10 x5 more Far Riders
5	Fleet Elements[a] 2d10 x 50 MC of warships
6	Defensive Elements[a] arrive 5 MS FTs and 3d10 x 50 MC of unassembled bases
7	Automated Defense Elements[a] Arrive 2d10 x 50 MC of AP Buoys
8	Major Fleet[a] elements arrive 4d10 x 50 MC of warships
9	Next Wave of colonization arrives 2d10 x10 Far Riders 4d10 x 50 MC of defenses[a] (50% automated) 4d10 x 100 MC of warships[a]
10	Roll twice more while rerolling 1 and 10

[a] Increase MC total by (1+month/100)

All reinforcements bring enough FT to both carry goods and maintenance for 10 months.

Any other race in the system will have no idea where this invasion fleet came from and might be worried about an extra WP running around in that system. Of course, this race is crippled by a poor economy. *CEM +20*

Conditional Surrender/Partnership Agreement - One NPR that you are currently at war with partially surrenders. They return any conquered systems to you, and cede any systems that you control, plus one adjacent system. They will not cede their home system unless it is the only system available, in which case they will retire to their planet and cede the warp points and any uncolonized system bodies to you. If you accept their surrender, you are at a state of Limited Trade with them for a minimum of the next 6 months (This can be broken with the usual penalties, or negotiations can be made to better your treaty relationship).

If you are not at war with any NPR, one randomly selected NPR, without a treaty of partnership or better with you, agrees to go into a Partnership agreement with you. If you have not met any NPRs, or have Partnerships or better with all NPRs you have met, then the next NPR you establish full communications with will immediately offer a Partnership Agreement. If you refuse the surrender, all other races have a permanent +5 to all RC rolls made against you. *CEM -40*

Coronal Expulsion - A randomly selected star, other than the homeworld's star, within the empire has a coronal Expulsion of massive size for 3d10 hours (or 10% chance of days). This expulsion is 2 radians wide (such as between 2 and 4) and is in a direction most annoying to the player <evil grin>. Any spacecraft, or other non-atmosphere protected unit, that cannot immediately (within 5 minutes of being exposed) hide behind a blocking major body (moon or planet) will suffer damage each hour:

- E-type damage: 3d10 – LM distance from star
- L-type damage: 2d10 – LM/2 distance from star
- Populations on airless moons or planets (O2 and O1) will lose (3d10 – LM/2) * 0.1 PTU per hour exposed.

Shields do not regenerate during the expulsion. All small units in space are automatically destroyed if any amount of damage is taken. *CEM –15*

Cosmic Rainbow - A strange stellar event causes your home system to be sheeted with beautiful scintillating lights. Although this is little more than a scientific curiosity to your people, other alien races see it as a foretelling of good or bad fortune. For every race that you are contact with, roll 1d100 - 5. If the roll is less than or equal to that race's RC, then they decide the Rainbow is a sign of good fortune; that race permanently lowers its RC toward your race by 2, and lowers its RC by another 3 with respect to your race while this event continues. Otherwise, they decide the Rainbow indicates bad fortune, and their RC is permanently raised by 2 toward your race and by another 3 with respect to your race while the Rainbow continues. *Continuing Event, CEM +0*

Crack Leader Discovered - Your war college discovers a genius during routine training operations. Roll 1d10 to find the type of leader gained; 1-5 Admiral, 6 General, 7-9 Governor, 10 Diplomat. One of your fleets/armies/planets/survey groups (randomly selected) gains that LG+1 Leader. Roll normally for any specializations [S]. CEM -3

Deep Mining - New technological development makes deep mining more rewarding on light-metal planets. All VP planets upgraded to P. The technology is non-transferable. Only by amalgamation can you gain it from another race. *CEM –7*

Defection - A random graded leader defects very publicly to another government (and they take a warship with them!). Not only do you lose, and they gain, a graded leader, some of YOUR economic/military/technological/political data just got revealed. And you may not even be sure of what. The system the graded leader starts the month in is the "capture system." Roll once on U5.01 at a -10 and roll once one U5.02 at a +0. *CEM +12*

Design Recall - Your ship designers discover a severe flaw in the construction of one of your ship classes. Until these ships are refitted, every die roll that results in a 10 due to system operation results in the system shutting down for the next week (this is not a good thing in battle with 10% of weapons and Point Defense shutting down each use). The refit to fix the flaw costs 10% of the cost of the ship, and takes as long as a normal refit to the entire hull. Select the effected class at random. *CEM +20*

Desirable Colony - All colonization PTU that *shipped* last month are tripled due to desirable locations. Many colonists convinced their extended families to come with them at their own expense. If no colonization shipped last month, then this event does not occur. *CEM -6*

Development Advance - One randomly selected development that you are currently working toward gets a bonus +20 Research points. *CEM -5*

Development Fumble - One randomly selected development that you are currently working toward loses 3d10 research points (note the total amount can be negative!). *CEM +5*

Development Impossible - Your R&D teams find it simply impossible to *develop* one randomly selected item that you are currently researching. You may try to research the item again after gaining an EL or meeting another race that already has the item. *CEM +15*

Diplomatic Incident - Your diplomats have blundered during negotiations with a NPR. Treat as though an unmodified 02 was your political acceptance roll [T2.04] against a randomly selected NPR you are in negotiations with on this month. This can force the loss of a Partnership relationship. If you are not in negotiation with any NPRs, then roll 1d10 each time you negotiate with NPRs again. On a roll of 3 or less, this event occurs and you no longer need to roll. *CEM +10, once the event occurs.*

Donation - A wealthy industrialist decides to support your government by donating 1d6%+4% of your income to your home world's treasury. *CEM -6*

Economic Boom - All your worlds have their income increased by 2d10% for the next month (roll only once). *CEM -7*

Economic Depression - All your worlds have their income decreased by 2d10% while this event continues. Roll once each month. *Continuing Event - CEM + 15*

Economic Recession - All your worlds have their income decreased by 1d10% while this event continues. Roll each month. *Continuing Event - CEM +8*

Economic Upswing - All your worlds have their income increased by 1d10% while this event continues. Roll each month. *Continuing Event; CEM –8.*

Efficient Bureaucracy - Your government has been reorganized, and is much more efficient than it used to be. While this event is in effect, your survey fleets generate 20% more survey points, your mobile shops and shipyards build at +1 HS per EL, and all your political acceptance and first contact die rolls have a -5 modifier. You gain a +1 RP (free) on all R&D projects, and all your initiative rolls and combat rolls get a +1 bonus while point defense rolls are one better (-1 to die roll).

Over time, people will change practices or retire, and you will lose these benefits, unless you spend a great deal of money to keep the current organization. When this event stops because a 1 was rolled, you may pay a fee to disregard the roll. The cost is 20% of the GEV of your empire (including trade income), plus 10% per previous time that you have already disregarded a 1 for this event. Only one Efficient Bureaucracy event may be in play at a time. If this event is rolled while a Efficient Bureaucracy is continuing, no random event occurs. If this event rolled while any Efficient Minor Bureaucracy event is in play, replace the Efficient Minor Bureaucracy event with this one. *Continuing Event; CEM –30*

Efficient Minor Bureaucracy - One of your bureaucracies becomes extremely able at performing its job. As long as you continue to follow current practices, you gain benefits. Roll 1d100 on the table below to determine the Bureaucracy that becomes efficient. When this event stops because a 1 was rolled, you may pay a fee to disregard the roll. The cost is 3% of the GEV of your empire (including trade income), plus 2% per time that you have already disregarded a 1 for this event. *Continuing Event*

Roll	Bureaucracy	Effect
1-20	Survey	Your survey fleets generate 20% more survey points.
21-40	Shipyard	Your mobile shops and shipyards build at +1 HS per EL.
41-60	Foreign Affairs	All your political acceptance and first contact rolls have a -5 modifier.
61-80	R&D	You gain a +1 RP (free) on all R&D projects including EL.
81-100	War College	All your fleets get a +1 initiative, +1 to hit and +1 to point defense.

Only one event of a particular version of efficient minor bureaucracy may be in play at a time. If a duplicate is rolled, reroll to direct it to a new area. *Continuing Event; CEM –15*

{Ed. note: if you get the War College version of this event, consider attacking immediately. The +1 to-hit bonus is very valuable in combat}.

Efficient Project - A current project undergoes a permanent (until complete) acceleration (as a breakthrough). (CEM -7)

Elite Leader Discovered - Your war college discovers a genius during routine training operations. Roll 1d10 to find the type of leader gained; 1-5 Admiral, 6 General, 7-9 Governor, 10 Diplomat. One of your fleets/armies/planets/survey groups (randomly selected) gains that LG+2 Leader. Roll normally for any specializations [S]. CEM -5

Emigration Boom - Discontent citizens of your empire move out. 1d100 + 50 PTUs depart from your systems. Starting with the system(s) closest to a random neighboring empire, and taking no more than 1/2 of the total PU from any one location, the PTUs uproot themselves and their equipment and pay their way to move to the new empire, where they can be placed on any system body for free.

Naval ships currently located on the path from a particular planet to an enemy planet may be used to intercept the colonists from that planet and prevent them from leaving. One ship must be used for every 5 PTU leaving and each ship can only stop 5 PTU regardless of how many emigration routes they sit upon. All the ships involved in intercepting the colonists automatically lose one grade. CEM +10

Engine Overload at WP - The engines of a warship vessel experience an unexpected fluctuation at a WP. The results can include any of the following: (roll 1d10)

1-2 Temporal Displacement - the vessel appears (as far as it is concerned) as normal, but has been 'in-transit' for 2 months of game time causing it to be declared overdue.

3 The entire passenger and crew compliment is dead. Either the engines are on (40%) and the vessel heads in straight line a random direction from the WP at full safe cruising speed or they are off (60%) and the vessel drifts according to orbital mechanics.

4 The vessel's IFF malfunctions and, combined with the drive-field problems, renders the vessel unidentifiable until it visits a Shipyard. Emergency repairs [E2] cannot fix this.

5-6 The WP transit does not occur and the vessel is stranded for 1 StMP making repairs

7 Instead of appearing at the WP, the vessel appears 20+1d100 tH from the WP

8-9 The vessel is wrecked except for one system. Crew or passengers in that system survive, but have life-support problems!

10 The vessel is neatly sliced in two and wrecked. One half remains in the original system; the second half makes the transit. The vessel can be repaired if both halves are recovered. All engines are destroyed and all other systems fail to work. One system is completely destroyed (at the point of the cut). CEM +6

Environmental Disaster - One of your benign, inhabited planets (roll randomly but not the homeworld) suffers a catastrophic industrial disaster, which makes it a harsh world. 5% of the PTU on the planet must be moved, per month, until the planet is reduced to an appropriate population level as determined by [Table L1.01b T/ST Population Limits]. PTU that are not moved during a month are destroyed. CEM +15

Environmental Upheaval - A randomly selected habitable planet, other than the homeworld, undergoes an environmental shift. The planets HI increases or decreases by 1 [L1.03.1]. Based on the populations HI, this could be good or bad. CEM -3

ESP Success - A long-term black project has scored a major success. 10,000 people with ESP (most of your entire population of people with ESP) have been linked into a massive mind meld. The mind meld is stressful in the extreme and 50% of them die and the rest are nearly dead. However, the information they learn is unprecedented in its scope and detail. You learn the income level of every race you are in contact with, all random events that are affecting any of them this month, and their maintenance cost this month. Both income and maintenance are adjusted to (89+2d10)% of the actual value. No other race knows this has happened unless they get an ESP success on the same month. CEM -40

Failed Mutiny - A random crew of a warship vessel (not a flagship) attempts mutiny. The vessel must return to the nearest ICC or Capital to re-crew/sort out the legal implications. It must return at maximum cruise speed and may not stop on route or travel other than by the shortest route. CEM +2

Fraud - A cash-strapped CFN company claims a vessel is lost to raiders and attempts to collect from the government. After 1d4+1 months (no leasing fees) the vessel will turn up in the CFN under another name (50%) or be found 'mothballed' (50%) in an uninhabited asteroid belt. At that point, the Government gets the vessel free, but the company goes bust and no money is recoverable. CEM -4

Funding Shortage - The fleet bureaucracy suffers from a funding shortage, forcing you to build unusually small ships. You must build armed warships without X that are 6 size classes smaller than the largest ship you can currently build (minimum size ES). At least 3d10%+20% of your builds (by cost) must be small ships. Continuing Event - CEM +10

Government Shutdown - Your government bureaucracy shut downs, preventing you from doing much of anything. You may not survey, use shipyard or machine shops, colonize, make or accept political offers, use the CFN except to provide maintenance transfers, complete or start R&D projects, attempt breakthroughs, nor move ships into systems currently held or contested by the enemy. Also, due to the demoralizing effect of the shutdown, your fleets receive a -1 on initiative rolls.

You may continue to collect money normally, and spend it on maintenance and continuing research and development projects. You accumulate research and design point totals normally, but you may not advance the EL or put a new device into production while your government is in shutdown. You can still use ground based industry as normal. Continuing Event - CEM +35

{Ed. note: This is a major disaster but it is not as bad as you might think. You still make income and can invest it in IUs. At the end of this event, you can sell all IU purchased during this event.}

Governor Thwarted - A system governor has been building a private navy in order to secede from the current government. He has been discovered and all the ships have been confiscated. The additional ships are from empire current designs but the class unit of the design must have been completed at least 5 months ago. The empire will gain fleet combat units that will increase the COMBAT portion of the navy by no less than 15% and no more than 40% (space master must decide but unless the player really needs aid during a war, the 15%-25% range should be the norm). CEM -25

Heroic Leader - A leader of enormous natural abilities is discovered. Grade is Leader Grade + (1d3). Roll for abilities normally, then give an extra free ability roll. CEM -15

Immigration Boom - A group of colonists from another empire decide that they want to become your subjects. A random empire that you have a Restricted Trade or higher agreement with, loses

1d100 + 50 PTUs. These PTUs move from the closest system(s) to your empire, and no more than 1/2 the population of any location will leave. See Emigration Boon for how the enemy can prevent the PTU from leaving. They may be placed in any location in your empire for zero cost, since they pay their own way. CEM -7

Incompetent Promoted - Your war college promotes an admiral who seems to be intelligent, but is not (this could also be because of political pressure). This admiral is graded "Green" and receives a -1 to initiative. Each month that he serves on a ship, roll d10. On a roll of 5 or less, the ship loses a grade. This admiral must be placed on an armed ship at all times, which must command a squadron of at least 5+EL ships. He can be fired after 3 months by paying 10% of the total income of the richest non-homeworld system in your empire for each of those three months. CEM +5

Industrial Disaster - An industrial complex (one IU) mysteriously explodes. A ship with Science Instruments, an SA, or an RDS must be allocated for 1 month to help with the post disaster investigations. Until the investigation is complete, there is a 25% chance per month of another IU exploding elsewhere in the empire due to the same flaw (CEM +2).

Inefficient Minor Bureaucracy - One of your bureaucracies suffers severe inefficiencies. Until the department is reorganized and reformed, you have no ability to perform its functions. Continuing Event - CEM +10

Roll	Bureaucracy	Effect
1-20	Survey	You may not generate survey points, nor probe new systems.
21-40	Shipyard	You may not use your shipyards or mobile shops.
41-60	Foreign Affairs	You may not make or accept political offers.
61-80	R&D	You may not start any R&D projects, attempt breakthroughs, nor complete any R&D project (i.e., you continue to pay but get no die roll).
81-100	War College	You may not attack systems held by enemy forces. Your fleets suffer a -1 penalty to initiative.

Only one event of a particular version of inefficient minor bureaucracy may be in play at a time. If a duplicate is rolled, reroll to direct it to a new area (i.e., you could be inefficient in both survey and shipyard). *Continuing Event; CEM +10.*

Innovative Fleet Commander - One of your fleet commanders develops an excellent series of training exercises. Randomly select a fleet of at least ten ships (if possible). 40% (FRU) of that fleet (determine randomly) increases by one crew grade level to a maximum of Legendary. These ships still receive a normal chance to increase grade [F3.04] *CEM -10*

Isolationism - Your Empire experiences an outbreak of isolationism. 90% of all survey forces (anything with X) must be immediately recalled to the nearest shipyard and mothballed. They cannot be taken out of mothballs while this event continues. *Continuing Event - CEM +20*

J'Rill production - One randomly selected world of your empire (not the home world) with a Medium or better population creates a J'Rill race at the same EL as your empire. The J'Rill have been silently stripping the planet but this month they appear openly (strip 50% of the planet to create the new J'Rill race including all ships, then double the number of factory ships). They will finish stripping the planet and then move to attack the nearest, largest population center. The J'Rill have all the astrogation data for your empire. *CEM +35*

Lawsuit - Your government is sued, and loses the case. You must pay 2000 MC in 4 installments of 500 MC, starting next month or lose 25% of your homeworld's income this month. *CEM +8*

Leader Dies - A randomly selected graded leader [S] dies. Randomly select among all leaders of any type available to the race. *CEM is based on leader grade*

LG+0 is +3; LG+1 is +5; LG+2 is +8; LG+3 is +12; LG+4 is +17; LG+5 is +25. Add +3 per specialization.

Leader Exiled - A randomly selected graded leader [S] is no longer available for service. He may be recalled for active service after 3 strategic months by paying 10% of the total income of the richest world in your empire for each of those three months. Otherwise, he returns when the "event ends. The decision to pay to return the leader must be made immediately. *Continuing Event - CEM +2*

Leader Improves - One random graded leader improves by one grade (max of LG+4). Roll for specialization. *CEM -3*

Leader Retires - One random graded admiral, general, or diplomat retires and becomes a Governor of the same grade [S]. Roll for governor specialization. This governor can be placed on any planet (except the homeworld) where there is not already a governor. *CEM -9*

Leader Stumbles - One random graded leader loses one grade (min of LG+0). Specialization cannot be lost. *CEM +4*

Loan - The loyal citizens of a planet with at least 100 MCr income per month offer a loan of up to 10% of your total production MCr loan but they will reduce their GPV income by 100 MCr per month until the loan is repaid. (CEM -2)

Local Initiative - At a random inhabited habitable planet (what a mouthful) without an orbiting SS, gain a brand new shipyard built by the civilians and gifted to the empire. The design is H(Bsa)H(Bsa)QQ(SY)x3 where Q is the best type of Q available to your empire. *CEM -7*

Low Shipping Demand - Civilian-shipping demand is so low the number of ships available for hire (i.e., CFN base pool) is 50% greater. The CFN will sell this extra 50% of capacity for 90% of cost. All shipping receives a 20% discount but all lease rates are 20% lower. *Continuing Event - CEM -2*

Lousy Design Approved - Your fleet bureaucracy approves a lousy design, and insists that your fleet purchase it in quantity. The design must be one of the three largest hull sizes you can build. Use the NPR ship design rules [Y19]. You must build at least one ship of this design for every three ships of other designs built, regardless of size, which you build during this event, and you may

not put this design in mothballs or refit it while this event continues. *Continuing Event - CEM +15*

{Ed. note – You can avoid this event by stopping all ship production but that only works if the duration of the event is short}

Mechanical Failure (CFN) - A CFN FT1 vessel has not kept up its maintenance and has suffered a catastrophic engine failure in an uninhabited system. A rescue mission must be mounted. If not repaired, it must be paid for by the government. *CEM +3.*

Mechanical Failure (Warship) - A transiting warship suffers a major engine failure immediately after a WP transit into an uninhabited system due to improper maintenance. A rescue mission must be mounted. *CEM +1 per 10 HS of ship*

Media Mania - Infamous murder or spy trial is broadcast on tri-video! Until the trial, a very long trial, is over, people stay home to watch or spend work time arguing about whether or not the perpetrator is guilty. Productivity (income, build rates, build capacity, RP purchases at local RDS and SA, and pilots generated by training facilities) is reduced by 25% (FRU) on and around the planet affected (cannot be the homeworld). The event is negated by a wartime threat that occurs in or to a neighboring system. *Continuing Event - CEM +5*

Militancy Decreases - An unusually large number of pacifists appear across the empire ranting and raging against all military expenditures. During this event, RM is reduced by 5 and all military expenditures [L6] except maintenance cost 110% of book value, reflecting the populace's antipathy towards more military expansion. *Continuing Event - CEM +4*

Militancy Increases - An unusually large number of activists appear across the empire ranting and raging against all enemies or perceived enemies. During this event, RM is increased by 5 and all military expenditures [L6] except maintenance cost 90% of book value, reflecting the populace's desire for more military expansion. *Continuing Event - CEM -4*

Military Command Scandal - A senior officer in one of your fleets gets involved in a scandal, which has a strong negative effect on the morale of his subordinates. 20% of the ships in a random warfleet of at least 10 ships (if possible) lose one grade - roll randomly to see which ships are affected. These ships cannot be trained for at least six months but grade may still be gained in combat. *CEM +10*

Military Unrest - A random fleet is frozen in position while the diplomats take care of the disloyal elements. The fleet must be one of the five largest war fleets in the empire. The fleet will defend the system it is in. *Continuing Event - CEM +8* (note double the CEM if this occurs during war time).

Mineral Depletion - One of your planets has a lot less mineral resources than originally thought. Reduce the mineral value of a random, poor or better, inhabited planet (not moon, asteroid, or homeworld) by one level. *CEM +10*

Mineral Discovery - One your planets has a lot more mineral resources than originally thought. Increase the mineral value of a random, rich or worse, inhabited planet (not moon, asteroid, or homeworld) by one level.

Moral Boost - An act of heroism inspires military personnel. This month subtract 2 from every crew or leader grade advancement roll. Note: A total of zero or less will always indicate success if the unit had any chance of advancing. *CEM -10*

Mutiny - A random crew of a warship vessel (not a flagship) successfully attempts mutiny. The vessel will attempt to run for the deep space in the nearest system with an inhabited planet (of your race). It will take 5 tactical turns for a fleet it was with to figure out what is happening and then they will react as if surprised. The fleet will shoot and the vessel will shoot back.

If the vessel successfully makes it to deep space, it becomes the core of a pirate group. See Pirates Raid CFN, Pirates Raid Colony Convoy, and Pirates Raid Hideout for ideas on what these new pirates might do or attempt. (CEM+8)

New Drug Discovered - A plant on one of your colonies (not extreme environment) is discovered to be a powerful and addictive drug. Until at least 6 armed starships [App2-2.02] are provided for customs patrol in orbit around this planet, lose 1% per month of your gross imperial income to the drug trade. (i.e., 1% on month 1, 2% on month 2, 3% on month 3, etc.) Max. loss is 15% per month. *Continuing Event - CEM +3*

Off Course - Receive a courier drone from a HEL race (with CD available) that has a lower treaty than Limited Trade (or lowest treaty available – including no treaty, at war, and even non-intercourse). Said courier drone contains an interesting bit of data (newest ship class design not seen, fleet deployments, something that is a valuable piece of information). *CEM -7*

Peace Treaty/LT&M Agreement - One NPR that you are currently at war with formally agrees to end the war. They will not move into any of your systems, they will cede any of your original systems, and they will not attempt to retake any system you currently hold. They will pay the equivalent of 4 months income from any world they take, and require you to pay them the equivalent of 1 months income of any world they surrender. If you accept this offer, you are at a state of Non-Aggression with them for a minimum of the next 6 months. (This can be broken with the usual penalties, or negotiations can be made to better your treaty relationship.).

If you refuse the peace treaty, or are not at war with any NPR, one randomly selected NPR agrees to make a Limited Trade & Military agreement with you. If you have not met any NPRs, or have limited trade or better agreements with all NPRs that you have met, then the next NPR you establish full communications with, will immediately offer a Limited Trade & Military Agreement. *CEM -30*

Peculation - The monthly GPV of a colony or settlement goes missing. The perpetrators are either (a) never found or (b) found in the territory of a neighboring race with whom the aggrieved race has a limited or free trade treaty. In the latter case, the neighboring race gets a boost to their income of 5%+3d10% of the missing amount as the fugitives have spent their way to safety. Under no circumstances is any money recoverable from the fugitives and demands for recompense from the neighboring race, or return of the fugitives, will be met according to circumstance and the player or umpire's whim as appropriate (NPRs should generally not

refund the money though high treaty levels, a successful RO check, or low aggression level [Y15] may induce them to repay some of it (CEM +6).

Pilot Strike - Labor unrest causes all CFN pilots to go on strike. No colonizing with the CFN, no ships can be added or removed from the CFN in any manner, and any graded leaders en route via CFN cannot leave their system unless they can commandeer a military ship. Emergency Military powers (and military pilots) allow the CFN ships to be operated on a minimal level that allows income, trade, and maintenance transfers. Trade *Continuing Event - CEM +4*

Pirates Raid CFN - Roll 1d10 to determine the type of ship located. (1-3) FT1, (4-6) FT2, (7-8) FT3, (9-10) FT4. Subtract three if this is an outer system with little population in or beyond it. The FT must be replaced and income equaling 1d100 TIMES the ships FT numbers is lost. *CEM +6*

Pirates Raid Colony Convoy - Pirates attack any colonization that shipped last month. The attacks reduce the PTU total by 20% (can be from a single colony or spread across a number of colonies as the Space Master wishes). Note that the CFN lost shipping will also have to be replaced. If at least 10 ships are able to arrive in a system of attack within 2 weeks, they will be able to find and capture the pirates who are not well armed. The PTU will still be lost but CFN replacement costs will be reduced by 90% in that system. *CEM +7*

Pirate Hideout - Pirates establish a base of operations in a random system. The system should have a moon, asteroid belt, or planet that is not normally scanned or passed by shipping. (e.g., it should not be easy to detect.) The pirates have built underground hangers [E8.03.1] to store their fleet and live in.

A nearby governor of a major planet is supporting the pirates surreptitiously (no income is lost). The pirates receive 20% of the planet's PU in income, which is equal to the pirate fleets current maintenance. They also have one underground SY per 500 MC of support they receive (can build up to BC sized ships). The pirate fleet has the same technologies as the player. Each month, the pirates may raid one or more systems per month but they will pull back and wait if a lot of imperial forces begin to congregate. Money and ships captured in raids will be used to replace losses, build new units, etc. The pirates sell captured CFN FT back to the government through the supporting governor. This transaction is untraceable but takes 1+1d4 months to complete. Note that the CFN may also be carrying other things like maintenance for fleets, income transfers, etc. The space master should provide them with some of this income too.

If the player can capture the pirate base, he will be able to scrap it (30% of value) and might capture unsold ships. The governor will be found out and eliminated and the next 3 months of pirate support end up going to the player. *CEM +8*

Plague - One randomly selected *inhabited planet* in your empire contracts a virulent plague. While plagued, the population produces no income and each month, 1d10% of the PUs are destroyed (roll randomly each month). Expending 1 MC per PU saves a PU. Note: The homeworld is immune to plague.

The plague world must be immediately quarantined. This requires 4 armed starships for each population level (Outpost requires 4, Very Large requires 28) of the population center and 0.1 MC per PU each month the world is quarantined. Each fighter squadron counts as 1 ship but the carrier only counts if it has a SRW or LRW, and ships with a strategic speed equal to the CFN speed count as 2. On any month in which sufficient ships or funds are not available (at the start of the month) to quarantine a population, roll 1d10 for each population center in the same system. Add 1 for the each of the following: insufficient ships available, insufficient funds available, or the population is in the system where the plague originated. On a roll of 10+, the population also contracts the plague. Also, each adjacent populated system must roll 1d10 once PER un quarantined plague world; spreads there on a 1-2, and if the plague spreads there, a random population becomes plagued.

Six months after the plague starts (at any location), the plague may end naturally. For each world (planet, moon, or belt) under the influence of the plague, roll 1d10 at the start of each month. On a 1, the plague ends for that world. For each world in which the plague ends naturally, you get 1d10 RP toward developing a cure.

Developing a cure for the plague is a Development Project: The target RP is 20, it is an SL 0 project, and has development cost equal 100+25 MC per EL. Implementing the cure takes 2 MC per PU to be saved. All the PU on a given world must be cured at the same time. *CEM +35*

Political Appointment - A LG-1 governor is fired. A random planet with a population of 181 or more has a new governor appointed. The governor is rated as follows (roll on d10):

Governor	Roll	CEM
Nothing Special	1-3	+0
LG	3-6	+2
LG+1	7	+4
LG+2	8	+7
LG+3	9	+11
LG+4	10	+15

Poor Construction - One of your ships had a construction flaw that went unnoticed until a little too late. Choose a random ship, amongst the 10 largest ships to have built or refitted in the last few months, and destroy it. *CEM +5*

Population Boom - Your Empire undergoes a population expansion of enormous proportions. While this event continues, gain +1.5% growth rate for your entire empire. *Continuing Event CEM -30*

Public Subscription - A planet raises a public subscription to fund a capital ship. The ship must be of a type already in service; must be assembled at the nearest shipyard to the planetary benefactor (even if this is a surface or mobile yard); and must visit the benefactor's planet on its maiden voyage. The planet will (during the visit) refund 50% of the cost of the vessel or an amount equal to twice the planets GPV, whichever is smaller. *CEM -6.*

Public Subscription (Major) - A planet raises a public subscription to fund three capital ships. The ships must be of a type already in service; must be assembled at the nearest shipyard to the planetary

benefactor (even if this is a surface or mobile yard); and must visit the benefactor's planet on its maiden voyage. The planet will (during the visit) refund 50% of the cost of the vessel or an amount equal to six times the planets GPV, whichever is smaller. *CEM -6*.

Racial Turmoil - Racial statistics of a random nearby NPR race shifts due to some factor (religious, political, philosophical, whatever). Roll 1d10 to determine which statistics change; 1-2 RD, 3-4 RM, 5-6 RC, 7 RD & RM, 8 RD & RC, 9 RC & RM; 10 all three statistics shift. Roll 1d10 for each stat and determine whether to increase or decrease it (50% each). Stat activation will not change but the difference between the stat activation and the new stat will be different. If this would cause a change in the racial government due to Y3.01 3rd paragraph (the one with the underlined word difference), then the government is destabilized [Y20.02]. This destabilized government reforms at a 30% chance each month. *CEM +3*

Radical Discovery - Your Empire gains the ability to research a wildcard technology. The player may choose 1 already open tree or branch as the wildcard. For the next 25 months, all R&D in the wildcard branch is treated as if its SL was three points lower than normal [N6.05] (i.e., it is cheaper and faster). *CEM -20*

Rebellion - n% (where n = 3d10*2 + 5) of the systems in your empire rises up in rebellion against their rulers. Determine which systems rebel randomly but the home system will not rebel. There is a 100-n% chance that any military large spacecraft *in a rebel system* will mutiny and become part of the rebel fleet, and 100-n% of Qv in a rebel system rebelling. The rebellion can be avoided at a particular population by paying 5 MC per PU. A graded leader's chance of rebellion is halved due to the impressive status such individuals hold. However, the graded leader's status may affect other things in a system. If there is a single graded leader in a system, that graded leaders status will determine the entire system, including ships, status (rebel or loyal). If multiple leaders are present, each controls those forces normal assigned to them (admirals get fleets, generals armies, governors get planets, and diplomats get survey forces and their escorts). Conflicts are resolved via the [Section S] rules [S1.02]. Any other conflicts are resolved by individual ship/population rebellion roll then going with the leader that decided the same way. This can cause a fleet to start shooting at itself.

The rebel systems are treated as a single NPR, which must roll for successes normally using your racial statistics, and may be of any government type except J'Rill, Hive Mind, Artificial Intelligence, or Group Mind. Those government types only produce like government types. The rebel NPR will immediately wage a limited war to conquer the minimum number of systems to make all the rebel systems connected. Once they have done that, they will immediately offer a free trade + defensive military treaty.

A rebellion will occur even if you are currently at war with other races, however, the newly created NPR is treated as a Partner (including all restrictions thereof); the rebel will not amalgamate with its old empire and both races are treated as non-aggression for the purposes of espionage. This partner will actively aid in defeating the enemy race and will make sure that (based on fleet ratios), that you do not purposely destroy rebel ships instead of Imperial Ships. After the war ends, the rebellion will continue normally, with the rebels going to war against any race necessary to connect all systems that rebelled. The rebels will surrender (rejoin the empire) when all rebel planets have been blockaded [V5.09] for 1 month. Should the Imperial race declare war on another race during a time of rebellion, the rebels will threat such a race as ALLIES. However, should another race attack the empire during a rebellion, the rebels will instead aid the empire until the other race is no longer a treat; the rebellion will continue only if a war check is passed. *CEM +30*

Research Advance - Your research towards the next economic level gets a bonus +10 research points. *CEM -6*

Research Fumble - Your research towards the next economic level loses 1d10+3 research points. *CEM +8*

Sabotage - Aggrieved workers sabotage production at a space station. One project's progress is reduced to 1 HS for this month only. *CEM +2*

Secret Ally - This event only occurs in very rare circumstances but when it does occur, it can be a life saver of enormous proportions. If this event does not occur, roll on the major benign events table again. *CEM -40*

This event only occurs if your race is at war with two or more HEL races and at least one of those races is a HEL NPR. In that case, one of those attacking HEL NPRs has just accepted a PARTNERSHIP agreement with you! During this month or the next month, the NPR must break all other agreements that this new partnership agreement would conflict with. This can be done either diplomatically or militarily, such as a sneak attack when in a mixed fleet with the nasty point blank range surprise (ouch!).

Space Masters warning: Situations can vary dramatically and this can be a game killer. If other player's existence would be seriously threatened, take steps to immediately improve his situation or weaken the NPR who switched sides. To some degree, the aid should be tailored so that the player race that started the war does not have an easy time of it.

Aid for the other player: Efficient Bureaucracy, Efficient Minor Bureaucracy, Elite Leader Discovered (combat oriented, Alert is good), Governor Thwarted (free warships always help), Weapons Cache, and/or Population Boom.

Weakening the NPR: Space Master Fun, Military Unrest, Berserker (the enemy fleet pretty much has to respect this one), Design Recall (one of the most numerous classes can slow a race a bunch), Government Shutdown (on the NPR due to confusion on the switch of alliances), J'Rill production, and/or Rebellion (this can really hamper the NPR and take them out of attack mode for a while).

Shipping shortage - Civilian-shipping demand is so high the number of ships available for hire (i.e., CFN base and government pools) is reduced by 75%. Any government purchased shipping costs double and "paper work" delays prevent any sales to/from the

CFN or the government from withdrawing Government FTs from CFN.

However, tax revenue on the massive shipping cost increase results in an extra 1 MC per H and 1.5 MC per Qv in the government pool. *Continuing Event - CEM +2*

Shipyard Explosion - A single SY module around the home world blows up and must be repaired. One ship being built on the current month suffers damage equal to the SY construction rate. If this is equal to or greater than the ships spaces, the ship is destroyed. Otherwise, repairs to the ship cost a percentage of the total ship cost equal to (damage sustained/ship's spaces). *CEM +4*

Slave Revolt - A race in Slave status revolts against their evil oppressors. Begin an invasion phase but during the first month only, triple the slave population. Reroll if no slave races in the empire. *CEM +8*

Slave Race Calms - A random slave race becomes a subject race. Reroll if no slave races in the empire. *CEM -7*

Small-Craft Crash - A small craft crashes on landing, writing off both itself and the bay into which it crashed. *CEM+2*

Smuggler - A CFN legal FT is confiscated as a result of a smuggling case and passes to the Government Pool for free. Roll 1d10 (1-2) FT1 w/H, (3-4) FT1 w/Qv, (5-6) FT2 w/H, (7-8) FT2 w/Qv, (9) FT3 w/H, (10) FT3/Qv. (CEM -4)

Space Master Fun - For some mundane reason, a ship or a few ships are stranded in space for a while. Whether due to a energy surge, extra violent WP transit, temporal disturbance, mutiny, or something else, is not important except for story line. The goal of this event is for the Space Master is to make the player think that a ship or a few ships on the outskirts of his empire have been destroyed due to enemy activity and redistribute ships to investigate. Such ships are affected by their problems until this continuing event ends. Event ends normally or when a ship not affected by the event discovers the affected ships and aids them (time of aid needed determined by space master). Some ideas for the space master include a ship or ships picketing an empty system, a population in a system with no other means of communicating, WP probes, system probes, etc. *Continuing event; CEM +3*

Space Moths - Tiny hull-consuming parasites attack your mothball unit storage (OK, this is a bit silly, make the event whatever you want but the result is the same). Oversight of mothball storage is very limited. 2d10 * 2d10 (2-20 * 2-20) HS of random mothballed units are eliminated from the game. *CEM +10*

Stock Market Crash - Income reduced by 5% for three months. IU cost 20 MC but can only be sold for 20 MC due to low demand. After 5 months, IU cost 30 MC. After 10 months, IU can be sold for 30 MC. *CEM +3*

Subject Race Revolt - A race in Subject status revolts against their evil oppressors. Begin an invasion phase but during the first month only, triple the subject population. Reroll if no subject races in the empire. *CEM +20*

Subject Race Calms - A race in Subject status becomes a Free Trade and Offensive Military Ally. Reroll if no subject races in the empire. *CEM -20*

Survey Brilliance - The next completed WP survey can detect WPs one level higher than normal. This would even allow Xa to detect concealed WPs, which it normally could not do. At least one higher than normal WP must be found. *CEM -6*

Technological innovation - Roll 1d100 *CEM -15*

1-70 Random developed weapon generation gets a +1 to range permanently (maximum of one occurrence per weapon per generation). For this weapon, the owner may choose during combat to subtract 1 from all distance calculations (e.g., an enemy at range 5 could be treated as being at range 4 for both damage and to-hit numbers). This does extend the weapon's range by one. Note that if Fb gets this innovation it does not extend to Fe, Fa, or Eb. The weapon must be the highest generation of weapon developed in that particular tree/branch.

71-85 The best developed combat sensor(60%) or long range sensor (40%) have 10% more range at every category (FRU).

86-100 The best developed multiplex system can target 1 extra ship. (i.e., M3 acts like M4 but costs less).

Note: Technological innovations cannot be sold, stolen, or in any way transferred to another race except through amalgamation. Innovations are permanent but will be surpassed eventually.

Terraforming Success - An experimental Terraforming process converts a randomly selected Harsh or Hostile environment planet to Benign. Unfortunately, the process also kills most of the scientists involved and destroys many of the records of their work. Your scientists, working from fragmentary data, predict they can duplicate the process in approximately 100 years. *CEM -10*

Tourist Trap - A planetary colony of yours becomes famous for its scenic vistas / wonderful lifestyle / easy access to mind altering substances / quaint handicrafts. For every NPR with whom you have a relationship of Free Trade or better, (including amalgamated NPRs) this colony gains 100 MC extra income per month, to a maximum of 100% of the base income of the colony. *CEM -6 (permanent)*

Unavoidable War - The war faction of your government gains influence, and forces your navies to attack (with at least (RM/2+10)% of your mobile fleet, by cost [You can more if you like]) the weakest non-Partner race that you are aware of. If all the races you are aware are Partners or better, you must attack the next NPR you meet. You may not sue for peace while this event continues and the event is not considered to start until you attack (you have three months in which to make the attack). If you win the war before this event ends, you must attack the next weakest non-Partner race that you are aware of. If unable to determine the weakest race, determine randomly. This event always lasts at least 5 months; do not roll for ending until 5 months after the attack. There can be no peace during this event, only unconditional surrender. *Continuing Event - CEM +25*

Unexpected Breakthrough - A civilian makes a breakthrough discovery (gain a breakthrough vs. something currently stopping progression) but gives it for free to any and every race that has ships calling at that persons home planet (including his own race) Other races gain either a free acceleration or the same breakthrough if they have yet to achieve it (CEM -5).

Unnecessary Contract Approved - Your design bureaucracy has been forced to buy and employ large numbers of unnecessary weapons. Randomly select a weapon system at least 1 generation lower than the generation of that weapon system that you can build (i.e., Fa in place of Fb). You may not retrofit to get rid of this weapon while this event continues. Each month, you must either

1. retrofit at least 5% of the ships in your fleet each month or
2. at least 10% of income or construction or refitting or
3. use 60% of your available build capacity constructing or refitting ships.

All units refitted or constructed must contain at least 20% of their HS in this weapon until the Goal is reached. Then, you can build whatever as long as the goal is maintained.

Goal: Overall, your combat units must contain at least 20% of their total HS in that weapon. NOTE: Mothballed ships do not count. Continuing Event - CEM +10

Venus Cools - In the recent past, a large comet crashed into a random V type planet. Due to the composition of the very large comet, a chemical chain reaction has begun to breakup the dense clouds and absorbs much of the world's extra heat. Unnoticed by anyone (its fun to put this in a uninhabited but discovered out of the way system) this month, the chemical changes accelerate in the atmosphere generating lots of Ozone. Oxygen and water are released and the planet undergoes rapid cooling. Through a process that no one understands, the world becomes livable. Environmental conditions will always be hostile with lots of powerful storms but the planet receives a +5 on its REI roll. *CEM -20*

Warp Point Change - A normally stable WP suddenly changes visibility by 1 category at each end. Roll 1d10 (1-5) visibility increases, (6-10) visibility decreases. *CEM+3*

Warp Point Discovered - Survey Command determines that through a paper work/calculation error, you missed a discovering a warp point. Location and transit information on a random missed warp point now available (must have been detectable with your current scanners). If no missed WPs available, space master may either create a new WP (always missed at the other end too if necessary), or may use this on a later month after survey ships miss their next WP. *CEM -4*

Warp Flare - An otherwise normal WP generates a sudden and unexpected 'Flare' event. Any vessels with operating drives within 1 sH have those drives burned out by the emitted pulse. i.e., all Ic, 1/2 of all I and 1/3rd of all J drives are marked as damaged and are inoperable. At least some vessels must be damaged, if possible otherwise (CEM is -2). Engines in station-keeping mode become inoperable for 1 hour, causing all vessels, AP and small-craft to undergo orbital drift for that period until the engines can be reset. *CEM +15*

Warp Point Forms - See Warp Point Forms Oddity. The Warp Point goes to a random system in the galaxy and if all warp points in that system are ineligible or already linked, a new WP forms in that system if it has less than 10 WPs (otherwise, choose another random system). *CEM -5*

Warp Point Instability - A normally quiet WP suddenly starts rapidly changing 'visibility' and 'size' and emitting low-intensity gravity waves. On any given tactical turn, its size is re-rolled. Any vessel larger than the new size is destroyed. The effect lasts for one entire month. CFN vessels, however, will NOT use the WP until it is proven safe!

At the start of the 2nd month, roll on the Galactic Oddities -- Warp Point Oddity table ignoring False, Nexus, Nodal, and Rosette WPs results. *CEM +6*

Warp Point Missed - Your survey crews get lazy and miss finding a warp point. Until a WP is missed, have someone roll 1d10 for each system you survey. On a roll of 3 or less, they should report one less warp point than that system actually has. If there is a choice, the missed WP is always the most visible one. Subsequent higher level surveys will also miss this warp point in the future, only a second survey of the same TYPE will have a chance of finding the WP. *CEM +5*

Weapons Cache - An ancient weapons cache has been found on a random inhabited planet. 2d100/2 weapons are found in perfect working order. The SL of these weapons can be up to three SL above the players current EL (also see N9.03.1 which will apply). Space Master can choose which weapon or roll randomly although it should be in an open tree (but not necessarily the same branch). Installing these weapons can be a big help for the player though they may not be repairable until the SL catches up. *CEM -15*

Weapons Shortage - Due to a manufacturing error, stocks of a commonly used weapon or defense are very limited. Randomly select among the weapons and defenses that most of your designs use or will use (i.e., a new system just came out and you were about to starting installing it). The weapon or defense now costs triple what it normally does. *Continuing Event - CEM +8*

World Government Upheaval - Religious, ethnic, or political schism starts a conflict on one world (cannot be the homeworld). All productivity (i.e., income generation) grinds to a halt as war breaks out. The rebels receive supplied Qv [V3.01] equal to (30+2d10)% (FRU) of the worlds PU total. The rebel Qv never have to worry about supplies and are considered to control space around the planet unless ships from another sector arrive. If the empire has only one sector, "another sector" is defined as more than 1/2 the distance of the length of that empire. The empire's government may support either side of this combat. *CEM +10*

World Sold! - A large corporation "buys rights" to an empty habitable world, 100 free PU/colonists are emplaced on that world. "Tax incentives" mean no income to the government for x months, then collect normally. "x" varies based on the world. Benign = 10 months, harsh = 15 months, hostile = 20 months. Poor = +20% months, Very Poor = + 50% months (FRU). *CEM -6*

Y3K virus - A hacker has developed a virus that shuts down a certain type of system for 1 month. Unfortunately, the virus is much more powerful than expected and has infiltrated every computer in the empire. This month the virus hits and….roll 1d10. On 1-5 every CD in the empire will not work, 6-7 all multiplex system can target 1 less units, 8-9 all sensors are 20% less effective, 10 all datalink systems can handle 1 less unit in the link (HS limit is not affected). There is a 40% chance that this is a continuing event instead of limited to just one month. *CEM +10 or Continuing Event CEM +20*

HH2.02 CALL FOR HELP (OPTIONAL)

At the beginning of a game, each player race is entitled to "call for help" once during the game. Additionally, each time they (or the SM) rolls a "50" while consulting the random events table, they receive one additional "call for help." Calls for help may be saved until needed. Each call for help is worth an amount of victory points equal to 5000 PU.

CALL FOR HELP - At any point during a tactical turn, the player may "call for help." From that point until the end of the tactical turn, the player makes TWO rolls for everything anywhere in that system and may choose either roll as the official roll. Furthermore, all his opponent must make TWO rolls for everything and must always use the worst result. If two opposing sides both invoke a "call for help" both are canceled and considered used up. Needless to say, a CALL FOR HELP only be used in times of desperation (like when being surprise attacked by an NPR.

Possible uses of a call for help: Activating most of the fleet on the first turn of a WP assault. Weakening the enemy with a long range, highly accurate bombardment during the opening stages of a deep space battle. Or during a sizable fighter strike.

HH2.03 SANITIZING ASTEROID FIELD WP

A WP that exits into an asteroid field is a particularly annoying anomaly. However, asteroids are not particularly difficult to destroy with weapons of Starfire power as long as you have the time. Some provision for temporarily reducing the number of asteroids, and the damage they cause, should be possible. For the sake of simplicity, we'll ignore the general nature of asteroids and allow all weapons to damage them normally. Normal combat usage of weapons rarely exceeds about 25 shots and shots above that start causing major breakdowns.

During a StMP, use the following formula to total the amount of damage that each weapon causes (only use range 2+ players choice). Objects are DF down and suffer triple damage from K and nukes.

To-hit number * damage * (300/ship's StMP speed) = ast damage

Weapons are assumed to be able to fire about 100 times per day (that is already accounted for in the formula) with appropriate down time for maintenance and replacement of worn out parts. Each 5,000 pts of ast damage causes a minus one to the damage caused to entering ships. Each month new asteroids are captured by the gravity well and counter the damage reduction amount by +10 (if your worried about days, this is +1 every 3 days). Thus, a fleet needs to cause about 50,000 pts of ast damage per month to maintain whatever the current minus number is. Fa causes 4,800 pts per month.

It is pretty worthless to use weapons requiring ammo for the purposes of countering an asteroid field as the number of magazine reloads would be astronomical.

APPENDIX HH3 – ULTRA OPTIONAL RULES

These are rules that have the potential to be unbalanced, paperwork intensive, or especially burdensome upon the Space Master. Their use should only be with the agreement of every involved player.

HH3.01 RACE SPECIFIC TECH

When a race gains a new EL, they roll a 1d6. If a 5 or a 6 is rolled, nothing happens. If a 1-4 is rolled, the next developed item corresponding to the die roll (1-4) becomes a race special item. Such an items is either (50/50) 40% cheaper than normal or 33% smaller than normal. For size adjustments, round the size of the item up to the next value listed-- 1/6, 1/5, 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, whole number. These are 0.167, 0.20, 0.25, 0.333, 0.40, 0.50, 0.60, 0.667, 0.75, 0.80, 0.833, and 1.0 respectively. I believe you can even edit the shipyard.xls value with the new values and it will work properly. Thus, a 4 HS system would become 2.64 HS or rounding up, 2.667 or 2 2/3 HS.

Race Specific Tech is designated by EL even though the tech might be a different Science Level. When amalgamating, only 1 of Race Specific Tech of a specific EL is available and that one is randomly decided. Ships with old Race Specific Tech still work, are maintainable, and are repairable. But new construction or refitting of the system will destroy its unique value.

HH3.02 NPRS WITH ARMED CFNS

Each NPR must roll vs. 1/2 their RM to determine if their CFN is armed. If the CFN is armed, d100/4+20 (d100/2+25 if RM is an active stat) percent of the ship's will be armed. Armed CFN units will fight to protect the homeworld.

HH3.03 ADMIRAL'S GRADE LIMITED

A graded Admiral's abilities and bonuses are limited by the amount of time spent with a particular fleet. A fleet which increases, but not decreases, its size (from its "starting size") by more than 50% of Hull Spaces is considered a new fleet and resets the counter. When considering this size increase, ships which leave the fleet during the month are not counted towards "starting size" for that month. Combat losses are always considered as part of the starting fleet for that month.

Full Month(s)	Admirals Effective Grade
One	LG+1
Two	LG+2
Three	LG+3
Four	LG+4
Five	LG+5

Example: A fleet of 400 HS has been with a LG+3 for two full months (and 15 days of a 3rd month). The leaders effective grade is LG+2. The fleet can increase by 200 HS in the next month without starting over as far as the leaders effective grade is concerned. However, if the fleet loses 100 HS due to being moved elsewhere and gains 175 HS, it will have to start over since its effective gain (over experienced crews) is 175/(400-100) = 175/300 = 58.33%

HH3.04 NUKES REDUCE MAXIMUM POPULATION LIMIT

Nuclear bombs should damage the environment. So, for each point of damage that a nuke (bomb, R tree, and G tree) that was targeted against Population [V6.01.3], Industry [V6.01.4], or Troops [V6.01.2], reduce the maximum allowed population on the planet by 1 PU. PDCs strikes are allowed without penalty.

HH3.04.1 CLEAN-UP

The planet naturally heals itself at a rate of +1 PU maximum population allowed per month.

Races may pay to clean up the damage at a rate of 10 MC per +1 PU maximum population allowed.

HH3.05 SURVEY CREW EXPERIENCE

Ships with survey equipment earn survey experience, which is called Survey Grade (SG). Such a unit advances in SG and BG independently. Survey grade is in no way related to BG. Thus, a SG-1 unit from a BG=Elite race functions identically from a SG-1 unit from a BG=Poor race.

Definition: "involved" = generating survey points during at least 2 StMP. Fractional survey points are kept and not rounded.

Die rolls occur when the survey is complete.

[SG-2 survey craft] After being involved in surveying a system, they become SG-1.

[SG-1 survey craft] If green and involved in a finding a WP, they become SG.

[SG survey craft] For each system a SG survey craft is involved in surveying, they have a 5% chance to advance.

[SG+1 survey craft] For each system a SG+1 survey craft is involved in surveying, they have a 3% chance to advance.

Survey Modifiers

- Survey craft that are less than SG, generate 10% less SP.
- SG Survey craft generate SP normally.
- SG+1 Survey craft generate 10% more SP.
- SG+2 Survey craft generate 25% more SP.

Survey Experience modifiers apply after all other modifiers.

HH3.06 UNUSUAL LIFE FORMS

This rule can be very time consuming to handle as a Space Master. Rated as HIGHLY OPTIONAL.

HH3.06.1 INTRODUCTION

Races that are not carbon based will see a star system differently than a carbon based life form. A binary system full of T worlds is going to look bad to a race that lives on Gas Giant worlds. Those "worthless" systems for the T and ST type life can now contain dangerous NPRs.

HH3.06.2 GAME RULES

All game rules are attempts to simplify game play and tables and yet still provide a hopefully balanced game.

NPR Life Forms (table adjustments) Because of the added life types, the potential for generating an NPR is 9 times greater. As that many races would be a burden on a space master. Use Table Y1.03.1 Unusual Indigenous Life in place of Y1.02.

Be advised that these tables will totally change the distribution of all NPRs including Terran and Super-Terran races.

See Table HH3.06.1a Life Form/Planet Environment Type for planet habitability.

See Table HH3.06.1b Population Limits for colonization limits.

- AMALGAMATION: Amalgamation between different life types is impossible. The best that can be achieved is either partnership or subject race. This is a critical game balance rule to prevent massive problems with amalgamation between different life types. WARNING: It is ***strongly*** recommended that even home rules avoid this.
- Optional Realism: There is a 60% chance that an NPR race's policy level (Y15 and Y16) is always increased by one when dealing any different life form.
- GENOCIDE: Genocide penalties are halved if the race learning about the genocide is a different life type from the race that did the genocide.
- An NPR will 80% of the time favor a same life type race vs. a different life type race (most other things being equal).
- [N4.03] A race's homeworld(s) can always support up to 4 SA and 8 RDS. Any planet with an SA or RDS can perform R&D normally.
- A functional planet has at least one Ground Based Industry. It can support construction and at least 1 SA and 1 RDS. Exception: Functional I planets can have just a single facility.
- G, I, V, O2, and O3 planets have no HI. All are the same.

Definition: Functional Planet - A benign or harsh planet (not moon) at the highest population size class it can be (or was at highest size class prior to an EL growth bonus).

HH3.06.3 TERRAN (OR SUPER-TERRAN) LIFE

This carbon-based life is modeled after Earth inhabitants. It is the ULTRA standard life form and all other life is compared to it.

Home world type is T (or ST) planet.

- Advantages:
  Massive populations in easily defended locations
  Growth bonuses are very effective
- Disadvantages:
  Limited good colonization opportunities

HH3.06.4 ICE LIFE

Formed of an unknown substance, ice life has highly developed telekinesis skills. Fortunately, they have no ability to read or control minds. Ice life burrows deep within the ice like an anthill. An Ice Planet with more than 150 PU can have 1 ground facility (not 1 RDS and 1 SA but rather ONE facility, which includes pilot training facilities, etc.).

Ice life has double the chance of creating or promoting Graded Admirals.

Home world type is I planet.

- Advantages
  Excellent mineral resources on almost all habitable locations
  Many colonization locations
- Disadvantages
  Tiny populations in most locations
  Growth bonuses run up against the maximum population limit per system body almost immediately.
  Considerably fewer potential PU than any other type of life.

HH3.06.5 THERMAL LIFE

Thermal Life developed in the direct heat and close proximity of a star. Most such races are rock or metal based making them very difficult to damage in ground combat. Likewise, attacking a world with 1000 degree temperatures is no easy task. The heat gives these creatures a very short life span but that in turn makes them breed incredibly fast. Further more, their planets have excellent resources which are easy for them to extract and the high heat allows them to easily create extremely dense metals.

Growth Rate of Thermal Life is +0.5% per month. They are immune to radiation (though their ship systems are not). Their ground forces receive a +50 bonus. Their leaders must roll each 10 months for death (+10% chance).

Home world type is mass 1 O3 planet.

- Advantages
  Powerful Ground Combat forces
  More potential habitable PU than even Terran worlds
- Disadvantages
  Cannot stand the cold of space
  Limited worlds to colonize.
  Leader Death

Table HH3.06.1a Life Form/Planet Environment Type[a]

Type	Terran	Super Terran	Vacuum	Gaseous	Ice life	Venusian	Thermal
AST	desolate	desolate	Hostile	*death*	extreme	Hostile	*death*
G	*death*	*death*	*death*	Harsh	desolate	Hostile	Harsh
HGT	Harsh	Harsh	desolate	*death*	desolate	extreme	*death*
I	*death*	*death*	extreme	desolate	Benign	*death*	*death*
mT	Hostile	Hostile	extreme	extreme	extreme	extreme	*death*
O1	*death*	*death*	desolate	*death*	Benign	*death*	*death*
O1m	extreme	extreme	desolate	*death*	Benign	*death*	*death*
O2	desolate	desolate	Benign	*death*	extreme	extreme	*death*
O2m	desolate	desolate	Harsh>> Hostile	*death*	Harsh	*death*	*death*
O3	extreme	extreme	desolate	extreme	*death*	Hostile	Benign
O3m	extreme	extreme	desolate	extreme	*death*	Hostile	Benign
ST	Hostile	Benign	desolate	desolate	extreme	*death*	*death*
T	Benign/Harsh	Harsh/Hostile	desolate	desolate	extreme	extreme	*death*
V	*death*	*death*	*death*	Hostile	desolate	Benign	Hostile

[a] Some Planets have two Environment Types listed. These planets have an HI and can be either type.

Table HH3.06.1b Population Limits

Colonization and Body Type	T Planet (Terran)	ST Planet (Super Terran)	O2 Planet (Vacuum)	G Planet (Gaseous)	I or O1 Planet (Ice)	V Planet (Venusian)	O3 Planet (Thermal)
Benign Planet	3000+250	3000+250	1500+200	n/a	150+15	4500+400	3000+250
Harsh Planet/Benign moon	1500+200	1500+200	500+100	340+30	75+10	1000+200	1500+200
Hostile Planet/Harsh moon	750+150	750+150	500+100	240+30	50+5	300+100	500+100
Hostile Moon	400+100	400+100	300+60	140+20	30+3	180+60	300+60
Desolate Planet	180 PU	180 PU	180 PU	180 PU	180 PU	300 PU	180 PU
Extreme Planet/Desolate moon	60 PU	60 PU	60 PU	60 PU	60 PU	200 PU	60 PU
Extreme Moon	20 PU	20 PU	20 PU	20 PU	20 PU	100 PU	20 PU
Asteroid Belt	LM times 20						
Maximum Population Size - Values in PU. Plus amounts are per EL. Thus, 400+30 at EL 4 is 400+120=520.							

Table HH3.06.1a Life Form/Planet Environment Type[a] (REVISED 1-05-2006)

Type	Terran	Super Terran	Vacuum	Gaseous	Ice life	Venusian	Thermal
AST	desolate	desolate	Hostile	*death*	extreme	Hostile	*death*
G	*death*	*death*	*death*	Harsh>> Benign/Harsh	desolate	Hostile>> *Desolate	Harsh>> **death*
HGT	*Hostile>> Harsh	*Hostile>> Harsh	desolate	*death*	desolate	extreme	*death*
I	*death*	*death*	extreme	desolate	Benign	*death*	*death*
mT	Hostile	Hostile	extreme	extreme	extreme	extreme	*death*
O1	*death*	*death*	desolate	*death*	Benign	*death*	*death*
O1m	extreme	extreme	desolate	*death*	Benign	*death*	*death*
O2	desolate	desolate	Benign>> Benign/Harsh	*death*	extreme	extreme	*death*
O2m	desolate	desolate	*Harsh>> desolate	*death*	Harsh	*death*	*death*
O3	extreme	extreme	desolate	extreme	*death*	Hostile>> *Harsh	Binges>> Benign/Harsh
O3m	extreme	extreme	desolate	extreme	*death*	Hostile>> *Desolate	Benign>> *Hostile
ST	Hostile	Benign	desolate	desolate	extreme	*death>> *Hostile	*death*
T	*Benign/Harsh	*Harsh/Hostile	desolate	desolate	extreme	extreme	*death*
V	*death*	*death*	*death*	Hostile	desolate	Benign	Hostile

[a] Some Planets have two Environment Types listed. These planets have an HI and can be either type (50%/50%).
* Changed during the 1-05-2006 revision

Table HH3.06.1b Population Limits (REVISED 1-05-2006

Colonization and Body Type	T Planet (Terran)	ST Planet (Super Terran)	O2 Planet (Vacuum)	G Planet (Gaseous)	I or O1 Plnt (Ice)	V Planet (Venusian)	O3 Planet (Thermal)
Benign Planet	3000+250	3000+250	*1700+140	*500+50	150+15	4500+400	*2300+200
Harsh Planet/Benign moon	1500+200	1500+200	*800+100	*350+40	75+10	*1200+140	*1300+170
Hostile Planet/Harsh moon	750+150	750+150	500+100	240+30	50+5	300+100	*500+100
Hostile Moon	400+100	400+100	300+60	140+20	30+3	180+60	300+60
Desolate Planet	Settlement		180 PU	180 PU	180 PU	300 PU	180 PU
Extreme Planet/Desolate moon	Colony		60 PU	60 PU	60 PU	200 PU	60 PU
Extreme Moon	Outpost		20 PU	20 PU	20 PU	100 PU	20 PU
Asteroid Belt	LM times 20						
Maximum Population Size - Values in PU. Plus amounts are per EL. Thus, 400+30 at EL 4 is 400+120=520.							

Table HH3.06.1c Life Form Planet Environment Type & Population Limits[a] (REVISED 1-05-2006)

Type	Type	Terran	Super Terran	Vacuum	Gaseous	Ice life	Venusian	Thermal
AST	Envir Max PU	desolate LM * 20	desolate LM * 20	Hostile LM * 20	*death*	extreme LM * 20	Hostile LM * 20	*death*
G	Envir Max PU	*death*	*death*	*death*	Benign 500+50 Harsh 350+40	desolate 180	Desolate 300	*death*
HGT	Envir Max PU	Harsh LM * 150	Harsh LM * 150	desolate LM * 150	*death*	desolate LM * 150	extreme LM * 150	*death*
I	Envir Max PU	*death*	*death*	extreme 60	desolate 180	Benign 150+15	*death*	*death*
mT	Envir Max PU	Hostile 400+100	Hostile 400+100	extreme 20	extreme 20	extreme 20	extreme 100	*death*
O1	Envir Max PU	*death*	*death*	desolate 180	*death*	Benign 150+15	*death*	*death*
O1m	Envir Max PU	extreme 20	extreme 20	desolate 60	*death*	Benign 75+10	*death*	*death*
O2	Envir Max PU	desolate 180	desolate 180	Benign 1700+140 Harsh 800+100	*death*	extreme 60	extreme 200	*death*
O2m	Envir Max PU	desolate 60	desolate 60	desolate 60	*death*	Harsh	*death*	*death*
O3	Envir Max PU	extreme 60	extreme 60	desolate 180	extreme 60	*death*	Harsh 1200+140	Benign 2300+200 Harsh 1300+170
O3m	Envir Max PU	extreme 20	extreme 20	desolate 60	extreme 20	*death*	Desolate 300	Hostile 500+100
ST	Envir Max PU	Hostile 750+150	Benign 3000+250	desolate 180	desolate 180	extreme 60	Hostile 300+100	*death*
T	Envir Max PU	Benign 3000+250 Harsh 1500+200	Harsh 1500+200 Hostile 750+150	desolate 180	desolate 180	extreme 60	extreme 200	*death*
V	Envir Max PU	*death*	*death*	*death*	Hostile 240+30	desolate 500	Benign 4500+400 Harsh 1200+140	Hostile 300+100

[a] Some Planets have two Environment Types listed. These planets have an HI and can be either type (50%/50%).
* Changed during the 1-05-2006 revision -- Only use the 'c' version of the table.

HH3.06.6 VENUSIAN LIFE

Venusians have skin like steel and can withstand incredible pressures. High air pressures have little effect on these beings and their strong skin makes low pressures easier to tolerate. Venusians are smaller than normal (crews are bigger). Thus. Each Qv transports 1.5 Venusian Qv. Venusians Combat Qv consume 33% less H per month. Venusians get a +20 bonus on all invasion tables. PTU and PU are unchanged but have more individuals.

Venusians have double the chance of creating or promoting a Graded General.

Home world type is V planet.

- Advantages
  Powerful Ground Combat forces
  More potential habitable PU than even Terran worlds
- Disadvantages
  Population somewhat spread out

HH3.06.7 Gaseous Life

This life form lives in a gas giant's mid to upper atmosphere. The life form's skin contains gas and floats in the gas giant's atmosphere (a floater). They use their body to 'strain' metal or create super-strong crystal (for building) from then surrounding clouds. The gaseous life form can also dive to and tolerate for a while the dense lower atmosphere of the gas giant. With the proper equipment, even mining occurs on the surface. Gaseous life is rare and the minerals to support it are even rarer -- thus the low population limits on G worlds.

PDCs built on Gas Giants are not available until EL4 but Gas Giant PDCs, which only gaseous life can build, are airborne (anti-gravity), and quite mobile. They can move 1 hex side per tactical turn.

All other life forms are -40 to invade a floater population and the floaters are -20 to invade any other planet.

Gaseous life can work with armor and metal that is denser than any other race. All items in the gaseous armor tree are 4 SL below the numbers indicated in [App A-Technology Trees and Systems]. Note: that this ability is NOT transferable to other races. In a sense, 'A' armor for Gas races is 2/3 spaces at 3 MC but any other race trying to copy it would get 1 space armor at 2 MC.

Gaseous life has double the chance of creating or promoting Graded Diplomats.

While Gaseous life cannot inhabit asteroid belts, they still get the asteroid belt income bonus [L3.01].

Home world type is G planet.

- Advantages
  Tougher ships and better PDCs
  5x more habitable colonization locations than Terran-life
  Effectively unlimited good investment possibilities.
- Disadvantages
  Worlds without atmosphere are unusable.
  Limited population in any one location
  No benign locations
  Growth bonuses run up against the maximum population limit per system body rather quickly.

HH3.06.8 Vacuum Life

This carbon-based life form originates on an O2 planet with no atmosphere (mass 1 by definition). Despite being born in the cold vacuum of space and in the harsh radiation of a star, life is hardy and vibrant. Because the environment suffers from extreme heating and cooling plus high radiation levels of all sorts, they are immune to radiation and most vacuum conditions. Being based on a mass 1 planet, the vacuum life readily adapts to micro-gravity colonization.

Vacuum life has double the chance of creating or promoting a Graded Governors (only one governor per asteroid belt is required)

Home world type is mass 1 O2 planet.

- Advantages:
  Effectively unlimited good investment possibilities.
  Tens of thousands of O2 airless bodies to colonize
  Rich asteroid belts provide a strong economic base.
  An asteroid belt provides an excellent location to conduct ambushes from.
  Immune to radiation (i.e., Star, nebula, tech, etc. radiation)
- Disadvantages:
  Population is distributed across many locations in a system making it difficult to defend from raids.
  Very few benign locations
  Growth bonuses run up against the maximum population limit per system body rather quickly.

HH3.06.9 Game Setup

HH3.06.9.1 Initial PU placement. Not all races will start with a single homeworld due to homeworld size limits.

T/ST/V	1 Homeworld (2000 PU)
O2	2 Homeworlds (1000 PU each)
G	5 Homeworlds (400 PU each)
O3	2 Homeworlds
	(1 Benign {1277 PU}, 1 Harsh {723 PU})
I	? Homeworlds

Unlike other races, I races treat each planet and its orbiting moons as a single component for the purposes of:

- **R&D facilities**
  This allows I "homeworld" planets to each reach the 181 PU necessary to have 1 R&D facility of each type. Place 93 PU on each I or O1 planet, place 47 PU on each O1m. The goal is to limit the number of "homeworld" planets the I race has, so planets with more moons are preferred. When placing the final amount of PU, short moons (as few as possible), not planets. Even at EL 1, a I world with 4 moons will be able to contain enough PU to reach the magic 501 PU mark of a Medium population.
- **Governor generation**
  I races have an issue with "extra PTU" generation available for making new colonies (they lag behind by about 250 times in extra PTU generation). Further, each Governor affects a lot less PU. Therefore, when increasing size to small, I governors generate 50% of the time.

HH3.06.9.2 Adjustments

Table N4.03 R&D Facility Limits

This table DOES apply for T/ST/V/O2,O3, and G races. It does mean that G races, in particular will have R&D facilities more spreadout than the others. O3 races must start with 3 RDS and 2 SA on the Benign HW and 1 RDS and 2 SA on the Harsh HW. O2 races must split facilities evenly. G races place 1 RDS + 1 SA on 4 of the 5 homeworlds.

HH3.06.10 ANALYSIS

Analysis is based on the normal tidelock values, not reduced values.

Body Type	Body Total	Description
AST	7274	Asteroid Belts
G2	24163	Gas Giant
HGT	18	Habitable Gas Tortuses [W7.04.1]
I	21357	Ice planets
O3	6364	O3 planets (hot)
O1m	54747	O1 moons
O2	10537	O2 planets
O2m	97616	O2 moons
ST	2389	Super-Terran
T	4631	Terran Benign
mT	761	Terran Hostile moon [W7.03.4]
V	1144	Venus like planets

Design Notes: After much examination of the data charts and the implications of some of the above issues plus the average richness issue of the main world type for each type of race, I realized that O2 races could not have full populations on benign O2 worlds. By limiting populations, SDS can keep the game simple (most tables remain unchanged) and yet still achieve some balance in the game.

Remember, all unusual life forms may be penalized in one or more of the following areas due to low populations on single bodies: Planetary Sensor Range and Graded Governors

HH3.07 COMMAND AND CONTROL

The quality of a race's command and control structure plays a part in a battle, but that part is relatively minor. The intent of these rules is to increase the effectiveness and impact of winning initiative by a significant margin, and thus rewarding investment in technologies that give bonuses to initiative as well as rewarding the risking of a high quality admiral with a large initiative bonus.

At this time, I have two rules that you can use: Fire Additional Units First or Task Force Organization. Don't use them together.

Design Notes: most ideas for command and control are way too complex or significantly impact game play speed. The first version does not and most of the leg work on the second version can be done ahead of time.

HH3.07.1 FIRE ADDITIONAL UNITS FIRST

A race whose modified initiative die roll is 4 or more above his opponent's total is allowed to fire, before his opponent fires any ship, 5 units plus 2 times the "plus value" of the admiral (LG+0 is 5 units, LG+1 is 7 units, LG+3 is 11 unit, etc.). (Units - not datagroups)

Obviously this favors large units, which is good.

HH3.07.2 TASK FORCE ORGANIZATION

Concept: Larger Groups of ships are inherently more disorganized and tougher to wield effectively in battle.

HH3.07.2.1 Task Force Size Limit Each Admiral can command effectively a Task Force of no more than 3 datagroups of ships plus 1 datagroup of ships above LG+0. 100 HS may be substituted for 1 datagroup. Thus, a LG+1 Admiral could command 2 datagroups (each of 3 BBs) and 200 HS of other ships.

A Task Force not led by an Admiral cannot exceed either one datagroup or 250 HS.

Exception: Race's without Admirals can have up to 4 datagroups in a non-Admiral led Task Force (max. of 1000 HS).

HH3.07.2.2 Excessive Task Force Size Penalty Exceeding the maximum Task Force Size is allowed but at a cost of -1 initiative per fraction of 200 HS the task force exceeds the maximum (I.e. a LG+0 admiral commanding a 667 HS Task Force would suffer a -2 on the die roll.) No task force may exceed the limit by more than 1000 HS.

HH3.07.2.3 Initiative Order Each Task Force in the battle rolls initiative separately; then, in order of initiative, each Admiral fires his entire Task Force. This may result in multiple Task Forces of one side going before the other side fires any Task Force.

Note that initiative penalties for exceeding size remain constant throughout the battle regardless of losses.

HH3.07.2.4 Task Force Quantity Limit The number of task forces in a battle cannot exceed 2 without penalty. Every task force above this limit causes a -1 initiative penalty to all task forces in the battle. A fleet cannot have more than 5 Task Forces in weapon's range (as defined below) at one time. A race (or alliance) exceeding this limit of 5 Task Forces causes all their Task Forces to roll a natural "1" for initiative, which would then be modified by any other modifiers.

Task Forces that are destroyed during battle or that are outside "weapon's range" (theirs and the enemies longest range) by 20 tH or more are not counted toward this limit. This distance is fixed at the start of the battle. Thus, the concept of reserves is generated.

Allies in battle DO count toward this 5 datagroup limit.

Ed. Note: The result of this limit is that larger empires forces will fight less effectively. Two equal sized empires will have the same modifiers but a smaller fighting force will do slightly better, thus offsetting the larger empires weight of ships.

HH3.07.2.5 Dispersing Task Forces At the start of any turn, a task force can be declared as "disengaging". The task force units must attempt to move at maximum speed and in a direction that will take them away from the largest concentration of enemy ships (in hull spaces) until the units have retreated fully according to the provisions of HH3.07.2.4. Turning to keep an enemy away from the blind spot is permissible as long as distance between the main enemy force increases each turn.

HH.03.7.2.5.1 Disengaging units may fire as usual, but with the restriction that they fire after all other units. If both sides have units that are disengaging, use normal initiative for these units (after all task forces have fired) with initiative going to the side who rolled the highest modified initiative for one of their task forces. The disengaging task force no longer fires as a single group, but datagroups can fire together.

HH.03.7.2.5.2 Disengaging units are not counted towards the task force limit of HH3.07.2.4

HH.03.7.2.5.3 Disengaging units cannot reform into a new task force until after 30 minutes have passed.

HH3.07.2.6 Warp Transit and Initiative Units that transit a WP have a special set of modifiers.

Task Force Size limit is increased by 20% [HH3.07.2.1]

Task Forces need only transit the WP to be disengaged. When battle occurs on both sides of the WP, treat each battle as an entirely separate conflict for the purposes of initiative.

The attacker (the side that initiated the first WP transit) receives a +1 to initiative throughout the entire battle.

HH3.08 Simultaneous Written Movement

Players may use simultaneous written movement instead of pulse type 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. Movement point(s) used to move straight ahead are recorded as a number "#." Any point expended in place is recorded as "x." Any turn is indicated by the direction of the turn (R - right, L - left). 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. At both the start and end of the movement record, place the new scattergram facing in square brackets "[x]."

WARNING: These rules may not solve all the problems involved with simultaneous written movement balance. The J'Rill order section adds enough complexity that you should probably be using standard movement anyway. If you do use them, let me know how they work out.

HH3.08.1 Other Types of Orders:

Pre-written movement is normally given on a hex by hex, facing change by facing change basis without regard to any other ships in the game. However, other options may be available depending on the situation.

HH3.08.1.1 Pursue A unit, which is in the rear 120-degree arc of an enemy and has the enemy in its forward 120-degree arc, may choose to pursue that enemy. A pursuing unit moves each MP after the enemy expends MP for a movement pulse. The pursuing unit must attempt to move closer to the unit being pursued.

HH3.08.1.2 Homing A unit, with an enemy with the forward 180-degree arc, may be ordered to close toward an enemy unit. Such a unit will move to range 0 or 1 and attempt to remain at that range from the enemy unit. The goal is to be at range 1, directly behind the enemy unit, and facing the same direction.

HH3.08.1.3 Hold Station on friendly unit. Units may only hold station on friendly units (called the "maneuver leader" and the "holder"). Normally, this is used to hold a datagroup in the same configuration.

Essentially, the written orders of the maneuver leader are transferred to the holder ships in the fleet. If the holder has a higher speed, the extra MP are used in place. If the holder has a lower speed, it moves until it runs out of MPs. If the holder has a higher TM and a facing change is issued that it has not satisfied its turn mode for, the facing change is pushed back 1 MP until it can be executed. This pushing back may occur a number of times before the facing change occurs.

HH3.08.1.4 J'Rill movement (extra optional) Ships may use any of the orders listed in J'Rill.11.2.

HH3.08.1.5 Keep in Arc The unit keeps a particular enemy target in a single weapon's firing arc if it can. The enemy unit must start within arc and the ship can only turn if the unit leaves the arc. Any forward movement must be written out. This option is only usable by units with a firing arc of less than 300 degrees.

HH3.08.2 Execution

HH3.08.2.1 Order Execution Sequence

1. Move each PURSUED unit one MP followed by its pursuing unit(s). A unit that is both pursuing and being pursued pursues its target and then is pursued itself. If a ring of pursued units ever occurs, randomly choice one unit and move it (record all positions and facings before moving any unit incase you have to redo it). Then move all other pursuing units with the exception that the last unit to move must move so as to be within the firing arc of its pursuing unit and the distance between those units cannot exceed the starting distance + pursued units speed - the pursuing units speed. (Generally a ring of such units will move in a circle and the circle will contract toward the center.) Continue moving each unit 1 MP until all pursued and pursuing units have moved their full MP allowance.
2. Move the homed on units and then the units doing the homing but do it 1 MP at a time. Mutual homing units move at the same time.
3. If using J'Rill orders, use the following order.
   a. All units using J'Rill orders move 1/2 (FRD) of their MPs.
   b. All units using written movement move 1/2 (FRD) of their MPs.
   c. All units using J'Rill orders move their remaining MPs.
   d. All units using written movement move their remaining MPs.
4. Adjust the arc of "keep within arc" units.

Example: A starship's move written [2] 2RxxR2 [4] indicates that the unit began movement on facing "2" from the scattergram, moved 2 hexes straight ahead, turned right (to facing "3") expended 2 movement points in place to satisfy its turn mode, turned right (to facing "4") from the scattergram, and expended its last 2 movement points moving 2 hexes straight ahead.

Example: A fighter squadron's move written (L:3)5L1L1 [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.

HH3.09 NPR Ownership Policy

Credit: Matthew P Olson

ULTRA currently does not give any rules or guidelines on how an NPR will address the ownership of star systems. ULTRA's rules only determine whether or not a race that enters a star system is a surveying race or a "native" race. By default, being "native" makes that race an owner, and is only accomplished by having a population in that system.

Historically this is inaccurate. Races will have policies ranging from a belief that no race can own a star system, to believing that their God gives them the divine right to all the star systems in the galaxy. The happy medium will be where most races will lie, but since some races will have more eccentric ownership policies the player will have to step carefully and practice diplomacy...or risk offending his neighbors.

NPR Ownership Policies -- Roll (d100)

NPR Ownership Policy Table

Roll	LO[a]	NPR's Ownership Policy
01	LO 1	The race believes that no race can own anything. This race will colonize and explore any and all systems, regardless of who might already have colonies and forces present. This race will not attempt to colonize an already colonized planet, but has no qualms about colonizing the moon around it that hasn't been colonized yet. Only military force will prevent them from exercising their policy, and they will immediately go to war with any race that does so, because they do not understand the concept of ownership or "privacy".
02-05	LO 2	The race believes that no race can own "space", only worlds. This race will colonize and explore any and all systems, but will respect a race's colonies in a star system and only colonize planets and moons in a star system that has no colonies. They do not respect a race's ownership of "space", however, and will move through warp points and explore for warp points even though colonies and military forces are present. Only military force will prevent them from exercising this policy, and they will immediately go to war with any race that does so, because they do not understand the concept of ownership of "space" and "warp points" as borders.
06-10	LO 3	The race recognizes the ownership of any system that has been explored by the race. If the race can provide records that it has been there, then it cedes that the race owns that system. However, if the race later determines it has been tricked, it will immediately go to war. There is a 10% chance that the race will claim any system that it has discovered (and that has no opposition presence of colonies, military presence, or CFN) and say that it had explored that system before.
11-50	LO 4	The race will only recognize the ownership of a system by a race which has a colony in that system. It will also recognize the ownership of any system by that race if the system can only be reached by traveling through a system with a colony in it.
51-80	LO 5	The race will recognize the ownership of a system by a race that has a colony or a military presence in that system. It will also recognize the ownership of any system by that race if the system can only be reached by traveling through a system with a colony or military presence in it.
81-90	LO 6	The race will recognize the ownership of a system by a race that has any kind of presence (colony, military, AP, CFN, etc.) in that system. It will also recognize the ownership of any system by that race if the system can only be reached by traveling through a system with such a presence in it.
91-98	LO 7	The race recognizes the ownership of any system within 1d10/2 jumps of any colonies of that race. It considers this "distance" the border of that race's empire. It will also recognize the borders to extend to any system that can only be reached by traveling through a system that is part of the race's borders.
99-00	LO 8	The race only recognizes itself as the legitimate owner of any star system in the galaxy. Whether by divine right, ignorance, or just arrogance, the race will not recognize any other race's claim to any star system whatsoever. Any attempts to convince it otherwise will be quelled by force.

[a] "LO" means "level of ownership" and is used for determining ownership agreements for treaties.

Note: For the purposes of ULTRA, player races have an LO of 5.

HH3.09.1 Modifiers and Special Cases

- Every 10 points of RM, RC, or RD on SUCCESS scores (an attribute that was a success in the government determination) adds a +2 to the dice roll.
- +20 Artificial Intelligence, Military Bureaucracy, Insane Race, Hive Mind
- +10 Unstable race, Military Hierarchy, Plutocracy, Feudal Monarchy, Oligarchy, Marxist-Leninist Communism, Stalinist Communism, National Socialism
- -40 Herd Race
- Races with Level 7 and Level 8 [Y15] policies can only have LO 7 or LO 8 policies. Roll until that result occurs.

HH3.09.2 Treaties

When a race enters into a trade agreement or better with a race it must adjust its LO towards that race for the purposes of determining an agreement on ownership between those races. When the races enter into a trade agreement they must pick the LO that is in the middle of their own LO's. If it cannot be evenly determined, then the LO leans towards the race asking for the treaty.

For example, Race A asks Race B for a trade agreement. Race A has an LO of 3, and Race B has an LO of 6. The median between 3 and 6 is 4.5, but since Race A asked or the treaty then it leans towards Race A and the new LO between those races is an LO of 4. If their LOs had been 3 and 7, then the median would have been 4 and their LO would be 4.

HH3.09.3 Partner LO Shift

When a race becomes a partner of another empire, the LO toward that race shifts to be equal to that of the dominant partner. However, the LO toward other races shifts to be halfway between its current LO and the dominate partner's LO, with any fractions rounded towards the dominate partner's original LO. If a race is amalgamated into an empire, its LO becomes that of the dominating partner in the amalgamation.

HH3.09.4 .War LO Change

A race losing a war will shift its LO toward that race and that race's known allies to be equal to the LO of the winner of the war. It will also permanently shift its general LO by 1 toward LO 5.

APPENDIX HH4 – ARTICLES

Table HH6 Colonization Rates

	Very Poor		Poor		Normal		Rich		Very Rich	
Richness	2-4[a]	5-8[a]	2-4[a]	5-8[a]	2-4[a]	5-8[a]	2-4[a]	5-8[a]	2-4[a]	5-8[a]
Benign	4.2	2.6	5.6	3.5	7.1	4.3	8.5	5.2	9.9	6.1
Harsh	3.1	2.0	4.1	2.7	5.1	3.3	6.2	4.0	7.2	4.7
Hostile	2.4	1.6	3.2	2.2	4.0	2.7	4.8	3.2	5.6	3.8

Note: 0 Asteroid Belts[b]

[a] Distance in StMP
[b] Multiply value by 1 + (# of belts/10) to get other belt numbers

HH4.01 COLONIZING UP A STORM

Ultra Starfire is an ECONOMIC wargame, with the emphasis on military. Without money, you cannot maintain a fleet large enough to overcome other races. Without reinvestment in the economy, you cannot grow more money fast enough. Without R&D funds, you're firing slingshots at tanks.

The big difference between editions prior to GSF and those that followed is the closely balanced and limited nature of your starting position. As there are only 5 ways to increase your income, you need to focus on your opportunities. BTW: The 5 methods are: Colonization, Trade, Industrialization, Leasing FT to the CFN, and Conquest. Each method has limitations and risks. Colonization has a moderate risk but great rewards. It is perhaps the best method of income generation though Leasing FT to the CFN is close behind.

There are four things that affect a planet's colonization potential: Distance from the source of the colonists, the environment, mineral richness, and asteroid belts. There is a 5th element that does apply -- Growth Rate over time. Time is set at 30 months for this discussion. While we could go beyond that period, 30 months is a long time in Starfire to determine what may happen and associate risks with it. The EC that this article first appears in contains more detailed tables.

Looking at the interesting part (habitable, distance 2-8, 0 Asteroid belts) our tables now look like Table HH6 Colonization Rates.

This table can be a real help in determine the best colonization choices. We can see that being in the 2-4 range is about 55% better on average than being in the 5-8 category.

The values in the table represent a rate of return on investment. IU purchase have a rate of return of about 3.0. Values below that number are typically "bad" investments. "Good" investments are in the 5.0 and higher range though those opportunities are rare.

HH4.02 THE EMPIRE STATE FORMATION

The Empire State Formation (ESF thereafter) is a generally loathed formation; consequently, it has generated much debate in Starfire. In this article, we'll explore the why and how this particular formation tends to dominate the tactics of most victorious commanders. After we understand the power of the ESF, we'll give some highly unofficial remedies for the situation.

The ESF is based on the most simple of principle of combat. Concentrate your firepower or, in other words, a united force cannot be defeated piecemeal. Modern ground combat has a large number of issues that differ significantly from the situation presented in Ultra Starfire. Together, these issues cause the importance of the ESF formation. A few of these issues are Terrain, Area Defended, Weapon Ranges, Limited Mobility, and Limited Concentration.

The Area Defended issue refers to the fact that counties are many thousands of square miles in size and that no army can maintain troops within every square mile. The battlefield tends to be the entire area of a country. Thus, a "wall" of troops defends an area behind it. Usually, the entire area behind the wall is considered to be valuable and thus it is unacceptable that any portion of the wall be breached. The problem is that this wall can be hundreds and even thousands of miles long.

Modern tactical weapons certainly don't have the range to protect an entire country nor the entire length of a wall. They cannot even cover a small fraction of the length of many battle lines. These facts combined with the next issue are a serious difference between ground and space combat.

Modern ground combat has terrain that breaks up the defenders fields of fire (thus, limiting effective weapon range even more) and ability to see the enemy or his movements. With minimal effort, an attacker can concentrate his forces and achieve local superiority and thus local victories. Because of this and the other issues, the entire front line (potentially hundreds of miles long) must be defended. Thus, the defender is forced to keep mobile reserves to the rear in order to deal with zones that get overwhelmed.

Limited Mobility is another major issue. Mobile troops can take days and even weeks to cross a major county. A two front war is particular devastating to many major counties and was a prime factor in downfall of Germany during WWII. Limited mobility makes response to local breakthroughs slow and time consuming. A poor guess of where to send defending mobile troops can mean the breakthrough becomes much bigger and much worse. Because the wall is so lengthy, the attacker can pretty much choose anywhere along the wall to concentrate and force the issue. Being flanked is a major problem and the "wall" of forces helps to deal with that by providing a form of a warning system.

Limited Concentration of forces (e.g., only so many men fit comfortably in an acre) means that the both the attacker and defender are required to spread out to some degree. This almost always means that one part of the formation cannot support the other part.

Space Combat within Ultra Starfire is vastly different. The Area defended is only those systems with significant empire importance, such as a habitable planet or key warp point junctures. Even within those systems, the majority of space is empty. In essence, the area

defended is one tactical hex here and there. But Starfire ships can travel many times that distance in a minute making the combat occur well away from the valuable planets. Warp Points limit the attacker's options to a few isolated locations thus allowing a concentrated defense without the need for a tactical or even an operational reserve. Combats begin and end in minutes but reinforcements tend to be weeks away. Starfire ships can fire weapons many times the distance of a single tactical hex and that means that weapons located in orbit of the planet give a 360 field of protection. Obviously, space has no terrain and generally you can see much further than you can shoot your weapons. This means that (excepting WP combat), you can evaluate your tactical situation and prepare your fleet prior to combat. You can even run away if the balance of power is not acceptable. Strategically and tactically, Starfire combat does not compare ground combat but there has yet to be discussed the most important issue: Concentration of force.

Starfire does not and should not, considering the size of a ship compared to the size of a tactical hex, restrict the stacking of ships in a single hex regardless of the size and or numbers of those ships. However, this reality is the major cause of the ESF. With every ship in the same hex, the enemy must either attack with everything or avoid the entire fleet. There are no in between half-measures. You cannot probe the enemy to see his strength nor do you need to since you can usually see his forces. Furthermore, once the enemy has "circled the wagons" so to speak, any of your ships within the range of them can be struck with fire from every ship. This makes any attack other than a full out assault pretty worthless. So when you attack, you usually engage the enemy fully and concentrate your own forces to cancel out his own concentration advantage. This maxim is why many people hate the ESF formation.

The next question might be "So once the enemy is within range of my weapons, I can safely spread out?" A simple example shows why this is a horrible idea. Let's say that two identical fleets of two identical CAs met in deep space. The first fleet (A) stacks both ships in the same hex will the other fleet (B) maintains a distance of two tactical hexes between his ships. After movement, one ship is two hexes closer to the enemy (A) than the other and there is a difference in their two hit numbers. Assuming the to-hit numbers are 5 and 4, both of fleet A's units will fire at the closer of fleet B's CAs (both 5 to-hit). Both of B's CAs fire at one of A's CAs. Fleet B will be about 18% less effective with its fire during combat. No commander should ever willing give up a 18% reduction in the effectiveness of his combat forces.

So, having determined that the ESF is unquestionably the best formation for a fleet, how does that effect fleet tactics? Is the ESF the only formation that should ever be in use? Are there exceptions? The answer is a mixed bag of yes and no.

A number of issues impact the effectiveness and the viability of the ESF. Most importantly, GSF's game design encourages the use of mixed sized vessels in a fleet. These mixed sizes have different speeds, which will naturally tend to separate fleets units into groups of ESF based on speed. This is generally ok as long as care is used in the placement of these ESF. Obviously, you don't really want short and long range armed units to be restricted to the same ESF throughout a battle. And during the opening rounds of combat, the ESF with the small fast short ranged units should not be in front of the main long-ranged units. In fact, that ESF should be at least 4 hexes behind. The big units are much tougher and designed to absorb more damage while the small units have a much higher damage inflicting potential in close (with beam weapons).

ESF is rather effective when the short range dogfight occurs however there are times when you will be forced to abandon it in order to protect your blindspot from a small fast ESF group. Fortunately, due to the higher to-hit numbers at low ranges, the loss of combat effectiveness is below 10% and can be overcome with other tactics. e.g., you'll be less effective but you'll not really notice it.

One area where the ESF concept is not used much, and probably with good reason, is in defending a WP. Whether or not the enemy knows the WP "surge data" [C4.01]. Without surge data, the enemy will be forced to either sit on the WP until his facings match or be forced to fight a non-ESF battle. Either way, the defender has a potential advantage. If the attacker sits, the defenders units should already be set up at optimum weapons ranges from the WP. If the attacker moves, you can focus each SRW armed unit against his closest unit while your LRW armed units focus on killing the most dangerous units first. For the attacker to do this, he must either avoid optimum range shots or divide his fire among many defenders.

Conversely, if the defender uses a couple of ESF groups (LRW and SRW), individual enemy unit may be able to open the range in a certain direction. The question of whether this is a real threat or not is left up to the player to decide. Few defenders choose this option since the opportunity to get blindspot shots is eliminated.

When the enemy does have WP "surge data," he can exit all ships in the same direction and essentially blow a hole through one side of the defense. Again, it is questionable as to the value of this option for both the attacker and the defender.

So after all of that introduction, you may be asking "Why is the ESF so loathed as a tactic?" Well, the argument is that it makes combat less interesting, and less tactically challenging, if all the ships are always within a few ESF stacks. Certainly it can be seen that such a combat is not a dogfight situation with ships swirling in every direction. I'm not sure how big an issue this is with most people but the Starfire E-mail list did come up with a few usable solutions.

HH4.02.1 ANTI-ESF OPTIONAL RULE A

When a DF collapses without a normal shutdown, a tremendous amount of energy is explosively released. Ships in a tactical hex try to maintain a safe distance from all other units in that hex in order to minimize this explosive release but if the number in the hex is too large, some will end up being too close and will suffer collateral damage.

HH4.02.1.1 When a ship's DF must shutdown due to damage incurred [D4.02.2], the ship explodes. Note: a DF shutdown due to the engine being turned off under C1.02.5.1 does not cause it to explode nor does the destruction of engines that are off cause an explosion.

HH4.02.1.2 The explosion will not affect other units unless there are more than 9 units in the hex counting the just destroyed unit. All units *above this number* suffer 1 pt of force beam damage (owner of the ships decides which ones do not take damage). This damage will destroy 10% of your small units in the hex.

HH4.02.1.3 (Optional) The number of engines destroyed during the killing volley determines the surrounding damage done based on

the following: Damage done = 1 + engines destroyed/5 (FRD). i.e., 1-4 engines destroyed causes 1 pt of damage; 5-9 engines destroyed causes 2 pts, and so on.

HH4.02.1.4 Optional rule A notes: The damage to enemy small craft, in particular fighters, is potentially devastating. To have the fighters attack a unit, destroy it, and lose 10% of their number to the subsequent explosion is really a bad idea.

You might also question why all explosions due only a single point of damage regardless of the size of the unit. This is a simple assumption that the final volley will generally only destroy 1-5 engines. I included the optional rule for those that might like a bigger explosion.

This rule penalty is quite mild and has minimal effect. Most unit's shields will absorb the damage and regenerate unless they continue to take the same type of damage every couple of turns. On the other hand, destruction of 5-6 small ships in a large stack could be very bad for a swarm.

Marking the damage could become rather tedious though.

HH4.02.2 ANTI-ESF OPTIONAL RULE B

A large number of DF within a single hex can cause extra interference to the targeting computers.

HH4.02.2.1 Large units firing from the same tactical hex may suffer a penalty based on the amount of active large unit DFs present.

1-9 active DF	no penalty
10-49 active DFs	-1 to-hit
50+ active DFs	-2 to-hit

HH4.02.2.2 Optional rule B notes: Notice that small unit are never affected by this rule nor do they affect other units.

This rule is far more punishing than the first rule as it applies to all units in the next, not just those in the penalty area (above 9). Also, 1 pt of damage is meaningless to a JG while a –1 to EACH of its weapons is huge. The effect of this rule is to prevent all stacking above 9 ships and it does that very well.

HH4.02.3 E46.C ANTI-ESF OPTIONAL RULE C

Large numbers of units within an area cause a potential for misses to still strike another unit. However, because space is vast and ships are small, this number is nearly pointless to consider. BUT, homing weapons are a different story as they may retarget a different unit. Minor physics violations may occur to implement this rule.

HH4.02.3.1 Any non-sprint missile, torpedo, or kinetic weapon, which misses its original target by 1 on the to-hit die, strikes a random unit other than the target in the hex if there are more than 9 units in the target's hex. Such hits are always treated as a single volley. If multiple misses in the same salvo retarget the same unit, all are treated as a single salvo.

HH4.02.3.2 Optional rule C notes: This is a nice rule with one big exception. The random determination of the new target makes this a time consuming effort. Determining which ship of 57 is not a fun task.

APPENDIX HH5 – SPACE MASTER TIPS

BY JEFFREY KESSLER

When I started my GSF campaign, I used the spreadsheets that are available for download. They implement a lot of the rules, and make it much easier on the SM. There is also a utility to generate a Starfire universe, you tell it how many system you want, and it will pre-generate all the system for you. You can always modify the results, but this makes it quite a bit easier on the SM. As a SM, I find I spend the most time creating and developing NPR's. Depending on your campaign, if you don't pregenerate all your NPR's, then I would suggest only developing as much of the NPR as you need to save time. It is demoralizing to spend hours working up an NPR, and designing the fleet according to the specs, and have a player race negotiate a trade relationship. You could keep their money for their fleet in a pool until you need it, then place the ships where/when they are needed.

HH5.01 SOME TIPS AND TRICKS IN NO PARTICULAR ORDER

- Start small. For your first game have 25-30 systems per player. While players will meet early and you won't get far up the tech trees, it will be easier for a novice Space Master to handle. The next campaign can be bigger.
- Keep everyone using the same excel sheets. For 3rd edition, everyone in my campaign built or modified their own sheets. This made it difficult to run monthly turns because the data was never in the same place for each player. Use the GSF sheets. Take some time to learn how they work. They are not perfect but they are pretty good.
- You'll never do as many months as you think you can in a week. When I first ran my campaigns, I tried for 1 monthly turn a week. This became impossible with busy work and family schedules. I recommend going to 1 month every 2 weeks except for the first 10-15 monthly turns.
- Know the rules. If you have questions ask on the mailing list. The problem is that sometimes two interpretations are viable from the same sentence.
- Don't let NPRs be cakewalks. NPRs are supposed to be tough, played intelligently, and not just to let Players roll right over them. Also Partnered NPRs should be watched so that the player doesn't weaken them inappropriately.
- New Space Masters should probably generate systems on demand instead of pre-generating the entire universe at the start. Having all that data can be overwhelming. Plus it is easier to modify the universe when it isn't fully created.
- Use checklists for the month. I think the rule book has a good one. Keep notes on what the NPR short, medium and long term goals are. (You can make the players identify their goals too.)
- Mention to players when you think they are doing something unwise.

APPENDIX HH6 – NEW WEAPON DESIGN

One of my major goals for ULTRA Starfire was to allow new weapon types and trees to be relatively easy to add. As such, there needs to be some general design guidance for those players interesting in helping out or creating their own weapon designs.

SDS learned during the lengthy development of the GSF weapons that allowing double damage (or worse) against certain types of systems or under certain conditions are very difficult to balance across an array of SLs. Furthermore, technologies that skip ALL shields or ALL armor are also a problem. You'll note that Ep only x amount of armor. With Elite and Ultra, all skipping weapons now have limits.

I think that weapons are going to be better balanced if they do things like +1 or -1 damage to shields to represent weakness or strengths.

One thing that is missing from the game, although K are somewhat in that place, is a mid range weapon that is poor both at distance and at point blank range.

Another thing that people always seem to be trying to toss into the game is anti-engine weapons. Because engines are buried deep within the hull behind lots of passive defense and because the speed given by those engines is the lifeline of any Starfire combat ship, allowing any sort of beam weapon to easily skip all forms of passive defenses (shields and armor) and directly destroy engines is a MAJOR combat effect and as such there must be balancing bad things about such a weapon. I might be able to see an anti-engine beam weapon IF it was -2 to hit and about 20 HS in size and only killed a single engine per shot. The fact that it is unlimited in fire during a game and cannot be stopped by any defense makes the value incredibly high. Look at the ADMs disadvantages. It can be stripped off of the XO racks (vulnerability), you can only carry a few of them, PD will gang up on them, if they are wise, allowing at most 30% of them to hit assuming 6 to-hit. A early CA with XOb can only carry 2 ADMa. As you can see, ADM may play a part in a battle but it will be mostly limited to a lucky hit here and there. Later in the game, more ADM are available due to better XO racks and smaller ADM size but the Point defense is much better.

Well, enough rambling on. Here are my thoughts to help guide weapon designers on an organized approach. Send your thoughts to the SDS or E-mail list for comments on your ideas.

HH6.01 PART A
DETERMINE GENERAL CHARACTERISTICS

Some weapon designs are always going to be a game balance problem. No penalties can help these types of weapons. The questions in this first section are to get the designer to look carefully and CRITICALLY at the specific weapon he is designing.

1. Determine the **goal** of the new weapon.
   Is it supposed to damage just engines? Just shields?
   Is it supposed to be long ranged with a flat damage scale but tailing off at the end (i.e., a good medium ranged weapon)?
   Does it do 1/2 damage against some stuff and extra damage against other stuff? (i.e., double vs shields but 1/2 vs the rest of the ship)?
   What does it skip?
   Does it have a restriction (i.e., ineffective against shields or armor)?
   Does it do precision or deep hits?
2. Check for **over effectiveness** (Important note: cost is not the answer in balancing powerful weapons, often size is)
   If a specialized weapon, how important are the systems that it destroys to the overall effectiveness of the ship (i.e., an unlimited shots beam weapon that only kills engines is an ultra-nasty weapon)?
   If it has a restriction, is there another weapon(s) that it can combine with to be extremely powerful (i.e., E beam and any shield destroying weapon).
   Can it combine with an already powerful weapon to make a super-combo (i.e., a weapon that does double damage to shields is very powerful when combined with a E beam)?
3. Correct general **balance**
   Implement penalties if over powerful. Penalties are bigger size, slower rate of fire, ammo requirements (not a very good one)
   Implement a bonus if under powered

HH6.02 PART B
DETERMINE SPECIFIC CHARACTERISTICS

Now that the general characteristics and balance have been considered, a to-hit and damage chart can be designed with some effectiveness.

1. Build to-hit chart
2. Build damage chart
3. Compare vs other weapons of the same type (SRW or LRW). SDS uses a highly tailored formula to determine weapons effectiveness. As a guide, damage per turn per HS needed to use the weapon is a good starting point.
4. Redo steps 1-3 if balance is questionable. (This step is often repeated more than once).

HH6.03 PART C
DETERMINE THE PHYSICS EXPLANATION

While you probably had an idea of what the weapon was to start with, that is generally a bad way to start. Figure out what you want to do then balance things. Explanations are always easier later. The Starfire E-mail list can help to that end as there are plenty of people with knowledge of real physics and Starfire physics that can help you to figure out some good sounding physics.

Next Section: Appendix AA - Technology Trees and Systems

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