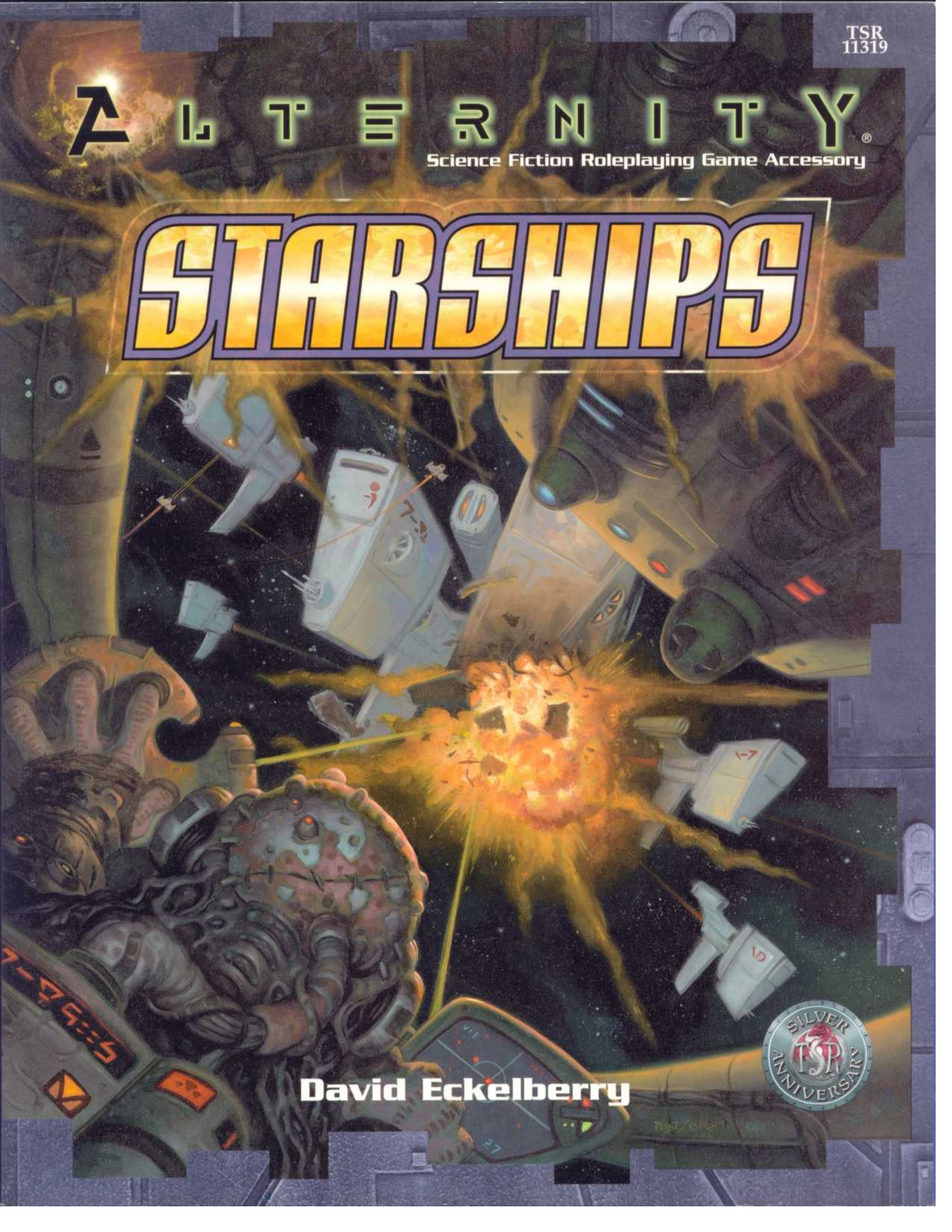
TSR 11319

ALTERNITY®

Science Fiction Roleplaying Game Accessory

STARSHIPS



David Eckelberry

ALTERNITY®

Science Fiction Roleplaying Game

STARSHIPS

David Eckelberry

For William

Credits

Design: **David Eckelberry**
Editing: **Andy Collins**
Creative Direction: **Jim Butler**
Typesetting: **Eric Haddock** • Graphic Design: **Dee Barnett**
Cartography: **Rob Lazzaretti and Rick Achberger**
Graphics Coordination: **Paul Hanchette** • Cover Illustration: **Brom**
Interior Illustrations: **Walter Velez**
Advice and Special Thanks: **Kim Mohan, Duane Maxwell, Andy Collins, and The ALTERNITY Playtest Team: Ronald Bedison, Martin Shoemaker, Ted Evans, Daren McCormick, Adam Schwaninger, Jon Spinner, Martin Hanley, Jimmy Strube, John Bacon, David E. Wall, Steve Bartell, Malcolm MacDonald, and Craig Shackleton**

U.S., CANADA,
ASIA, PACIFIC, & LATIN AMERICA
Wizards of the Coast, Inc.
P.O. Box 707
Renton, WA 98057-0707
+1-800-324-6496

EUROPEAN HEADQUARTERS
Wizards of the Coast, Belgium
P.B. 34
2300 Turnhout
Belgium
+32-14-44-30-44

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Introduction

Starships dance the heavens, firing plasma cannons and missile salvos, rising to interstellar conflicts and miraculous rescues. A spaceship is the car, battleship, and the airplane all rolled into one.

In the real world, spaceships result from long, laborious work by professional designers and engineers. They take years—even decades—to emerge from concept to design to fiery launch. The daily brilliance and creativity displayed by the astrophysicists, engineers, and astronauts of NASA and the European and Russian space agencies can't help but amaze us.

The popular culture of movies, books, and roleplaying games has stretched our imagination far beyond what modern science can deliver. So, while humanity collectively holds it breath for the day it takes its first step to distant stars, we dream of ships that could take us there. Both amateur and professional scientists alike enjoy flexing their minds at designing concepts both serious and impossible.

The science fiction genre draws much of its allure from that dream. In the future of science fiction, starships can offer an availability that reaches the masses. Much as the automobile formed a symbolic reference for the mid-twentieth century, in the future so does the starship. A starship symbolizes freedom and independence—not just for an individual, but for a species.

The spaceships, systems and rules in this book build upon the foundation presented in the ALTERNITY game's core rulebooks. The basic rules for spaceships—their construction, operation, movement, and combat—are presented in *Chapter 11: Spaceships* in the *Gamemaster Guide*, with some additional information for heroes in *Chapter 12: Vehicles* in the *Player's Handbook*. While *Starships* occasionally refers to those books, it assumes familiarity with those two chapters, and with the ALTERNITY game rules in general.

Of course, one of the prime tenets of ALTERNITY is that "it's your game." As Gamemaster, it's ultimately your decision what to use in your game. Don't like the advanced damage rules presented in this book? Forget about them. Think that some of the ship systems are too powerful, or violate a scientific discovery of your campaign world? Change them, disregard them, or design additional variants for systems you like. If the stardrive isn't appropriate for your jumpgate-filled galaxy, then ignore drivespace and concentrate on the unique features of your setting.

In order to help you find the material you do find appropriate, this accessory is divided into three chapters. In *Chapter 1: Expanding Play* you'll find more information about how starships interact with one another and their environment. This chapter includes a discussion of different styles of play, including three new ways of presenting space combat. More combat tactics, advanced skill results and skill rank benefits, and more complete damage rules can also be found here, all of which build on the spaceship rules you already have. You'll also discover details on starships in different situations and environmental conditions, rules for boarding actions, more information on drivespace, and alternate methods of faster-than-light (FTL) travel.

Chapter 2: Space Technology, details all of the fantastic systems that make spaceships active and interesting. Dozens of new systems for PL 6, 7, and 8 are presented, ranging from realistic to outlandish.

If you aren't ready or don't have time for ship design, *Chapter 3: Ships and Deck Plans* is for you. Eighteen ships of various sizes and Progress Levels are detailed, complete with a full statistical block of data and a deck plan for each ship. Whether you use these ships as listed or modify them to fit your campaign, the deck plans should help you and your heroes visualize life and adventure in the stars.

Contents

Combined Tables

Chapter 1
Expanding Play

This chapter presents a collection of rules that address the use of spaceships and starships in your campaign. They deal with subjects as varied as special tactics, new methods of FTL travel, and how ships perform under unusual circumstances—including when they suffer damage.

With so many varied topics, most of the sections in this chapter can be considered independently of one another. This means that the Gamemaster can choose to apply certain rules while ignoring others. It's your game, after all, and even a cleverly-written rule may not add anything to the fun of your game session. Finally, you can use a pick-and-choose method to slowly introduce your players to all the diversity that spaceships have to offer.

Begin with a simple reading of the chapter. Consider making a few notes in the margin about something you'd like to expand on, underlining a few important sections you like, or even striking through something you don't want to use. More than any accessory that has been released for the game, *Starships* begs for an active reader and an active player.

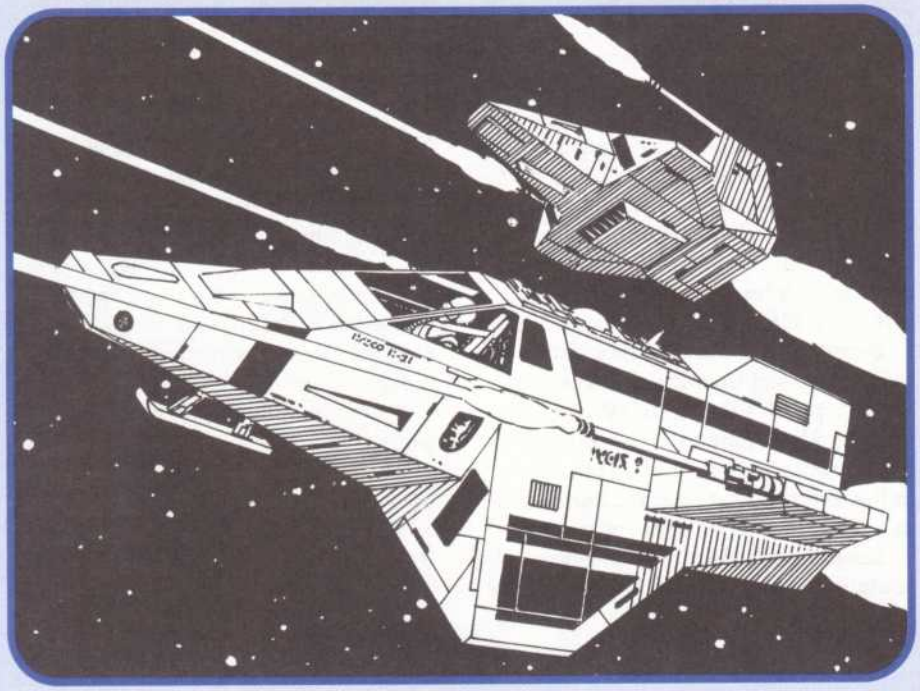
Style

The first question that comes to mind when you bring spaceships into your game sessions is how you and your players will use them. What role will spaceships fill in your campaign?

Ships can take on any number of roles in your campaign setting. They can be titans of military strength, pioneers in the field of discovery, or risky endeavors into the fields of venture capital. These represent just a few of the options you have before you as you consider what purpose or purposes ships will perform in your campaign. Of course, off-stage and off-camera they may fulfill many more roles than you explore with heroes. But what matters most is how you integrate them into your campaign model.

While this accessory can't hope to consider every campaign model that you may use, a few of the more common ones bear some consideration. Remember that spaceships, like guns or high-tech gear, are just tools and props for the Gamemaster and players to advance a fun story. While they may be some of the coolest gadgets in science fiction roleplaying, don't let them become the sole subject of your game. In other words, spaceships can make fine stages for action—but they can't replace the necessary actions of heroes, around which all stories revolve.

The most likely sources of inspiration for how to use spaceships lie in science fiction universes of paper and celluloid with which you're already familiar. Books and movies have probably helped to create the setting you play in, and they'll have something to say about how you use ships in your campaign. It's difficult to contemplate an exploration-based style without thinking of the classic series *Star Trek*. The epic battles of *Star Wars* suggest many useful implications of how to integrate the actions of heroes into a military model. Pick up just about any SF book or movie that features a spaceship, and you'll find a starting point of how to integrate them.



A Historical Perspective

That said, thinking about some of the analogues to space travel that human history already contains can provide additional ways of thinking about how to add ships to your game. (It might be interesting to consider other species' history too, but that information still proves difficult to come by at present.)

Interested in a story that revolves around exploration? Consider the discovery and investigation of the New World in the fifteenth and sixteenth centuries. These years held many intrepid sailors who set out to points where mapmakers feared to tread, to seas that said "beyond here there be dragons." Your heroes can sail on the futuristic descendant of Columbus'

Santa Maria or Magellan's *Trinidad*. This model can work especially well for a campaign in which exploration and starships are still in their infancy, a risky prospect dared only by the fearless or the desperate.

Following history's path, after the explorers come the profiteers. The New World proved irresistible to men seeking gold, men willing to exploit or even exterminate native populaces. While your campaign may not have such dark consequences, it may still hold many similarities to historical events. No matter the era, the themes of dealing with less advanced sentient species and with new resources on foreign worlds under the light of alien stars hold untold adventures. Your heroes' spaceship can take part in such a dollar-driven call into the unknown, or it could be part of a government attempt to ensure that the eyes of justice extend to those on distant shores.

Naturally, with profiteers carrying wealth and raw resources back to more civilized regions, some will seek to make a profit on the work of others. Variously called pirates or privateers, the morality of these sailors varied dramatically, yet their influence on popular memory outlasted the three centuries when they were most active. Fortunately for would-be pirate ships, the frontier of space is limitless, and the opportunities thus endless.

Later, the colonists followed the profiteers. All sorts of models—English, Spanish, and French come to mind—can be mined for ideas about how to use spaceships and how well the colonists get along with native populations. The colony spaceship idea could provide especially interesting stories, with a setting defined by the ship's outer hull for months or even years. Even an drive capable of ten times the speed of light would demand long months of travel. In this model, the ship provides a stage on which the Gamemaster can tell many stories.

History also holds another variant of this concept: the pilgrimage. The progress of pilgrims from one land to another—such as the exodus of Jews from Egypt, the homesteading wagoneers heading west to California, or the trail of Native Americans forced to march from Georgia to Oklahoma—may germinate ideas for your own spaceborne caravan on a journey to a new home. *Battlestar Galactica* explored such an idea. Whether the voyagers make their journey by choice or by force will also shape how they view the spaceships on which they travel.

Still other, more modern times may have something to add. For a military campaign, consider the rugged B-52 bomber, home to several crewmen. Their stations of pilot, navigator, radio operator, bombardier, and gunner could easily mimic those of a twenty-fourth-century warship. The same tales of rugged heroism that circulate concerning the crew of the *Memphis Belle* could be the sort of legends your own heroes spawn.

Even more recently, the culture of 1950s America may have something to say about the future. Imagine a time in which starships are as common as automobiles, and possess all of the magical symbolism of the hot rods and cool riders of this time. It's all about having the fastest, hottest ride in the galaxy . . . maybe even with fins.

History holds many other models that you can follow for using starships. Consider the state of transportation after the fall of Rome, or during the great days of locomotive dominance in America, and how you could adapt these to an era of space travel. Whether you choose to take inspiration from one of the ideas mentioned or come up with your own, the important thing is that you consider how society deals with spaceships on a regular basis.

Spaceships or Starships?

Throughout the introduction to this product, the two terms have been used almost interchangeably. Generally "spaceships" refers to ships of an interplanetary nature—ships that can travel between the Earth, Mars, and even Neptune, but can't as a practical matter reach Alpha Centauri. The typical PL 6 vessel is a spaceship.

Starships, on the other hand, have some means of traveling between the stars. Typically, this is an FTL engine that somehow manages to break or circumvent the barrier of light speed. In the average campaign, a starship is at least PL 7 technology.

Despite the title of this accessory, it contains information augmenting both kinds of vessels.

Systems of Play

After determining the style you will use, you must consider how you and your players will roleplay the act of controlling starships in your campaign. When it comes to actually using spaceships and starships during your game, you have a few decisions to make. The *Gamemaster Guide* presents two reasonable, middle-of-the-road options for representing ship movement, especially as it regards ship-to-ship interaction: narrative combat and visual combat.

In the next section, a brief discussion of these two systems highlights their differences, and why a player might choose one over the other. In addition, the section presents three new systems for representing spaceship interactions: 3-D vector combat, action combat, and off-stage combat. These represent different points on the spectrum of realism, providing Gamemasters with a number of options for this facet of the game.

Depending on the circumstances, you may want to use one system during one encounter, then another system later on. There's nothing wrong with that, as long as your players can adapt to the change. For example, you may decide to quickly pass through a skirmish between two scoutships with the narrative system. Later, when a pair of corvettes and a few space fighters engage in a more serious battle, you could use a more precise system.

Narrative Combat

The narrative system is the simpler of the two standard options. With broad categories of movement broken down to the choice of whether to break, open, hold, or close, your heroes can give the Gamemaster a good sense of what they wish to accomplish. At the same time, you won't be encumbered by anything more than your imagination.

The narrative system shows its weakness when players begin to ask about positional relationships between ships that they can take advantage of, or when the Gamemaster has difficulty tracking the movements of multiple ships in his or her memory. It makes no pretense about ignoring the particulars of three-dimensional movement in space,

although the Gamemaster, as narrator of the scene, can color his speech with descriptions of positions above and below, in addition to fore, aft, starboard, and port. In general, however, the narrative system works best for players and Gamemasters who prefer a fairly casual approach to ship combat, or who seldom engage in it.

Visual Combat

The visual combat system remains relatively easy. It offers ten different maneuvers to choose from, with options such as roll, half-loop, spin ship, and hard bank. The visual combat system requires a hex map and either miniatures or cardboard ship figures.

As such, its advantage is that it can show the positional relationships that a more tactically-minded group of heroes desire. This results in a more time-consuming exercise for everyone involved. That's great, if players and Gamemaster have the interest in simulating a more realistic battle, but even if they do, the Gamemaster should ensure that the tactical elements don't rule the game. Ship-to-ship combat shouldn't distract from a roleplaying experience that centers around players and heroes, not imaginary technology.

Like narrative combat, the visual system largely ignores the possibility of three dimensions in space. As long as the conflicts involve only two or three ships in an uncrowded vacuum of space, the participants can generally ignore the inaccuracies in the system; assume the ships involved operate on a single geometric plane.

Players who are fond of and regularly use the visual system can consider a modest expansion to deal with a third dimension. In addition to the maneuvers depicted on page 136 and page 159 of the *Gamemaster Guide*, a ship can "climb" or "dive."

As part of any Ordinary maneuver, a ship may move up or down one megameter (Mm). A Good maneuver of any kind allows movement of two Mm up or down, and moving a ship up or down three Mm requires an Amazing maneuver. (Don't forget to divide these distances by a factor of 10 for PL 6 encounters.) On the hex pad on which you maneuver ship icons, make a note of each ship's "altitude" in space. In order to determine the approximate range between any two ships, add the difference of their ship's altitude to the number of the hexes that separate them. Of course, this isn't precisely accurate; those desiring precision may utilize the Pythagorean theorem to more accurately determine the distance between the two ships.

This optional expansion to the visual system doesn't take into account a ship's speed or the ability of ships to alter the heading completely in three dimensions, but it can add a touch of realism and give you the feeling of more accurate movement.

A Reminder About Measurements

The megameter (Mm), which equals 1,000 kilometers, is the standard unit for measurement in space combat. Weapon ranges are listed in megameters. Ship speeds are determined in megameters per phase. (One megameter per phase is equal to 1 million kph.) Acceleration is listed in megameters per phase per phase (abbreviated Mpp).

For strategic movement outside of tactical or combat situation, the astronomical unit (AU) is the standard. An AU equals 150 million kilometers (or 150,000 Mm).

Be warned!
A vector system is only for die-hards . . .

3-D Vector Combat

Be warned! The vector system is intended for players who have a passionate interest in representing space movement and combat with a wealth of accuracy. It's for those who think the visual system isn't realistic enough, and only the ultimate in realism will do. The vector system requires a familiarity with—or at least a tolerance for—routine use of mathematics and multiple calculations. Using the vector system calls upon the use of a calculator with every round of action; users of this system should know that it requires a fair amount of labor to make it work.

If this system isn't for you, skip to 'Action Combat' on page 7.

What does the vector system offer, then? Verisimilitude. Everyone knows that ship battles happen in three-dimensional space, but for easy resolution, most systems ignore it.

In reality, each ship has a single characteristic that determines its ability to move in all three dimensions: its acceleration. As the system explains, using the acceleration given for any ship, you can determine all of the characteristics that allow it to maneuver.

In preparing to run a vector combat, you'll need just a few things. With a piece of graph paper or even normal lined paper, draw a square Cartesian coordinate grid. This will help you see where each ship or spaceborne object lies. Label one axis of the grid the "x-axis" and another the "y-axis." The third axis, representing the z-coordinate, you can draw in or simply note with every ship.

For PL 6 ship encounters, velocities, distances, and accelerations are measured in tenths of a megameter (.1 Mm, .2 Mm, etc.). At PL 7, measurements, units, and coordinates are in megameters (1 Mm, 2 Mm, etc.).

In each phase, a ship's position will be described by its coordinates (x, y, z). Its velocity is the change in its x, y, and z coordinates since the last phase. In a three-dimensional system, each of these values may be positive or negative.

Example: A ship is at x 3, y 0, z –4 and moves x +3, y –1, z +1 in the phase. It ends the phase at x 6, y –1, z –3.

The grid isn't actually required for showing maneuvers, like the hex grid used by the visual combat system is, but it can help players visualize where things are. It can also allow a good guess at range between two objects, although range can be more accurately determined through the application of trigonometry (see 'Determining Range' below). Other than the grid, all you need is a calculator (or a deep-seated desire to perform a lot of arithmetic.)

Setting Up the Fight

In many ways, setting up a vector combat works much like the other two

methods. Detection ranges are still determined with a System Operation–*sensors* skill check and using TABLE S20: SPACESHIP DETECTION RANGE on page 52.

The starting coordinates and opening velocities depend on the circumstances that initiated the battle. If one ship came upon an unmoving one (or even one moving slowly in a stable orbit), set one ship at the zero point (coordinates x 0, y 0, z 0) and another 10 or more Mm away (or one-tenth of this distance for PL 6 encounters), but with a velocity that carries it toward the first.

Example: A closing ship could have a position at x –10, y 0, z 0 and a velocity of x+3, y 0, z 0 in megameters per phase.

You can use the same method for a ship that has closed to within range of a ship it was chasing. Although both ships may be hurtling along at millions of kilometers per hour, assume a steady (but moving) frame of reference between the two ships. At the start, set the fleeing ship's velocity at zero and its position at x 0, y 0, and z 0. The other ship has a velocity of 2 or 3 megameters per phase in the direction of its quarry. (It probably also has a better acceleration, since it's been able to catch its prey.)

In addition to the principal ships involved, you can also consider the presence of moving or stationary obstacles when you set up the fight. Space stations, satellites, asteroids, and other random and non-random objects can each be given a coordinate position and a velocity. Unless something interferes, their velocities (unlike those of ships) probably won't change.

Resolving Velocity from Acceleration

Most of the rules for maneuvering a ship in combat are still in effect in the vector system, although the specifics differ on how the rules work.

At the start of the round, the pilot or helmsman of each ship makes an action check as normal. Just as in the visual system, the action check determines who has the advantage; in other words, who decides which ship will move first. See page 135 in *Chapter 10: Vehicles* in the *Gamemaster Guide* for more information on advantage.

Each phase, a ship has a velocity. This is the change in coordinates that the ship experienced during the last phase, or the velocity determined as the scene opens (see above).

Example: Continuing from the last example, the pursuing ship has a velocity of x +3, y 0, z 0. Its prey was assumed to be at rest, with no velocity (x 0, y 0, z 0).

At the start of each phase, the pilot of each ship can choose to apply his ship's acceleration to change its velocity. (Acceleration is determined by considering the ship's engine, maneuverability, and its size; see page 144 in *Chapter 11: Spaceships* in the *Gamemaster Guide*.)

Example: The chasing ship may want to continue accelerating toward its prey. So, it applies its acceleration of 1 Mpp in the x-axis and now has a velocity of x +4, y 0, z 0.

This simple example illustrates how to use a ship's acceleration to change its velocity. Just like velocity, a ship may use its acceleration to push along in any of the three referenced axes, in positive or negative coordinates. In many ships (including all ships using PL 6 engines), acceleration doesn't neatly resolve itself into whole numbers. Accelerations of x +0.5 are possible; thus, a ship's velocity may become something like x +3.5, y –0.5, z +1.

Acceleration can also be divided, or split, between two or more axes. Depending on the level of realism that you wish to portray, you have a few options on how a helmsman can choose to divide acceleration between the axes. The first option, and the easiest, is to simply add together the change on each axis. So, a ship with an acceleration of 0.5 Mpp could change his velocity by x +0.3 and z +0.2.

That's mildly unrealistic, since an acceleration of x +0.3 and z+0.2 doesn't really add up to a total acceleration of 0.5, for the same reason that walking three steps, turning right and walking two steps doesn't mean that you're five steps in a straight line from where you started. In order to fully represent the components of acceleration accurately, you should use an application of geometry or trigonometry: either the Pythagorean theorem or sine and cosine functions, to divide up the ship's total acceleration along 3 axes.

To avoid the math entirely, consult TABLE S1: RESOLVING 1 MPP ACCELERATION. A list of values divides up 1 Mpp into three components (x, y, and z). The pilot can select any line from the table below.

For accelerations greater or less than 1 Mpp, simply multiply each component by the ratio of the difference. For example, a ship with a total acceleration of 3 Mpp would multiply each component by three. If the pilot had selected the third line of the table, the adjusted numbers would be x +2.7, y +0.9, z +0.9).

Also, remember that any of the numbers in the table above can be positive or negative as the pilot desires.

TABLE S1: RESOLVING 1 MPP ACCELERATION

X	Y	Z
1.0	0.0	0.0
0.9	0.4	0.0
0.9	0.3	0.3
0.9	0.0	0.4
0.8	0.6	0.0
0.8	0.5	0.3
0.8	0.4	0.4
0.8	0.3	0.5
0.8	0.0	0.6
0.7	0.7	0.0
0.7	0.6	0.4
0.7	0.5	0.5
0.7	0.4	0.6
0.7	0.0	0.7
0.6	0.8	0.0
0.6	0.7	0.4
0.6	0.6	0.6
0.6	0.4	0.7
0.6	0.0	0.8
0.5	0.8	0.3
0.5	0.7	0.5
0.5	0.5	0.7
0.5	0.3	0.8
0.4	0.9	0.0
0.4	0.8	0.4
0.4	0.7	0.6
0.4	0.6	0.7
0.4	0.4	0.8
0.4	0.0	0.9
0.3	0.9	0.3
0.3	0.8	0.5
0.3	0.5	0.8
0.3	0.3	0.9
0.0	1.0	0.0
0.0	0.9	0.4
0.0	0.8	0.6
0.0	0.7	0.7
0.0	0.6	0.8
0.0	0.4	0.9
0.0	0.0	1.0

Using Maneuvers in the Vector System

Although a ship's acceleration can be

described in any of three directions, that doesn't necessarily mean that a ship can accelerate in just any direction in every phase.

In the visual system, Routine, Moderate, and Extreme maneuvers are specifically described by the kinds of moves they allowed on a hex map. In the vector system, maneuvers have a similar intent; they limit the change in acceleration that a ship can experience.

Routine maneuvers allow for a 60° change in the direction of acceleration from one phase to the next. Moderate maneuvers allow a 120° change, and Extreme maneuvers make a ship capable of a 180° change in the direction of acceleration.

A ship at rest, or a ship that didn't accelerate at all in the previous phase, can accelerate in any direction with a Routine maneuver.

As noted, a pilot or helmsman can attempt Routine maneuvers during each phase, regardless of the result of his or her action check. Moderate and Extreme maneuvers require an action.

Determining Facing

The easiest way to determine facing is by examining the ship's acceleration; assume the ship's bow faces the same direction as the ship's acceleration during its maneuver.

If a vessel performs a Routine or Moderate maneuver, it can end its phase with the use of maneuvering jets to change its facing as much as 60°. This increases the difficulty of the maneuver by one grade (from Routine to Moderate or Moderate to Extreme).

This system doesn't take a ship's pitch or rotation into account; feel free to experiment with these elements if you see fit.

Failing a Vehicle Operation Check

The usual rules for failing a Vehicle Operation–*space vehicle* apply. Use TABLE G49: LOSING CONTROL OF A SPACESHIP and the accompanying descriptions on page 159 in the *Gamemaster Guide*.

Determining New Coordinates

After determining a ship's velocity for the phase, you can easily determine its new position. Simply add the ship's velocity to the coordinates that marked its position at the start of the turn. (Remember that adding two negative numbers will result in a larger negative number, while adding a negative number to a positive number is essentially subtraction.)

Resolving Range

Once you've determined a ship's acceleration—and thus its new velocity—for a phase, you should next determine the distance between the two ships. This determines if the ships are within short, medium, or long range (or entirely out of range) of their weapons.

The formula for determining the distance between any two objects in a three coordinate system is described in the following equation, where R=range:

$$R = \sqrt{[(x_1-x_2)^2+(y_1-y_2)^2+(z_1-z_2)^2]}$$

Coordinates x_1, y_1, and z_1 refer to the first object, and x_2, y_2, and z_2 to the second. Remember to perform the mathematics involving negative numbers properly; For example, if $x_1=6$ and $x_2=-7$, the first number to be squared is 13 (6– ⁻7).

At times, it may prove unnecessary for you to calculate range with such precision. If two objects are within a few megameters of one another, it may be that their advanced weapon and sensor systems all function at short range. Until the distance between the two ships increases, don't bother to recalculate.

Example: The heroes' ship is at the coordinates of x 5, y 4, z 3 and their target is at x –2, y 7, z 1. When you insert these numbers into the equation above, you get

$$R = \sqrt{[(5-^-2)^2+(4-7)^2+(3-1)^2]}$$

which becomes

$$R = \sqrt{[49+9+4]} = 7.9 \text{ Mm}$$

Resolving Combat Fire

While the helmsman maneuvers his vessel, weapons officers engage their offensive firepower to attack the enemy. During a phase in which a weapon officer has an action, he can choose to fire at the beginning of the phase before the ship starts its movement, or at the end of the phase when the movement is complete. (This rule exists purely for simplicity; if you have the patience to recalculate ranges in the middle of a maneuver to allow ultrarealistic strafing runs, you may do so.)

Three Dimensions and Weapon Systems

The standard rules for weapons assume that only two dimensions are being referenced. As such, there are only four arcs of fire to be considered: fore, aft, port, and starboard. In a three-dimensional system, two additional two arcs must be considered: up and down. Thus, ship weapon systems must indicate which of these six (not four) arcs it faces.

With the standard turret described on page 153 in the *Gamemaster Guide*, three arcs of fire can be allotted to a weapon system. This remains true; in other words, the standard turret allows a weapon to fire over half the arcs possible.

A raised turret, commonly available at PL 6, allows a weapon system to fire in five of the six arcs of fire. This system is further described on page xx.

Missile delivery systems don't list an arc of fire; homing missiles can be fired at a target in any arc.

Resetting The Grid

After a few rounds of combat, your ships may wander far from where they started. While large numbers for coordinates won't affect the math, they may affect your ability to visualize what's going on. At any point in the combat, you can reset your combat grid. Simply set one ship's location at the origin (x 0, y 0, z 0), and adjust the position of all other ships accordingly. Their velocities remain the same.

Example: A ship at x 16, y –7, z 32 forms the new origin. A ship chasing it at x 13, y –3, z 36 has its new relative position set to x –3, y 4, z 4.

Action Combat

While vector combat leans toward the greatest degree of precision and provides an unmatched objectivity that players and Gamemasters can share, action combat presents the reverse view of things. It's an even more stripped-down system than the narrative. Here, the Gamemaster is the unquestioned dictatorial storyteller.

The Gamemaster presents the situ-

ation and any information that the heroes know simply by telling the players. While he keeps a notion of the relative position of the ships involved in a combat, no chart, graph paper, or even precise range data is recorded.

The action system returns most of the control of the space combat scene to the improvisation of the Gamemaster. He can react to questions of the heroes and requests for information, but basically he fashions a cinematic approach, describing what the heroes would see through a viewscreen on their bridge or command deck.

For the Gamemaster, the system demands both less and more. There's no need to track precise maneuvers—when the helmsman wants to move the ship a specific way, the Gamemaster simply applies a penalty or bonus (see 'Eyeballing' on page 34 in the *Gamemaster Guide*). Yet this doesn't mean that space battles must be any less fun or interesting. When the graph paper, coordinates, and special maneuvers are gone, the Gamemaster has the obligation of stepping forward with colorful description.

No matter what the action that a hero attempts, the Gamemaster responds with an exciting depiction of the events. Often, these descriptions can be full of (admittedly, fictional) coordinates, bizarre maneuvers, and technobabble. It's all about keeping the action and momentum flowing, just as if the heroes were the active participants in a raging battle that you'd see in the average science fiction movie. In other words, make it up and have fun!

Just how far you extend the simplicity of the system is up to you. You may still want to track the precise damage of each weapon and durability of each ship's compartment during combat. Or you can simply make a mental note of compartments that are fine, lightly wounded, heavily wounded, or scorched and gone.

A few guidelines for the most likely forms of heroic action are discussed below. They're intended for the action system, but the ideas may prove helpful for any system you choose.

◆ Weapons: The key here is to talk about effects. What happens? What can the heroes see, and what measurable progress toward the enemy's destruction have the heroes made?

Direct hit! The plasma fire rakes across the cutter's bow, tearing loose plates of neutronite and sending electrical discharges in all directions. You can see the interior compartment exposed, with all of its delicate systems vulnerable.

◆ Sensors: The sensors officer functions as the eyes and ears of the ship, but equally important is that the information he gains be put to some practical, even if not immediate, use. Since the sensors officer doesn't have the direct impact of weapons, the Gamemaster must indicate what he can learn, and how he can help.

Locked on! You have a positive coordinate lock on the highest energy signature within the enemy corvette—undoubtedly its reactor core. It's a sizable power plant, and you're sure that its FTL engines could overpower yours.

◆ Helm (Piloting): The pilot enjoys the most romanticized and most necessary position aboard a ship. The pilot hero wants to hear all sorts of detail that locates his ship in the space around him—relative to other vessels and other objects. How can the pilot find an advantageous position for his ship? What are the options for flight? What can be used for cover?

Well done! The crowded zone of low orbit makes it difficult to risk any high velocity maneuver, but you make it look easy. In a few moments, you're in a convenient position behind the freighter's rear arc of fire, in an ideal position to lay down your terms.

◆ Defenses: If the ship takes serious damage, the whole team of heroes risks injury or even death. The defenses officer must make a difference in keeping the team alive. Even if the ship takes some hits, this hero could have changed a direct hit to a glancing blow. The enemy was targeting the ship's command deck? Now they hit the auxiliary compartment. Of course, all this means the enemy must be active and dangerous.

Alarm! Your sensors are screaming that you have only a moment before you receive the first volley. With the computer's assistance and a flash of intuition, you align the inducer to deflect as much as the energy possible. Now you'll find out if it was enough.

◆ Engineering: The engineer fulfills the largest variety of functions aboard a ship. He must distribute power to necessary ship systems and maximize their efficiency. He often serves as the damage control officer as well. Like all heroes, the engineer wants to know that he can contribute, and with more than just the clean-up afterward.

"Emergency power to the shields!" yells the captain, and your fingertips race across the panel to fulfill his orders. Where to get the power? The reactor screeches its objection as you remove the safety limits and push it beyond the red. You can keep it together . . . for a while.

◆ Communications: The basic role of the communications officers suffers from the perception, sadly enough, of being a glorified receptionist. However, it's important to note that, using the System Operation–*communications* skill, the comm officer becomes responsible for much of the electronic warfare; i.e., jamming and counterjamming. Hence, he can confuse the enemy sensors and prevent enemy communications. The comm officer can also spice up this station by performing as the liaison, or diplomatic, officer.

Zap! The space around the scout fills with electromagnetic clutter. He's still trying to make a run for it, but as long as you can jam his signal, the imperial fleet won't know you're coming. Just a few more seconds before your weapons come within range . . .

Off-Stage Combat

A final system for handling space conflicts isn't really a system at all. There may come instances when your heroes are largely powerless to intervene, or simply have no desire to risk their own hides. In that case, you need not play out the combat at all. After all, it probably won't be much fun for you, and it certainly won't be much fun for the heroes.

So don't even use the narrative system. Instead, just describe the major events of the battle and move on with the results—which might be of more interest to the heroes.

You have two choices to determine the winner of such a battle. The easiest is for you to make a decision, either arbitrary or based on how you want your story to evolve. Is it more

interesting to you if the foul alien fleet triumphs? Then it does. Meanwhile, increase the tension by rolling a few dice while you describe the doomed battle and pretend to consider the results.

For a more systematic approach, allow each side to roll Tactics–*space tactics* skill checks. Apply a bonus or penalty for ships of differing sizes and functions. For example, a corvette might enjoy a –3 step bonus over a scout, or even a –4 step bonus over a trader ship.

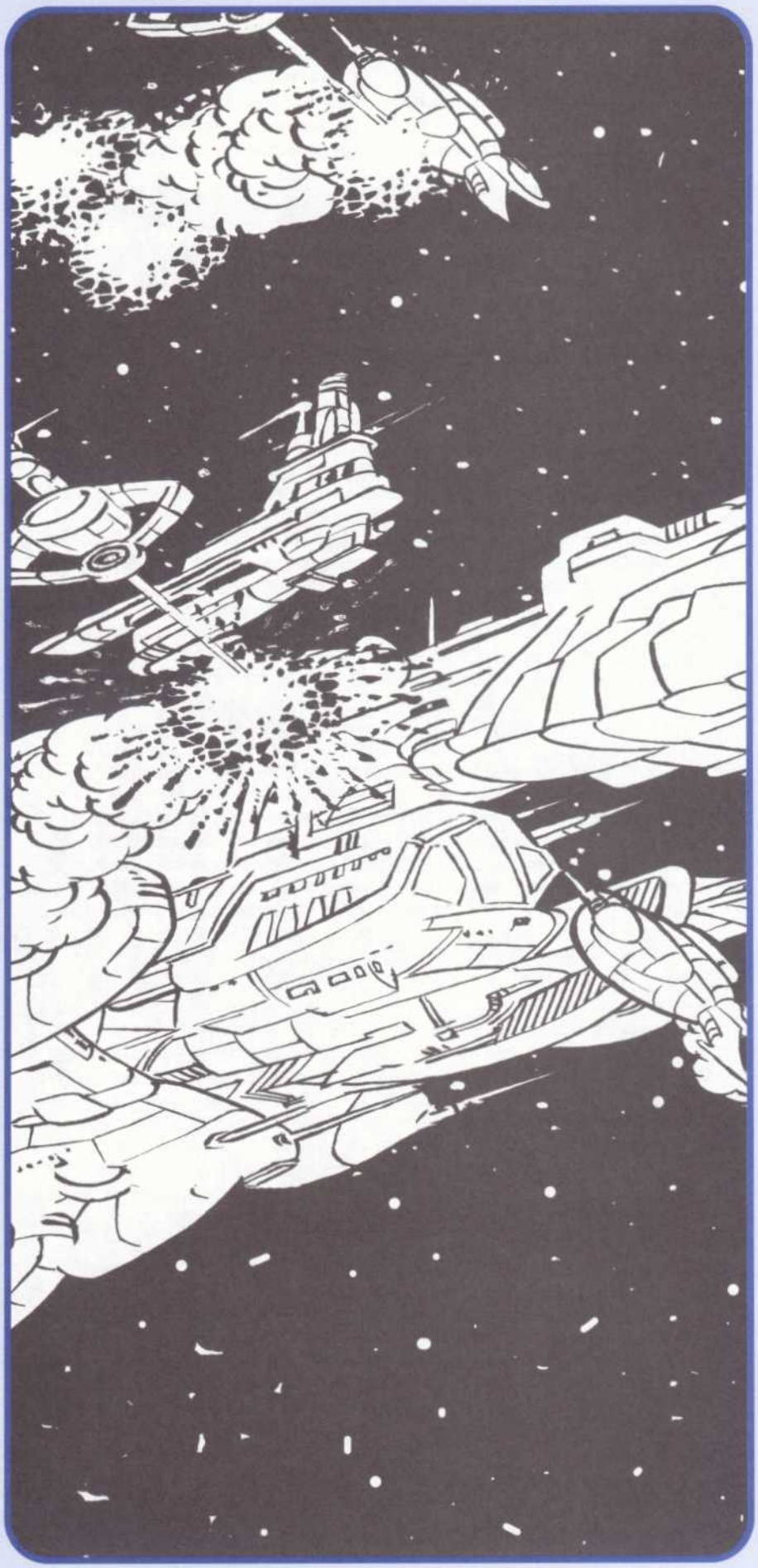
If you don't know what skill score to give the combatants, one method you can use is to examine TABLE G26: SOCIAL STATUS on page 107 in the *Gamemaster Guide*. Make a guess at an approximate rank (line officer, command officer, flag officer) of the commander of the vessel (or fleet) and use the appropriate social status as the skill score.

Compare the results of the two sides using the 'Character vs. Character' rule found on page 63 in the *Player's Handbook*. The side with the better degree of success wins. You can consider just what a victory is likely to mean for the two sides. Sometimes, it could result in outright destruction for one side and victory for the other. Or it may mean that the smaller ship gets away or bypasses a threat; to its crew, survival might connote victory.

STARDRIVES AND DRIVESPACE

Drivespace represents a standard means by which FTL travel, through the stardrive, and communications, through the drivespace relay, can be accomplished.

The principles by which drivespace travel is accomplished are simple for game play. No matter how far a molecule of matter may travel in normal space, it takes 121 hours from starfall to starrise. No matter how far an energy wave travels through normal space, it takes 11 hours from transmission to reception. A drivespace jump, or starfall, always takes 5 days (or more precisely, 121 hours); the amount of power that a vessel can pour into its stardrive determines the distance the ship can reach. See TABLE G41: STARFALL



DISTANCES on page 146 in the *Gamemaster Guide*. After starrise into the target system, the stardrive must recharge, as explained on page 155 in the *Gamemaster Guide*.

A principal limitation on the use of the stardrive is the requirement for a tachyonic charge within the stardrive. However, since the stardrive itself represents the only form of tachyonic collection and containment, it's impossible to engage in tachyonic refueling; only the stardrive booster, available in the late days of Progress Level 7 (and detailed in 'Drive Systems' on page 50), allows for a shorter recharge time by quickly replacing the stardrive with one that's already gained a tachyonic charge.

Since the stardrive relies on a manipulation of the gravity plane, it has the possibility of being affected by supermassive objects in space—stars and planets. Ironically, the stardrive seems to possess characteristics which both pull and push it away from these large objects. First, there's the mild tendency of starfalling ships to be arrive slightly closer to a star or planet than the navigator planned—as if the gravity well of the object pulled the vessel closer. Yet there's also a limit to the effect: closer than about 0.1 AU (15,000 km), large objects push the starfalling vessel away from the object's outer surface. This is in some ways convenient for navigators hoping to avoid the possibility of crashing into a planet or moon or entering the corona of a star.

Numerous theories may exist in your campaign to explain why travel times work as they do. Some posit the existence of a drivespace hypersphere through which all vessels pass. Others conjecture that drivespace must be a dimension somewhere in which all points of space overlap, and that the journey of five days is simply to go and return from this nexus point. Whatever the theory adopted by futuristic scientists, the stardrive operates the same.

While technically another dimension, drivespace itself largely functions as a featureless void through which starships travel. Much like interstellar space, it's a cold vacuum with temperatures near absolute zero. It even lacks the tiny specks of interstellar dust that populate interstellar space and allow fusion ramjets to function.

There's nothing alive in or natural to drivespace to encounter—unless the Gamemaster wants to place some truly nefarious lifeforms out in that alien void.

In fact, drivespace even appears to lack the existence of other starfalling vessels. Once a vessel enters drivespace, it's completely on its own for the five days. It won't encounter other vessels, and while a drivespace detector system may be able to sense it

Drivespace At Progress Level 8

Manipulation of drivespace continues beyond the Progress Level in which it was first discovered and exploited. While the principles which rule over drivespace remain unchanged, a greater degree of technological creativity allows some substantial advances.

The Drivewave Generator

The drivewave generator (see page 146 in the *Gamemaster Guide*) stands out as the leading advance in drivespace-related technology at PL8. Though this drive system doesn't extend starfall range, the drivewave generator nonetheless represents a dramatic improvement over the stardrive of PL7.

By surrounding a driveship with a focused tachyonic field, it allows a ship to travel as energy does in drivespace. In other words, only 11 hours—not 121 hours—pass between starfall and starrise.

Meanwhile, each drivewave generator has a tachyonic focusing system that actually requires a far smaller tachyonic charge. To determine how long it takes for a drivewave generator to recharge, the Gamemaster can either roll d4+1 hours (for a quick estimate) or roll 10d20+100 minutes (for a more precise measurement).

If the Gamemaster allows, an engineer may attempt to decrease the time by analysis of tachyonic density. Allow a System Operation–*engineering* skill check. The result reduces the recharge time: Ordinary, 8d20+100 minutes; Good, 6d20+100 minutes; Amazing, 4d20+100 minutes.

Obviously, the reduction in both travel and recharge time can open whole new vistas of travel. Whereas the typical PL 7 campaign using a stardrive may be limited to only one corner of the galaxy, the drivewave generator can quickly open the galaxy to interstellar travel. Even nearby galaxies—Andromeda and the Magellanic Clouds—may not be beyond reach.

Starfall Detectors

Around the same period, a new form of drivespace detection is also developed. This second generation of detectors—known typically as starfall detectors—can form a real-space-based network around which entrances into drivespace are detected only an hour after entrance.

Each starfall detector has a radius of 100 light-years. Like previous detectors, the improved model can judge both the destination and mass of a starfalling vessel by its starfall. Eventually, a network of these starfall detectors, spread out over space, can provide improved detection capabilities.

Drivespace Communication

Regrettably, despite improvements in transportation and detection technology, communication through drivespace remains frozen at the rate of 11 hours per relay, with a maximum range of 50 light-years. This has interesting military consequences. With a fleet powered by drivewave generators, it may be impossible for the target system to know of the arrival of a ship prior to its arrival—and it's certainly impossible for them to receive assistance beforehand. Without the existence of a new FTL system—such as the foldsender or something similar—the advantage of the new starfall detection system may be lost.

coming before its starrise, there is nothing that can be done to the vessel while in drivespace.

From the moment of starfall, a field generated by the stardrive surrounds its vessel, pushing it along its course. In a few instances, ship accidents in drivespace have helped to prove this theory: anything that loses physical contact with the ship—a piece of wreckage, a blown compartment, or even a man whose tether line breaks during a repair—is lost forever, never starrising with the rest of the ship. Nothing returns once lost in drivespace.

Drivespace Technology

Two standard offshoots of the stardrive are the drivespace communicator and the drivespace detector.

The drivewave detector, a large and bulky system invented during PL 7, can only be found on large capital vessels and orbital platforms. A detector can sense starrises and starfalls within a 50-light-year radius, noting the point of origin, destination, and mass of the starfalling ships. It can even detect vessels that will enter its radius when they starrise, and through precise analysis determines their points of origin. The detector pinpoints these starfalls and starrises exactly 11 hours after a vessel starfalls.

The drivespace communicator is a means of FTL communication, which, though it doesn't allow communications to vessels in drivespace, can connect two points of normal space. As it is a form of energy, communication requires 11 hours to travel between two drivespace communicators.

Alternate FTL Methods

As the variety of science fiction campaigns must be as infinite as the human imagination, so must be the means of traveling between the stars. The stardrive represents only one of those ideas. Faster-than-light travel has been a staple of SF from the days even before the barrier that light-speed presents was understood. Sometimes, the aliens came to Earth from their distant and bizarre planets; other times, humanity became the visitors.

This section describes some FTL methods you may choose to integrate into your campaign. The most likely choice will be to choose one method, or perhaps two, to convey heroes from star to star. Yet in a distant far-future setting, who knows? Maybe every incredible FTL science has been mastered.

The basic assumption for FTL travel in Alternity is that it evolves sometime during the Gravity Age (Progress Level 7). It improves and continues to refine itself through PL 8, increasing in range, speed, efficiency, and frequency of use. In certain campaigns, though, FTL travel may never appear. Or it may appear late. Or early—a single jumpgate from Sol to Alpha Centauri creates an interesting, but still small, PL 6 campaign.

For more information on including specific FTL systems into individual starships, refer to 'Drive Systems' on page xx. As noted there, for most FTL methods, use the Navigation–*drivespace astrogation* skill and rename it as you desire (*hyperspace astrogation*, *warp astrogation*, *wormhole astrogation*, etc.).

For drive systems similar to the stardrive—hyperdrive, space folding, or an adjustable wormhole or jumpgate system—use the standard 'Drivespace Off Course Results Results' sidebar on page 86 in the *Player's Handbook*.

For more direct FTL systems—such as a warpdrive—use the 'System/Surface Off Course Results' on page 87 in the *Player's Handbook*.

Finally, for fixed jumpgates and wormholes, barring a serious malfunction or bizarre accident beyond the starship's control, it's impossible to journey off course. The destination is set by the fixed portal. In this case, a failed skill result may be impossible, or may simply indicate that the crew fails to successfully activate or enter the portal, at the Gamemaster's option.

General Options

Each of the FTL methods described below offers some specific observations about the effects of integrating it into your campaign, and offers some choices about restrictions and specifics of how they work. How you answer these questions—and there is no right or wrong answer—adds flavor, detail, and mood to your campaign. And there's a few things to consider with any drive system in your setting.

What about malfunctions? The level of superscience involved in most FTL systems begs the questions of the consequences of error. Does the ship suddenly travel in time as well as space? Or is it lost—forever or only temporarily—in a parallel dimension slightly askew from the one the heroes are familiar with?

How prevalent is it? Does it have the common use of an automobile in the late twentieth century on Earth? Or is it more like commuter plane traffic of the 1950s—rare, but accepted? Still yet, is FTL as exotic as space travel remains at the close of the twentieth century?

What does it do to humans and other sentients? Are there any side effects (nausea, radiation, or even death) when people enter hyperspace, travel through a wormhole, or fold space? Are special precautions required, such as sealed suspension chambers? Do the biological organisms have to be asleep during the journey? Or can only robotic and artificial intelligences survive the stresses of superluminal travel?

Can anyone do it? Is superluminal travel, or superluminal navigation, limited to a select few? Perhaps only mutants tailored and engineered to survive can manage it. Or maybe only mindwalkers in touch with the universe psionically can guide a ship in FTL travel.

Can an FTL system leap anywhere? Are there any general restrictions that apply? For example, can a ship begin FTL travel while still within a planetary atmosphere? In orbit? Or not even anywhere in the star system? Similar questions can be asked about the destination of an FTL jump.

How does it fit into your setting? Do the players have ready access, or does an outside agency control the keys to the drive system?

The choices about an FTL system have a lot to say about the nature of your SF setting, and thus about the adventures that the Gamemaster and players will share.

Military Considerations

The selection of a drive system can have enormous impact over the way that nations and even individuals con-

duct themselves in combat. A few things to consider include:

How far can the drive system go? With even modest light-year ranges, the ability of nation-states to defend borders may become impossible. Advanced ships will simply leap behind enemy lines to wreak havoc on undefended worlds and star systems.

Can FTL travel be detected? Is there is a ship system such as the drive-space detector, or device that can be mounted on a satellite or on a planet, that tracks FTL travel? What range of detection exists? Typically, the range of detection should at least equal the maximum range of a drive system.

Can an FTL system be blocked? Is it possible to somehow destabilize a target ship's drive system, such as with the drivespace inhibitor? Or can a system or planet forge some kind of defensive network that forbids FTL travel or jumps nearby?

Hyperspace

As one of the numerous dimensions or parallel universes that lie close to our own, hyperspace offers the promise of a universe in which distance operates under fundamentally different laws. In some ways, it's simply a smaller dimension, in which points that lie close together correspond to more distant location in normal space.

Hyperdrive transport must be carefully planned in advance. The proper coordinates must be plotted; it's a very time-consuming process. When heroes attempt to activate a hyperdrive quickly, apply a +2 step penalty per minute less than ten spent in preparation. Note that this replaces the penalty listed on 'Navigation Situation Modifiers' on page 86 in the *Player's Handbook*.

Hyperspace travel takes an amount of time strictly dependent on the distance a starship moves. See TABLE S14: HYPERDRIVES on page 48. For example, a vessel traveling 12 light-years with a hyperdrive speed of 2 ly/hour exits hyperspace six hours later at its destination.

Another advantage that hyperspace travel can enjoy over other FTL drives may be the lack of recharge time. Once a hyperspace arrives in normal space, it can immediately begin recalculating for another leap.

Hyperspace Options

Another option the Gamemaster can consider in integrating hyperspace technology is the concept of nexus points. In some campaigns, use of the hyperdrive may be restricted to certain nexus points—similar to the zero gravity Lagrange points in space. These nexus points may be distributed randomly, near large stars, or even in the depths of empty interstellar space.

Perhaps a ship can only travel from one nexus point to another, or it may only be required to hyper out or in to a nexus point. The more freedom you allow in hyperspace travel, the larger your campaign will quickly become, and the faster it will grow.

Another option to consider is the possibility, or impossibility, of hyperspace encounters. In a more typical SF campaign, hyperspace is little more than a light-filled void in which even hyperspace-travelling vessels don't run into one another. More exotic campaigns may have foreign intelligences, new species, or just the possibility of ship-to-ship rendezvous.

Jump Gates

These are permanent portals in space that allow instantaneous transit from one corner of the galaxy to another—or at least within the local group of stars. Unlike wormholes, jump gates represent an artificial, constructed system rather than a natural phenomena. By weakening the fabric of space precisely, the engineers of a jumpgate produce a superspace link connecting two distant locations.

For heroes, the advantage is simple. At worst, the requirement for their ship is a small jumpgate activator—although more restrictive Gamemasters may also require the ship to include a wormhole screen. See page 48 for more information on those systems.

For Gamemasters, jumpgates may have some appeal since they typically allow a more limited exploration. Unrestricted systems such as a hyperdrive let a group of heroes travel to any corner of the universe—and thus require the Gamemaster to instantly create new worlds with only a moment's notice. With only a few jumpgates littering the campaign, the Gamemaster can control the star systems that heroes can access.

TABLE S2: JUMPGATE DISTANCES

PL	Small	Medium	Large
7	5 ly	50 ly	1000 ly
8	50 ly	500 ly	10000 ly

Jumpgate Options

A number of options exist for you to consider. First, is a jumpgate's destination fixed during construction, or can it be tuned and adjusted? The first option links individual star systems together tightly, while the second makes jumpgates open doorways to literally anywhere.

Second, does a jumpgate require a corresponding exit jumpgate in order to function? If so, a slow-traveling generation ship, assigned the job of jump gate construction, may be necessary to expand the setting's borders. If not, than it may be possible to build a jumpgate that leads into the heart of enemy space or the distant reaches of unexplored territory.

Are jumpgates unidirectional? In other words, does it require two jumpgates to allow passage back and forth between two star systems or can one jumpgate handle traffic in both directions?

Can a jumpgate itself be moved? Is it locked in position immediately after construction is complete or can it be dragged from one planet to another in a system, or even down to a planetary surface?

Finally, just how expensive and rare are jumpgates? Is it the kind of investment that private individuals, small companies, giant megacorps, world governments, or whole species may come together to create?

Just how far a jumpgate can offer transport depends on the jumpgate—a level of technology more often in the hands of powers beyond the heroes' ability to control. The exact distance a jumpgate can reach depends on the setting. For settings with extremely restricted jumpgates, the actual distance between the stars spanned by the gates may actually be irrelevant. It's actually the number of gates that restrict the campaign's size. For settings with more numerous gates, or gates that can be tuned, some guidelines for variously sized campaigns appear below.

At PL 7, a small campaign will include a handful of stars, a medium campaign several hundred, an a large campaign about a million. These PL 7 campaigns all still focus on a single region of the galaxy. A PL 8 campaign can quickly grow larger, encompassing the entirety of a galaxy or even expanding to new galaxies.

These decisions are left to the Gamemaster. Some guidelines for developing and expanding an interstellar campaign can be found in *Chapter 14: Campaign Architecture* in the *Gamemaster Guide*.

Space Folding

While the theory for space folding relies on miraculous discoveries far different from those of hyperdrives, many of the game effects it creates are the same. As noted under the description of the spacefold drive system (see page xx), navigating with spacefold tech is extremely difficult, even at PL 8, with double the normal chance of a Critical Failure.

Folding technology does have some significant benefits; the chief of which is the absolutely instantaneous travel. No matter how far a ship can cross, given its design and energy capacity, no time elapses between the beginning of a fold and arrival at the destination.

Like the stardrive, most spacefold devices suffer some limitation of use. After arriving in a new system, a foldship must rest its drive system for a number of days equal to number of light-years traveled (beyond PL 8, this may be reduced to a number of hours per light-years.)

Space Folding Options

Thanks to the nature of this device, there are few options to consider about travel time and superspace encounters. The best possibility is the chance to integrate nexus points (see 'Hyperspace Options' on page 12) and thus allow the Gamemaster to exercise some control over where the heroes travel.

Space folding may also be one of the most biologically-unfriendly means of superluminal travel, resulting in hard radiation (treat as if exposed to R4 environment) or even madness (use Resolve–*mental resolve* skill checks, with a +1 step penalty for each consecutive space fold).

Warp

Warp travel stands an example of direct FTL. No teleportation or parallel dimension becomes involves as the ship just breaks through the light-speed barrier almost as if it didn't exist. Hence, this system has an incredible advantage of being able to, theoretically, watch space zoom by and stay in touch with the universe. It can also allow the crew of the warpship to alter their destination in mid-travel, something most of other FTL systems have no ability to match.

The warp drive system encapsulates the warpship in an insulative bubble, shielding it from the harmful effects of mind-boggling acceleration and the effects of relativity—exponential mass increase and time dilation. Once so shielded, the warp system activates to send the vessel cruising away, covering several light-years in a single day—or even a single hour, with enough power.

Warp Options

The warpdrive system represents possibly one of the simplest means of travel to administer, and so there are relatively few options with which to complicate it.

Where can warpdrive operate? It's possible that lines of gravity or energy confine warp travel to only a single lane of traffic from one star to another. Or, the converse may be true: a few narrow regions of space—the "lost zones"—may be impassable to warpships. Can warpships only operate outside the confines (50 AU or so) of a star and its planets?

Moreover, how long does it take to power up or depower the warp engine? The physics of the drive bubble may allow a quick deceleration to sublight velocities, or maybe several minutes to charge up or prepare for movement through normal space.

Wormholes

Ultimately, humanity and other sentient species may never invent a means to travel between the stars. Maybe the universe already has, in the form of super-extreme Kerr objects: spinning black holes with an electric charge, somehow induced into stability despite the pressures involved.

The wormhole represents a portal from one corner of the universe to another. Wormholes may be separated by only a few light-years, neighboring stars linked close to one another. Or wormhole geography may replace realspace geography; a network of even a few wormholes, connecting stars on opposite ends of the universe, would be more important than their actual locations. Distance is quite simply not a factor in determining travel time; entering one end of a wormhole equals leaving its opposite end.

The wormhole screen is one of the more common ship systems related to this drive system; it protects a ship from the interdimensional and gravitic stresses a wormhole represents. A more fantastic system is the wormhole generator, capable of creating short-lived wormholes.

Wormhole Options

Several of the consideration for jumpgates (essentially artificial wormholes) apply to wormholes as well. Are wormholes one-directional, or does each provide travel to and fro? Can advanced technology move wormholes from place to place within a system, or do the ends of a wormhole move about randomly through the universe? Can a ship or a station cause an existing wormhole to change its destination point, or even close it down forever?

Wormholes tear open the fabric of our universe. Hence, they bear watching for use in other capacities. There's nothing to say that travel through a wormhole can't involve moving across time as well as space. Sometimes it may not matter that the when the heroes are visiting a distant star system that they're visiting a place that's millions or billions of years in their past. Other times, interesting story ideas, such as visiting the early days of the universe, or its final hours, may be possible.

Or, who's to say that the stars connected by wormholes even lie in the same dimension. If a campaign allows the possibility of numerous parallel universes approximating our own, a wormhole may be the mean by these universes are connected. One wormhole could connect to one parallel dimension, a second to another, and a third to a new location back in the original home universe. Again, sometimes this effect may not have much effect; or, who know what different physical laws a parallel dimension might function under?

Psionic Travel

In some campaigns, use of psionics may be required to activate, use, or manipulate an FTL system. For example, in one setting a mindwalker may be the only sentient capable of navigating through the mysteries of drivespace. Perhaps even a talent is required to control the awesome power of a spacefolding drive. In these cases, you can make any FTL system here a psionic FTL system.

Or, perhaps an incredible application of raw psionic power may be required to defeat the commonly understood laws of physics. The psychoportive drive, described on page xx, is just such a device. Essentially, it functions much like a spacefolding drive; the distance that the ship can travel, however, is determined by the total number of psionic energy points expended. The psychoportive drive is also unique since its recharge time is dependent on a character and his ability to recover psionic energy points.

Psionic Options

The choice to integrate psionics in your campaign can make it more distinct, and even the limiting requirement for one or more mindwalkers can make an interesting story. Here are some of the more interesting options to consider:

How common are mindwalkers? Are they the prized commodity of a nation, or more like a an available resource waiting to be used?
How many mindwalkers, or how many psionic energy points, does an FTL system demand? Maybe only a single discharge of mental energy is required, or perhaps only through the concentration of a hundred mindwalkers acting in concert can a psionic jumpgate be opened.

Can other beings, whether in another dimension such as hyperspace or in this one, sense these powerful psionic emanations? What attention does use of a psionic FTL system gather?

Along with these questions, the Gamemaster should consider all the issues that psionics raise. How common are these powers and who can have them? Who knows that they exist? Take a look at *Chapter 16: Optional Rules* in the *Gamemaster Guide*.

Other Ideas

This section has discussed FTL effects especially as they relate to starships. However, superluminal travel may go beyond, or indeed have nothing to do with, spaceships. Perhaps planetside portals connecting worlds about far-flung stars will be the best means of cruising the cosmos. Or maybe even personal-sized jumpwebs will take single individuals—humans, robots, or other biological sentients—from one world to another. Or maybe the only means of traveling from one star to another will be completely nonphysical, involving either advanced psionic discipline or the transference of consciousness to an electronic medium. Imagine two cultures exchanging immigrants without physical bodies.

You can choose to integrate any of these ideas, or something of your imagination with starships, or completely on their own. It's your game.

Realism in Play

Realism is a significant consideration of the styles and systems described above. The decision of how scientifically accurate you want your game in general, and spaceship rules in specific, will cast a long shadow over many of your gaming sessions.

A nod to realism can imply a greater degree of complexity, as the vector system illustrates. It also demands a greater familiarity with principles of physics. The Alternity game mechanics allow for a more realistic campaign, although to fulfill such a goal you may have to alter the specifications of certain items of technology, ship systems, and the like. This section examines a few of the topics you may want to consider as you construct such a model of play.

The most common "realistic" spacefaring campaign limits itself to PL 6 technology. Thus, it relies on scientific principles that are logical extensions or manipulations of science understood today. It leaves behind the more outlandish concepts of gravity manipulation, FTL travel, and artificial intelligence.

Decompression

For a campaign in which spacefaring is still in its infancy and limited to a single star system, most ships simply aren't designed to handle combat situ-

PL 5 Spaceships

Generally speaking, the typical modern-day campaign finds little use for spaceships and even smaller concerns involving spaceship combat. Spaceships remain incredibly rare, expensive, and restricted to the hands of governments or multinational corporations. Their operators, in turn, spend years (if not decades) focusing on their task as astronauts. There's no realistic way for heroes to step forward into spacesuits and ride a space shuttle into history.

That said, some extraordinary campaigns, perhaps toward the end of Progress Level 5, may begin tinkering with spaceships and their use by heroes. Maybe the first colonies on Mars and the Moon are under way, and the heroes are specialists sent in to investigate an incident, rescue a crew, or prevent the impact of an a asteroid.

In that case, consider designing spaceships that can use any of the following PL 6 systems as PL 5 systems: airlock, command deck, reentry capsule, standard hatches, chemical reactor, fission reactor, solar cell, conventional rocket, fission rocket, life support unit, recycler unit, workshop, air/space radar, radio transceiver, marginal computer cores, crew quarters, cargo space, fuel tank, and laser cannon.

ations. The metal plating that lines their hulls is designed to resist only the smallest micrometeor impacts and to contain the modest atmospheric pressure inside. It provides scant protection against even the weakest laser fire or other weapon.

The first time that such a ship suffers wound damage in a compartment, assume that it immediately decompresses. If each compartment has been sealed, the effect can be limited to certain sections. Otherwise, the entire ship loses its atmosphere. 'Environments' in *Chapter 3: Gamemasters in Action* in the *Gamemaster Guide* discusses the effect of exposure to a vacuum.

Radiation

The vacuum of interplanetary space, while vast, isn't completely empty. In addition to providing light and infrared energy, a star also sheds a massive amount of ionizing radiation, quite harmful to the human body. Beneath an atmosphere and in low orbit, a planet's magnetosphere offers protection from this radiation. In the depths of interplanetary space, no such refuge exists.

The steel hull of a ship will offer capable protection during normal conditions, but every star has periods of solar flares which are serious threats. Realistically, a ship's crew would have to return to a heavily-shielded chamber near the center of their ship. They'd have to wear heavy protective suits and wait for hours, maybe days, while the flare passed over.

(As an example, NASA was lucky that a solar flare didn't arise during the Apollo lunar missions. Although they paid close attention to sunspots and timed the missions during low periods of solar activity, a single flare would have destroyed the lander and its astronauts.)

To accommodate this realism in the game, assume that a solar flare causes R3 radiation, even aboard a spaceship. Of course, at PL 7 and above, starships possess shielding that protects them from such radiation.

Mpp and AUs

The standard way to describe the power of engines is through their acceleration (in megameters per phase per phase, or Mpp) and their cruising speed for long journeys (in AU/hour). Of the two, acceleration is by far the more important.

A ship's cruising speed is not an absolute, as it simulates the time necessary to reach a given velocity, as well as the time needed to decelerate to a safe stop at the end of a voyage. In addition, cruising speed exists to emphasize that ship hulls may not be able to safely withstand the pressure of extreme velocities. For especially long journeys, you may choose to allow a vessel to travel at a rate greater than its cruising speed.

Acceleration and Human Limits

The acceleration values listed for the stock spaceship engines (see page 144 in the *Gamemaster Guide*) make a number of assumptions. Since they're more appropriate for a style concerned with heroic space opera, the figures exceed even a generous interpretation of plausibility. In short, they do not accurately represent true reaction-thrust engine performance.

The figures for PL 6 engines ignore another biological factor involved. With acceleration that equals dozens, even a hundred times the force of gravity on Earth, the ship's own engines would crush a human body. (This is sometimes known as the raspberry jam effect, so named for the likely appearance of human passengers after the trip.) Under such a burden, it would be equally impossible for the crew to go about their duties, and even the strongest steel hull would likely collapse like a soda can.

It's possible that gelatin couches or water-enclosed environments could help a human body to resist some of this force, but without an imaginary science of gravitic induction or inertial control fields, no human could live through more than ten gravities.

A good baseline for a realistic campaign is to reduce the accelerations listed for all PL 6 engines (including the planetary thruster) by a factor of ten. For example, a realistic fusion torch engine should have an acceleration of .005 Mpp.

Fuel

While a cavalier attitude toward enforcing fuel requirements may make spaceships more interesting and playable for heroes at this level of technology, it may violate a strict interpretation of physics. A single durability point of hydrogen fuel lasts for up to ten weeks of continuous operation—and continued operation at an engine's maximum acceleration will consume fuel even faster. The Gamemaster should strictly enforce this rule. When taken in combination with the acceleration reduction noted above, it should be clear that a ship may need more than half its space just to store conventional fuels.

Relativity

Most science fiction fans know that as a ship approaches the speed of light, some unusual things start to happen. The ship's mass increases and time aboard the ship appears to slow.

At early progress levels, the effects of approaching the speed of light rarely have a game effect that heroes can appreciate. It's simply impossible to reach relativistic velocities within the span of a single year, given limits

Table 53: Determining Gamma

AU/hour	% c	g
0.01	0.14%	1.000001
0.05	0.69%	1.000024
0.1	1.4%	1.0001
0.2	2.8%	1.0004
0.5	6.9%	1.0024
0.7	10%	1.005
1.0	14%	1.01
1.5	21%	1.02
2.0	28%	1.04
3.0	42%	1.1
4.0	56%	1.2
5.0	70%	1.4
6.0	83%	1.8
6.5	90%	2.3
6.8	94%	2.9
7.0	97%	3.9
7.05	97.4%	4.4
7.1	98.1%	5.1
7.13	98.5%	5.8
7.16	98.9%	6.7
7.18	99.2%	7.8
7.19	99.3%	8.5
7.2	99.5%	9.5
7.21	99.6%	11.0
7.22	99.7%	13.5
7.23	99.9%	19.0
7.235	99.93%	26.9
7.239	99.99%	60.2
7.24	100%	infinite

of fuel and low acceleration. However, if your campaign uses ships with PL 7-style accelerations, you may want to consider the results.

Determining Gamma

Physicists use the ratio gamma (g) to describe the effect created by approaching the speed of light. The equation used to determined this relativistic factor is given below:

$$g = \frac{1}{\sqrt{[1 - (V^2/c^2)}}$$

V stands for the velocity is the vessel, and c is the speed of light. Both figures must be in equivalent units (for instance, megameters per second or kilometers per hour).

See TABLE S3: DETERMINING GAMMA to calculate the ratio of certain standard velocities without using the formula.

The ratio gamma has three major game effects. First, the mass of all objects traveling at the listed velocity is multiplied by g, the number in the third column. Even if you ignore the problem of human bodies quadrupled in mass, the ship's armor and weapons have extra mass as well. Fortunately, it's darn near impossible to engage in space conflict at this speed.

The second effect concerns acceleration. As mass increases, the ability of ships to increase their speed decreases. Divide a ship's acceleration by g when traveling at high speeds.

Time Dilation

The third and final game effect of traveling at extreme velocity concerns time. Even while the passengers of a super-fast ship continue to divide a minute into 60 seconds that seem just as long as normal, clocks inside the ship won't match those outside once the ship has finished its trip.

Divide the travel time of a ship's journey by g. This is the amount of time that the occupants of the ship experience.

Example: A ship travels at a spectacular 6 AU/hour (0.83c) for what outsiders observe as 9 hours. To the ship's occupants, only 5 hours have passed (9 / 1.8 = 5).

Time dilation can have dramatic effects on your campaign, so consider its use carefully.

Weapons & Realism

One of the last things to evaluate for a realistic campaign is the speed of certain weapons in combat. The basic rules assume that weapons fire travels with infinite velocity, arriving in the same phase launched. And for one form of attack, that's fine: Energy transmits at the speed of light (300,000,000 meters per second, or some 900 megameters per phase). It's effectively instantaneous.

For projectile weapons, things aren't so clear. To be completely accurate, each projectile travels at a specific speed, determined by its kinetic energy at launch. Plus, you would have to consider the relative velocity of the ship the projectile was launched from. As a simple rule of thumb to allow for delivery time, consider a projectile's damage to occur in the phase after it's fired.

Missiles

To judge missile combat more accurately, after launch consider the missile to be an object like a ship. Track its course independently until it enters close proximity with its target (the same hex). At that point (and not before), the weapons officer rolls a System Operation–*weapons* skill check to determine if the weapon hits.

Assume that the standard PL 6 missile has an acceleration of 0.5 Mpp, and that PL 7+ missiles accelerate at 10 Mpp. Missiles can perform any kind of maneuver (Routine, Moderate, or Extreme) during each phase. A missile typically has enough fuel to last for three rounds (12 phases)

If the result of the *weapons* skill check fails, the weapons misses and continues to move past the target, but will automatically make a second attempt (as above), if fuel remains.

Welcome to Progress Level 9

This sourcebook, along with most of the rest of the ALTERNITY rulebooks and accessories, focuses its attention on eras of development up to and including Progress Level 8: The Energy Age. That's not because it represents the peak of scientific advance, however. Beyond the Energy Age lies the Far Future, a time period in which a culture's understanding of reality enters a new level. Here, mastery of science begins to seem akin to a mastery of magic, where a sufficiently advanced technology can do almost anything.

Matter Creation

Practical control of matter at the subatomic level engenders the power not merely to transmute matter—say, from lead to gold—but the power to create matter out of nothingness. What this means for characters is that, armed with proper device, anything that they ever need, they can instantly bring into being.

For spaceships, an obvious consequence may be the end of the trading campaign and merchant freighters. Certainly small specialized traders will be especially hurt, though bulk freighters of large, unremarkable substances may still be able to turn a profit.

For spaceships in combat, matter creation technology suggests a number of evolutions. First, new weapon systems will simply create explosive or energistic substances near, on, or even in an enemy vessel. Damage from such weapon systems could double the firepower even of the Energy Age.

Teleportation

Parallel to matter creation is the ability to destroy a substance at one location and record all of its structure, location, and direction down to the subatomic level (though this would seem to violate known scientific principles). This requires computer systems with incredible sensitivity, processing power, and data storage. Of course, the interests of computer systems with such incredible power may be a cultural concern. Once the data is recorded and trasmitted to its destination, the original substance can be recreated as an exact copy of the original.

Moreover, the act of teleportation may not necessitate destruction of the original—or the creation of only a single duplicate. Cloning and duplication technologies could create theoretically infinite numbers of anything, or anyone. Obviously, this may allow for resurrection-type situations, with either recorded recreations, or with

each individual carrying around a subatomic recorder that's used to ensure the complete regeneration of an individual and his thoughts up to a moment before death.

For spaceships, this could be the end of it all. Assuming a reasonable form of high-bandwidth interstellar communications, there's never a reason for an interstellar, interplanetary, or even planetary travelers to use a vehicle. Simply step into the teleporter in one location, vanish, and beam in somewhere else. Why spend any time in travel? Why waste money or resources moving things around when it can be accomplished instantaneously? About the only purpose a starship could serve is to extend the frontier with the construction of new teleporters.

In the interim, the traveler is for all purposes dead, only a copied piece of data sent to another computer. While the users of such phenomenal devices may be uncomfortable or have to answer ethical questions concerning its use, for heroes and Gamemasters this represents a serious turn in the way campaign are run. It's likely to destroy any real sense of journey, of the quest.

About the only good news for owners of shipyards is that the same duplication technology for individuals—including recreating the destroyed—could be applied to spaceships as well. With a flash of energy, a fleet can wink back into existence.

Campaign Size

With teleportation and incredible new FTL technologies, the PL 9 campaign enters a new level of growth in campaigns. The Gravity Age (PL 7) saw the advent of interstellar travel, and the likely exploration and colonization of thousands of nearby stars. With the Energy Age, the campaign can expand to be a truly galactic one, with heroes traveling throughout the Milky Way galaxy. Perhaps the true frontier here will be a galaxy or two not far away: Andromeda, or the Magellanic Clouds. In PL 9, the universal expansion begins. Armed with sufficient technology, the campaign can explore every corner of the expanding universe. Earth and ancient history may be but a memory.

Damage

An inevitable consequence of space combat is the effect of high energy weapons and missiles on the hulls and internal components. Pages 161–163 in *Chapter 11: Spaceships* in the *Gamemaster Guide* cover the basics: stun, wound, and mortal points for each compartment; durability checks; damage to passengers and crew; and a way to determine if a system failure results.

The most important side effect of damaged compartments is the penalty given to skill checks involving the compartment's systems. A compartment that has suffered damage equal to more than half of its stun rating or wound rating provides a +1 step penalty to its systems. Each point of mortal damage also provides a +1 step penalty. All of these effects are cumulative.

This section explores the effects of damage in greater detail.

Determining Hit Location

After a successful hit, roll a d20 to determine the compartment that was struck. (See TABLE G50: COMPARTMENT HIT LOCATION in the *Gamemaster Guide*.) For especially large vessels (eight or more compartments), some compartments may be layered deep enough within a vessel that they can't be hit without the assistance of a sensors operator (see 'Called Shots' on page).

Damage to Systems

Compartments suffer stun, wound, and mortal damage just like heroes do. They suffer secondary damage at the same rate, and can be equipped with armor to protect themselves.

Unlike heroes, whenever a compartment suffers damage in excess of half its stun or wound points—or any mortal damage—it must make a durability check. A compartment's effective Stamina-*endurance* equals twice its durability rating. Any applicable penalties for stun, wound, or mortal damage are applied to the durability check.

If a compartment fails this durability check, it suffers a system failure. As this section details, the severity of the failure depends on the kind of damage that caused it.

A Simpler Solution to it All

Maybe you're presenting spaceship combat casually, and you don't want to get involved with the complexity presented even by the single chart on Table G50. Consider the following option. The result of a System Operation–*weapons* check determines the compartment hit. With an Ordinary result, the pilot of the ship struck can select the compartment that suffers damage. With a Good result, the defending pilot must offer a choice of two compartments, and the attacker chooses one of them. With an Amazing result, the attacker selects the exact compartment he desires to hit. The sensors operator still has a role to fulfill in this simple system; he can provide a bonus to System Operation–*weapons* skill checks, and he can do the scanning necessary to determine what kind of systems are in each of the enemy compartments.

Determining System Failure

After a compartment fails a durability check due to stun or wound damage, the Gamemaster must randomly determine the ship system affected. Number off each system, and don't forget to include any systems with zero durability cost located in the compartment. Then roll an appropriate die.

Example: An engineering compartment suffers a system failure. It contains an antimatter reactor (1), a flux engine (2), an autosupport unit (3), an accumulator (4), and a stabilizer (5). The Gamemaster rolls a 4 on a d6 and determines that the autosupport unit suffers a failure. (The Gamemaster would have rerolled a result of 6.)

If a compartment fails a durability check due to mortal damage, every system in the compartment suffers a system failure.

Multiple System Failures

A single attack could cause a compartment to exceed both half its stun or wound points, or could cause mortal damage and one of the above. In

The Engines are Tough

It's reasonable to posit that certain systems may be tougher and more resistant to damage than others. This is reflected in each system's durability.

As an alternative to the method of determining system failure described above, begin with the system with the lowest durability (including 0-durability systems). It has a 50% (2-in-4) chance of failure.

If the result indicates no failure, move to the next-largest system and repeat the process. The last system to be checked automatically suffers the failure.

that case, resolve each system failure separately.

Effects of System Failure

System failure doesn't necessarily mean that the damaged system simply goes off-line and ceases functioning. Sometimes, a failure could have a limited effect or time, apply a penalty to a system's use, or create a power inefficiency. More serious failures could result in dangerous malfunctions, including loss of control, weapons misfires, and ship-threatening explosions.

Refer to TABLE S4: SYSTEM FAILURES. In the rows at the left side, find the type of system (engine, power, weapon, etc.) suffering the failure. Then, find the column appropriate for the degree of damage that caused the failure. Look across to locate the appropriate effect on the table.

Example: After a compartment suffers 6 points of wound damage, the Gamemaster determines that a laser transceiver suffers a system failure. Looking at the row labeled 'Communications' and across to the column labeled 'Wound,' the Gamemaster discovers that the laser transceiver's range has been reduced to a single AU. This might cause difficulty if the heroes attempt to call for help.

For most system failures, the Gamemaster can assume that the ship computer reports the effect. Of course, on a ship wracked with enemy fire, perhaps the crew remains dangerously unaware of what's gone wrong. In the example above, the crew might never know that their distress call has never been received.

The Command Deck

While the command stations on the bridge of a ship aren't actually independent systems, it remains possible that damage could impair the function of these control computers and user input devices. When the command compartment suffers damage, treat the bridge as one of the 0-durability systems subject to damage for the purposes of determining a system failure.

If a random determination results in a bridge system failure, consult TABLE S4: SYSTEM FAILURES for the effects.

Repairing System Damage

There are a few ways to respond to a system failure. Some failures on Table S4 list specific responses, and others imply through their effects that the system cannot be repaired. Otherwise, three methods exist.

The first, described on page 163 in the *Gamemaster Guide*, involves restoring a system to normal function temporarily. Using the Technical Science–*juryrig* skill, a hero can restore a system for a number of rounds, with the unfortunate side effect of making permanent repairs slightly more difficult later. Generally a hero cannot juryrig a system a second time if it fails again, although the Gamemaster may allow a desperate engineer to make a *juryrig* skill check with a +3 step penalty. Despite these repercussions, many ship engineers swear by juryrigging; bringing a critical system online for just a minute or two can make the difference between victory and extinction.

The second option, one which every good engineer prefers, involves the time-consuming process of making permanent repairs. Once a compartment has been repaired of all its stun, wound, and mortal damage with Technical Science–*repair*, the malfunctioning or failed systems return to normal status. Regrettably, this kind of exhaustive repair operation takes hours, or even days when wound or mortal damage is involved. (See page 163 in the *Gamemaster Guide* for exact details on administering this complex skill check.)

Whether a result of military obligations or personal ones, sometimes a crew has the need to repair a specific system for more than just a few minutes—and the urgency of their task prevents complete repair of the compartment. So, the engineer concentrates his efforts on the system he needs. This involves a complex skill check.

Because stun damage to a compartment can be repaired in only a matter of rounds, there's no reason to attempt a specific system repair for systems that have suffered stun damage.

Repairing a system that failed as a result of wound damage is a task of Good complexity, requiring a total of 6 successes. Repair attempts to gain these successes can be made once per minute of work.

Repairing a system that failed as a result of mortal damage is a task of Amazing complexity, requiring a total of 8 successes. In this case, repair attempts can be made once per hour of work.

Repairing a system in this manner has no effect on the durability rating or damage recorded on the system's compartment. Any wound or mortal damage remains in effect, and additional damage is just as likely to cause new system failures.

Transferring Damage

When a compartment takes stun damage that exceeds its total, each additional 2 stun points translate to 1 point of wound damage. Similarly, excessive wound damage translates into mortal damage.

When a compartment suffers mortal damage in excess of its total, each point of mortal damage translates to 1 point of wound damage applied to the next lower-numbered compartment (or adjacent compartment, if such can be determined by the Gamemaster). If necessary, wrap around to the highest-numbered compartment if the lowest is destroyed. Armor has no effect on damage caused by internal transfer; however, further hits on the compartment must still penetrate its armor.

Example: Compartment 4 of a ship has 4 durability, and thus 4 mortal points. After suffering 6 points of mortal damage, the compartment is destroyed. In addition, 2 points of wound damage are applied to Compartment 3.

Spaceship Death

When a compartment loses its last mortal point, it's effectively destroyed. All of the systems within it have been demolished, and each will need to replaced. Generally, this is the only effect.

Engineering compartments containing reactors and power plants, however, may end their serviceable life with a more explosive finale. Assume a base 1-in-6 chance that the destruction of the engineering compartment precipitates a reactor breach and explosion. This is even worse than the result of the worst system failure involving a power plant.

The crew has only 2d4 phases to abandon their ship. After this time, the annihilation of the power plant completely destroys its ship.

Explosive Results

The explosive termination of a ship also causes damage to ships and other bodies in the immediate vicinity of space (1 Mm or less).

The amount of damage caused by the explosion depends on the size of the exploding ship. Divide the former ship's total durability by 10, rounding down. This is the number of "hits" that the explosion causes. For each hit, roll randomly to determine which compartment suffers damage; it's possible that a compartment suffers more than one hit. Each hit causes d8+2 points of wound damage. Armor is applied normally; the damage is considered to be HI/A.

Other Damage Effects

Space combat has the potential to become a spectacular display of flashy effects. It can also create a tragic scene that renders beautifully-designed space vessels into twisted, smoking ruins. It's up to you to decide how clean or messy you want to represent your combats. Still, you should consider adding some spice to the simple tracking of stun, wound, and mortal points. The impacts of fast-moving missiles and energy blasts are likely to have a number of interesting effects on a ship. Improvise as you desire; a few suggestions are listed below.

◆ Interior communications breakdown. Heroes can no longer communicate from one section of the ship to another.

◆ Lights out! The standard onboard illumination system fails.

◆ Damage renders certain compartments unreachable, or somehow divides the ship by closing down ship corridors.

◆ Scars and cosmetic damage! While the damage is technically unremarkable, until the hull is resurfaced and repainted, the ship's resale value is lowered by 5-10%. The owner of the vessel may have a tougher time booking contracts or making deals until he fixes his ship's damaged appearance.

Damage to Armor

Nothing can stand up to one deadly barrage after another, and armor is no exception. Once a compartment has suffered mortal damage or a serious amount of wound damage, its armor begins to lose effectiveness. Armor degradation doesn't take effect on the attack that degrades it, only on subsequent attacks.

After a ship compartment suffers wound damage that exceeds half its total wound points, apply a 1-point reduction in effectiveness against all categories to its armor. (Remember that a check for system failure is also required at this time.) For example, once damaged by excessive wound damage, moderate alloy armor is rated at d4/d4/d4–1 (instead of the normal d4+1/d4+1/d4).

After a compartment suffers any amount of mortal damage, apply a 2-point reduction in effectiveness in all categories. Armor can have zero effect on an attack, but the result of a negative result for armor never implies additional damage.

The reduction from wound and mortal damage aren't cumulative; apply only the largest penalty.

Repairs

Once the show is over and the fight is done, it becomes time not merely to spray fire retardant foam, apply some quick sealant, and juryrig a system or two. It's also time to work out all of the ship's stun, wound, and mortal damage from all of its compartments. For all of the relevant skill checks and time fac-

Table 54: System Failures

System	Stun	Wound	Mortal
Power Power plants such as the mass reactor or the grav-fusion cell	The reactor hisses angrily. Internal power conduits between this compartment and one other are severed.	Sparks flash within the heavy shielding, and its steady hum quiets. Power factor production within the reactor is halved (round up).	The reactor fails and stops providing power. *Critical failure:* The reactor explodes, causing d6m (En) to the compartment.
Engine Fusion torches, induction engines, and the like (For stabilizers and similar accessories, refer to 'General'.)	Chaos! Control over the ship's course is briefly lost. The helmsman must make a *space vehicles* skill check, or the ship enters a spin (see page 159 in the *Gamemaster Guide*).	Disaster! Control over the ship's course is lost. The helmsman must make a *space vehicles* skill check every phase, or the ship enters a spin (see page 159 of the *Gamemaster Guide*).	The engines fail. The ship continues moving, but can't maneuver or accelerate. *Critical Failure:* The engines overload; the ship accelerates madly in its current direction, but no maneuvers may be attempted.
Drive Stardrives and other independent FTL engines	The drive unit goes offline, and can't be used until jurygrigged or repaired.	The drive unit loses its charge containment and must be recharged before use.	If the drive unit is charged, it activates, sending the ship in a random direction. *Critical Failure:* Half of the ship is sent to one location, and the other half light-years away in another direction.
Support Life support and autosupport. This includes integrated acceleration-resistance systems. (For recyclers, accumulators, and similar accessories, refer to 'General'.)	General life support (air and temperature) fails in one randomly-determined compartment supported by the unit.	General life support fails in all compartments supported by the unit. Inertial resistance systems begin to fail. During any acceleration or maneuver the ship becomes a G3 environment.	The unit malfunctions, emitting toxic chemicals into the ship's atmosphere. Treat as an A3 environment after d4 rounds. *Critical Failure:* Inertial dampening systems fail. If the ship accelerates or maneuvers, the crew dies.
Sensors Active sensors such as radars and passive ones such as mass, EM, and IR detectors	Sensor scrambling provides a +2 step penalty to operator. Sensor range is half normal.	Scrambling inflicts a +3 step penalty. Sensor range is one-tenth normal.	The system fails. If the system was the only sensor available, the crew is effectively blind. *Critical Failure:* The system returns false (but believable) data.
Defenses Primary defenses such as jammers, point-defense guns, and ablative shields (For damage control, see 'General'.)	The system loses effectiveness, providing a +2 step penalty to its operator.	The system fails, but continues to draw power until power is reallocated by the ship's engineer.	The system fails. On each phase, it draws 1 additional power factor from a randomly determined system (cumulative). *Critical Failure:* As above, but power drain is doubled.
Communications All forms of transceivers	The system loses bandwidth; video and holographic transmission is impossible.	Signal degradation and targeting failure limits the communication's range to a single AU (150 Mm).	The transceiver fails. *Critical Failure:* The communicator replays old messages.

TABLE S4: SYSTEM FAILURES

System	Stun	Wound	Mortal
Computer Core The primary control computer for all ship functions, regardless of quality	The computer no longer provides automatic reports of ship status. All functions must be performed manually.	The computer occasionally (1-in-4 chance) refuses to acknowledge commands. In the event of refusal, the command must be repeated or the computer taken offline.	Incorrect data streams to the attention of the crew: damage reports, system failures, etc. Roll three fictional system failures for other compartments. *Critical Failure:* The computer immediately shuts down the "damaged" systems as above.
Dedicated Comp. Systems Helm, weapons, tactical, etc.	The assistance programs become erratic; during each phase, there is a 1-in-4 chance they provide no bonus to its user.	The assistance programs cease providing any bonus to their user.	While appearing undamaged, the computer gives a +1 step penalty until deactivated. *Critical Failure:* As above, but with a +3 step penalty.
Weapons: Energy Lasers, plasma cannons, particle beams, mass cannons, EM torpedoes, and the like. (For non-offensive systems, see 'General'.)	A power malfunction in the system renders it inoperative for d4 phases (may extend into the following round).	Nothing appears wrong at first, but the weapon overloads if used again, destroying itself and doing d4w to its compartment.	An overload builds up in the system. In d4 rounds, an explosion causing d6m rocks the compartment. *Critical Failure:* The overload begins as above, but the explosion occurs in d4 phases.
Weapons: Guided Missile racks and missile tubes	Guidance system failure. Attempts to fire the weapons system suffer a +2 step penalty until repairs are made.	Target recognition failure. Immediately after launch, the missile homes in on the closest target, friend or foe.	Arming protocols fail, and one of the missiles in the ammunition locker detonates, dealing its Ordinary damage to compartment. *Critical Failure:* All of the system's missiles and ammunition simultaneously detonate, as above.
Weapons: Projectile Rail cannons and similar slug throwers	The weapon jams and requires d4 phases to automatically clear itself (may extend into the following round).	The weapon's launch cylinder loses alignment. Use of the weapon incurs a +4 step penalty.	A jam prevents firing the gun again. If another shot is attempted, the weapon destroys itself. *Critical Failure:* The weapon is destroyed.
General Includes crew, cargo, and other systems that defy standard categories	The system demands double the normal power factors (or 1 if it normally requires 0 power factors).	Temporary system failure lasts d6 phases (may extend into the following round).	Random malfunctions and activations are permanent until repairs are made. The Gamemaster should come up with something creative. *Critical Failure:* The system is destroyed.
Bridge Station This includes any bridge control station, such as helm, engineering, or weapons	A single station ceases to function. Systems tied to it must be controlled manually from the compartment	The data network malfunctions. Any skill checks using ship systems from bridge stations suffer a +2 step penalty.	As stun, but all bridge stations cease functioning. *Critical Failure:* No additional effect.

When Life Support Fails

A ship's life support system could fail as the result of damage to the compartment holding the system. It's also possible that someone might deactivate life support in effort to gain power factors elsewhere on the ship, or in an effort to sabotage the ship.

The failure of life support doesn't instantly mean death for the heroes aboard. They may be able to carry on for hours, even days, before the invasive effects of the cold vacuum outside bring about their end.

One immediate effect is the failure of any artificial gravity systems aboard. The ship becomes a G0 environment, and the crew should quickly belt themselves in. Even more importantly, the ship must maintain its current course and speed, as any change in velocity or direction would certainly doom those aboard (see 'Acceleration and Human Limits' on page 15).

The second effect is the end of atmospheric recycling. The air within the ship will run out of necessary oxygen, and the unprocessed carbon dioxide that the crew exhales will become poisonous. Divide the ship's total durability by its crew. This is the number of hours before the ship becomes an A3 environment.

The final effect involves the control of temperature. Interplanetary and interstellar space are cold, and without life support systems to heat the ship, the temperature within quickly falls to match that found outside. For each hour, reduce the ship's temperature by one grade on the GRAPH scale. After one hour, the ship falls from an H2 to an H1; after a second hour, it becomes an H0 environment.

A ship's crew can don environmental suits to extend their viability. Once life support returns, the effects are quickly felt. Artificial gravity can be instantly restored, and only ten minutes need pass before the atmosphere returns to normal. Temperature rises at the same rate it originally fell.

tors, see 'Damage Control Skills' on page 163 in the *Gamemaster Guide*.

A ship can't hope to fully replace itself. Limits exist on the amount of damage that heroes can fix outside of a repair shipyard, as do realistic constraints on the amount of spare parts that a ship can carry around.

Assume that a ship can repair any number of stun points, given sufficient time. Stun damage is mostly cosmetic, and usually involves minor adjustments and refits, not replacements.

For more serious repairs, each ship carries a number of repair points equal to its total durability. Each point of wound damage successfully repaired costs 1 repair point, and each point of mortal damage successfully repaired costs 2 repair points. If a hero fails the complex skill check to repair damage, half the repair points that would have been used are wasted and destroyed (round fractions up).

A ship can carry additional spare parts and replacement components in a cargo hold. For each durability point of cargo space allocated to this purpose, the ship gains an additional 10 repair points.

Repair Times

The *Gamemaster Guide* provides the basics of repair times (see 'Damage Control Skills' on page 163), and the time it takes to install new systems or replace fatally damaged ones (see 'Improving Old Systems' on page 155). Depending on where repairs are made, the install modifier from TABLE S8: SPACEPORTS on page 34 can modify these times significantly.

Moreover, sometimes an even more comprehensive repair—full compartment replacement—may be necessary. When a compartment loses all of its durability points, it must be taken to port of at least miniport quality (see 'Miniports' on page 34). There, after the wreckage of its predecessor is carefully removed, a replacement can be put in place.

The exact time to replace a compartment depends on the compartments size and type:

To speed things along, it's possible to install the compartment's systems at the same time while the compartment itself is refitted. Since compartment repair times are always at least as long, ignore the system replacement times.

TABLE S5: REPLACING COMPARTMENTS

Type	Time
Command	6 weeks/dur
Engineering	10 weeks/dur
Weapons	3 weeks/dur
Auxiliary	4 weeks/dur
Electronics	4 weeks/dur
Cargo	1 week/dur
Crew	2 weeks/dur

Repairing Armor

Unlike most forms of damage and system failure, the crew of a vessel can't repair armor damage during combat. Armor repairs require that the damage control officers complete replacement and restoration from outside the ship hull. In space, this can be accomplished using environmental suits. Grafting on new armor plates and bending old ones back into place also consumes a fair amount of time.

To complete armor repairs, use a complex skill check with the Technical Science–*repair* skill. For armor damaged by excessive wounds, the task is of Good complexity, requiring a total of 6 successes (and 1 repair point, regardless of the amount of damage incurred). Skill checks to accumulate these successes can be made once per ten minutes. For armor that has sustained mortal damage, the task is of Amazing complexity, requiring a total of 8 successes, plus 1 success for every point of mortal damage the compartment suffered (and 2 repair points, regardless of the amount of damage incurred). Skill checks to accumulate these successes can be made once per hour.

Repair Costs

A final consideration in the repair of a ship is the reckoning that comes afterwards. To determine how much it costs to repair a ship is simply a process of addition. Each system replaced add its list cost, as does any compartment replaced. (The list cost includes installation and handling fees.) Each repair point costs $100. Labor costs adds an additional percentage (d4×10%) to the total. Finally, it may be a worthwhile

idea to add a small gratuity to the repair crew, especially if they performed well, or if the heroes think they might make use of them again on a later date.

General Tactics

Spaceship movement and combat can include more than just rushing to close range and blasting away with plasma cannons. Before combat begins, the parties involved can get entangled in long games of evasion, detection, and pursuit. They can make use of cloaking technology, nearby astronomical bodies, and all sorts of maneuvers intended to give them an advantage.

Ship Crews

One question that heroes—and players and Gamemasters—may ask is how many crew members should a ship have? Without a sufficient crew, heroes waste the advantages of their ship's advanced technology. With too many crew members, heroes and players may feel useless as they watch a combat go by with no role to play.

To accurately determine how many crew members a ship needs, the Gamemaster must consider the necessary ship systems. Add up the number of critical systems (systems that will be used in every combat or situation). Every critical system needs an operator. For example, each weapon system that will be fired regularly, the sensor suite, and the helm control are the most important systems.

For a quick guideline, however, consider the following rule: to be fully crewed, a ship should have at least as many crew members as its compartments. (For ships with unusual designs, divide its total durability by 5.) For example, a standard scout-class ship should have about six crewmates. A corvette probably needs at least a dozen.

Reduce this number by a couple operators for weakly-armed cargo vessels that fill their space with large cargo bays. Multiply this number by three, four, or even five for military ships standing prepared for battle with multiple offensive systems, repair stations, and a crew ready to respond to any emergency.

Multiple Operators

With many ship systems, it's impossible for more than one operator to control a system at a time. For example, each weapon system aboard a ship can only be fired by one person during a phase. Each weapons operator controls his own weapon.

If a weapon has enough actions, two characters can split time controlling it. The same is true for pilots and helmsmen controlling ship engines, and defenses officers manning similar technology. It's even true for commanders and executive officers who attempt to lead their crew with Leadership skill checks.

For a few systems—namely communications and sensors—however, it's possible for more than one crew member to man a single system. Modern and futuristic comm systems can handle thousands, if not millions, of message signals. Similarly, the data analysis and targeting of a sensor system can be used by more than one sensors operator.

Stations and Switching Stations

Vessels larger than space fighters typically have dedicated control stations on their command deck. One station controls weapons, another sensors, etc. Larger ships may have more than one station for functions with numerous systems aboard. For example, a ship with multiple sensor systems likely has two sensor stations, so that two operators can work simultaneously.

If a character is working at one station—for example, defenses—and wants to transfer to another—such as communications—it takes one action (one phase) to move to the new station and activate it.

If a character needs to rush to another compartment to reach a control station or system, assume that it takes two full actions (two phases) to reach his destination and prepare to work. In especially large vessels, it could take even longer.

Undercrewed Ships

Thanks to the advances of computer systems, the hourly operation of a ship is regulated without the need for human control. In other words, it's not a cause for immediate disaster when a ship becomes undercrewed. Yet the consequences are obvious when a serious situation, such as combat, develops. Important systems, from mass cannons to damage control stations, may desperately need controllers. Characters frantically roaming back and forth between various stations squander their efforts. Usually, the situation gets even worse when the undercrewed ship begins to suffer damage, as no officer aboard can spare the time to leave the command deck and its control station in order to repair compartments.

Sometimes, though, the problem may simply be that the group of players seems too small. The Gamemaster has a few options to consider to help them along as they struggle to command a vessel beyond their means (other than encouraging them, one way or another, to get a smaller ship). First, he can allow the heroes to recruit a supporting cast: space hands and naval officers. During a combat, the players can take on the task of temporarily controlling an extra character as these characters are needed.

Computer and technology offer another option. Many ship functions can be performed by a ship's computer system. The *Gamemaster Guide* discusses computer systems aboard a spaceship, and both the *Player's Handbook* and the accessory *Dataware* (#2811) provide detail on how to use artificial intelligences (AIs). The short version is that AIs and expert computer systems have skill scores in System Operation specialties much like normal heroes. Depending on the quality of the system, the Gamemaster can offer a high (15–17) or relatively low (10–12) skill score.

AIs could reasonably be assigned to control sensors, communications, and even some engineering tasks. But some tasks are more difficult to leave to the computer. Ship repair stands out as a good example. For such a task, the heroes could consider adding a few robots and similar slave units aboard their ship.

Ultimately, though, the focus of your sessions, whether in a starship combat or anywhere, should stay on the heroes and not on the supporting cast, the computers, or the robots. The heroes should lead the way, make the important decisions, and even the important dice rolls.

Transponders

For the average law-abiding citizen, interstellar trader, or space-faring tourist, issues of detection never come into consideration. They're more concerned about being seen than going undetected, so they carry transponders. In essence, a transponder is a system constantly transmitting "Here I am!" through the reaches of space. Even more than that, it provides the identity of the vessel to everyone within radar range. Most interstellar law agencies heartily approve of the practice, and around crowded planets and stations, transponders are critical for the safety of everyone.

Yet the very existence of transponders presents certain heroic opportunities. Heroes who want to falsify their identity may choose to disable their transponder broadcasts; this easy task can be completed by anyone with the System Operation skill. Yet many people (including law enforcers) may be curious if they detect a ship without a transponder.

The other option involves falsifying a transponder code. To complete this task successfully, a hero must make a Computer Science–*hacking* skill check. The result of a successful check indicates the complexity of the *communications* skill check required to penetrate the "disguise" (Ordinary, Good, or Amazing). In some cases, curious individuals may find it advisable to call up the local authorities to confirm the validity of the ship's identity.

Note that, especially in times of war, military vessels will use a variation on the IFF (Identify: Friend or Foe) system. Instead of an active transponder signal announcing "Here I am!" to all within range, this system requires an active "ping" from other ships' sensor systems to respond.

Cloaking & Shadowing

It's difficult to hide the existence of ships that travel at relativistic speeds, or even those that move at a few million kilometers per hour. Ships with such kinetic energy present a significant sensor signature that makes them difficult to miss. Only at the later Progress Levels—PL 7 and beyond—does true sensor cloaking technology evolve that has a chance of allowing moving vessels to evade sensor detection. (See *Chapter 2: Space Technology* for examples of some systems.)

With the existence of such systems, it becomes possible to escape notice and even to shadow another ship as it moves through space. Begin the encounter when the vessels enter sensors range, determined by TABLE S20: SPACESHIP DETECTION RANGE on page 52 (note that this is an expanded version of TABLE G46 on page 156 in the *Gamemaster Guide*). The basic mechanic is easy; a System Operations–*defenses* skill check made by the cloaked ship applies a +1, +2, or +3 step penalty to the enemy's *sensors* skill check (for an Ordinary, Good, or Amazing success, respectively). This penalty is further modified by the specific cloaking system used (and any other circumstances of the encounter). If the *sensors* skill check results in a failure, the ship remains undetected. Of course, if the heroes' ship is the one being shadowed, the Gamemaster should make these checks in secret to avoid tipping his hand. Note that the effects of multiple stealth systems aren't cumulative; apply only the effects of the best system.

Once the check has failed, the undetected vessel can attempt to close and surprise the enemy (see 'Surprise' in the next section). Or, the ship can keep a safe distance and hope to follow the enemy. In this case, with each passing hour both the cloaking ship and the enemy vessel must make skill checks to determine detection.

The use of active sensor systems, weapons systems, a transponder, or any direct thrust engine systems (to accelerate or maneuver) immediately negates the stealth system's advan-

Active or Passive?

Chapter 2: Space Technology presents a complete list of active and passive sensors. Generally speaking, radars are active sensors, while systems called detectors are passive systems.

tages for the current round. The section entitled 'Sensor Systems' on page 52 identifies active sensor systems. The induction engine, hypermagnetic engine, gravitic redirector, and inertial flux engine are examples of engine systems that don't use direct thrust.

At the end of each following round without the use of such systems, the stealth vessel regains 1 step of its original defensive advantage. In the round after which the ship has gained its maximum defensive advantage (i.e., the step penalty has returned to its original value), the enemy sensor operator must make a successful *sensors* skill check (apply normal penalties, including that of the stealth system), or else contact with the cloaked ship is lost.

Lying Low

Perhaps the best way to avoid detection is to lie low. This tactic is available even at PL 6, and remains one of the more effective ones even at later Progress Levels. Interplanetary space, especially near developed worlds, can be crowded with stray comets, asteroids, satellites, and other random objects that provide excellent concealment. It's only when a ship spends energy moving that it becomes easily identified.

If a crew reduces power to a minimum of life support and passive sensors and ceases movement, they apply a +3 step penalty to attempts to be detected when a ship first attempts to detect them, or just enters sensor range. Standard modifiers for obscurity and prevailing conditions apply.

Evasion

Once the Gamemaster has determined that surprise conditions don't apply, the next consideration is evasion. Assuming an infinite amount of space, you can generally apply a single rule: the ship with the greater acceleration determines if the evasion is successful. If that ship is the pursued, it can accelerate away from the enemy's current position and get away. Only if the pursued has the velocity to get out of sensor range very quickly will he be able to get away from a pursuer with greater acceleration.

Of course, battles need not be fought in the featureless void of space, and the decision of whether to evade combat may depend on a number of factors. Even if the slower-accelerating ship couldn't ultimately get away, maybe it can reach more friendly space, occupied by allies or law enforcement. Or maybe it can attempt to reach a crowded meteor shower, a planet, or even the fringes of a star's outer corona.

Docking

As docking typically forms an unexciting beginning or ending to an adventure, it usually falls into the category of events that are best simply described without the need for rolling dice. Times may occur, however, when you want to raise some tension with a challenge scene in which docking forms an essential part. Some examples situations could be:

- The heroes' vessel is severely damaged, making even Routine maneuvers difficult.
- The heroes are attempting to complete a docking action while taking fire from enemy ships (perhaps including the ship with which they're attempting to dock).
- The heroes have only a few moments to link with another ship. Maybe it's about to enter drivespace and the heroes only have one chance to get it right.

Before docking can be attempted, the ship attempting to dock must close within 0.1 Mm of its target. Docking with a station or ship at a stable speed requires a Routine maneuver. (This also includes targets which aren't moving at all, or are in a stable orbit.)

Docking with a vessel still moving through space is more difficult. Before the pilot may attempt the maneuver, the ship desiring to dock must match the velocity and acceleration of its target. The target vessel can then make things easier by linking their navigation data and computer data together. With such assistance, docking with a moving ship is a Moderate maneuver.

The hardest situation comes when trying to dock with a vessel that's not trying to assist. If the heroes close within 0.1 Mm of their target and the pilot makes an Extreme maneuver, assume that the pilot succeeds in docking.

Successful use of a tractor beam in any of these situations reduces the difficulty of the maneuver by one step (from Extreme to Moderate, for instance).

Using Weapons Without Sensors

Most weapons systems, from particle beams to missiles, rely on active guidance systems or laser targeting systems. Ships that rely on stealth and nondetection must do without active rangefinding radar systems and the like; as a result, they suffer a +1 step penalty on System Operation–*weapons* skill checks. Unless the Gamemaster determines that a surprise situation is possible, the crew of both ships are generally aware when they're being targeted.

Combat Tactics

While evasion and preliminary maneuvers may affect the outcome of your interstellar campaign, players generally find the events during a battle the most enjoyable. This section discusses a few cunning plans and optional rules that can add depth and interest to a space-based slugfest.

Surprise

In space, surprise situations rarely occur. Before a pilot can attempt an ambush, the target must fail a *sensors* skill check. Then, the ambusher makes a Tactics–*space tactics* skill check (modified by the prevailing conditions). If a cloaking system is being used, a *defenses* skill check is also made.

The results of these checks apply a modifier to the target's chance to notice the ambusher (with a second *sensors* skill check) as it enters weapons range.

If both of the target's skill checks end in failure, a surprise situation occurs. The enemy can close to weapons range, take position, and release a barrage of fire. During this surprise phase, the target ship continues along its merry way, blissfully unaware of its impending fate. After a single phase of fire, the crew of both ships roll action checks as normal.

He's on My Tail

As mentioned on page 200 in the *Player's Handbook*, a pilot can gain some major benefits by staying on the enemy's tail. As long as he maintains the tailing situation, the pilot gains a bonus to his action check and his Vehicle Operation–*space vehicles* skill check.

Just how you determine the success of an attempt to perform this maneuver with a spaceship depends on the system of presentation you've adopted. For the visual and the vector system, positions on the hex map or ship coordinates should make it clear when a tailing situation is in place. In the visual or action combat system, a tailing situation can be achieved simply through the successful execution of an Extreme maneuver (+2 step penalty), assuming that such a maneuver is logically possible, given the description of the combat.

Dead On

Sometimes, the pilots of two vessels want nothing more than to close distance between one another, showering fire and energy blasts down with brute efficiency. The Gamemaster can determine, depending on the system of play being used, just when such a situation has developed. (This can also result when two ships are both traveling at high velocity in one direction, but in their frame of reference they approach one another directly.)

In addition to the standard bonus to attacks given by the lack of maneuvers (–1 step), the weapons officers of both vessels gain a second –1 step bonus, much as if they were motionless, for a total –2 step bonus. They also ignore any penalty for exceeding cruising speed, if traveling at high speed in the same frame of reference.

Scanning

Intelligence represents half the engagement, and the sensors officer is almost always the key to getting information. Before a strategy targeting a ship's vulnerable points can develop, the sensors operator must illuminate the specifics of the enemy ship. Using conventional radar, a sensors operator can identify the function of each compartment and its size in durability points.

Identifying systems within a compartment presents a more difficult task; the metal hull of a ship prevents radar examination. Other sensor systems, however, can make the attempt, cross-referencing measurements and readings with databanks of systems. Example systems include IR detectors, CE passive arrays, and mass detectors.

Allow a *sensors* skill check at a +2 step penalty. The sensors operator can choose a compartment randomly, or have already determined the function of the target compartment. The number of systems identified depends on the result of the check: Ordinary, one system; Good, two systems; Amazing, three systems. The largest systems (determined by durability) are the first identified. A sensors operator can make multiple skill checks to identify more systems in a compartment.

Truly alien or unknown systems may defy identification, although a scan may ascertain their general size and purpose (power, weapon, sensor, etc.).

Aiming

When it's more important to shoot accurately than often, a weapons officer can spend an action aiming before an attack is made. Aiming provides a –1 step bonus to the next attack.

Aiming can be combined with the standard rule for holding an action so that the attack need not occur in the phase immediately after the hero aims; however, if any other action is taken between the aiming and shooting, the benefit is lost.

Called Shots

It's possible for a System Operation–*sensors* skill check to adjust the result of a random compartment hit location. (See page 161 in the *Gamemaster Guide* for more information.) Basically, a successful result changes the random d20 roll by 1, 2, or 3 points.

Using skill rank benefits presented in the next section of this chapter, heroes with several skill ranks in System Operation–*sensors* or weapons can increase their control over the result of the compartment hit roll.

Note that the pilot of a small spacefighter can attempt to assist his own hit location result. Use the 'Two Actions at Once' rules found on page 51 in the *Player's Handbook*; the player rolls two separate skill checks during the same phase. The primary action (the *weapons* skill check) receives a +2 step penalty, and the secondary action (targeting with *sensors* skill check) receives a +4 step penalty. Ambidexterity has no effect on these penalties; they have more to do with dividing one's attention than physical limitations.

Some advanced spacefighters (PL 7 and above) may contain an artificial intelligence program or a robot that can make *sensors* skill checks that help the heroic pilot.

Sensors are Affected Too

Whenever a sensors operator attempts to assist in targeting of weapons, his System Operation–*sensors* skill checks are modified by all of the same modifiers (target's maneuver, speed, conditions, etc.) that the weapons officers uses for his attack. See 'Spaceship Attack Modifiers' on page 160 in the *Gamemaster Guide*.

Table 56: Called Shot Penalties by Compartment

Number of Ship Compartments	Modifier
2	+2 step
3–4	+3 step
5–6	+4 step
7–8	+5 step
9–10	+5 step[1]
11–12	+5 step[2]

Compartment Durability	Modifier
1–2	+2 step
3–4	+1 step
5–6	+0 step
7–8	–2 step
9–10	–3 step

[1] Compartment 1 (usually the command deck) lies deep within the hull and can't be targeted.

[2] Compartments 1 and 2 (usually the command deck and the primary engineering compartment) lie deep within the hull and can't be targeted.

Called Shots: Method B

The standard rule doesn't really allow for the heroic stab at the enemy's vitals. You may want to allow heroes to devote themselves to hitting a critical enemy compartment and the systems it contains. This may be especially true for story reasons; maybe the heroes simply must shoot the enemy's dreaded superweapon before it releases its effect on a helpless population below.

To achieve this effect, use the same rule as used for called shots in personal combat. The sensors officer receives a +4 step penalty to his System Operation–*sensors* skill check. Assuming that both the *sensors* and (unmodified) *weapons* skill check both succeed, the attack hits the selected compartment. On a failed *sensors* result, the location of a successful hit is determined randomly, as normal. (Of course, if the *weapons* skill check fails, the shot misses regardless of the targeting assistance.)

Called Shots: Method C

The method described above fails to take into account the size and shape of the target ship. As ships grow in size, it becomes increasingly difficult to target specific parts within them; ship designers can plan to put critical ship components in the heart of the ship, away from its outer hull.

It's also possible to consider the size of the compartment itself; compartments of 8 durability are easier to hit than compartments of 4 durability.

To consider these effects, the penalty given to the System Operation–*sensors* skill check depends on the number of compartments in the enemy ship and the size of the compartment. Refer to TABLE S6: CALLED SHOT PENALTIES BY COMPARTMENT below. Follow the same rules described for the method above, but use the modifier found on TABLE S6.

Targeting A System

Even more difficult than targeting a specific compartment is the attempt to damage a specific system. In order to make the attempt, the sensors operator of the ship must have knowledge of the enemy ship's system allocation (see 'Scanning' on page 25).

Use any of the called shot systems just described, and apply an additional +2 step penalty. Then three conditions must be met. First and second, the *sensors* and *weapons* skill checks must succeed. Third, the attack must do enough damage to force a durability check for system failure. If the attack meets these qualifications, ignore the random determination of system failure; the targeted system is automatically the subject of the durability check.

Friendly Fire

Fortunately for ships that work in pairs or groups, it's nearly impossible to randomly strike a ship in the vastness of space. The Gamemaster should only consider the possibility when unusual circumstances warrant it, or for story purposes. Possible situations include a crowded orbital environment, ships that are docked with one another or at point blank range, or small craft in proximity to much larger vessels. In such an event, have the weapons officer immediately roll a second skill check for his errant shot, just as if he were attacking the unintended target. Apply modifiers normally.

Targeting a Turret

Targeting a turret (and by definition the weapon it houses) involves many of the same rules just described for targeting a specific system. However, the exposure that turrets have on a ship's hull, negates the normal +2 step penalty to target a system. In addition, targeting a turret does not require a system allocation scan of the enemy vessel.

Threaten

In the complex affairs of interplanetary relations and negotiations, sometimes all that's needed is the rattling of a saber, and not the shedding of blood. Instead of making a normal attack, a weapons officer can threaten the enemy with a broadcast of a successful weapons lock. The hero makes a *weapons* skill check, but inflicts no damage. Instead, he immediately begins holding his action until the threatened vessel performs a certain action; for example, firing guns, maneuvering, powering up engines, or whatever. At the moment that the threatened vessel acts, the weapons officer immediately inflicts damage, as determined by the initial skill check.

The hero can take no actions between the phase of threatening and firing. He could, however, say a few words over his communicator, such as "Surrender!" or "One move and you're dead."

A hero can combine a threaten attack with a called shot.

Point Blank

The definition of point blank range depends on the Progress Levels involved. At PL 6, if two vessels close within 0.01 Mm (a mere 10 kilometers) of one another, they're considered to be within point blank range. At PL 7, ships within 0.1 Mm lie within point blank range.

Within point blank range, the weapons officer gains a –3 step bonus to his System Operation–*weapons* skill checks. The sensors operator receives the same bonus to his *sensors* skill checks when attempting to target the vessel for weapons fire.

Besides offering the same bonuses to the enemy, ship pilots often avoid such close proximity for fear of being rammed, boarded, or caught within the explosive radius of a dying ship.

Boarding

Executing the hostile takeover of a ship can prove extremely profitable. Valuable cargo can be taken, along with anything else on board the ship. The ship itself represents a potential fortune on the black market; hence, the existence of spaceborne pirates becomes possible.

As lucrative as the possible rewards, boarding represents a difficult operation. Use the rules for docking (see 'Docking' on page 24). Unless the target vessel's engines have been disabled, the attacking ship must make an Extreme maneuver to match airlocks—and that's after closing to point blank range (see 'Point Blank,' above). As with docking, use of a tractor beam reduces this to only a Moderate maneuver.

Even after a successful docking, the potential boarders face the situation of proceeding inside a vessel whose lay-

out, defenses, and internal systems they probably don't know. Plus, just getting out the airlock into the target ship could prove especially dangerous; armed defenders would likely guard the airlock entrance to the ship.

Fighting Aboard a Starship

While no ship captain likes to see his ship boarded, it's a common element of futuristic heroic stories, and thus the players, if not the heroes, may want to savor the experience. In general, ranged and close quarters combat aboard a starship works normally. The Gamemaster may want to take into account a few special considerations.

First, consider the cramped quarters and tight passages of the average vessel. Ship designers concern themselves with cramming as many systems and components into a starship, and often don't take into account comfort or roominess. While the ship construction system presented doesn't detail precise measurements of corridors or rooms, no ship will have wide open spaces that the heroes may be used to fighting in on a planet's surface. On a tightly packed military ship, free space can be even harder to find.

During the fight, pay attention to how many people could engage in combat. In a ship corridor, it might not be possible for two heroes both to engage an enemy in hand-to-hand combat. Perhaps no more than two or three characters could attempt to use ranged weapons. Moreover, don't forget to take account the rules for friendly fire (see page 46 in the *Gamemaster Guide*).

Another thing to consider is cover. The typical ship compartment may be filled with parts and components that jut out from walls. Even in the most elegant organically-designed vessels, an access panel, service tunnel, or nearby exit may offer an opportunity to seek protection from ranged fire. As long as characters haven't been rendered immobile, assume that they can find at least medium cover (+2 step penalty to opponent's ranged attacks) at a moment's notice.

Defensive Advantage

A consideration for the attacking characters must be the layout of the ship that they're boarding or invading. Unless they've managed to procure a schematic, the defending characters have a significant "home court" advantage. The defenders can sneak through passages, double-back on the enemy, and have an advantage in ambush situations. (If the defenders set up an ambush, add a +3 step penalty to the attacker's surprise check.)

The attacking characters must also consider the status of the vessel they've intruded into. If it hasn't been completely disabled, they may be in for some surprises. The defenders are sure to at least use control over the ship's illumination (or lack of it, when preparing a counterattack). The standard penalties for illumination during combat or surprise apply (up to a +3 step penalty to attacks or surprise checks for total darkness).

But the besieged ship's crew can be yet more nasty, using the environmental controls to render sections of the ship uninhabitable. For this reason, it's not a bad idea for a boarding party to don hard e-suits or some form of protective powered armor. Finally, if they're really desperate, the defenders could leap into an escape pod and engage their self-destruct.

Where the Bullets Go

Whereas the defenders can use their vessel and knowledge of it to their advantage, the attackers may enjoy some situational leverage of their own: They may not care about the final condition of the ship they're invading. They can freely shoot up their surroundings with only the problems of ammunition to limit them. The defenders may not share such a careless attitude about the property.

For each stray shot in a compartment—or intentionally stray shot—the compartment must roll a durability check (apply normal penalties for any stun, wound, or mortal damage already suffered). If the compartment fails, the stray shot has caused damage. Roll the weapon damage normally and then degrade by one grade (mortals become wounds, wounds becomes stuns, and stuns are ignored). Apply this damage to the compartment as normal; armor has no effect.

This damage has the standard possibility to cause system failure. Indeed, if a shot is intentionally fired at a specific ship component (or the Gamemaster determines that the system is most likely to be hit since it's being used for cover, etc.), that system in the compartment is automatically the victim of a system failure, if a system failure is indicated.

Characters taking special care not to harm delicate systems or ship components can restrict their fire, taking a +2 step penalty to their skill check on the attack. If he misses, he doesn't strike anything and the compartment doesn't need to make a durability check to determine if it suffers damage.

Ramming

After boarding, ramming stands as the next most difficult ship action. Use the rules for attempting to dock with a hostile ship noted above (0.1 Mm, Extreme maneuver unless using a tractor beam, in which case it's a Moderate maneuver). If the helmsman succeeds in the maneuver, he has successfully rammed the enemy vessel.

The amount of damage caused by the ram depends on the size of the ships involved. For each ship, divide its total durability by 10, rounding down. This is the number of "hits" that the ship inflicts to the other vessel involved in the ramming action. For each hit, roll randomly to determine which compartment suffers damage; a compartment may suffer more than one hit. Each hit causes d6 points of wound damage, plus 1 wound per .5 AU of total velocity (add the two ships' velocities together). If the ships are not striking each other head-on (for instance, if one is "sideswiping" or "broadsiding" the other), this additional damage can be reduced by half or more. Armor is applied normally; consider the damage to be HI/A.

Electronic Warfare

The previous section illustrated the importance of electronic assistance in targeting and weapons assistance. However, the effect of the high-tech gadgets found on an average spaceship extends even further than noted.

Electronic countermeasures (abbreviated ECM) form the centerpiece of most electronic warfare. Common ECM systems include jammers or ion scramblers. Using such a system, a communications officer can make a *communications* skill check to apply penalties to the enemy's *sensors* and *communications* skill checks. It also

applies a penalty to *weapons* skill checks used in firing a missile system. (For the specific penalty, see the description of the system.) The effects last throughout the entire round after the current round.

Of course, the enemy will likely return the favor, and in order to respond, an officer can make a *communications* skill check to counterjam. Jamming suppression works the same way as jamming, except that it takes effect for all of the current round; each step of penalty listed for the system's use in jamming becomes one step of jamming removed.

Another form of electronic warfare overlaps that of the datastream gridrunner, the hacker. Every ship has a computer tied into all of its functions, whether critical or insignificant. As with standard computers, a shipboard computer can be described with active memory slots, programs, and the like. And since the computer is tied into the ship's communication system too, a proficient gridrunner can attempt to break in and take control.

The communications officer must complete a complex skill check, building up successes with every action; the complexity is determined by the quality of the target's shipboard computer. A dedicated communications computer aboard the target vessel applies a penalty to the check according to its quality (Ordinary, +1 step; Good, +2 steps; Amazing, +3 steps). Once a hero successfully completes the complex skill check. he or another crew member can use Computer Science–*hacking*, using the normal rules and system for infiltrating an enemy system. A Control program will eventually be used to manipulate the target's ship systems.

In practice, this is a difficult operation. The moment that a ship's crew determines they're the subject of a foreign attack, they can terminate the hacker's access by deactivating their communications systems. Or, a ship can carry defensive computer programs much like any valuable networked computer. Finally, the crew of a military ship will simply segment their ship's computer processing, drawing a strict line that divides the passage of communications data from the rest of the ship.

Self-Destruct

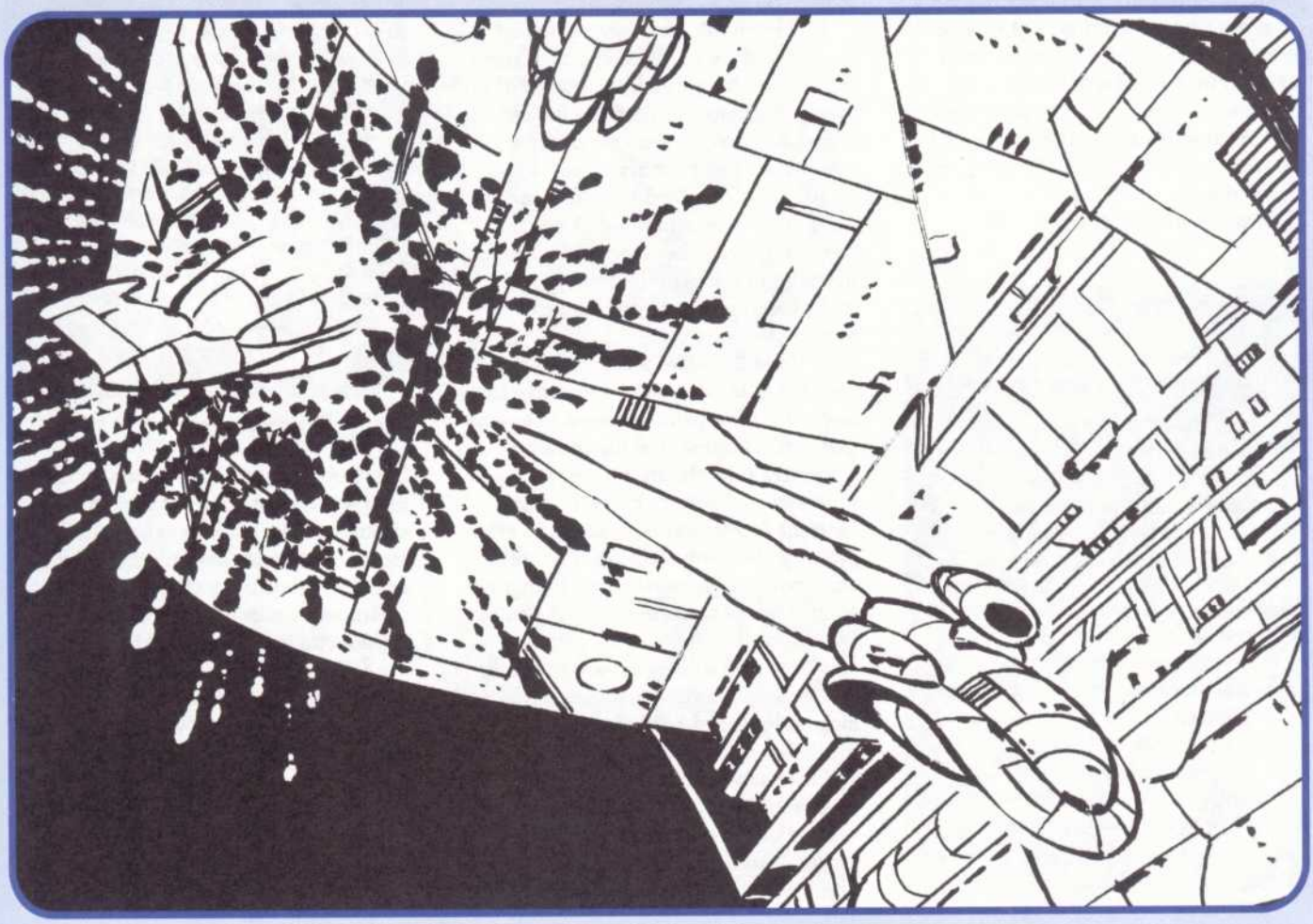
A final option that a ship crew can consider is the choice to sacrifice their ship—and possibly their lives—in the service a greater cause. Perhaps they battle a force that they simply must destroy no matter what the cost, or maybe the heroes won't stand to have their ship taken over by the ravenous hordes about to board. In either event, an explosive death for all involved may be the only way to go.

Refer to the rules for 'Spaceship Death' on page 18. A ship crew can choose to overload their reactor with the results described; no 1-in-6 chance applies. The ship will be lost, and it may even destroy another ship nearby.

It's possible, through the combination of ramming and self-destruct, to cause even greater damage in a cumulative final blow. Resolve each action and the damage they cause separately.

Helpless Targets

Often, it's only necessary to disable a target in order to complete a mission



objective. At other times, only complete annihilation will do. Unless circumstances complicate the situation with third parties, damage systems, limited ammunition, a time limit on the heroes, or some other interference, the Gamemaster can simply assume that a disabled vessel can be destroyed with a repeated barrage of weapons fire.

If the situation is complicated by one of the situation above, simply take into account the significant System Operation–*weapons* bonuses involved. The enemy ship may be motionless (–1 step bonus); it's not maneuvering (–1 step bonus); and the attacking ship can aim or close to short or point blank range. Every crew member can concentrate on making every shot count and keeping every weapons system firing.

Advanced Skill Results

As the crew of a ship gains experience in using its systems, they become more proficient at the stations, able to produce more impressive results, and even able to extend their ship beyond its strict specifications. Players can reflect a increased competence for their heroes' space skills by purchasing additional ranks of System Operation and Technical Science specialty skills and Vehicle Operation–*space vehicles*.

Purchasing Rank Benefits

The sidebar on page 63 in *Chapter 4: Skills* in the *Player's Handbook* describes a method by which the Gamemaster can allow especially gifted or ambitious heroes to purchase skill rank benefits prior to achieving the rank with which they are normally associated. You can use the same rule for the skill rank benefits in this section, but remember that skill rank benefits marked with the ⊗ can only be obtained by characters who attain the rank at which the benefit becomes automatically available.

Piloting

As pilots gain additional skill ranks in Vehicle Operation–*space vehicles*, they learn more about the capabilities of their vessel and its engines. They reduce their chance of losing control and help to perform more difficult maneuvers with an ease once reserved for the simplest ones.

⊗ Rank 3 allows a hero to reduce his chance of losing control of his ship, and a greater chance to regain control once it has been lost. (For rules on losing control of a spaceship, see 'Failing a Vehicle Operation Check' on page 159 of the *Gamemaster Guide*.) When the pilot fails a maneuver, he receives a –2 step bonus to his *space vehicles* skill check to determine if control is lost. If the result of this skill check is a Failure, the pilot reduces the penalty associated with the loss of control by 1 step: major spins cause a +3 step penalty; spins cause a +1 step penalty; and a yaw indicates no penalty, although the pilot must successfully perform a regain control maneuver before he may attempt any other maneuver.

► Rank 6 allows a hero to select and specialize in a specific Moderate maneuver (long roll, half-loop, or tight turn). The hero can perform the chosen maneuver as if it were an Ordinary maneuver. The primary effect is to remove the standard +1 step penalty for a Moderate maneuver. A second benefit is that it becomes possible for the pilot to perform the maneuver in any phase, without spending an action.

► Rank 9 allows a hero to improve his ability to dodge incoming fire by improving the penalty given to enemy gunners as a result of his maneuvers. Normally, a Moderate maneuver imposes a +1 step penalty, and an Extreme Maneuver imposes a +3 step penalty. With this skill rank benefit, each penalty increases by 1 step, and even Routine maneuvers by the pilot impose a +1 penalty on enemy fire.

► Rank 12 allows a hero to select and specialize in a specific Extreme maneuver (hard bank or loop and turn). The hero can perform the chosen maneuver as if it were a Moderate maneuver. The effect is to reduce the standard +3 step penalty for an Extreme maneuver to a +1 step penalty.

Team Experience

As a crew of heroes survives and triumphs in battles all over the star system, the galaxy, or even the universe, they can grow into a potent team. As this section illustrates, additional skill ranks in spaceship skills play a major role in increasing a crew's effectiveness. Another part of that can be found in the intangibles of a team that grows comfortable with one another through time, anticipating one another's needs and aware of each other's strengths.

After a spaceship crew establishes itself, begin recording the achievement points they receive. For every 50 achievement points accumulated, the crew receives a –1 step bonus on the skill checks when one crewmember attempts to assist another. After 150 achievement points, the bonus reaches its maximum.

Example: If the engineer attempts to assist the damage control officer, he receives a –1 step bonus to his engineering skill check.

For every 100 achievement points that a crew accumulates, each member of the crew receives a –1 step bonus to her action check. After 300 achievement points, this bonus reaches its maximum.

Breaking up a team has a definite effect on its esprit de corps; the loss of crewmate can be felt throughout the ship. For each member of the crew who leaves or is lost, subtract 50 achievement points from the team total.

Copiloting

In the frenzied arena of space battle, no pilot will deny the advantage of a friend sitting nearby, helping to calculate maneuvers, evaluate trajectories, and assist in prioritizing objectives. With additional ranks in *space vehicles*, a copilot can increase his ability to assist.

⊗ For every four ranks achieved, the effectiveness of his skill check improves by one step (although a Critical Failure can never provide a bonus). For example, a copilot with rank 8 in *space vehicles* provides a –4 step bonus to the pilot's *space vehicles* skill checks with a Good success (instead of the standard –2 step bonus).

Overpowered Systems

Despite the damage that it causes to a compartment, ship engineers overpower their systems with a disturbing frequency. The advantages of the practice, listed below, seem irresistible to the cunning engineer who likes to take risks.

Engines: Once all of a ship's engines have been overpowered, they operate with a –1 bonus to their maneuver rating, and subsequently increase their acceleration (see page 144 in *Chapter 11: Spaceships* in the *Gamemaster Guide*.)

Support: By overpowering a standard life support system, an engineer can create more unusual conditions. This includes any deviation in air pressure desired, an increase in temperature by one grade (H3), and the insertion of unusual atmosphere, including toxic (A3) atmosphere. At PL 7 and beyond, an increase in gravity (up to G4 conditions) is possible.

Sensors: Passive sensor systems such as IR detectors receive no benefit from additional power. Active systems, however, such as radar, can be overpowered to their advantage. All skill checks made by such a system receive a –2 step bonus.

Defenses: Many defensive systems, including armor, damage control, chaff, and ablative shields, gain no benefit from being overpowered. Active defense systems such as jammers, deflection inducers, and displacers (those that require a skill check) can be overpowered in order to provide a –2 step bonus to skill checks involving their use.

Communications: The great advantage that overpowering can offer to communications systems lies in preventing them from being jammed. When a communications officer uses an overpowered system to send transmission while being jammed, he receives a –2 step bonus.

Energy and Projectile Weapons: An overpowered weapon system does additional damage with a successful hit. Regardless of the degree of success of the weapons officer, the effect of the overpower is to add 2 points of damage (stun, wound, or mortal, as appropriate). Missile weapon systems, cargo systems, crew systems, and computer systems generally gain no benefit from being overpowered.

Drive: Drive systems generally can't be overpowered. They already require a massive infusion of energy. For an interesting twist, you may allow FTL drive systems that affect a single vessel—the stardrive or the typical hyperdrive or warp engine—to briefly extend their capabilities. The repercussion should be severe, involving mortal damage to one or more compartments, or possibly the complete destruction of reactor, drive unit, or both.

► Rank 4 allows a copilot to seize control of her spacecraft before it enters a yaw, spin, or major spin. After the pilot fails both his maneuver check and his skill check to maintain control, the copilot can immediately attempt a skill check on her own, just as if the pilot's check to maintain control were never attempted. This action uses the copilot's action in the current phase (or the next available phase, if the copilot had no action to use as a result of her action check).

Communications

The communications officer, sometimes known as an electronics warfare officer, has a crucial role to fill. Given the existence of mines and missiles activated by a dispatch from an observing ship, this officer can save a ship from harm or lead it to disaster. With the increase in skill, he can improve his odds of successful jamming.

⊗ For every four ranks achieved, the effectiveness of his skill check improves by one step (although a Critical Failure can never provide a bonus). For example, a comm officer with rank 8 in System Operation–*communications* provides a –4 step bonus to related skill checks with a Good success (instead of the standard –2 step bonus).

► Rank 3 allows a hero a chance not only to inhibit enemy communications signals, but an opportunity to use communications channels to effectively access a enemy vessel's computer and control systems. Once a link has been established to the target computer (see 'Electronic Warfare' on page 28), this skill rank benefit allows the comm officer to apply a bonus (–1, –2, or –3 steps) to the Computer Science–*hacking* skill checks.

Table 57: Overload Damage

Skill Result	Overload Dmg
Critical Failure	4 stun points
Failure	3 stun points
Ordinary	2 stun points
Good	1 stun point
Amazing	no damage

Engineering

Captains and ship commanders never cease demanding that their ship engineers produce more than the designers of a vessel rated it for. Learning to get more out of a ship—even with the stresses it may cause—is what advanced education in System Operation–*engineering* is all about.

► Rank 3 allows the engineer to overpower a ship system. By providing the system with twice its ordinary requirement in power factors, the engineer can increase the system's effectiveness. The exact effect depends on the system involved. See the sidebar 'Overpowered Systems.'

Overpowering systems has the unfortunate side effect of causing minor overloads, circuit damage, and similar stun effects in the system's compartment. In each phase that the system is overpowered, allow the hero a System Operation–*engineering* skill check to determine the exact amount of stun damage that the compartment receives.

In effect, the stun damage from overload is just like any other damage the compartment suffers; when added together with damage from enemy weapons it can cause system failure, which should always target the system that was overpowered in the compartment.

The stun damage from overpowering can be repaired normally, including via a remote repair by the engineer. However, no repair of this stun damage can be attempted while a system in the compartment is overpowered.

⊗ Rank 6 increases the effectiveness of a System Operation–*engineering* skill check to assist in permanent repairs using Technical Science–*repair*: Critical Failure, +1 step penalty; Marginal, –1 step bonus; Ordinary, –2 step bonus; Good, –3 step bonus; Amazing, –4 step bonus.

⊗ Rank 9 increases the effectiveness of the hero's remote repair ability by one point. The result of the skill check is as follows: Critical Failure, d4–1 points of additional damage are suffered; Marginal, 1 stun point repaired; Ordinary, 2 stun points repaired; Good, 3 stun points repaired; Amazing, 4 stun points repaired.

⊗ Rank 12 lets a hero engage in the risky practice of overdrawing his ship's power plants and reactor systems. Determine the ship's total power factors produced; for every five power factors (or portion thereof), the hero can make a successful *engineering* skill check to draw 1 additional power factor from the reactor. For each round in which the reactor exceeds its specifications, each reactor compartments suffers 1 point of stun damage. Like overload stun, this stun damage is treated normally, although it can't be repaired until the engineer restores the reactors to normal operation.

Sensors

The sensors operator has so much to do, so many opportunities to assist during a combat, that even smaller vessels that heroes own and operate may benefit from a second sensors operator. Similarly, advanced knowledge of sensors doesn't actually provide the sensors operator with new talents or tasks to perform, but instead increases his effectiveness.

⊗ With every 3 ranks acquired, a hero can increase the adjustment made to random compartment hit location by an additional point. For example, a hero who has achieved 6 ranks and rolls an Ordinary success can alter the d20 roll that determines hit location by ±3 (instead of ±1).

⊗ With every 4 ranks acquired, a hero can increase the bonus provided to the weapons officer by –1 step. For example, a hero who has achieved 4 ranks and rolls a Good success gives the weapons officer a –3 step bonus (instead of a –2 step bonus).

► Rank 4 allows a sensors operator to specialize in called shots, reducing the penalty in making a called shot by 1 step. At ranks 8 and 12, reduce the penalty by an additional 1 step.

Weapons

Always at the center of attention of any fight, the weapons officer has a simple objective that can be complicated by sensors, jamming, defenses, and hit locations. As a hero gains additional ranks in the skill, he learns to adapt and overcome the difficulties that a busy combat can present.

► Rank 3 provides a hero with an increased benefit from aiming (see 'Aiming' above), giving him a –2 step bonus when preparing a shot for a full phase.

► Rank 6 allows a weapon operator to affect a random hit location much like a sensors operator does, simply as a result of his increased skill. After a successful

hit, the weapons officer can modify the random d20 roll on TABLE G50: COMPARTMENT HIT LOCATION by ±3. This modifier is cumulative with any adjustment made by a sensors operator.

► Rank 9 presents the weapons operator with an opportunity to increase the range at which his weapons remain effective. Increase medium and short range for energy and projectile weapons by 50%.

► Rank 12 offers the ultimate in weapons expertise. Thanks to her precise knowledge of weapon systems, the hero can increase the damage performance of his weapons, increasing the result of a damage rolls by 2.

Damage Control

Unlike most control stations, the position of damage control officer requires at least two specialty skills: Technical Science–*repair* and *juryrig*. Also, it's not uncommon for the engineer to double as damage control officer on most small ships. So, the greatest advantage that increases skill ranks offer is to decrease the amount of time that repairs take to complete, thus allowing the hero to divide his time among its many demands. (For information on repair times, see page 163 of the *Gamemaster Guide*.)

Each rank in *juryrig* increases by 1 round the amount of time that a temporary repair of a system lasts. For example, an Ordinary result indicates that a system becomes operational for d6+1 rounds. For a hero with 3 ranks, roll d6+4 to determine the effectiveness of the juryrig.

► Rank 4 in *repair* decreases the number of successes required to repair stun damage by 1. It still requires a full round of labor to make a skill check to accumulate successes, but with a single Good result, the operator removes all stun damage from the compartment.

► Rank 8 in *repair* decreases the number of successes required to repair wound damage by 1. Depending on the amount of wound damage that the compartment has suffered, the hero may take minutes or hours. A single Amazing success, however, indicates that the hero removes all wound damage in a single attempt.

► Rank 12 in *repair* decreases the number of success required to repair mortal damage by 2. Attempts to build up these successes can now be attempted once every eight hours, instead of once per day.

SPACEPORTS

The triumphant heroes return home; a terrible but epic battle concluded in victory and laurels. All the honors of state and popularity descend upon them. Meanwhile, their noble ship needs more than a few spare parts; it needs a thorough refit, with replacement systems and maybe even a reconstructed compartment or two.

A well-stocked spaceport becomes the next destination for the heroes. It's up to the Gamemaster to provide such a site. Sometimes, the simple task could turn into an odyssey of its own as the heroes seek out a qualified spaceport on a rugged frontier. Maybe they have to search high and low for some rare components before a technician can see to the repairs.

This section presents a method of describing various kinds of spaceports, from the most advanced and well-equipped to the smallest and weakest. Since these are guidelines, the Gamemaster should feel free to make spaceports that differ in small ways from the types presented.

Each spaceport that the heroes visit has its own individual flavor, with an interesting if not talented supporting cast. It could be a military-run operation, strictly organized with a dedicated hierarchy and dreadful bureaucracy. Or it could be an independent operation, where the priorities are always attached to the profit line. A spaceport could be surrounded by an active site for mercantile exchange or be near a watering hole on the edge of the known universe.

Of course, spaceports can be located planetside, in orbit, or in the depths of space. Advantages can be found in each location, and in a far-future setting, the heroes can visit all kinds.

Spaceport Type

Wherever it's located and whatever surrounds it, for play purposes it's what the spaceport can do that matters. What kind of repairs can it handle? Can it replace systems? What are the odds of the port having what's needed? What level of expertise do the employees have?

To answer these questions, consider the description of the five types of spaceports detailed below. Then examine TABLE S8: SPACEPORTS and the accompanying text for more information.

Type 1: Megaport

Megaports are rare. Found only in the most populated and civilized systems, they represent an investment which only nations and large corporation can hope to support. Everything lies within the capabilities of a megaport; it can construct and repair capital class vessels: frigates, destroyers, cruisers, and probably dreadnoughts. The largest of all megaports—the sort that even a wealthy nation could only afford one or two of—can even engage in the lengthy and expansive construction of a fortress ship.

For smaller heroic vessels such as scouts, fighters, and traders, a megaport is equally well-equipped, with the ability to construct or repair more than two dozen such vessels at a time. Effectively, there's really no limit to the amount of work a megaport can do for heroes.

Type 2: Superport

In a far-future setting, every well-populated and technologically advanced star system has a superport, or wants one badly. These ports generally don't engage in building capital ships of their own, although some of the better ones are up to the task. All of them, however, are capable of repairing capital ships, and building and repairing any kind of small personal craft.

Unlike megaports, superports may occasionally lack a specific system or component, and they may deplete themselves of necessary repair parts. In

*Spaceports In the STAR*DRIVE Setting*

If you're playing in the STAR*DRIVE CAMPAIGN SETTING, you may be curious to know what type of spaceports some of the larger and more developed Verge star systems possess. At present, Tendril has the sole megaport (type 1), although even it isn't one of the giants that could construct a fortress ship. Aegis, Algemron, and Hammer's Star have superports. Oberon, Lucullus, and Corrivale have baseports. Today, most of the remaining star systems have smaller facilities, or none at all; this is quickly changing as more investment, trade, and interest come into the Verge.

Table S8: Spaceports

	Capital Ships	Small Ships	System Avail.	Install Mod.	Repair Skill	Repair Points
Megaport (Type 1)	Construct & Repair	Construct & Repair	Always	0.25	24	infinite
Superport (Type 2)	Repair	Construct & Repair	18	0.5	20	5,000
Baseport (Type 3)	Emergency Repair Only	Construct & Repair	14	1	16	500
Miniport (Type 4)	—	Repair	10	3	12	50+6d12
Padport (Type 5)	—	Repair	6	5	0	0+3d12

this case, it may be a task of weeks or months, depending on the distances involved, before the necessary equipment can be produced or procured.

Type 3: Baseport

Modest but growing planets and star systems prove home to a baseport. Because they're the smallest port that can hope to do any form of repairs on the capital ships of a fleets, baseports can also be found as the centerpieces for bases along a frontier, border, or territory in conflict.

Baseports don't have the large and sophisticated facilities to build any form of capital ship, but in a pinch they can perform the basic repairs on them, especially the smaller frigates and destroyers. At the same time, most baseports have a small shipyard capable of constructing two or three personal craft at any given time. Getting a ship constructed here may prove difficult, given the limited facilities. Parts and structure components probably are shipped in, not produced locally, and as a result the amount of on-hand material is significantly less than at larger ports.

Type 4: Miniport

A miniport can be found near small outposts, mining stations, and other permanent but modest installations in space. Small colonies, numbering only in the thousands, may also support miniport as part of their service to travelers and visiting merchant traffic. Finally, it's not uncommon to find miniports serving a secondary role in the outer parts of a more populated system, where a larger port can be found near a population center.

Miniports can't perform any kind of meaningful repair on capital ships,

Using Table S8

After the Gamemaster has determined the heroes' stopping point, the finer points of repair come into play. Table S8 addresses the primary concerns of such a task in each type of spaceport.

Capital Ships: This column defines what function the port can perform relative to large capital-class ships. While the average heroic campaign doesn't involve the heroes directly as captain of such large cruisers or battleships, many times the larger heroic tale may demand such information.

Small Ships: These are the personal craft that heroes are likely to build and operate, from tiny space launches to corvettes. All spaceports can hope to do some form of repair, but this column indicates where construction may occur. See 'Ship Construction Times' on page 39 for guidelines on how long such a task takes.

System Avail.: Use a d20 roll to determine if a specific system is available at the port; if the number rolled is equal to or less than the number in this column, the system is available. If the random roll indicates a higher result, the system isn't in stock. For more exotic or rare ship systems, you can apply a step penalty to the d20 roll (like a normal skill check). See the 'Military & Restricted Systems' sidebar on page 35.

The exact time it takes to have parts delivered depends on the distances involved, the speed of travel in the setting, and the amount of merchant traffic to be found. As a guideline, assume it takes d4+1 weeks for the system to arrive. Again, you can add a longer delay for more unusual or difficult-to-find systems.

You can use system availability to determine if a port has the materials on hand to complete a full compartment replacement (see 'Repair Times' on page 22).

Install Mod.: The better port facilities have advanced robotic drones, highly skilled technicians, and sophisticated diagnostic systems that allow for a faster-than-usual installation time. Similarly, smaller, understaffed ports may necessitate a longer delay. When a new or replacement system must be installed, multiply the number listed here by the normal time (see 'Repair Times' on page 22).

Repair Skill: When determining the effectiveness of a repair, this column lists the average Technical Science—repair skill score for the technicians at the spaceport. It's possible that a hero will insist on doing the work himself, or he might call upon an expert, to increase his chance of success.

Repair Points: Only the largest ports have an unlimited number of repair supplies on hand. See 'Repairs' on page 19 for information on the limits of repairs and repair points. Each point of wound damage costs 1 repair point; each point of mortal damage costs 2 repair points. When a spaceport runs out of repair points, it can't effect further repairs until another shipment of parts arrive. (Assume the number on Table S8 is replenished each month.)

and they have no construction yard of any kind. What they can do as serve as the minimum repair yard that a technician would want to repair small, personal craft. Unfortunately, the likelihood of a miniport having a specific system is only about 50%, and shipping delays could add weeks to any repair time.

Type 5: Padport

Even honoring this kind of spaceport in the list may be a waste of time for catalogers. A padport is exactly what it sounds like: little more than a landing pad where ships can land while awaiting repair. There's no great store of repair parts to be founded, no skilled technician force standing by, and no robotic units awaiting orders. Parts may have to be ordered for even the most common system replacement.

Specialized Ports

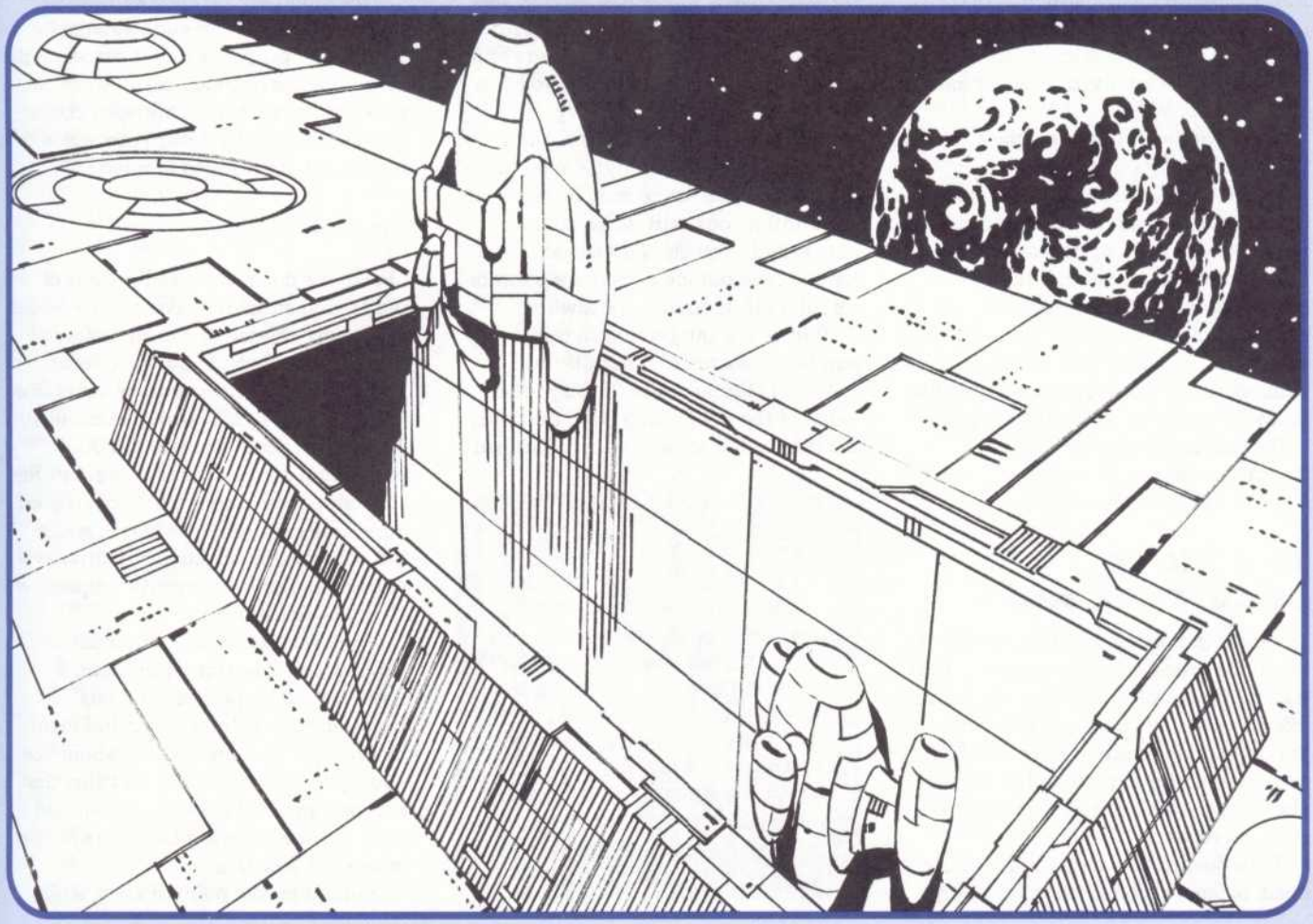
The Gamemaster—and wealthy heroes, perhaps—can design individualized spaceports that break the molds set by the five types outlined on Table S8. For example, it's possible to construct a small, but highly-sophisticated spaceport. Maybe it has all of the characteristics (install modifier, repair skill, etc.) of a superport but focuses only on small ships. It's your game, and you should feel free to take the suggestions here and make your own game of them.

Military & Restricted Systems

In a PL 6 setting, heroes find it difficult to procure ships with military hardware, much less restricted equipment. For heroes without military credentials or official sanction, the standard rules apply for purchasing military (5 times listed cost) or restricted (10 times listed cost) equipment. That's if, of course, the Gamemaster wants to make such systems available.

At PL 7 and beyond, it becomes a bit easier for heroes to acquire weapons and other limited items. While the standard rule from above applies to items of the same Progress Level, it's a relatively easy task to acquire items of the previous Progress Level. (This is the standard rule that items of a previous Progress Level become more available by one grade.) These systems are probably still in production and brand new, just no longer the state of the art. For example, at PL 8 a hero may find it difficult to buy a kinetic lance, but a plasma cannon shouldn't really present a great obstacle; it's trickled down into wider availability.

When obtaining military or restricted hardware at a spaceport, apply a penalty to the availability check on TABLE S8: SPACEPORTS. Military systems (in the current Progress Level) apply a +2 step penalty, and restricted systems apply a +5 step penalty.



Chapter 2
Space Technology

The previous chapter has discussed many of the choices that await players and Gamemasters as they brings starships into their campaign. In this chapter, heroes, aliens, and the supporting cast enter the decision-making process.

This chapter centers around designing spaceships and starships. Here, you'll find dozens of new ship systems to fit into the vessels of your campaign.

Designing A Ship

Building a space vessel is a time-consuming, arduous process that even in the distant future is likely to consume months, if not years, of time. It also eats away millions or even billions of dollars. Compare the construction of a cruiser, destroyer, submarine, or aircraft, and it's possible to understand the challenges involved. And yet many players do it. Why?

Fortunately for players, they don't have to actually build a ship—only design it. Then, the magic of roleplaying fiats the vessel into virtual existence. Maybe the ship represents a mass-produced model that the heroes can purchase off the average shipyard, or maybe a blur of months can pass by with a single sentence from the Gamemaster. In any event, the simplistic design system here takes the place of the real arduous work that ship designers, engineers, and technicians complete behind the scenes.

The Most Important Rule

The most important thing to remember about the process of ship design is that it should be a role-playing scene much like any other; it can be no different than a challenge scene in which the heroes—and through them the players—must exercise their wits to overcome an obstacle.

Ship design, like character creation itself, is one of the places where players dig their hands into the rules system, tinkering, spending various points, and doing much of the work themselves. It would seem easy to consider ship design as part of a tactical wargame.

Yet for most gaming groups, Alternity remains a roleplaying game, not a strategy game. In other words, players shouldn't forget to involve their heroes, and not just themselves, in the design of a starship. Consider not only what the most efficient or powerful systems may be, but what the characters in the game would want, and what they would be able to get. Later in this section is a discussion of ship purposes, and the players should consider their characters as part of the process.

The best way to play this out might be to involve a whole roleplaying session, during which the heroes interact with the managers and engineers of a shipyard. The heroes are sure to have incredible, even contradictory, demands that stretch realism, their credit accounts, and maybe even interstellar law. The scene may be one part negotiation, one part technical dialogue, and even one part quest, as heroes seek out the necessary permits for all their dangerous hardware.

Part of the interaction in this scene can revolve around a negotiation between Gamemaster (through the voice of the supporting cast) and players (through their heroes). It's natural that the players will want the best ship possible, and by roleplaying the exercise, the Gamemaster may find it easier to moderate their desires with play balance and the particulars of his campaign.

The Basics

As the introduction to the last chapter pointed out, the ship rules presented here build on the system presented in *Chapter 11: Spaceships* in the *Gamemaster Guide*. There, you'll find information on ship's hulls, compartments, and durability—all of which you need to build any ship described in this book.

Ship Purpose

Before even the ship's hull can be considered, the prospective designer needs a firm concept of the ship's intent. Decisions in ship construction, again like character creation, often involving choosing one system, advantage, or trait over another. It would be nice to have the fastest, most heavily-armed ship, equipped with the best sensors, a mighty power plant, and stiff defensive arrays.

Unfortunately, no such ship exists, and thus no ship can enthusiastically perform all purposes that a vessel might be put to. The decision about what purpose the vessel serves allows a character to walk into the design process with a clear set of priorities in mind.

Scoutship

One of the most well-used models of play using starships involves the heroes assuming the role of interplanetary or interstellar scouts. In general, scoutships share two important features. The first is speed; in spaceship terms, this indicates a good acceleration. And depending on the kind of campaign, the scoutship may demand not only a good acceleration when traveling in space but also a fairly effective FTL drive system (for example, a stardrive capable of 10-light-year starfalls).

The second requirement must be sophisticated sensor equipment. A scout serves no purpose if it jets between worlds but stays blind to all its prospective finds. Scouts should be equipped with every sensor array that can be squeezed aboard, and should even consider having back-up systems whenever possible.

From a heroic point of view, scout-

ships should have at least one skilled sensors operator. Even better, a second operator can allow the ship to operate multiple sensor systems simultaneously, or allow the two operators to assist and check one another.

Because militaries, governments, corporations, and even private individuals can explore space for a variety of purposes, many kinds of scouts, each uniquely suited to its specialized task, may exist in your campaign. Military scouts, on patrol for enemy activity, may be equipped with reasonable offensive and defensive weaponry; they may also place a high priority on good communications systems for relaying their discoveries to the fleet. Finally, the best military scouts may be equipped with advanced cloaking technologies so that they may study their targets unobserved.

Other kinds of scouts may be just as armed as they explore dangerous frontiers, ready for encounters with aliens, competitors, or even rogues looking for trouble. They may also be equipped with lab space to analyze their discoveries, and spectroanalyzers to scan the particulars of any environment.

Tradeship

Whether the cargo is high-grade ore, delicate computer parts, or even sentient passengers, a tradeship's ultimate purpose remains simple: deliver the goods from one location to another. As such, the single requirement of any trade vessel is the cargo space (or passenger compartments) to hold what they carry. The particulars of their missions, however, make for the distinctions in tradeships.

Bulk carriers have the easiest job, and perhaps the greatest possibility to generate revenue. The more cargo space a vessel has, the more profit it can generate through its carrying capacity. A bulk freighter is likely to devote about one-half of its space to cargo. As a result, it's minimally powered, armed, and armored, relying on escorts or the goodwill of neighbors to ensure its safety.

At the other end of the spectrum is the specialized trader, with only a few spaces (durability points) allocated to actual cargo space. This sort of vessel relies on unusual or rare cargo to provide the profit. Maybe it's simply carrying data crystals or expensive technical parts. Or perhaps its a smuggler of small, high-grade personal firearms that merit a high price. In any event, this trader is likely to seem more like a high-speed scout (faster deliveries often mean more money) or a well-armed warship (rare cargo often invites unfriendly attention).

A final sort of tradeship crosses the line between this type and a warship. A pirate trader must be well-armed in order to subdue the enemy, have a few cargo spaces, and have the speed to make an escape and keep away from the authorities. One of the reasons that piracy can prove difficult is that a pirate vessel by definition must attempt to do everything—speed, fight, and carry.

Warship

Bristling with undisguised antagonism, a warship, when seen up close, can't be mistaken for anything other than a tool for destruction. Of course, the enemy will never see the cylindrical plasma cannons and energy turrets; the blasts from these guns destroy targets thousands of kilometers away.

After weapons, defenses assume a likely second place. Warships are probably the only vessels to consider spending a full 20% of their total durability for heavy armoring. They're also the most likely to purchase expensive defense systems such as deflection inducers or ablative shields.

Even in ships of war, though, individual variations may dominate. What role does the vessel fulfill in the scheme of a larger military? Is it intended to serve as part of a fleet? Does it operate independently or with others? These questions can answer the kind of secondary systems—sensors, communications, and drive systems—included in the vessel's design. In combat, what role should the ship perform? Front line attack? Skirmish? Artillery? Support?

If the vessel is intended to operate on its own, it should have a reasonable engine, and a drive system, if appropriate to the campaign. If it operates in a group—say, a space fighter based on a carrier—it may not need an FTL engine. It also may be able to do without very sophisticated sensors, expecting that another friendly ship will download critical information in battle.

Other Ships

A few other ship types, private or publicly owned, could be designed. A pleasure-ship or luxury liner, filled with elaborate quarters and entertainment facilities, is one model. Most of its internal space would serve no practical purpose, and would certainly be of little use in a confrontation. Another might be the communicator, a ship that assumes to the role of a mobile relay satellite. A science vessel, with futuristic computers and labs, might be an extreme form of scoutship. Most concepts can be related to one of the three described above.

Ship Size

After purpose, the second consideration should be the overall size of ship. Often, the designer has a clear concept in mind. For example, a group of heroes may choose to design a few space fighters, a scout, or even a mighty corvette, the giant of the personal ship campaign. Yet when heroes are looking for a reasonable, mid-sized ship, it's not as clear, especially if the players are new to ship design. Should the trader have 8 compartments or 6?

There are three ways to approach the situation. First, the monetary one. In truth spaceship construction involves such ludicrously high amounts of money that comparing the cost of even widely different ships may seem equally ludicrous. Once you're spending millions, does it matter? Well, the Gamemaster can limit the amount of credit, grant, or military expenditure that the heroes have access too. The smaller the allotment, the smaller the ship. Take a look at some of the prebuilt ships in the next chapter; they should give you an idea of how much different sizes of ships can cost.

The second method, for characters not strictly limited by a budget, involves some simple estimation by adding together some numbers. Total the number of weapon systems desired. Add one for moderate armor, two for heavy. Add one for each unusual system (drive unit, defense system, etc.). Add one for each medium-sized (4–5 durability) cargo bay desired. This number forms a rough guess of how many compartments the ship should have.

The third methods turns the design procedure around. Instead of considering the hull just yet, have the ship

architect look through all the ship systems on TABLE S10: SHIP SYSTEMS. Construct and refine the list of systems desired, and then reconsider the question of the hull afterwards. Some adjustments may be required, of course, as the durability cost and efficiency of many systems, such as engines and many defensive systems, depend on the size of the ship that they're in.

Military or Civilian?

The choice for a military or civilian hull typically has more to do with price and availability than any actual advantage. Military hulls always have more space for their compartments, and for ships, space is everything. Not only does it indicate the number of systems that can be carried, but it also tells how tough a ship is. Examine TABLE G34: SHIP HULLS on page 139 in the *Gamemaster Guide*. Military hulls always have more durability, but they also cost significantly more.

Remember, however, that the number of the compartments listed on the table is a standard and a maximum, but not a requirement. So, a ship designer could build a ship around a transport hull, normally a 10-compartment vessel, and only construct 8 compartments. Essentially, he's gained the advantage of a military ship with an attack ship hull—more durability per compartment.

And it's also more available. Military hulls should be considered to have military availability; the typical civilian shipyard may not be able to construct one, and even it if had the technical capability, legal authorities might restrict its desire to get involved in the production. For characters without military contacts or backgrounds, about the best military hull they could hope for would be an older ship that's been decommissioned.

Vessels with military hulls, even ones legally acquired, receive more attention from law enforcement and military personnel. They're more likely to keep track of the vessel's whereabouts, probe into the owner's background, and observe the ship's behavior.

The choice should also be a personal and a philosophical one for the heroes. Military ships are designed to squeeze every iota of space, and care little for the comfort of the crew. Crawlspaces may be tiny and restrictive, and personal quarters especially modest. In reality, though, the transport hull described above is bigger than the attack ship hull; so while they hold equal systems, the transport hull is roomier and more accommodating.

But What About Heroism?

Regardless of a ship's stated purpose, all campaigns that have a significant focus on spaceship interaction share something in common. Eventually, energy blasts will be exchanged, and unless the players desire a harshly realistic model, they should take steps to ensure that their vessel has at least a modicum of defensive and offensive ability. After all, it's a heroic roleplaying game, not an prospectus on extrasolar discovery or even an economic simulation.

Building Compartments

After a hull's been selected, the next step of design is to divide the ship's durability points among a number of compartments. Obviously, this process must go hand-in-hand with the selection of individual ship systems, or else it becomes impossible to know just what size or compartment types to build. That said, there are some general guidelines worth noting.

Most of the guidelines below begin with an essential assumption: Inevitably, the vessel suffers damage in combat. While no ship captain wants to think of his ship battered and reeling, it's part of the job of a ship designer to consider the best ways to allow the crew of a starship to survive, and even succeed, in space battle.

Bigger is better. The more durability points assigned to a compartment, the more resistant to damage it becomes. Critical systems should be fitted within compartments of at least moderate size (4 or more durability points). This

Ship Construction Times

It may be important to determine just how long the heroes must wait before the ship they've designed and ordered rolls off the assembly line. The Gamemaster can arbitrarily select a time frame that feels appropriate, or can make a determination based on the size of the ship and its durability. See the tables below.

Table S9: Ship Construction Times

Civilian Ships

PL	Time in days
6	Dur ×20
7	Dur ×10
8	Dur ×5

Military Ships

PL	Time in days
6	Dur ×30
7	Dur ×15
8	Dur ×7

"Dur" is the total ship durability.

Note that construction times may not mesh perfectly with the compartment repair times listed in *Chapter 1*. That's because it's often easier (and faster and cheaper) to build a starship from scratch than to repair a badly-damaged vessel.

includes engines, power plants, and the command deck itself. Remember, no compartment can be assigned more than 10 durability points.

Taken to an extreme, ship designers can choose to make fewer than the maximum number of compartments, simply in order to build fewer, tougher ones. For example, an attack hull (40 durability, usually 10 compartments) that has only 5 compartments averages an impressive 8 durability points per compartment.

Command and engineering are the center. There's no reason that any ship need build anything but multiple command and engineering compartments. Only one of the command compartments actually serves as the bridge, and one of the engineering compartments acts as main engineering. The real reason is cost; command and engineering compartments represent the most expensive to be found.

Since these two compartments tend to contain the most important systems—and are the most likely to house the crew during a fight—most ship designers take advantage of Table G50: Compartment Hit Location and place the command and engineering compartments as the lowest-numbered compartments. On larger vessels, these two compartments may be completely impervious to being hit.

This ability to protect a compartment and reduce its chances of being hit represents the counterargument to making fewer, larger compartments as noted above. A good compromise is to build several small compartments to fill out the compartment hit locations. For example, a 40-durability ship could plan 8 compartments; 4 of them with only 2 durability points each. Thus, the lower numbered-compartments remain tough to wound (8 durability points each) and still gain the advantage of being unlikely to be hit with a random roll. Ship designers of larger vessels have a choice to make, neither of which can be said to be "better."

Plan the systems. In order, the most important systems are command, power, engines, support, weapons, defenses, sensors, communications, computer, crew, and cargo. The systems appear in this order on Table S10: Ship Systems later in this chapter.

Primary compartments get distributed. While the command and engineering compartments house the most critical systems, weapons and defenses, and even secondary power plants, should be distributed. If a ship design calls for more than one mass reactor, divide them between engineering and an auxiliary compartment.

The berths can suffer. During a fight, the crew's not likely to be lounging in their quarters. Ships with crew compartments can leave them exposed as one of the higher-numbered compartments. It's always better to lose your bunks than to lose your engines or your reactor.

Cargo is last. For all but the most valuable merchandise, the ship crew would rather lose their freight than an important system—or their lives. Cargo compartments are thus the last designed and the highest-numbered compartments.

Ship Systems

With a great crew, a good design, and fate's blessing, a ship may become more than the sum of its working parts. But the detail of what a ship can and cannot do begins with its systems. Through the addition of individual components, each ship grows more unique by the choices of its designer.

In this section, you'll find dozens of new ship systems that add to the list already available in the *Gamemaster Guide*. Table S10: Ship Systems contains a complete list of systems, new and old, divided by system time and Progress Level. The table indicates which systems have been described in *Chapter 11: Spaceships* in the *Gamemaster Guide* and which are presented in this section.

Remember that systems of a previous Progress Level are generally available at later Progress Levels, and just because they represent established technology, it doesn't mean that the systems themselves have been around for years. For example, the standard airlock system has been available since the creation of the first spaceships. With only minor modification and improvement, it will remain in use for all of the foreseeable future. The same might be said of a simple radio transceivers and solar power cells. They continue to be mass-produced in great numbers, long after they first entered common use.

Redundant Systems

Characters find any number of reasons to build more than one of a specific system. Often, a ship simply needs more than one mass reactor, engine, or life support unit. On other occasions, a designer can elect to include a second plasma cannon or accumulator. The extra system acts just like the first, and both function at the same time.

In other instances, however, a designer can choose to include a second unit of the same system for no reason other than as a back-up in the event that the first fails. Examples include second airlocks, communicators, fuel tanks, and even command decks (see the sidebar 'A Second Command Deck'). The practice has been standard aboard vessels for years, even centuries.

TABLE 510: SHIP SYSTEMS

Type	System	PL	Avail	Cost	Dur	Pow	Notes
—	Airlock	6	Com	10K	1	0	1 unit built into hull
—	*Armored hatches*	6	Mil	100K	1	0	
—	Command deck	6	Com	50K	1	0	1 unit built into hull
—	*Cutting airlock*	6	Con	80K	1	0	
—	*Decon airlock*	6	Com	50K	1	0	
—	*Extension airlock*	6	Com	25K	1	0	
—	Reentry capsule	6	Con	5K	1	0	1 unit built into hull
—	*Security hatches*	6	Con	50K	0	0	
—	Standard hatches	6	Com	10K	0	0	Units built into hull
—	Boarding pod	7	Mil	100K	2	0	
—	Escape pod	7	Com	50K	2	0	
Pow	*Chemical reactor*	6	Con	50K	3	*	Per 2 power factors generated
Pow	*Cold fusion reactor*	6	Con	100K	1	*	Per 1 power factors generated
Pow	*Fission generator*	6	Con	75K	4	*	Per 5 power factors generated
Pow	Fusion generator	6	Con	100K	2	*	Per 3 power factors generated
Pow	Grav-fusion cell	6	Con	200K	5	*	Per 10 power factors generated
Pow	*Hydrogen collector*	6	Con	80K	2	0	See system description
Pow	*Self-destruct device*	6	Com	200K	0	*	See system description
Pow	Solar cell	6	Con	100K	3	*	See system description
Pow	*Antimatter reactor*	7	Mil	350K	3	*	Per 7 power factors generated
Pow	*Dark matter coll.*	7	Con	100K	1	0	See system description
Pow	Mass reactor	7	Con	200K	2	*	Per 5 power factors generated
Pow	*Tachyonic collider*	7	Mil	400K	1	*	Per 2 power factors generated
Pow	*Dynamic mass rctr*	8	Mil	300K	1	*	Per 3 power factors generated
Pow	Matter converter	8	Mil	500K	2	*	Per 7 power factors generated
Pow	*Quantum cell*	8	Mil	450K	3	*	Per 10 power factors generated
Pow	*Singularity gen.*	8	Mil	2 M	2	*	Per 6 power factors generated
Eng	*Conventional rocket*	6	Con	50K	5	0	Per movement point generated
Eng	*Fission rocket*	6	Con	100K	4	0	Per movement point generated
Eng	*Fusion rocket*	6	Con	100K	3	0	Per movement point generated
Eng	Fusion torch	6	Con	50K	3	1	Per movement point generated
Eng	Ion engine	6	Con	100K	2	1	Per movement point generated
Eng	*Magnetic sail*	6	Con	150K	3	1*	See system description
Eng	*Microfusion pulse*	6	Mil	150K	5	1	Per 2 movement points generated
Eng	*Particle sail*	6	Con	150K	4	1*	See system description
Eng	Photon sail	6	Con	100K	5	*	See system description
Eng	Planetary thruster	6	Con	100K	1	1	Per 20 durability of ship
Eng	*Antimatter rocket*	7	Mil	200K	3	0	Per maneuver point generated
Eng	Induction engine	7	Con	200K	2	2	Per movement point generated
Eng	Stabilizer	7	Mil	250K	1	0	Per 20 durability of ship
Eng	*Hypermagnetic eng.*	7	Mil	300K	2	3	Per movement point generated
Eng	*Gravitic redirector*	8	Mil	200K	3	2	Per 3 movement points generated
Eng	Inertial flux engine	8	Mil	250K	1	1	Per movement point generated
Drv	*Gate activator*	7	Con	1 M	1	3	See system description
Drv	*Hyperdrive*	7	Con	1 M	2	*	See system description
Drv	Stardrive	7	Con	1 M	3	*	See system description
Drv	*Stardrive booster*	7	Con	1.5 M	4	*	See system description
Drv	*Wormhole screen*	7	Con	1 M	3	5	See system description
Drv	Drivewave	8	Mil	2 M	1	*	See system description
Drv	*Psychoportive drive*	8	Mil	1 M	3	10	See system description
Drv	*Spacefold drive*	8	Con	1 M	3	*	See system description
Drv	*Warpdrive*	8	Con	2 M	4	*	See system description
Drv	*Wormhole gen*	8	Mil	2 M	4	*	See system description
Sup	*Cryogenics unit*	6	Com	100K	2	1	Per 12 passengers
Sup	*Hydroponics bay*	6	Com	75K	2	1	Per 10 passengers
Sup	Life support unit	6	Com	20K	1	1	Per 20 durability supported
Sup	Recycler unit	6	Com	50K	1	1	
Sup	Workshop	6	Com	20K	2	1	
Sup	Accumulator	7	Con	40K	1	*	See system description
Sup	Autosupport unit	7	Com	200K	0	1	Per 20 durability supported
Sup	*Life suspension unit*	7	Con	250K	1	1	Per 12 passengers
Sen	Air/Space radar	6	Com	20K	0	0	
Sen	EM detector	6	Mil	10K	0	0	
Sen	IR detector	6	Con	20K	0	0	
Sen	*Internal monitors*	6	Con	30K	0	0	
Sen	*Ladar*	6	Con	50K	0	0	
Sen	*Probe*	6	Con	80K	1	0	Includes 4 probes

TABLE 510: SHIP SYSTEMS

Type	System	PL	Avail	Cost	Dur	Pow	Notes
Sen	*Radiation detector*	6	Con	40K	0	0	
Sen	*Advanced probe*	7	Con	100K	1	0	Includes 4 probes
Sen	Mass detector	7	Con	50K	1	0	
Sen	Multiband radar	7	Com	25K	0	0	
Sen	Remote network	7	Mil	200K	2	2	
Sen	Spectroanalyzer	7	Con	100K	1	1	
Sen	CE passive array	8	Mil	300K	2	1	
Sen	*Cloaked probe*	8	Mil	200K	1	0	Includes 4 probes
Sen	*Drive detector*	8	Con	200K	1	1	
Sen	*Madar*	8	Mil	250K	1	1	
Sen	Multiphase radar	8	Mil	250K	1	0	
Sen	*Starfall detector*	8	Mil	300K	2	1	
Def	Armor	*	*	*	*	0	See armor description
Def	Chaff	6	Mil	50K	1	0	
Def	*Charged hull*	6	Mil	25K	1	1	
Def	*Charged deckplates*	6	Mil	100K	1	1	
Def	Damage control	6	Mil	*	1	1	Per 20 durability protected
Def	*Decoy drone*	6	Mil	80K	1	1	Per 3 decoys
Def	Jammer	6	Res	100K	0	1	
Def	Point-defense gun	6	Res	200K	1	1	
Def	*Stealth hull*	6	Mil	200K	1	0	
Def	*Stealth shield*	7	Mil	200K	2	2	
Def	Deflection inducer	7	Mil	250K	1	2	Per 20 durability of ship
Def	*Defense network*	7	Mil	300K	2	2	
Def	*Stardrive scrambler*	7	Mil	100K	1	2	
Def	Ablative shield	8	Mil	500K	2	*	Per 20 durability of ship
Def	*Cloaking unit*	8	Mil	1 M	1	3	
Def	Displacer	8	Res	1 M	2	3	Per 20 durability of ship
Def	*Energy compiler*	8	Mil	100K	2	*	
Def	*Holo array*	8	Mil	500K	1	4	
Def	*R/VR array*	8	Mil	1 M	1	2	
Def	*Stardrive mask*	8	Mil	200K	0	2	
Comm	Laser transceiver	6	Com	20K	0	1	
Comm	Radio transceiver	6	Com	10K	0	1	
Comm	Mass transceiver	7	Con	100K	1	1	
Comm	*Drive transceiver*	8	Con	200K	2	2	
Comm	*Foldsender*	8	Mil	250K	1	1	
Comm	*Psionic transceiver*	8	Mil	150K	1	2	
Comp	Computer core	6	Com	*	*	0	See computer description
Comp	Battle	6	Mil	*	0	0	See computer description
Comp	*Business*	6	Com	*	0	0	See computer description
Comp	Communications	6	Com	*	0	0	See computer description
Comp	Defense	6	Con	*	0	0	See computer description
Comp	Engineering	6	Com	*	0	0	See computer description
Comp	Navigation	6	Com	*	0	0	See computer description
Comp	Science	6	Com	*	0	0	See computer description
Comp	Sensors	6	Com	*	0	0	See computer description
Comp	*Tactical*	6	Mil	*	0	0	See computer description
Crew	*Brig*	6	Com	20K	1	0	Per 4 prisoners
Crew	Crew quarters	6	Com	20K	1	0	Per 6 crew members
Crew	*Entertainment bay*	6	Com	50K	1	0	Per 4 entertainees
Crew	Lab section	6	Com	100K	2	0	
Crew	Passenger suite	6	Com	50K	1	0	Per 2/4 passengers
Crew	Sick bay	6	Con	100K	2	0	
Crew	*Holoprojection bay*	7	Com	60K	1	0	Per 4 entertainees
Crew	*Psi detention bay*	7	Con	125K	1	0	Per 4 prisoners
Crew	*Holofield bay*	8	Con	100K	1	0	Per 4 entertainees
Car	Cargo space	6	Com	10K	1	0	Per 24 cubic meters of storage
Car	*Dedicated hangar*	6	Com	50K	1	0	Per 2 durability pt. of vehicle
Car	Fuel tank	6	Com	10K	1	0	Per power plant/engine fueled
Car	Hangar	6	Com	25K	1	0	Per 1 durability pt. of vehicle
Car	Autocargo	7	Com	30K	1	1	Per 24 cubic meters of storage

Systems listed in *italic* are new systems described in this book.
System listed in normal font are described in *Chapter 11* of the *Gamemaster Guide*.

Separable Components

Some ship component systems—autocargo, hangars, and passenger suites, for example—all consume a standard amount of space and may be considered to be largely independent of the rest of a vessel's operation. At PL 7, the Gamemaster can exploit this fact by allowing trader-class vessels and larger craft to employ separable sections that can be added or removed at port. This may have an advantage in that cargo loading may never be required; instead, in a single hour or two, a ship's full cargo spaces can be replaced by new ones, already loaded for a new destination. Triple the cost of any ship component that's considered separable; all such decisions must be made with the Gamemaster's approval.

In most instances, the hero pays the extra cost in money and durability (and power factors, when the system is being used), but gains no benefit from such a redundant system. Only when the primary system fails does it even matter that the back-up exists.

No ship can contain unlimited back-up systems, however. For systems with a durability cost of 1 or more, the cost of the back-up system is identical to the primary system. (For systems such as autosupport, that may take multiple units to provide a ship, consider each complete back-up support of the ship after the first to occupy 1 durability point.)

Example: A ship designer decides that one stardrive isn't enough. No benefit is gained by the back-up stardrive, but 3 additional durability points are consumed by the second drive unit.

For systems with no durability cost, a single back-up system also costs 0 durability. Each additional backup after the first costs 1 durability point.

Example 1: A ship captain, worried that his ship could become blinded in combat, decides to add a back-up multiband radar system to his vessel. There's no durability cost for this back-up.

Example 2: After his last crew died from decompression, a ship captain decides to include two complete autosupport system back-ups. Since an autosupport unit takes no durability, the back-up also takes no durability. The second back-up does, however, and 1 durability point must be allocated.

Vehicle-Grade Accessories

Sometimes, a ship designer may want to include specialized accessories normally seen only on ground or air vehicles, not on spaceships. More likely accessories include excavation gear, salvage gear, rescue gear, or a sonar system. Or, the captain of some vessels may request including an antipersonnel weapon such as a .50 caliber machine gun or an antivehicular weapon such as the 25mm charge gun. These weapons generally won't have much effectiveness in ship-to-ship combat, but ships that frequently descend to a planet's surface may enjoy their utility.

Two standard rules apply when adding a vehicular accessory or weapon. First, if an analogous spaceship system already exists (such as the EM detector, any of the radars, medical suites, or comm suites), use the spaceship system. Second, some accessories don't apply: airtight configurations, high-power engines, and performance packs are examples.

For systems that don't meet any of the previous restrictions, a ship captain can add the accessory or weapon by paying a cost in ship durability equal to one-half (round up) the vehicle durability value listed. For example, a quantum cannon takes up 6 durability on a tank; on a ship, it takes 3 durability points.

The Gamemaster can also require that a vehicle accessory or weapon needs a power factor or two to function.

For information on equipping ships with heavy personal weapons, see page 59.

Standard Systems

Airlocks, reentry capsules, boarding pods, and escape pods are standard systems introduced in the *Gamemaster Guide*. They can be installed in any compartment, regardless of its type. One airlock and reentry capsule are included, at no durability cost, in every ship hull.

This section introduces variants on standard systems that can be installed in any compartment. It also introduces standard hatches, another system that comes free of charge in all ship hulls.

The command deck is a specialized system, only allowed in command compartments. See the sidebar 'A Second Command Deck' on this page.

Armored Hatches (PL 6)

Armored hatches represent the best and the toughest protection that designers can take for their vessels. They replace standard hatches, but cost 1 point of durability and $100K. (This durability point can be assigned to any compartment.)

Armored hatches have Amazing toughness and 6 durability points (see 'Property Damage' on page 55 in the *Gamemaster Guide*). In addition, they're electronically sealed to prevent access, providing a +2 step penalty to any attempt to bypass with Security–*security devices*. The command deck can control the opening, closing, and locking of armored hatches.

A Second Command Deck

Much like the airlock, the command deck is one of the "hidden" ship systems aboard every vessel. It takes no durability points, but it performs a necessary function of allowing the crew to interface with all of the ship systems—while they don't need to be in the same compartment as the system itself. As *Chapter 1* discusses, though, a command deck can experience system failure or be destroyed (see page 18).

In larger vessels, careful or paranoid ship captains may want a fallback measure—a second command deck that the command crew can retreat to should the first experience system failure. To design such a feature, a character has to first be sure to include a second command compartment. Then, he must purchase a second command deck, for a price of $100K and 1 durability point.

It's Your Game

While systems have been divided into what Progress Level they appear, thankfully not every PL 7 campaign is the same. Progress Levels represent only a guideline of when certain technological advancements may result in new technologies.

In your particular campaign, it's possible—even likely—that history took a unique course that didn't result in the availability of every ship system listed here or in the Gamemaster Guide. The stardrive may never have been discovered in your PL 7 game, and maybe the deflection inducer remained a secret of corporate laboratories. To make things easier for you and your players, photocopy Table S10 and note which systems are unavailable.

For example, the STAR*DRIVE campaign doesn't integrate every PL 7 system (see the sidebar 'Bringing it into STAR*DRIVE' on page 63).

Similarly, luck may have blessed the denizens of your universe with the precocious development of incredible technologies. So, certain items of a later PL may be available in a setting that's generally set an earlier one. For example, the inertial flux engine's principles may be understood even in the early days of a PL 7 setting. As noted above, you can photocopy Table S10 and make notes that indicate which systems are available.

Finally, the ideas presented for ship systems here may catalyze you or your players into creations that you can add to your setting.

It's your game. Take, subtract, or add from any of the material presented here to make your game better and more your own.

Cutting Airlock (PL 6)

Cutting airlocks are common among military assault ships, pirates, and other vessels home to crews that attempt boarding actions. In everyday usage, a cutting airlock is little different from the extension airlock (see below). However, its forward mating end is equipped with laser cutting drills which can slowly cut through an enemy hull and allow passage without accessing the target ship's own airlock.

A cutting airlock takes 1 round to burn through an unarmored hull, 2 rounds for a lightly armored hull, 3 rounds for a moderately armored hull, and 5 rounds for a heavily armored hull. For more information on boarding actions, see 'Boarding' in *Chapter 1: Expanding Play*.

Unlike other airlocks, a cutting airlock always costs 1 durability point, even if its inclusion is planned and purchased during the design of a ship instead of a normal airlock.

Decontamination Airlock (PL 6)

Decontamination airlocks are common among survey ships and other vessels that frequently expose their passengers to alien environments and biological organisms.

After a passenger enters the sealed decontamination airlock, a series of air purifiers and anti-biological instruments remove any threat of infection. The system works at near-100% effectiveness, although truly new biological organisms or chemical poisons may reduce this effectiveness until their properties are fully known.

If the inclusion of decon airlock is planned and purchased during the design of a ship, it can be included at 0 durability cost instead of a normal airlock (or in addition to a cutting or extension airlock).

Extension Airlock (PL 6)

The extension airlock finds most common use on trade ships that frequently dock with other vessels in the depths of space. The sealed airlock environment is only created when the airlock chamber is extended—thus further protecting the ships from accidental collision, or even from harm that might come should one of the ships experience any kind of malfunction. In the event of emergency, the extension assembly can be jettisoned in order to immediately deny access from the airlock to its target.

For this reason, and the ones noted above, extension airlocks also see common use by pirates and other space criminals.

If the inclusion of extension airlock is planned and purchased during the design of a ship, it can be included at 0 durability cost instead of a normal airlock.

Standard Hatches (PL 6)

As vessels are divided into compartments, so hatches form the gateways from compartment to compartments. While not able to function as airlocks, each hatch does isolate one compartment from another. This safety precaution prevents the loss or decompression of one compartment leading to the loss of air in all of them.

During normal situations, it's assumed that hatches are open and unsealed. One of the first acts of a crew in battle must be to seal the hatches—a simple action which can be controlled from the command deck.

Standard hatches offer no special means of preventing unauthorized entry from one compartment to another. The activation of simple door button opens a standard hatch. They also offer little in the way of physical protection. On its own, a standard hatch is considered an object of Ordinary toughness, with only a few points of durability (average of 4) to withstand weapons fire (see 'Property Damage' on page 55 in the *Gamemaster Guide*).

Security Hatches (PL 6)

Purchase of this system indicates that all of the ship's standard hatches have been replaced by security hatches. In most respects, a security hatch is identical to a standard one. Like normal hatches, they cost 0 durability; their opening, closing, and locking can be controlled at the command deck.

However, all security doors possess Good toughness and 6 durability points (see 'Property Damage' on page 55 in the *Gamemaster Guide*). In addition, their electronic locks impose a +2 step penalty on any attempt to bypass them with Security–*security devices*.

Power Systems

Without power, nothing on a starship functions. Even systems such as air/space radar, listed as taking no power factors to operate, need at least some fraction of energy to function. A ship that's lost its functioning power plants is cast adrift in space, moving without acceleration, and experiences a slow death.

Fortunately, brilliant men and

women have dreamed of dozens of ways to manipulate the physical laws of the universe and harness its energies. For ship designers, this can mean a variety of choices to provide power factors to their vessels.

In addition to introducing power plant systems, this section introduces additional considerations about fuel consumption, and two new systems that offer the capability to collect fuel without a stop for refueling.

Fuel & Systems

The *Gamemaster Guide* introduces the need of certain systems—engines and power plants—for fuel. Many of the new systems here demand fuel of some kind. For power and fuel system in common use, see TABLE S11: FUEL CONSUMPTION on this page.

TABLE S11: FUEL CONSUMPTION

System	Fuel Longevity	Fuel Cost
Chemical reactor	2 weeks	$10K
Cold fusion reactor	5 weeks	$20K
Fission generator	25 weeks	$60K
Fusion generator	10 weeks	$1K
Grav-fusion cell	10 weeks	$1K
Chemical rocket	2 weeks	$20K
Fusion torch	10 weeks	$1K
Ion engine	10 weeks	$5K
Planetary thruster	25 weeks	$25K

The entry for "Fuel Longevity" indicates the span of time that a single 1-durability fuel tank, filled with the appropriate material, will power a single unit of this type. For example, each fission generator fueled by a fuel tank operates for 25 weeks. Each tank after the first multiplies the duration; each generator tied to the same tank divides it.

The entry for "Fuel Cost" lists the cost to refuel a 1-durability fuel tank.

Certain power systems may not use fuel tanks, but may require eventual fuel replacement. See TABLE S12: FUEL REPLACEMENT below.

TABLE S12: FUEL REPLACEMENT

System	Fuel Longevity	Fuel Cost
Antimatter reactor	50 weeks	$200K/$50K*
Mass reactor	30 weeks	$50K
Dynamic mass reactor	50 weeks	$25K
Singularity generator	250 weeks	$1 M

* At PL 7/PL 8.

The entry for "Fuel Longevity" refers to the length of time that a filled reactor lasts between refueling. The entry for "Fuel Cost" lists the total cost to refill the reactor. The singularity generator can't be refueled, and the cost listed is for a complete replacement.

Chemical Reactor (PL 6)

While a principal source of power for the Information Age and even the early days of the Fusion Age, a chemical reactor stands out as the most primitive and most inefficient means of creating power aboard a space vessel. It may rely on the combination of two compounds to release energy or involve the consumption of a fossil fuel such as oil or gas. About the only advantage that a chemical reactor may offer in comparison to more advanced systems is a small price tag, although even this is offset by high fuel costs.

As a result of the brute wastefulness of the system, it demands a high volume of fuel. Each 1-durability fuel tank can power the chemical reactor for 2 weeks. In addition, fuel tanks for chemical reactors are especially prone to system failure. Any compartment that stores chemical fuel inside it suffers a +2 step penalty on all durability checks.

Cold Fusion Reactor (PL 6)

Even many years prior to the development of a working model, the promise of cold fusion energy drew the attention of numerous scientists and even frauds. The principles of inducing a hydrogen isotope to fuse at room temperature prove complex, but not impossible to master during the Fusion Age. Unfortunately, in most settings the near-simultaneous discovery of more energy-abundant fusion generators makes cold fusion relegated to a role of support. Since cold fusion reactors are so small, they can be used to provide a last touch of energy that a ship needs.

Fission Generator (PL 6)

Relying on the radioactive splitting through neutron bombardment of heavy atoms such as uranium or plutonium, the fission generator stands out as significantly less efficient than other power sources of the Fusion Age.

Fuel for the fission generators is very compact, even accounting for radiation shielding. A single fuel tank space can provide power for a fission generator for up to 50 weeks of use. On the other hand, construction of a fission fuel tank costs five times the standard cost.

Hydrogen Collector (PL 6)

Sometimes known as a Bussard ramscoop as originally developed, the hydrogen collector renders the standard fusion torch, which relies on a catalytic nuclear reaction, into a ram-augmented rocket system, a refined ramjet. For ships using a fusion or grav-fusion generator, each hydrogen collector assigned to the ship allows it to collect enough hydrogen and hydrogen isotopes to fuel the ship. The particles are abundant in the solar wind and the interstellar medium.

Whenever a hydrogen collector is not

Fuel or No Fuel?

Only in campaigns that deal with extended exploration missions or other long expeditions should fuel become a significant factor. Otherwise, the Gamemaster can freely ignore the consideration of fuel and assume that the heroes take a few moments to fill their tanks whenever they visit settled planets or star systems.

Like many things in a role-playing campaign, refueling is a detail that can often be passed over—or used as an opportunity for an adventure. What kind of scam might the little corporation be trying to pull on the frontier? Can anyone obtain fuel with the supplies lines stretched by war?

In game terms, the Gamemaster can apply a simple rule when a ship system runs out of fuel: It stops working. Depending on how hard the heroes have been working their ship and spending energy, this could be several days or even a few weeks before the standard time listed on TABLE S11: FUEL CONSUMPTION. Fortunately, a careful engineer keeps track of such things....

In the week that a fuel tank runs empty, roll 1d6+1 to determine the day of the week on which it becomes empty.

being used to fuel a system, a vessel may use it to collect enough hydrogen atoms to fill a fuel tank. Usually, this requires 10 weeks per fuel tank, although this number may be reduced by half or more by a close approach to a star or a pass through a gas giant's upper atmosphere.

Vessels using a fusion torch engine gain an additional benefit. The collector can accelerate much of the particles it gathers and mix it with the exhaust stream of the rocket itself, For the purposes of determining acceleration and cruising speed, the engine gains a –1 bonus to its maneuver rating.

Self-Destruct Device (PL 6)

Sometimes, the threat to self-destruct can be enough to dissuade potential

aggressors from boarding actions or close-combat. At other times, this system of last resort can represent the sacrifice of heroes, the only chance for victory.

When activated, this device increases the amount of damage caused by a vessel's explosion (see 'Spaceship Death' on page 18). Double the number of "hits" caused by the ship's explosion, and increase the amount of damage to 2d6+4 wounds per hit.

If this system ever suffers a system malfunction, the crew has 2d4 phases to succeed at disarming the device with a Technical Science–*repair* skill check (or evacuate the ship). At the end of this time, it detonates.

Note that although this system is designated as a power system, this only refers to the necessity of placing it in direct proximity to the ship's main power system. The self-destruct system itself doesn't provide any power (well, at least not more than once).

Antimatter Reactor (PL 7)

A crowning achievement of the Gravity Age, the antimatter reactor represents an incredible source of power that easily outpaces energy sources of the past. With only a few kilograms of antimatter particles, a ship can produce volumes of energy to power the average vessel for years of time without the need for refuel.

Despite its efficacy, the antimatter reactor does suffer under a few drawbacks. Safe antimatter containment requires a fairly large reactor space, and a significant portion of the energy produce must be redirected at antimatter containment field. Even so, every ship designer must tremble at the prospect of an antimatter reactor suffering damage in combat. If a compartment containing an antimatter reactor suffers mortal damage and a random roll indicates that the reactor is the target of a system failure (see 'Effects of System Failure' on page 17), automatically assume that the reactor explodes as if a Critical Failure (not just a Failure), had occurred (see page 18 for the damage effects of a reactor explosion).

A secondary drawback is the high cost of producing antimatter. While the reactor typically requires refuel only once every year, refueling a reactor costs $200K.

At PL 8, when it becomes easier to contain and manipulate antimatter, an improved system exists that occupies one fewer durability point and costs only $50K to refuel.

Dark Matter Collector (PL 7)

Mass reactors and dynamic mass reactors (see below) rely on the decay of a nonbaryonic dark matter—sometimes known as duodecim—in order to harness energy. Within either reactor, the dark matter lasts for tens of weeks. After this point, the reactors must be refueled. This operation can be attempted any modern starport.

For ship captains on long journeys, or just hoping to eventually save some money, a dark matter collector stands out as a viable alternative. The system constantly collects and stores dark matter for the reactor, forever eliminating the need for refueling.

Tachyonic Collider (PL 7)

Once the methods of decelerating tachyonic matter have been grasped, the process can also be used not only to enhance existing energy sources, as some drive systems do, but also to provide power directly. On a large scale, tachyonic collision can't provide the measure of power that some other systems do, but its capability for miniaturization may make it popular nonetheless.

Dynamic Mass Reactor (PL 8)

While the advances of scientific research introduce new, perhaps more efficient power technologies, the refinement of the mass reactor—an energy system relying on nonbaryonic dark matter—produces a second generation reactor that's both smaller and more efficient than its predecessor. The dynamic mass reactor accelerates dark matter decay to enhance this already plentiful and stable energy production.

It also enjoys a singular advantage over its contemporaries: It can be used in conjunction with a stardrive, previously restricted to a mass reactor alone.

Quantum Cell (PL 8)

The possibilities for deriving energy from the sea of fluctuating quantum foam present everywhere, even in vacuum, may have been known for centuries before PL 8. However, harnessing that knowledge and the manipulation of point-based energy demands the more complete understanding that comes with the Energy Age.

The quantum cell never requires fuel tanks or any kind of refueling.

Singularity Generator (PL 8)

While its name may cause some misapprehension of this power source as a weapon system that hurls singularities, the singularity generator is, in overall principle, more of a long-term battery or accumulator. Through an expensive process, a specialized construction facility creates a singularity—a black hole—which is then stored and contained within a starship. The starship taps the singularity for energy as it undergoes a slow decay. Under normal conditions and assuming a reasonable rate of energy consumption, a singularity generator can power a ship for up to five years without being replaced.

Some inherent instability in using a matter-hungry singularity as a power source may result in additional damage if the generator suffers a system failure. Apply the same effects listed under the antimatter reactor, above.

Engine Systems

Whatever purpose a ship is to serve, if it is to be anything more than a satellite or starbase it must be equipped with the means to make it move. Thus engines are oft spoken of as the second-most important system aboard.

The rules introduced in the *Gamemaster Guide* apply to all of the engines described here. Each engine consumes a certain number of power factors and converts them into movement points; based on the size of the ship, you can determine the ship's maneuver rating (see Table G38: Ship Maneuverability on page 144 in the *Gamemaster Guide*). Finally refer to Table S15: Ship Acceleration & Cruising Speed on page 49, using the maneuver rating and engine type to determine the ship's movement properties.

Conventional Rocket (PL 6)

A strong metastable tripropellant rocket system offers the best performance that convention, liquid-chemical rock-

ets can offer. While they can't match more complicated models, their low cost may make them tempting for travelers or small corporations running a tight budget.

Conventional rockets can only be used for a constant thrust of three days before emptying their internal fuel canisters.

Rockets

All of the engine systems described in this section are reusable; although they may eventually need refit or replacement after years of use, each use doesn't necessitate a near-immediate replacement.

Four rocket systems presented in this section present a different approach. The engine system is disposable, and can only be used for a short period of time. The advantage lies in that the rocket doesn't require a separate fuel tank and needs only a power plant to govern thrust and maneuvering, not actually to power the process. This has the unfortunate side effect that rockets, when they suffer a system failure, can explode just as power plants do (see page 18).

In addition, rockets can be jettisoned when they run out of fuel. Thereafter, their durability cost can be ignored for the purpose of determining an engine's movement points and acceleration.

Fission Rocket (PL 6)

Through nuclear reactions, a gas-core fission rocket can convert a much greater percentage of its fuel mass into energy for thrust. Regrettably, though, this rocket system suffers from its own weight, thanks to the necessity of carrying heavy, fissionable material.

The fission rocket lasts up to two weeks of constant use before exhausting itself.

Fusion Rocket (PL 6)

A fusion rocket is, in essence, nothing more than a fusion generator whose plasma containment bottle has been ruptured. The exhaust jet that results from the deuterium/helium-3 reaction propels the rocket forward at a velocity that's unmatched by any rocket system of the Fusion Age.

The fusion rocket lasts for six weeks of constant use before emptying itself of fuel.

Table S13: Magnetic Sails

Distance From Star	Condition	Movement Points Generated
< 0.5 AU	Amazing	3/sail
0.5–5 AU	Good	2/sail
> 5 AU	Ordinary	1/sail

Magnetic Sail (PL 6)

An engine system that relies on the creation of magnetic field to catch and propel the vessel on the near-infinite field energy of stars and the galaxy. Like the solar sails, only a modest acceleration is possible. See Table S13: Magnetic Sails.

Despite its power requirement, the magsail is judged to be the superior of similar systems, given its smaller size and its ability to operate beyond the confines of a solar system. Still, performance remains unimpressive unless the systems receives power artificially from a planet- or orbital-based source. (This automatically provides Amazing conditions on Table S13: Magnetic Sails.)

Microfusion Pulse (PL 6)

Although refinement took years, the concept for a microfusion pulse engine, known initially as Project Orion and eventually as Project Daedalus, goes back to the middle of the Information Age. Basically, the system uses a series of small fusion bombs as means to provide thrust against a carefully constructed and shielded pusher plate at the rear of the vehicle.

Particle Sail (PL 6)

The particle sail functions much as its cousins, the magnetic and photon sail, offering an alternative to conventional systems. Particle sails have much to be said for them; unlike magnetic fields or photons, particles have mass, allowing the particle sail to be built smaller and attain greater acceleration. Unlike the others, however, it's impossible for the particle sail to attain a significant acceleration without artificial power. As a result, this engine system can only be used in settled systems where artificial power systems can direct a ship through space. Without an external delivery system, the particle sail provides no acceleration.

Once externally powered, each particle sail provides 3 maneuver points.

Antimatter Rocket (PL 7)

One of the last ventures into the field of rocketry is the antimatter rocket. While a true antimatter engine never became popular due to the risks involved, more disposable and separable rocket systems using antiproton annihilation provide abundant thrust. The antimatter rocket lasts for ten weeks of constant use before emptying itself of fuel.

Hypermagnetic Engine (PL 7)

This kinetic engine works by momentarily negating the rest mass of a powerful magnet through mass induction technology and then hurling it along the path of the engine. By the time the magnet reaches the end of the engine, it regains its mass and magnetic properties, attracting the ship toward it. Numerous such magnets apply an acceleration down a unidirectional course.

Gravitic Redirector (PL 8)

The gravity induction engine of the previous era fabricates a slope in space. As understanding of fundamental forces improves during the Energy Age, the development of the gravitic redirector allows a vessel not only to overcome the natural force of gravity nearby, but instead to manipulate the graviton wave backs already present. The result is a more efficient and more powerful engine that's just as maneuverable.

Drive Systems

The *Gamemaster Guide* introduces the stardrive, and its successor the drive-wave generator, as a baseline FTL drive system. The stardrive can be used in any campaign setting you desire; it's also the standard in the STAR*DRIVE campaign setting. Some additional information on the stardrive and drivespace appears on pages 9–10.

The progress of science and the ability of sentient minds to bend the laws of the universe may take another path in your campaign universe. In the active imaginations of Gamemasters and players, dozens of FTL drive systems may be produced. Chapter 1 detailed some of the most common forms of FTL travel in science fiction (see 'Alternate FTL Methods' on page 11). The ship systems that make those FTL methods work are described here.

Whatever FTL system you include in your campaign, there's no need to invent new skills to handle the problems of interstellar or interdimensional transportation. Simply use the Navigation–*drivespace astrogation* skill and retitle it as you need (*jumpgate astrogation*, *warp astrogation*, *wormhole astrogation*, etc.).

Of course, in your campaign the lightspeed barrier may never be broken. In that case, the only means to get to the stars may be a reliance on time dilation (see page 16), generation ships, and cryogenics technology (see 'Support Systems' on page 51).

Gate Activator (PL 7)

The gate activator is a necessity in some campaigns where jumpgates stand out in as the means by which interstellar is accomplished. Since most of the energy and control mechanisms are contained with the jumpgate, the gate activator requires very little space or durability in comparison with other drive systems.

The gate activator has an effective range of 5 megameters, and the typical jumpgate requires a full phase to power up. As a result, ships must be careful not to travel into a jumpgate at high velocity.

The distance that a jumpship can travel depends not on its jumpgate activator but on the jumpgate itself. In addition, it may be impossible to proceed off course. See 'Jumpgates' on page 12.

Hyperdrive (PL 7)

In many ways, the hyperdrive operates on principles similar to the stardrive. The hyperdrive allows a vessel to enter hyperspace, a parallel reality in which distance, as it understood in this reality, functions on different rules. Like the stardrive, it requires a significant amount of energy to activate.

Travel times through hyperspace, however, can't be so easily predicted. The amount of energy that a ship devotes to its hyperdrive determines how fast it travels; see TABLE S14: HYPERDRIVES. As the table notes, smaller vessels find it easier to travel and move quickly through hyperspace.

The internal components of the stardrive booster are identical to the standard model. To this is added a roll-on, roll-off system. In only a few hours at a starport, the uncharged stardrive system can be removed and replaced with a charged stardrive booster waiting around just for such a purpose. Meanwhile, a few days later, the uncharged stardrive booster can reenter use. Interestingly, smaller vessels that can more often benefit from a stardrive booster system; comparatively larger capital ships have a more difficult time with modular components.

Typically, it requires a baseport (see 'Spaceports' on page 32) to effect this operation. On average, the fee for the service runs about $25K, although availability and cost may change from place to place and campaign to campaign.

The exact time required to remove and replace a stardrive booster depends on the result of a System Operation–*engineering* skill check: Critical Failure, operation fails after d12+6 hours and must be repeated; Marginal, d12+6 hours; Ordinary, d6+4 hours; Good, d4+2 hours; Amazing, d4 hours.

TABLE S14: HYPERDRIVES

Durability		Power Factors			
1–10		3–5	6–9	10+	
11–20		5–10	11–20	21–30	31+
21–30		10–20	21–30	31–45	46+
31–40		15–25	26–40	41–65	66+
41–50		15–35	36–50	51–80	81+
51–60		20–40	41–55	56–85	90+
Hyperdrive	PL 7	1 ly/d	2 ly/d	3 ly/d	5 ly/d
Speed	PL 8	2 ly/h	4 ly/h	6 ly/h	10 ly/h

Ly/d = Light-years traveled in a single 24-hour day.
Ly/h = Light-years traveled in a single hour.

Wormhole Screen (PL 7)

While some settings and their inhabitants may benefit from the existence of naturally-occurring wormholes, the ability of a vessel to survive a wormhole's stresses may not be so natural. A wormhole screen unit casts a quantum-level protective field over its vessel, allowing a ship to survive the incredible stresses of wormhole travel.

A wormhole screen has no effect over travel time or wormhole range.

Stardrive Boosters (PL 7)

A development appearing near the end of the Gravity Age, the stardrive booster will quickly be made obsolete by developments of the next era. For a brief time, however, a stardrive booster represents a tempting solution to the wait period that all stardrives require after starrise.

Psychoportive Drive (PL 8)

This drive system stands out as one of more unusual manipulations of energy available. While the unassisted mindwalker doesn't possess the power even to teleport his own mass, faultlessly-designed psionic-enhancement systems can allow the mindwalker to alter reality, moving a ship over vast distances with a thought. In one (admittedly bizarre) theory, the psiship isn't

TABLE S15: SHIP ACCELERATION & CRUISING SPEED

Maneuver Rating	Chemical Rocket		Fission Rocket		Fusion Rocket		Fusion Torch	
	Acc	Cruise	Acc	Cruise	Acc	Cruise	Acc	Cruise
+3	.001	.01	.003	.01	.02	.02	.01	.05
+2	.003	.02	.005	.02	.05	.04	.02	.1
+1	.005	.03	.01	.05	.1	.07	.03	.15
0	.01	.05	.02	.1	.15	.1	.05	.2
-1	.02	.07	.03	.15	.2	.2	.1	.3
-2	.03	.1	.05	.2	.3	.3	.15	.4
-3	.05	.15	.1	.3	.4	.4	.2	.6

Maneuver Rating	Ion Engine		Magnetic Sail		Microfusion Pulse		Particle Sail	
	Acc	Cruise	Acc	Cruise	Acc	Cruise	Acc	Cruise
+3	.005	.01	.01	.05	.01	.1	.02	.05
+2	.01	.02	.02	.1	.02	.15	.04	.1
+1	.02	.05	.03	.15	.03	.2	.07	.2
0	.03	.1	.05	.2	.05	.3	.1	.3
-1	.05	.15	.1	.3	.1	.5	.15	.4
-2	.1	.2	.2	.4	.15	.7	.2	.5
-3	.15	.3	.3	.5	.2	1	.25	.6

Maneuver Rating	Photon Sail		Planetary Thruster		Antimatter Rocket		Induction Engine	
	Acc	Cruise	Acc	Cruise	Acc	Cruise	Acc	Cruise
+3	.001	.05	.001	.01	.2	.5	.25	.3
+2	.003	.1	.001	.01	.4	1	.5	.6
+1	.005	.15	.001	.01	1.3	1.5	1	1
0	.01	.2	.001	.01	2.5	2	2	1.5
-1	.02	.3	.001	.01	4	3	3	2
-2	.03	.4	.001	.01	6	4	4	3
-3	.05	.5	.001	.01	8	6	6	4

Maneuver Rating	Hypermagnetic Engine		Microinductor		Gravitic Redirector		Inertial Flux Engine	
	Acc	Cruise	Acc	Cruise	Acc	Cruise	Acc	Cruise
+3	.2	.3	.1	.1	1	.3	.5	.5
+2	.4	.6	.2	.2	2	.6	1	1
+1	.7	1	.3	.5	3	1	2	1.5
0	1	2	1	.7	4	1.5	3	2
-1	2	3	2	1	6	2	4	3
-2	3	4	3	1.5	8	3	6	4
-3	5	6	5	2	10	5	8	6

Acc: Acceleration is measured in megameters per phase per phase (Mpp).
Cruise: Cruising speed is in AUs per hour.

The Microinductor

Neither precisely an engine nor a power plant, the microinductor is a development of the late Gravity Age that integrates a small mass reactor and engine system into a single device. As such, it has properties unlike any of the systems here, and it's uniquely suited for a small vessel such as a space fighter, launch, or perhaps a cutter. The microinductor doesn't have the power to function very effectively in vessels with a durability of 21 or more, and it becomes completely ineffective in vessels with greater than 30 durability.

The microinductor costs 4 durability points and costs $400K, making it an efficient but expensive system. Its small mass reactor does the job of powering the engine and providing an additional 4 power factors. Each engine, meanwhile, supplies 1 movement point.

Unlike most engine systems, the microinductor doesn't use TABLE G38: SHIP MANEUVERABILITY in the *Gamemaster Guide* to determine its maneuver rating. See the table below.

TABLE S15: MICROINDUCTOR MANEUVERABILITY

Durability	Movement Points Generated						
1–10	—	—	—	—	1	2	3+
11–20	—	—	1	2	3	4–5	6+
21–30	1	2–3	4–5	6+	—	—	—
Maneuver Rating	+3	+2	+1	0	-1	-2	-3

To determine the acceleration and cruising speed of a microinduction vessel, refer to TABLE S15: SHIP ACCELERATION & CRUISING SPEED. Find the column for the microinductor and the row for the appropriate maneuver rating.

The microinductor, like all of the systems included here, should be included in a campaign only with the Gamemaster's approval. This particular system provides small fighter craft a significant boost in their power and abilities.

Since the microinductor is technically powered by a mass reactor, it's theoretically possible to configure several microinductors together with a stardrive.

actually moving, but entering a parallel universe in which it occupies the specified location.

The distance a ship can leap depends on the amount of psionic energy points spent by one or more mindwalkers (the ship's power factors are almost irrelevant). Each mindwalker must possess the Telekinesis broad skill, although no skill check or specialty skill is required. A maximum of five mindwalkers (per psychoportive drive unit) can infuse the system with energy.

The total number of psionic energy points spent equals the maximum distance, in light-years, that the psiship can jump. A minimum of 5 psionic energy points must be spent, although it's possible to leap distances shorter than 5 light-years.

Note that like most other drive systems, the psychoportive drive has proven unable to function in the close proximity to large celestial bodies.

Spacefold drive (PL 8)

The spacefold FTL system involves a spacefolding technology of incredible power and ingenuity. Evolving through an understanding of energy's relation to space-time developed relatively late during the Energy Age, the spacefold represents one of the earliest attempts at teleportation technologies. Travel time is near-instantaneous, taking only a few seconds to cross light-years.

The distance a spacefold-drive vessel can travel depends solely on the amount of power it can generate. See

TABLE S17: SPACEFOLD DISTANCE

Power Factors	Fold Range
1–8	0.5 light-years
9–15	1.0 light-years
16–30	2.0 light-years
31–50	5.0 light-years
51–70	10.0 light-years
71–100	20.0 light-years
100+	50.0 light-years

TABE S17: SPACEFOLD DISTANCE.

Regrettably for its users, even the miracles of the Energy Age have yet to totally master spacefolding technology. When attempting Navigation–*spacefold astrogation* skill checks, a character automatically suffers a +2 step penalty, and a '19' or '20' result on the control die indicates a Critical Failure (the ship travels its maximum distance in a randomly-determined wrong direction).

Warpdrive (PL 8)

Warp travel represents a means of near-direct FTL travel. By surrounding the vessel with a warp bubble, it's possible to move the vessel at an incredible velocity, breaking the speed of light in moments. The great advantage of the warpdrive is that, unlike the interdimensional travel represented by the stardrive or hyperdrive, it's possible to change course during an FTL journey. Of course, this could represent a theoretical risk; two ships traveling at warp may be able to engage one another in combat.

The speed that a warpship can attain depends directly on the power factors it can devote to its warpdrive.

TABLE S18: WARP SPEED

Power Factors	Warp Speed
0–15	Not possible
16–25	0.2 ly/hour
26–35	0.5 ly/hour
46–60	1.0 ly/hour
61–75	2.0 ly/hour
76–90	5.0 ly/hour
100+	10.0 ly/hour

TABLE 519: WORMHOLES

Power Factors	Range	Duration
5–10	0.1 ly	1 round
11–25	0.5 ly	1 minute
26–40	1.0 ly	5 minutes
41–55	2.0 ly	20 minutes
56–75	5.0 ly	1 hour
76+	10.0 ly	6 hours

Larger warpships almost always travel faster than their smaller cousins. See the table below.

Wormhole Generator (PL 8)

As the Energy Age explores the relationship between energy and mass, one result is a device capable of generating and controlling short-lived superextreme Kerr objects (wormholes). This system, when activated, opens a temporary portal to another location light-years away. Once generated, the wormhole lasts for a number of minutes, or even hours.

The exact range of the wormhole, and the length of time before the wormhole collapses, depend on the energy devoted to the system when it's activated. The engineer must decide how many power factors to assign to wormhole duration, and how many to assign to wormhole range. See the table below.

It's impossible to set a wormhole destination to less than 0.01 ly (about 60 AU) or a duration of less than one round.

Support Systems

While several other systems exist, the standard life support unit, and its successor the autosupport unit, form the most important systems available in this type. Regardless of its location aboard a ship, a life support unit regulates the air quality, pressure, lighting, and temperature aboard the entire ship (or at least a number of durability points of the ship that it can handle). Without it, the crew would either freeze, die in a vacuum, or suffocate from lack of oxygen, not to mention bump into one another in the dark. Finally, a PL 6 support system supplies a ship with several gelatin couches and similar accoutrements so that the crew can withstand accelerations up to ten times Earth's gravity.

To these capabilities, the PL 7 autosupport unit adds the power to activate artificial gravity. The engineer can control which compartments have gravity (see 'Overpowered Systems' on page 31). Most sentients find it more comfortable to function when they have a reference of "down," and an ability to set objects down without them floating away. Artificial gravity also conveys the ability to counter the extreme accelerations that PL 7 engines produces—hundreds or even thousands of times Earth's gravity. Like the life support unit, the autosupport unit affects a number of compartments, not just the compartment in which it lies.

This section introduces a new kind of support system especially appropriate for campaigns with an interest in telling stories of realistic travel through space, without the miracle of FTL travel.

Cryogenic unit (PL 6)

In some societies, cryogenics may be developed primarily for medical or longevity purposes (as was the case for the species known as t'sa, a cryogenics leader in the STAR*DRIVE setting). For starships, however, the cryogenic unit serves another possible: allowing the crew to pass years of time in sub-light travel without dying of old age or boredom.

The standard cryogenics unit supports up to 12 passengers and costs 2 durability points and one power factor in constant use. For each additional durability point assigned to a cryogenics system, an additional eight passengers can be accommodated (this costs $50,000 but requires no additional power factors). Unlike many other systems, including life support, shutting down the cryogenics unit for anything more than a few seconds (1 round) has the disastrous consequence of causing d4 points of mortal damage to every inhabitant of the cryochambers.

Placing biological organisms in, or removing them from, a cryogenic state requires hours to accomplish safely. The exact time depends on the size of the creature; assume a total of 4 hours for freezing and 12 hours for thawing for a standard human. Larger beings require more time, smaller ones less.

While their bodies lie chilled at a temperature not too far above absolute zero, the passengers in cryochamber age very slowly—about one-fiftieth (2%) of normal time. For example, five months would age a passenger only 3 days; and a long journey of 10 years would age the inhabitants only about two-and-a-half months.

Each cryogenics unit contains enough biological material and supplies to support its 12 passengers for a complete 5-year span. Fewer passengers indicate a longer duration (assume a static total of 60 passenger-years). For each additional durability point assigned to the cryogenics unit for this purpose, it can extend this duration by 10 years for 12 passengers. This costs $10,000 per durability point assigned.

Hydroponics Bay (PL 6)

A hydroponics bay offers another option during especially long journeys. Basically, a hydroponics unit is a garden that produces edible vegetable crop without the need for soil. High crop yields using advanced biological engineering allow each hydroponics bay to support a total of 20 passengers or crew members with food. When coupled with efficient management and a recycler unit for water, this unit offers almost infinite (100+ years) consumables.

Hydroponics bays are typically controlled by characters familiar with both System Operation–*engineering* and Life Science–*botany*.

Life suspension unit (PL 7)

Relying on principles developed with the cryogenics unit, the life suspension system adds a better understanding of fundamental life interactions—at the microcellular, even molecular, level. Biological organisms in the life suspension unit aren't merely frozen, they're suspended, immune to the ravages of time or any need for food or any biological matter. Moreover, placing or removing an organism to or from stasis

takes only a few moments (1 round), although they remain disoriented (+2 step penalty to all actions) for 2d6 minutes afterward.

The standard life suspension unit has the same passenger capacity as the cryogenic unit, and its capacity may be increased in the same manner (at a cost of $100,000 per durability point added). The life suspension unit can carry its passengers as long as it receives power.

Sensor Systems

The eyes and ears of a starship, sensors fill a role that most sentient species take for granted—the ability to observe their environment. Just as a sentient without an ability to sense and interact with its environment inspires sympathy, so a ship that can't detect the enemy and survey its surroundings deserves pity.

Sensors operators, as noted in the previous chapter and the *Gamemaster Guide*, may not be as glamorized as the average pilot or gunner, but they have an equally important obligation aboard a ship. The guns can't shoot and the ship can't navigate without a view of the space about it. Moreover, an excellent sensors operator with good equipment does more than allow opportunities for other ship systems and operators, he augments them, improving their chance of success.

While sensor systems vary wildly in the kind of energy mediums they detect, each sensor type can be distinguished into two broad types: active and passive. Passive systems, often called detectors, are simply listeners that hope to notice and identify through their own sensitivity. They send out no signal on their own, and they can't by themselves give away a ship's location. Examples include EM detectors, IR detectors, mass detectors, and radiation detectors.

Active sensors, by contrast, work by sending out an energy signal that strikes objects and vessels and is returned. Radar stands out as the most common active system, reliable even in the far-distant future; other examples include ladar and madar. Active systems are more likely to detect the enemy, but they also automatically provide a –2 step bonus to an enemy sensors operator when trying to detect the actively signalling vessel, provided the vessel has an appropriate detector. See below:

Table 520: Spaceship Detection Range

System	Skill Check (O/G/A)
CE passive array	50 Mm/100 Mm/150 Mm
EM detector	30 Mm/60 Mm/90 Mm
IR detector	2 Mm/4 Mm/6 Mm
Ladar*	5 Mm/20 Mm/30 Mm
Mass detector	10 Mm/50 Mm/100 Mm
Madar*	40 Mm/60 Mm/80 Mm
Radar:	
air/space*	10 Mm/20 Mm/40 Mm
multiband*	30 Mm/60 Mm/90 Mm
multiphase*	40 Mm/80 Mm/120 Mm
Radiation detector	10 Mm/20 Mm/40 Mm

* Denotes an active system

Active System	Detector
Radar	EM detector
Ladar	Visual detector or CE passive array
Madar	Mass detector

Internal Monitors (PL 6)

While most sensor systems configure their arrays out into space, this system lines a ship's corridors, compartments, and sections with cameras and audio receivers. From the command deck, an operator can call up a view of just about any corner of a vessel with this system.

Typically, the sensor devices about the ship don't make themselves readily seen. If a character deliberately looks for monitors, a successful Investigate–*search* check, made with a +2 step penalty, is required to find the sensor.

Passive Sensors & Weapons Lock

It's quite difficult to achieve as precise a sensor lock on a vessel using only passive systems when compared to active systems. Whenever a weapons operator attempts to target using only passive sensors, apply a +1 step penalty to his attack. An equal penalty applies whenever a sensors operator attempts to assist the weapons officer with targeting when using only a passive system.

At PL 7 and beyond, internal monitors can also be equipped with weapon detectors or psi detectors.

Ladar (PL 6)

Laser detection and ranging systems form accurate and reasonable alternatives to radar systems. In star systems plagued by solar interference or regions in which electromagnetic jamming has grown common, ladar may represent a means to get around the opposition.

Ladar is especially effective at targeting of energy weapons; a sensors operator using ladar to assist in a weapons lock or called shot receives a –2 step bonus to his System Operation–*sensors* skill check.

Radiation Detector (PL 6)

The radiation detector proves effective against only a portion of ships available by focusing on hard radiation, high-energy emissions. The system can be used to attempt detection of any vessel using or carrying any nuclear system (fission or fusion), whether it's an engine, power plant, or weapon. It remains blind to other ships.

The radiation detector can also be used to locate natural and unnatural sources of radioactivity such as uranium deposits, stellar fragments, and fusion mining facilities.

Probe (PL 6)

A sensor probe is a meter-long projectile, containing nothing more than a small rocket system, controlled by radio (or some other transceiver) and equipped with a sensor package. The probe can be sent ahead of a vessel in hopes of investigating an unknown anomaly or planetary surface.

The standard sensor probe possesses a small rocket engine capable of 0.05 Mpp acceleration. Generally, it can cruise along at 0.1 AU/hour for up to 48 hours.

A standard probe can contain any two of the 0-durability sensor systems available, and a battery to power it for 48 hours. For example, a probe could contain an EM detector and a multiband radar. Larger probes can be customized to include larger sensor systems or additional smaller ones. For each 0-durability sensor system after the first, the probe costs an additional durability point. For sensor systems with a durability cost, simply add the system's durability cost to the probe's base durability cost of 1.

With less than a single durability point in spaceship terms, a single hit from any ship weapons system, or any hit that causes wound damage to a target of Good toughness destroys a probe; however, the small size of the target provides a +2 step penalty to attempts to target it by ship weapons. It has no actual military function and carries no warhead. Other than being mistaken for a missile by a careless sensors operator, a probe's only purpose in battle is to detect and scan.

With the purchase of the probe system, a vessel can hold as many as four standard probes within its hull for a single durability point. By spending an additional durability point (and additional money equal to half the system's cost), the probe system can contain an additional six probes.

The rules for detecting a star vessel apply to the detection of probes as well. See page 52.

Advanced Probe (PL 7)

Resembling its predecessor in most respects, the advanced probe distinguishes itself by a greater acceleration (1 Mpp), cruising speed (2 AU/hour), and longevity (240 hours, or ten days). In all other respects, the advanced probe behaves as a standard probe.

Cloaked Probe (PL 8)

The final evolution in probe technology involves adding a cloaking unit to the tiny probe, applying a +4 step penalty to any attempts to detect it. This penalty is negated if the probe uses any active sensor system. In all other respects, the cloaked probe is identical to the advanced probe above.

Drive Detector (PL 8)

A drive detector detects starfalls and starrises within 50 light-years. Moments after a driveship enters drivespace, it sends out a carrier wave that is detected 11 hours later by any detector within range. In addition, detectors within 50 light-years of the driveship's imminent starrise also become aware 11 hours after the ship's starfall.

The detector provides a rough approximation of the mass being transported through drivespace. Thus, a detector can estimate the size of a vessel (typically expressed in ship durability or compartment size) or the total size of a fleet that's entering drivespace or about to starrise.

Previous to PL 8, drive detectors could only be found as large, cumbersome devices kept aboard orbital satellites or large capital ships (fortress ships, dreadnoughts, and large or specialized cruisers). In addition, a PL 7 detector represented a more significant investment on the part of its builders, where by PL 8 the technology has reached widespread mass production.

At PL 8, even while drivespace detectors enter greater availability, the usefulness declines thanks to the impressive FTL speed demonstrated by the drivewave generator. In essence, a ship is detected only at the same moment it arrives at its destination. Its one advantage remains that, within its 50-ly radius, it can detect starrises as well as starfalls.

Madar (PL 8)

With improvements in gravity manipulation technology in the Energy Age comes the gravitic redirector and the madar (mass detection and ranging) sensor systems. Basically an active system built on the mass detector concept, a madar system generates a gravitic wave that reflects off massive objects, reporting their existence back to the vessel. When known objects are filtered out, madar represents a sophisticated mean to detect ships (–2 bonus to skill checks), but it never excels at targeting (+2 penalty to skill checks). For this reason, madar is best used when combined with another sensor system.

Starfall Detector (PL 8)

Bulkier and more expensive than a drivespace detector, a starfall detector relies on a principle of extreme gravitic disturbance in normal space. Unlike both drivespace communicators and detectors, the starfall detector remains completely in normal space, not using drivespace energy waves in any manner.

A starfall detector detects starfalls within 100 light-years, pinpointing the departing vessel's approximate mass and destination. A starfall detector senses this information a mere hour after the ship starfalls.

Defensive Systems

Three principal defensive systems exist, each representing a different style of defense. The first type is the screen, energy field, jammer, or defense gun; directly or indirectly, they prevent a vessel from being hit. The second line of defense is armor; after a ship suffers a hit, it's up to armor to absorb, or at least minimize, the attack's destructive effects. The final line of defense lies in ship designs tailored to compensate for a wounded vessel; damage control systems, redundant systems, and nanite repair crews are examples.

Armor (PL 6–8)

The *Gamemaster Guide* provides information on the purchase and durability cost for all kinds of armor. It also describes five types of armor. See TABLE S21: ARMOR, which lists both the five older types of armor and the new ones described below. Remember that armor takes up durability space, though this does not reduce a ship's total durability for the purposes of ship systems, determining maneuverability, etc. It also reduces the total number of durability points available to be spent on ship systems and compartments,

Reflective armor consists of dense, layered plates of polished metal. It's especially effective at resisting energy attacks, but generally poor against other categories of weapons.

Reactive armor, a predecessor to the more advanced nanofluidic protection, wraps angled layers of compressed helium or insulative gel between sheets of cerametal. One disadvantage of this armor lies in the extreme difficulty of its repair (see 'Damage to Armor' on page 19). Double the number of successes required in the complex skill check.

Crystallis armor, representing the finest in anti-energy armor systems, also possesses incredible regenerative capabilities. While it can be degraded in combat (see 'Damage to Armor' on page 19), three minutes (15 rounds) after the last damage to the ship occurred, the crystalline lattice structures take advantage of the energy dispersed by the very attacks that wounded them, and spontaneously regenerate all armor damage.

Layering Armor

While expensive and often limiting to a ship hull, it's possible for a ship to be designed with as many as three layers of ship armor: one heavy armor, one moderate armor, and one light armor. The purchase and durability cost for each type of armor must be purchased separately. (Thus, a ship with both heavy and moderate armors spends 30% of its durability points.)

When a ship with more than one layer of armor is struck, make a dice roll to determine how much each layer of armor absorbs, but apply only the best result.

Partial Armor

Realistically, it's likely that ship designers may choose to attach more armor to some compartments of a ship, and less to others. For ships with more than 20 durability points, use the following rule.

Add up the number of durability points to be covered by one type of armor. To determine how many durability points it costs to add armor to this section, treat it as if it were an independent ship of its own. Light armor costs no durability, moderate armor costs 10% the total durability of the section, and heavy armor costs 20%.

Table 521: Ship Armor

Armor Type	PL	LI	HI	En	Avail	Cost per 10 durability
Light Armor						
Alloy	6	d6-1	d6-1	d4-1	Con	75K
Polymeric	6	d4-1	d4-1	d4-2	Com	50K
Reflective	6	d4–3	d4–2	d6–1	Com	50K
Cerametal	7	d6-1	d6-1	d6-1	Mil	100K
Neutronite	7	d6	d6	d6-1	Mil	250K
Reactive	7	d4+1	d6–1	d4–1	Con	75K
Crystallis	8	d6–1	d6	d6+2	Mil	250K
Nanofluidic	8	d8-1	d8-1	d8	Res	500K
Moderate Armor						
Alloy	6	d4+1	d4+1	d4	Con	150K
Polymeric	6	d4	d4	d4-1	Com	100K
Reflective	6	d4–2	d4–1	d6	Com	100K
Cerametal	7	d4+1	d4+1	d4+1	Mil	200K
Neutronite	7	d6+1	d6+1	d6	Mil	500K
Reactive	7	d4+2	d6	d4	Con	200K
Crystallis	8	d6	d6+1	2d4+1	Mil	750K
Nanofluidic	8	2d4	2d4	2d4	Res	1M
Heavy Armor						
Alloy	6	d6+1	d6+1	d6	Con	300K
Polymeric	6	d4+1	d4+1	d6–1	Com	200K
Reflective	6	d4	d4	d8+1	Com	350K
Cerametal	7	d8	d8	d8	Mil	400K
Neutronite	7	d8+1	d8+1	d8+1	Mil	1M
Reactive	7	2d4+1	d8	d4+1	Con	500K
Crystallis	8	d8	d8+1	3d4	Mil	1.5M
Nanofluidic	8	2d4+1	2d4+2	2d4+1	Res	2M

However, always round up any fraction. So, if a 14 durability-section is to be covered with moderate armor, it costs 2 durability points.

The cost in durability is removed from the ship as a whole, as normal.

Example: The captain of a space freighter, 40 durability, decides to protect only half his ship with moderate armor. The cargo holds receive only light armor. It costs the ship captain 2 durability points (instead of the normal 4).

Charged Deckplates (PL 6)

Typically only found in prison ships or highly restrictive military vessels, charged deckplates represent an extreme form of interior defense. Controlled through the command deck, a high voltage electric charge can be routed into any compartment. Individuals walking on the floor's deckplates suffer d4 points of stun damage (En) each phase.

Charged Hull (PL 6)

One of several responses to a fear of being boarded, the charged hull radiates a strong electric charge through the hull of the ship. Individuals walking on the hull suffer d4 points of stun damage (En) each phase.

In addition, a captain can use this system to degauss the hull in order to render ineffective the clamping techniques employed by magnetic boots of e-suits or the clamps of a boarding pod.

Decoy Drone (PL 6)

A decoy drone represents a good line of defense for ships which find themselves under heavy assault. A decoy drone sends out a false radar signal, illuminating itself as a duplicate of the ship it's launched from. Decoy drones must be uniquely designed for each ship (or model of ship).

After one or more decoy drones are launched, the enemy sensors operator must spend an action attempting to isolate the actual target. This System Operation–*sensors* check is made with a +2 step penalty. Until all of the decoy drones have been identified by the sensors operator, any attack on the decoying ship has an equal chance of striking a decoy instead. (In this case, the decoy is destroyed, and unless its vessel is cloaked or somehow shielded, the enemy ship can reacquire its target.)

At PL 7, a decoy drone can be equipped with a small gravitic accelerator, designed to deceive mass detectors.

Stealth Hull (PL 6)

The first advent of stealth technology aboard a spaceship relies on accepted practices of radar and laser-absorbing material. A stealth hull imposes a +2 step penalty on the *sensors* skill checks to detect or target its ship when using such systems. See 'Cloaking and Shadowing' on page 24.

A stealth hull has no effect on other sensor systems, including IR detectors, radiation detectors, mass detectors, and CE passive arrays.

Stealth Shield (PL 7)

A relative of the deflection inducer, the stealth shield scrambles and mutes electromagnetic signals along a broad spectrum—including radar, infrared, laser, and even gravitic energy forms. The stealth shield imposes a +3 step penalty on the *sensors* skill checks to detect or target its ship. See 'Cloaking and Shadowing' on page 24.

Defense Network (PL 7)

An evolution in planet-based "pebble defense" systems, the defense network bears many similarities to the remote network of the same era. Unlike its cousin, the defense network is typically launched just prior to a hostile engagement. Scores of small spheres, each equipped with tiny microwave projectors, expand out to cover a radius some 10 Mm in only a single round. They continue to travel forward along with the ship's velocity at the time of deployment.

Once deployed, the defense network creates a near-impenetrable screen against missiles. When a missile attacks the defended vessel, the defenses operator makes a System Operation–*defenses* skill check with a –2 step bonus. A successful result indicates that the missile has been blocked.

Like the point-defense gun, it's possible for a weapon officer to use the defense network as a weapon of last resort. Assume that the system does damage equal to a laser cannon, but that with a single action it is capable of generating three separate attacks with a single action. Range is limited to within the 10 Mm deployment cloud.

The durability cost of the system includes 3 cloud deployments; for each additional durability point assigned to the system allows another 3 deployments. Each deployment cloud costs $50K.

Stardrive Scrambler (PL 7)

At this Progress Level, drivespace detectors are limited to capital ships, orbital satellites, and the like. Nevertheless, it's possible for a ship to scramble its signal so as it make it difficult for its destination or mass to be discovered (apply a +4 step penalty to any *sensors* skill checks made to detect the ship's starrise or starfall). It's impossible to completely conceal the starfall from listening ears with this technology. The stardrive scrambler must be active and fully powered during a starfall. The stardrive scrambler has no effect on a starfall detector (see page 54).

An unfortunate side effect of this device is to render the astrogator's job more difficult. When making a Navigation–*drivespace astrogation* skill check, the navigator suffers a +2 step penalty.

Cloaking Unit (PL 8)

The ultimate in cloaking technology renders a ship essentially invisible to every known energy medium and form of detection. The cloaking imposes a +4 step penalty on the *sensors* skill checks to detect or target its ship. See 'Cloaking and Shadowing' on page 24.

Energy Compiler (PL 8)

The energy compiler offers an improvement to the already-impressive ablative shield (see page 150 in the *Gamemaster Guide*). It changes the nature of the absorptive particles that surround the ablated ship. Instead of merely dissipating, these excited particles are absorbed back into the ship.

For every 2 power factors used by the ablative shield in the absorption of damage in a phase, the energy compiler automatically provides 1 power factor. These power factors can be funneled back into the shield, or routed anywhere else aboard the ship.

Holo Array (PL 8)

Offering many of the advantages of the decoy drone, a holographic array weaves an exact copy of its ship—which quickly moves a distance of some kilometers away. While the array remains active, the enemy sensors operator must spend an action each round attempting to isolate the actual target. This System Operation–*sensors* check is made with a +2 step penalty. Unless the holoprojection is identified by the sensors operator, any attack on the decoying ship has an equal chance of striking the projection instead.

Following an attack on the holoprojection, it's standard practice to reinitialize the system, terminating the revealed ghost ship and creating a new one.

RNR Array (PL 8)

A radical nanite repair array offers damage ships an impressive volume of reconstructive capability with a flip of a switch. It allows a ship engineer—or a ship AI—to order a remote operation that repairs not only stun damage (as detailed on page 163 in *Chapter 11: Spaceships* of the *Gamemaster Guide*), but wound damage as well. A single action and a System Operation–*engineering* skill check is required. The number of wounds repaired depends on the result achieved: Critical Failure, compartment suffers d4 stun points, Marginal, 1 wound repaired; Ordinary, 2 wounds repaired; Good, 3 wounds repaired; Amazing, 4 wounds repaired.

Once an attempt is made to repair either stun or wound damage, the engineering officer can't attempt an additional remote repair in the target compartment until it suffers additional damage.

A RNR array also has two side effects that benefit a standard repair operation. First, it provides a –3 step bonus to all Technical Science–*repair* skill checks on the ship. Furthermore, through more precise application of replacement parts and damage materials, a ship with an RNR doubles the effectiveness of each repair unit (see page 19), allowing it to make a greater number of repairs.

Stardrive Mask (PL 8)

A stardrive mask muffles the gravitic waves that accompany entrance into drivespace. As a result, it renders a driveship wholly immune to detection by a drivespace detector.

Against a starfall detector , a starfall mask's efficacy is less assured. It applies a +3 step penalty to the operator's *sensors* skill check.

The stardrive mask imposes no penalty on Navigation–*drivespace astrogation* skill checks. For pirates, criminals, and special military operations, a stardrive mask may be the only means to assure anonymity.

Communication Systems

Communications systems never gain the glamor or attention that even sensors or defenses do. As impressive as the ability to communicate over trillions of kilometers may be, modern society has embraced quick, easy, and reliable communications. It's only when they fail, or when they involve limitations, that they demand the interest of heroes and Gamemasters.

The three standard communications systems introduced in the *Gamemaster Guide* remain the prevalent means. Of these, radio stands out as the cheapest and the one most likely to appear in all campaigns.

FTL communication systems, introduced here, pose an interesting situation for the Gamemaster. There's nothing that says that FTL communications must exist, and even if someone in your setting discovers a means for FTL travel, communications may be limited to a pony express of the future, a courier service that offers the only alternative to radio. Or, such FTL comm systems may simply be unavailable to heroes. Perhaps they're too big and bulky to fit on small vessels, even at Progress Level 7. And even FTL communications may be far from instantaneous, taking hours or even days for a short message.

For heroic purposes, limiting communications and access can be critical. Sometimes it's a simple as wanting the heroes to be stranded. Or the Gamemaster may want the heroes to tough it out for a while before they can be rescued. But all good adventure stories share one characteristic: The heroes must make decisions that affect them, their companions, and ultimately even the rest of the setting. That's impossible if they have an instantaneous link to anywhere in the galaxy. Imagine the dull, robotic nature of adventuring if the heroes could be watched and ordered about by distant superiors.

Drive Transceiver (PL 8)

Like the drivespace detector, this system represents a miniaturization of a ship system previously only available on large military or commercial craft. With a drive transceiver, a ship can communicate to any other transceiver within 50 light-years. Messages take exactly 11 hours to reach their destination. Despite its name, the drive transceiver can't send or receive messages while in drivespace.

Foldsender (PL 8)

Spacefolding technology, when converted to the use of sending messages, offers incredible levels of speed and range. In a single hour, a foldsender can send a message to anywhere within about 100,000 light-years—essentially, anywhere in the galaxy.

Psionic Transceiver (PL 8)

This system is restricted to campaigns using psionics and psionically-endowed characters. In some campaigns, the speed of thought may be the only mechanism with which to surpass the speed of light. The psionic projector system stands out as an unusual system; it's not really a communication array but a battery of psionic energy and psionic enhancers that allow a mindwalker with the Telepathy broad skill to communicate instantaneously over light-years. Of course, another mindwalker using a psionic transceiver must be present to receive the message.

Active use of the projector costs a number of psionic energy points and two successful skill checks (Telepathy–*contact* and System Operation–*communications*); the exact number is determined by the distance. It's possible for more than one mindwalker to combine their psionic energy points to reach more distant targets. Multiply the number of psionic energy points spent by 5. This number represents the maximum range for that energy expenditure. Each hour of active use after the first requires an equal expenditure of psionic energy points.

Passive use of the system requires the attention of a mindwalker, although this officer can go about other duties on the command deck while awaiting reception of a message. Since the char-

acter is psionically active during this period, however, he cannot meditate or recover psionic energy points.

In order to communicate information other than words (such as maps, diagrams, or colored charts), the mindwalking communications officer must possess either the datalink specialty skill or have integrated a NIJack into his body.

Computer Systems

Aboard starships, three forms of computer systems play important roles. The first of these is simply the command-and-control computer, represented by the inclusion of the computer core, a ship system (of Marginal quality) that's automatically a part of any ship hull. This computer system allows the crew's commands to be processed, routed, and precisely executed by the proper ship system. This computer system has no form of intelligence behind it, other than a good design and configurable entry system. The computer core of a ship also performs as a standard mainframe (with active memory determined by quality of the computer core), capable of running computer programs or even initiating hacking attempts.

The second form of ship system, the dedicated computer system, acts as a semi-intelligent assistance to the crew aboard. Depending on the exact dedicated computer, it provides a bonus to a crew member's skill checks.

The final form of computer system is a program capable of actually running on the computer core: an artificial intelligence. *Chapter 10: Computers* in the *Player's Handbook* introduces AIs, and the ALTERNITY accessory *Dataware* (TSR#2811) includes a greater level of detail on how to create and use AIs in your campaign. In starships, they can be equipped with System Operation and even Vehicle Operation–*space* skills that allow them to either assist a crewmate or fill in the position in the event of an emergency or an undercrewed vessel.

Dedicated Computer Systems

Six types of dedicated systems are described on page 150 in the *Gamemaster Guide*, providing bonuses to System Operation, Navigation, and even Science skill checks. Two new dedicated computer systems are described below.

Tactics computers organize and classify incoming information, offering likely counters and outcomes and providing a bonus to the officer's Tactics–*space tactics* skill check. Tactics computers cost $50K, $100K, and $500K for Ordinary, Good, and Amazing-quality systems, respectively.

Business computers analyze market trends, sort financial data, and provide economic information that's as up-to-date as possible. Primarily found aboard traders and independent freighters, this system provides a bonus to a captain's Business–*small business* skill check. Business computers cost $10K, $25K, and $50K for Ordinary, Good, and Amazing-quality systems, respectively.

Crew Systems

Every starship needs a place for its crew to rest between busy duty shifts. Only the smallest of short-ranged vessels can go without a few bunks and personal space for its crew. The standard crew quarters is located in its own compartment, in larger vessels, or in the command compartment, in smaller ones. Meanwhile, a passenger suite fulfills the role of housing any other beings aboard, ranging from providing luxury to two VIPs, standard accommodations and luggage space to four economy-class passengers, or room for four soldiers or boarding troops and their gear, armor, and military supplies.

This section adds two additional types of crew systems. The first is a confinement facility: a brig for troublesome crew members, passengers, or criminals caught along the way. The second type of system offers a way for crew members and passengers to relief stress and pass long periods of boring travel.

Brig (PL 6)

The standard brig system is composed of four independent holding cells and a small central chamber. The designer has a choice between mechanical or electronic confinement, or a mix of the two between the four cells.

Without technical equipment or assistance from without, it's essentially impossible to escape from a brig. With the proper gear, a character can make a Security–*security devices* skill check, with a +2 step penalty, to open his electronically-sealed cell door. A Manipulation–*lockpick* skill check, also with a +2 step penalty, allows escape from a mechanical cell door.

The typical brig is equipped with a monitoring system that indicates the opening or closing of cell doors, and often adds a videorecorder linked directly to the command deck.

As with crew quarters, each unit of brig automatically includes enough food, air, and water for a total of 10 weeks.

Entertainment Bay (PL 6)

While the standard crew quarters may contain a few pieces of exercise equipment designed to prevent muscle atrophy in low-gravity environments, it's no substitute for an entertainment bay. The standard bay has a dozen or so viewing monitors, consoles, and playing space.

Typical recreational activities range from simple video viewing, computer gaming and simulations, and even roleplaying games. Larger vessels often use entertainment bays to prepare for combat with simulations and mock trial combats. In such vessels, the entertainment bay may seem more like a command deck than a crew lounge. Aboard other ships, crew members use the days or weeks of interstellar travel to crosstrain one another using simulations and adaptable interfaces (allow a –1 step bonus on all Teach skill checks). Entertainment bays stand out as one of the most customizable resources aboard a starship.

Holoprojection Bay (PL 7)

To the standard features of the entertainment bay, a holoprojection bay adds the new medium of the day: free-standing holography. Just about anything that a holo artists can imagine can be made to appear within a holoprojection bay. Of course, these images have no substance, and it's possible to pass a hand right through any holoprojected image, leaving a characteristic white static in one's wake.

Psionic Detention Facility (PL 7)

Mindwalkers represent a special sort of problem for jailers, incarceration experts, and law enforcement officials. Unlike the typical criminal or detainee, it's impossible to completely disarm the telepath or the telekinetic charac-

ter. One option is the use of a psi-restraint (see page 146 in the *Player's Handbook*). Yet even that form of inhibiting device doesn't completely preclude the possibility of a psionically assisted escape.

A psionic detention facility, developed at PL 7, offers a more complete option. Essentially, it's a brig, but with a greater understanding of psionic sciences, the creation of a psionic dampening field is possible. While it has the side effect of causing a splitting headache for the nonpsionic, it drains psionic energy points from mindwalkers. For each hour that a mindwalker spends in the facility, he must make a Resolve–*mental resolve* skill check, with the following results: Critical Failure, lose 3 psionic energy points; Failure, lose 2 points; Ordinary, lose 1 point; Good or Amazing, no effect. Eventually, a psionic character's energy is drained away, as it's impossible for a mindwalker to regain psionic energy points while in the facility.

Holofield Bay (PL 8)

The final evolution in an entertainment facility before the advent of miraculous, matter-creation technologies of the next era, the holofield bay uses primitive force fields and virtual particles to provide a modicum of substance to holoprojected images it creates. The verisimilitude of these creation is still primitive: a wall may feel properly solid, but a living being feels just as stubbornly resistant, and smooth contours of living flesh remain difficult to simulate.

Cargo Systems

Storage facilities stand out as the least exciting, and perhaps the least valuable, sections aboard a starship. Still, among larger vessels, even among corvettes and the like, cargo systems include the possibility of hangar bays for additional starships or vehicles.

Dedicated Hangar (PL 6)

Like the standard hangar system, a dedicated hangar acts as a vehicle storage, launch, and recovery bay. It too includes facilities for common maintenance tasks of the vehicles contained within.

The universal standard hangar bay can handle any kind of standard vehicle (planes, cars, bikes, etc) or starship that its total durability can handle. For example, one day a standard 8-durability hangar might contain a launch and the next day it could contain a skytank and a skybike (remember that a hangar bay contains 1 durability of space vehicle, or 2 durability of standard vehicles, for each durability point assigned to it).

Each durability point of a dedicated hangar bay (or collection of points) must be assigned to a specific model of starship or vehicle. In trade, however, capacity of a dedicated hangar bay is doubled: for each durability point assigned to the dedicated hangar bay, it contains either 2 durability points of spaceships or 4 durability points of standard vehicles.

A space vehicle or standard vehicle that's within a hangar is almost completely inactive. It cannot activate weapons, sensors, or defenses, although it can use radio and mass transceivers. A radio link to the parent vessel can allow anyone in the hangared vessel access to parent ship's sensor data, location, etc.

Damage to Hangared Ships & Vehicles

As long as the compartment that contains a docked ship remains intact, it's difficult, but not impossible, for a hangared vessel to suffer damage. First, armor of the parent vessel is accounted for and the primary damage suffered by the compartment is calculated. Any vessel within the hangar suffers the same damage, reduced by one grade. The type of damage (LI, HI, or En) suffered is the same indicated by the attack. If the vessel possesses armor, it may be taken into account.

If a compartment containing a space vessel is completely destroyed, it may attempt to power up its engines and move away. Otherwise it, and any other standard vehicle, become space debris.

Example 1: A spacefighter lies within a cargo compartment struck for 10 points of wound damage from a matter torpedo. The vessels armor absorbs 6 wounds, leaving the primary ship taking 4 wounds (and 5 stuns, for secondary damage). Meanwhile, the spacefighter inside also suffers 4 points of stun damage (which it may absorb using its standard armor rating vs. energy (En) attacks).

Example 2: The same spacefighter is in a compartment that suffers 6 points of mortal damage. The primary vessel armor absorbs 2 mortals, indicating that the spacefighter within suffers 4 wound points, which its armor may absorb. It also suffers 2 points of secondary stun damage.

Weapon Systems

Rightfully, weapons systems receive much of the attention and the glory in space battles. Throughout history, even the best of defenses eventually succumbs to a steady increase in weapons technology.

When placing weapon systems into a ship, remember that all non-guided weapon systems must be installed with a facing: forward, port, aft, or starboard (and, if you're using a 3-D representation system, the choices extend to up or down).

This section introduces a number of new primary weapon systems, along with specialized weapons, weapon accessories, and deployment systems.

Internal Weapons & Mounts

Assault ships, pirates, and even freights which find themselves frequent participants in boarding actions may consider the addition of a mounted heavy weapon within their vessel. Technically, dozens of personal or even heavy weapons can be carried aboard a vessel by its crew; realistic limitation of what each character can use will determine how many are actually used.

In addition to these carried weapons, any vessel can choose to mount two heavy weapons in their hull—for no cost in cash or durability other than the list price of the weapon itself. The most common site to locate such a firearm is near an airlock. Mounting additional heavy weapons aboard a ship costs 1 durability point for every 2 such weapons mounted.

Mounting a heavy weapon provides

TABLE 523: SHIP WEAPONS

Weapon	Avail	Cost	Dur	Pow	Acc	Range	Type	Damage	Actions
Progress Level 6: Fusion Age									
Arc cannon	Mil	150K	1	2	-3	1/2/3	En (e)	d6s/d6+4s/d6+2w	4
Cable gun	Con	150K	2	1	+1	1/2/3	HI (p)	See description	2
Laser cannon	Con	100K	2	2	0	1/2/3	En (e)	d4s/d4w/d4+2w	4
IR laser	Mil	250K	3	2	0	2/4/6	En (e)	d4+1s/d4+1w/d6+1w	4
Launch rack	Con	50K	2	1	0	1	As load		2
Launch tube	Mil	100K	3	1	0	1	As load		1
Minelayer	Mil	100K	2	1	0	1	As load		2
Mine, ARN	Mil	75K	0	0	0	—	HI (*)	d6+2s/d6+2w/d4+1m	0
Mine, CHE	Con	25K	0	0	0	—	HI (*)	d6+1s/d6w/d4m	0
Mine, EMP	Mil	30K	0	0	0	—	En (*)	d4s/d4+2s/d6+2s	0
Mine, NUK	Res	300K	0	0	-1	—	En (*)	d8+3s/d8+3w/d6+2m	0
Mine, TRS	Con	10K	0	0	0	—	LI (*)	See description	0
Missile, ARN	Mil	100K	0	0	-1	10/20/30	LI (g)	d8s/2d4+1s/d4+2w	0
Missile, CHE	Con	50K	0	0	+1	8/16/24	LI (g)	d8s/d6+1w/d4+1m	0
Missile, NUK	Res	500K	0	0	-2	10/20/30	En (g)	2d6s/2d6w/2d6m	0
Missile, SMP	Mil	100K	0	0	-1	18/16/24	HI (g)	d6+2s/d6+2w/d6+4w	0
Rail cannon	Res	500K	4	3	+1	4/8/12	HI (p)	2d4s/d6+2w/d4+1m	2
Raised turret	Con	200K	2	0	-1	As weapon			
Turret	Con	100K	1	0	0	As weapon			
Weapon link	Con	150K	0	0	0	See description			
X-ray laser	Mil	350K	3	2	0	3/6/9	En (e)	d6+1s/d4+2w/d4m	4
Progress Level 7: Gravity Age									
Assault network	Mil	400K	5	1	0	1/2/3	HI (p)	d6w/d8w/d8+2w	4
Drivespace inh.	Res	300K	1	4	-2	5/10/30	En (e)	See description	1
GDS tube	Mil	250K	2	1	0	5/10/20	As load		3
Grappler, COR	Mil	50K	0	0	0	—	En (*)	See description	0
Grappler, DEC	Mil	75K	0	0	+1	—	LI (*)	See description	0
Grappler, DIN	Res	150K	0	0	+1	—	En (*)	See description	0
Grappler, EMP	Mil	35K	0	0	-1	—	En (*)	See description	0
Grappler, RAD	Mil	80K	0	0	0	—	En (*)	See description	0
Grappler, TRA	Con	25K	0	0	0	—	En (*)	See description	0
Gravitic ram	Mil	300K	2	5	0	0	HI (e)	See description	1
Mass cannon	Con	300K	2	3	0	5/10/15	LI (e)	d6+2s/d6+1w/d6+3w	3
Mass converter	Res	1 M	4	6	0	3/6/9	En (e)	d6+3s/d6+3w/d6+2m	2
Matter torpedo	Res	600K	5	4	+1	2/5/10	En (e)	2d6s/2d6w/d6+3m	2
Missile, MRB	Res	200K	0	0	-1	10/20/30	En (g)	2d4+1s/2d4w/d8+1m	0
Missile, PLA	Mil	50K	0	0	0	15/30/45	En (g)	d6+3w/d8+3w/d6+2m	0
Particle beam	Res	500K	4	5	0	6/12/18	En (e)	d6+3s/d4+1m/d4+3m	2
Plasma cannon	Mil	400K	3	3	0	4/8/16	En (e)	d6+2w/d8+2w/d6+1m	3
Plasma network	Res	1 M	5	3	0	1/3/5	HI (p)	d6+1w/d8+1w/d8+3w	4
Psionic amp.	Res	1 M	2	5	0	2/4/6	En (e)	See description	3
RR launch tube	Mil	300K	3	1	-1	As load			3
Tractor beam	Con	500K	2	*	-1	3/6/9	En (e)	See description	2
Progress Level 8: Energy Age									
Cloaked network	Res	500K	2	2	0	2/4/6	En (e)	d6+2w/d8+2w/d6m	4
EM torpedo	Res	450K	3	1	0	3/6/15	En (g)	d6+3s/2d8s/d4+2w	2
Flux cannon	Mil	500K	3	5	0	5/15/30	En (e)	d6+4w/2d6+2w/3d6+2w	3
Kinetic lance	Mil	750K	2	1	0	5/10/20	HI (e)	d4+1w/2d4w/d4+3m	3
Maser cannon	Con	400K	4	3	-1	6/12/20	En (e)	d6+2w/d4+1m/d6+2m	4
Tachyonic acc.	Mil	200K	1	2	-1	4/10/20	En (e)	See description	1

a –1 step bonus to the user's skill check.

In addition to controlling a mounted weapon directly, a heavy weapon can be controlled remotely, by a robot, or by a ship computer. In any of these cases, use the System Operation–*weapons* skill.

Arc Cannon (PL 6)

Without an atmosphere, arc cannons suffer a difficult restriction: No medium exists for the system to launch its normally devastating electrical attack. In space, the use of this weapon system requires the successful attachment of a cable (see 'Cable Gun' below.) Then, the cable can act as a delivery system for electrical energy.

As long as the cable is attached, the arc cannon almost always inflicts damage, with its –3 step bonus to System Operation–*weapons* skill checks.

Cable Gun (PL 6)

The cable gun, primarily used for non-military applications, allows one vessel to tow a second vessel through space. Although the strongest carbonate fibers are durable, they don't allow for more than a acceleration of .01 Mpp on behalf of either vessel. Thus, it's difficult, if not impossible, to tow a vessel with functioning and powered-up engines.

Mine, ARN (PL 6)

The antiradiation mine, like its missile cousin, is especially effective at targeting vessels using radar, jammers, or any electromagnetically active ship system. Apply a –2 step bonus to the System Operation–*weapons* skill check when the mine activates near such a vessel.

Mine, CHE (PL 6)

A conventional mine, loaded with high explosives that detonate upon close proximity with a target.

Mine, EMP (PL 6)

The electromagnetic pulse mine causes only a small amount of damage to a vessel it strikes. However, it has the more serious side effect of playing havoc with radars (all sorts), EM detectors, and jammers, providing operators of such systems with a penalty depending on the grade of the hit: Ordinary, +2 step penalty; Good, +3 step penalty; Amazing, +4 step penalty. The penalty remains in effect for d4+2 phases.

Mine, NUK (PL 6)

Nuclear mines may be viewed with special distaste by governments, given their tendency to inflict damage on innocent targets, especially in crowded systems.

Mine, TRS (PL 6)

Commonly called the "trash" mine system, the TRS (Tactical Response Saturation) mine consists of thousands of dispersed dense projectiles designed to be attracted to motion or energy. The TRS cloud covers an area of 1 Megameter, and its use functions under different rules from a standard mine. When a vessel moves through the TRS deployment cloud, it suffers damage based on its velocity and a Vehicle Operation–*space vehicles* skill check of its helmsman:

Velocity	Modifier
0–0.1 Mm/p	–2 step bonus
0.1–1.0 Mm/p	no modifier
1–3 Mm/p	+1 step penalty
3–7 Mm/p	+3 step penalty
8–14 Mm/p	+5 step penalty
15 Mm/p+ or 0.1 AU/hour+	+6 step penalty*

Mm/p= Megameters per phase

* For ships travelling at 0.1 or more AU/hour, treat any Failure result whose combined dice total exceeds '20' as a Critical Failure result.

Skill Check	Damage
Critical Failure	d4+3m
Failure	d8+4w
Ordinary	d6w
Good	d4+1s
Amazing	No damage

Use of a deflection inducer also

Cable Guns & Stardrives

Cable guns have a special function in reference to stardrives, a drive system of the next Progress Level. It's common for a driveship to connect to another vessel in order to make starfall together; it's called piggybacking. It generally has no effect on the range of capital ships and the like, who have abundant mass reactor energy.

If the procedure is used by smaller vessels, simply add the two vessels' total durability and recalculate the vessel's drivespace ranging using TABLE G41: STARFALL DISTANCES on page 146 in the *Gamemaster Guide*. If the total durability of the ships exceeds 60, refer to the table below.

TABLE S22: CABLE STARFALLS

Durability	Power Factors			
61–70	25–45	50–65	70–95	100+
71–80	35–55	60–75	80–105+	110+
81–90	45–65	70–90	100+	—
91–100	55–75	80–100	105+	—
101–110	70–90	95–115	120+	—
111–120	85–105	110+—	—	—
Starfall (ly)	5	10	15	25

It's possible, however, that the total durability of both vessels combined may be beyond the ability of the driveship to move. For example, a corvette (60 dur) cannot starfall if it's towing a trader (24 dur) and it's unable to generate at least 45 power factors from its mass reactors. In addition, assume that no vessel of the types described in this book can starfall using its own stardrive while attached to a capital class vessel.

Even considering that limitation, it's possible for a large vessel (especially a capital class ship) to use a tow cable to neutralize a target vessel's stardrive. Of course, the vessel's engines would have to be neutralized first, or else the relatively delicate cable could be broken by an easy acceleration and maneuver by the target ship.

applies a –2 step bonus to the *space vehicles* skill check.

Unlike most mines, the TRS mine can inflict damage on friendly targets. It cannot be recovered, regardless of success; it's also automatically detectable by a powered-up sensor system.

Minelayer (PL 6)

Rather than launch a payload directly at any enemy vessel, a minelayer ejects it into open space (within 1 Mm) with the hope that an enemy vessel passes through or near a mine or group of mines. See the 'Mines' sidebar on page 60.

A minelayer system contains room for as many as 10 mines. Each extra durability point assigned to the minelayer allows it to carry 5 additional mines (this costs $5,000 per point assigned).

Some star systems, satellites, and asteroid-based installations may use minelaying systems for a permanent defense.

Raised Turret (PL 6)

A system especially designed for use in campaigns using 3-D methods of space combat, a raised turret allows a weapon system to fire in five of the six arcs of fire. The weapon remains "blind" to the sixth arc. The improved targeting possible inside the raised turret provides a –1 step bonus to System Operation–*weapons* skill checks when the turreted weapon is fired.

Weapon Link (PL 6)

A weapon link connects two or more (typically identical) weapon systems. By bonding together their fire and control mechanisms, a weapons officer can fire the linked systems with a single action and a single skill check.

Several restrictions apply. The weapon systems must have the same facing (forward, starboard, etc), be able to strike the target through a turret, or be guided delivery systems. If the weapon systems are identical, no other penalties or restrictions apply. For example, two plasma cannons, each in a turret, can fire simultaneously through a weapon link without penalty.

If a weapon link is used to connect two or more systems that aren't identical, a standard +1 step penalty is applied. In addition, when calculating the appropriate step modifier to finally apply, always use the worse of the two. For example, a flux cannon linked with a plasma cannon may suffer given the differences in each weapon's range.

For every weapon linked together after the first, a separate weapon link system must be purchased. For example, a group of four linked weapons requires three links. Weapon links can be activated or deactivated instantly, without the need to spend a full action.

Assault Network (PL 7)

The assault network resembles both the remote network and the defense network. Indeed, a *sensors* skill check is required to distinguish between this system and the others. Like the defense network, the assault network is typically launched just prior to a hostile engagement. Dozens of small spheres, each filled with tiny rail cannons, expand out to fill a 10 Mm radius in a single round. They continue to travel forward along with the ship's velocity at the time of deployment.

Once deployed, the assault network acts as a strong deterrent to close approach. During each phase that an enemy vessel lies within the radius of the network, the weapons officer who launched the network can make a free attack as several of the small spheres attack the target. Make a *weapons* skill check as normal, but the weapons officer spends no action to make the attack.

The attacks are automatic, although the weapons officer can send out a signal to the network that neutralizes it. After ten attacks, the cloud has been depleted of energy and can no longer make attacks.

The durability cost of the system includes two cloud deployments; each additional durability point assigned to the system allows another two

Mines

Mines represent an alternative to conventional and direct delivery systems such as launch tubes and launch racks. The rules for determining the effectiveness of a mine, and whether it strikes the target depend on the Progress Level.

At PL 6, a ship must pass within the same hex (0.1 Mm) of the target to activate a mine. At PL 7, a ship must pass within a hex (1 Mm) in order to activate a mine. At PL 8, a ship must pass within 3 hexes (3 Mm) in order to activate a mine. No more than three mines can be active in a hex at a single time; after that number, additional mines have no greater effectiveness during a single phase, although they can activate in a later phase.

Most mines are radio controlled or "smart"; they possess friend-or-foe recognition systems that prevent activation by a friendly target. Thus, most mines can also be recovered if not used during a conflict.

It takes an action on behalf of the weapon operator to launch a mine; however, a *weapons* skill check to determine the mine's effectiveness isn't rolled until the mine is activated. (This skill check does not consume an action.) The result of a successful skill check determines damage as normal. A Failure result indicates that the mine failed to strike the target, but remains active and can try again next phase if the target is within range. A Critical Failure indicates a premature detonation, causing no damage, or a dud. In either event, the mine is useless.

Like a missile, an activating mine can be destroyed by a point-defense gun or a defense network.

Detecting & Destroying Mines

Allow a standard System Operation–*sensors* skill check to determine whether a vessel detects the presence of foreign or enemy mines. At PL 6 and 7, most mines are equipped with radar-absorbent technology that provides a +2 step penalty to detection attempts. At PL 8, full cloaking technology provides a +4 step penalty.

Once a mine has been detected, it can be destroyed with any weapon system of sufficient range. Apply the same penalties to *weapons* skill checks as those given to *sensors* skill checks, above.

Grapplers

One of PL 7's more exotic weapon systems is a grappler. Equipped with a variety of payloads, a grappler is distinguished by its desire to lock onto an enemy hull—either through chemical sealants or magnetic clamps, designer's choice—before activating its payload.

A grappler can be launched through a normal minelayer or a GDS tube. If dispersed with a minelayer, a grappler activates just like a mine, activating when the enemy vessel approaches and requiring a successful *weapons* skill check to latch onto the enemy vessel at that time. If launched directly through the GDS tube, a successful hit indicates that the grappler has latched on and is ready for activation on the hull.

Typically, the grappler can be activated through a simple radio message from its deployer; until that time, it simply awaits orders on the hull. The weapons operator can also configure grapplers for activation on contact.

Determine the compartment hit normally; if deployed with a mine, it's not possible to target the grappler.

A ship crew can execute an extravehicular activity to remove the pests from their hull. This activity requires a successful Technical Science–*repair* skill check to complete. A Critical Failure result indicates that the grappler activates during the process. The operation takes d4+1 minutes to complete and is rarely attempted during a space battle.

deployments. Each deployment cloud costs $100K.

Drivespace Inhibitor (PL 7)

The drivespace inhibitor launches a gravitic disruption wave that, while causing no damage to starships, chaotically disrupts a small region of space-time, making it difficult for astrogators to make a starfall into drivespace. The disruption spreads to 20 Mm in radius around the target.

Normally, a Navigation–*drivespace astrogation* skill check only determines destination and whether the vessel is off-course (see page 86 in the *Player's Handbook*). When an astrogator attempts to starfall within a drivespace inhibition wave, he must make two *drivespace astrogation* skill checks, each with a +4 step penalty. The first check determines whether the astrogator can successfully activate his stardrive in the inclement conditions. (Also apply normal penalties, such as those for taking less than the standard 5 minutes).

If the result is a Failure, he fails to activate his stardrive and must try again. If the result is a success, the astrogator immediately makes the second skill check, also with a +4 step penalty, to determine whether the vessel is off course.

GDS Tube (PL 7)

The grappler deployment system stands out as a refinement of mines and missile technologies. Grapplers are specialized payloads that can be launched through this system and fired directly at any enemy vessel. A *weapons* skill check is necessary to accurately deploy the grappler onto the target vessel; the result of a successful check does not, however, determine the exact effect. See the descriptions of the individuals grapplers below.

Grappler, COR

The most directly offensive grappler system, the corrosive grappler latches onto the target and releases a bath of concentrated acid onto its hull. After activation, the grappler causes d6+3 points of wound damage (En/G) for 4 consecutive phases.

Grappler, DEC

A decompression grappler consists of a single focused charge designed to rip a hole through the target vessel's hull. The grappler causes d4+4 points of wound damage (HI/G). If even a single point of wound damage is not absorbed by the ship's armor, the hull in the target compartment is considered breached and exposed to vacuum.

Grappler, DIN

The drivespace inhibitor grappler behaves in a identical fashion to the drivespace inhibitor weapon system (see above), making it difficult for a driveship to starfall or astrogate successfully. The grappler's inhibition zone, however, moves with the target ship that it's attached to. Once activated, the grappler's inhibition field remains in effect for 1 hour.

Grappler, EMP

The electromagnetic grappler inflicts no damage on its target, but constantly emits electromagnetic pulses that make it difficult to use sensor systems (apply a +2 step penalty to all *sensors* skill checks). In addition, as long as an EMP system is attached to a vessel, it's considered to possess an active sensor system—in other words, it's almost impossible for the vessel to hide or cloak.

Grappler, RAD

Illegal in most regions because of its propensity for misuse, the radiation grappler latches onto a target vessel's hull and releases high-energy gamma radiation capable of penetrating even a ship's hull. In only 5 rounds (one minute), the grappler creates an R4 environment (see 'The GRAPH System' on page 62 in the *Gamemaster Guide*) in the compartment to which it is attached. Throughout the rest of the vessel, radiation seepage creates a R3 environment. Within a few hours, any biological organisms aboard the vessel may be dying or too sick to fight.

Once activated, the full effects of the radiation begin to fade after a day. Reduce the R4 environment to R3 and the R3 environment to R2. Thereafter, the only means to completely neutralize the effects of the radiation is a a complete decontamination cycle, taking d4+1 days at a starport or planetary facility.

Grappler, TRA

The simplest or grappler systems, the tracer grappler deposits a small radio-emitting module onto the target's hull. The module can be set to constant emission, periodic emission, or passive emission (responding only to a radio signal from its deployer).

Effectively, as long as the tracer

remains on the enemy vessel, it's impossible for the target to hide or cloak. As a side benefit, any *sensors* skill checks targeting the vessel receive a –1 step bonus.

Gravitic Ram (PL 7)

The gravitic ram focuses and magnifies the energy of a ramming maneuver, projecting a bladelike field of gravity energy from the bow of the ramming vessel. More importantly, it protects the ramming ship from damage. A deflected recoil wave reduces the number of "hits" suffered by the ramming ship by half. (See 'Ramming' on page xx.)

Missile, PLA (PL 7)

The plasma warhead missile offers significant damage yields through energy explosion without resorting to the disturbing potential of the nuclear or mass reaction bomb.

Plasma Network (PL 7)

The plasma network resembles in all respects the rail-cannon powered assault network. In exchange for a mild increase in damage potential, it demands a greater consumption of power factors.

Psionic Amplifier (PL 7)

Only available in campaigns that include psionics and mindwalkers, as long as its powered up and active, a psionic amplifier enables the mindwalkers aboard its vessel to make telepathic attacks (*mind blast*, *suggest*, or *tire*) on the crew of a target vessel, despite the extreme distances involved. At high levels of psionic proficiency, it may even be possible to use the psionic amplifier to wrest control of an enemy ship's computer using the datalink power.

Use the ranges on TABLE S23: SHIP WEAPONS instead of the normal range limitation listed in *Chapter 14: Psionics* in the *Player's Handbook*. Short range provides a –1 step bonus to the mindwalker's skill checks; medium range has no modifier; and long range provides a +1 step penalty.

Naturally, psionic attacks ignore ship defenses, including ablative shields, deflection inducers, and armor.

RR Launch Tube (PL 7)

The rapid-recovery launch tube has two characteristics which make it a clear evolution over the standard system of the previous era. First, it can fire three times as often; second, refinements in missile accuracy make the launch tube a more precise instrument of destruction delivery.

Cloaked Network (PL 8)

With maser cannon weaponry and cloaking technology at its advantage, a cloaked network has all of the same capabilities of the assault network, adding increased damage and a +4 step penalty to enemy sensors operator's attempts to detect the network.

Flux Cannon (PL 8)

A flux cannon releases a wave of chaotically destructive quantum transformation. The inertial state of the target is randomly altered as subatomic reprobabilization results in damaging macro-effects.

Tachyonic Accelerator (PL 8)

Within the core of a stardrive or drivewave generator, a tachyonic decelerator captures, collects, and contains tachyons that are critical to the functioning of the drive unit. A tachyonic accelerator excites these stored tachyons, restoring them to their natural FTL state and releasing them from their containment. As a result, the drive unit loses its tachyonic charge and must go about the standard process of recharging (a matter of days, for a stardrive; hours, for a drivewave generator).

A vessel protected by an ablative shield is immune to this weapon system, but a vessel without such an energy screen has no defense.

Bringing it into STAR*DRIVE

The STAR*DRIVE setting is a space opera-style universe set at the waning days of Progress Level 7 (specifically, the dawn of the 26th century). In general, most PL 6 and PL 7 ship systems have entered some level of use; PL 7 military and restricted systems, of course, remain difficult to acquire.

A few PL 7 systems are unavailable in the STAR*DRIVE setting. First, the only means of FTL travel is the stardrive—and, in more developed areas, the stardrive booster system. Drivespace communicators and detectors exist, but the science of miniaturization has yet to make them available to the personal-sized ships described here. No other FTL systems have been developed.

The only unavailable weapon system is the psionic amplifier. Perhaps a fraal vessel, more established in its understanding of psionic energies, could possess such a device, but human understanding of psionic energies has yet to reach this level.

Similarly, PL 8 systems are beyond the reach of "modern" science. Perhaps someday those miracles will trickle into widespread use; today, however, PL 8 systems should stay limited to powerful alien species and the most secret and advanced stellar nation laboratories—if they exist yet at all.

Chapter 3
Ships & Deck Plans

Osakin *Skiff*

The Osakin *Skiff* represents the minimum definition of a spaceship, containing little more than a tiny engine, a reactor, and the means to survive the depths of space at low accelerations for reasonable periods of time. Its singular advantage lies in that it may be one of the most inexpensive ships around.

The *Skiff* requires only a pilot and a copilot (who doubles as navigator and sensor operator). Without significant armor or a single weapon, the *Skiff*'s passengers must rely on the goodwill of others or have better-prepared escorts to offer protection. It's fortunate the *Skiff* is easy to replace.

Small launches such as the *Skiff*, with only modest upgrades to the particular systems, should remain common as shuttle craft in many campaigns, through many Progress Levels. It can be used to ferry important cargo or passengers between ships, stations, and planets.

Osakin *Skiff* (Launch class) **PL 6** **Cost $660,000**

Compartments: 2 Dur: 8
Maneuver Rating: 0 Acc: 0.001 Mpp
Cruise Speed: 0.01 AU/hour Berthing: 4 passengers

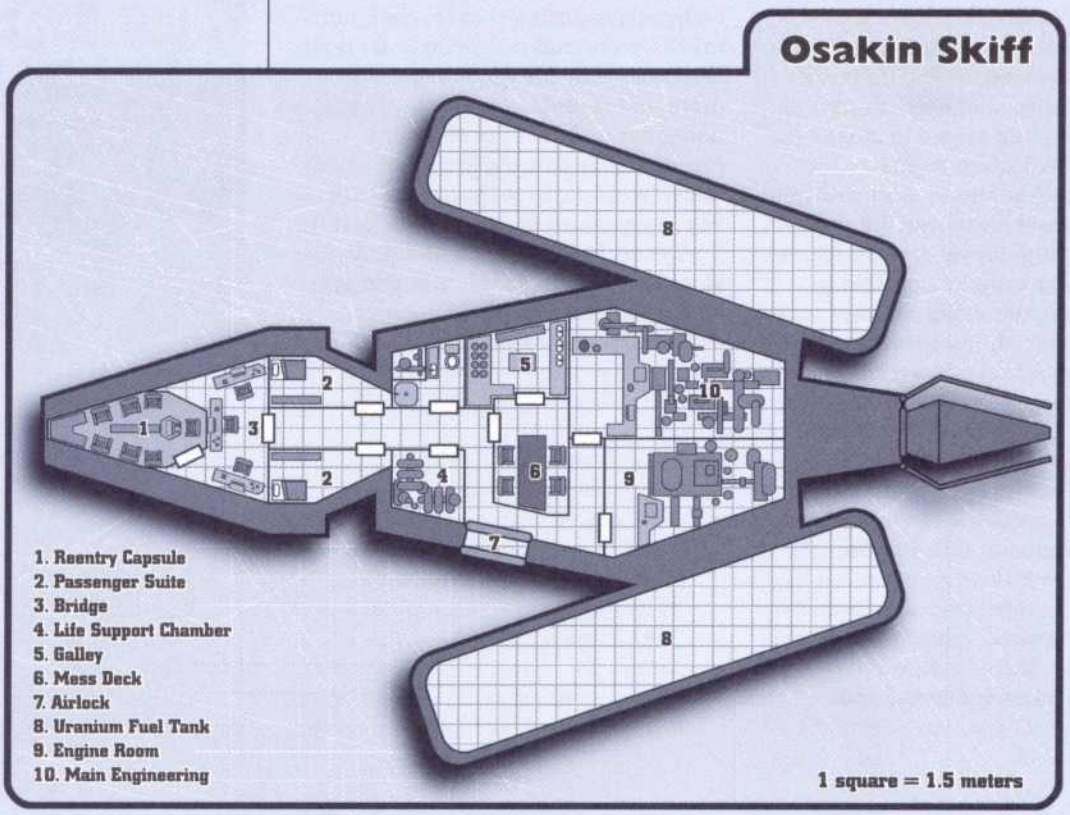
Armament: None Defenses: None
Armor: Light polymeric (0 dur) d4–1 (LI), d4–1 (HI), d4–2 (En)
Computer: Marginal computer core
Engines: Planetary thruster
Power: Fission generator rated for 5 power factors
Drive: None Hatches: Standard (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
1–6	Command	Command deck (0/0)	2/2/1
		Passenger suite (1/0)	
		Air/Space radar (0/0)	
		Radio transceiver (0/1)	
		Airlock (0/0)	
		Reentry capsule (0/0)	
		Marginal computer core (0/0)	
7–12	Engineering	Planetary thruster (1/1)	14/14/7
		Fuel tank (1/0)	
		Life support (1/1)	
		Fission generator (4/*)	

Option: Make this launch into a tug. Remove the crew quarters and passenger suite and add a cable gun. Cost increase: $80,000.

Weapon Data (Optional Configuration Only)

System	Acc	Range (Mm)	Type	Damage	Actions
Cable gun	+1	1/2/3	HI [p]	See description	4



Demetrius *Outrider*

The first generation of fighter spacecraft suffers from needing many systems that require high durability at this Progress Level. It's not surprising that the fighter craft doesn't really come into its own until a later era.

Equipped with a solar sail, the *Outrider* can serve as a patrol craft for planets near a star that provides its solar sail with energy. More likely, an *Outrider* will draw its energy from satellites or planetary installations that fire pulses of laser energy into its solar cell. A fleet of *Outriders* with a few such satellites can be a cheap and effective means of defense. All that's needed to make the *Outrider* effective in offensive military actions is a larger vessel (usually a capital class ship), equipped with laser cannons modified to provide power to its escorts.

Without crew compartments, the *Outrider* has only enough room to seat two crewmates.

Demetrius *Outrider* (Fighter class) **PL 6** **Cost $860,000**

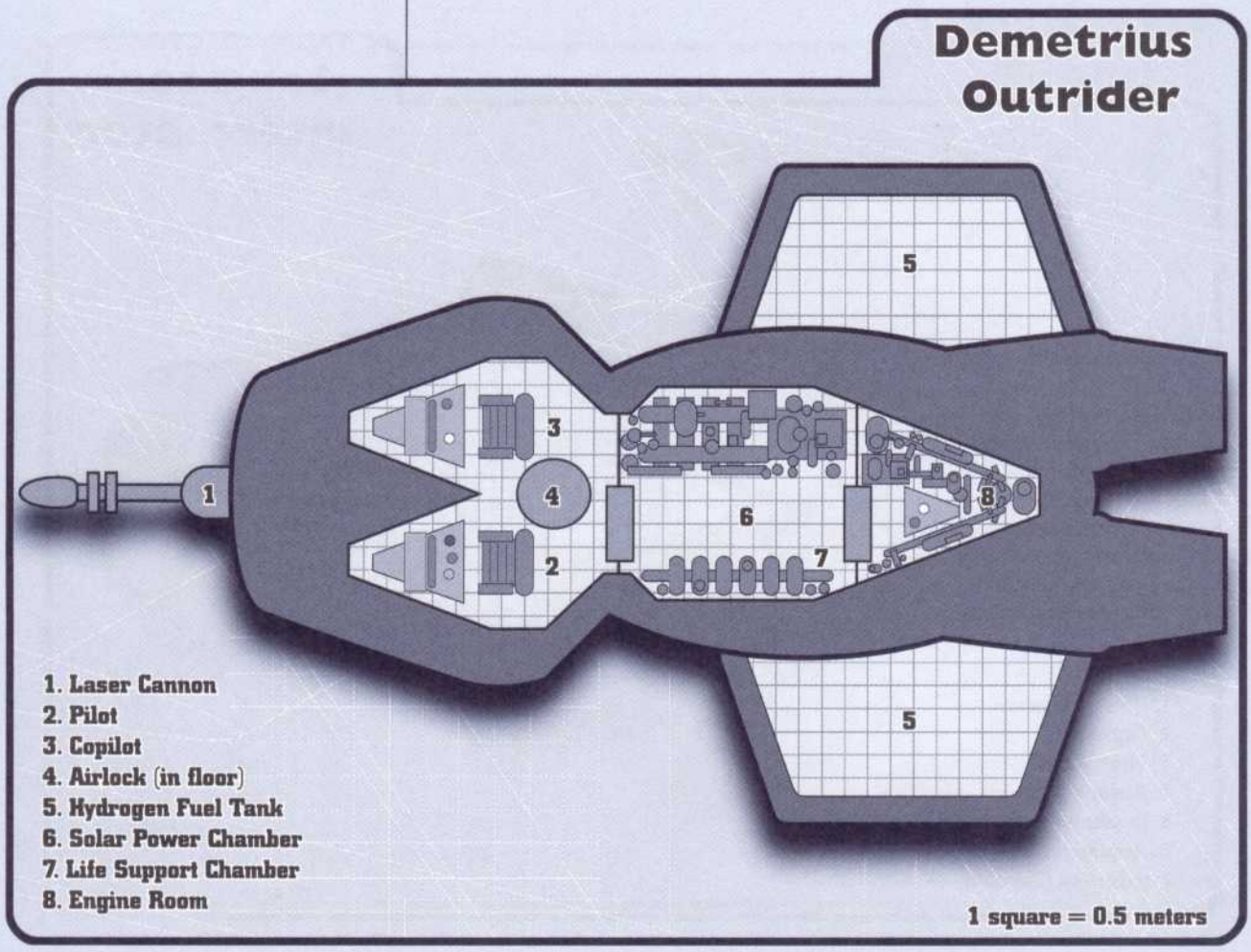
Compartments: 2 Dur: 10
Maneuver Rating: –1 Acc: .05 Mpp
Cruise Speed: 0.15 AU/hour Berthing: 2

Armament: NoneDefenses: None
Armor: Moderate Alloy (1 dur) d4+1 (LI), d4+1 (HI), d4 (En)
Computer: Marginal computer core
Engines: Ion engine
Power: Solar sail (variable power factors, see description)
Drive: None Hatches: Standard (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
1–6	Command	Command deck (0/0)	4/4/2
		Laser cannon (2/2)	
		Air/Space radar (0/0)	
		Radio transceiver (0/1)	
		Airlock (0/0)	
		Reentry capsule (0/0)	
		Marginal computer core (0/0)	
7–12	Engineering	Ion engine (2/1)	14/14/7
		Fuel tank (1/0)	
		Life support (1/1)	
		Solar cell (3/*)	

Weapon Data

System	Acc	Range (Mm)	Type	Damage	Actions
Laser cannon	+1	1/2/3	En (e)	d4s/d4w/d4+2w	4



Langston *Interceptor*

As miniaturization advances enter the field of ship design, this era witnesses the increasing power of small spacecraft, including one or two-man space fighters. The Langston Interceptor represents this new design philosophy. The Interceptor is usually launched from a carrier—which often has an FTL unit allowing it to deliver its fighter fleet from system to system.

Design approaches invite differentiation within a fighter model. The *Interceptor* focuses on the classic advantages of small craft: speed and maneuverability. With only moderate armament and armor, the *Interceptor*'s pilot must rely on his ability to make tight turns and maneuvers to avoid being hit.

The typical *Interceptor* has a two-man crew, with seats for the pilot and systems operator—the individual responsible for locating and firing upon enemies.

Langston *Interceptor* (Fighter class) **PL 7** **Cost $1,820,000**

Compartments: 2 Dur: 10
Maneuver Rating: –1 Acc: 2 Mpp
Cruise Speed: 1 AU/hour Berthing: 2 crew

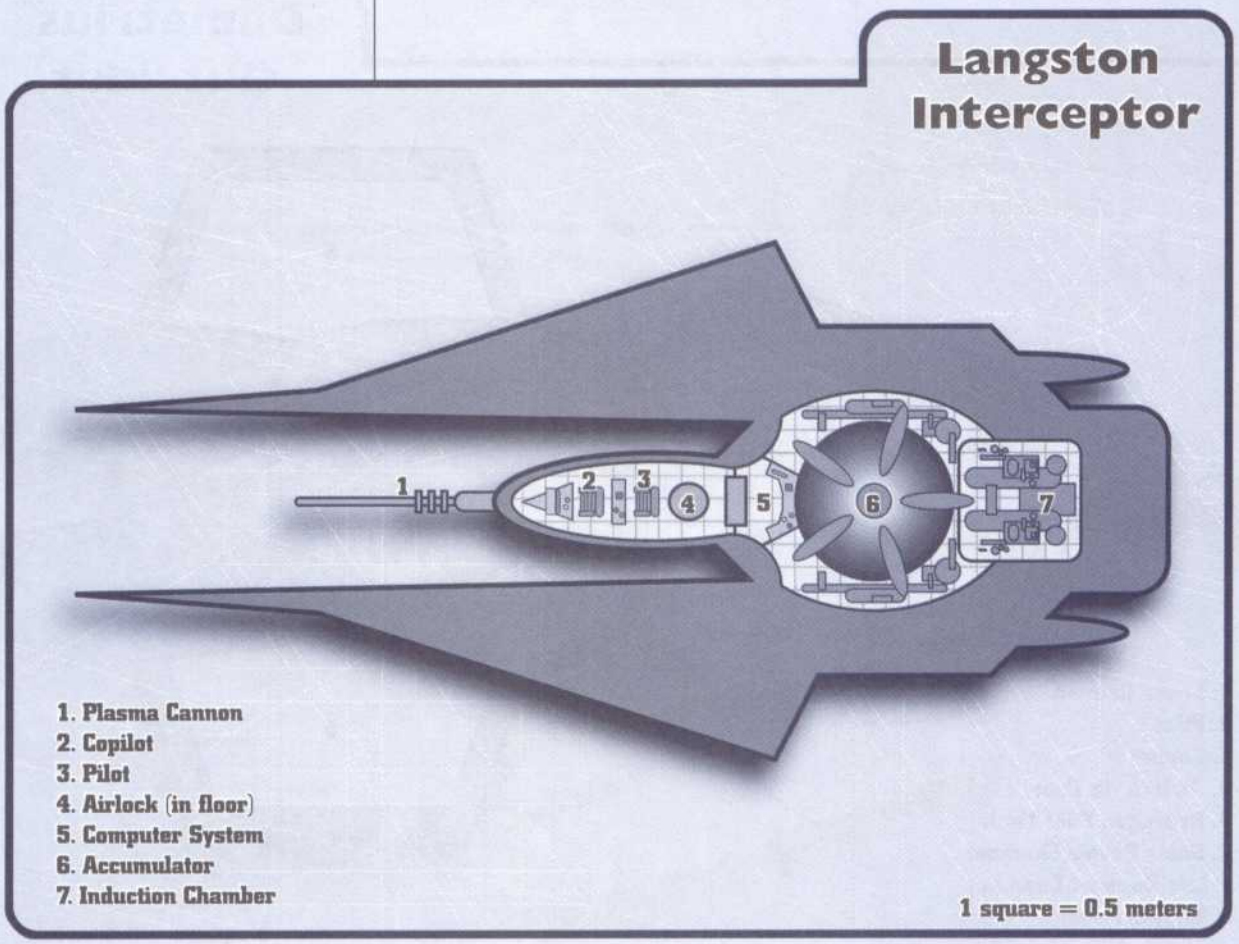
Armament: Plasma cannon Defenses: Jammer
Armor: Moderate reactive (1 dur) d4+2 (LI), d6 (HI), d4 (En)
Computer: Ordinary computer core, Ordinary dedicated battle, defense, and sensor computers
Engines: Microinductor
Power: Microinductor rated for 4 power factors, accumulator
Drive: None Hatches: Standard (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
1–6	Command	Command deck (0/0)	8/8/4
		Plasma cannon (3/3)	
		Jammer (0/1)	
		Multiband radar (0/0)	
		EM detector (0/0)	
		Radio transceiver (0/1)	
		Airlock (0/0)	
		Reentry capsule (0/0)	
		Ordinary computer core (1/0)	
7–12	Engineering	Microinductor (4/*)	10/10/5
		Autosupport unit (0/1)	
		Accumulator (1/*)	

Weapon Data

System	Acc*	Range (Mm)	Type	Damage	Actions
Plasma cannon	–1	6/12/18	En (e)	d6+2w/d8+2w/d6+1m	3

**Accuracy includes Ordinary battle computer system*



Centauri *Brand*

In the Energy Age, fighter craft come into their own. Flux technology and miniaturization allow small craft to deal out unprecedented punishment, while new forms of armor and defensive technologies complement the problems of targeting the easily maneuvered craft.

The Centauri *Brand* strikes a balance during this period between offense and defense. Though it has neither the raw power of a fighter-bomber nor the maneuverability and incredible speed of a multi-engine craft, this fighter promises to do it all—and survive. The displacer unit, paired with a pilot who keeps the enemy guessing with unpredictable maneuvers, makes the *Brand* very difficult to hit dead-on. Also, the fighter's crystallis armor can absorb significant amounts of energy damage. Because it's equipped with so many useful systems, the *Brand* generally seats two operators.

Centauri *Brand* (Fighter class) **PL 8** **Cost $3,645,000**

Compartments: 2
Maneuver Rating: –1
Cruise Speed: 3 AU/hour

Dur: 10
Acc: 4 Mpp
Berthing: 2 crew

Armament: Flux cannon
Armor: Moderate crystallis (1 dur) d6 (LI), d6+1 (HI), 2d4+1 (En)
Computer: Marginal computer core
Power: Quantum cell rated for 10 power factors
Drive: None

Defenses: Displacer, jammer
Engines: Inertial flux engine

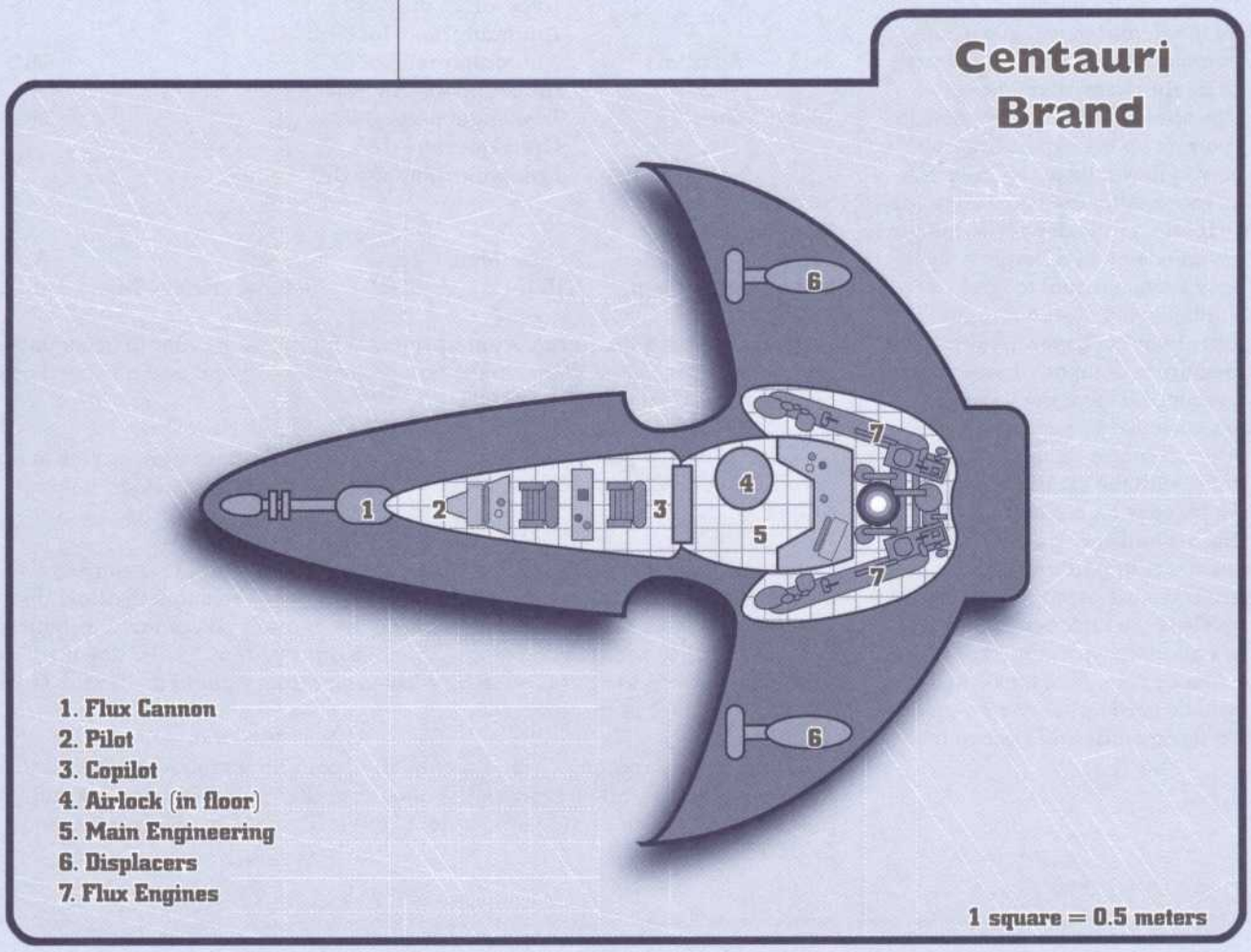
Hatches: Standard (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
1–6	Command	Command deck (0/0)	10/10/5
		Flux cannon (3/5)	
		Jammer (0/1)	
		Displacer (2/3)	
		Multiband radar (0/0)	
		EM detector (0/0)	
		Radio transceiver (0/1)	
		Airlock (0/0)	
		Reentry capsule (0/0)	
		Marginal computer core (0/0)	
7–12	Engineering	Inertial flux engine (1/1)	8/8/4
		Autosupport unit (0/1)	
		Quantum cell (3/*)	

Weapon Data

System	Acc	Range (Mm)	Type	Damage	Actions
Flux cannon	0	3/6/15	En (e)	d6+4w/2d6+2w/3d6+2w	3

Option: Make this an FTL fighter. Remove the displacer, add a drivewave generator, and replace the quantum cell with 3 dynamic mass reactors. The redesigned fighter has 9 power factors and a range of 5 light-years per starfall. Cost increase: $1,450,000.



Lophir *Herald*

Too small to engage in cargo traffic of any serious size, courier-class vessels find common use as a means of high-class in-system and FTL travel.

The *Herald* accomplishes these objectives in style. It holds four dignitaries in comfort—or can be converted to house a pair of VIPs in truly lavish accommodations. Meanwhile, both passengers and crew can enjoy the vessel's holoprojection bay to relieve boredom during the days spent in travel.

The Lophir *Herald* stretches the limits of its size to the limit, squeezing every inch of space for ship systems. Most notably, the *Herald* is a hypership, capable of FTL travel velocities that easily exceed the typical vessel. To accommodate its hyperdrive, the *Herald* floats through space with a great reserve of energy. Some of this energy reserve can be consumed by jammers, computer cores, and a back-up life support unit; much of it lies dormant until called into use during FTL travel.

The *Herald* isn't really intended for use in combat, with only a splash of thin armor and a single weapon system whose performance can be classified as average for its day, at best. The crew of the *Herald* must keep a constant watch on its sensors; at the first sign of trouble from an unidentified craft, the wise *Herald* captain immediately powers up his hyperdrive and prepares to leave the potentially dangerous scene. After all, it's always easier to explain a rude departure than to engage an enemy in a *Herald*.

It may seem unusual to have so many options and customizations available from the Lophir Dynamics Manufacturing Company for such a small vessel, but over the years Lophir's customers have come to ask for certain changes quite regularly. Ironically, with the small size of the Herald, it's easy for a customer to imagine a small change here or there to make the craft perform more as he desires. The most popular customization involves the replacement of passengers quarters with cargo space. It's a rather easy change to make, and it can even be accomplished as a modification during a Herald's active life.

Lophir *Herald* (Courier class) **PL 7** **Cost $3,925,000**

Compartments: 4
Maneuver Rating: 0
Cruise Speed: 1.5 AU/hour

Dur: 16
Acc: 2 Mpp
Berthing: 6 crew/4 passengers

Armament: Mass cannon
Defenses: Jammer
Armor: Light neutronite (0 dur) d6 (LI), d6 (HI), d6–1 (En)
Computer: Ordinary computer core, Ordinary dedicated navigation and sensor computers
Engines: Induction engine
Power: Antimatter reactors rated for 14 power factors
Drive: 2 light-years per day
Hatches: Standard (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
1–4	Command	Command deck (0/0)	6/6/3
		Mass cannon (2/3)	
		Jammer (0/1)	
		EM detector (0/0)	
		Multiband radar (0/0)	
		Ladar (0/0)	
		Radio transceiver (0/1)	
		Laser transceiver (0/1)	
		Airlock (0/0)	
		Reentry capsule (0/0)	
		Ordinary computer core (1/0)	
5–7	Engineering	Induction engine (2/2)	14/14/7
		Autosupport unit (0/1)	
		Hyperdrive unit (2/*)	
		Antimatter reactor (3/*)	
8–12	Auxiliary	Antimatter reactor (3/*)	6/6/3
		Autosupport unit (0/1)	
13–20	Crew	Passenger suite (1/0)	6/6/3
		Crew quarters (1/0)	
		Holoprojection bay (1/0)	

Weapon Data

System	Acc	Range (Mm)	Type	Damage	Actions
Mass cannon	0	5/10/15	LI (e)	d6+2s/d6+1w/d6+3w	3

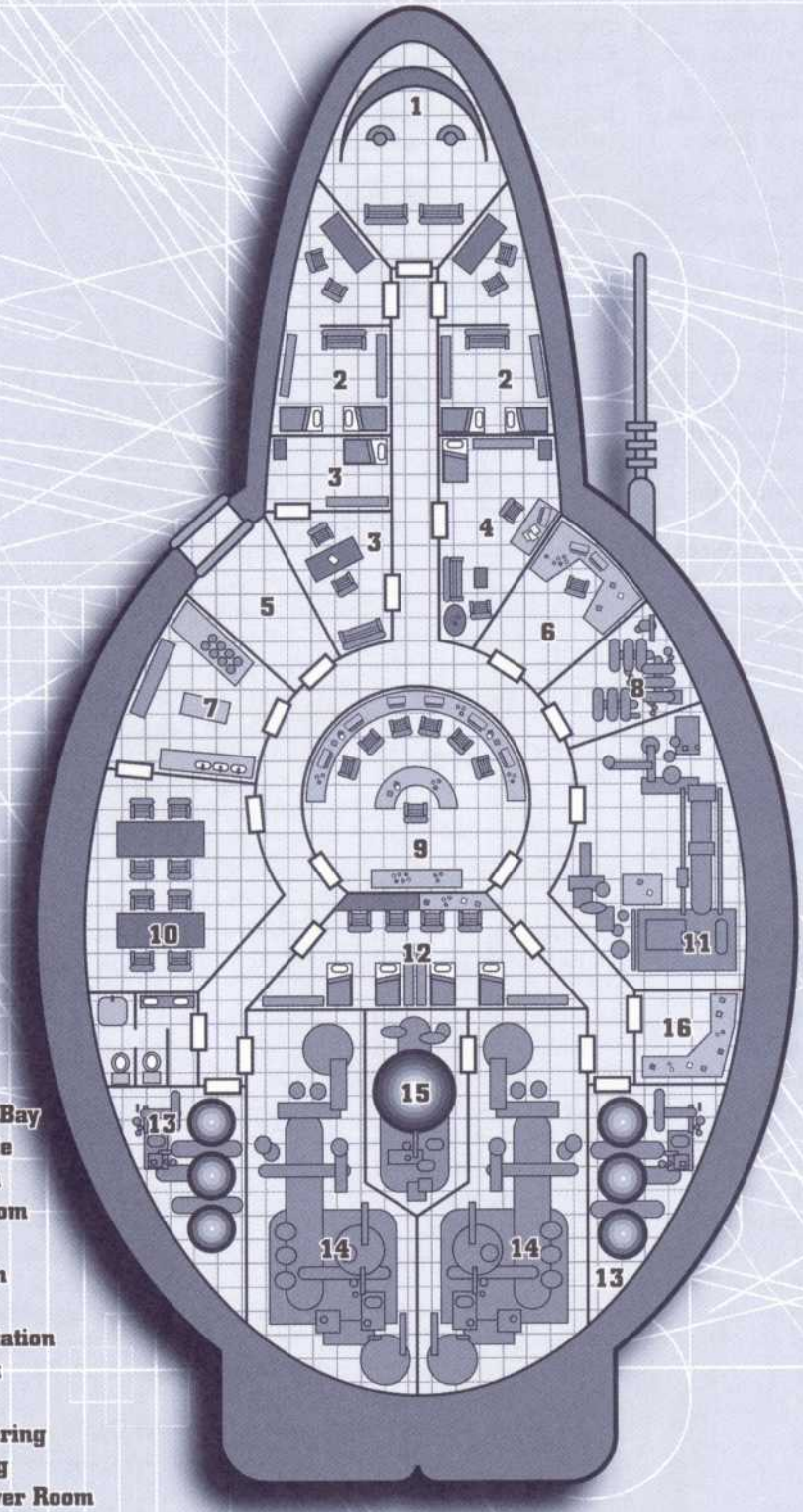
Option: Remove the *Herald*'s entertainment facilities in order to accommodate additional passengers. Remove the holoprojection bay and add a second passenger suite. Cost savings: $40,000.

Option: Change part of the ship's purpose from VIP passenger service to rare cargo delivery. Change the passenger suites into cargo space. Cost savings: $40,000.

Option: Change the FTL system from a hyperspace-model to a stardrive-model. Replace the two antimatter reactors with mass reactors to allow this model to function. With two mass reactors, the vessel's power factor production is reduced to 10, and it becomes capable of 5 light-year starfalls. Use the durability point saved to upgrade the *Herald*'s armor from light to moderate: LI d6+1; HI d6+1; En d6. Cost increase: $200,000.

Option: For campaigns fortunate enough to contain jumpgates, replace the hyperdrive with a gate activator. Use the durability point saved to upgrade the *Herald*'s armor from light to moderate: LI d6+1; HI d6+1; En d6. Cost increase: $100,000.

Lophir Herald



1. Holoprojection Bay
2. Passenger Suite
3. Captain's Cabin
4. Officer Stateroom
5. Airlock
6. Weapon Station
7. Galley
8. Life Support Station
9. Command Deck
10. Mess Deck
11. Main Engineering
12. Crew Berthing
13. Auxiliary Power Room
14. Induction Engine
15. Hyperdrive Chamber
16. Computer Room

1 square = 1 meter

Cerir *Guardian*

While most acknowledge that it's almost impossible to construct effective independent fighters during the Fusion Age, with a cutter's doubling of size for systems, the problem of fitting enough systems begins to fade away. It still requires half of its space to be devoted strictly to engines, life support, power, and fuel, and while it's not the titan of firepower that later generations of small ships may become, the cutter of PL 6 has a number of design options open to it.

As a military cutter that takes its advantage in the range of its weaponry, the *Guardian* represents one design option taken to a reasonable extreme. This is a missile boat, equipped with two dozen missiles divided between the three launch racks, which are linked through fire control computers to allow independent or simultaneous coordinated launch. Missiles easily out-range the direct fire weapons of the Fusion Age—by a factor of ten, for the typical laser cannon. The crew of the *Guardian* plans to keep its enemies at a distance and bombard them into submissions with repeated missile launches.

Because the *Guardian* can only carry a limited arsenal of missiles, duty assignments for the cutter usually consist of planetary and starport patrols. It has also sacrificed fuel space for missile space and other systems, reducing its longevity in space to only five weeks before a refuel is required. It's another reason for the *Guardian* not to travel more than a few days beyond reach of its base.

Despite these limitations, the *Guardian* wields a punch that can surprise many opponents. It pairs its own missile batteries with a battle computer to improve accuracy, and meanwhile prepares itself for return fire with a point-defense gun. Should the situation become truly desperate and close-ranged, it could wield that same defensive system for offensive purposes.

Cerir *Guardian* (Cutter class) **PL 6** **Cost $3,700,000**

Compartments: 4
Maneuver Rating: 0
Cruise Speed: .2 AU/hour
Dur: 20
Acc: .05 Mpp
Berthing: 6 crew

Armament: Rail cannon, launch racks (3) (18 CHE, 6 ARN missiles)
Defenses: Point-defense gun, jammer
Armor: Moderate neutronite (2 dur) d6+1 (LI), d6+1 (HI), d6 (En)
Computer: Ordinary computer core, Ordinary dedicated battle, navigation, and sensor computers
Engines: Fusion torch
Power: Fusion generators rated for 6 power factors
Drive: None
Hatches: Security (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
1–4	Command	Command deck (0/0)	10/10/5
		Launch rack (2/1)	
		Weapon link (0/0)	
		Point-defense gun (1/1)	
		Jammer (0/1)	
		EM detector (0/0)	
		Air/Space radar (0/0)	
		Radio transceiver (0/1)	
		Crew quarters (1/0)	
		Airlock (0/0)	
		Reentry capsule (0/0)	
		Ordinary computer core (1/0)	
5–7	Engineering	Fusion torch (3/1)	8/8/4
		Fuel tank [hydrogen] (1/0)	
8–12	Auxiliary	Life support unit (1/1)	10/10/5
		Fusion generator (4/*)	
13–20	Weapons	Launch rack (2/1)	8/8/4
		Weapon link (0/0)	
		Launch rack (2/1)	

Weapon Data

System	Acc*	Range (Mm)	Type	Damage	Actions
Launch rack	–1	———	as load	———	2
ARN missile (1)	–1	10/20/30	LI (g)	d8s/2d4+1s/d4+2w	0
CHE missile (7)	–1	8/16/24	LI (g)	d8s/d6+1w/d4+1m	0
Launch rack	–1	———	as load	———	2
ARN missile (1)	–1	10/20/30	LI (g)	d8s/2d4+1s/d4+2w	0
CHE missile (7)	–1	8/16/24	LI (g)	d8s/d6+1w/d4+1m	0
Launch rack	–1	———	as load	———	2
ARN missile (4)	–1	10/20/30	LI (g)	d8s/2d4+1s/d4+2w	0
CHE missile (4)	–1	8/16/24	LI (g)	d8s/d6+1w/d4+1m	0
Point-defense gun	–1	1/2/3	HI (p)	d4s/d4w/d4+2w	4

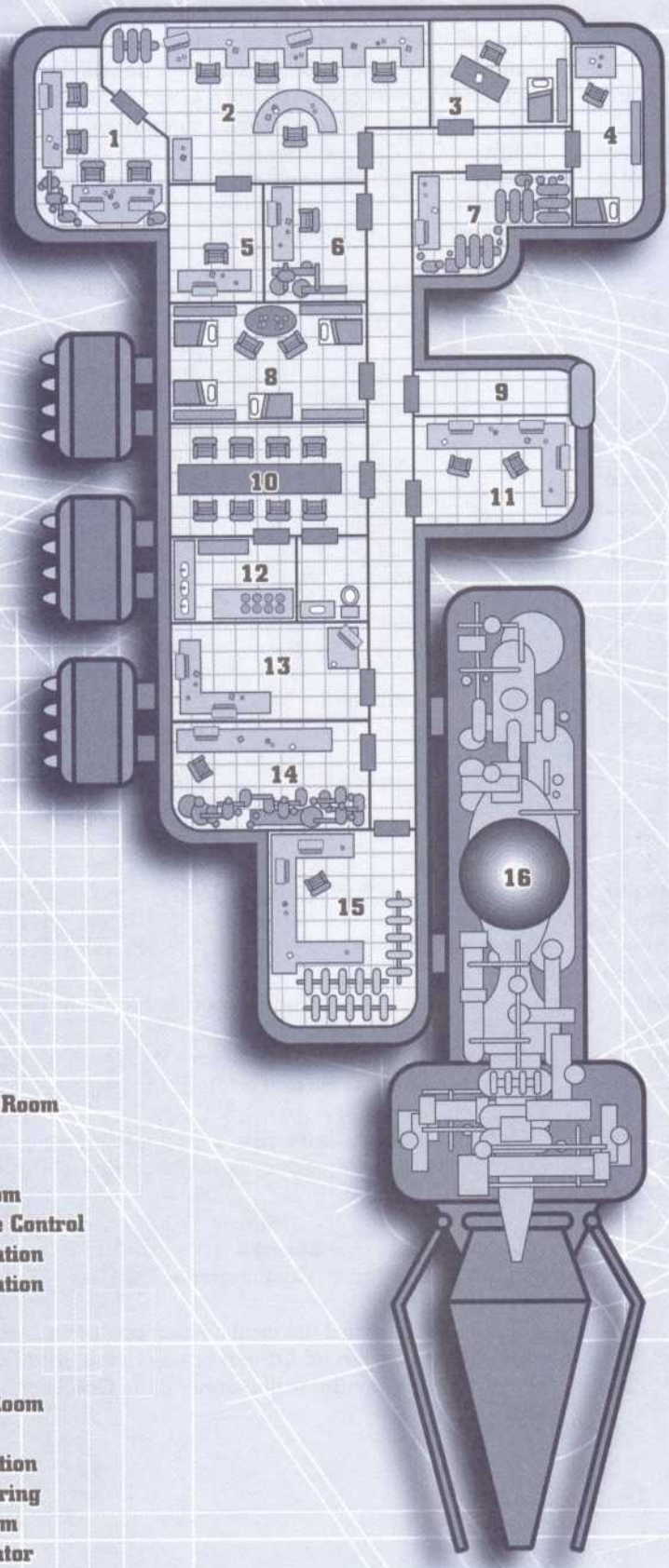
** Accuracy includes Ordinary battle computer system*

Option: Increase the *Guardian*'s travel range by adding an additional 2 fuel tanks, tripling its longevity. To make room for the fuel, it's necessary to remove one of the ship's launch racks. Cost savings: $280,000.

Option: As above, but instead remove the Ordinary computer core (and its dedicated computers) and the point-defense gun. Cost savings: $310,000.

Option: Reduce this craft's commitment to missiles. Remove the first two launch racks and their missiles and replace them with a rail cannon. Cost savings: $100,000.

Cerir Guardian



1. Missile Control Room
2. Command Deck
3. Captain's Cabin
4. Officer Stateroom
5. Missile Defense Control
6. Engineering Station
7. Life Support Station
8. Crew Berthing
9. Airlock
10. Mess Deck
11. Fuel Control Room
12. Galley
13. Electronic Station
14. Main Engineering
15. Computer Room
16. Fusion Generator

1 square = 1 meter

Manari *Dagger*

As a practical matter, the cutter can serve a number of purposes beyond simple patrol craft or missile boat. This versatility becomes pointed as spaceships grow more advanced.

The Manari *Dagger* takes full advantage of the durability space offered by small power plants, engines, and life support units. With only a third of its space devoted to such purposes, it can afford to include several advanced weapons and defensive systems. The kinetic lance offers reasonable damage for its small size, and the terrifying maser cannon can destroy whole compartments with a solid hit. In combat the *Dagger* saves several power factors for its ablative shield, even while firing both its weapon systems.

Despite such fear-inspiring capabilities in the typical spaceship-on-spaceship slugfest, the *Dagger* has a purpose that steps outside the bounds of normal rules of conflict. Included within the *Dagger*'s hull is a state-of-the-art cloaking unit. The cutter's ablative shield may never be put to the test if it approach undetected and fire first, taking the enemy by surprise. Or, the *Dagger* can be assigned to watch over and follow an enemy fleet from afar—using long range, its cloaking device, and perhaps some form of cover or interplanetary debris to remain undetected.

At the same time, the *Dagger* suffers a few limitations. Like all stealth ships, the *Dagger* can't take advantage of its cloaking unit once it fires weapons, engages active sensors (the multiband radar), or uses a communications system. Until the crew chooses flight over fight, the cloaking unit remains unpowered while the shield receives all the power it can get.

A second limitation is the relatively thin armor that coats the hull. Should the vessel ever lose use of its energy shield, it could quickly be put down by enemy fire.

Manari *Dagger* (Cutter class) **PL 8** **Cost $6,140,000**

Compartments: 4 | Dur: 20
Maneuver Rating: –1 | Acc: 6 Mpp
Cruise Speed: 2 AU/hour | Berthing: 6 crew

Armament: Kinetic lance, maser cannon
Defenses: Ablative shield, cloaking unit, RNR array, jammer
Armor: Light nanofluidic (0 dur) d8–1 (LI), d8–1 (HI), d8 (En)
Computer: Good computer core, Good dedicated battle, defenses, navigation, and sensor computers
Engines: Gravitic redirector
Power: Matter converters rated for 14 power factors
Drive: None
Hatches: Security (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
1–4	Command	Command deck (0/0)	8/8/4
		Cloaking unit (1/3)	
		Jammer (0/1)	
		EM detector (0/0)	
		IR detector (0/0)	
		Multiband radar (0/0)	
		Radio transceiver (0/1)	
		Crew quarters (1/0)	
		Airlock (0/0)	
		Reentry capsule (0/0)	
		Good computer core (2/0)	
5–7	Engineering	Gravitic redirector (3/2)	14/14/7
		Matter converter (4/*)	
		Autosupport (0/1)	
8–12	Weapons 1	Ablative shield (2/*)	12/12/6
		Maser cannon (4/3)	
		Weapon link (0/0)	
13–20	Weapons 2	Kinetic lance (2/1)	6/6/3
		RNR array (1/2)	

Weapon Data

System	Acc*	Range (Mm)	Type	Damage	Actions
Kinetic lance	–2	5/10/20	HI (e)	d4+1w/2d4w/d4+3m	3
Maser cannon	–2	6/12/30	En (e)	d6+2w/d4+1m/d6+2m	4

* *Accuracy includes Good battle computer system*

Option: Make this cutter into an FTL hypership model by stripping away its fine computer systems and adding a hyperdrive. Cost increase: $700,000.

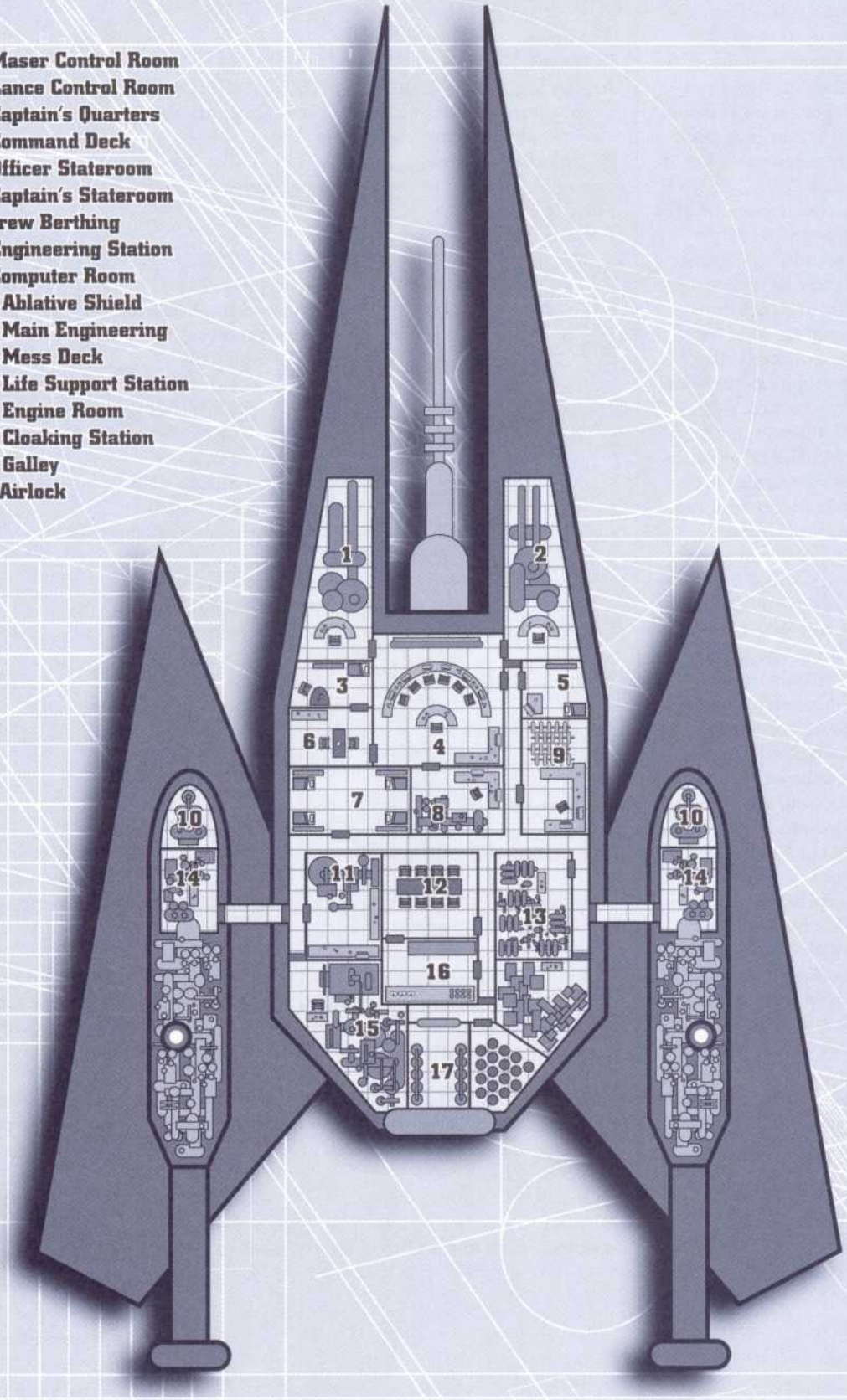
Option: As above, but make it a driveship using a drivewave generator. Downgrade the computer systems to Ordinary quality to provide space. Cost increase: $1,735,000.

Option: As above, but make it a warpship. Remove both the computer systems and the kinetic lance. Cost increase: $950,000.

Option: To increase the craft's sheer combat effectiveness, add a third matter converter to provide additional power to the ablative shield. The ship should become nearly invulnerable; remove the Good computer system. Cost increase: $200,000.

Manari Dagger

1. Maser Control Room
2. Lance Control Room
3. Captain's Quarters
4. Command Deck
5. Officer Stateroom
6. Captain's Stateroom
7. Crew Berthing
8. Engineering Station
9. Computer Room
10. Ablative Shield
11. Main Engineering
12. Mess Deck
13. Life Support Station
14. Engine Room
15. Cloaking Station
16. Galley
17. Airlock



1 square = 1 meter

Erbleke *Princess*

The average trader-class vessel finds use carrying a small amount of cargo, preferably expensive or rare materials that make a trader's smaller freight capacity profitable when compared to a larger freighter or bulk transport. Other traders have been converted to an almost military purpose; equipped with weapon systems, these are pirates, whether independent or given a letter of marque from a nation of the future.

The Erbleke *Princess* does none of these things. Equipped with only a modest laser cannon and the lightest of armors, it's not intended for combat. Rather, it's devoted to the luxurious comfort of its passengers. With two sections of accommodations, it fits some eighteen passengers in addition to its crew of six. One section is for business class, with three suites of four passengers each. The other represents first class, with three suites of two passengers each. Along with the spacious rooms, up to a third of the passengers can enjoy the *Princess*'s entertainment bay at a time.

The ship's crew is usually made up only of a pair of officers who also serve as ship operators. The rest of the crew focuses on the dining and personal needs of the *Princess*'s guests. A chef, a host, a pleasure coordinator, and a maid form the typical complement. Dining tends to be expensive, and supplying this vessel's ship stores costs ten times the normal price ($50k per passenger suite per 20 weeks).

Since the *Princess* has no ability to repel hostiles, it tends to operate only within the safe and patrolled regions of star systems, or with an escort of better-armed and better-armored ships to protect it. The single laser cannon doesn't cause much fear within the hearts of criminals or unfriendly military vessels. Moreover, as dedicated to comfort as it is, the Princess' engines don't truly offer an avenue of escape. When compared to even the average Fusion Age vessel, the Princess lags significantly in acceleration.

An interesting situation could develop aboard the *Princess*, given that it holds some 24 sentients, but its escape pod holds only eight and a reentry pod only one.

Erbleke *Princess* (Trader class) **PL 6** **Cost $1,815,000**

Compartments: 6
Maneuver Rating: +1
Cruise Speed: .05 AU/hour

Dur: 24
Acc: .02 Mpp
Berthing: 6 crew/18 passengers

Armament: Laser cannon
Defenses: None
Armor: Light alloy (0 dur) d6–1 (LI), d6–1 (HI), d4–1 (En)
Computer: Ordinary computer core, Ordinary dedicated navigation and sensor computers
Engines: Ion engine
Power: Fusion generators rated for 6 power factors
Drive: None
Hatches: Standard (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
1–2	Command	Command deck (0/0)	12/12/6
		Laser cannon (2/2)	
		EM detector (0/0)	
		Air/Space radar (0/0)	
		Radio transceiver (0/1)	
		Crew quarters (1/0)	
		Escape pod (2/0)	
		Extension airlock (0/0)	
		Reentry capsule (0/0)	
		Ordinary computer core (1/0)	
3–4	Engineering	Ion engine (2/1)	10/10/5
		Fusion generator (2/1)	
		Back-up life support (1/1)	
5–7	Auxiliary	Fusion generator (2/*)	8/8/4
		Life support (2/2)	
8–10	Crew 1	Passenger suite (3/0)	8/8/4
		Entertainment bay (1/0)	
11–14	Crew 2	Passenger suite (3/0)	6/6/3
15–20	Cargo	Fuel tank [hydrogen] (2/0)	4/4/2

Weapon Data

System	Acc	Range (Mm)	Type	Damage	Actions
Laser cannon	0	1/2/3	En (e)	d4s/d4w/d4+2w	4

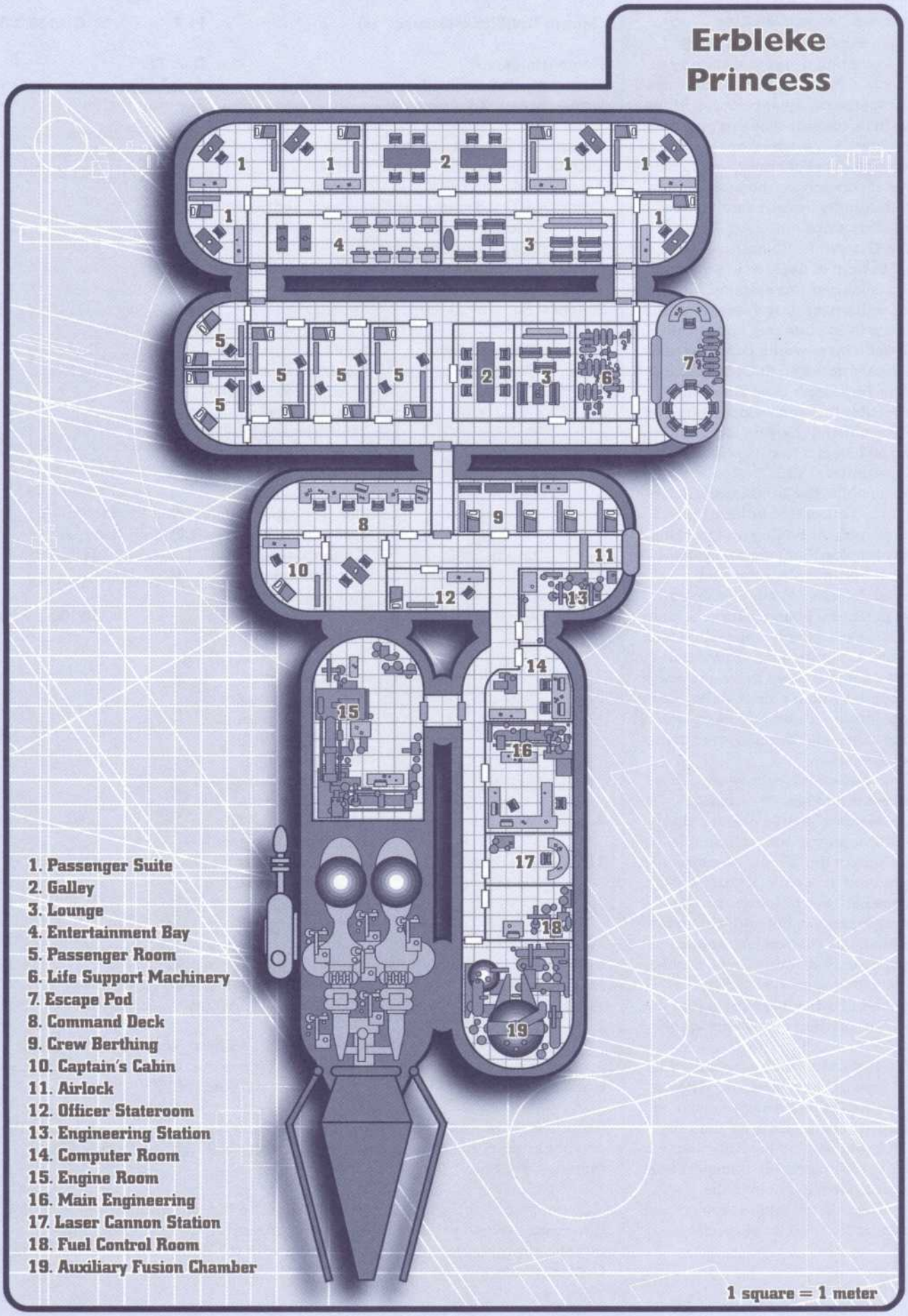
Option: Add some cargo capacity to this liner. Replace as many passenger suites with cargo space as desired; each replacement saves $10,000.

Option: With some modifications, this vessel can attempt longer runs to the edges of star systems, although a vessel this size could never attempt actual interstellar travel. Replace two passenger suites with a cryogenics unit, and replace the escape pod with two additional fuel tanks. Cost savings: $30,000.

Option: In order to allow the vessel to attempt planetary landings or even precise docking maneuvers without assistance, replace one of the passenger suites with a planetary thruster. Cost increase: $50,000.

Option: In regions of space where safety is more important than capacity, additional weapon systems may be desired. Replace two passenger suites with a launch rack and 8 CHE missiles. Cost increase: $200,000.

Erbleke Princess



Geneva *Trailblazer*

The 30-durability hull has enough room to contain a significant array of weapons, defenses, or any kind of systems that the designer calls for. At the same time, the ship size is a good one for a balance of sensors, speed, and a reasonable level of armament. In other words, it encourages the proliferation of 30-durability vessels serving as scout-class ships.

The Geneva *Trailblazer* can be found in front of fleets or in patrols of young colonized star systems. Make no mistake, it's a military vessel that fills almost a third of its ship space with weapons (two powerful cannons) and defenses (armor and deflection inducer). The *Trailblazer* is no slouch in combat. Against spaceships of its own size or smaller, it may do much more than just detect a hostile presence; it will neutralize them.

Meanwhile, the *Trailblazer*'s detection arrays allow it to fulfill its primary purpose of finding and tracking enemy targets. Eight sensor systems, ranging from simple radar and infrared detectors to more complex mass detectors, remote networks, and probes make it nearly impossible for someone to surprise the *Trailblazer*. Don't forget that these sensor systems are coupled with a pair of skilled sensor operators—a standard complement on this ship—and sophisticated dedicated computers.

Equipped as it is with reasonable armaments and sensor arrays, the Trailblazer has invited use in military, scientific, and various civilian roles, to the delight of the Geneva Construction Corporation. Presently, it stands at a balance between military and nonmilitary functions, but with only a few modifications, such as the removal of a weapon and the addition of another sophisticated sensor (or vice versa), the owner of a Trailblazer can find the perfect assortment of systems for his craft.

The *Trailblazer* isn't especially fast, and it doesn't come standard with an FTL engine. Its probe systems extend its range to compensate for the first fallback, but without modification or a larger vessel to provide transport from one star system to another, the *Trailblazer*'s effectiveness is restricted to a single star and its planets.

Geneva *Trailblazer* (Scout class) **PL 7** **Cost $6,320,000**

Compartments: 6 Dur: 30
Maneuver Rating: 0 Acc: 1 Mpp
Cruise Speed: 2 AU/hour Berthing: 9 crew

Armament: Plasma cannon, mass cannon
Defenses: Deflection inducer, jammer
Armor: Moderate neutronite (3 dur) d6+1 (LI), d6+1 (HI), d6 (En)
Computer: Good computer core, Good dedicated navigation, science (Physical), and sensor computers
Engines: Hypermagnetic engine
Power: Antimatter reactors rated for 14 power factors
Drive: None
Hatches: Security (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
1–2	Command	Command deck (0/0)	12/12/6
		Plasma cannon (3/3)	
		Jammer (0/1)	
		Multiband radar (0/0)	
		Radio transceiver (0/1)	
		Crew quarters (1/0)	
		Decon airlock (0/0)	
		Reentry capsule (0/0)	
		Good computer core (2/0)	
3–4	Engineering	Antimatter reactor (3/*)	14/14/7
		Hypermagnetic engine (4/6)	
		Autosupport (0/1)	
5–7	Electronics	Mass detector (1/1)	10/10/5
		Remote network (2/2)	
		Advanced probe (1/1)	
		Ladar (0/0)	
		Radiation detector (0/0)	
		Multiband radar (0/0)	
		EM detector (0/0)	
		IR detector (0/0)	
		Laser transceiver (0/0)	
		Mass transceiver (1/1)	
8–10	Weapons	Mass cannon (2/3)	8/8/4
		Deflection inducer (2/4)	
11–14	Auxiliary	Antimatter reactor (3/*)	6/6/3
		Autosupport (0/1)	
15–20	Cargo	Autocargo (2/2)	4/4/2

Weapon Data

System	Acc	Range (Mm)	Type	Damage	Actions
Mass cannon	0	5/10/15	LI (e)	d6+2s/d6+1w/d6+3w	3
Plasma cannon	0	6/12/18	En (e)	d6+2w/d8+2w/d6+1m	3

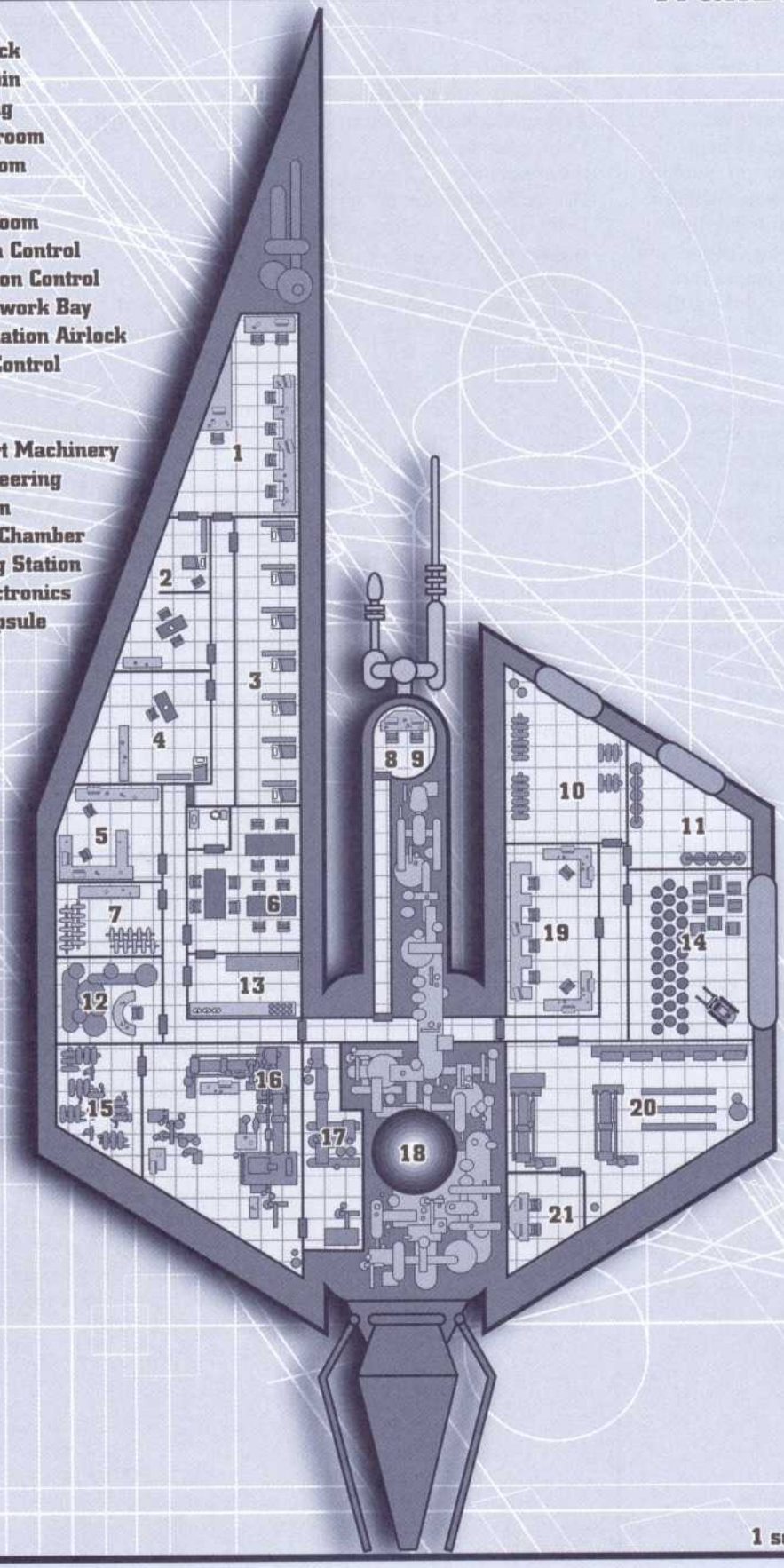
Option: Rededicate the ship's purpose from military scouting to scientific exploration. Remove the mass cannon and the accumulator; replace them with a spectroanalyzer and a lab section. Cost savings: $140,000.

Option: Make this an FTL hypership. Replace the mass transceiver and the accumulator with a hyperdrive with a velocity of 2 light-years/day. Cost increase: $860,000.

Option: Make this an FTL driveship. Replace the two antimatter reactors with three mass reactors. Remove the mass transceiver, accumulator, and the advanced probe system. Add a stardrive with a 5 light-year per starfall range. Cost increase: $610,000.

Geneva Trailblazer

1. Command Deck
2. Captain's Cabin
3. Crew Berthing
4. Officer Stateroom
5. Computer Room
6. Mess Deck
7. Electronics Room
8. Mass Cannon Control
9. Plasma Cannon Control
10. Remote Network Bay
11. Decontamination Airlock
12. Deflection Control
13. Galley
14. Cargo Bay
15. Life Support Machinery
16. Main Engineering
17. Engine Room
18. Antimatter Chamber
19. Engineering Station
20. Gravity Electronics
21. Reentry Capsule



1 square = 1 meter

Augustan *Avatar*

During the Energy Age, scouting within a star system, or even a local group of systems, has given way to galactic expansion and exploration. It's no longer noteworthy merely to keep pace with or marginally exceed the speed of light. Now, it's only impressive to leave photons eating one's dust.

The Augustan *Avatar* has been designed with the purpose of moving as fast as possible between the stars. That goes beyond the unusual design of placing the engineering section, not the command compartment, in the most well-defended area of the ship. The *Avatar*'s velocity exceeds more than 4,000 times the speed of light, crossing the distance between two stars in the time it once took people of Earth to travel across town. With its speed, even extragalactic movement would be possible with time.

In order to accomplish this feat of speed, designers devoted 40 percent of the *Avatar*'s durability space to its power plant and warpdrive. With matter converters generating amazing amounts of power, when it's not travelling at FTL velocities the *Avatar* has power going to waste. So, the *Avatar*'s builders added many advanced systems that could use this energy, including flux cannons and an ablative shield that can repel most weapon barrages.

The price the *Avatar* pays for its power plants and weapon systems lies in a few places. Its in-system engines are unimpressive for the Energy Age. And although its crystallis armor has excellent protection against energy attacks, if the ablative shield ever fails, the *Avatar* would prove vulnerable to kinetic lances and other high-impact weapon systems.

The *Avatar* also demands an experienced and well-qualified crew. Without a sophisticated computer system to assist, the crew of the *Avatar* must succeed in their tasks on the basis of skill alone.

Augustan *Avatar* (Scout class) **PL 8** **Cost $9,755,000**

Compartments: 6 Dur: 30
Maneuver Rating: 0 Acc: 3 Mpp
Cruise Speed: 2 AU/hour Berthing: 6 crew

Armament: Flux cannons (2)
Defenses: Ablative shield, jammer
Armor: Moderate crystallis (3 dur) d6 (LI), d6+1 (HI), 2d4+1 (En)
Computer: Marginal computer core
Engines: Inertial flux engine
Power: Matter converters rated for 28 power factors
Drive: 0.5 light years per hour
Hatches: Security (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
1–2	Engineering	Inertial flux engine (2/2)	12/12/6
		Warpdrive (4/*)	
		Autosupport (0/1)	
3–4	Command	Command deck (0/0)	12/12/6
		Ablative shield (4/*)	
		Jammer (0/1)	
		Radio transceiver (0/1)	
		Ladar (0/0)	
		Radiation detector (0/0)	
		Multiband radar (0/0)	
		EM detector (0/0)	
		IR detector (0/0)	
		Laser transceiver (0/0)	
		Foldsender (1/1)	
		Crew quarters (1/0)	
		Decon airlock (0/0)	
		Reentry capsule (0/0)	
		Marginal computer core (0/0)	
5–7	Auxiliary 1	Matter converter (4/*)	8/8/4
		Autosupport (0/1)	
8–10	Auxiliary 2	Matter converter (4/*)	8/8/4
11–14	Weapons 1	Flux cannon (3/5)	6/6/3
15–20	Weapons 2	Turret (1/0): flux cannon (3/5)	8/8/4

Weapon Data

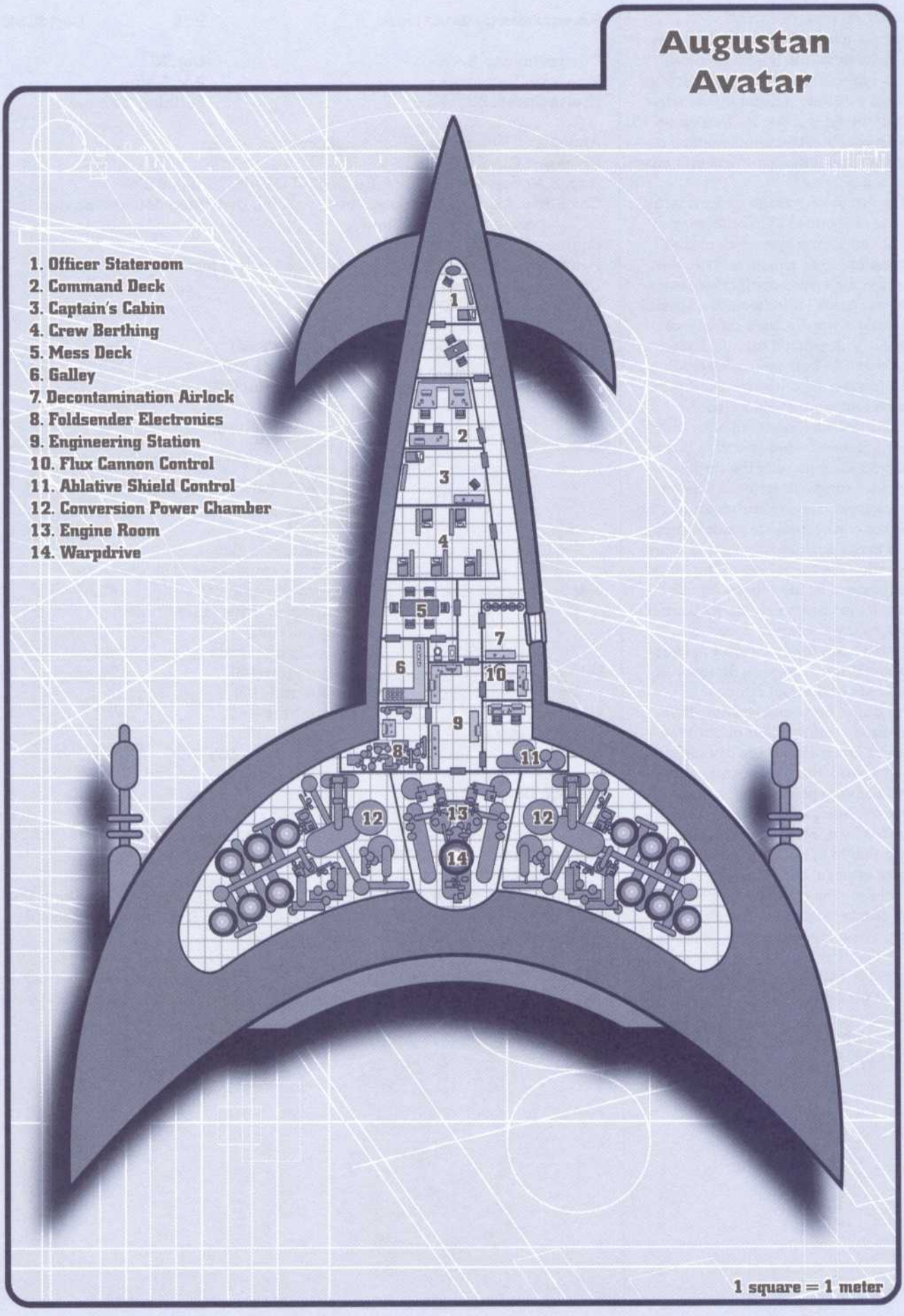
System	Acc	Range (Mm)	Type	Damage	Actions
Flux cannon (2)	0	3/6/15	En (e)	d6+4w/2d6+2w/3d6+2w	3

Option: Make this an FTL hypership. Replace the warpdrive with a hyperdrive; use the two durability points saved to add a cloaked probe unit with 10 probes. Cost increase: $860,000.

Option: If talented operators can't be found to control the ship, replace one of its flux cannons with an Amazing computer system, along with equal quality battle, sensors, and navigation dedicated computers. Cost increase: $700,000.

Option: Substitute a multiphase radar and a drive (warp) detector for a flux cannon, reducing the starship's military application, but increasing its effectiveness as a sensor scout. Cost savings: $50,000.

Augustan Avatar



Seneca *Projector*

While the average 30-durability vessel generally falls into the scout class, there's nothing preventing such a vessel from fulfilling a different objective. Among the typical scout-class vessels, the Seneca *Projector* stands out as a ship of unusual design, crew, and mission focus.

The *Projector* has the usual operator core of six or so ship officers who man its mundane systems: engines, power plant, and maser cannon. But the *Projector*'s more distinctive crew members are all mindwalkers, special individuals who've been gifted—or cursed—with psionic talents. Based on these sentient beings—and a cloaking unit—the *Projector* focuses its capabilities and unusual mission focus.

In battle, the *Projector*'s crew aims to bring it undetected to within a few thousand kilometers of the target—very close range, in terms of Energy Age weapons. Once near its target, the *Projector* can employ its psionic amplifier to make psionic attacks and plant suggestions in the minds of the target vessel's crew. At first, these attacks focus on the enemy's sensors operator to reduce the chance of detection. Then, they can freely assault the vessel's command crew with dangerous commands and direct attacks.

For game purposes, assume that the average mindwalker aboard the *Projector* has a skill score of 14 in *suggest*, *tire*, and *mind blast* and twelve psionic energy points. (Individuals may vary their skills scores and energy points by species and experience). In addition to using their mental energies for attacks, the mindwalkers aboard the *Projector* usually conserve some power to activate its psychoportive drive and psionic transceiver.

In many settings, mindwalkers are difficult to control, and prone to mental aberrance. The typical *Projector* includes a psionic detention bay for this reason.

Seneca *Projector* (Scout class) **PL 8** **Cost $9,940,000**

Compartments: 6 Dur: 30
Maneuver Rating: –1 Acc: 6 Mpp
Cruise Speed: 2 AU/hour Berthing: 24 crew

Armament: Psionic amplifier, maser cannon
Defenses: Cloaking unit
Armor: Moderate neutronite (3 dur) d6+1 (LI), d6+1 (HI), d6 (En)
Computer: Amazing computer core, Amazing dedicated defense, navigation, and sensor computers
Engines: Gravitic redirector
Power: Singularity generators rated for 12 power factors
Drive: Psychoportive drive
Hatches: Standard (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
1–2	Command	Command deck (0/0)	12/12/6
		Psionic amplifier (2/5)	
		Jammer (0/1)	
		Multiband radar (0/0)	
		EM detector (0/0)	
		IR detector (0/0)	
		Psionic transceiver (1/2)	
		Radio transceiver (0/1)	
		Airlock (0/0)	
		Reentry capsule (0/0)	
		Amazing computer core (3/0)	
3–4	Engineering	Gravitic redirector (3/2)	12/12/6
		Psychoportive drive (3/10)	
		Autosupport (0/2)	
5–7	Auxiliary	Singularity generator (4/*)	8/8/4
8–10	Weapons	Maser cannon (4/3)	10/10/5
		Cloaking unit (1/3)	
11–14	Crew 1	Crew quarters (4/0)	8/8/4
15–20	Crew 2	Holofield bay (1/0)	4/4/2
		Psionic detention bay (1/0)	

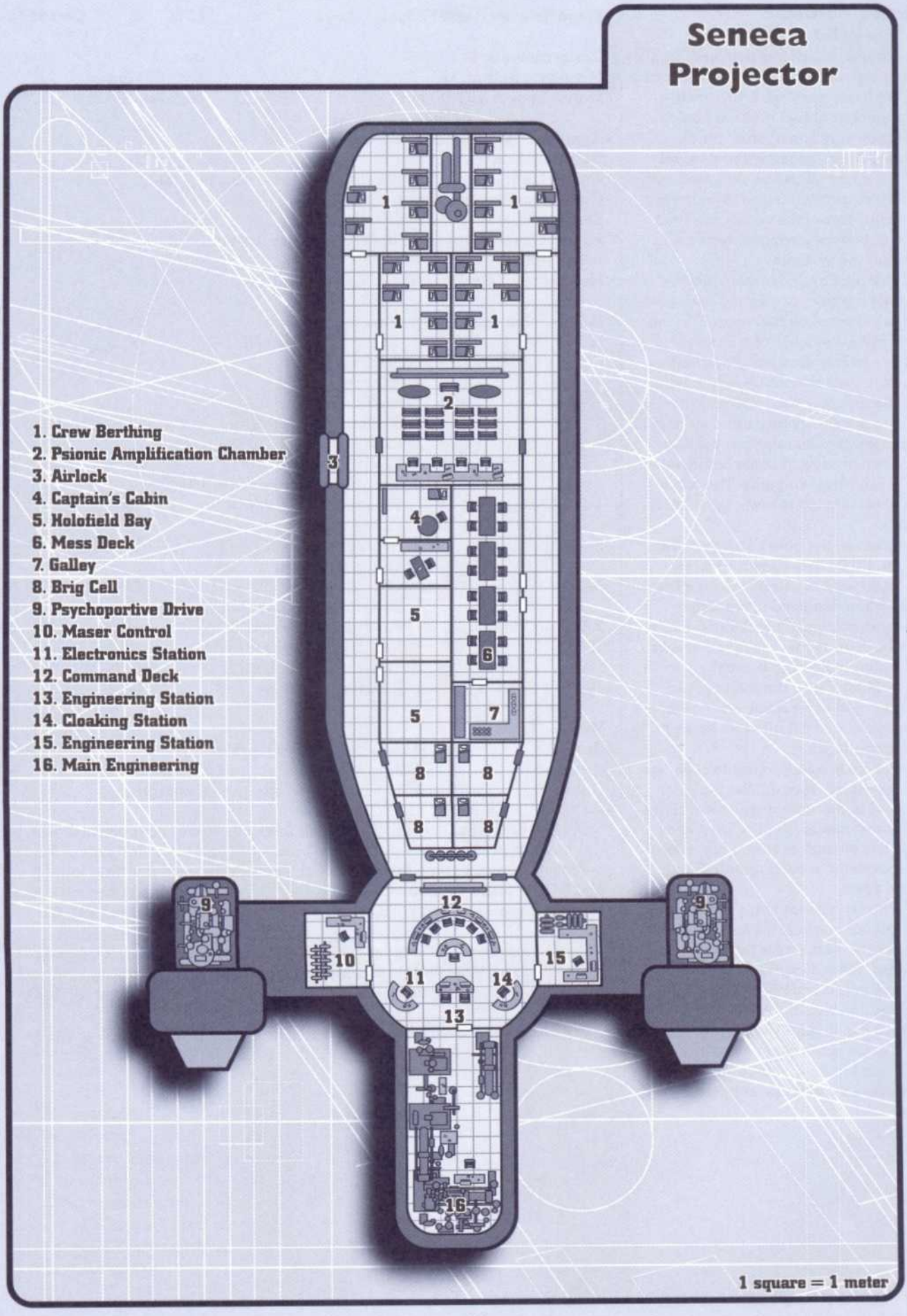
Weapon Data

System	Acc	Range (Mm)	Type	Damage	Actions
Psionic amplifier	0	2/4/6	En (e)	See description	3
Maser cannon	–1	6/12/20	En (e)	d6+2w/d4+1m/d6+2m	3

Option: If the mindwalkers aboard are trusted, or are the ones making the decisions, the psionic detention bay may be removed in place of a second holofield bay. Cost savings: $25,000.

Option: To add additional firepower to the Projector, downgrade its Amazing computer core to an Ordinary quality one, and add a kinetic lance. Cost savings: $55,000.

Seneca Projector



Fargo *Refueler*

While heralded as an incredible advance, fusion power demands large sections of ship space devoted to containing hydrogen fuel. With a sufficient number of fuel tanks, a Fusion Age spaceship can operate for an average of ten weeks without refueling. Yet many ships are designed with a short longevity in mind. By carrying fewer fuel tanks, the vessel can hold more important weapons, sensors, or even engine systems.

Enter the Fargo *Refueler*. Most of the time a planet or orbiting space station is the common fuel source. In the more distant reaches of a star system—or in less developed systems—there's a need for mobile resupplying that the *Refueler* can answer. With three impressively large fuel storage chambers, the *Refueler* can provide hydrogen to several ships before needing to refill its own tanks. The cable gun aboard helps to tow customers in tightly.

Moreover, the *Refueler* may never need to fill its hydrogen tanks. Equipped with a pair of collector systems, when deployed these large hydrogen scoops allow the *Refueler* to refuel one of its fuel tanks in 5 weeks when simply floating through open space. More likely, the pilot of the *Refueler* will enter a low orbit around a gas giant and fill all of its tanks in only a single week.

Because it doesn't want to consume its own source of profit, the *Refueler* relies on a less advanced power plant for its own needs. The fission power plant has enough uranium fuel aboard the spaceship to need refueling only once a year.

As is the case for many Fusion Age commercial vessels, the *Refueler* deserves no respect for its combat prowess. When desperate, the captain of the ship can use its arc cannon in combination with the cable gun to annoy a foe. In addition, the *Refueler* saves some space and power by not bothering to provide its cargo fuel compartments with life support.

Fargo *Refueler* (Light Freighter class) **PL 6** **Cost $1,740,000**

Compartments: 8
Maneuver Rating: +2
Cruise Speed: .15 AU/hour

Dur: 32
Acc: .03 Mpp
Berthing: 12 crew

Armament: Cable gun, Arc cannon
Defenses: None
Armor: Light polymeric (0 dur) d4–1 (LI), d4–1 (HI), d4–2 (En)
Computer: Marginal computer core
Engines: Fusion torch, Hydrogen collectors
Power: Fission generator rated for 5 power factors
Drive: None
Hatches: Standard (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
(<1)	Command	Command deck (0/0)	6/6/3
		Cable gun (2/1)	
		Arc cannon (1/2)	
		Air/Space radar (0/0)	
		Radio transceiver (0/1)	
		Extension airlock (0/0)	
		Reentry capsule (0/0)	
		Marginal computer core (0/0)	
1–2	Engineering	Fission generator (4/*)	14/14/7
		Fusion torch (3/1)	
3–4	Auxiliary	Hydrogen collector (4/0)	10/10/5
		Life support (1/1)	
5–6	Crew	Crew quarters (2/0)	6/6/3
		Entertainment bay (1/0)	
7–9	Cargo 1	Fuel tank [uranium] (2/0)	4/4/2
10–12	Cargo 2	Fuel tank [hydrogen] (4/0)	8/8/4
13–16	Cargo 3	Fuel tank [hydrogen] (4/0)	8/8/4
17–20	Cargo 4	Fuel tank [hydrogen] (4/0)	8/8/4

Weapon Data

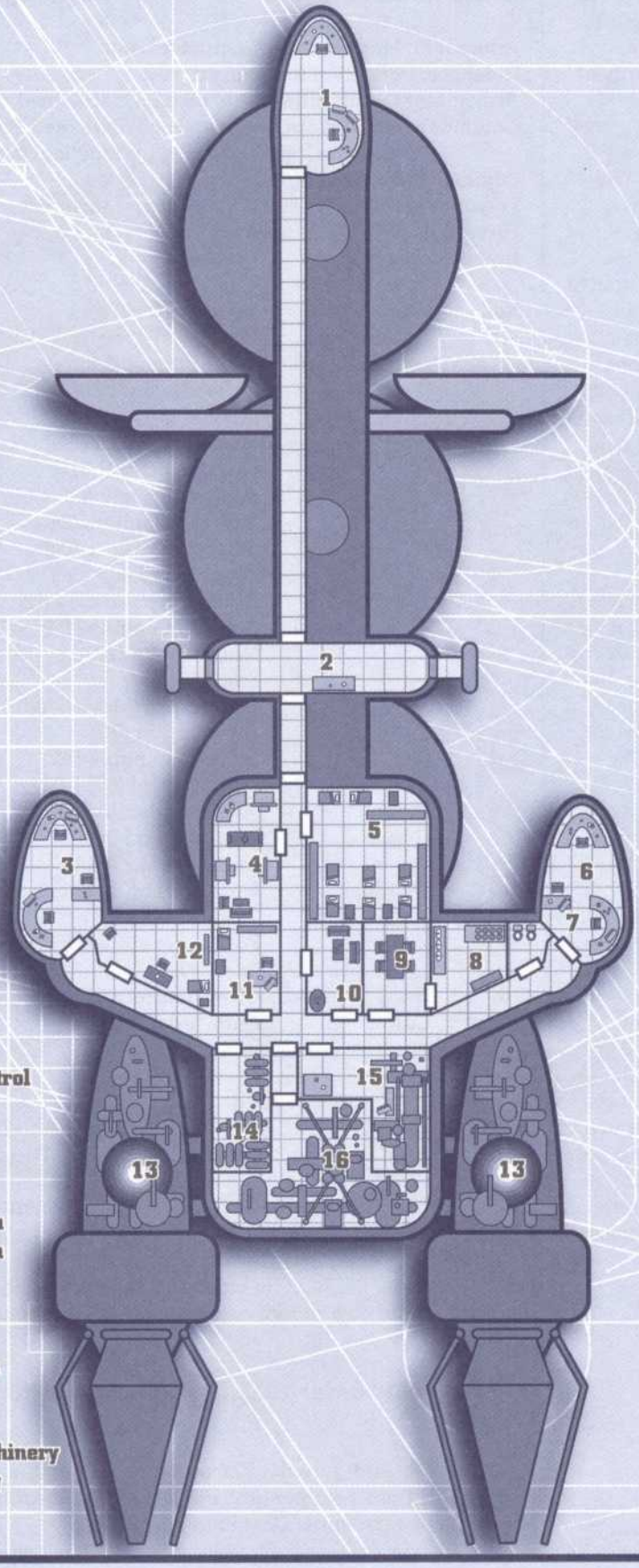
System	Acc	Range (Mm)	Type	Damage	Actions
Arc cannon	–3	1/2/3	En [e]	d6s/d6+4s/d6+2w	4
Cable gun	+1	1/2/3	HI [p]	See description	4

Option: Refueling operations in more lawless regions of space could be lucrative enough to be worth reducing the number of fuel tanks in favor of modest defenses. Remove one 4-durability fuel tank and replace it with a launch rack and 8 CHE missiles. Also remove the entertainment bay and upgrade the armor to moderate alloy armor: LI d4+1; HI d4+1; En d4. Cost increase: $260,000.

Option: Emphasize the vessel's role as a collector in high-traffic systems where fuel can be quickly sold for profit. Remove one 4-durability fuel tank and replace it with an additional 2 hydrogen collectors. Cost increase: $120,000.

Option: In order to offer fuel to asteroid bases or the like, landing operations may be necessary. Remove one durability of fuel tank and add a planetary thruster. Cost increase: $90,000.

Fargo Refueler



1. Hydrogen Fuel Control
2. Extension Airlock
3. Command Deck
4. Entertainment Bay
5. Crew Berthing
6. Cable Control Room
7. Engineering Station
8. Galley
9. Mess Deck
10. Lounge
11. Officer Stateroom
12. Captain's Cabin
13. Fission Reactor
14. Life Support Machinery
15. Main Engineering
16. Engine Room

1 square = 2 meters

Langston *Invader*

Military vessels, just like civilian ones, continue to specialize even when able to load a large vessel with numerous systems. Focusing on a specific objective allows a small fleet of vessels to perform admirably at their tasks, rather than sinking into mediocrity at everything.

The Langston *Invader* devotes itself toward the intact capture of enemy vessels near its size or smaller. With space for a small platoon of sixteen assault troops, it has enough personnel and firepower to overpower the crew of the average freighter, cutter, or even corvette. The *Invader* wields excellent delivery systems for its heavily armed and armored troops with a cutting airlock, boarding pod, and a tractor beam. Important officers aboard the target vessel can be held aboard the *Invader*'s brig. Finally, the *Invader* fits an operator crew of twelve; thus, it can afford to send over a crew of four or more officers to take over an enemy vessel.

Before boarding actions can be attempted, however, the *Invader* must disable its target. Against civilian vessels, the *Invader* is usually up to the task, between its two mass cannons for offense and deflection inducer for defense. When forced to deal with equal-sized military craft, however, the *Invader* must acknowledge a need for assistance. The assault ship is neither especially fast nor well-armored. Often, this means that against military targets the *Invader* works as part as a fleet. The *Invader*'s escorts help to disable a target and then the *Invader* moves in for the capture.

The most common escorts are a pair of Langston *Interceptors* (see page 66). They provide enough firepower to turn a battle, and the *Invader*'s mass reactors have just enough power to allow the driveship to dock with a pair of spacefighters and still starfall.

In addition to its strictly military use, the *Invader* makes a fine choice for a pirate or privateer.

Langston *Invader* (Attack class) **PL 7** **Cost $8,275,000**

Compartments: 8
Maneuver Rating: 0
Cruise Speed: 1.5 AU/hour
Dur: 40
Acc: 2 Mpp
Berthing: 12 crew/16 pass./4 pris.

Armament: Mass cannon (2), tractor beam
Defenses: Deflection inducer, jammer
Armor: Light neutronite (0 dur) d6 (LI), d6 (HI), d6–1 (En)
Computer: Good computer core, Good dedicated battle, defense, navigation, science (Technical), sensor, and tactical computers
Engines: Induction engine
Power: Mass reactors rated for 20 power factors
Drive: 5 light-years per starfall
Hatches: Armored (1 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
(<1)	Command	Command deck (0/0)	14/14/7
		Mass cannon (2/3)	
		Deflection inducer (2/4)	
		Jammer (0/1)	
		Multiband radar (0/0)	
		Mass detector (1/0)	
		Radio transceiver (0/1)	
		Internal monitors (0/0)	
		Extension airlock (0/0)	
		Reentry capsule (0/0)	
		Good computer core (2/0)	
1–2	Engineering 1	Induction engine (4/4)	18/18/9
		Mass reactor (2/*)	
		Stardrive (3/*)	
		Self-destruct device (0/*)	
		Autosupport (0/2)	
3–4	Engineering 2	Induction engine (2/2)	16/16/8
		Mass reactor (6/*)	
5–6	Crew 1	Passenger suite (2/0)	10/10/5
		Boarding pod (2/0)	
		Cutting airlock (1/0)	
7–9	Weapons	Mass cannon (2/3)	8/8/4
		Tractor beam (2/*)	
10–12	Crew 2	Passenger suite (2/0)	6/6/3
		Brig (1/0)	
13–16	Crew 3	Crew quarters (2/0)	4/4/2
17–20	Cargo	Autocargo (2/2)	4/4/2

Weapon Data

System	Acc*	Range (Mm)	Type	Damage	Actions
Mass cannon (2)	–2	5/10/15	En (e)	d6+2s/d6+1w/d6+3w	3
Tractor beam	–3	3/6/9	En [e]	See description	2

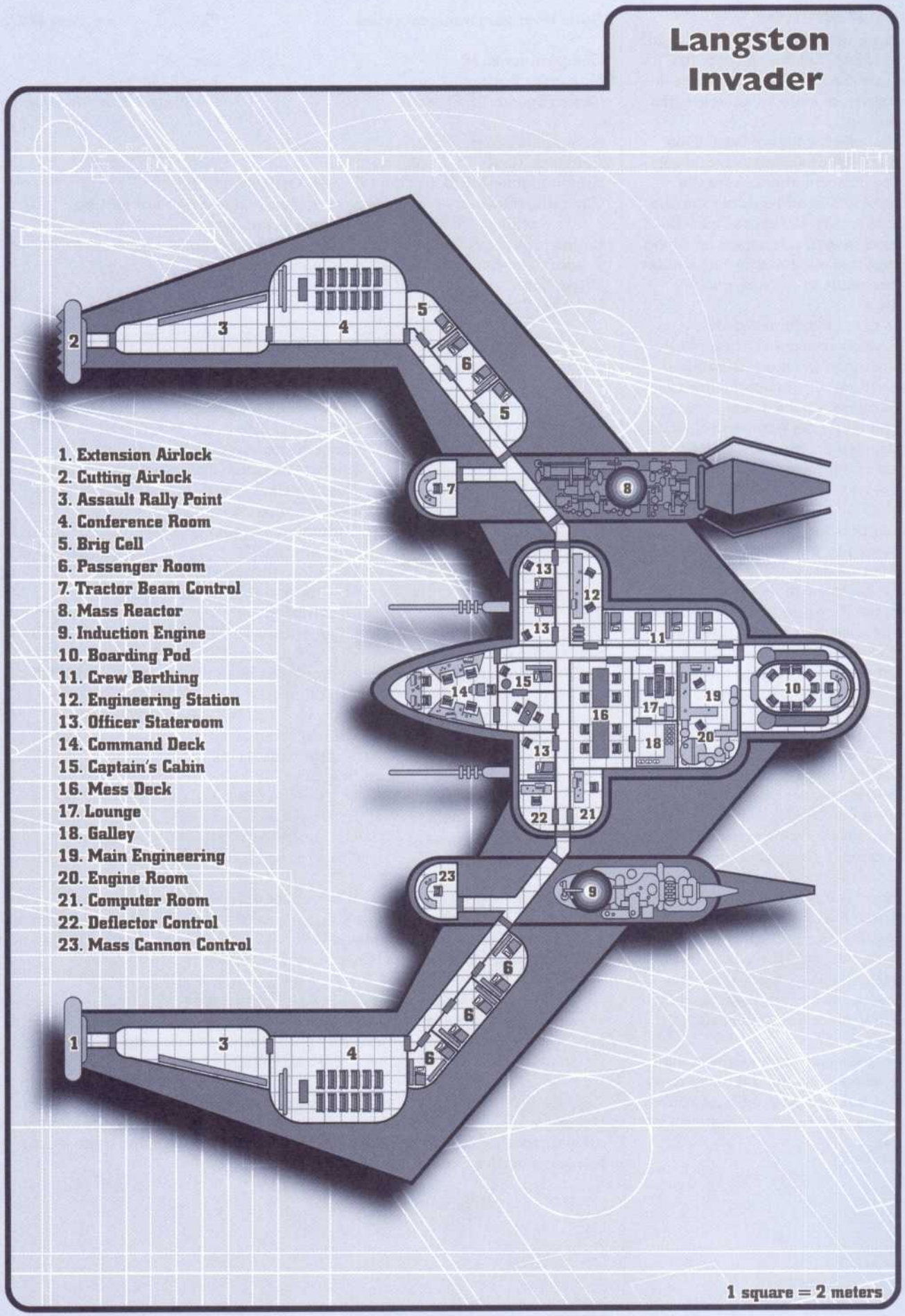
* *Accuracy includes Good battle computer system*

Option: If operating as part of a large fleet, or dedicated to operations in a single system, the Invader can be made more effective by removing its stardrive. Add a third mass cannon to increase combat strength. Cost savings: $700,000.

Option: As above, but instead add additional troop space. Cost savings: $950,000.

Option: Reconfigure the FTL system to make this vessel a hypership with a speed of 1 light-year per day. Use the saved durability space to add another troop passenger suite. Cost increase: $50,000.

Langston Invader



Gulix *Wayfarer*

A transport-class ship can fill its hold with a significant amount of cargo. It's also ideal for carrying several dozen passengers, or more for short lengths of time.

In the middle days of the Fusion Age, interstellar exploration and colonization can sometimes leave the realms of fiction and speculation and step into reality. Massive ships, kilometers in length, can depart for Alpha Centauri and other nearby stars, cities in space ready to colonize a new tomorrow.

The Gulix *Wayfarer* stands out as an unusual passenger carrier. While relatively small, it has a reasonable chance of serving as interstellar transport. Years may pass to a stationary observer while the *Wayfarer* relies on a modest but steady acceleration, reaching a target star in only a few years relative time. (See 'Relativity' on page 15.)

Equipped with only a single engine and power plant, the *Wayfarer* is neither maneuverable nor powerful. Furthermore, in its travel through space, the *Wayfarer* is likely to travel at an acceleration of only a few gravities, a fraction of its capabilities. Thus, it conserves fuel for the long trip. Moreover, the hydrogen collectors aboard the starship allow it to refuel as it goes, slowly collecting hydrogen atoms in the vacuum of interstellar space.

While the vessel has space for six crew members, under normal conditions the vessel's crew spends the journey in cryogenic storage along with the rest of the passengers. The *Wayfarer*'s computers monitor course, thrust, and fuel consumption, and can awaken the crew in the event of trouble. At regular monthly intervals, a ship officer is awakened to perform diagnostics, inspect the vessel, and make any minor adjustments or repairs.

To conserve space and power, half of the vessel—including the fuel tanks, cargo space, hydrogen collectors, and the cryogenics chambers—have no life support.

Gulix *Wayfarer* (Transport class) **PL 6** **Cost $3,275,000**

Compartments: 10
Maneuver Rating: +2
Cruise Speed: .05 AU/hour

Dur: 40
Acc: .02 Mpp
Berthing: 6 crew/72 cryogenic

Armament: None
Defenses: None
Armor: Light alloy (0 dur) d6–1 (LI), d6–1 (HI), d4–1 (En)
Computer: Ordinary computer core, Ordinary dedicated navigation, science (Technical), and sensor computers
Engines: Ion engine, Planetary thruster, Hydrogen collector
Power: Grav-fusion cell rated for 10 power factors
Drive: None
Hatches: Standard (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
(<–1)	Command	Command deck (0/0)	2/2/1
		Multiband radar (0/0)	
		EM detector (0/0)	
		IR detector (0/0)	
		Radio transceiver (0/1)	
		Internal monitors (0/0)	
		Decon airlock (0/0)	
		Reentry capsule (0/0)	
		Ordinary computer core (1/0)	
(–1)	Engineering 1	Ion engine (2/1)	8/8/4
		Planetary thruster (1/1)	
		Life support (1/1)	
0–1	Auxiliary 1	Grav-fusion cell (5/*)	10/10/5
2–3	Auxiliary 2	Cryogenics unit (5/1)	10/10/5
4–5	Auxiliary 3	Cryogenics unit (5/1)	10/10/5
6–7	Auxiliary 4	Hydroponics bay (2/1)	10/10/5
		Workshop (2/1)	
		Recycler unit (1/1)	
8–10	Crew	Crew quarters (1/0)	12/12/6
		(Extra stores) (1/0)	
		Sick bay (2/0)	
		Lab section (2/0)	
11–13	Engineering 2	Hydrogen collector (2/0)	4/4/2
14–16	Cargo 1	Fuel tank [hydrogen] (4/0)	8/8/4
17–20	Cargo 2	Cargo space (3/0)	6/6/3

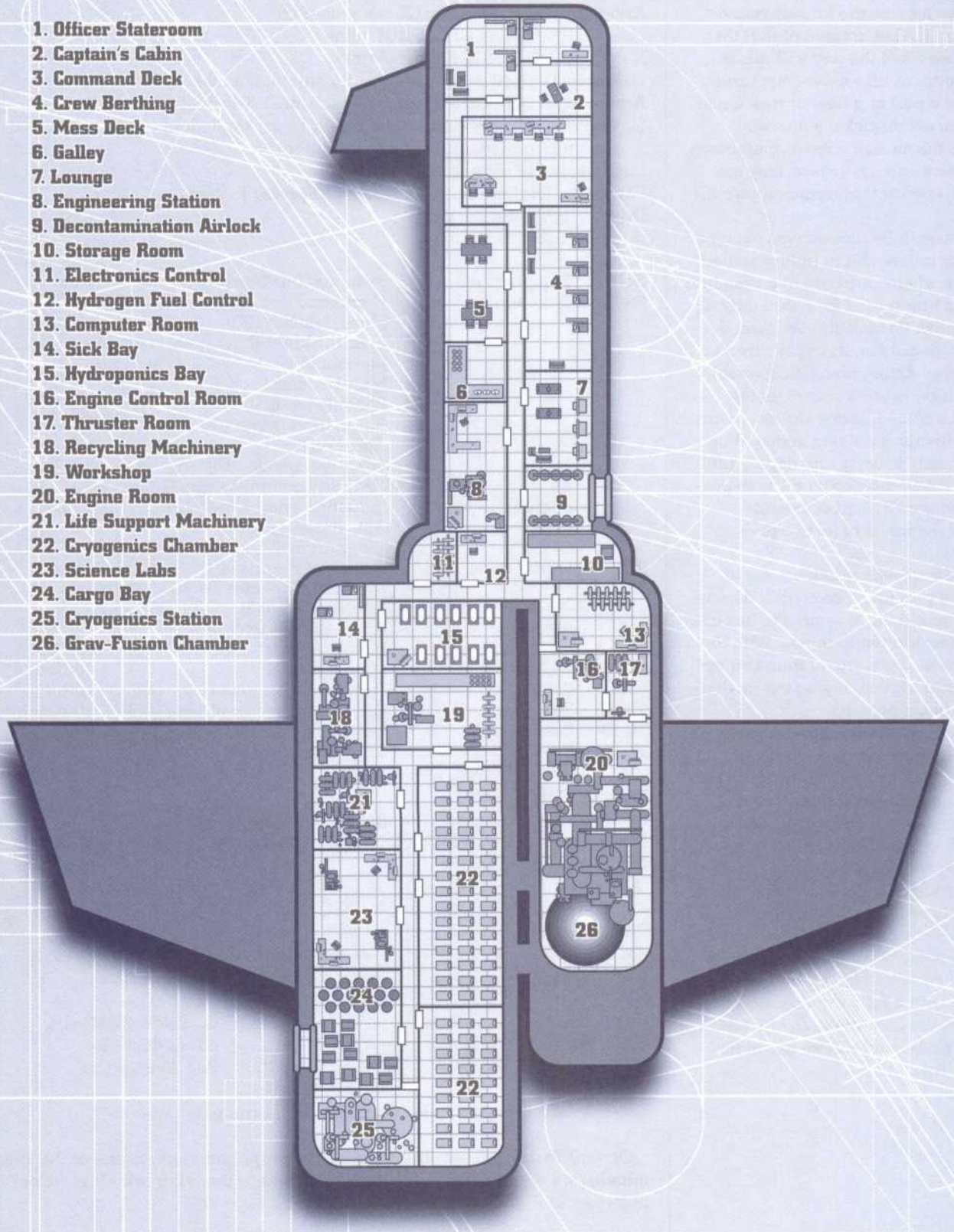
Option: If used merely to travel to an interstellar colony, not establish one, remove the lab section, planetary thruster, and workshop and replace them with another 5 durability points added to the cryogenics units, adding 40 additional cryogenic passengers. Cost increase: $30,000.

Option: For journeys likely to be measured in decades, not years, increase the vessel's odds of success by adding another hydrogen collector and 2 durability points of stores. Remove 3 durability points of cryogenic units, reducing the passenger payload by 24. Cost decrease: $60,000.

Option: For travel through dangerous areas, remove 4 durability points of cryogenic units (and 32 cryogenic passengers) and upgrade armor to moderate alloy armor: LI d4+1, HI d4+1, En d4. Of course, this only helps if the *Wayfarer* has escort ships. Cost increase: $100,000.

Gulix Wayfarer

1. Officer Stateroom
2. Captain's Cabin
3. Command Deck
4. Crew Berthing
5. Mess Deck
6. Galley
7. Lounge
8. Engineering Station
9. Decontamination Airlock
10. Storage Room
11. Electronics Control
12. Hydrogen Fuel Control
13. Computer Room
14. Sick Bay
15. Hydroponics Bay
16. Engine Control Room
17. Thruster Room
18. Recycling Machinery
19. Workshop
20. Engine Room
21. Life Support Machinery
22. Cryogenics Chamber
23. Science Labs
24. Cargo Bay
25. Cryogenics Station
26. Grav-Fusion Chamber



1 square = 2 meters

Lorrid *Deathseed*

Escort and corvette class vessels stand out as the princes of the small-ship universe. They're generally the largest vessels that a wealthy independent citizen or small corporation can afford, and they may be the largest vessels with any kind of armament that the governments of the day will allow. These princes also serve important roles as a part of a fleet or task force; they can act as picket ships, and despite the modest size in comparison to cruisers and destroyers, they can carry firepower that larger ships can't ignore.

The Lorrid *Deathseed* was designed to act as a defender in lightly settled systems where ships are at a premium and can't be spared for patrol duty. To accomplish its task, the *Deathseed* relies primarily on its capability as a minelayer. Acting alone, this vessel can quickly place a ring of mines around a planet, space station, or any other important point in space. With the capacity to carry and deploy fifty mines, the *Deathseed*'s ability to project a defensive blanket extends beyond the range of its two plasma cannons.

The *Deathseed* is seldom out of mines or grapplers; soon after deploying its munitions, it returns to its base to receive additional mines. With its hyperdrive, it can travel from star system to star system, laying out its dangerous fields of death.

In combat, the *Deathseed* boasts average power, as its devotion to mines limits its direct firepower. Particle beams are impressive weapons, but the two aboard the *Deathseed* are its only two weapon systems. With only light armor, the *Deathseed* prefers to draw its enemies across its own minefields to assure victory. Perhaps this is why the designers included a full backup life support system. If forced into toe-to-toe combat with a fully armed escort or corvette, the crew of the *Deathseed* is strongly advised to make use of its hyperdrive.

Lorrid *Deathseed* (Escort class) **PL 7** **Cost $14,040,000**

Compartments: 10 Dur: 50
Maneuver Rating: 0 Acc: 2 Mpp
Cruise Speed: 1.5 AU/hour Berthing: 12 crew

Armament: Particle beam (2), minelayer (2)
(10 ARN, 20 CHE, 5 NUK mines)
(10 COR, 5 EMP grapplers)
Defenses: Deflection inducer, stealth shield, jammer
Armor: Light neutronite (0 dur) d6–1 (LI), d6–1 (HI), d4–1 (En)
Computer: Ordinary computer core, Ordinary dedicated battle, navigation, and sensor computers
Engines: Induction engine
Power: Antimatter reactors rated for 21 power factors
Drive: 1 light-year per day
Hatches: Security (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
(<–1)	Command	Command deck (0/0)	8/8/4
		Mass detector (1/0)	
		Stealth shield (2/2)	
		Jammer (0/1)	
		Multiband radar (0/0)	
		EM detector (0/0)	
		Radio transceiver (0/1)	
		Airlock (0/0)	
		Reentry capsule (0/0)	
		Ordinary computer core (1/0)	
(–1)	Engineering 1	Induction engine (4/4)	12/12/6
		Autosupport (0/3)	
		Hyperdrive (2/*)	
0–1	Engineering 2	Induction engine (4/4)	14/14/7
		Antimatter reactor (3/*)	
		Autosupport (0/3)	
2–3	Auxiliary	Antimatter reactor (6/*)	12/12/6
4–5	Weapons 1	Minelayer (5/1)	10/10/5
6–7	Weapons 2	Minelayer (5/1)	10/10/5
8–10	Weapons 3	Turret (1/0): particle beam (4/5)	10/10/5
11–13	Weapons 4	Turret (1/0): particle beam (4/5)	10/10/5
14–16	Weapons 5	Deflection inducer (3/6)	6/6/3
17–20	Crew	Crew quarters (2/0)	4/4/2

Weapon Data

System	Acc*	Range (Mm)	Type	Damage	Actions
Particle beam (2)	–1	6/12/18	En (e)	d6+3s/d4+1m/d4+3m	2
Minelayer	–1	1	——— as load ———		2
ARN mine (5)	–1	—	LI (*)	d6+2s/d6+2w/d4+1m	0
CHE mine (10)	–1	—	LI (*)	d6+1s/d6w/d4m	0
NUK mine (5)	–2	—	En (*)	d8+3s/d8+3w/d6+2m	0
COR grappler (5)	–1	—	En (*)	See description	0
EMP grappler (5)	–1	—	En (*)	See description	0
Minelayer	–1	1	——— as load ———		2
ARN mine (5)	–1	—	LI (*)	d6+2s/d6+2w/d4+1m	0
CHE mine (15)	–1	—	LI (*)	d6+1s/d6w/d4m	0
COR grappler (5)	–1	—	En (*)	See description	0

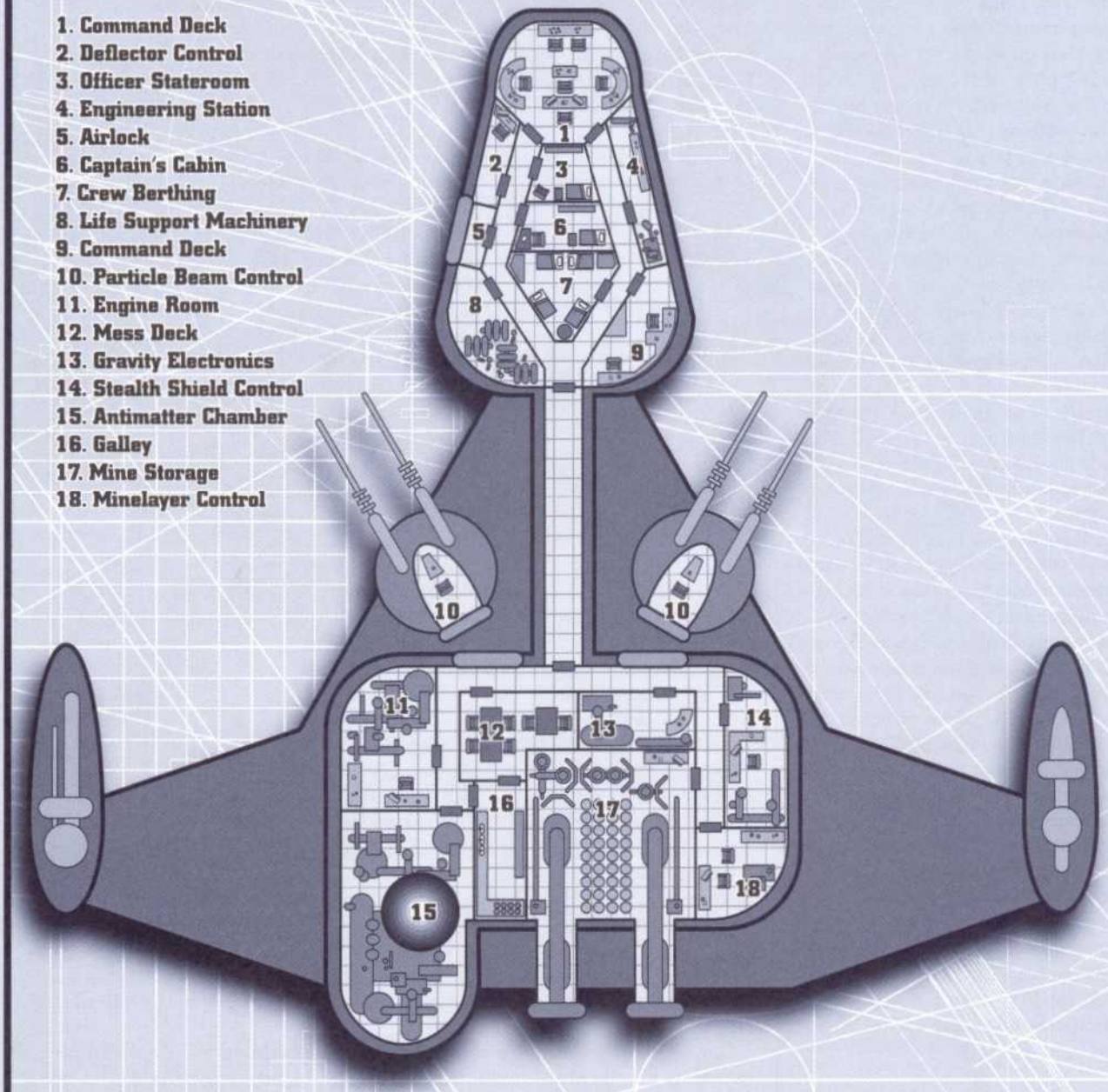
* *Accuracy includes Ordinary battle computer system*

Option: To allow direct fire launches of grapplers, replace one of the vessel's minelayers with a GDS tube. Move all mines to the other minelayer. Cost increase: $150,000.

Option: Alter the configuration of mines or grapplers as desired. Change in cost depends on final payload.

Lorrid Deathseed

1. Command Deck
2. Deflector Control
3. Officer Stateroom
4. Engineering Station
5. Airlock
6. Captain's Cabin
7. Crew Berthing
8. Life Support Machinery
9. Command Deck
10. Particle Beam Control
11. Engine Room
12. Mess Deck
13. Gravity Electronics
14. Stealth Shield Control
15. Antimatter Chamber
16. Galley
17. Mine Storage
18. Minelayer Control



1 square = 2 meters

Creek *Superliner*

The image of the medium freighter—a large, bulky, and slow spaceship loaded down with massive cargo spaces and little else—has become typical because it is common. The bigger the vessel, the more cargo a ship can carry and the more profit its owners can show. Along safe and well-used shipping lanes, there's little reason to include armor, weapons, or defenses. Often, there's no reason to load down the freighter with powerful, expensive engines when doubling the amount of cargo space has the same results in traffic efficiency.

The Creek *Superliner* meets few of the qualifications of a typical medium freighter. A fine mix of breakthroughs of the Energy Age and accepted systems of the earlier era, about the only thing it shares in common with the medium freighter described above is that it's relatively slow and unmaneuverable. Ironically, the *Superliner*'s spacefold drive is also generally considered a difficult system to navigate with, so this adds to the perception of the *Superliner* as a troublesome vessel to helm. Eventually, it became standard to include an excellent navigation computer aboard to ameliorate its deficiencies.

With three kinetic lances and an ablative shield, the *Superliner* in some ways resembles a slow and weak battleship more than a freighter. Given that its important ship sections enjoy a healthy coat of nanofluidic armor, damaging anything on this ship but cargo sections may prove difficult.

With its armament, the *Superliner* can carry only about half the cargo of a more modest medium freighter. Its designer conceived it working on the edge of space, moving important cargo to well-paying colonies. It holds a large crew of eighteen personnel. While many of them have some talent as ship operators, fully half work as laborers, contract crew, or mercenaries. Their job is to ensure the quick and unmolested delivery and pickup of cargo.

Creek *Superliner* (Medium Freighter class) **PL 8** **Cost $17,740,000**

Compartments: 12 Dur: 48
Maneuver Rating: +3 Acc: .25 Mpp
Cruise Speed: 1.5 AU/hour Berthing: 18 crew

Armament: Kinetic lance (3)
Defenses: Ablative shield, jammer
Armor: Non-cargo compartments
Moderate nanofluidic (3 dur) 2d4 (LI), 2d4 (HI), 2d4 (En)
Cargo compartments
Light neutronite (0 dur) d6–1 (LI), d6–1 (HI), d4–1 (En)
Computer: Good computer core, Good dedicated navigation computer
Engines: Induction engine
Power: Singularity generators rated for 18 power factors
Drive: 2 light-years per spacefold
Hatches: Standard (0 dur)

Roll	Comp't	Systems (Dur/Pow)	Dur
(<–3)	Command	Command deck (0/0)	14/14/7
		Kinetic lance (2/1)	
		Weapon link (0/0)	
		Multiphase radar (1/0)	
		EM detector (0/0)	
		Radio transceiver (0/1)	
		Airlock (0/0)	
		Escape pod (2/0)	
		Reentry capsule (0/0)	
		Good computer core (2/0)	
(–3)	Crew	Crew quarters (3/0)	6/6/3
(–1–2)	Engineering	Singularity generator (2/*)	14/14/7
		Induction engine (2/2)	
		Autosupport (0/3)	
		Spacefold drive (3/*)	
0–1	Auxiliary	Singularity generator (4/*)	8/8/4
2–3	Weapons 1	Ablative shield (6/*)	12/12/6
4–5	Weapons 2	Kinetic lance (2/1)	8/8/4
		Weapon link (0/0)	
		Kinetic lance (2/1)	
6–7	Cargo 1	Autocargo (3/3)	6/6/3
8–9	Cargo 2	Autocargo (3/3)	6/6/3
10–11	Cargo 3	Autocargo (2/2)	4/4/2
12–14	Cargo 4	Autocargo (2/2)	4/4/2
15–17	Cargo 5	Autocargo (2/2)	4/4/2
18–20	Cargo 6	Autocargo (2/2)	4/4/2

Weapon Data

System	Acc	Range (Mm)	Type	Damage	Actions
Kinetic lance (3)	0	5/10/20	HI (e)	d4+1w/2d4w/d4+3m	3

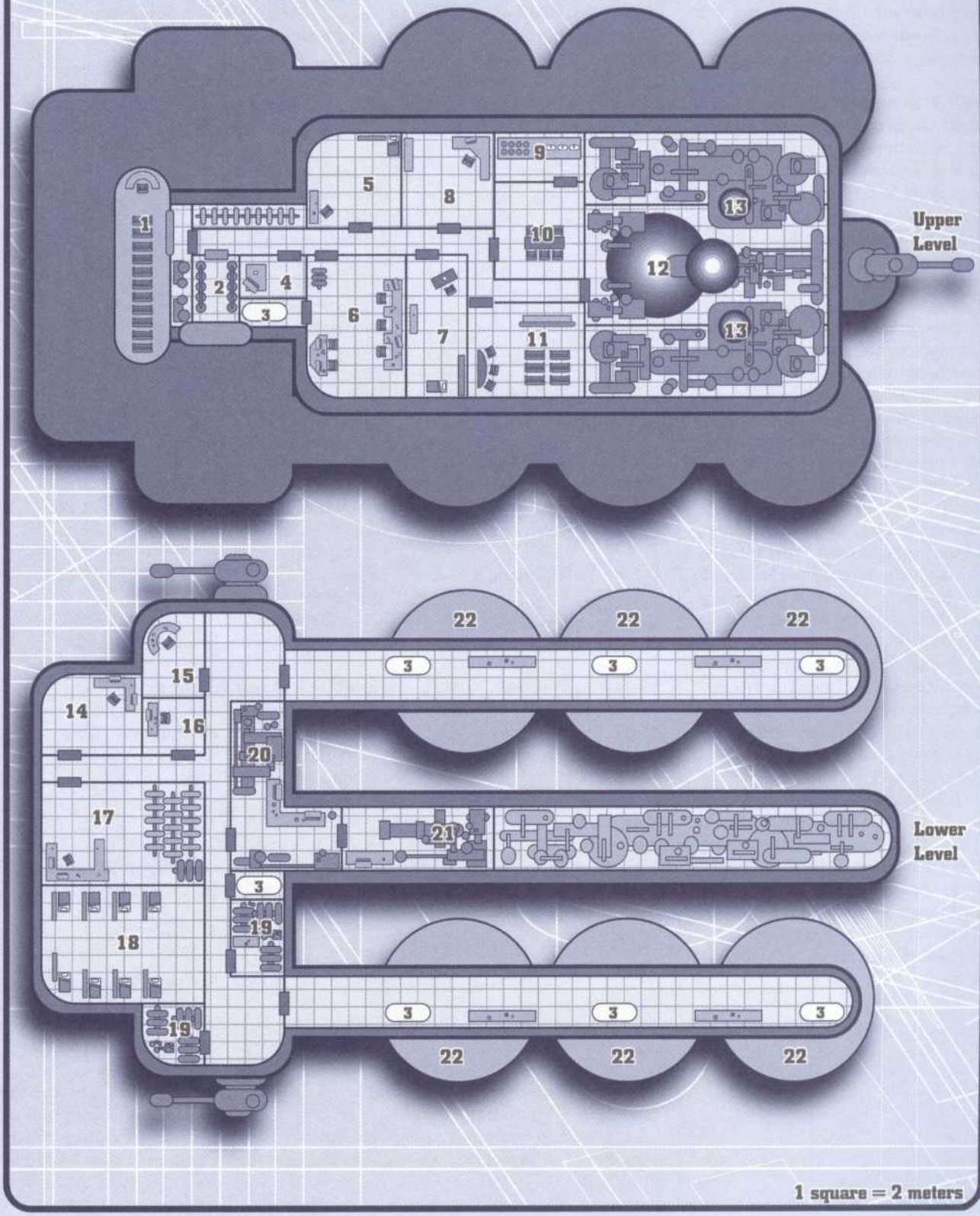
Option: Convert this cargo hauler into a passenger freighter. Each autocargo space switched to a passenger suite adds $20,000 to the vessel's total cost.

Option: In more settled star systems, the well-armed freighter can abandon two of its kinetic lances and its ablative shield, replacing them with an additional ten durability points of cargo space. Cost savings: $2,700,000.

Option: Make this ship a warpship by replacing the spacefold drive with a warpdrive unit. Remove one unit of cargo space to make room for the larger warpdrive. Cost increase: $970,000.

Creek Superliner

1. Escape Pod
2. Airlock
3. Cargo Lift
4. Engineering Station
5. Officer Stateroom
6. Command Deck
7. Captain's Cabin
8. Cargo Control
9. Galley
10. Mess Deck
11. Lounge
12. Spacefold Drive
13. Auxiliary Singularity Chamber
14. Electronics Station
15. Kinetic Lance Control
16. Ablative Shield Control
17. Computer Room
18. Crew Berthing
19. Life Support Machinery
20. Main Engineering
21. Engine Room
22. Cargo Space



Pohlov *Avenger*

Corvettes are designed for two standard purposes: alone, they cast watchful eyes as patrollers, able to defeat most criminals, pirates, and organized military threats presented by scouts and even small fighter squadrons. Since the necessities of power, engines, and life support represent a smaller fraction of larger ships' durability, the corvette represents not merely a linear increase in firepower over smaller craft, but an exponential one.

The Pohlov *Avenger* fits into the standard role of a corvette with ease. Relying on antimatter reactors to offer power and antimatter rockets for thrust, it represents a well-balanced arsenal of destructiveness. The *Avenger*'s main batteries, three plasma cannons placed in turrets, allow a complete coverage of deadly power. The matter torpedoes promise to punch through hardened targets with their greater damage potential, and the missile system delivers plasma rain upon targets that try to evade or keep their distance.

Accompanied by a fine battle and tactical computer, the ship has a strong crew of eighteen, of which at least four stand on duty at any time. The rest can quickly be called to duty should the *Avenger* detect any trouble. Off hours, they can enjoy the luxury of a holoprojection entertainment facility, a privilege uncommon aboard most military craft.

The *Avenger*'s chief weakness lies in its weak armor coating. The vessel relies on a skilled defenses operator, using a deflection inducer, jammer, a defense network, and a dedicated computer, to avert most incoming enemy fire. Most of the time, the trade for specialized systems works in the *Avenger*'s favor. Another problem for the *Avenger* may be its lack of sophisticated sensor systems.

The *Avenger* relies on jumpgates for FTL travel, equipped only with a gate activator, and not an independent FTL system.

Pohlov *Avenger* (Corvette class) **PL 7** **Cost $16,675,000**

Compartments: 12 Dur: 60
Maneuver Rating: +1 Acc: 1.3 Mpp
Cruise Speed: 1.5 AU/hour Berthing: 18 crew

Armament: Matter torpedo, plasma cannon (3), RR launch tube (10 PLA missiles)
Defenses: Deflection inducer, defense network, jammer
Armor: Moderate neutronite (6 dur) d6+1 (LI), d6+1 (HI), d6 (En)
Computer: Good computer core, Good dedicated battle, defenses, navigation, sensor and tactics computers
Engines: Antimatter rockets
Power: Antimatter reactors rated for 21 power factors
Drive: Gate activator
Hatches: Security (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
(<–3)	Command	Command deck (0/0)	6/6/3
		Multiband radar (0/0)	
		EM detector (0/0)	
		IR detector (0/0)	
		Mass detector (1/0)	
		Radio transceiver (0/1)	
		Airlock (0/0)	
		Reentry capsule (0/0)	
		Good computer core (2/0)	
(–3)	Engineering 1	Antimatter reactor (3/*)	8/8/4
		Autosupport (0/3)	
		Gate activator (1/*)	
(–1–2)	Auxiliary	Antimatter reactor (6/*)	12/12/6
0–1	Engineering 2	Antimatter rocket (6/0)	12/12/6
2–3	Engineering 3	Antimatter rocket (6/0)	12/12/6
4–5	Weapons 1	Deflection inducer (3/6)	6/6/3
		Jammer (0/1)	
6–7	Weapons 2	Defense network (2/2)	12/12/6
		Matter torpedo (4/5)	
8–9	Weapons 3	RR launch tube (3/1)	6/6/3
10–11	Weapons 4	Turret (1/0): plasma cannon (3/3)	8/8/4
		Weapon link (0/0)	
12–14	Weapons 5	Turret (1/0): plasma cannon (3/3)	8/8/4
		Weapon link (0/0)	
15–17	Weapons 6	Turret (1/0): plasma cannon (3/3)	8/8/4
18–20	Crew	Crew quarters (3/0)	8/8/4
		Holoprojection bay (1/0)	

Weapon Data

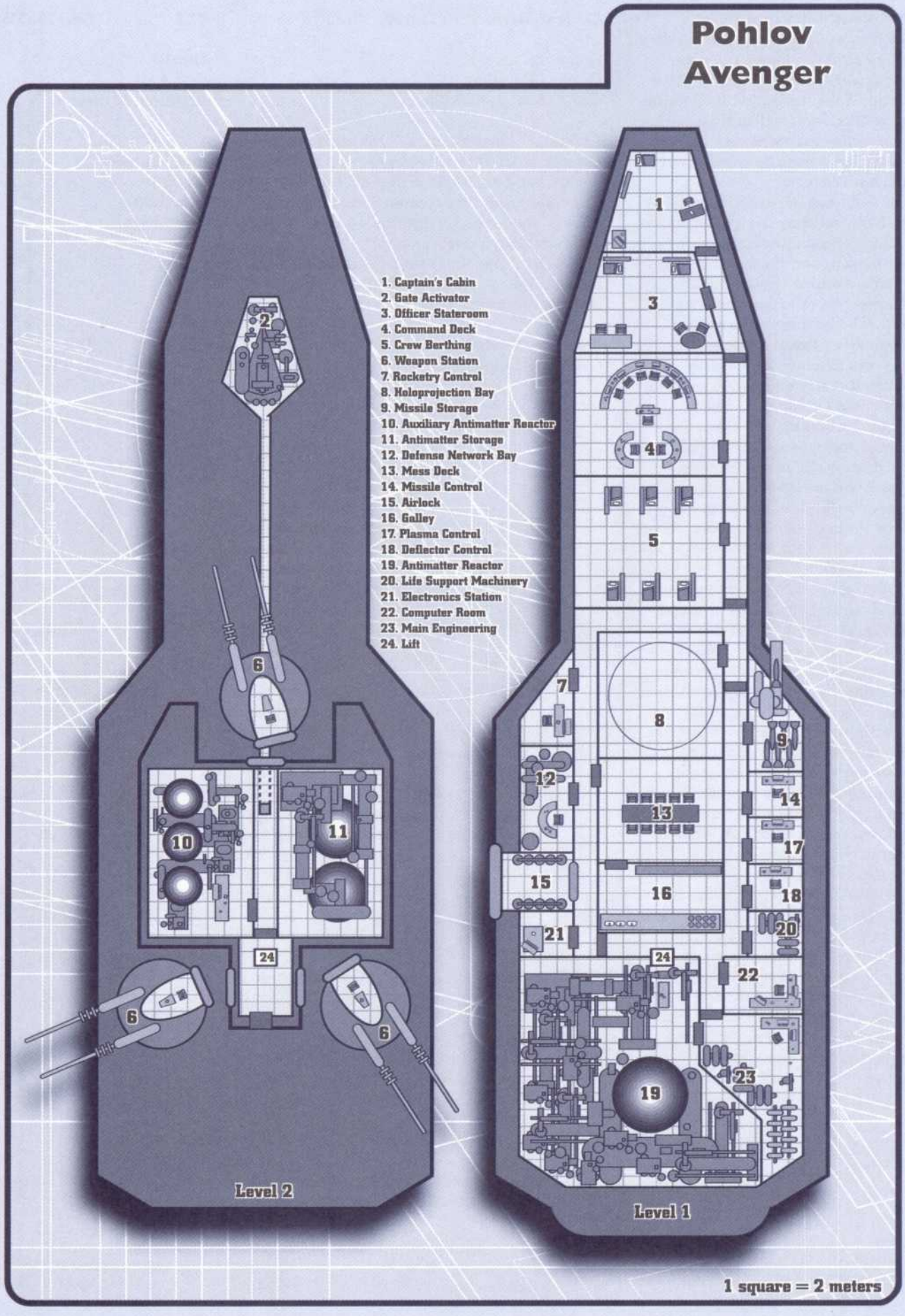
System	Acc*	Range (Mm)	Type	Damage	Actions
Matter torpedo	–2	2/5/10	En (e)	2d6s/2d6w/d6+3m	2
Plasma cannon (3)	–2	6/12/18	En (e)	d6+2w/d8+2w/d6+1m	3
RR launch tube	–				3
PLA missile (10)	–3	15/30/45	En (g)	d6+3w/d8+3w/d6+2m	0

* *Accuracy includes Good battle computer system*

Option: For planetary or installation bombing missions, replace the plasma missiles with nuclear payloads. Cost increase: $2,500,000.

Option: To further increase battlefield effectiveness, remove the luxury that the holoprojection bay offers the crew and upgrade the vessel's computer core and dedicated computer systems to Amazing quality (thus providing an additional –1 step bonus to the use of the ship's weapon systems). Cost increase: $1,550,000.

Pohlov Avenger



Centauri *Devastator*

In the Energy Age, as in the era before, no small craft can match up to the strength of a corvette. Even as miniaturization has allowed for the possibility of well-armed small craft, the same advance allows a greater number of offensive systems to be constructed within a corvette.

The Centauri *Devastator* has everything that a military design could ask for, making no compromise in any department or section. It has a powerful, maneuverable engine, something that earlier corvette designs often lacked. It has a drivewave generator that can allow travel of dozens of light-years in a few short weeks.

When it reaches its destination, the vessel doesn't disappoint. The *Devastator* offers up five direct fire cannons, any of which has the potential to destroy whole ship sections in the span of a few seconds. For ease of use, both the pair of maser cannons and the three kinetic lances are linked together for simultaneous barrage. For defense, the *Devastator* contains both an ablative shield to deflect incoming fire and a energy compiler to absorb their energies for immediate reuse. A holo array keeps enemy sensor crews guessing while a tachyonic accelerator prevents their departure into drivespace.

Finally, the *Devastator*'s designers made the choice not to add a sixth weapon system, instead adding a hangar bay perfect for keeping a space fighter (such as the Centauri *Brand*; see page 67) aboard. While the fighter may not add much to the *Devastator*'s overall firepower, it can act as scout, relay, decoy, or bait in a variety of missions.

Thanks to its fantastic electronics systems, the *Devastator* operates with a very light crew for its size: only twelve personnel are aboard, although with the artificial intelligences that the average ship captain includes, even that may be more than is required.

Centauri *Devastator* (Corvette class) **PL 8** **Cost $21,555,000**

Compartments: 12 Dur: 60
Maneuver Rating: 0 Acc: 4 Mpp
Cruise Speed: 1.5 AU/hour Berthing: 12 crew

Armament: Kinetic lance (3), maser cannon (2)
Defenses: Ablative shield, energy compiler, holo array, jammer
Armor: Light crystallis (0 dur) d6–1 (LI), d6–1 (HI), d6+2 (En)
Computer: Amazing computer core, Amazing dedicated battle, defenses, navigation, sensor, and tactical computers
Engines: Gravitic redirector
Power: Dynamic mass reactors rated for 24 power factors
Drive: 5 light-years per starfall
Hatches: Security (0 dur)

Roll	Compartment	Systems (Dur/Pow)	Dur
(<–3)	Command	Command deck (0/0)	16/16/8
		Kinetic lance (2/1)	
		Weapon link (0/0)	
		Multiband radar (0/0)	
		Drive detector (1/1)	
		Internal monitors (0/0)	
		EM detector (0/0)	
		Jammer (0/1)	
		Drive transceiver (2/2)	
		Radio transceiver (0/1)	
		Airlock (0/0)	
		Reentry capsule (0/0)	
		Amazing computer core (3/0)	
(–3)	Engineering 1	Dynamic mass reactor (4/*)	10/10/5
		Autosupport (0/3)	
		Drivewave (1/*)	
(–1–2)	Auxiliary	Dynamic mass reactor (4/*)	8/8/4
0–1	Engineering 2	Gravitic redirector (3/2)	6/6/3
2–3	Engineering 3	Gravitic redirector (3/2)	6/6/3
4–5	Weapons 1	Ablative shield (4/*)	10/10/5
		Holo array (1/4)	
6–7	Weapons 2	Ablative shield (2/*)	8/8/4
		Energy compiler (2/*)	
8–9	Weapons 3	Tachyonic accelerator (1/2)	18/18/9
		Turret (1/0): kinetic lance (3/1)	
		Weapon link (0/0)	
		Turret (1/0): kinetic lance (3/1)	
10–11	Weapons 4	Turret (1/0): maser cannon (4/3)	10/10/5
		Weapon link (0/0)	
12–14	Weapons 5	Turret (1/0): maser cannon (4/3)	10/10/5
15–17	Crew	Crew quarters (2/0)	4/4/2
18–20	Cargo	Dedicated hangar (5/0)	10/10/5

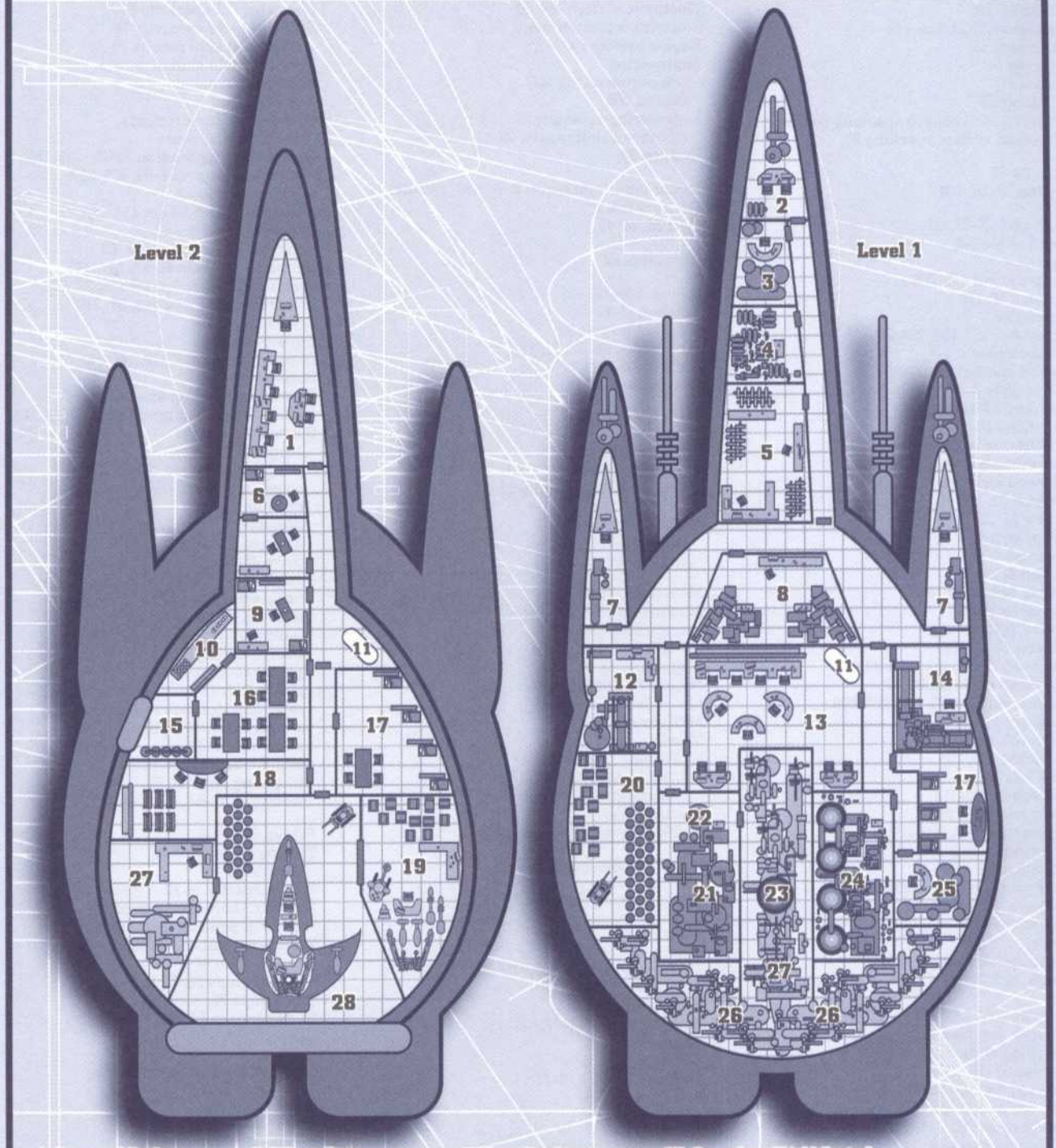
Weapon Data

System	Acc*	Range (Mm)	Type	Damage	Actions
Kinetic lance (3)	–3	5/10/20	HI (e)	d4+1w/2d4w/d4+3m	3
Maser cannon (2)	–4	6/12/30	En (e)	d6+2w/d4+1m/d6+2m	4

* *Accuracy includes Amazing battle computer system*

Option: Remove the dedicated hangar bay and add a fourth kinetic lance and a third maser cannon. Cost increase: $900,000.

Centauri Devastator



1. Command Deck
2. Maser Control
3. Holodefense Control
4. Life Support Machinery
5. Computer Room
6. Captain's Cabin
7. Kinetic Lance Control
8. Shield Control
9. Officer Stateroom
10. Galley
11. Lift
12. Electronics Station
13. Command Deck 2
14. Engineering Station
15. Airlock
16. Mess Deck
17. Crew Berthing
18. Lounge
19. Fighter Maintenance
20. Storage Room
21. Storage Room
22. Mass Reactor
23. Drivewave Generator
24. Compiler Converters
25. Secondary Shield Control
26. Tachyonic Accelerator
27. Engine Room
28. Hangar

1 square = 2 meters

INDEX

This index references the *Starships* accessory (page numbers in *italics*), the *Gamemaster Guide* (in blue), and the *Player's Handbook*.

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Wizards of the Coast, Belgium
P.B. 34
2300 Turnhout
Belgium
+32-14-44-30-44

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