Far Horizons Rules

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FAR HORIZONS is a strategic role-playing game of galactic exploration, trade, diplomacy, and conquest. The first and second editions were designed for play by postal mail. Later editions were designed for play by electronic mail, and many mistakes were made in the transition. Hopefully, this current edition has corrected most of those mistakes.

At the start of a game, each player controls an intelligent species and the home planet on which it lives. As the game progresses, you can explore nearby regions of the galaxy and establish colonies. As you range farther and farther from home, you will encounter other intelligent species. These encounters can be hostile, neutral, or friendly, depending on the participants. Interstellar war is a distinct possibility.

FAR HORIZONS, unlike some similar games, has been designed to make role-playing as easy and practical as possible. In addition to being a rich and realistic simulation, there are no true victory conditions - the game is played solely for enjoyment. However, at the end of the last turn, final statistics for all species will be sent to all of the players so that they can compare their relative strengths and weaknesses. Thus, rather than requiring a massive bloodletting as in some other similar games, it's possible for a peace-loving species to effectively "win".

Still, those who enjoy a more aggressive game, or those who wish to role-play an "evil" or warlike species will not be disappointed. FAR HORIZONS does not discriminate against anyone - it simply tries to be as realistic as possible.

Chapter 1. GAME BASICS

The following sections will discuss the basic concepts used throughout the game.

1.1. THE GAME TURN

A game turn is about five Earth years long. As a result, generations can pass in a single game. Populations will increase and colonies will grow. Since quite a lot can happen in five years, FAR HORIZONS is strategic in nature, rather than tactical. The reason for a five year turn will be explained below.

1.2. THE GALAXY

In FAR HORIZONS, the galaxy is a small open star cluster. It is approximately spherical, but is projected onto an easy-to-use two-dimensional map. The size of the galaxy and the actual number of stars in it will depend on the number of players. As an example, for a game with about 15 players, the galaxy would have a radius of approximately 18 parsecs and contain about 80 usable star systems.

The basic unit of interstellar distance is the PARSEC, which is equal to 3.26 light-years. Thus, every star system in the galaxy will have an X, Y, and Z coordinate in parsecs, relative to the reference point at 0,0,0. Furthermore, all coordinate values are zero or greater. Thus, you can picture the galaxy as floating in a box whose lower, left, rear corner has the coordinates 0,0,0. (Negative numbers were used in earlier games, but players sometimes forgot the minus signs, with disastrous results. Use of only positive numbers will help prevent mistakes.)

1.3. SPACE TRAVEL

In this universe, scientists have discovered only one way to break the barrier imposed by the speed of light. The method is inherently risky. Essentially, a spaceship's engines must "rip" a hole through the space-time fabric in order to travel from one point to another. A ship does this by creating a temporary, private "wormhole" that the ship can pass through. A ship does this by creating and manipulating a small black hole. When a ship travels in this way, it is said to "jump" to its destination.

There is no limit to how far a ship can travel in this way, but greater distances involve greater risks. The technology involved is called "gravitics", and the more experience a species has in this technology, the farther a ship can jump without risk of missing its destination or of being destroyed.

The time needed for a ship to travel through the wormhole is independent of the distance being traveled. However, it IS dependent on the mass of the ship, as shown by the following equation:

$$ \textrm{time in years} = 5\: \tanh (\textrm{mass in grams}) $$

If you're not mathematically inclined, don't worry! What the equation says is that it takes almost exactly five years for anything larger than a pea, since all masses used in the game will be at the extreme asymptotic limit of the equation. Only extremely small masses (such as the photons that

make up radio waves) can take significantly less than 5 years to travel through a wormhole.

Note also that no time goes by for the people on the ship. For them, the move is essentially instantaneous. For the people who remain behind, however, the ship will appear to "wink out" immediately. Five years later, it will reappear at its destination.

Creation of a wormhole is risky business, and there is always a chance that a ship can be swallowed up by the wormhole it creates. If this happens, then the ship and everything it carries will be totally destroyed. It is also possible for a ship to "mis-jump". If this occurs, the ship will not be destroyed, but will simply arrive at the wrong destination. As a species gains knowledge and experience in gravitics technology, its ships will become more reliable and less susceptible to sudden destruction or mis-jumps.

1.4. COMMUNICATIONS

Communications across interstellar distances utilizes the same technology as space travel, but on a much smaller scale. Any two tranceivers can be "tuned" to each other (if both sides cooperate), effectively creating a small wormhole through which radio waves can pass. Also, since radio waves have very close to zero mass, the transmission time is close to zero. Thus, although ships require five years to move between star systems, radio communication is essentially instantaneous, and home planets can always be in instant communication with their ships and colonies. Note, though, that ships in transit are incapable of communicating, since, for them, no time is actually passing.

1.5. THE HOME PLANET

Each player starts the game with a home planet. This is where his species evolved, acquired intelligence, and eventually learned how to travel among the stars.

At the start of the game, the only material resources available to a species are those of its home planet. These resources can be used to build units such as mines, factories, spaceships, planetary defenses, etc. As the game proceeds, a species can colonize other planets and tap them for resources as well.

1.6. TECH LEVELS

A tech level is a measure of how advanced a species is in a specific field of technology. Six technologies are defined and used in this game. Each one is described below:

AF

    attack factor

MINING

    Mining tech level is a measure of how proficient a species is at tapping a planet's natural resources. It includes functions such as mining and farming, and basic refining and food processing. As mining tech level increases, greater quantities of raw materials can be produced.

MANUFACTURING

    Manufacturing tech level is a measure of proficiency at converting raw materials to usable, final

forms. It is used to determine how many units, such as ships, can be built each turn. It also places a limit on the maximum size of ships that a species can build.

MILITARY

Military tech level is a measure of experience in warfare. It indicates the level of sophistication in military strategy, tactics, and weaponry. It is one of the major factors used to determine the outcome of armed conflict.

GRAVITICS

Gravitics tech level is a measure of a species' knowledge of gravity control. Gravitics allows the design of the engines which drive interstellar ships, since a black hole cannot be created and controlled without the ability to manipulate gravitational fields.

LIFE SUPPORT

Life support tech level is a measure of a species' experience in surviving in hostile environments. It is used to construct and maintain artificial shelters on planets with temperatures or atmospheres that differ from the home planet. It also determines the effectiveness of defensive shields used on ships.

BIOLOGY

Biology tech level is a measure of a species' knowledge and experience in the life sciences. Its most obvious applications are in genetic engineering, germ warfare, and terraforming (i.e., using specially designed micro-organisms to modify the atmosphere and micro-flora of a planet, making it more suitable for habitation).

There are many other applications of the six basic technologies in addition to the ones mentioned above. These will be discussed later. After the start of the game, tech levels will increase primarily through research. While there is no limit to how high a tech level can get, in practice it is unlikely that a tech level will ever exceed 100.

1.7. TURN PROCESSING

1.7.1. Sequence of Events

Each turn is processed in six steps, and the order form that you send to the gamemaster has six corresponding sections. These sections are:

1. Combat orders

2. Pre-departure orders

3. Jump orders

4. Production orders

5. Post-arrival orders

6. Strike orders

When your turn is processed, all combat orders are processed first, then all pre-departure orders, then all jump orders, and so on. After yur orders have been processed, a special program is run that

handles population growth and interspecies transactions, and performs several other housekeeping chores. Finally, a "report" program is run that generates summaries that will be sent to the players. Thus, several programs are actually used by the gamemaster to process a turn.

[The strike phase is a limited-combat phase. Any combat that takes place in the strike phase generally takes the form of an initial surprise attack. Combat that requires more time, such as bombardment and siege, will take place in the combat phase of the following turn, and are thus continuations of the combat that began in the strike phase.]

At the end of each report is an order form that you will need to fill out. This form will contain all six sections, even though not all of them may be applicable for the current turn. For example, the jump section cannot be used in the first turn, since you have no ships. Simply delete the sections that do not apply, and fill out and send in those that do.

Each section of the orders begins with a START command and ends with an END command. Each section should only appear ONCE. Thus, each order form will contain the following sections:

```
START COMBAT
;Combat orders belong here.
END

START PRE-DEPARTURE
;Pre-departure orders belong here.
END

START JUMPS
;Jump orders belong here.
END

START PRODUCTION
;Production orders belong here.
END

START POST-ARRIVAL
;Post-arrival orders belong here.
END

START STRIKES
;Strike orders belong here.
END
```

The production section will be started for you, and will have an appropriate PRODUCTION order for each planet you control. This will save you a little time, and will help prevent you from accidentally forgetting to give orders for a planet.

The six sections shown above may appear in any sequence. However, it is recommended that you fill out your orders using the sequence provided, since that is the sequence in which they will be executed. In other words, combat orders will be executed before pre-departure orders, pre-departure orders will be executed before jump orders, and so forth, REGARDLESS of where each

section appears in your order form.

The orders that you give in each section must be reasonable for that section. For example, you may not give JUMP orders in any section except the jump section. BUILD and RESEARCH orders may only be given in the production section. Combat orders may only be given in the combat and strike sections. And so on. Here is a complete list:

1.7.1.1. Combat section

```
Attack
Battle
Engage
Haven
Hide
Hijack
Summary
Target
Withdraw
```

1.7.1.2. Pre-departure section

```
Ally
Base
Deep
Destroy
Disband
Enemy
Install
Land
Message
Name
Neutral
Orbit
Repair
Scan
Send
Transfer
Unload
Zzz
```

1.7.1.3. Jump section

```
Jump
Move
Pjump
Visited
Wormhole
```

1.7.1.4. Production section

```
Ally
Ambush
Build
Continue
Develop
Enemy
Estimate
Hide
Ibuild
Icontinue
Intercept
Neutral
Production
Recycle
Research
Shipyard
Upgrade
```

1.7.1.5. Post-arrival section

```
Ally
Auto
Deep
Destroy
Enemy
Land
Message
Name
Neutral
Orbit
Repair
Scan
Send
Teach
Telescope
Terraform
Transfer
Zzz
```

1.7.1.6. Strike section

```
same as combat section
```

All of these commands will be explained in later sections of this document.

A special note must be made about the TRANSFER command. There is a possible situation in which colonists and supplies could be transferred to a new colony immediately after a jump. If the planet is already inhabited by another species, neither species will know about the new colony until the next turn. To prevent this very unrealistic kind of incident, a TRANSFER to a planet may only be made in the post-arrival phase IF the planet is already inhabited by the species making the transfer. Otherwise, the transfer will have to be done in the pre-departure phase of the next turn. Once the colony has been established, you may TRANSFER goods to the planet in either the pre-departure or post-arrival phases.

1.8. VICTORY CONDITIONS

There are no final winners or losers in Far Horizons, just as there aren't any in other role-playing games. The only purpose of the game is to have fun. However, for those who want to know how well they did relative to the other players, the following will be done:

```
At the end of a game, a final summary report will be sent to all
players, and will contain a list of the total revenue-generating
capacity of each species along with their final tech levels and
other statistics.  These values can be used to get a good idea
of who "won" the game.
```

A game will last between 20 and 100 turns. The actual final turn number will be randomly determined by the gamemaster and will be kept secret until the end of the game is announced. This approach will prevent the unrealistic gameplay that always results when players know that the game is about to end. The gamemaster may arbitrarily and secretly extend the game if he feels it would be inappropriate to interrupt an "interesting" situation, or if he is convinced that everyone is having a lot of fun.

Chapter 2. STARS AND PLANETS

As mentioned earlier, the galaxy of FAR HORIZONS is a small open star cluster, similar to the Pleiades Cluster.

In a real cluster, many of the stars would be components of binary or trinary star systems. In fact, such multiple star systems make up about 85% of all star systems in the Milky Way galaxy. In systems such as these, planets, if any, are likely to have very odd orbits, and if they have atmospheres, their climates are likely to be extremely erratic. As a result, multiple star systems have been totally eliminated from the game. You can assume that they exist, but they will not be shown on star maps or be made available for use by players.

2.1. STARS

The location of a star is indicated by its X, Y, and Z coordinates, which are always positive integers greater than or equal to zero. I assume here that the reader has sufficient technical background to understand how to work with these coordinates (called Cartesian Coordinates). Just as a reminder, though, the distance between any two stars can be calculated using the formula:

$$\textrm{distance} = \sqrt{ (X2 - X1)^2 + (Y2 - Y1)^2 + (Z2 - Z1)^2 }$$

Most distances can be estimated by simply looking at the map and counting squares. Finicky players, however, may want to calculate exact distances using the above formula.

Any region of space defined by a set of specific X Y Z coordinates is called a "sector". Thus, the number of sectors in the galaxy is simply the number of possible combinations of X, Y, and Z. Most sectors are effectively empty. Only a relatively small number of sectors contain usable stars and planets.

2.1.1. SPECTRAL CLASS

The information in this section is for "color" only, and does not play an important role in the game. Feel free to skim through it. Do not let the technical jargon bother you.

In addition to its galactic coordinates, a star is identified by its spectral class, which indicates both its color and its size. In general, stars which radiate more towards the red end of the spectrum are smaller than those which radiate more towards the blue end of the spectrum. There are, however, many exceptions. It is not uncommon to find red giants or blue dwarves. Also, in general, large stars will have more usable planets than small stars.

Here is a list of the most common spectral colors:

Table 1. Spectral Colors

Code	Meaning
O	Blue stars, hottest and largest (eg. Lambda Orionis)
B	Blue-white (eg. Rigel, Spica)

Code	Meaning
A	White (eg. Sirius, Vega)
F	Yellow-white (eg. Canopus, Procyon)
G	Yellow (eg. Earth's sun, Capella))
K	Orange (eg. Arcturus, Pollux)
M	Red stars, coolest and smallest (eg. Antares, Betelgeuse)

Here is a list of the most common spectral types:

Table 2. Spectral Types

Code	Meaning
(not marked)	main sequence star
d	ordinary dwarf star
g	ordinary giant star
D	degenerate dwarf star

Each class contains ten subdivisions numbered 0 through 9. Thus an F5 star is approximately halfway between F0 and G0. Zero indicates the hottest within the spectral class, while 9 indicates the coolest with the class.

Here are some examples:

Table 3. Star Code Examples

Example	Meaning
O8	Blue
dF1	Yellow-white dwarf
DA5	Degenerate white dwarf
G6	Yellow
gG9	Yellow giant
dM5	red dwarf
DB	Degenerate blue-white dwarf
gK7	Orange giant

It is customary to drop the number in the designation of degenerate dwarf stars. Thus, in the astronomical literature, one is more likely to see "DA" rather than "DA5". I have left them in, however, for consistency.

The star map which you will receive from the gamemaster will be two- dimensional, and will show X and Y coordinates on the axes. If a star exists at a particular X,Y coordinate, then a number and a

spectral type will be displayed at that location. The number will be the Z coordinate. Thus, if you see the following:

```
  12
 gF6
```

at the position on the map where X=5 and Y=9, it indicates that a giant yellow- white star is located at coordinates X=5, Y=9, Z=12.

2.2. PLANETS

Planets are real estate, and are the ultimate source of all wealth and power in the game. As a result, planets are also the most common cause of interstellar conflict.

In the following sections, the various terms used to describe a planet's physical characteristics will be discussed. It is by evaluating these characteristics that a player can decide if a planet is suitable for colonization and/or exploitation by his species. For reference, here is a sample of a star system scan:

```
    Coordinates:    x = 7   y = 10  z = 18  stellar type =  A0   8 planets.

                    Temp  Press Mining
    #  Dia  Grav Class Class  Diff  LSN  Atmosphere
    ----------------------------------------------------------------
    1    5  0.28  23     3    0.37   42  Cl2(100%)
    2   14  0.80  23     6    0.38   39  F2(33%),H2O(67%)
    3   12  0.91  18     9    0.65   24  HCl(38%),Cl2(32%),F2(30%)
    4   21  2.00  15     6    0.38   24  CO2(29%),HCl(43%),Cl2(17%),F2(11%)
    5   14  0.96  10     9    2.25    0  N2(47%),CO2(23%),O2(30%)
    6  189  2.67   4    18    4.34   33  CH4(49%),NH3(48%),N2(3%)
    7  103  1.94   3    17    0.49   33  H2(58%),CH4(42%)
    8   34  2.46   3    11    0.77   21  He(40%),N2(60%)
```

2.2.1. PLANET NUMBER

Each planet has a number, indicating its relative position around the sun. Planet number 1 is closest to the sun. The planet with the largest number is farthest from the sun. Actual distances are not important for game purposes. In the above sample, there are eight planets numbered 1 through 8.

2.2.2. PLANET DIAMETER

A planet's diameter is listed under "Dia" and is the diameter of the planet in thousands of kilometers. Thus, in the above sample, planet #5 has a diameter of 14,000 kilometers. (For comparison, Earth has a diameter of approximately 13,000 kilometers, and Jupiter has a diameter of about 143,000 kilometers.)

2.2.3. PLANET GRAVITY

A planet's gravity is listed in the "Grav" column, and is given in standard Earth gravities. Thus, Earth would have a value of 1.00. In the above sample, a person standing on the surface of planet #4 would weigh twice as much as on Earth.

2.2.4. TEMPERATURE CLASS

A planet's temperature class is listed in the "Temp Class" column and can have one of the following values:

Table 4. Temperature Class

Temperature Class	Degrees Celcius	Examples
1	-273	Pluto, absolute zero
2	-240	Mercury (dark side)
3	-210	Neptune
4	-180	Titan (moon of Saturn)
5	-150	Uranus, Saturn
6	-120	Jupiter
7	-90	
8	-60	
9	-30	Mars
10	0	
11	30	Earth
12	60	
13	90	
14	120	
15	150	
16	180	
17	210	
18	240	
19	270	
20	300	
21	330	
22	360	
23	390	
24	420	
25	450	Venus

Temperature Class	Degrees Celcius	Examples
26	480	
27	510	Mercury
28	540	
29	570	
30	600	

The temperatures listed in the table are approximate, average temperatures that can be experienced on the surface of the planet. Colonies are more likely to prosper if the temperature class of a planet is as close as possible to that of the home planet. If this is not the case, life support technology will have to be applied to produce an artificial environment for the colony.

2.2.5. PRESSURE CLASS

A planet's pressure class is listed in the "Press Class" column and can have one of the following values:

Table 5. Pressure Class

Pressure Class	Pressure	Examples
0	0.0000	Mercury,vacuum
1	0.0020	
2	0.0039	
3	0.0078	Mars
4	0.0156	
5	0.0312	
6	0.0625	
7	0.125	
8	0.25	
9	0.5	
10	1	Earth
11	2	Uranus
12	4	
13	8	Neptune
14	16	Venus
15	32	
16	64	
17	128	
18	256	

Pressure Class	Pressure	Examples
19	512	
20	1024	Saturn
21	2048	
22	4096	
23	8192	
24	16384	
25	32768	
26	65536	Jupiter
27	131072	
28	262144	
29	524288	

The pressures listed in the above table are multiples of Earth "atmospheres" and are approximate, average values that can be experienced on the surface of the planet. Colonies are more likely to prosper if the pressure class of a planet is as close as possible to that of the home planet. If this is not the case, life support technology will have to be applied to produce an artificial environment for the colony.

2.2.6. MINING DIFFICULTY

A planet's mining difficulty is listed under "Mining Diff". Mining difficulty is a relative figure-of-merit which indicates how difficult it is to extract or utilize a planet's natural resources. Higher values represent greater difficulties. This value will be used to determine how much raw materials can be produced on a planet during each game turn.

2.2.7. LIFE SUPPORT NEEDED (LSN)

The number in the column labeled "LSN" is the amount of Life Support technology that your species needs to survive on the planet. If your Life Support tech level is lower than this value, then your species may not safely colonize the planet, and any attempt to colonize the planet will result in the destruction of the colony. If your Life Support tech level is equal to or greater than this value, then your species may safely colonize the planet. We will discuss later how these values are determined.

Keep in mind that these values apply only to the species that does the scan. If you receive a scan from another player, the LSN values will probably not apply to your species.

2.2.8. PLANETARY ATMOSPHERE

A planetary atmosphere will be described in terms of the gases that are its major components. Each gas in the atmosphere will have a percentage value associated with it. The following gases and their symbols are used in this game:

Table 6. Gas Codes

Code	Meaning
H2	Hydrogen
CH4	Methane
He	Helium
NH3	Ammonia
N2	Nitrogen
CO2	Carbon Dioxide
O2	Oxygen
HCl	Hydrogen Chloride
Cl2	Chlorine
F2	Fluorine
H2O	Water Vapor or Steam
SO2	Sulfur Dioxide
H2S	Hydrogen Sulfide

For example, an Earth-type atmosphere would be described as N2(78%), O2(22%). This means that Earth's atmosphere consists of approximately 78% Nitrogen and 22% Oxygen.

2.2.9. FURTHER NOTES ON TEMPERATURE, PRESSURE, AND ATMOSPHERE

The temperature, pressure, and gaseous components of a planet are the prime criteria by which you can decide if the planet is suitable for colonization by your species. Furthermore, there are many possible combinations, and finding a planet that closely matches your home planet will not be easy.

For planets with a pressure class greater than about 20, the gases in the atmosphere will usually condense into liquids, and will often even solidify as you get closer to the surface. On these planets, there is often no clear distinction between the atmosphere and the solid surface. These planets are usually gas giants. Only the most intrepid and advanced species would ever try to colonize the surface of such a planet since it is so inherently hostile to life. Because of this, any colonies that you do establish "on" such planets will actually be on moons orbiting the planet, artificial satellites, etc.

If you wish to colonize or exploit a planet that is unsuitable for your species, then some form of life support must be provided. This is where your Life Support tech level will play an important part. A low value for this technology will give you few options - you will have to search longer and farther from home to find a planet that is suitable for colonizing. As your Life Support tech level increases, you will have a wider range of options.

Another possibility open to a species is to actually modify or "terraform" the planet. This can be done by seeding the atmosphere with specially designed micro-organisms, and by operating large plants on the surface that will convert the atmosphere to something more suitable. Both temperature and pressure classes can also be changed in this way. However, terraforming is available only to species with relatively high Biology tech levels.

Chapter 3. SETTING UP FOR THE GAME

When a player is ready to enter the game, he must fill out a Set-up Form and send it to the gamemaster. The form is in Appendix D. The following sections explain how to fill it out.

3.1. TECH LEVEL POINT ALLOCATION

A starting player has a total of 15 points that can be allocated to Military, Gravitics, Life Support, and Biology tech levels. Any combination is allowable as long as they add up to 15.

A tech level can even be zero if you decide that your species has no knowledge in that area. If Gravitics tech level is zero, then you may only build sub- light ships. If your Life Support tech level is zero, then none of your ships will have defensive shields. If a tech level is zero, then it can only be raised if another species transfers the knowledge to you. We'll discuss how to do this later.

All species start the game with Mining and Manufacturing equal to 10.

3.2. SPECIES, HOME PLANET AND GOVERNMENT

Choose a name for your species. It can be something out of science fiction or something you make up. Feel free to use your imagination! Examples: Human, Kenda Jo, Klingon, Graxian, Jubjub Denboy, Ferengi, Mo Ja'adebi, etc.

Choose a name for your home planet. Examples: Earth, Mars, Barsoom, Dune, Giver of Life, Korunkorunkoruniman, Toi di Bai, etc.

Choose a name for your government or political system. Examples: The United States of America, The Korun Federation, The Holy Alliance of Denadan, The Jubjub Denboy Empire, etc.

All of the above names are limited to 31 characters and will be truncated if they are longer. When referring to them later, case will not be significant. Names may contain spaces and any printable characters except commas and semi-colons. ALL characters in a name, including spaces, are included in the 31-character limit. Names may NOT contain tabs!

Name the type of government or political system of your species. (In this game, we assume that all planets owned by a species are run by a single government.) Be descriptive but limit yourself to 31 characters. Examples: Libertarian Democracy, Communist Totalitarianism, Constitutional Monarchy, Absolute Dictatorship, Benevolent Plutocracy, Slaver Republic, Ruthless Oligarchy, Theocratic Monarchy, Military Republic, etc.

The political system you choose could have an impact on the game, since species may react to each other differently, depending on ideology. Also, since Far Horizons is a role-playing game, the player should always operate within the limitations imposed by the type of government he chooses.

3.3. PROCESSING TURNS

After the gamemaster has received your set-up information, he will either send you a map of the galaxy or he'll tell you where you can obtain a copy via ftp. He will also send you a status report

which contains a detailed description of your home planet and its production capabilities. At the end of the status report, there will be an order form that you can fill out for your first turn.

In the following sections, we will discuss these items in more detail.

3.4. STAR SYSTEM DATA

The star system data sent to you for the first turn provides a detailed description of the home star system. Refer to Chapter 2 if you have any problem deciphering the information.

Star system data can be provided to you for every star system that your species visits. However, you will not receive this information automatically, but must specifically request a "scan". This can be done in the pre-departure or post- arrival section of the orders you send to the gamemaster. (We'll have more to say about the 'scan' command later.)

3.5. SPECIES STATUS REPORT

This section of the information sent to you describes your species' current situation. At the start of a game, you will not have any planetary defenses, ships, etc. You start the game with a blank slate. You DO, however, have mining and manufacturing capability which you can start using immediately to build ships and other items.

Names of items that are available for use on a planet will be printed out in full, along with their class abbreviation, required carrying capacity, and quantity. For example:

$$\textrm{Raw Material Units}(\textrm{RM},\textrm{C1}) = 17$$

The above example indicates that the planet has 17 unused raw material units, which require a carrying capacity of 1 each, and have the abbreviation "RM". (We'll have more to say about raw material units and carrying capacity later.)

Ages of ships and their orbital status will be indicated as in the following example:

```
CT Derby Dan (A5,O6)
```

Here, "CT" is the abbreviation for a corvette. "A5" indicates that the age of the ship is 5 turns. The letter "O6" indicates that the ship is in orbit around planet number 6 (as opposed to being landed on the surface). If a ship is on the surface (i.e., "landed"), then "L" will be used. If a ship is in deep space, not associated with any planet, the letter "D" will be used. If a ship voluntarily withdrew from combat during the strike phase, then "WD" will be used. If a ship was forced to jump using Forced Jump Units during the strike phase, then "FJ" will be used. If a ship is still under construction, then the complete designation will be simply "©". (We'll have more to say about landing, orbiting, and combat later.)

The rest of the status section is intended to be self-explanatory. It indicates what your current Mining and Manufacturing Bases are and how much you can produce in the current turn. (Abbreviations MI = Mining Tech Level, MA = Manufacturing Tech Level, and MD = Mining Difficulty.) How to use this data will be described later. The atmospheric requirements and the list

of gases poisonous and harmless to your species will be used later in the game to decide whether or not other planets are suitable for colonization. How to colonize planets will be described later.

3.6. NOMENCLATURE

In order to make turn-processing as easy as possible for the gamemaster, and to allow as much processing as possible to be done by the computer, certain naming conventions have been established. Players should be careful to follow these conventions carefully.

All items in the game have a 2-5 letter abbreviation. For example, heavy cruisers use the designation "CA", while starbases use "BAS". These class designations should ALWAYS be used when giving orders for the items.

Ship and planet names are limited to 31 characters and will be truncated if they are longer. Case is not significant. Thus, the following names for a heavy cruiser are all the same:

```
CA USS Enterprise
ca uss enterprise
CA USS ENTERPRISE
```

The particular upper/lower case combination that you use the first time you name a ship or planet will be used in all subsequent reports. You may use ANY combination, however, in subsequent orders.

Names may contain spaces and any printable characters except commas and semi-colons. ALL characters in a name, including spaces, are included in the 31 character limit.

Chapter 4. MINING AND MANUFACTURING

In order to explore the galaxy, you will need spaceships, among other things. The following sections will discuss how mining and manufacturing are used to produce the items you will need.

4.1. RAW MATERIAL UNITS

As was mentioned earlier, Mining tech level does not apply strictly to mining, but also includes such operations as drilling for oil, refining metals, growing, harvesting, and processing crops, etc. In other words, it is a generic term that covers all aspects of tapping a planet's natural resources. This technology is used to produce all of the raw materials that, in turn, are used for final production. Thus, mining technology produces raw materials and manufacturing technology consumes them.

In FAR HORIZONS, quantities of raw materials are measured in RAW MATERIAL UNITS. The number of raw material units that can be produced on a planet in a single turn is:

$$\textrm{Raw Material Units} = \dfrac{\textrm{Mining Tech Level} \times \textrm{Mining Base}}{\textrm{Mining Difficulty}}$$

MINING BASE is a relative measure of the total physical plant, acreage, infrastructure, etc. that is available on the planet for the production of raw materials. Thus, it is a measure of how many mines, farms, drilling facilities, steel mills, etc that can be used by the planet's population.

For example, if your mining tech level is 4, your mining base is 136 and the planet's mining difficulty is 1.24, then you can produce

$$\dfrac{4 \times 136}{1.24} = 438.71 = 438 \textrm{ raw material units}$$

in the current turn. Note that fractions are always dropped. Since current values are always shown on status reports that are sent to players, it will NOT be necessary for players to do these calculations.

The mining base on all home planets will automatically increase by about 2% per turn. On colonies, however, the mining base can only be increased by shipping in colonists and installing colonial mining units (we'll have more to say about this later). This, in fact, is how colonies are actually started.

When referring to raw material units in orders which you send to the gamemaster, use the abbreviation "RM". We'll have more to say about this later.

Finally, unused raw material units may be carried over into later turns. In effect, such carry-over is the equivalent of long term storage and stockpiling.

4.2. PRODUCTION CAPACITY

A species' PRODUCTION CAPACITY is a measure of its ability to convert raw material units into final products. Specifically, it is a measure of the number of raw material units that may be converted into usable products in a single turn. This value is determined as follows:

$$\textrm{Production Capacity} = \textrm{Manufacturing Tech Level} \times \textrm{Manufacturing Base}$$

MANUFACTURING BASE is a relative measure of the total physical plant available on a planet for the conversion of raw material units into final products. Thus, it is an indication of how many factories, dock yards, processing plants, etc. that can be used by the planet's population.

For example, if manufacturing tech level is 6 and manufacturing base is 142, then

$$\textrm{Production Capacity} = 6 \times 142 = 852$$

in the current turn. Thus, the planet has the production capacity to "consume" 852 raw material units and "purchase" 852 units of final products. Since current values are always shown on status reports that are sent to players, it will NOT be necessary for players to do these calculations.

The manufacturing base on all home planets will automatically increase by about 2% per turn. On colonies, however, the manufacturing base can only be increased by shipping in colonists and installing colonial manufacturing units (we'll have more to say about this later).

Production capacity can only be utilized at its maximum if sufficient raw material units are available. You cannot convert what you don't have. Furthermore, production capacity cannot be carried over into later turns. If you don't utilize your full production capacity, then it simply means that your production facilities are not operating at full capacity.

It is possible to use raw materials in the same turn as they are produced. They do not have to be stockpiled in earlier turns. Thus, the total number of raw material units available for manufacturing in the current turn is the sum of what was carried over from the previous turns plus what will be produced in the current turn.

Chapter 5. PRODUCTION

At the end of each status report that you receive, there will be an order form which you must fill out and send to the gamemaster. In it you will provide your orders for the current turn. The form has sections for combat orders, pre-departure orders, jump orders, production orders, post-arrival orders, and strike orders.

At the start of a game, you will only be able to provide production orders for one planet - your home planet. In later turns, you will need to fill out orders for each planet on which you have production capacity.

Production for each planet must be preceded by the order:

```
PRODUCTION PL name
```

where "PL" is the class abbreviation for a planet and "name" is the name of the planet. This command indicates that the orders that follow apply only to the indicated planet. Orders for each planet must be preceded by a PRODUCTION command.

Each section of the orders is started for you, and you must provide your specific orders. For example, if your home planet is called "Earth", and you have a colony called "Mars", the initial production section will look something like this:

```
START PRODUCTION
PRODUCTION PL Earth
; Enter your production orders for planet Earth here.

    PRODUCTION PL Mars
    ; Enter your production orders for planet Mars here.

END PRODUCTION
```

Note that some lines begin with a semi-colon. The semi-colon indicates that the line is actually a comment and that the computer should ignore it. You may add comments of your own. Comments may appear anywhere and always start with a semi-colon. Everything on a line that follows a semi-colon is ignored by the computer. Completely blank lines are also ignored.

Each order begins with a command word, such as "TRANSFER", "RESEARCH", etc. These command words are not case sensitive and may be truncated to just the first THREE letters. Any letters after the first three are ignored. Thus, all of the following are equivalent to "RESEARCH": "reS", "RESEA", "REsoQQQ", etc.

When a name (such as the name of a ship or planet) is not the last item on a line, it should be terminated by a comma. This is necessary because names can contain spaces. Thus, in the following example, the name "Laughing Dog" is immediately followed by a comma:

```
JUMP    CT Laughing Dog, PL Shangri La
```

Note though that "Shangri La" is NOT followed by a comma, since it is the last item on the line.

> WARNING! Omitting a required comma is one of the most common mistakes made by players. It is also one of the most frustrating, since the computer will reject the order.

You may use as many tabs and/or spaces as you wish to separate items in a command to make it more readable. Tabs and spaces at the very beginning of a command line are ignored. For example, the following are valid orders:

```
Orbit   FF  Thomas Edison,     PL  Mars
JUMP    PB  Benjamin Franklin,  12  7   18
```

Tabs, like commas, will terminate a name. However, use of commas is recommended because tabs are not always easily visible. Any spaces that appear in a name will become part of the name.

If a comment appears after an order on the same line, spaces and tabs that precede the semi-colon are ignored. Thus, there is no need to terminate a name with a comma if the name is immediately followed by a comment. For example:

```
Jump    TR7 Love Dove,  PL Mars    ;Deliver new colonists.
```

Note that "Mars" is not followed by a comma, and that the spaces between "Mars" and the semi-colon will not be considered as part of the name "Mars".

Any items that you may wish to build, such as ships, planetary defenses, etc. will have a "cost" of equal amounts of raw material units and production capacity. Thus, if you wish to build a spaceship with a cost of 200, then a total of 200 raw material units will be used in its construction, and a total production capacity of 200 will be needed to actually build it.

Except for ships, all items must be built in a single turn. You can take as many turns as you like to build ships. Thus, if we continue the above example, you could build the ship in, say, 4 turns. You could allocate 100 raw material units and production capacity in the first turn, 70 in the second turn, 0 in the third turn, and 30 in the fourth turn.

Finally, keep in mind that raw material units and production capacity must always be spent in equal amounts. Thus, for example, if your production capacity is greater than the number of raw material units, then the excess may not be used. Also keep in mind that unused raw material units MAY be carried over into later turns, but that unused production capacity may NOT.

5.1. SPACESHIPS

Spaceships come in all sizes as can be seen in the following table:

Table 7. Spaceship Classes

Minimum MA	Abbr	Class	Tonnage	Carrying Capacity	FTL Cost	Sub-light Cost
2	PB	Picketboat	10,000	1	100	75
4	CT	Corvette	20,000	2	200	150
10	ES	Escort	50,000	5	500	375
20	FF	Frigate	100,000	10	1,000	750
30	DD	Destroyer	150,000	15	1,500	1,125
40	CL	Light Cruiser	200,000	20	2,000	1,500
50	CS	Strike Cruiser	250,000	25	2,500	1,875
60	CA	Heavy Cruiser	300,000	30	3,000	2,250
70	CC	Command Cruiser	350,000	35	3,500	2,625
80	BC	Battlecruiser	400,000	40	4,000	3,000
90	BS	Battleship	450,000	45	4,500	3,375
100	DN	Dreadnought	500,000	50	5,000	3,750
110	SD	Super Dreadnought	550,000	55	5,500	4,125
120	BM	Battlemoon	600,000	60	6,000	4,500
130	BW	Battleworld	650,000	65	6,500	4,875
140	BR	Battlestar	700,000	70	7,000	5,250

"Minimum MA" is the minimum Manufacturing tech level that a species must have before it is capable of building a ship of the corresponding tonnage. For example, a species must have a Manufacturing tech level of 40 or higher in order to be able to build a light cruiser.

"Abbr" is the abbreviation that will be used for the corresponding class of ship. The correct abbreviation must ALWAYS be used when making reference to a specific ship. Thus, if you build a battleship named "USS Iowa", you must always refer to it as BS USS Iowa. You are free to give your ships whatever names you wish, as long as you conform to some simple naming conventions that will be discussed later.

"Tonnage" is the ship's fully loaded deadweight in long tons in standard gravity. (Note that the maximum tonnage that a species can handle is equal to 5000 times the Manufacturing tech level.)

"Carrying Capacity" is the amount of cargo units or colonist units units that a ship can carry. More will be said about this later. (Note that carrying capacity is equal to the tonnage divided by 10,000.)

"FTL Cost" is the number of raw material units and production capacity needed to build a ship capable of interstellar travel (FTL stands for "Faster-than- light").

> Note that the FTL cost is equal to the tonnage divided by 100.

"Sub-light Cost" is the number of raw material units and production capacity needed to build a ship that is NOT capable of interstellar travel. These ships have all of the capabilities of the equivalent FTL ship, except that they must either remain in the star system in which they were constructed, or move very slowly from one sector to the next. (Note that the sub-light ship cost is equal to the FTL cost minus 25%.)

To build ships, use the BUILD command, and be careful to use the correct class abbreviation. For example:

```
START PRODUCTION
PRODUCTION PL Earth
; Enter your production orders for planet Earth here.

    ;Build sub-light frigate and pay for all of it now. Cost is 750.
    BUILD   FFS Farragut

    ;Build light cruiser. Pay one-quarter now (500) and the rest (1500)
    ; later...
    BUILD   CL  Guardian,   500

END PRODUCTION
```

Note that if a payment amount is not specified, then the ship will be completely built. The computer will calculate the needed cost. You will, of course, have to keep track of the costs yourself to make sure that you don't try to spend more than what you have.

To continue construction on a ship, use the CONTINUE command, as in the following examples:

```
START PRODUCTION
PRODUCTION PL Earth
; Enter your production orders for planet Earth here.

    ;Pay 1250 more on the dreadnought we started a while back...
    CONTINUE   DN Dynamite Dan,   1250

    ;Finish the light cruiser we started last turn...
    CONTIN  CL  Guardian

END PRODUCTION
```

If you do not specify the amount to spend, then the computer will calculate the cost needed to finish construction.

NEVER use the same name for two different ships, even if their classes are different. For example, if corvette "CT Danny Boy" already exists, then an order to build frigate "FF Danny Boy" will fail.

5.2. COMBAT EFFECTIVENESS

In this section, we will digress slightly and consider just how effective the above-listed ships would be in combat situations.

In a game where each turn is five years long, any rules regarding combat must, of necessity, be highly abstract. Furthermore, FAR HORIZONS is a strategic game, as opposed to a tactical game. And since the game must be played by mail, it is not possible for players to be directly involved in the details of space combat. As a result, the outcome of all battles must be determined by the gamemaster's computer.

Whenever combat does occur, the computer will assign probabilities defining each side's offensive and defensive potentials. Offensive potentials will depend most heavily on the numbers and sizes of the ships (i.e. how much firepower is available) and their Military tech levels (i.e. how effective their weaponry and tactics are). Defensive potentials will depend most heavily on the sizes of the ships (i.e. how much armor and defensive shield generators can be carried) and their Life Support tech level (since the design of shields is an application of life support technology).

MOST IMPORTANTLY, a single, large ship has MUCH more offensive and defensive capability than several smaller ships of the same total tonnage. For example, a single frigate (100,000 tons) could EASILY destroy a fleet of five corvettes (20,000 tons each) or ten picketboats (10,000 tons each) if tech levels are about the same.

Each battle will consist of one or more "rounds", during which ships on either side may be damaged or destroyed. The battle will proceed until one side is destroyed or forced to leave.

Thus, the players will not be directly involved in determining the outcome of a battle. Only the results of a battle will be reported to them, on their status reports.

5.3. PLANETARY DEFENSES

Planetary defenses are intended to protect a planet from attack by enemy ships. They can attack and be attacked by ships in space near the planet. A planet may not be controlled by an invading force until all planetary defenses have been destroyed. Planetary defenses can also be used in besieging a planet if they are on the planet that is under siege.

In this game, we will not be concerned with the number, location or strength of the individual bases and facilities that make up a planet's planetary defenses. If a planet is attacked, only the total planetary defense strength is important.

Specifically, each planetary defense unit will have a cost of 1, and will have the combat "value" of a 50 ton FTL warship. For example, if a planet has produced 2000 planetary defense units (at a total cost of 2000), then it will have the same combat effectiveness as a 100,000 ton frigate.

At first glance, it might seem that planetary defenses are not very effective for the amount spent in their construction. Keep in mind, though, that planetary defenses can grow without limit, becoming more and more powerful at each step in their growth. Also, planetary defenses are not limited in size by the species' Manufacturing tech level, as ships are. And, as we will see later, planetary defenses don't suffer from aging effects.

When referring to planetary defenses in orders, use the abbreviation "PD". Each planetary defense unit requires a cargo capacity of 3.

To construct planetary defenses, use the BUILD command, as in the following examples:

```
START PRODUCTION
PRODUCTION PL Earth
; Enter your production orders for planet Earth here.

    Build   102 PD  ; Build 102 planetary defense units. Total cost = 102.

    PRODUCTION PL Vega VI
    ; Enter your production orders for planet Vega VI here.

    BUI 55 pd   ; Build 55 planetary defense units. Total cost = 55.

END PRODUCTION
```

The units produced will remain on the producing planet unless they are transferred elsewhere.

5.4. TRANSPORTS

Transports are ships that are specially designed to carry colonists and cargo. They CAN take part in combat, but their offensive and defensive capabilities are about one-tenth that of warships. (As indicated in the warship list above, warships also have carrying capacity, but it is much less than a transport of the same tonnage.)

Transports can be built in any multiple of 10,000 tons. The maximum tonnage, as for other ships, is 5000 times the Manufacturing tech level.

The carrying capacity of a transport is the total number of colonist units or cargo units (or combination thereof) that a transport can carry at any one time. Colonist units will be discussed later. A cargo unit is the equivalent of one raw material unit. For example, a transport with a carrying capacity of 200 could carry 90 colonist units and 110 raw material units. Transports should use the class abbreviation "TRn", where "n" is the tonnage divided by 10,000.

The carrying capacity of a transport is calculated as follows:

$$\textrm{Transport Carrying Capacity} = (10 + n/2) \times n$$

For example, a TR7 (i.e. a 70,000 ton transport) has a carrying capacity of

$$ (10 + 7/2) \times 7 = (10 + 3) \times 7 = 91 $$

Note that fractions are dropped in the division.

Here are some more examples:

Table 8. Transport Examples

Minimum MA	Abbr	Tonnage	Carrying Capacity	FTL Cost	Sub-light Cost
2	TR1	10,000	10	100	75
4	TR2	20,000	22	200	150
10	TR5	50,000	60	500	375
12	TR6	60,000	78	600	450
20	TR10	100,000	150	1000	750
30	TR15	150,000	255	1500	1125
40	TR20	200,000	400	2000	1500
100	TR50	500,000	1750	5000	3750
120	TR60	600,000	2400	6000	4500

You may build a transport of any tonnage as long as it is a multiple of 10,000, and as long as your Manufacturing tech level is high enough. Note that you do NOT have to calculate the carrying capacity of ships each time you give orders for the ships, since all capacities are listed on your status reports.

To build transports, use the BUILD command, and be careful to use the correct class abbreviation. For example:

```
START PRODUCTION
PRODUCTION PL Earth
; Enter your production orders for planet Earth here.

    ;Build sub-light transport and pay for all of it now. Cost is 750.
    BUILD   TR10S Barrel of Monkeys

    ;Build 40,000 ton transport. Pay one-quarter now (100) and the
    ;  rest (300) later...
    BUILD   TR4 Tummy Tunes,    100

END PRODUCTION
```

Note that if a payment amount is not specified, then the ship will be completely built. The computer will calculate the needed cost. You will, of course, have to keep track of the costs yourself to make sure that you don't try to spend more than what you have.

To continue construction on a transport, use the CONTINUE command, as in the following example:

```
START PRODUCTION
PRODUCTION PL Earth
; Enter your production orders for planet Earth here.

    ;Finish the 40,000 ton transport we started in the last turn.
    ;  Since we only paid 100 then, we must now pay 300.
    Cont    TR4 Tummy Tunes

    ; Pay an additional 500 on the 200,000 ton transport we started a
    ;  few turns ago.
    CON TR20 Tunnel of Love, 500

END PRODUCTION
```

NEVER use the same name for two different ships/transports, even if their classes are different. For example, if frigate "FF Danny Boy" already exists, then an order to build transport "TR8 Danny Boy" will fail.

5.5. MORE ON SUB-LIGHT SHIPS

As mentioned above, sub-light ships have all of the capabilities of FTL ships of the same tonnage. However, their cost is 25% less because they do not have the engines that allow them to make interstellar jumps. Thus, they are primarily intended for local use.

Sub-light ships should add the letter "S" to their class abbreviations. For example, a sub-light frigate would have the class designator "FFS", a sub-light 40,000 ton transport would use "TR4S", etc.

5.6. STARBASES

Starbases are essentially floating fortresses. Unless towed, they cannot move under their own power, but must remain in orbit around a planet.

Once construction has started, a starbase may be added to indefinitely. However, the total tonnage cannot exceed the maximum tonnage allowed by a species' Manufacturing tech level. This limit is exactly the same as for ships; i.e., the maximum tonnage of a starbase is 5000 times the Manufacturing tech level.

Starbases are constructed in the same way as ships. The player simply places an order for a starbase of a specific tonnage, or for additional tonnage to be added to an existing starbase. The cost is the same as the equivalent FTL ship tonnage; i.e., tonnage divided by 100. Starbases must always be built or incremented in multiples of 10,000 tons. For example, it would cost 20,000/100 = 200 to built a starbase of 20,000 tons. To increase its tonnage to 50,000 tons would require an additional cost of (50,000-20,000)/100=300. Thus, the amount spent must always be an exact multiple of 100.

A starbase built using the normal production capacity of a planet must be built in orbit around that planet. (We will discuss another way of building starbases later.)

The carrying capacity of a starbase is determined as follows:

$$ \textrm{Starbase Carrying Capacity} = \dfrac{\textrm{Tonnage}}{1000} $$

Overall, the combat effectiveness of a starbase is exactly the same as a warship of the same tonnage. Thus, a 150,000 ton starbase and a 150,000 ton destroyer would fight as equals.

> A starbase is not maneuverable and is thus a sitting duck. It is also limited in its choice of targets. This, however, is compensated for by more powerful shield generators and weaponry. Thus, it is probably best to think of the tonnage of a starbase as an 'effective' tonnage rather than an actual tonnage. The actual tonnage will almost certainly be much higher. By using an effective tonnage in the game, we can easily compare the combat effectiveness of starbases relative to other ships.

Starbases in orbit around a planet may be towed into orbit around another planet in the SAME star system. It is not necessary to allocate individual ships to do this - it is assumed that the starbase itself has sufficient shuttlecraft to do it. In the same way, starbases may also be towed up to one parsec per turn at sub-light speeds; i.e. to an immediately adjacent sector. We'll discuss how to do this later.

The class abbreviation "BAS" should always be used for starbases. For example, you could refer to a starbase as BAS Deep Space 9 or BAS High Guardian.

To build starbases, also use the BUILD command. Since starbases must be built in increments of 10,000 tons (which has a cost of 100), anything spent on building a starbase must be an exact multiple of 100. For example:

```
START PRODUCTION
PRODUCTION PL Bakupa
; Enter your production orders for planet Bakupa here.

    ;Build a new 20,000 ton starbase...
    BUILD   BAS Misty Na Goba, 200

END PRODUCTION
```

Note that a payment amount must ALWAYS be specified when constructing starbases, and the amount must always be an exact multiple of 100.

To increase the size of an existing starbase, use the CONTINUE command, as in the following examples:

```
START PRODUCTION
PRODUCTION PL Bakupa
; Enter your production orders for planet Bakupa here.


    ; Increase size of starbase by 40,000 tons...
    CONT    BAS Misty Na Goba,  400


END PRODUCTION
```

NEVER use the same name for two different ships/starbases, even if their classes are different. For example, if frigate "FF Danny Boy" already exists, then an order to build starbase "BAS Danny Boy" will fail.

5.7. RESEARCH

Tech levels may be increased by spending equal amounts of raw material units and production capacity on research. You may spend any amount you wish on any or all tech levels. For example, you could spend 25 on Military tech level and 433 on Biology tech level in a particular turn.

There is no guarantee, however, that research will result in an increase in a tech level. The results of scientific research are never predictable.

When a tech level increases, the increased knowledge is available for use on all of the planets owned by the species. Thus, even though research may be done on just one planet, its benefits are available to the entire species.

There is no limit on how high a tech level can be, but in practice tech levels are unlikely to exceed 100.

You may spend any amount on any tech level. The command to allocate resources to research is RESEARCH. For example:

```
START PRODUCTION
PRODUCTION PL Deneb VII
; Enter your production orders for planet Deneb VII here.


    ; Spend 27 on Biology research...
    RESEARCH 27 BI


    Res 1255    LS  ; Spend 1255 on Life Support research.


END PRODUCTION
```

Use the following abbreviations for tech levels:

Table 9. Tech Level Abbreviations

Abbreviation	Meaning
MI	Mining
MA	Manufacturing
ML	Military
GV	Gravitics
LS	Life Support
BI	Biology

Spending on research does not guarantee success. In general, the more you spend, the greater your chance of success will be, and the greater the increase is likely to be. Keep in mind, though, that the process is very unpredictable. Do not be disappointed if you spend a lot on research but experience no increase in tech level, and do not be surprised if you spend very little and experience a large increase.

It is also possible for a tech level to rise without spending funds on research. This increase comes from research done by the private sector. In effect, the government gets some technology for free, just as the private sector gets technology for free as a result of government research. In general, tech increases from the private sector will not be very large, so you should not depend too much on them.

> IMPORTANT!
>
> You may not raise a tech level using research, nor will you receive free tech increases from the private sector, if your initial tech level is zero. If a tech level is zero, you must first have the basics of the technology taught to you by another species using the TEACH command.

We'll have more to say about the TEACH command later.

5.8. ECONOMIC UNITS

It is expected that there will eventually be a thriving galactic economy, with lots of trade taking place between species. This trade is transparent to the player, who is primarily concerned with government and military matters. Still, there must be a way to transfer wealth between planets owned by one species and between different species, as, for example, when one nation on Earth sends "aid" to another. In FAR HORIZONS, this type of transfer is done using a special type of item called an "Economic Unit".

Unlike other items, however, economic units are more like money or bank balances, and may be transferred freely between planets without the need for ships or cargo capacity. Economic units may even be transferred between species.

In Far Horizons, each species has the equivalent of a bank account which contains zero or more economic units.

If a species has economic units, they may be spent just as if each unit were the equivalent of 1 raw

material unit and a production capacity of 1. During production on a planet, economic units owned by the species will be used automatically (if available) if orders are given which require more than the available production capacity of the planet. For example, if a planet can spend 500 using normal production, plus the species has 150 economic units, then the planet can spend a total of 650 for construction of ships and other items. In other words, normal production capacity will be used up first, and economic units will only be spent if there is insufficient normal capacity.

However, there has to be a limit on how many economic units a colony can spend. For example, it makes no sense to try to spend a large sum of 'money' on a small colony. A small colony simply does not have an economy that is robust enough to deal with large sums of 'money'.

So, in Far Horizons, the amount of economic units that a colony can spend in addition to its normal production will be limited to what it can produce on its own. For example, if a colony can spend 850 using normal production, then it may ALSO spend up to 850 economic units from the species' treasury, for a total of 1700. Thus, the robustness of the economy, measured by the amount of economic units it can spend, will grow as the colony grows.

There is no limit to how much may be spent on a home planet.

Economic units may NOT be produced like other items using the BUILD command. Instead, they are "produced" automatically on any planet that has unused raw material units and an equal amount of unused production capacity. The "cost" of one economic unit is 1 raw material unit and a production capacity of 1. Thus, for example, if you need economic units to give to another species, then simply do NOT spend an appropriate amount on one or more planets.

Note that there is no need to explicitly transfer economic units between planets that you control. Economic units owned by a species are available for any planet that needs to spend them. Later, we'll discuss how to transfer economic units to another species.

5.9. UPGRADES

The successful operation of ships and other items often depends on the value of a particular tech level. For example, the effectiveness of a ship in combat will depend heavily on its Military tech level. For game purposes, everything will function at the current tech levels for the species. This is unrealistic, but it makes bookkeeping much easier.

As a way of compensating for this lack of realism, ships and starbases will also have an "age" associated with them. This age will be equal to the number of turns that have passed since construction finished. For a starbase, the effective age will be the weighted average of all of its contributions. All other items, including planetary defenses, will not experience any aging effects.

The age of a ship will affect its operation as follows: whenever an operation has a certain probability of success, that probability will be reduced by a percentage equal to 2 times the effective age. For example, if a newly constructed ship has a 98.17% chance of hitting an enemy target, then at the age of 9 turns, its chance of success for the same shot would be 98.17 - (18% of 98.17) = 80.50%. When a ship reaches the ripe old age of 49, it will remain at that age, apparently held together by spit and glue. Obviously, a ship that has reached the age of 49 will have a difficult time doing ANYTHING right!

In a similar way, the age will also affect the firepower of weapons and the absorption power of shields.

Ages of ships and starbases will be listed in the status reports for the species.

An item's age may be reduced by having it upgraded (i.e., it will undergo a retrofit). The amount of age reduction can be calculated with the following formula:

$$ \textrm{Age Reduction} = \dfrac{40 \times \textrm{Amount Spent}}{\textrm{Original Cost}} $$

Fractions will be dropped.

Or, if you'd rather start with the age reduction, then the corresponding cost can be determined using the following formula:

$$ \textrm{Cost of Upgrade} = \dfrac{\textrm{Desired Age Reduction} \times \textrm{Original Cost}}{40} $$

If the result has a fraction, it should be rounded UP to the next whole number. For a starbase, the original cost is considered to be the current tonnage divided by 100.

For example, to completely upgrade an 80,000 ton transport that has an effective age of 17 turns would cost (17 x 800) / 40 = 340, and would reduce its effective "age" to zero. To reduce the age of a 70,000 ton starbase from 34 to 10 would cost (34 - 10) x 700 / 40 = 420.

To upgrade a ship or starbase, use the UPGRADE command, as in the following examples:

```
START PRODUCTION
PRODUCTION PL Nushki Pata Pata
; Enter your production orders for planet Nushki Pata Pata here.


    ;
    ; Let's keep that old light cruiser a little longer. If we spend 700,
    ;  we will reduce its age by 40 * 700 / 2000 = 14 turns.
    ;
    UPG CL Mighty Mouse, 700

    ; Rejuvenate that old destroyer from age 23 to age 0.
    upgr    DD Dawson   ; cost will be (23 x 1500)/40 = 863.


END PRODUCTION
```

If you do not specify the amount you wish to spend in the upgrade command, then the age will be set to zero and the cost will be determined accordingly.

There is never a need to upgrade planetary defense units since they do not experience aging effects.

A ship or starbase that is to be upgraded must be in the same sector as the planet doing the upgrade, and the upgrade order must appear in the production section for that planet. A ship cannot jump and be upgraded in the same turn, since both jumping and upgrading require a

complete turn.

Finally, keep in mind that an upgraded ship will still get one year older during the turn in which the upgrade is done. Thus, when you receive the status report for the turn, the age of the above destroyer will be 1, NOT 0.

5.10. RECYCLING

Most items may be recycled. When this is done, the item is effectively sold on the open market, and an appropriate amount of 'money' is added to the treasury of the species. The amount received will depend on the item that is recycled. Ships and starbases will have values that depend on their age, while most other items can be cashed in for half of their original cost.

Mining and manufacturing bases may NOT be recycled.

Recycling will add economic units to the balance for the species. For items that do NOT suffer aging effects, the number of economic units gained will be half the original cost (fractions will be dropped). The only exception to this is for raw material units, which will be cashed in at the rate 1:5 (for example, recycling 29 RMs will generate 5 economic units).

For ships and starbases, the amount of economic units generated will be:

$$ \dfrac{3 \times \textrm{original cost}}{4} \times \dfrac{(60 - \textrm{age})}{50} $$

If a ship is still under construction, it may be recycled for half of what has already been spent on it. If a ship is carrying cargo, the cargo will first be transferred to the planet before the ship is recycled (cargo, if any, is NOT automatically recycled).

To recycle ships, starbases and other items, use the RECYCLE command, as in the following examples:

```
START PRODUCTION
PRODUCTION PL Knock Out
; Enter your production orders for planet Knock Out here.

    ; Let's recycle some stuff we don't need...
    ;
    ; Get rid of those old corvettes.
    ;
    RECYCLE    CT  Dragon
    recycle    CT  Princess
    ;
    ;Next, I don't need so many planetary defense units...
    ;
    rec 20 pd


END PRODUCTION
```

If colonist units or planetary defense units are recycled, the available population for the planet will

be increased by the number of units recycled. This will allow you to convert CUs to PDs or vice-versa.

Recycling is a good way to get rid of old, unreliable ships and starbases. It is also good for getting rid of excessive amounts of raw material units.

An item, ship, or starbase that is to be recycled must be on the planet or in orbit around the planet, and the recycle order must appear in the production section for that planet. Economic units generated by a RECYCLE command may be spent in the same turn. Make sure, though, that the recycle command precedes any other commands that will spend the money obtained by recycling.

A ship cannot jump and be recycled in the same turn, since both jumping and recycling require a complete turn.

5.11. RECYCLE OR UPGRADE - WHICH IS BEST?

An important decision that players will have to make is whether to upgrade a ship or to recycle it. There are several things to keep in mind when making this decision:

1. A large warship is much more effective in combat than several smaller warships of the same total tonnage. This is a strong incentive to recycle smaller warships, and use the proceeds to build larger ones.

2. Recycling is more cost effective as a ship gets older, but the aging effects could have a serious negative impact on the ship's operation. In purely financial terms, the crossover age is about 15 turns; i.e., the fractional financial return from recycling is the same as the fractional remaining useful lifetime when the age of the ship is about 15 turns.

3. Starbases require such a long time investment, that it is never worthwhile to recycle them. In general, they should always be upgraded. The only time you can justify recycling a starbase is if you are forced to do so by an enemy, or if it was intended originally for only temporary use.

4. You may want to keep smaller, non-intimidating ships (such as small transports) for exploration or spying. Thus, upgrading a small number of these could be advantageous.

So, as a general rule-of-thumb, it's a good idea to recycle warships and transports of 40,000 tons or more when they reach the age of about 15. If you're willing to sacrifice a small amount of the financial return for a little more security, then recycle when the ship is slightly younger, say 10 or 12 turns old.

Starbases should almost always be upgraded. Recycle them only when you have no choice or when you no longer need them.

Small warships and transports (less than 40,000 tons) are great for exploration and spying, and you may want to continually upgrade a few of them. Recycle only if you have more than you need. If you explore or spy with anything bigger (especially large warships), the aliens you visit may consider it a hostile act.

Another thing to keep in mind is player tedium. Providing orders for lots of small ships can be a real pain in the neck. Also, the more ships you have, the more likely it will be that you'll make mistakes.

Finally, keep in mind that the above are just guidelines. The "personality" of the species that you are role-playing can definitely impact your strategy. And, as in any role-playing game, you should always role-play your species correctly, even if "correct" means "less efficient" or "less practical".

5.12. BUILDING OTHER ITEMS

To build items other than ships and starbases, also use the BUILD command, but specify the number of items you want and their class abbreviation. Here are some examples:

```
START PRODUCTION
PRODUCTION PL Earth
; Enter your production orders for planet Earth here.

    build   7 PD    ;Add seven planetary defense units...
    BUI 50 CU   ;Train and equip 50 colonist units...

    Build   3 jp    ; Build 3 jump portal units.

END PRODUCTION
```

We'll have more to say later about "colonist units" and "jump portal units". Always be careful to use the correct class abbreviations in ANY orders.

5.13. FLEET MAINTENANCE COST

Manning and maintaining ships and starbases is not free, and costs can be especially high for military vessels. To reflect this reality, each species will be required to pay a "fleet maintenance cost".

The fleet maintanance cost will be calculated by the computer and listed on your status report. The base cost for all military ships will be the tonnage divided by 500, the base cost for starbases will be the tonnage divided by 1000, and the base cost for transports will be the tonnage divided by 2,500. Sub-light ships will receive a 25% discount. For example, it will cost 400 per turn to maintain a 200,000 ton light cruiser, 60 per turn to maintain a 150,000 ton TR15, and 750 per turn to maintain a 500,000 ton sub-light dreadnought. The full cost must also be paid for ships that are still under construction. After calculation of the total base cost, a discount will be applied equal to the current military tech level divided by 2, used as a percentage (drop fractions). For example, if your military tech level is 27, then you will receive a 13% discount. In this way, those species that "specialize" more heavily in military technology will be able to operate their fleets more efficiently.

The computer will calculate the percentage of the total production of all planets that is needed to pay the fleet maintenance cost, and will subtract that percentage from the total amount available for spending on each planet. Thus, the player will NOT have to do any calculations at all - the cost will be automatically deducted from the production of each planet. Here is an example of how the cost and deductions will appear on your status reports:

For the entire species, you will see a line like this:

```
Fleet maintenance cost = 926 (7.34% of total production)
```

For each planet, you will see a line like this:

```
Total available for spending this turn = 2278 - 167 = 2111
```

where the portion of the fleet maintenance cost that is being paid by this planet is 167 (i.e. 7.34% of 2278).

If the fleet maintenance cost is greater than the total production of all of your planets, then the percentage will be greater than 100. If this occurs, then as much of the cost as possible will be paid using any economic units in the treasury. If the remaining cost is still greater than total production, the amount over 100% will be the percent chance of civil unrest, riots, and destruction of infrastructure. In other words, the population will get very upset if the military budget becomes too excessive.

Chapter 6. MOVEMENT

As soon as you have finished constructing at least one ship, you will be able to give movement orders in the movement sections of the order form. Jump orders can be given only for ships and items that are listed in the status report for the current turn. You may not give jump orders for items that will be produced in the current turn. Other movement orders for newly constructed ships may be given immediately after production, in the post- arrival section of the order form.

Movement orders are of four types: jump orders, transfer orders, landing and orbiting orders, and sub-light move orders. These orders are described below.

6.1. JUMP ORDERS

Jump orders are given when a ship must be moved to a different star system. These orders should use the JUMP command. Here are some examples:

```
START JUMPS
; Place jump orders here.

    jump PB Benjamin Franklin, 12 7 18
    JUMP    FF  Thomas Edison,     PL  Mars

END
```

For the destination, use the name of a planet in the destination star system whenever possible. If you mistype a planet name, the computer will report an error which the gamemaster may be able to fix. However, if you mistype "x y z" coordinates, the ship will arrive at the wrong destination, if it arrives at all.

If a planet name is used, then the ship will automatically go into orbit around the planet when it arrives. If X Y Z coordinates are used, the ship will remain in the deep space part of the sector, even if the sector has planets.

If a ship or starbase is located at a terminus of a natural wormhole, then it may use the wormhole to travel to the other terminus. To do this, use the WORMHOLE command, as in the following examples:

```
START JUMPS
; Place jump orders here.

    Wormhole    TR10 Praying Mantis
    WORM    BAS Deep Space 3, PL Danbury
    Wor FFS Farragut
    Worm        BC Tanid's Sword, PL Vega III

END
```

> Note that this is the only way that a starbase can "jump" to a different sector at FTL speeds.

If an optional planet name is specified, then the ship or starbase will enter orbit around the planet when it arrives at the other end of the wormhole. Otherwise, it will remain in deep space. (Obviously, if a planet is specified, then it must be located at the same X Y Z coordinates as the other end of the wormhole.)

When a location is scanned (discussed later), the scan will indicate if a wormhole is present, but it will not indicate the coordinates of the other end of the wormhole. The only way to determine the other endpoint is to actually use the wormhole, as described above.

Natural wormholes are absolutely stable. There is no chance of a mis-jump or self-destruction when using one, regardless of the distance traveled.

6.2. TRANSFER ORDERS

Transfer orders use the TRANSFER command, and are used to move items to and from ships and planets in the same sector. They must be given in the pre- departure or post-arrival sections of your orders.

Transfers between planets in the same sector do not require the use of specific ships. It is assumed that there are sufficient shuttlecraft available. For example:

```
START POST-ARRIVAL
; Place post-arrival orders here.

    TRANSFER 100 RM PL Earth, PL Mars

END
```

In effect, the TRANSFER command is used to transfer goods between any two entities that are capable of holding them, as long as the transfer occurs within a sector. Here are some more examples:

```
START PRE-DEPARTURE
; Place pre-departure orders here.

    TRAN 50 RM PL Earth, BAS Earth Orbit 3
    tra 2 RM    FF Gibbon,  CA Embassy
    TRANSFER 100 RM BAS Earth Orbit 2, BAS Mars Orbit 1
    Tran    50 PD   PL Earth, Pl Mars

END
```

If a planet is the source or destination in a transfer, the planet name MUST be used - coordinates may NOT be used!

There is no limit to the number of TRANSFER commands that a ship or planet can be given in a single turn.

A special note must be made about the TRANSFER command. There is a possible situation in which colonists and supplies could be transferred to a new colony immediately after a jump. If the planet is already inhabited by another species, neither species will know about the new colony until the next turn. To prevent this very unrealistic kind of incident, a TRANSFER to a planet may only be made in the post-arrival phase IF the planet is already inhabited by the species making the transfer. Otherwise, the transfer will have to be done in the pre-departure phase of the next turn. Once the colony has been established, you may TRANSFER goods to the planet in either the pre-departure or post-arrival phases.

An optional feature of the BUILD command that was not discussed earlier allows the player to provide a destination for the items that are built. Here are some examples:

```
START PRODUCTION
PRODUCTION PL Earth
; Enter your production orders for planet Earth here.

    ; Build 120 colonist units and transfer them to a transport.
    Build   120 CU  TR6 Belly Laugh

    ; Build 150 planetary defense units and transfer them to the colony
    ;  on Mars.
    Bui 150 PD  PL Mars


END PRODUCTION
```

If the optional destination is a planet, then it must be in the same star system as the producing planet. If the optional destination is a ship, then the ship must be in the system BY THE END OF THE TURN. In other words, a BUILD command with an optional destination is exactly equivalent to a BUILD command in the production section of the orders, followed by a TRANSFER order in the post-arrival section. If the destination does not have sufficient cargo capacity, then only items for which there is sufficient capacity will be transferred. All item transfers will be logged on the status report. And since this optional feature cannot have any destructive or irreversible consequences, no error message will be posted if the transfer fails or is incomplete. If the transfer cannot be made, then the produced items will simply remain on the planet.

IMPORTANT!

If you attempt to auto-transfer items to another planet in the same sector, and at least one of the planets is under siege, then the transfer will be ignored. If a planet is under siege, you MUST use a separate TRANSFER command. Also, keep in mind that post-arrival TRANSFERs will only work if the destination planet is already populated.

6.3. THE "LAND", "ORBIT", AND "DEEP" COMMANDS

The LAND, ORBIT, and DEEP commands are used for moving ships within a star system. The LAND command indicates that the ship should land on the surface of a planet. The ORBIT command indicates that the ship should enter orbit around a planet. The ORBIT command can also be used to have a starbase towed from orbit around one planet into an orbit around another planet in the same star system. The DEEP command may be used to move a ship that is currently landed or orbiting into deep space. A DEEP order may NOT be given for a starbase. LAND, ORBIT, and DEEP orders may be given in either the pre-departure or post- arrival section of your orders.

Examples:

```
START PRE-DEPARTURE
; Place pre-departure orders here.

    Land    FF Don Quixote, PL Mars
    ORB BAS Hurdy Gurdy,    PL Jupiter
    DEEP    DD Jeopardy
END
```

The destination in a LAND or ORBIT can be a planet number or a planet name. (We will discuss how to name planets later.)

In FAR HORIZONS, ships that are given JUMP commands of the form "JUMP X Y Z" do not actually land on a planet or go into orbit around a planet. Instead, they are simply located somewhere in the star system, and we refer to this "somewhere" as 'deep space'. Also, movement within a star system is considered to be trivially easy in FAR HORIZONS. Thus, there is no movement penalty or advantage to being in deep space, in orbit around a particular planet, or landed on a particular planet.

However, there is one circumstance where being landed on a planet can provide an advantage. If a ship owned by another species visits the system, it will detect ships in orbit or in deep space, but NOT ships that have landed on a planet that is populated by your species. In effect, the population of your colony or home planet can "hide" your ships from prying eyes. Ships that are under construction are always automatically hidden in this way. However, if another species also has a colony on the same planet, then your ships cannot be hidden from them.

The LAND command will allow you to land a ship on one of your populated planets, thus hiding it from alien view. The ORBIT command will allow you to place a landed ship in orbit, thus intentionally making it visible to others. Here are some more examples:

```
START POST-ARRIVAL
; Place post-arrival orders here.

; Move the little corvette from the surface of Mars to Earth orbit for the
;   Klingons to see.
orb CTS Jiminy Cricket, PL Earth
; But, don't let them see our big ships...
LAND    DN Faragut, PL Earth
Lan BS Wellington, PL Mars

END
```

A LAND or ORBIT command may only be issued to a ship that is in the same star system as the planet. A ship does not already have to be at the planet when a LAND or ORBIT command is given - it just has to be in the same sector.

When you give a JUMP order of the form "JUMP ship, PL name", the ship will automatically go into orbit around the planet.

For the purposes of this game, a ship cannot land on uninhabited planets. [Actually, it is certainly possible for ships to land on uninhabited planets, but it does not perform a useful game function, and so it is not allowed.] Also, in general, you may not land your ships on a planet that is not inhabited by your species, even if it IS inhabited by one or more other species. The only exception to this is if a species that inhabits the planet has declared you as an ALLY. (We'll have more to say about the ALLY command later.)

If you want to land your ship on a planet that is inhabited by another species that has declared you as an ALLY, you must use a planet number rather than a planet name in the LAND order, even if you have given a name to the planet. Here are some examples:

```
Land    TR5 Jabberwocky, 5  ; One of our allies has a colony on
                            ;  planet 5.

LAN FF Kharsh Dukh, 3.  ; Let's see if they consider us an
                        ;  ally.
```

If there is at least one species that has population on the planet and that has declared your species as an ALLY, then your ship will be allowed to land. If you are allowed to land by one or more species, then all of those species will be notified that they granted you permission to land. If you are not allowed to land by ANY species, then all species that have population on the planet will be notified that they denied you permission to land.

If your star system is attacked, ships on the surface of a planet will react just as quickly as ships in orbit or in deep space. In other words, there is no advantage or disadvantage to being on the surface, in orbit, or in deep space. A ship does not have to be in orbit or on the surface to load or unload goods. A newly constructed ship will remain on the surface until told otherwise. If you land a ship on a planet that is populated by both your species AND by one or more other species, then the other species WILL detect your ship, even though it has landed. In other words, if a planet is

colonized by more than one species, then ALL ships on the planet will be detected by ALL species that populate the planet, even ships that are still under construction. The same is true for planetary defenses.

Finally, if you do not specify a planet name or number in a LAND or ORBIT command, the computer will check if the ship is already orbiting or landed on a planet. If so, it will use that planet. For example:

```
START JUMPS
; Place jump orders here.

    Jump    DD Defiant, PL Earth
END

START POST-ARRIVAL
; Place post-arrival orders here.

    Land    DD Defiant
END
```

The above LAND command will land the ship on PL Earth.

6.4. MISHAP PROBABILITIES

Whenever a ship jumps from one star system to another, there is always a chance of a mishap. This section is provided for those players who would like to know the actual probabilities involved.

The percentage probability that something will go wrong is:

$$ \textrm{Mishap Probability} = \dfrac{\textrm{Distance}^2}{\textrm{Gravitics Tech Level}} $$

The result is in percent. For example, if the distance is 7 parsecs and the Gravitics tech level is 4, then the mishap probability is (7 x 7)/4 = 12.25%. Note that the result is significant to two places after the decimal point.

If a mishap does occur, then the result will be either a mis-jump or self- destruction. When a mishap does occur, a second check is made using the same probability. If the second mishap also occurs, then the ship self-destructs.

Finally, don't forget that all success/failure probabilities are further affected by the age of a ship. The probability calculated above is for a ship whose effective age is zero.

6.5. THE MOVE COMMAND

It is possible for a ship or a starbase to travel up to one parsec per turn at sub-light speeds. The ship can be either sub-light or FTL. It is assumed that a starbase is towed by its own shuttlecraft.

To do this, use the MOVE command. MOVE orders may only be issued in the jump section of your

orders. Here are some examples:

```
START JUMPS
; Place jump orders here.

    Move     BAS Sneakers, 5 12 17
    MOV CC Ornery, 17 16 11
    mov DDS Victory, 22 31 15


END
```

Only one coordinate (X, Y, or Z) may change, and it may not change by more than +/-1. Here are some examples:

```
Okay:
    from 15 16 21 to 15 16 22   Z increased by 1
    from 21  5  7 to 20  5  7   X decreased by 1
    from 31 15 15 to 31 16 15   Y increased by 1
```

```
Wrong:
    from 15 16 21 to 15 17 22   Y and Z both increased by 1
    from 21  5  7 to 19  5  7   X decreased by 2
    from 31 15 15 to 30 16 15   X decreased by 1 and Y increased by 1
```

The move requires a full turn. Thus, a ship or starbase can only be given one MOVE order per turn.

Since sub-light travel does not involve use of a wormhole, there is no danger of mis-jumps or self-destruction.

Chapter 7. COLONIZATION

One of the goals of most players will be to create colonies in other star systems as well as in their home system. How this is done will be explained in this chapter.

7.1. GENERAL CONSIDERATIONS

Before a colony can be established, a suitable planet must be found. The three major criteria used to determine the suitability of a prospective planet are its temperature class, its pressure class and the constituents of its atmosphere. If any of these three criteria differ considerably from those of the home planet, then a considerable amount of life support expertise will be required if the colony is to survive.

Once a suitable planet has been found, the colony can be started by shipping in colonists and the supplies and equipment they will need to set up the colony. In its early stages, a colony will grow mainly by constant infusions from the home planet or other larger colonies, since its population will be too low to grow much on its own. Eventually, though, the colony's population will become large enough that additional people and materials will no longer have to be shipped in from elsewhere.

> IMPORTANT!
>
> In general, you may NOT set up a colony on your own home planet or on the home planet of another species. However, you MAY colonize the home planet of another species after you have completely destroyed the population by means of germ warfare or orbital bombardment (discussed later). You may also re-colonize your home planet up to its former highest economic base if it was reduced by bombardment of germ warfare.

This rule is designed to prevent three unrealistic situations: 1. Building a colony on your own home planet so that you can increase your mining and manufacturing bases above the 2% limit per turn; 2. Doing the same on someone else's home planet; 3. Sneaking onto someone else's home planet and installing a colony before they can stop you.

I doubt if anyone would ever want to do number 3, unless it was an act of pure mischief, but numbers 1 and 2 are ways of getting around the 2% growth limit, and might appeal to players who like to 'cheat' by taking advantage of loopholes in the rules.

7.2. DETERMINING A PLANET'S SUITABILITY FOR COLONIZATION

A colony may only be started if the Life Support tech level of the species is high enough to handle the prevailing conditions at the planet. If the Life Support tech level is not high enough, then a colony may not be started. Use the following guidelines to determine how much life support is actually needed:

1. If the single gas required by the species is not present in the required range, 3 points of life

support will be needed.

2. If the atmosphere has any gases poisonous to the species, 3 points of life support will be needed for EACH poisonous gas.

3. For every point of difference between the home planet's temperature class and the colony's temperature class, 3 points of life support will be needed.

4. For every point of difference between the home planet's pressure class and the colony's pressure class, 3 points of life support will be needed.

The minimum Life Support tech level needed to allow creation of the colony is the sum of all the above contributions. For example, consider the following data:

```
Home:   tc=10 pc=10 NH3(29%),N2(47%),O2(24%)
Colony: tc=9  pc=12 H2S(46%),O2(54%)

Atmospheric Requirement: 14%-54% O2
Gases Poisonous to Species: HCl,Cl2,SO2,H2S,Fl2,CH4
Gases Harmless to Species: He,H2,H2O,NH3,N2,CO2
```

The requirement for O2 is just barely met, so no life support is needed for it. However, the colony has one poisonous gas, H2S, so 3 points of life support will be needed. The temperature class difference is 1, so 3 points of life support are needed. Finally, the pressure class difference is 2, so 6 points of life support will be needed. Thus, a total of 0+3+3+6 = 12 points of life support are needed. If the Life Support tech level of the species is 12 or higher, then the colony may be started.

Finally, extremely large planets, such as gas giants, are so hostile to life that nothing can survive on the surface. However, these planets typically have large numbers of satellites (i.e. "moons") which can be colonized instead. Thus, for planets such as these, we can think of the life support requirements as 'averages' for the entire planet and its system of satellites. It is for this reason also that the gravity of a planet is not a consideration.

7.3. STARTING THE COLONY

In order for a colony to be of any use, it must have people, raw materials, and production capacity. In FAR HORIZONS, these needs have been met by implementing the following items:

Table 10. Colony Units

Abbreviation	Name	Cost	Carrying Capacity
CU	Colonist Units	1	1
IU	Colonial Mining Units	1	1
AU	Colonial Manufacturing Units	1	1

A colonist unit is the approximate equivalent of 1000 humans.

Colonist units, colonial mining units, and colonial manufacturing units are used to establish the

initial mining and manufacturing bases on a colony planet. Units are installed as follows:

$$1 \text{ colonist unit} + 1 \textrm{ colonial mining unit} = 0.1 \textrm{ mining base}$$
$$1 \textrm{ colonist unit} + 1 \textrm{ colonial manufacturing unit} = 0.1 \textrm{ manufacturing base}$$

In other words, a colonist unit consists of trained people, ready and willing to work. A colonial mining unit or a colonial manufacturing unit contains the supplies and equipment they will need to do the particular job.

After colonial mining and manufacturing units have been transported to a new colony, they must be installed; i.e., they are used to create new mining and manufacturing bases, or to increase existing bases. The installation is started in the pre-departure section of the orders, but requires the entire turn to complete.

Note that colonist units, mining units, and manufacturing units must be ON the planet before they can be installed. Thus, they must be transferred from the ships that brought them to the planet's surface before they can be installed. Furthermore, items may only be transferred to a planet that has a name. For this, use the NAME command. For example:

```
NAME 12 3 9 4   PL Epsilon Eridani IV
```

The above example will give the name "Epsilon Eridani IV" to the fourth planet of the star system at coordinates X=12, Y=3, Z=9. Note that the abbreviation for planet "PL" is required. (In FAR HORIZONS, names ALWAYS require use of the appropriate class abbreviation. There are no exceptions.)

> WARNING!
>
> One of the most common player mistakes is to accidentally omit a required abbreviation. In Far Horizons, ALL ships and items have abbreviations, and ALL orders that refer to them must use the required abbreviation. If not, the computer will reject the order.

After colonial units have been transferred to the planet using the TRANSFER command, they may be installed with the INSTALL command. Here's a complete example involving the NAME, TRANSFER, and INSTALL commands:

```
START PRE-DEPARTURE
; Place pre-departure orders here.

    Name    13 24 7 3   PL Dickory Dock

    Tra 50 cu   TR5 No-one Here, PL Dickory Dock
    Tra 22 iu   TR5 No-one Here, PL Dickory Dock
    Tra 28 au   TR5 No-one Here, PL Dickory Dock
    Inst    22 iu   PL Dickory Dock   ; Mining base will be 2.2
    INst    28 au   PL Dickory Dock   ; Manufacturing base will be 2.8
END
```

Make sure that sufficient colonist units (CUs) are present on the planet before installing the mining units (IUs) and manufacturing units (AUs) that will need them. Also, orders to transfer units to the planet will NOT automatically install them. If you do not give specific installation orders, the units will simply sit on the planet's surface.

In other words, when you give an order to install 22 IUs, you are telling the computer to combine 22 CUs and 22 IUs and increase the mining base of the planet by exactly 2.2. When the order is executed, the computer will reduce the number of CUs and IUs by 22 each, and will increase the mining base by exactly 2.2.

Alternatively, you can use the UNLOAD command, as in the following example:

```
START PRE-DEPARTURE
; Place pre-departure orders here.

    Name    13 24 7 3   PL Dickory Dock

    Orbit   TR5 No-one Here, PL Dickory Dock

    Unload  TR5 No-one Here
END
```

This command will transfer all CUs, IUs, and AUs on the ship to whatever planet it is located at (orbiting or landed). After the transfer, it will then automatically install as many mining and manufacturing units as it can, starting with mining units, and including any colonist units, mining units, and manufacturing units that were already on the planet.

The ORBIT command was required in the above example because the planet was just named, and there was no way that the transport could have already been in orbit around the planet. If the planet had been named in an earlier turn, and if the transport had jumped directly to the planet, then it would have automatically orbited the planet and the above ORBIT command would not have been necessary.

A special note must be made about the TRANSFER command. There is a possible situation in which colonists and supplies could be transferred to a new colony immediately after a jump. If the planet is already inhabited by another species, neither species will know about the new colony until the

next turn. To prevent this very unrealistic kind of incident, a TRANSFER to a planet may only be made in the post-arrival phase IF the planet is already inhabited by the species making the transfer. Otherwise, the transfer will have to be done in the pre-departure phase of the next turn. Once the colony has been established, you may TRANSFER people and goods to the planet in either the pre-departure or post-arrival phases.

7.4. AVAILABLE POPULATION

As a colony grows, its population will increase by normal means. This population will be listed on status reports as a number of 'available population units'. This population can then be used as follows:

```
If a colony builds planetary defense units or additional colonist
units, they will also have an equivalent cost in 'available
population units'.  For example, to create 17 planetary defense
units on a colony will reduce the number of available population
units by 17.
```

In other words, before you can "build" colonist units or planetary defense units, you must first have enough people to hire and train for the job. Thus, you can think of 'available population' as equivalent to the number of population units that are available for hire. This number will be relatively low on colonies, but will be much higher on the home planet.

The number of available population units that are currently 'for hire' on each planet will be listed in your status reports.

Note that the above rules do NOT apply to ships or other items built on a colony planet. In other words, building ships does not have an equivalent "cost" in colonist units. (Crewing requirements are considered to be insignificant. Very large ships may require large crews, but small colonies will not have the resources and production capacity to build such ships.)

7.5. POPULATION GROWTH ON COLONY PLANETS

In general, colonial populations increase at a much higher rate than on the home planet. In this game, we will use a base figure of 10% per turn. This value will be modified downwards depending on how hostile the planet is to your species.

If your Life Support tech level is exactly equal to the Life Support needed to colonize the planet, then the colony will experience no growth.

At the opposite extreme, if no life support is needed, then population growth will be 10% (plus or minus small random fluctuations).

Any new growth is converted to 'available population units', which you can then use to BUILD colonist units (CUs) or planetary defense units (PDs).

The actual growth will be calculated by the gamemaster's computer, and the current total population and available population will be listed in the status report for each planet.

Finally, unused available population will NOT carry over into later turns if they are not used to BUILD CUs or PDs. Instead, the people will either find other jobs locally, or will give up in disgust (because they can't find jobs) and will look for better opportunities off-planet. This approach will prevent unrealistic accumulations of "idle" population.

7.6. MINING COLONIES

If a colony has a mining base that is greater than zero, but its manufacturing base is exactly zero, then it will be considered a 'mining colony'. A mining colony has the following special features:

1. A mining colony will never produce 'available population'. The only way to increase the population is by bringing in colonists and installing colonial mining units.

2. Raw material units produced each turn on the mining colony will be automatically "sold" and converted to economic units (3 raw material units = 2 economic units, fractions dropped). In other words, the number of economic units generated will be two-thirds of the number of raw material units that are "mined".

3. As raw materials are extracted from a mining colony, the mining difficulty of the planet will gradually rise. The rise in mining difficulty will be proportional to the amount of material mined. Note that this increase in mining difficulty occurs ONLY on mining colonies.

Economic units generated by a mining colony cannot be spent on the mining colony itself (except for the HIDE command, discussed later). Instead, they are automatically added to the balance for the species. They may be spent in the same turn on other planets only if the PRODUCTION order for the mining colony appears before PRODUCTION orders for the planets where the economic units will be spent.

Thus, mining colonies allow a species to take advantage of planets that are rich in resources but which are not suitable for normal life. The raw material units that they generate are automatically converted to cash which can then be spent on producing planets.

A mining colony is a better investment than a normal colony as long as the mining difficulty is less than 1.50. When the mining difficulty becomes greater than 1.50, the return on investment becomes less than for a normal colony. Thus, it's a good idea to convert a mining colony to a normal colony (by installing colonial manufacturing units) when the mining difficulty approaches 1.50.

7.7. RESORT COLONIES

If a colony has a manufacturing base that is greater than zero, a mining base that is exactly zero, a gravity less than or equal to the home planet, and requires less than 6 points of life support technology, then it will be considered a 'resort colony'. A resort colony has the following special features:

1. A resort colony will never produce 'available population'. The only way to increase the population is by bringing in colonists and installing colonial manufacturing units.

2. Each turn, the production capacity of a resort colony will be automatically converted to economic units at a rate of three-to-two. In other words, the number of economic units generated will be two-thirds of the production capacity. For example, if the production capacity

is 40, then it will be automatically converted to 26 economic units.

Economic units generated by a resort colony cannot be spent on the resort colony itself. Instead, they are automatically added to the balance for the species. They may be spent in the same turn on other planets only if the PRODUCTION order for the resort colony appears before PRODUCTION orders for the planets where the economic units will be spent.

Thus, resort colonies allow a species to take advantage of planets that are especially suitable for life but which may have a high mining difficulty. Their effective production capacity is automatically converted to cash which can then be spent on producing planets.

> IMPORTANT!
>
> One of the most common mistakes that players make is to ignore the gravity of a planet when trying to create a resort colony. The gravity MUST be less than or equal to the gravity of the home planet.

7.8. HIDDEN COLONIES

It is possible to hide a colony from detection by aliens. This is done by using special shielding, conducting as much activity as possible underground, delaying or reducing activity when aliens are in the system, using evasive tactics, and so on. However, hiding a colony is expensive and it reduces the overall efficiency of the colony.

In Far Horizons, you may indicate that a colony is to be hidden by placing a HIDE order in the production section of your orders, as follows:

```
Hide
```

The command takes no arguments.

The HIDE command will last only for the current turn. If you wish to permanently hide a colony, then you must issue the HIDE command each turn.

The cost of hiding is the sum of the mining and manufacturing bases of the colony at the beginning of the turn. For example, if the most recent status report shows that a colony has a mining base of 25.7 and a manufacturing base of 29.2, then the cost of hiding the colony will be:

$$ 25.7 + 29.2 = 54.9 = 54 $$

Note that fractions are dropped.

You may not hide a resort colony or a home planet. You may only hide normal colonies and mining colonies. (In fact, a HIDE order is the only production order that may be given to a mining colony.) Also, you may not hide a planet that is under siege (discussed later).

When a colony is hidden, it will not be listed on the status reports of other species that are in the same star system. Ships under construction and any ships that have landed on the planet will also

be undetected. However, starbases and ships in orbit WILL be detected. Also, the colony WILL be detected by a species that has population on the same planet.

If you suspect that a planet has a hidden colony, you can detect the colony by transferring planetary defense units or colonist units to the surface during the pre-departure phase of the turn. However, they must remain on the surface until at least the next turn in order to detect the hidden colony.

You MAY hide a colony that has population on it (i.e. colonist units and/or planetary defense units) but which does not have any installed mining or manufacturing bases. Since the total installed base is zero, the cost is also zero. However, you will have to provide your own PRODUCTION order for the planet.

7.9. COLONY ATTRITION AND LOSSES

When a new colony is started, it is normal to expect losses to be relatively heavy compared to later in its development. This higher-than-normal casualty rate will have several causes: unfamiliar flora and fauna, unpredictable climate, unexpected geological phenomena such as earthquakes and volcanoes, and so on. In addition, very small colonies cannot replace these losses through new births because their population is too small. For example, extremely small colonies must avoid the potentially harmful effects of inbreeding, which can greatly restrict their growth rate.

In Far Horizons, we will simulate the losses that can be expected in very small colonies as follows:

```
If the total population of a colony is less than 50 population
units (about 50,000 people), then there will be a fixed loss of
exactly 1 population unit (about 1000 people) per turn.  If the
total population is at least 50 population units, then no loss
will occur.
```

This reduction in population will occur at the end of every turn, immediately after normal population growth. Thus, if the colony experiences a natural increase in population, there will be no net loss.

The reduction will take place as follows:

```
If the number of available population units is greater than zero,
    then it will be reduced by one;
otherwise, if the number of colonist units on the planet is
    greater than zero, then it will be reduced by one;
otherwise, if the number of planetary defense units on the planet
    is greater than zero, then it will be reduced by one;
otherwise, if the manufacturing base of the planet is greater than
    zero, then it will be reduced by 0.1;
otherwise, the mining base of the planet will be reduced by 0.1.
```

Obviously, if a planet has no population at all, then it will not experience any reduction.

A reduction in colonist units, planetary defense units, mining base, or manufacturing base will be

indicated on the status report. Reduction in available population units will not be mentioned.

7.10. THE PRODUCTION PENALTY

A colony that has a Life Support tech level that is barely sufficient to survive will not be useful for much else. If, for example, the tech level needed to survive is 27 and the actual tech level is also 27, then the colony is on the borderline between extinction and survival. We certainly cannot expect such a colony to be very productive, no matter how large its mining and manufacturing bases. Instead, the entire output of the planet's mining and manufacturing bases would be needed just to survive. If, however, the tech level needed is much less than the actual tech level, then the colony would be able to thrive and be very productive.

In Far Horizons, we simulate this reality with what is called a "production penalty" that will apply to all planets. The penalty will depend on the actual Life Support tech level of the species (LS) and the tech level needed to survive on the planet (LSN). The production penalty is calculated as follows:

$$ \textrm{Production Penalty} = \dfrac{100 \times \textrm{Life support tech level needed}}{\textrm{Life support tech level}}\textrm{percent} $$

For example, if the LSN value for the planet is 9 and the LS value for the species is 36, then production capacity and raw material production will each be reduced by 25%. If LS equals LSN, then the production penalty is 100%, and nothing at all will be available for spending - the entire output of the planet's mining and manufacturing bases will be needed just to survive.

The penalty will apply to all planets, including mining colonies, manufacturing colonies, and even the home planet. However, since the life support tech level needed on the home planet is zero, the penalty will also be zero. (The only way this could change is if the home planet is terraformed by another species. We'll have more to say about terraforming later.)

The penalty will be calculated by the computer and printed on your status reports, along with the net production values. Although you will not have to do any additional calculations, you should always keep the penalty in mind when deciding on which planets to colonize.

Chapter 8. WARFARE

Since FAR HORIZONS is a role-playing game, it is quite possible for a species to choose to be peaceful, and to live harmoniously with all of its neighbors. Unfortunately, its neighbors may not be similarly inclined...

8.1. PREPARING FOR BATTLE

Before a battle can begin, you must specify its location. This is done with the BATTLE command. For example:

```
START COMBAT
; Place combat orders here.

    ;The following combat orders will be for the attack on the Romulan home
    ; planet in their star system at 12 4 3...
    BATTLE  12 4 3

    additional combat orders follow the BATTLE order

END
```

Note that only the X, Y and Z coordinates are given. Any planets that are to be involved will depend on later commands. A BATTLE command MUST be specified before any other combat orders that will apply to the specified location. In effect, a BATTLE command states that a battle MAY take place at the specified location, and that all of your forces at that location are on alert. A single BATTLE command may be followed by other combat commands, and all such commands will apply to the location specified in the most recently executed BATTLE command. Thus, if you are attacking more than one star system in a turn, then each set of combat orders will be preceded by an appropriate BATTLE order.

8.2. COMBAT

To indicate your intentions at a battle, use one or more ENGAGE commands. Each ENGAGE command requires an "option" argument to indicate the nature of the engagement you are willing to take part in. Some also require an additional argument which specifies the planet where the option will apply. You may specify more than one ENGAGE command per battle. Here are your options:

Option	Meaning	Explanation
0	Defense in-place	Do not attack anyone unless they are clearly hostile. If fighting does start, fight only if the battle moves to your current location. If battle moves to a new location, do not move with it. This is the default option if you do not provide any ENGAGE orders.
1	Deep space defense	Do not fight unless the opponent is clearly hostile. If a fight is inevitable, try to keep the battle away from your planets. This option should be used if you have planets you wish to defend and you wish to keep the battle away from them to avoid damage to civilians and civilian structures. (Remember, "deep space" is anywhere in a star system that is not within fighting range of a planet.)
2	Planet defense	This option requires an additional argument indicating the planet you are willing to defend. This command should be given for each planet you wish to defend.
3	Deep space fight	Attack the enemy in deep space and destroy as many ships as possible. If the enemy is not willing to meet you in deep space, then no battle will take place. (Remember, "deep space" is anywhere in a star system that is not within fighting range of a planet.)

Option	Meaning	Explanation
4	Planet attack	This option requires a second argument to indicate the number of the planet that you wish to attack. This type of attack will do as much damage as possible to military targets, while minimizing damage to civilians and infrastructure. With this option, an attacker will have to contend with starbases, planetary defenses, and ships on the ground or in orbit.
5	Planet bombardment	This option requires an additional argument to indicate the number of the planet that you wish to attack. Start with a planetary attack. After you have successfully destroyed all of the enemy's ships, starbases, and planetary defenses, bombard the specified planet doing as much damage as possible to the population and infrastructure.
6	Germ warfare	This option requires an additional argument to indicate the number of the planet that you wish to attack. Start with a planetary attack. After you have successfully destroyed all of the enemy's ships, starbases, and planetary defenses, attempt to destroy all enemy life on the planet using germ warfare.
7	Besiege planet	This option requires an additional argument to indicate the number of the planet that you wish to attack. Start with a planetary attack. After you have successfully destroyed all of the enemy's ships, starbases, and planetary defenses, besiege the planet and extort 'taxes'.

If you give an ENGAGE order whose option is 3 or greater, you must also specify the name or names

of the enemy you want to fight with. For this, use the ATTACK command. For example:

```
Attack  SP Klingon
ATT SP Romulan
```

The above says that you will attack two species: the Klingons and the Romulans. Note that you must issue a separate ATTACK command for each species that you wish to attack.

You also have the option of attacking all species that you have declared as enemies using the ENEMY command (discussed later). To do this, give the ATTACK command a zero argument, as in the following example:

```
ATTACK  0   ; Attack all declared enemies at this battle location.
```

If you want to attack both enemies and non-enemies, then give the above order plus specific ATTACK orders for the non-enemies.

If you do not give specific orders to attack other species, then you will not attack them unless they attack you.

> IMPORTANT!
>
> It is not possible for a battle to take place if only transports are being engaged. In order for a battle to occur, at least one participant must have at least one warship, starbase, or planetary defense unit at the engagement location.

Now, if there are other species at the battle location that you are NOT attacking, but they have declared as ALLY a species that you ARE attacking, then they will fight in the battle on the side of their ALLY. In other words, the effect will be the same as if you had given ATTACK orders for them and they for you.

EXAMPLE #1: Several Romulan ships appear in sector 4 12 3 where you (the Humans) have two colonies (planet #4 and #7). You're not sure if they will attack, and you would prefer not to fight. Also, if they do attack, you want to keep them away from your colonies to avoid civilian deaths and destruction of mining and manufacturing capacity. Here are the combat orders you should give:

```
START COMBAT
; Place combat orders here.

    BATTLE  4 12 3
      ENGAGE    1   ;Try to keep fight, if any, away from
                ; colonies.
      ENGAGE    2 4 ;Protect planet #4.
      ENGAGE    2 7 ;Protect planet #7.


 END
```

EXAMPLE #2: You are the Romulan visitors of the preceding example. Your goal is to attack the Humans at planet 4 and destroy all defenses there. If this succeeds, you then want to attack planet 7, and destroy its defenses. Finally, if everything goes well up to this point, bombard planet 7 (but NOT planet 4). Here are the orders you should give:

```
START COMBAT
; Place combat orders here.

    Battle  4 12 3

      Attack    SP Human

      Engage    4 4 ;Attack planet #4 and destroy its defenses,
                ; but do NOT try to destroy civilians and
                ; infrastructure.

      Engage    5 7 ;Attack planet #7 and destroy its defenses,
                ; then try to wipe out the population and
                ; infrastructure by bombarding the planet.
 END
```

If you want to attack the enemy in deep space and still protect your planets, then provide an "ENGAGE 2" command for each planet you wish to defend, and also provide an "ENGAGE 3" command. In other words, you definitely want to fight, but you also want to keep the battle away from your planets for as long as possible.

If a defending species provides orders to engage an attacker in deep space, but the attacker has orders to attack a planet, then the following will apply:

If the defender has a higher military tech level than the attacker, then N rounds of combat will occur in deep space before the battle moves to the planet, where N is the difference in Military tech levels. Otherwise, only one round will occur in deep space.

For example, if the Fizians (Military tech level = 22) wish to attack the Jubwa (Military tech level = 27) home planet, but the Jubwas want to keep the battle away from the planet for as long as

possible, then 27-22 = 5 rounds of combat will occur in deep space. Starting with the 6th round, the battle will be at the Jubwa home planet (assuming the Fizians can still fight).

When a planet is attacked, considerable damage can also be done to non- combatants and to surface structures. This damage will be indicated on status reports by reductions in mining and manufacturing bases.

In the following sections, we will discuss some of the above options in more detail.

8.3. ANNIHILATION

After an attacker has destroyed all of the defender's ships, starbases, and planetary defenses, he may choose to attempt to annihilate the population. This can be accomplished in two ways: by heavy bombardment from space, or by the use of germ warfare.

When attacking a planet by bombarding it from orbit, the actual damage done will depend on the number and combat capability of the attacking ships, and on the population and infrastructure of the now-defenseless planet. If sufficient power is applied, then the defenders can be completely destroyed. As a rough rule-of-thumb, a fleet of ten unenhanced Strike Cruisers (250,000 tons each) with a military tech level of 50 will have sufficient firepower to wipe out the entire population and infrastructure of a heavily populated planet.

Germ warfare is used when the attacker wishes to ensure complete annihilation of the defender. It is most useful if the attacker does not have or may not have sufficient firepower to annihilate the population and infrastructure by means of bombardment. It is also useful if the planet is rich and the attacker wants to loot it after destroying the inhabitants.

Germ warfare is carried out by the use of high tech devices called "Germ Warfare Bombs", and the results will depend on the relative Biology tech levels of the attacker and defender. Germ warfare bombs will be discussed in more detail later.

If germ warfare is used to successfully wipe out the population of a planet, then the planet may be colonized by someone else (such as the attacker) in the next turn. However, the original mining and manufacturing bases are lost. Instead, the planet is looted by the attackers and the resulting economic units are added automatically to the balance for the attacking species. (It is assumed that the direct transfer of the planet itself from the defender to the attacker is impractical because they are completely different species; that is, mining and manufacturing bases for the two species are not compatible. However, some of the original wealth of the defenders is obtained by looting.)

Note that germ warfare may not be successful, and the outcome will depend on the relative Biology tech levels of the two species. Bombardment, however, will always do some damage.

If a home planet is bombed, it may be recolonized by the original inhabitants, even if the damage was only minor. However, the final economic base that results from any installations cannot exceed the original base. (In the case of multiple bombings, the highest base at any time during the bombings will be considered the original base.) When the base eventually reaches its original value, the home planet will be considered fully recovered. During recovery, the amount that may be spent on a bombed home planet will be limited, and the available population will be less than normal.

8.4. SIEGE

After an attacker has destroyed all of the defender's ships, starbases, and planetary defenses, he may choose to besiege the planet and make the inhabitants pay 'protection money' or 'taxes'. In effect, the attacker is blackmailing the planet, saying "give us money or we will destroy you".

The effectiveness of a siege will depend on the size of the planet's economy and the number and sizes of ships that take part in the siege. And since siege is an inherently military operation, it will also depend on the relative Military tech levels of the opponents. An effectiveness rating will be calculated as follows:

$$ \textrm{Effectiveness} = \dfrac{\textrm{Total ship tonnage} \times \textrm{ML of attackers}}{\textrm{Production base} \times (\textrm{ML of defenders} + 1)} $$ $$ \textrm{Production base} = (\textrm{MI} \times \textrm{Mining Base}) + (\textrm{MA} \times \textrm{Manufacturing Base}) $$

If a ship besieges more than one planet in a sector, then its effectiveness will be divided by the number of planets that it is besieging.

Since a starbase does not have the maneuverability of a normal ship, it will have an effective tonnage that is one quarter of its actual tonnage. Transports will have NO effectiveness at all in a siege. Also, if the besieging species has planetary defense units on the planet that is being besieged, then they will contribute to the effectiveness of the siege in proportion to the equivalent 'tonnage' of the defenses. However, planetary defense units on the surface of a planet are MUCH more effective against a defeated population than against attacking enemy ships above the planet. To reflect this, each planetary defense unit will have an equivalent tonnage of 2000 tons FOR SIEGE PURPOSES ONLY; i.e. forty times more effective than when attacking enemy ships. Finally, planetary defenses may not conduct a siege by themselves. The besiegers must also have at least one warship or starbase taking part in the siege to provide orbital support.

The effectiveness will be used as a percentage to determine the amount of production lost by the besieged planet. The maximum effectiveness is 95%. Also, 25% of the lost production will be converted to economic units and transferred to the besieging species. (The remaining 75% is considered lost due to inefficiency, civil unrest, sabotage, reduced interplanetary and interstellar trade, the cost of maintaining the siege, etc.)

For example, if the effectiveness is 37 and the planet can spend 1205 in production for the turn that it is under siege, then the planet will only be able to spend 1205 - 37% of 1205 = 760. In addition, 25% of the amount lost will be automatically transferred to the species that is conducting the siege. In the above example, 37% of 1205 is 445, and 25% of 445 is 111. Thus, the besieger will receive 111 economic units. If more than one species besieges the planet, then the amount will be divided among them according to the relative effectiveness of each species.

The effectiveness will also be used to determine if the besieger detects and prevents the construction of ships and planetary defense units by the besieged species. For example, if the effectiveness is 37%, then there is a 37% chance that the besieger will detect if any ship construction occurs. If so, the ship will be destroyed. Similarly for planetary defense units.

A species that is under siege maintains complete control of his planet, and may give any orders that

make sense. However, some orders may not succeed because of the siege. Here are the basic rules that apply to sieges:

1. Any attempt to build a starbase on a beseiged planet will ALWAYS be detected, and the starbase WILL be destroyed.

2. Any construction on a ship, even partial construction, MAY be detected as described above. If so, the ship will be destroyed before it can be used.

3. Any construction of planetary defense units MAY be detected as described above. If so, all units on the planet will be destroyed before they can be used.

4. Any items other than ships, starbases, and planetary defense units can be built without fear of detection.

5. Any attempt to transfer items between the planet under siege and a different planet in the same star system MAY be detected as described above. If so, the items will be destroyed.

6. Besiegers will not detect transfers of economic units to other species.

7. Any attempt to secretly land a ship on a besieged planet MAY be detected as described above. If a landing is detected, the besiegers will be notified of the landing, but will not otherwise see the ship on their status reports. The player that owns the ship will be told one of the following:

   1. the landing WAS detected;

   2. the landing was NOT detected; or

   3. the landing MAY have been detected.

Besieging ships must remain in the system for the entire turn. Any ships that jump out of the system voluntarily or which are forced to jump away during combat will not take part in the siege.

> IMPORTANT REMINDER!
>
> Keep in mind that you may not BUILD and auto-transfer items to another planet in the same sector if either planet is under siege. Instead, you must use the TRANSFER command.
>
> Also keep in mind that post-arrival TRANSFERs will only work if the destination planet is already populated.

A player that controls a planet that is under siege or which may be placed under siege should keep in mind that some of his production may be stolen by the enemy. Thus, production orders should be listed in order of importance. Items will not be built if there are insufficient funds. For example, if your planet is successfully attacked and besieged at the beginning of the turn, then a percentage of your production will be lost. Only the remainder will be available for you to spend. Keep this in mind if your system is 'visited' by a potential enemy.

A player that wishes to maintain a siege for more than one turn MUST provide appropriate battle orders EVERY turn, just as if the siege were being attempted each turn. At the beginning of each combat phase, the gamemaster's computer effectively 'forgets' about any previous sieges.

8.4.1. OCCUPATION

Even though Far Horizons does not have any special rules that deal exclusively with 'occupying' a planet of another species, it IS possible to achieve a very realistic kind of occupation using the existing rules. Consider the following scenario:

```
SP Good Guys and SP Bad Guys each have a colony on the 2nd planet
of the star system at 7 14 23.  At the beginning of the turn,
the Bad Guys have several warships in the system, plus planetary
defense units at their colony.  If the Bad Guys want to 'occupy'
the colony of the Good Guys, they could give the following orders:

    START COMBAT
    ; Place combat orders here.
    Battle  7 14 23
    Attack  SP Good Guys
    Engage  7 2     ; Attack and attempt to besiege
                    ;  planet 2.
    END
```

If the Bad Guys are successful at eliminating the ships and defenses of the Good Guys, then the siege will commence. Furthermore, the planetary defense units in the Bad Guy colony will add to the overall effectiveness the siege. This is especially important since planetary defense units are much more effective at siege than at fighting ships above the planet.

Now, since at least one ship or starbase is needed to maintain a siege, the Bad Guys can build a small starbase at the colony during the production phase of the turn (if they do not already have one). They can also build lots of additional planetary defense units to help maintain the siege. In effect, they have 'occupied' the colony of the Good Guys. Still another option would be to build sub-light warships. This approach will release the FTL warships for duty in other star systems.

Note that it's perfectably acceptable for the Bad Guys to specify planet #2 in an ATTACK order, even though there is a Bad Guy colony on the planet. The computer will never allow a species to attack itself (unless, of course, you decide to commit suicide and give an ATTACK order against your own species).

Now, consider another scenario:

```
SP Good Guys have a colony on the second planet of the star system
at 7 14 23.  SP Bad Guys do NOT have a colony on the planet, but
they would like to conquer and 'occupy' the Good Guy colony.  So,
in the previous turn, several warships AND TRANSPORTS jumped to the
colony.  The transports contain colonist units, mining units, and
manufacturing units.  The Bad Guys can now give the following orders:

    START COMBAT
    ; Place combat orders here.
        Battle  7 14 23
        Attack  SP Good Guys
        Engage  7 2      ; Attack and attempt to besiege
                         ;  planet 2.
    END

    START PRE-DEPARTURE
    ; Place pre-departure orders here.
        Name 7 14 23 2  PL Revenge
        Transfer CUs, IUs, and AUs from transports to PL Revenge
        Install IUs and AUs on PL Revenge
    END
```

The above orders will start a new Bad Guy colony if the Bad Guys win the battle. If the bad guys lose, then the TRANSFER and INSTALL orders will be ignored by the computer, since the transports will have been destroyed.

Now, consider a third scenario:

```
SP Good Guys have a colony on the second planet of the star system
at 7 14 23.  SP Bad Guys do NOT have a colony on the planet, but
they would like to conquer and 'occupy' the Good Guy colony.  So,
in the previous turn, several warships AND TRANSPORTS jumped to the
colony.  The transports contain lots of planetary defense units.
The Bad Guys can now give the following orders:

    START COMBAT
    ; Place combat orders here.
        Battle  7 14 23
        Attack  SP Good Guys
        Engage  7 2      ; Attack and attempt to besiege
                         ;  planet 2.
    END

    START PRE-DEPARTURE
    ; Place pre-departure orders here.
        Name 7 14 23 2  PL Revenge
        Transfer PDs from transports to PL Revenge
    END
```

If the Bad Guys win the battle, the above orders will start a new Bad Guy colony that contains ONLY planetary defense units. If the Bad Guys bring enough PDs, then the PDs can contribute significantly during the subsequent siege.

The above approaches are very realistic ways of effectively 'occupying' a planet inhabited by another species. The planetary defenses of the besieger play the role of an occupying army, while at the same time defending the colony of the occupier. If the siege has a high effectiveness rating, then the besieged species is in a quandry, especially if it has no hope of outside help. Also, keep in mind that it's very difficult to hide a partially constructed ship from the besieger. Since the besieger has people on the same planet, the chance of detecting ship and PD construction will be 95%, regardless of the actual siege effectiveness.

8.4.2. ASSIMILATION

Another very real kind of occupation can occur if the besieger actually lives on the besieged planet, shipping more and more of their own colonists there as time goes on. Eventually, the original population becomes 'assimilated'.

It is not realistic for a species to assimilate an entire home planet, since the population to be assimilated is simply too large. (Consider the failed Cardassian occupation of the Bajoran home world in the Star Trek stories.) However, it should be possible to assimilate the population of a colony. Something similar is actually happening today, here on Earth. For example, the Indonesians have essentially occupied and are now assimilating the people of East Timor, while the Chinese are doing the same in Tibet. In situations such as these, a relatively small occupying population is in complete control of a much larger native population because the occupiers control all of the weapons, the government, industry, communications, the economy, and so on, while continually shipping in more and more of their own people.

In Far Horizons, a colony will be considered 'assimilated' if the besieging species has a colony on the same planet, if the total population of the besieging species is more than 20 percent of the population of the besieged colony, and if the effectiveness of the siege is exactly 95 percent (i.e. the highest possible value). Also, only population due to the installed mining and manufacturing bases will be counted. (Population due to available population units, planetary defense units and uninstalled colonist units will NOT be counted, since they can be removed from the planet after assimilation takes place.) Also, only the effective economic bases will be used; i.e., any base over 200.0 will have only 5% of its actual value. (The purpose of this rule is to prevent the unrealistic situation in which a besieged colony artificially pumps up its economic base to prevent assimilation.)

When these conditions have been met, HALF of the mining and manufacturing base of the besieged colony will simply be transferred to the colony of the besieger, and the besieged colony will, in effect, cease to exist. (The remaining half is considered lost due to conversion inefficiency, low morale, guerrilla resistance, costs of dealing with a hostile population, etc.)

For example, the Human colony on Vega III is besieged by the Klingons, and the overall effectiveness of the siege is 95 percent. On Vega III, the installed population is 1,180,000 (mining base is 61.8 and the manufacturing base is 56.2). The Klingons also have a colony on the same planet, named Kitomer, with a total installed population of 250,000. Since the conditions for assimilation have been met, the computer will increase the mining base of Kitomer by 30.9 and the

manufacturing base by 28.1. In addition, any inventory on Vega III will be transferred to Kitomer. The Human colony Vega III will effectively disappear. From that point on, the Klingon player has complete control of the Human population on the planet. In effect, the Humans have become 'assimilated'.

If the siege is being conducted by more than one species that have colonies on the planet, then the mining and manufacturing base will be allocated in proportion to the relative siege effectiveness of each species.

Some players may object to the 20% population ratio, saying that 20% is too large, and that a value such as 10% or even smaller would be more realistic. Keep in mind, though, that here on Earth we are all humans on our home planet. Assimilating an alien species on an alien planet should be much more difficult.

8.5. SURPRISE

In some situations, it may be possible for one species to take another completely by surprise. For example, an ally that has ships in your system may attack unexpectedly. If surprise occurs, the attacker will be given one free round of attacks. Also, the defender's shields will be down during the surprise round. (In Far Horizons, it is assumed that shields are never in use unless absolutely necessary. Thus, when a ship is taken by surprise, it will always be assumed that the shields are down. Note that this is similar to the way shields are used in the Star Trek stories.)

Surprise can only occur if you are attacked by a species that you have declared to be an ALLY.

If you suspect potential treachery, then give a BATTLE order for the location, and also give any appropriate defensive ENGAGE orders. When this is done, it will be assumed that you are on full alert, and will not allow any allies to have a free round of surprise. Everyone at the location, however, will definitely be aware of your heightened state of alert.

8.6. BETRAYAL

If you are attacked by a species that you have declared ALLY, the status of the attacker will automatically change to ENEMY after the combat or strike phase in which the betrayal occurred. In effect, an "ENEMY SP Attacker" order will be issued for you.

If an ALLY is attacked by another ALLY, the status of the attacker will automatically change from ALLY to ENEMY. In effect, an "ENEMY SP Attacker" order will be issued for you.

(We'll discuss how to declare enmity or alliance towards other species later.)

8.7. COMBAT LOG

A complete log of the the fighting that takes place during a battle will be sent to the players of the species involved. The log describes who fires on whom, and whether or not the shot was successful. Since a battle contains many misses, these logs can become very long and very boring. If you want to receive only a brief summary of the results, then provide a SUMMARY command after the BATTLE command. The SUMMARY command has no arguments. Here is an example:

```
START COMBAT
; Place combat orders here.

    BATTLE  4 12 3
      SUMMARY      ;Log only the important stuff.
      ENGAGE    1  ;Try to keep fight, if any, away from
                   ; colonies.
      ENGAGE    2 4 ;Protect planet #4.
      etc.


  END
```

If a SUMMARY command is used, then only the important combat news will be sent to the player. Various failures, misses, and hits that do not completely destroy a ship or planetary defenses will not be reported.

The gamemaster always has the option of turning on summary mode if he feels that the logs are too long.

During a battle, it's possible for cargo to be destroyed if damage passes through the shields of a ship. Since this happens quite frequently, it is NEVER reported in the combat log. You will only know about it after the battle when you notice that some or all of the cargo is missing.

8.8. DAMAGE

In FAR HORIZONS, damage done in combat is indicated by increasing a ship's age. Thus, when a ship's age reaches 50, it is considered destroyed, since this is the age at which a ship becomes 100% disfunctional.

Ships which survive a battle, but which are badly damaged, can be repaired by using the UPGRADE command, or can be "cashed in" by using the RECYCLE command. Keep in mind, though, that these commands can only be used on planets that have production capacity. If the ships are badly damaged and are not in the same system as a producing planet that you control, they may have to jump to such a planet, and may self-destruct in the process.

8.9. WITHDRAWING FROM COMBAT

During the battle, your ships will have the option of withdrawing based on conditions that you set using the WITHDRAW command. If ships do withdraw, they will jump out of the sector to safety. You can also specify a rendezvous point using the HAVEN command. The HAVEN command has the following format:

```
Haven   x y z
```

where "x", "y", and "z" are coordinates where a ship should jump to if it decides to withdraw from battle. If no HAVEN order is given, then the ship will jump to a randomly selected location very

close to the battle sector. If a ship withdraws, then any explicit JUMP orders that appear in the jump section of your orders will be ignored. (It is assumed that a ship that withdraws from combat is likely to be damaged and that a normal, longer jump will be too dangerous.)

You may specify the conditions of withdrawal using the WITHDRAW command. Here is the format:

```
Withdraw    n1 n2 n3
```

```
n1 = maximum acceptable transport age
n2 = maximum acceptable warship age
n3 = maximum acceptable fleet loss percentage
```

The "fleet loss percentage" includes ships that have been destroyed or that have already withdrawn.

Here's an example:

```
START COMBAT
; Place combat orders here.

    ;The following combat orders will be for the attack on the Romulan home
    ; planet in their star system at 12 4 3...

    Battle      12 4 3
    Haven       10 3 3
    Withdraw    10 25 50


END
```

In the above example, any ships that decide to withdraw will attempt to jump to sector 10 3 3. An individual transport will withdraw if its age is greater than 10. An individual warship will withdraw if its age is greater than 25. The entire fleet will withdraw if at least 50% of the ships in the fleet have either been destroyed or have already withdrawn.

For the special case where the transport value is EXACTLY zero, transports will only withdraw if the entire fleet withdraws. For the special case where the fleet value is EXACTLY zero, the fleet will attempt to withdraw as soon as possible after ANY battle begins.

If no WITHDRAW order is given, the default will be:

```
Withdraw    0 50 50
```

Thus, the default is to fight to the death.

If a ship withdraws during the strike phase, then the ship name will contain the designation "WD" in the status report. These ships will jump automatically in the jump phase of the next turn, and

any explicit jump orders will be ignored.

8.10. AMBUSH

If you suspect that one or more other species may jump into your system to do battle, you may make advance preparations to 'ambush' them. You can do this by providing an AMBUSH order. However, unlike other combat commands, the AMBUSH command is given in the PRODUCTION phase of your orders - NOT in the combat phase. The AMBUSH command takes a single argument which indicates how much you will spend to prepare for the ambush. For example, if you suspect that the Cardassians and their allies will jump to your Vega IV colony system during the current turn in order to attack you in either the strike phase of the current turn or in the combat phase of the next turn, you can issue the following order in the production section for PL Vega IV:

```
START PRODUCTION
PRODUCTION PL Vega IV
; Place production orders here for planet Vega IV.

    Ambush  250

END
```

This indicates that you expect enemies to arrive in your sector before the end of the turn.

To carry out the ambush, you should give appropriate combat orders in the strike phase of the turn, as in the following example:

```
START STRIKES
; Place strike orders here.

    Battle  12 9 23
    Attack  0   ; Attack any declared enemies that arrive.
END
```

You may also give appropriate ENGAGE orders if you wish to continue fighting after the initial ambush.

An ambush will provide your species with a number of 'free' attacks that will damage and perhaps destroy enemy ships before any battle even begins. These attacks will take place in deep space as the enemy ships arrive in your system. The amount of damage done to the enemy will depend on how much you spent for the ambush; that is, how well you prepared.

Damage to the enemy will be measured in 'Effective Aging', which is calculated as follows:

$$ \textrm{Effective Aging} = \dfrac{10,000 \times \textrm{Amount Spent}}{\textrm{WT} + \textrm{TT}/10} $$

where

```
WT = The total enemy warship tonnage in the star system immediately before combat
begins.
TT = The total enemy transport tonnage in the star system immediately before combat
begins.
```

The 'Effective Aging' value will be added to the actual age of each enemy ship immediately before any battle begins. If the resulting age is greater than 49, then the ship is destroyed.

```
Example:  You expect that the Klingons will jump to the Earth system
during the current turn.  In your production orders for PL Earth, you
provide the order AMBUSH 710.  The Klingons arrive with three warships:
an FF (100,000 tons), a DD (150,000 tons), and a TR7 (70,000 tons).
Thus, the 'Effective Aging' value will be:
```

$$ \dfrac{10,000 \times 710}{100,000 + 150,000 + 70,000/10} = 27.63 = 27 $$

Note that fractions are dropped.

Thus, the age of each enemy ship will be increased by 27 turns immediately before the battle, if any, begins. In a situation such as the above, the ambush could be absolutely crippling.

In order for the ambush to take effect, you must issue an appropriate BATTLE order and one or more ATTACK orders during the strike phase, so that the computer will know who you consider an enemy. You may also provide any appropriate offensive and/or defensive ENGAGE options. Any normal combat will occur AFTER the ambush.

If the enemy does not arrive or if you do not issue any ATTACK orders, then the amount spent for the ambush will have been wasted.

A planet that is under siege may NOT issue an AMBUSH order.

Amounts spent on an ambush are cumulative. Thus, if two or more planets in the same star system issue AMBUSH orders, the effectiveness will be based on the total amount spent. Results are also cumulative if two or more species collaborate in an ambush.

The actual details of the ambush are not important, since Far Horizons is a strategic game - not a tactical one. However, an ambush could involve ships waiting in hiding among asteroids, use of space mines, subterfuge, and so on.

Since an ambush is essentially a way to 'purchase victory', there must be a realistic limitation on how much can be achieved. It makes no sense, for example, for a rich but poorly defended colony to be able to wipe out a powerful invasion force. In Far Horizons, we will simulate this reality as follows:

```
The amount of effective aging that results from an ambush will
be limited by the ratio of the warship tonnages present at the
ambush.
```

For example, if the warship tonnage of the ambushing forces is on par with the warship tonnage of the ambushed forces, then the full ambushing effect described above will take place. If, however, the ambushing forces are considerably weaker than the ambushed forces, then the net effective aging will be reduced. And if the ambushing forces are considerably stronger than the ambushed forces, then the effective aging will be increased.

Finally, it is much easier to ambush enemy ships if they enter the sector via a natural wormhole, since the ambushing species knows the precise exit point and can concentrate more of its forces at that point.

To simulate this reality, a ship that is ambushed as it exits a natural wormhole will experience DOUBLE the calculated age increase. Thus, if any of the ships in the above example had arrived via a natural wormhole, then their ages would have been increased by 2 x 27 = 54, which would have immediately destroyed them.

8.11. INTERCEPTION

There may be times when you wish to intercept and destroy a ship that jumps into one of your star systems before it can scan or learn anything about your inhabited planets. For this purpose, use the INTERCEPT command.

The intercept command is like the AMBUSH command because it appears in the production section of your orders and because you must specify the amount you are willing to spend for the interception. However, it is different because the results are applied immediately - you will attempt to destroy any enemy ship that jumps into your system the moment it arrives, rather than wait until the combat phase of the next turn.

It is also different because an ambush implies advance knowledge of who is coming and when they are coming. Interception implies a general state of alert without any advance knowledge. Thus, interception is inherently more difficult than ambushing, and has a higher cost for the same results.

When an INTERCEPT order is given in the production phase of your orders, it will apply immediately to any enemy ships that enter the system during the current turn. You can specify which species are enemies using the ENEMY command. The ENEMY command can appear in either the pre-departure, production, or post-arrival section of your orders. Here are some examples:

```
START PRE-DEPARTURE
; Place pre-departure orders here.


    Enemy   SP Klingon
    ENEMY   SP Romulan
    enem    999     ; ALL species are my enemies.


END
```

The ENEMY command takes a single argument, either a name of a species or a number. If it is a number, it states that all species in the game (even those you have not yet met) are your enemies.

Otherwise it states that the indicated species is your enemy. You may specify an enemy command for as many species as you want. When the argument is a number, any number may be used - the actual value is not important.

An ENEMY command remains in effect until cancelled. You can cancel an ENEMY command with either the NEUTRAL or ALLY commands. These also can appear in either the pre-departure, production, or post-arrival phase of the turn:

```
START POST-ARRIVAL
; Place pre-departure orders here.

    Neutral SP Klingon
    Neutral 7        ; I am neutral towards everyone.
    Ally    sp klingon  ; The Klingons are now my allies.


END
```

Again, a numeric argument (regardless of value) may be used to indicate neutrality towards ALL species in the game, even those you have not yet met. However, a numeric argument may NOT be used with the ALLY command. You can name one and only one species in an ALLY command, and you must have already met the species before you may declare alliance.

If you wish to declare that everyone in the game is an enemy EXCEPT one or more other species, declare everyone an enemy and then use the NEUTRAL or ALLY commands for the non-enemies. For example:

```
START PRE-DEPARTURE
; Place pre-departure orders here.

    Enem    111      ; Everyone is my enemy...
    Ally    SP Vulcan    ;  ...except the Vulcans (our allies)
    NEUTRAL SP Bajoran   ;  ...and the Bajorans (who I'm not sure of yet)


END
```

ENEMY, ALLY, and NEUTRAL orders will remain in effect until cancelled.

Unless you specify otherwise, the computer will assume that you are neutral towards all species in the game. When you meet a species for the first time, the computer will assume that you are neutral towards it, unless you have previously issued an ENEMY order with a numeric argument.

When an INTERCEPT order is executed, the computer will check if any enemy ships have successfully jumped into the star system of the producing planet during the current turn. If so, the total amount spent for interception on all planets in the star system will be applied to the enemy ships that just arrived, one at a time, until all ships are destroyed or until funds run out, whichever comes first. Ships will be chosen in random order, so as not to bias the results against any one enemy species.

The amount needed to destroy an enemy ship can be calculated as follows:

$$ \textrm{Cost} = \dfrac{100 \times \textrm{warship tonnage}}{10,000} $$

The cost needed to intercept and destroy a transport will be one-tenth of the cost for a warship of the same tonnage.

Note that, unlike an ambush, the ships are not aged - they are either completely destroyed or completely unharmed. If there are not enough funds to destroy the current randomly selected ship, then the interception process ends, and all remaining funds, if any, are wasted.

For example, let's say that three enemy ships successfully jump into the Earth solar system. The first is a 150,000 ton Klingon destroyer, the second is a 50,000 ton Romulan escort, and the third is a 50,000 ton Romulan transport. In the same turn, the production orders for Earth and Mars (in the same star system) contain the orders:

```
START PRODUCTION
PRODUCTION PL Earth
; Place production orders here for planet Earth.

    Intercept   450

    PRODUCTION PL Mars
    ; Place production orders here for planet Mars.

    Int     100

END
```

Thus, the total amount spent on interception is 550.

At the end of production for your species, the computer randomly selects the 50,000 ton Romulan escort as the first ship for interception. The cost is:

$$ \dfrac{100 \times 50,000}{10,000} = 500 $$

Since the current balance is 550, the escort is destroyed and the new balance is 550 - 500 = 50. If the computer then randomly selects the destroyer for destruction, the interception process immediately ends because the balance of 50 is not enough to destroy the destroyer (1500 needed), EVEN THOUGH IT IS ENOUGH TO DESTROY THE TRANSPORT! Thus, both the destroyer and the transport will be unharmed. If the computer had randomly selected the transport before the destroyer, then the transport would have been destroyed.

This element of chance is intentional, since an interception is inherently less reliable and more 'chancy' than an ambush.

Note that the three enemy ships do not have to be owned by the same species.

All species involved in an intercept will be notified of the results in their status reports. The species that owns the ships that were destroyed will only be informed that the ships disappeared without a

trace, cause unknown. Thus, the intercepted species will not know if the ship was destroyed by an enemy, or if it self-destructed on its own.

You may give both INTERCEPT and AMBUSH orders in your production orders. Obviously, INTERCEPT orders will apply immediately, while AMBUSH orders will take effect at the very beginning of the combat phase of the next turn.

Anything spent on interception is wasted if no enemy ships jump into the system; i.e., the amount spent does NOT carry over into the next turn. A planet that is under siege cannot issue INTERCEPT orders. Interceptions by more than one species in the same star system are NOT combined - they are each handled separately.

If an interception fails completely, the intended victim will not be told that an interception had been planned, and will remain completely in the dark.

Interception will only be used against ships that enter the sector via a JUMP, PJUMP, or WORMHOLE command. Interception cannot be used against ships that MOVE into a sector.

> A ship that MOVEs into a system is moving at sub-light speeds and will have telemetry of the space ahead, as well as the time to analyze the telemetry. An INTERCEPT takes advantage of the "timelessness" of the jump and the complete lack of data about the destination until the moment of emergence from the wormhole.

The main purpose of an interception is to prevent exploratory vessels from learning about the inhabitants of a star system. It is NOT intended as a replacement for normal combat. To reflect this reality, the INTERCEPT command will be limited as follows:

```
The maximum size of a ship that may be successfully intercepted
is 50,000 tons for warships and 200,000 tons for transports.  If
the random selection process described above selects a larger
ship, then the selection process will abruptly end.
```

For example, if three ships are randomly selected in the order <picketboat, battlecruiser, picketboat>, then only the first picketboat will be destroyed, even if there were sufficient funds allocated to destroy all three ships.

There is one major exception to the above rules regarding interception. Interception of a ship is much easier when the ship is exiting a natural wormhole, since the intercepting species knows the precise exit point and can concentrate more of its forces at that point.

To simulate this reality, the above tonnage limitations will NOT apply if the intercepted ship entered the sector via a natural wormhole. In other words, any ship can be intercepted and destroyed, REGARDLESS OF SIZE, if it enters the sector via a natural wormhole and if sufficient funds have been allocated for the interception.

8.12. STRATEGIC TARGETS

In general, an attacker will try to concentrate fire on the most powerful targets in order to eliminate them as quickly as possible. Smaller targets will generally be ignored until all of the more dangerous opponents are eliminated. Thus, if you have a large number of small ships (i.e. "cannon fodder") and hope that they'll draw the fire of more powerful opponents, you'll be disappointed. Attackers will rarely waste shots on puny targets as long as larger prey are available.

In some battles, however, you may want to concentrate your fire on targets of a specific type. For example, if you suspect that enemy transports are carrying germ warfare bombs, you may want to concentrate your fire on transports as long as they are within range. To specify a favorite target for a battle, use the TARGET command, as follows:

```
Target  1   ; Concentrate fire on warships.
Target  2   ; Concentrate fire on transports.
Target  3   ; Concentrate fire on starbases.
Target  4   ; Concentrate fire on planetary defense units.
```

Only one TARGET order may be given per battle. If more than one is given then only the last one will be effective.

The TARGET command simply indicates that you want to concentrate fire on units of the selected type. However, it does not guarantee that you will ONLY fire on the selected targets. The tactical situation may either prevent you from firing on a selected target or may force you to attack a different target. For example, if there are no more enemy units of the selected type, then your units will fire on any available enemy units.

8.13. THE STRIKE PHASE

Combat can take place either in the combat phase or in the strike phase.

All combat orders and engagement options are allowed in the combat phase.

All combat orders are allowed in the strike phase. However, engagement options for planet bombardment, germ warfare, and sieges are not allowed in the strike phase.

In effect, the strike phase is a limited-combat phase, And any combat that does take place in the strike phase generally takes the form of an initial surprise attack. Combat that requires more time, such as bombardment and siege, will take place in the combat phase of the following turn, and is thus a continuation of the combat that began in the strike phase.

Note that, even though a turn break occurs between the strike phase of one turn and the combat phase of the following turn, no actual game time passes.

8.14. PICKET DUTY

There may be times when you need to intercept enemy ships, but the INTERCEPT command will not work. For example, the ships may be too large, or they may be entering the sector via the MOVE

command. In situations like these, you can effectively intercept enemy ships in the strike phase - IF you have the firepower. Here's how to do it:

```
START STRIKES
; Place strike orders here.

    Battle  x y z
    Attack  SP name
    Engage  3        ; Deep space attack.
END
```

If you win the battle, the intruding ships will be destroyed before they can learn much about the sector.

Note that the above battle will not prevent the intruder from doing a scan during the post-arrival phase, but it WILL keep it from learning about who has colonies in the sector, what their economic bases are, and which non-attacking species, ships, and starbases are also in the sector. The intruder will only know that the attacker probably (but not necessarily!) inhabits the sector.

However, there is still one potential problem. If the intruder MOVEs to your sector and then ORBITs a planet, the above orders would not have the desired effect. This is because an "ENGAGE 3" order only tells your ships to attack enemy ships that are in deep space. You can, of course, give "ENGAGE 4 n" orders for all of the planets in the system, but this is a nuisance.

Instead, a special rule will apply in this kind of situation: the computer will reject a post-arrival ORBIT order for a ship that has just MOVEd into a sector. If necessary, the ORBIT order can be given in the pre-departure phase of the next turn.

8.15. HIDING YOUR STRENGTH

There may be times when you wish to engage in combat with an enemy, but you do not want to show your full strength. For example, let's say that you have a large fleet landed on a planet where the enemy cannot detect it. If you want to attack a single, small, enemy ship, you can do so using the commands described earlier. However, ALL of your ships will take part in the battle, and the enemy will learn your total strength in that sector.

To deal with this problem, you can use the HIDE command to tell the computer that specific ships are NOT to take part in combat unless absolutely necessary. Here's an example:

```
START COMBAT
; Place combat orders here.


    Battle  23 17 3
    Attack  SP Klingon
    Attack  SP Romulan
    Engage  3        ; Deep space attack.
    Hide    DN Omigosh  ; These ships should not fight unless we're
    Hide    BS Thunderclap  ;  losing the battle.
    Hide    BCS Whopper


END
```

In the above example, all of your warships in the sector will take part in the deep space attack except DN Omigosh, BS Thunderclap, and BCS Whopper. They will only join the battle if you are losing.

You may only give a HIDE order to ships that are landed on the surface of a planet. HIDE orders given to ships in orbit or in deep space will be ignored.

If you give a HIDE order to a transport, the enemy will only be allowed to attack it if you start losing the battle.

A ship that is given a HIDE order will not take part in any subsequent bombardment or siege, unless it also took part in the battle.

Keep in mind that there may be a risk in using the HIDE command. If you misjudge the enemy's strength, they may be able to destroy your front guard before the reserves join the fight. On the other hand, if all ships had been in the battle from the beginning, enemy fire could have been spread so thin that none of them would have been damaged.

8.16. HIJACKING

The HIJACK command should be used if you do NOT want to destroy enemy ships, but instead want to capture them. The captured ships and cargo can then be sold for profit, and the crew and passengers can then be ransomed or sold into slavery. The HIJACK command should be used instead of the ATTACK command, as in the following example:

```
START COMBAT
; Place combat orders here.

    Battle  10 25 12
    Attack  SP Klingon  ; Attack the Klingons and attempt to destroy
                ;  their ships.
    Hijack  SP Romulan  ; Attack the Romulans and attempt to capture
                ;  their ships.
    Engage  3        ; Attack them in deep space...
    Engage  5 2     ;  and at planet 2, and bombard the planet if
                ;    possible afterwards, ...
    Engage  7 3     ;  and at planet 3, and besiege the planet if
                ;    possible afterwards.
END
```

Hijacking may also be attempted in the strike phase.

When attempting to HIJACK the ships of another species, combat will occur in the usual way, but the hijacking ships will have only 25% of their normal offensive and defensive combat capabilities. If an enemy ship is then "destroyed", it will be considered effectively "hijacked". If you ATTACK one or more species while HIJACKing one or more other species in the same battle, then your ships will have the reduced combat capabilities whether they are ATTACKing or HIJACKing. Because of this, it may not be a good idea to do both unless you have vastly superior forces.

Hijacked ships and cargo will be automatically sold, and economic units will be added to the treasury of the hijacking species. The number of economic units received will be equal to the normal recycle value of the hijacked ships and their cargo.

You may NOT hijack planetary defense units. If successfully attacked, they will be destroyed.

If additional combat operations take place after the hijacking (such as bombardment or siege), the attacking ships will have their full, normal combat capability.

Chapter 9. MISCELLANEOUS OPERATIONS

Commands and other operations that do not belong in any of the previous chapters will be discussed here.

9.1. SCAN ORDERS

If you wish to receive information about a star system, you must order a ship to do a sensor scan. Use the SCAN command to do this. For example:

```
START POST-ARRIVAL
; Place post-arrival orders here.

    SCAN TR1 Intrepid

END
```

The SCAN command may only be issued in the pre-departure or post-arrival sections of your orders.

If the ship mis-jumped to the scan location during the jump phase, then a scan order issued in the post-arrival phase will still be executed, but it won't detect anything unless it mis-jumped to coordinates that contain a star system, which is highly unlikely.

A scan only tells you about the physical characteristics of the planets in the sector. It does NOT tell you which planets are populated, or if there are other ships in the sector. This additional information is always automatically provided on your status report, whether or not you give a SCAN order. Remember, though, that you will never be able to detect ships that have landed on a populated planet unless you also have population on the same planet.

If you have a ship or a populated planet in a star system that has one or more alien inhabited planets, your status report will also provide an approximate indication of the amount of commercial and industrial activity on those planets. The activity will be indicated as in the following example:

```
   Colony planet PL Dizzy (planet #2)                  SP Goofballs
      (Economic base is approximately 210.)
```

This simply indicates that a planet named "Dizzy" is colonized by a species named "Goofballs", and that the sum of mining base plus manufacturing base on the planet is approximately 210. Again, this information is provided automatically on your status report - there is no need to provide a SCAN order.

9.2. MESSAGES

You can send a message to any species you know of with the MESSAGE command. Messages may be

sent in either the pre-departure or post-arrival phase of the turn. Here are some examples:

```
START PRE-DEPARTURE
; Place pre-departure orders here.

  MESSAGE   SP Klingons

    My email address is goofy@bubblegum.gov. Please contact me ASAP!

  ZZZ

END

START POST-ARRIVAL
; Place post-arrival orders here.

Mes SP Romulans
Please do not be alarmed at the size of the fleet in your home system. We're
simply using your home system as a rest stop on our way to another location.
Rest assured that we have no ill intentions towards you.
zzz

END
```

Messages can be as long as you wish. Make sure to end the message with a line containing the command ZZZ. Also make sure that none of the lines in the message itself start with the letters "zzz".

9.3. TRANSFERRING ECONOMIC UNITS

To transfer economic units to another species, use the "SEND" command. For example, if you wish to transfer 250 economic units to the Klingons, you should give the following order:

```
Send 250 SP Klingon
```

You may not SEND economic units to a species that you have declared to be an ENEMY. If you wish to SEND economic units to an ENEMY, make a temporary declaration of neutrality, as in the following example:

```
START POST-ARRIVAL
; Place post-arrival orders here.

    Neutral     SP Tholian
    Send    500 SP Tholian
    Enemy       SP Tholian
END
```

A SEND order must appear in the pre-departure or post-arrival section of your orders - NOT during production!

9.4. KNOWLEDGE TRANSFERS

In Far Horizons, a donor species may transfer knowledge to a recipient species using the TEACH command, as in the following examples:

```
Teach   GV  SP Klingon
Teach   BI 17   SP Klingon
```

where the maximum tech level to be taught is optional. If not specified, then the actual tech level of the teacher will be used.

TEACH orders may only appear in the post-arrival section of your orders.

You may not TEACH a species you haven't yet met.

When a TEACH order is executed, the computer simply notes that you have obtained knowledge associated with a tech level. If you then RESEARCH the technology in a later turn, there will be no randomness in achieving the new tech level, since you already have the needed knowledge. Instead, the funds will be used to perform the necessary engineering and to spread the new technology throughout the species. In effect, the research funds will be used directly to 'purchase' the new tech level.

Since the basic research is eliminated, the randomness is also eliminated and the cost is reduced. However, the recipient must still do the initial engineering and development work. Thus, the cost of a tech increase will be less than the cost of solitary research.

On average, if you wish to increase a tech level by one point using normal, unaided research, then the average cost will be the current tech level times itself. For example, if the current Biology tech level is 9, then the basic cost to increase the tech level from 9 to 10 is 9x9 = 81. Keep in mind, though, that this is an AVERAGE value. Basic research is highly random.

Now, if another species first transfers the knowledge to you via the TEACH command, then there will be a 25% discount on the basic cost of research, and there will be no randomness at all.

For example, SP Human gives the following post-arrival order:

```
Teach   GV 20   SP Klingon
```

In the next turn, the Klingons have a gravitics tech level of 18 and give the following production order:

```
Research 750 GV
```

When this order is processed, the Klingon gravitics tech level will immediately rise as follows:

$$\textrm{cost for } 18 \textrm{ to } 19 = 18 \times 18 - 25\% \textrm{ discount } = 324 - 81 = 243$$
$$\textrm{cost for } 19 \textrm{ to } 20 = 19 \times 19 - 25\% \textrm{ discount } = 361 - 90 = 271$$
$$\textrm{total cost using transferred knowledge} = 243 + 271 = 514$$

The remaining funds (750 - 514 = 236) will be allocated to additional, normal research in gravitics.

If knowledge has been transferred to you but has not yet been applied, the usable knowledge level will appear in your status report as in the following example:

```
Tech Levels:
    Mining = 17/21
    Manufacturing = 17
    Military = 9
    Gravitics = 8
    Life Support = 13/14
    Biology = 4
```

The above indicates that your mining tech level is 17, but that you have knowledge up to 21. Similarly for life support.

There is no limit to how much technical knowledge may be transferred in a single turn. As long as the donor's tech level is high enough, the transfer will take place.

You may NOT transfer knowledge to a species that you have declared to be an ENEMY. If you wish to transfer knowledge to an ENEMY, make a temporary declaration of neutrality, as in the following example:

```
START POST-ARRIVAL
; Place post-arrival orders here.

    Neutral     SP Klingon
    Teach   GV 20   SP Klingon
    Enemy       SP Klingon
END
```

TEACH orders will not be logged in the donor's status report. They will be logged in the recipient's report ONLY if they succeed in raising the knowledge level of the recipient.

IMPORTANT!

It is strictly forbidden to attempt to transfer knowledge to a species that does not want it or which is not expecting it. This is necessary because some species may not want certain types of knowledge for role-playing reasons. Any player that intentionally breaks this rule will be evicted from the game.

9.5. ESTIMATING THE TECH LEVELS OF OTHER SPECIES

At any time after meeting another species, you many analyze all of the information you have about the species and estimate their tech levels. To do this, issue the ESTIMATE command in the production section of your orders for a planet. Here is an example:

```
START PRODUCTION
PRODUCTION PL Dagwood
; Place production orders here for planet Dagwood.

    Estimate    SP Klingon

END
```

Each estimate has a cost of 25. You will receive an estimate of all six tech levels for the species.

The accuracy of your estimate will depend on how high your tech level is compared to the same technology for the other species. If your tech level is significantly higher than the level for the other species, then the estimate will be very accurate. At the opposite extreme, if your tech level is much lower than the level of the other species, then the estimate may not be very accurate.

9.6. DISBANDING A COLONY

There may be situations when it is desirable to disband a colony. For example, you may be ordered to leave by a more powerful enemy who will destroy the colony if you don't obey. In this case, it would be better to remove the colony peacefully, and perhaps salvage some of your investment, than to fight a battle that you know you cannot win.

If you decide to disband a colony, for whatever reason, you should use the DISBAND command in the pre-departure section of your orders. For example,

```
START PRE-DEPARTURE
; Place pre-departure orders here.

    Disband     PL Vega III

END
```

You may NOT disband your home planet.

You may NOT disband a colony that is under siege.

When processing a DISBAND order, the computer will do the following:

1. Any mining base and manufacturing base will be converted to Colonist Units, Colonial Mining Units, and Colonial Manufacturing Units; i.e. exactly the reverse of the INSTALL command.

However, IUs and AUs will only be converted at 50% efficiency. For example, a mining base of 21.3 will produce 213 CUs, but only 106 IUs.

2. The computer will mark the colony as "disbanded".

3. At the end of the turn (after the post-arrival phase) the computer will convert anything of value that is left on the "disbanded" planet to economic units, and will automatically transfer the economic units to the balance for the species. Any ships that are landed on the planet and any starbases orbiting the planet plus any cargo that they carry will be salvaged, even ships that were under construction. The amount of economic units obtained by salvaging will be ONE-HALF of their total RECYCLE value (see section 5.10 for information about recycling).

When a colony is marked as "disbanded", any ships on the surface, including ships that are still under construction, and any starbases in orbit are marked as "salvage". If you LAND a ship on the planet after the DISBAND order, it will also be marked as "salvage". If you ORBIT a starbase around the colony after the DISBAND order, it will also be marked as "salvage". You may not give any MOVE, ORBIT, JUMP, PJUMP, or WORMHOLE orders to a ship or starbase that has been marked as "salvage". Thus, it is important to issue any LAND or ORBIT orders BEFORE giving the DISBAND order.

In the pre-departure section of your orders, immediately after the DISBAND order, you can fill up any other ships and transports with the CUs, IUs, AUs, and anything else that is on the planet, and give these ships orders to leave in the jump section of your orders. In other words, the "disbanded" colony and "salvage" ships and starbases may still take part in TRANSFER commands after the DISBAND order has been given. In this way, you can TRANFSER any items of value that are on the planet or on the "salvage" ships to other ships or even to other planets in the star system. If you have any jump portals in the star system, you may use them as well, including any jump portal starbases that have been marked as "salvage" (see section on high tech items for more information about jump portals).

After the post-arrival phase, any items and ships that are on a "disbanded" planet and starbases that are in orbit around the planet will be salvaged, even if they were not there when the DISBAND order was executed. If these ships or starbases have cargo, then the cargo will also be salvaged. The actual details of the salvaging operation are not important. (Possible scenarios: 1. The people on the planet commandeer all commercial vessals in the system, load them up, and escape. 2. The people on the planet negotiate with the enemy for a little more time to disband. 3. If there is time, the people and the government can hire commercial spacelines, or even professional salvaging companies to disband the colony. And so on.)

The DISBAND command will completely delete all information about the planet, even its name. Thus, you may also use this command to delete a planet that you have named but have not yet colonized.

9.7. DESTROYING SHIPS AND STARBASES

If you want to destroy a ship or starbase (for whatever reason), use the DESTROY command, as in the following examples:

```
START PRE-DEPARTURE
; Place pre-departure orders here.

    Destroy     BAS One Shot
    DES     CTS Billy Joe Bob
    dest        TR4 Lollipop
END
```

When the DESTROY order is executed, the ship or starbase and all of its contents are blown to smithereens. Nothing is salvaged.

The DESTROY command may be used in either the pre-departure or the post-arrival phase of the turn.

Unlike the RECYCLE command, the DESTROY command may be used anywhere - the ship or starbase does not have to be at a planet or in a star system.

The fate of the crew of the destroyed ship or starbase depends on the species. Some will commit suicide, some will choose to die with the ship, others may escape in lifeboats, and so on. It's entirely up to the player.

9.8. THE "DEVELOP" COMMAND

It's easy to make mistakes when calculating the number of IUs and AUs needed for a colony. If the number of units is not properly balanced (based on the mining difficulty), then you'll either have excessive production capacity or excessive raw material units.

The DEVELOP command was implemented to do these calculations for you, and to save you some time in other ways as well.

The DEVELOP command has three modes of operation. In the first mode, the command has two arguments: the name of the colony and the name of the transport that will carry the CUs, IUs, and AUs. Here is an example:

```
START PRODUCTION
PRODUCTION PL Earth
; Place production orders here for planet Earth.

    Develop PL Orion 7, TR20 Tubby

END
```

For the above order, the computer will first determine the current cargo capacity of the transport. If the colony is a normal colony (as opposed to a resort or mining colony) and has the resources to build its own IUs and AUs, then the computer will build only CUs to fill the transport; otherwise it will build the correct balance of CUs, IUs, and AUs based on the mining difficulty of the planet. If the colony is a resort colony, then only CUs and AUs will be built. If the colony is a mining colony,

then only CUs and IUs will be built. If only CUs are being sent to the colony, then the computer will also generate orders for the colony to build the correct amount of IUs and AUs based on the mining difficulty. (Why waste cargo space for IUs and AUs? Let the colony build them!) These orders will be placed in the orders section at the end of the status report.

> Incidentally, when the DEVELOP command is processed, the computer can not predict exactly what the production will be on the colony during the next turn. For example, the computer does not know what the fleet maintenance cost will be, and cannot predict if the player will be doing other production on the colony. Because of this, it makes a very conservative estimate of the next turn's production. The result may be that the transport carries IUs and AUs that the colony is capable of building itself. However, this will not be a serious problem because it will only occur once or twice, when the colony is still relatively small.

If the colony is not yet colonized, or if it does not have sufficient production capacity to build its own IUs and AUs, then the computer will fill the remaining cargo space of the transport with a correct balance of CUs, IUs, and AUs based on the planet's mining difficulty. Note that this will only work for normal colonies. If you want to start a mining or resort colony, do not use the DEVELOP command. However, the DEVELOP command may be used AFTER the mining or resort colony has been started.

At the end of production, any CUs, IUs, and AUs will be loaded onto the transport. Also, an order will be automatically generated for the transport to jump to the colony. This order will be placed in the order section at the end of your status report. This assumes, of course, that the ship is in the same sector as the producing planet. If not, the items will remain on the surface of the planet and no JUMP order will be given for the ship.

If you want to load other cargo onto the transport, make sure to do so BEFORE issuing a DEVELOP order. A DEVELOP order will use all remaining unused cargo space.

Note that the DEVELOP order must be given in the production phase of your orders.

In the second mode of operation, no transport is mentioned. Instead, it is assumed that the colony is in the same sector as the producing planet. Here is an example:

```
START PRODUCTION
PRODUCTION PL Earth
; Place production orders here for planet Earth.

    Dev PL Venus

END
```

The above order is similar to the previous one, except that the remaining available population of the PRODUCING planet will be used, and the items will be automatically transferred to the colony instead of to a transport. In addition, an order will be automatically generated for the next turn to install the units on the colony.

Since this mode uses the available population of the PRODUCING planet, this order should be placed after any other orders are given to build CUs or PDs.

In the third mode of operation, the command should be given on the colony itself and has no arguments. Here is an example:

```
START PRODUCTION
PRODUCTION PL Venus
; Place production orders here for planet Venus.

    DEV

END
```

For the above order, the computer will build X CUs, where X is equal to the remaining available population, and a correct balance of IUs and AUs based on the mining difficulty of the planet. It will also automatically generate INSTALL orders for the next turn to install the units. Note that this command cannot be given on a mining or resort colony, since it has no production capability.

If you do not have sufficient funds to utilize all of the available population or transport cargo capacity, then the computer will use the available funds as the limiting factor. Note that the computer WILL spend economic units from the treasury, if needed.

In all of the above modes, you may optionally specify a spending limit. Here's an example:

```
START PRODUCTION
PRODUCTION PL Earth
; Place production orders here for planet Earth.

    Dev 450 PL Venus

END
```

In the above example, no more than 450 will be spent to develop the planet Venus even if you have more available funds or available population.

Normally, you may not DEVELOP a home planet. However, if the home planet has been bombed, then you may use the DEVELOP command to bring it back to its original value.

9.9. THE "AUTO" COMMAND

Far Horizons is a complicated simulation, and providing orders for all of your ships and planets can be both tedious and time-consuming, especially in later stages of the game when empires become very large. The AUTO command is intended to reduce the tedium and make it less likely that mistakes or omissions will occur.

The AUTO command should be given in the post-arrival phase of your orders. It has no arguments:

```
START POST-ARRIVAL
; Place post-arrival orders here.

    Auto

END
```

The AUTO command instructs the computer to automatically generate reasonable orders for your ships and planets FOR THE NEXT TURN and to place these orders in the appropriate places in the orders section of the status report. The AUTO command will generate orders to accomplish the following:

1. If a transport has colonist units in it, is not in the home sector, and is orbiting or landed on a planet whose economic base is less than 200, then an UNLOAD order will be generated for the transport, and it will be given an order to JUMP to the planet where it was most recently loaded with CUs (typically the homeworld). Also, a DEVELOP command will be generated for the destination planet to prepare colonists for the same colony using the same transport.

2. Since TR1s are normally used for scouting, JUMP orders will be started for all TR1s. The destination will be the closest star that has not yet been visited by your species. If you've already visited all stars in the galaxy, then the destination will be "???". The order will be commented with the age and current location of the ship, plus the mishap chance for the jump.

3. All other ships will be issued JUMP orders with the destination "???". The order will be commented with the age and current location of the ship.

4. If a planet will have excess raw material units in the next turn, an order will be generated to recycle them.

5. If a colony has an economic base less than 200 and if it has an available population greater than zero, then a DEVELOP order will be generated for it.

6. For the home planet and any colonies that have an economic base of 200 or more, a check will be made to see if any other colonies in the same sector have an economic base less than 200. If so, then orders will be generated to DEVELOP those colonies.

7. Starbases will be given orders to increase their sizes up to the MA tech limit. A comment will indicate the current size.

8. Ships that are still under construction will be given orders to complete their construction. A comment will indicate the amount left to pay.

9. If a TR1 is in a sector that you do not inhabit, the computer will assume that it is a scouting vessel and will generate a SCAN order for it in the post-arrival phase.

10. An AUTO command will be generated for the next turn.

Obviously, if you do not agree with a particular order, you can simply delete it or change it to something more desirable. For example, if an order is automatically generated to develop your Rigel colony, you can manually change it to develop your Arcturus colony instead.

9.10. THE "VISITED" COMMAND

The AUTO command generates orders for TR1s to JUMP to the nearest sector that your species has not yet visited. However, the computer has no way of knowing if another player gives you a scan of an unvisited sector. The VISITED command tells the computer that you already have a scan of a sector and that you do not want it to generate JUMP orders to go there for your TR1s. Here are some examples:

```
START JUMPS
; Place jump orders here.

    Vis 31 12 18    ; We just received scans of these sectors
    VISIT  33 9 10    ;  from our allies.

END
```

A VISITED order must appear in the JUMP section of your orders, and the x, y, and z coordinates must apply to a sector that has a star. If the sector does not have a star, then the order will be ignored.

Also, whenever you NAME a planet, the sector will me marked as visited by your species even if you have not actually been there.

Chapter 10. MISCELLANY

This chapter will cover those aspects of the game that do not quite belong in any of the other chapters. Since it is also the last chapter, it is an ideal place to make additions, corrections, threats, etc. without throwing everything else out of kilter. Thus, this chapter is probably the most important one in the rules.

10.1. HIGH-TECH ITEMS

Appendix A of this manual contains a list of high-tech items that your species will be able to build when it achieves certain minimum tech levels. You will be notified on your status report whenever this occurs. The descriptions of the high-tech items are self-explanatory.

All high-tech items must be built in a single turn, unless specified otherwise.

10.2. COMMUNICATION BETWEEN PLAYERS

Players who wish to keep their real identities anonymous may do so. You may send a message to another species via the MESSAGE command. The recipient will only know the name of the species who sent the message. If you wish to communicate directly with other players, you can send them your email address with the MESSAGE command.

In addition, some gamemasters may provide a list server at their email site that will allow players to send messages to other players using species names rather than player addresses. It will also allow you to broadcast messages to all other players, anonymously or non-anonymously.

10.3. INTERSPECIES TRANSFERS

It is not practical or realistic to allow items or ships to be transferred from one species to another. Items built for one species are not likely to be suitable for use by a different species. The easiest and least expensive way to give something to another species is to give them economic units, discussed earlier. You may also build items and ships SPECIFICALLY for another species. This will be discussed later in the section on 'interspecies construction'.

10.4. QUESTIONS

Questions for the gamemaster should NOT be sent with your orders for the turn. You should send any questions to the gamemaster in a separate email message. It is quite possible that the gamemaster will never even see your orders, but will simply feed them to the computer.

10.5. USE PLANET NAMES, NOT NUMBERS!

The precise designation for a planet is "X Y Z N", where "N" is the number of the planet in the star system. This complete designation is only allowed in the NAME command, discussed earlier. Planet numbers are also needed in some combat commands, and may be used in the LAND and ORBIT commands. In all other commands, planet names MUST be used if you need to refer to a specific

planet, such as "PL Earth". You may NEVER use planet names assigned by other species. When processing YOUR orders, the computer is only aware of names that YOU have assigned. (There is one exception to this - the PJUMP command - which will be discussed later in the section on Jump Portals.)

If a star system has one or more planets with names, you may still refer to the star system by using the X, Y, and Z coordinates, but this is not recommended. If you mis-type a planet name, the gamemaster will be notified by the computer and can correct the mis-spelling. If you mis-type a coordinate, however, the gamemaster is not likely to know your intentions, even if an error is reported by the computer. Furthermore, if it is a JUMP order, your ship may mis-jump or even self-destruct. However, you should avoid giving names to planets that you have not colonized, unless you travel there frequently.

When jumping to meet another species, there is never any need to specify a particular planet. As long as members of two species are in the same sector, they may interact. There are no combat advantages or disadvantages to being on or near a particular planet in an encounter.

Finally, it is possible to NAME planets in a sector that you have not yet visited. If you name a planet that does not exist, then the computer will simply reject the order. Unfortunately, this allows cheaters to attempt to name up to nine planets in a sector that they know nothing about and, thus, to find out how many planets are in the sector. To protect against this kind of cheating, the computer will notify the gamemaster of any such attempts. Also, if your gamemaster is running the Far Horizons list server, then this will also occur when using the FHTest feature of the list server.

10.6. SPECIFYING ZERO QUANTITY

Whenever it makes sense, you can specify "0" quantity in an order to indicate that ALL available quantity should be used. Here are some examples:

```
Build   0 PD    ; Spend all remaining funds on planetary defenses.

CONT    BAS Deep Space 9, 0 ; Increase size of starbase as much as
                ;  remaining funds allow, but do not
                ;  exceed tonnage limit.

Cont    DD Dagger, 0    ; Spend all remaining funds (up to what is
            ;  actually needed) on DD.

Recy    0 RM    ; Recycle all excess RMs.

Install 0 IU, PL Mars   ; Install all IUs that are on Mars.

SEN 0 SP Klingon    ; Send all economic units we have to the
            ;   Klingons.

UPGRADE BAS Wobbly, 0   ; Spend all remaining production (or as much
            ;   as is needed) upgrading the starbase.
```

A zero argument used in a production command will NOT automatically spend economic units owned by the species. It will only spend what is available from production capacity and raw material units. If you wish to spend economic units, you must provide a non-zero argument. For the DEVELOP command, a zero argument will work as expected. Thus, if you specify "0", it will spend the remaining balance for the planet, and it will not spend any economic units (e.g. DEV 0 PL Mars). However, if you do NOT specify a spending limit (e.g. DEV PL Mars), then the entire balance, if needed, including economic units, will be used.

10.7. THE EFFECT OF COMBAT ON THE RELIABILITY OF STATUS REPORTS

A status report provides information about the status of your species IF COMBAT DOES NOT OCCUR AT THE VERY BEGINNING OF THE NEXT TURN.

If combat DOES occur during the combat phase, then the information on the status report may be unreliable. Here are a few examples:

1. If combat destroys some or all of the mining and manufacturing bases on a planet, then production for the planet will be less than indicated on the status report, and some production orders may be rejected by the computer.

2. If ships are destroyed during combat, then commands that involve these ships (e.g. JUMP, ORBIT, TRANSFER, etc.) will be rejected by the computer.

3. Ships that jumped into the star system in the previous turn and LANDed or ORBITed a planet will not actually be able to LAND or ORBIT if they are destroyed in combat.

In other words, the information in your status report assumes that combat at the very beginning of the next turn will not change the situation. It is important to keep this in mind when reading and interpreting your status reports. For example, if your status report shows that a large enemy fleet has just entered orbit around your home planet, IT MAY NOT BE TRUE. If you issue combat orders to fight the enemy in deep space, you may be able to prevent them from reaching your home world.

Thus, in effect, the status report shows you what the situation will be if combat does not occur at the very beginning of the next turn. If combat DOES occur, then the status report may be wrong.

10.8. SHIPYARD CAPACITY

Each producing planet will have a shipyard capacity which will limit how many ships can be built in a single turn. The shipyard capacity of the home planet will be one when the game begins. The shipyard capacity of a normal colony will start at zero.

The number of production orders that you issue to BUILD, CONTINUE, IBUILD, or ICONTINUE ships or starbases may not exceed the shipyard capacity. (The IBUILD and ICONTINUE commands will be discussed later.) For example, if you wish to issue three BUILD commands for new warships, a CONTINUE command for a transport, and a CONTINUE command for a starbase, then the planet must have a shipyard capacity of at least five. Orders that exceed the shipyard capacity will be ignored. Orders to build other items such as colonist units, planetary defense units, and so on, do NOT require shipyard capacity. Only construction of warships, transports, and starbases requires

shipyard capacity.

If you wish to increase the shipyard capacity of a planet, you must issue a SHIPYARD command during the production phase. This command will increase the number of shipyards on the planet by one. You may only issue one SHIPYARD order per planet per turn. The cost to build a shipyard is ten times the current manufacturing tech level. You may not build shipyards on mining or resort colonies.

10.9. LIMITATIONS ON COLONY SIZE

In Far Horizons, colonies grow mainly by installing mining and manufacturing units, and there is no limit to how many units may be installed. In fact, it's even possible for a colony to eventually produce more spendable income than the home planet. While this is not necessarily unrealistic, there must be a limit to how large and productive a colony can become. Otherwise, runaway growth would make the game unplayable.

We will deal with this potential problem by defining a new concept called "economic efficiency" which will apply to colonies, but not to the home planet. The economic efficiency of a colony will be 100% if its economic base (i.e., the sum of its mining and manufacturing bases) is not more than 200.0. If the sum is greater than 200.0, then the economic efficiency will be a percentage smaller than 100%.

When the computer calculates the production for a colony it will multiply the result by the economic efficiency to determine the actual amount that will be available for spending. For example, if the original amount is 2107, and the economic efficiency is 82%, then the actual amount available to spend will be 82% of 2107 = 1727. (Note that fractions are dropped. This calculation will be done after the calculation of the production penalty but before the calculation of the fleet maintenance cost.)

Here is how the economic efficiency (EE) will be calculated:

$$ \textrm{EE} = 100 \times \dfrac{200.0 + (\textrm{total economic base} - 200.0) / 20}{\textrm{total economic base}}\textrm{percent} $$

In effect, any installation of IUs and AUs beyond the 200.0 value will have only 5% of its normal effect.

> Keep in mind that the above applies only to colonies, since it is not possible to install IUs and AUs on a home planet, and since it is not possible to colonize the home planet of another species.

Note that players NEVER have to do any of the above calculations! All of the calculations will be done by the computer and the results will be printed on your status reports. It is very important, though, that you keep the 200.0 limit in mind, since installation of mining and manufacturing units after the 200.0 limit has been reached will not be very effective.

In Far Horizons, it's also possible for more than one species to colonize the same planet. Thus, when doing the above calculation, the computer will use the total economic base for ALL species on the

planet. In other words, the economic efficiency will apply to an entire planet, NOT just to a single colony on the planet, and will be the same for all colonies on the planet.

Now, even with the above rules, you will discover that many colonies generate more income than the homeworld, even though the homeworld has a much greater population.

There's nothing unrealistic about this if you keep in mind that homeworld production is the result of taxation. A colony (at least in its earlier stages) is completely owned by the government. In other words, the government owns all the resources, employs all of the population, keeps all the profits, and does not pay taxes. It can even tax the colonists (what one hand gives, the other takes away :-). Also, the total production on the home planet that is available for the player to use is only a small fraction of the total taxes actually collected by the government. Most taxes will be spent on other things, such as schools, police, health care, social security, boondoggles, and so on, and will not be available to the player.

In time, the same thing will happen to colonies, although not to the same extent as on the home planet, and definitely not within the course of a game. As the colony becomes more and more self-sufficient, a smaller and smaller fraction of its TOTAL production is owned directly by the government while a larger and larger fraction is due to taxes on the private sector. The 200.0 base limit is simply a game device that allows us to simulate the transition from a government-owned corporation to a more normal economy.

So, keep the 200.0 limit in mind. You may continue to install IUs and AUs beyond the limit, but it will take much longer to pay off the investment, and, in general, you will be much better off if you install the units elsewhere.

Appendix A: HIGH-TECH ITEMS AND CAPABILITIES

A high-tech item is different from other items already discussed in that it has a "critical" technology that is needed in its construction. For example, if a species wants to build Starbase Units, it must have a Manufacturing tech level of at least 20. Whenever your species achieves a tech level needed to build one of these special items, you will be notified on the status report. Unless stated otherwise, all items can be built using the BUILD or IBUILD command (the IBUILD command is described later).

A.1. STARBASE UNITS

A species with a Manufacturing tech level of at least 20 may build Starbase Units. These units are modular units that can be transported to remote locations where there is no production capability, and used to build starbases. For example, using starbase units, you can build a starbase at a resort or mining colony, or even at a location where there is no star system.

Starbase units have a cost of 110 each, and require a cargo capacity of 20 each. Use the abbreviation "SU" for starbase units. When installed, each unit will contribute 10,000 tons to the total mass of the starbase.

Starbase units are installed using the BASE command, which has the same format as the TRANSFER command. The first argument of the command is the number of starbase units that are to be installed. The second argument is the name of the ship or planet that will provide the starbase units. The third argument is the name of the starbase that is to be built or increased in size.

The first argument is optional. If it is missing or zero, then all available starbase units will be used. The BASE command may only be used in the pre- departure section of your orders. Here are some examples:

1. The Human transport TR16 Barrel of Monkeys jumps to the location x = 7, y = 12, z = 14. There is no star system at this location. The transport is carrying 7 starbase units. The order:

```
START PRE-DEPARTURE
; Place pre-departure orders here.

    Base    TR16 Barrel of Monkeys, BAS Deep Space 3

END
```

will unload all seven starbase units and construct the 70,000 ton starbase named BAS Deep Space 3.

In the next turn, the Human transport TR20 Tub of Lard jumps to coordinates 7 12 14 carrying 10 more starbase units. The order:

```
START PRE-DEPARTURE
; Place pre-departure orders here.

    BAS 4   TR20 Tub of Lard, BAS Deep Space 3

END
```

will install 4 of the units, increasing the size of the starbase from 70,000 to 110,000 tons. The six unused starbase units will remain onboard the transport.

A starbase built using the BASE command will always be built at the same location as the ship or planet that provides the units. For example, if a transport carrying the starbase units is in orbit or landed on a planet, then the starbase will be built in orbit around the same planet. If the transport is at an X Y Z location that does not contain a star system, then the starbase will be in 'deep space' at that location. However, if an X Y Z location contains a star system, then the starbase MUST be built in orbit around one of the planets in the star system. It is not practical (for game purposes) to allow a starbase to be located in the 'deep space' section of a star system.

If an existing starbase is being increased in size, it will remain in its original location. Obviously, the ship or planet providing the units must be at the same X Y Z coordinates as the starbase, although they do not have to be at the same planet, if any.

Since starbases built using starbase units are not likely to be near a planet where they can be upgraded, a normal upgrade is not possible. However, an effective upgrade can be accomplished by using Damage Repair Units, which are discussed in the next section.

A.2. DAMAGE REPAIR UNITS

A species with a Manufacturing tech level of at least 30 may build Damage Repair Units. These units are used to repair or upgrade ships in the field, where it is not possible to do a normal upgrade using the UPGRADE command.

Damage repair units are not simply spare parts that can be used to repair a ship. Instead, they are a combination of special 'matrix' materials that undergo mass/energy/mass conversion to produce the needed replacement parts (similar to the 'replicator' technology of Star Trek).

Damage repair units cost 50 each and require a cargo capacity of 1. Use the abbreviation "DR" for damage repair units.

Damage repair units effectively repair or upgrade a ship by reducing the age of the ship. The age reduction is determined as follows:

$$ \textrm{Age reduction} = \dfrac{160,000 \times \textrm{N}}{\textrm{ship tonnage}} $$

where N is the number of damage repair units that are used to do the repair or upgrade. For example, if 7 damage repair units are used on a 60,000 ton transport, then the age reduction will be (160,000 x 7)/60,000 = 18.67 = 18. Note that fractions are dropped.

The age reduction will never reduce the age to less than zero. The damage repair units must be

carried as cargo by the ship that is being repaired or upgraded, and will be consumed by the operation.

The repair/upgrade may be done in either the pre-departure or post-arrival phase of the turn using the REPAIR command. Here are some examples:

```
START PRE-DEPARTURE
; Place pre-departure orders here.

    Repair  BC Big Bend, 25 ; Use 25 damage repair units to reduce
                   ;  the age of the battlecruiser by 10.

    REP BAS Strong Arm, 17  ; Use 17 damage repair units
                      ;  to reduce the age of the
                      ;  90,000 ton starbase by 30.

    repa    FF Gorby Too, 0 ; Use all 5 units onboard to reduce the
                   ;  age of the frigate by 8.

    rep DD Dagger   ; Use as many units as are needed to reduce
                   ;  the age to zero.

END
```

If N is zero, then all units that are onboard the ship will be used (but not more than are necessary to reduce the age to zero). If N is not specified, then as many units as are needed to reduce the age to zero will be used and MUST be onboard.

It is also possible to have all ships at a particular location (including starbases and transports) pool their damage repair units, using them on the ships that need them the most. To do this, the REPAIR command should be given only the X Y Z coordinates of the location where the repairs are to be done, as in the following example:

```
START POST-ARRIVAL
; Place post-arrival orders here.

    Repair  23 12 9     ; Have all ships in the sector pool their DRs
               ;  and do as much repair work as possible.
END
```

In the above example, all of the ships in the sector will pool their damage repair units and repair only those ships that need repairing, starting with the most heavily damaged, and continuing until all ships are completely repaired or until you run out of DRs.

You may also specify a "desired age" as in the following example:

```
START POST-ARRIVAL
; Place post-arrival orders here.

    Repair  23 12 9 7   ; Have all ships in the sector pool their DRs
                    ;  and do as much repair work as possible down
                    ;  to age 7 but no lower.  Do not repair ships
                    ;  if their age is already 7 or less.
END
```

In the above example, all of the ships in the sector will pool their damage repair units and repair only those ships that need repairing, starting with the most heavily damaged, and continuing until all ships are completely repaired to age 7 or until you run out of DRs.

If there are still DRs left after all repairs have been made, there is no way to predict which ships will be carrying them.

> IMPORTANT!
>
> When a ship is damaged in combat, it is possible that some or all of its cargo will be destroyed, including damage repair units. Since this happens quite often, it is not logged. Thus, it's possible for REPAIR commands to fail or to not have the desired or expected result.

A.3. INTERSPECIES CONSTRUCTION

A species with a Manufacturing tech level of at least 25 may build items, ships, and starbases for other species. This type of construction will be referred to as 'interspecies construction'.

You may construct things for another species using the IBUILD and ICONTINUE commands. These commands are similar to the BUILD and CONTINUE commands with the following exceptions:

1. An additional argument indicating the name of the recipient species must appear immediately after the IBUILD or ICONTINUE command word.

2. The IBUILD and ICONTINUE commands must always complete construction of the item in the current turn. Thus, they must NOT indicate an amount to spend unless the item is a starbase. Obviously, they must have a final argument indicating the amount to spend if the item IS a starbase.

If you wish, you may use "zero" arguments if the item being built is a starbase or anything other than a ship.

When ships or starbases are built, they will be put in orbit around the planet which produced them, and ownership will then be transferred to the new owner.

Items other than ships and starbases will be added to the inventory of the colony of the new owner that is on the same planet as the planet that built them. Thus, the species that will receive the items must have a colony on the same planet. If not, the computer will automatically execute a NAME command for the recipient species using the same name as the producing planet.

If you want to build a ship or starbase over more than one turn, use the normal BUILD and CONTINUE commands for the initial stages of construction, and use the ICONTINUE command for the final stage of construction. If the item is to be built in one turn, use the IBUILD command. In other words, the IBUILD and ICONTINUE commands always terminate construction and transfer the result to the recipient species.

When building something for another species, a premium of ten percent will be added to the cost. (If the premium is not a whole number, it will be rounded UP to the next whole number.) When the ICONTINUE command is used for the final stage of construction, the premium will be based on the TOTAL cost of the ship or starbase - NOT on just the remaining cost.

You may only use the ICONTINUE command on a ship or starbase that YOU own. You may not use the ICONTINUE command on a ship or starbase that is already owned by another species.

You MAY use the ICONTINUE command to increase the size of a starbase that you received earlier from someone else and transfer it back to the original species or even to a third species (or fourth, or fifth, etc). In each case, however, the premium will be based on the TOTAL value of the starbase - not just on what was added.

Here are some examples:

```
The Humans and Klingons both have colonies on the same planet.
The Human colony is called PL Big Deal and the Klingon colony is
called PL Khaarsh Dukh.  The Humans give the production order:
```

```
Ibuild  SP Klingon, 21 IU
```

```
When the order is executed, 21 colonial mining units will be added
to the inventory of PL Khaarsh Dukh.  The total cost to the Humans
will be 21 + 10% (rounded up) = 21 + 3 = 24.  If the Klingons did
not already have a name for the planet, then the name "PL Big Deal"
would have been created for them and would appear on the Klingon
status report.
```

```
Later, the Klingons issue the following orders during the production
phases of turns 16, 17, and 18:
```

```
Turn 16:    Build        BAS Dagger, 200
```

```
Turn 17:    Continue     BAS Dagger, 300
        Build        DD Hammer, 250
```

```
Turn 18:    Icontinue   SP Human, BAS Dagger, 200
            Icontinue   SP Human, DD Hammer
```

```
At the end of turn 18, the Humans would be the new owners of a
destroyer and a 70,000 ton starbase.  The Klingons would have paid
the normal costs of 200 during turn 16, and 550 during turn 17.
However, the amount paid during turn 18 would be the normal cost,
plus a premium based on the TOTAL value of the items, as follows:
```

```
Destroyer:  (1500 - 250) + (10% of 1500) = 1250 + 150 = 1400
```

```
Starbase: 200 + (10% of 700) = 200 + 70 = 270
```

The IBUILD command may not be used to build colonist units or planetary defense units.

You may not build something for a species you haven't met.

You may not build items for a species that you have declared to be an ENEMY. If you attempt to build something for an ENEMY species, the computer will reject your order. If you wish to build something for an ENEMY, then issue a temporary NEUTRAL order and cancel it immediately afterwards, as in the following example:

```
Neutral SP Klingon
Ibuild  SP Klingon, 21 IU
Enemy   SP Klingon
```

All ships and items produced with the IBUILD and ICONTINUE commands will operate at the tech levels of the recipient species.

If the cost of an item is based on a tech level (such as terraforming plants), the cost will be based on the tech level of the builder. However, the item will always operate at the tech level of whoever is using it.

A.4. AUXILIARY GUN UNITS

A species with a Military tech level of at least 10 may build Auxiliary Gun Units. These units are carried as cargo and add to a warship's existing offensive power. Basically, these units can be used to convert unused cargo space into additional offensive capacity.

Auxilairy gun units are designed to enhance the normal firepower of warships only. They may not be used on transports or starbases, although they may be carried as cargo.

Auxiliary gun units come in the following sizes:

Unit Abbreviation	Equivalent Tonnage	Needed Carrying Capacity	Unit Cost	Minimum Military Tech Level
GU1	50,000	5	250	10
GU2	100,000	10	500	20
GU3	150,000	15	750	30
GU4	200,000	20	1000	40
GU5	250,000	25	1250	50
GU6	300,000	30	1500	60
GU7	350,000	35	1750	70
GU8	400,000	40	2000	80
GU9	450,000	45	2250	90

The 'Equivalent tonnage' indicates the amount of additional offensive capacity that the unit provides. For example, a 300,000 ton heavy cruiser carrying two GU3s will have the normal firepower of a heavy cruiser PLUS the firepower of two 150,000 ton destroyers.

Note that the FIREPOWER is additive - NOT the tonnage. Thus, the above heavy cruiser does NOT have the offensive power of a single 600,000 ton ship! Keep in mind that the defensive and offensive power of a ship is NOT proportional to the tonnage. Larger ships are more powerful than several smaller ships of the same total tonnage. For example, the firepower of a single 400,000 ton battlecruiser is significantly greater than the combined firepower of four 100,000 ton frigates. Also, greater firepower does not necessarily mean that a ship will fire more often per round, since shots are often combined. It DOES mean, however, that the same number of shots will do more damage.

Use the BUILD command to build auxiliary gun units. For example, to build 3-100,000 ton auxiliary gun units, give the production order:

```
BUILD 3 GU2
```

The total cost will be 1500.

On the status reports, auxiliary gun units will be referred to as "Mark-1 Gun Units", "Mark-2 Gun Units", etc. corresponding respectively to GU1, GU2, etc.

A.5. FAIL-SAFE JUMP UNITS

A species with a Gravitics tech level of at least 20 may build Fail-Safe Jump Units. The function of these devices is to provide more accurate control of the energies involved in an interstellar jump. They accomplish this by tuning themselves to the ship's engines and absorbing any stray energies that would result in a mis-jump or self-destruction. In game terms, this is what happens:

> If a ship is about to mis-jump or self-destruct, then the
> Fail-safe jump unit will instead be destroyed, and another
> attempt will be made automatically. If a ship carries more
> than one unit, then the process may be repeated. In effect,
> if a mishap occurs, a fail-safe jump unit is destroyed and
> the dice are rolled again.

Each unit costs 25 to build, and requires a carrying capacity of 1. Use the class abbreviation "FS" for Fail-Safe Jump Units. For example, to build 3 units, give the production order:

```
BUILD   3 FS
```

The total cost will be 3 x 25 = 75.

Fail-safe jump units will be used automatically, whenever they are needed, as long as they are carried by a ship.

A.6. JUMP PORTAL UNITS

A species with a Gravitics tech level of at least 25 may build Jump Portal Units. These devices are carried as cargo on a starbase, and a starbase that carries these units is called a "jump portal". A jump portal can be used to allow sub-light ships to cross interstellar distances as if they had a jump drive of their own. In effect, jump portals create a private wormhole for the sub-light ship using them. Jump portals can also be used by older FTL ships to reduce their chances of a mishap. There is no limit on how many times jump portals may be used in a single turn. Jump portals may NOT be used to move starbases.

In order for jump portal units to be effective, they must be loaded onto a starbase. In effect, the starbase that carries them becomes the control center for a portal. A starbase may carry as many jump portal units as needed, as long as it has sufficient cargo capacity.

A jump portal is characterized by an effective tonnage, which indicates the maximum tonnage of a ship that may use it. For example, a jump portal with an effective tonnage of 80,000 tons will allow any ship to use it that is 80,000 tons or less. The effective tonnage of a jump portal is 10,000 times the number of jump portal units carried by the starbase. For example, if a starbase carries 20 jump portal units, then a ship of up to 200,000 tons may use the portal. Units carried by different starbases may NOT be combined to increase their effective tonnage - the units affecting a single ship must be on a single starbase. Note that the tonnage of the starbase is not important. Only the number of jump portal units carried by the starbase is important.

Jump portal units have the class abbreviation "JP", a cost of 100 each, and require a carrying capacity of 10 each. You can build jump portal units in the usual way, using the BUILD command:

```
Build   3 JP   ; Build 3 jump portal units, total cost = 300.
```

Jump portals are used with the PJUMP command in the jump phase of the turn. For example:

```
   Pjump   TR4S Willow's Helm,   PL Orion IV, BAS Seneca Portal
   PJU CTS Hippocrates, 12 3 22, Bas Deep space 9
```

Note that the last argument of the PJUMP command is the name of the starbase carrying the jump portal units. Jump portals may NOT be used to move cargo or colonists directly. These items may only be moved if they are being carried as cargo by a ship that uses the portal.

Note also that a jump portal can only operate in one direction. It can send a ship TO a different location, but it cannot receive a ship FROM a different location. Thus, in order to establish two-way travel between two different locations, you must have a jump portal at both locations.

It is also possible to use a jump portal owned by another species, if that species gives you permission. You may give another species permission to use all of your jump portals with the ALLY command:

```
   Ally    SP Klingon
```

The above order tells the computer that you consider the Klingons to be allies and that they are allowed to use any of your jump portals. ALLY orders must appear in the pre-departure or post-arrival section of the orders and will remain in effect until cancelled with a NEUTRAL or ENEMY order.

If you want to allow more than one species to use your portals, then provide a separate ALLY order for each species:

```
   Ally    SP Klingon
   ALL Sp Vulcans
   ALLY    sp bajorans
```

A ship using a jump portal uses the age of the starbase and the gravitics tech level of the species that owns the starbase to determine mishap probabilities. However, only the ship using a portal can suffer a mis-jump or self-destruction. Fail-safe Jump Units carried by the ship will have their usual effect. Fail-safe Jump Units on the starbase will have no effect at all.

The use of jump portals by a starbase will have no effect on its offensive or defensive combat abilities.

A.7. FORCED MISJUMP UNITS

A species with a Gravitics tech level of at least 30 may build Forced Misjump Units. These devices are carried and used on a starbase, and are designed to force hostile ships to leave the star system. In effect, they are used as weapons. If their operation is successful, then any targeted ship will mis-jump to a different location. Furthermore, the ship may self-destruct.

Forced misjump units are characterized by an effective tonnage, which indicates the maximum tonnage of a ship that can be affected by them. The effective tonnage is 10,000 times the number of

units carried by the starbase. Units carried on different starbases may NOT be used in concert to increase their effective tonnage. The units affecting a single ship must be on a single starbase.

The base chance of forcing a misjump is 2% times the attacker's gravitics tech level minus the target's gravitics tech level. This value is increased by 2 percentage points for each forced misjump unit carried in excess of what is actually needed to affect the target. Note that the base chance can be negative, but the effective chance can still be positive if a sufficient number of units are used.

If the misjump occurs, a wormhole with totally random properties will be created and the target ship will be forced into it. The destination will be a randomly chosen location within the galaxy. (The x, y, and z co-ordinates will be random values between 0 and 99, inclusive.) Since this could be a large distance from the original location, the ship may self-destruct.

Forced misjump units are used automatically whenever a starbase which carries them takes part in combat. However, achieving a "lock on" can be difficult in a fast-paced battle, and an opportunity to use the devices may or may not arrive in a particular round of combat. Sometimes, though, if conditions are exceptionally good, more than one "lock on" may occur in a single round.

Forced misjump units have the class abbreviation "FM", a cost of 100 each, and require a carrying capacity of 5 each.

Fail-safe jump units carried by a target will not prevent a forced misjump, but they may help prevent self-destruction.

Forced misjump units will not be used against starbases.

If a ship is forced to jump during the strike phase, then the ship name will contain the designation "FJ" in the status report. These ships will jump automatically in the jump phase of the next turn, and any explicit jump orders will be ignored.

A.8. FORCED JUMP UNITS

A species with a Gravitics tech level of at least 40 may build Forced Jump Units. These devices are carried and used on a starbase and are designed to force hostile ships to leave the star system. In effect, they are used as non- lethal weapons, and are the non-destructive counterpart of forced mis-jump units. If their operation is successful, then any targeted ship will jump to a different location. Furthermore, unlike forced MIS-jump units, ships affected by forced jump units will NOT normally self-destruct, since the wormhole created by the units is controlled and set for only a very short distance from the original location.

In all other respects, forced jump units are like forced misjump units.

Forced jump units have the class abbreviation "FJ", a cost of 125 each, and require a carrying capacity of 5 each.

A.9. GRAVITIC TELESCOPES

A species with a gravitics tech level of at least 50 may build Gravitic Telescopes. A gravitic telescope allows the user to detect alien ships and inhabited planets at large distances from the X Y Z location

of the telescope itself.

A gravitic telescope operates on the same principle as interstellar communication devices; that is, a small wormhole is created and used as a conduit for the transmission of information. However, unlike interstellar communication devices (which are used in pairs), a gravitic telescope is only needed on the receiving end.

Gravitic telescopes are installed and used on starbases. In effect, the starbase provides the control center for the operation of the telescope. The range in parsecs of a gravitic telescope is simply the number of telescope units that are carried by the starbase divided by two (fractions dropped). For example, if a starbase is carrying seven gravitic telescope units, then it may observe aliens up to three parsecs away. The maximum distance is also limited by the gravitics tech level of the species, as follows:

$$ \textrm{Maximum distance} = \dfrac{\textrm{Gravitics tech level}}{10} $$

Fractions are dropped. If a starbase carries more units than are allowed by the tech level, then the excess units will not be used.

To operate a gravitic telescope, use the TELESCOPE command in the post-arrival section of your orders, as follows:

```
START POST-ARRIVAL
; Place post-arrival orders here.

    Telescope    BAS Peeping Tom

END
```

where the first and only argument is the name of the starbase that carries the gravitic telescope units. The above order will provide a list of all detectable alien ships, starbases, and populated planets within the range of the telescope.

The information provided by a gravitic telescope is exactly the same as the information that appears on your status reports when one of your ships is at the same X Y Z coordinates as an alien ship or planet; i.e., the names of ships in orbit or in deep space, and the names and approximate economic bases of populated planets. For planets, the approximate economic base will be indicated by a single number in parentheses immediately following the planet name. Ships that have landed or that are under construction are not listed. Ships and starbases that are at coordinates that do NOT contain a star system will be listed if they are within range of the telescope.

In addition, if use of a gravitic telescope detects an alien starbase that ITSELF contains one or more gravitic telescope units, then the number of units on the alien starbase will also be listed.

A gravitic telescope is a very delicate and difficult instrument to operate, and it is possible that some ships/planets may not be detected. The chance of detecting a particular ship or planet will depend on the gravitic tech level of the species operating the telescope (the higher the better). For planets, the probability of detection will also depend on how much industry there is on the planet and on whether or not a colony is actively hiding. In general, home planets and large colonies are

easy to detect, while smaller colonies are harder to detect. Large ships are easier to detect than small ships. Field- distorted ships (discussed later) are impossible to detect.

A gravitic telescope requires a cargo capacity of 20, and has a cost of 500. Use the item abbreviation "GT" for Gravitic Telescopes.

It is possible that the operation of a gravitic telescope will be detected by orbiting ships or starbases of the observed species. The chance of detection is:

```
Chance of Detection = 2 x (GV2 - GV1)
```

where GV2 is the gravitics tech level of the species being watched, and GV1 is the gravitics tech level of the observer. If the chance is zero or negative, then the observer will not be detected. For example, if SP Ferengi (GV = 32) is spying on SP Human (GV = 39), then the Humans have a 2 x (39 - 32) = 14 percent chance that they will know that they are being observed.

The check for detection will be done once for each orbiting ship or starbase that is observed by the gravitic telescope. Planets and ships landed on the surface cannot detect the operation of a gravitic telescope because of the interference from the planet's gravity.

The observer will not know if he is detected.

If the observer is detected, then the status report of the species being watched will indicate the location of the observer's gravitic telescope.

If operation of a gravitic telescope observes an alien starbase that ITSELF contains a gravitic telescope, then the above chance will be increased by two times the number of gravitic telescope units carried by the starbase:

$$ \textrm{Chance of Detection} = 2 \times (\textrm{GV2} - \textrm{GV1}) $$

where NGT is the number of gravitic telescopes on the starbase that is being observed. For purposes of detection, ALL gravitic telescope units on the starbase are counted, even if they cannot all be used to scan distant locations because of the gravitic tech level limitation.

A TELESCOPE order may appear only in the post-arrival phase of the turn. A starbase may be given only one TELESCOPE order per turn.

Colonies hidden by means of the HIDE command MAY be detected by a gravitic telescope. The reason for this is that successful hiding requires the ability to evade detection when aliens are present. If the hiders do not know that they are being observed, then they may fail at hiding. And even if a colony eventually discovers that it is being scanned by a gravitic telescope, it may be too late for it to successfully hide.

A.10. AUXILIARY SHIELD GENERATORS

A species with a Life Support tech level of at least 10 may build Auxiliary Shield Generators. These units are carried as cargo and add to a warship's existing shields. Basically, these units can be used to convert unused cargo space into additional defensive shield capacity.

Auxiliary shield generators are designed to enhance the normal defensive shields of warships only. They may not be used on transports or starbases, although they may be carried as cargo.

Shield generators come in the following sizes:

Table 11. Shield generator sizes

Unit Abbreviation	Equivalent Tonnage	Needed Carrying Capacity	Unit Cost	Minimum Life SupportTech Level
SG1	50,000	5	250	10
SG2	100,000	10	500	20
SG3	150,000	15	750	30
SG4	200,000	20	1,000	40
SG5	250,000	25	1,250	50
SG6	300,000	30	1,500	60
SG7	350,000	35	1,750	70
SG8	400,000	40	2,000	80
SG9	450,000	45	2,250	90

The 'Equivalent tonnage' indicates the amount of additional defensive capacity that the unit provides. For example, a 300,000 ton heavy cruiser carrying two SG3s will have the normal shields of a heavy cruiser PLUS the shields of two 150,000 ton destroyers.

> Note that the SHIELD POWER is additive - NOT the tonnage. Thus, the above heavy cruiser does NOT have the defensive shields of a single 300,000 ton ship! Keep in mind that the defensive and offensive power of a ship is NOT proportional to the tonnage. Larger ships are more powerful than several smaller ships of the same total tonnage. For example, the shield power of a single 400,000 ton battlecruiser is significantly greater than the combined shield power of four 100,000 ton frigates.

Use the BUILD command to build auxiliary shield units. For example, to build 3-100,000 ton auxiliary shield generators, give the production order:

```
BUILD 3 SG2
```

The total cost will be 1500.

On the status reports, auxiliary shield generators will be referred to as "Mark-1 Shield Generators", "Mark-2 Shield Generators", etc. corresponding respectively to SG1, SG2, etc.

A.11. FIELD DISTORTION UNITS

A species with a Life Support tech level of at least 20 may build Field Distortion Units. These devices are carried only on ships and starbases, and distort sensor data and visual data obtained by others. In effect, a ship or starbase that carries field distortion units can be seen and its size can be determined, but the name of the ship and the species that owns it can NOT be determined. It is also not possible to determine if the ship is sub-light or FTL.

In order for field distortion to take place, the ship or starbase must carry a number of units EXACTLY equal to its tonnage divided by 10,000. For example, since the tonnage of a battleship is 450,000, field distortion will only take place if the ship carries EXACTLY 45 units. A TR17S must carry EXACTLY 17 field distortion units, a 250,000 ton starbase must carry EXACTLY 25 units, and so on. If a number of units other than the required amount is carried, then they will simply be carried as cargo and will not be put into operation.

Field distortion units have the class abbreviation "FD", a cost of 50 each, and require a carrying capacity of 1 each.

A ship using field distortion will appear to others as simply a class abbreviation and the name "???". The species name will simply be a number. Here is an example of three alien ships that are using field distortion units as listed on the status reports of the owners:

The owner of the first ship will see this:

```
    Ships at x = 19, y = 2, z = 36:
    Name                                        Cap. Cargo
    ------------------------------------------------------------------------

    CT Thieve's Cant (A8,02)                      2   2 FD
```

The owner of the second and third ships will see this:

```
    Ships at x = 19, y = 2, z = 36:
    Name                                        Cap. Cargo
    ------------------------------------------------------------------------

    BCS Bandicoot (A3,D)                         40  40 FD
    BS Jabberwocky (A1,D)                        45  45 FD
```

And here is what other species at the same location would see:

```
    Aliens at x = 19, y = 2, z = 36:
    Name                                        Species
    ------------------------------------------------------------------------
    CT ??? (02)                                 SP 171
    BC ??? (D)                                  SP 92
    BS ??? (D)                                  SP 92
```

The battlecruiser and the battleship are both owned by the same species, and the corvette is owned

by a different species. The numbers are randomly generated, but a particular number will always apply to the same species as long as it stays at the same life support tech level. If the tech level changes, then a new random number is generated. To add to the confusion, it is possible, although highly unlikely, that two species will have the same number at the same time.

For example, if SP 92 corresponds to SP Klingon in the above example, then ALL field-distorted ships owned by the Klingons, wherever they may be, will be listed as being owned by SP 92 as long as the Klingon life support tech level does not change. However, it is also possible, but very unlikely, that another species will also be assigned the number 92 at the same time.

If you wish to attack a species that is using field distortion units, but you don't know their real name, use the name that is listed in the status report. For example, if you want to attack just the corvette shown above, you should issue the combat order:

```
ATTACK  SP 171
```

Field distortion units will be used in combat automatically, only if ALL ships and starbases of a species at the battle location are using the units, AND if the species has no populated planets at the battle location. Otherwise the units will not be used but will simply be carried as cargo. This is necessary because ships and planets of the same species must collaborate, and doing so could easily betray the real identity and owner of the ships.

In combat, field-distorted ships will be harder to hit. Specifically, the chance-to-hit a field-distorted ship will be 25% less than the chance to hit an undistorted ship.

If one or more field distortion units are destroyed in combat by damage that passes through the shields, then the units will stop functioning, and other participants in the battle will learn the real name of the ship and of the species that owns the ship. Note that this will only occur if the units were functioning when damage passed through the shields. It will not occur if the units were simply being carried as cargo. This also applies to ships that are destroyed in an intercept or in an ambush.

For the purpose of INTERCEPTs only, a field-distorted ship will be considered an enemy ship, even if the owner is not actually a declared enemy. In other words, a ship that is "disguised" is assumed to be inherently hostile.

Field distortion units should never be carried by an attacker if the attacker plans to besiege a planet. It is impossible to conduct a siege with field- distorted ships, and any attempt to do so will reveal the true identity of the species using the units.

Field-distorted ships and starbases are completely invisible to operators of gravitic telescopes.

Field distortion units can not be used by a ship that is landed on the surface of a planet. Thus, the true name and species of a landed ship will be known to another species if it has population on the same planet.

Finally, note that by combining the use of field distortion units with the HIJACK command, a species can raid its enemies and commit other acts of piracy without giving away the attacker's identity.

A.12. POPULATION GROWTH

A species with a Biology tech level of at least 20 will experience enhanced population growth on colonies.

Advanced biological knowledge will increase the fertility and survival rate of people on colony worlds. In Far Horizons, we will simulate this reality by adding a bonus to population growth. Note that this bonus will apply only to colonies - it will NOT apply to the homeworld.

Population growth will receive a bonus of N percentage points, where N is the Biology tech level divided by 20, fractions dropped. For example, if the normal population growth on a colony is 9 percent, and the Biology tech level is 59, then the actual growth rate will be 9 + 59/20 = 11 percent.

A.13. TERRAFORMING

A species with a Biology tech level of at least 40 may terraform a planet, making it more suitable for habitation. Terraforming has the effect of modifying the planet's temperature class, pressure class, and gaseous composition.

Terraforming is accomplished by operating special atmospheric processing plants on the surface which use biological and chemical methods to modify the atmosphere. Terraforming can also be used to add an atmosphere to a planet that doesn't have one.

The number of plants needed to completely terraform a planet is exactly the same as the life support requirement (LSN) for the planet. For example, if your species requires a minimum Life Support tech level of 9 to establish a normal colony on the planet, then you must use 9 terraforming plants to completely terraform the planet.

The cost of each processing plant is 50,000 divided by the Biology tech level of the species. For example, if the Biology tech level is 48, then the amount needed to build a single plant is 50,000/48 = 1041 (drop fractions).

To build terraforming plants, use the BUILD command and the abbreviation "TP":

```
Build  6  TP  ; Build 6 terraforming plants.
```

Terraforming plants can then be transported to the colony where they must be installed. Each terraforming plant requires a cargo capacity of 100.

Alternatively, if the colony has sufficient production capacity, you can build the terraforming plants on the colony where they will be used.

To perform terraforming on a colony, you must issue a TERRAFORM command in the post-arrival section of your orders, after TRANSFERing the plants to the colony:

```
START POST-ARRIVAL
; Place post-arrival orders here.

    Tran     6 tp    TR30 Big Boy, PL Epsilon Eridani IV
    Terraform 6 PL Epsilon Eridani IV
    SCAN         TR30 Big Boy

END
```

The above commands will transfer six terraforming plants from the transport to the colony and will then install and activate them. The results of the terraforming take effect immediately. The SCAN order will show you what the results are.

If the number of TPs is not specified or is 0, then all available TPs will be used, but not more than are actually needed to completely terraform the colony.

When the TERRAFORM order is processed, the gamemaster's computer will change the planet's temperature class, pressure class, and atmospheric composition to bring them closer to the home planet's. If the colony does not have exactly the number needed to completely terraform the planet, then a partial transformation will take place, in the following order:

1. Eliminate poisonous gases

2. Add required gas

3. Modify temperature class

4. Modify pressure class

After installation, terraforming plants will not appear in the inventory of the colony. In effect, they are "used up". Terraforming plants may not be recycled after installation.

Although terraforming takes effect immediately in game terms, you can assume that it actually takes a few years. Consequently, if a species were to attempt to terraform, say, the planet of an enemy, the residents would have plenty of time to prevent the installation and operation of the plants. Because of this, terraforming plants may NOT be operated on a planet if one or more other species also live on the planet, unless the other species allow it. The gamemaster's computer will not be able to check for this, but a player that violates this rule will be evicted from the game.

The effects of terraforming will last until the end of a game, unless counteracted by terraforming by another species.

A.14. GERM WARFARE BOMBS

A species with a Biology tech level of at least 50 may build Germ Warfare Bombs. When used successfully, a bomb will wipe out an entire species on a particular planet.

Germ warfare is accomplished by seeding an inhabited planet with specially designed micro-organisms which are delivered in a device called a Germ Warfare Bomb. The effectiveness of the bomb is a function of the relative Biology tech levels of the attacking species and target species.

Specifically, the base chance of success is 50%, and this value is modified up or down by 2% per point of difference in Biology tech levels of the two species.

A Germ Warfare Bomb has a cost of 1000, requires a carrying capacity of 100, and has the class abbreviation "GW". It should be built using the BUILD command, as in the following example:

```
;Build 2 germ warfare bombs.
BUILD   2 GW
```

To use germ warfare bombs in combat, issue the appropriate ENGAGE and ATTACK order as discussed earlier in the section on combat. All bombs that are present at the battle will be used. A separate check is made for each bomb that the attacker takes to the battle. If at least one bomb succeeds, then the defending species will be destroyed. Thus, the more bombs an attacker brings, the greater will be the chance of success.

Germ warfare bombs do their dirty work very quickly and an affected planet may be safely colonized in the next turn. Remember, ALL mining and manufacturing base that was originally on the planet will have been destroyed. However, you will gain some economic units from looting.

Appendix B: CLASS ABBREVIATIONS

The following class abbreviations are currently being used in FAR HORIZONS:

Table 12. Class Abbreviations

Abbreviation	Meaning
AU	Colonial Manufacturing Unit
BAS	Starbase
BC	Battlecruiser
BI	Biology tech level
BM	Battlemoon
BR	Battlestar
BS	Battleship
BW	Battleworld
CA	Heavy Cruiser
CC	Command Cruiser
CL	Light Cruiser
CS	Strike Cruiser
CT	Corvette
CU	Colonist Unit
DD	Destroyer
DN	Dreadnought
DR	Damage Repair Unit
ES	Escort
FD	Field Distortion Unit
FF	Frigate
FJ	Forced Jump Unit
FM	Forced Mis-jump Unit
FS	Fail-Safe Jump Unit
GT	Gravitic Telescope Unit
GUn	Auxiliary Gun Unit, Mark-n
GV	Gravitics tech level
GW	Germ Warfare Bomb
IU	Colonial Mining Unit
JP	Jump Portal Units

Abbreviation	Meaning
LS	Life Support tech level
MA	Manufacturing tech level
MI	Mining tech level
ML	Military tech level
PB	Picketboat
PD	Planetary Defense Unit
PL	Planet
RM	Raw Material Unit
SD	Super Dreadnought
SGn	Auxiliary Shield Generator, Mark-n
SP	Species
SU	Starbase Unit
TP	Terraforming Plant
TRn	Transport, eg. TR7 for 70,000 tons, TR14 for 140,000 tons, etc.

Remember, all ships may be built in sub-light versions, which have an "S" suffixed to the abbreviation. For example, a sub-light battleship has the class abbreviation "BSS", a sub-light 150,000 ton transport has the abbreviation "TR15S", etc.

Appendix C: COMMAND SUMMARY

The following commands are currently being used in FAR HORIZONS:

Table 13. Command Summary

Command	Arguments	Explanation
ALLY	sp	Declare species "sp" to be an ally
AMBUSH	n	Spend "n" in preparation for ambush
ATTACK	sp	Attack opponent "sp"
ATTACK	SP n	Attack field-distorted species number "n"
ATTACK	0	Attack all declared enemies
AUTO		Automatically generate sensible orders for next turn
BASE	[n] s,base	Build or increase size of starbase "base" using "n" starbase units from "s"
BATTLE	x y z	Set the location for a battle
BUILD	n ab	Build "n" items of class "ab"
BUILD	ship	Build "ship"
BUILD	ship,n	Start building "ship", spend only "n"
BUILD	base,n	Start building starbase "base", spend "n"
CONTINUE	ship	Finish construction of "ship"
CONTINUE	ship,n	Continue construction on "ship", spend only "n"
CONTINUE	base,n	Increase size of starbase "base", spend "n"
DESTROY	ship	Destroy "ship"
DESTROY	base	Destroy starbase "base"
DEVELOP	[n]	Build CUs, IUs, and AUs for producing planet but do not spend more than "n"

Command	Arguments	Explanation
DEVELOP	[n] pl	Build CUs, IUs, and AUs for colony planet "pl" in same sector but do not spend more than "n"
DEVELOP	[n] pl, ship	Build CUs, IUs, and AUs for colony planet "pl" and load units onto "ship" but do not spend more than "n"
DISBAND	pl	Disband colony "pl"
END		End current section of the order form
ENEMY	sp	Declare species "sp" to be an enemy
ENEMY	n	Declare all species to be enemies
ENGAGE	n [p]	Specify combat engagement option "n" and optional planet number "p"
ESTIMATE	sp	Estimate tech levels of species "sp"
HAVEN	x y x	Set rendezvous point for ships that withdraw from combat
HIDE		Actively hide this planet from alien observation
HIDE	ship	Keep "ship" out of combat unless you start to lose the battle
HIJACK	sp	Hijack opponent "sp"
HIJACK	SP n	Hijack field-distorted species number "n"
HIJACK	0	Hijack all declared enemies
IBUILD	sp,n ab	Build "n" items of class "ab" for species "sp"
IBUILD	sp,ship	Build "ship" for species "sp"
IBUILD	sp,base,n	Build starbase "base" for species "sp", spend "n"
ICONTINUE	sp ship	Finish construction of "ship" for species "sp"

Command	Arguments	Explanation
ICONTINUE	sp base,n	Increase size of starbase "base" for species "sp", spend "n"
INSTALL	n ab pl	Install "n" IUs or AUs on planet "pl"
INSTALL	pl	Install all available IUs and AUs on planet "pl"
INTERCEPT	n	Spend "n" in preparation for interception
JUMP	ship,loc	Have "ship" jump to destination "loc"
LAND	ship,pl	Have "ship" land on planet in same star system
MESSAGE	sp	Send a message to species "sp"
MOVE	ship, x y z	Move "ship" up to one parsec
MOVE	base, x y z	Tow starbase "base" up to one parsec
NAME	x y z p PL name	Give "name" to planet "p" at location "x y z"
NEUTRAL	sp	Declare neutrality towards species "sp"
NEUTRAL	n	Declare neutrality towards all species
ORBIT	ship,pl	Have "ship" orbit planet in same star system
PJUMP	ship,loc,bas	Have "ship" jump to destination "loc" via jump portals on starbase "bas"
PRODUCTION	PL name	Start production on planet "name"
RECYCLE	n ab	Recycle "n" items of class "ab"
RECYCLE	ship	Recycle "ship"
RECYCLE	base	Recycle starbase "base"
REPAIR	ship,n	Repair "ship" using "n" onboard damage repair units
REPAIR	base,n	Repair "base" using "n" onboard damage repair units

Command	Arguments	Explanation
REPAIR	x y z [age]	Repair as many ships/starbases as possible in sector x y z, pooling damage repair units but do not reduce age below "age"
RESEARCH	n tech	Spend "n" on research in technology "tech"
SCAN	ship	Have "ship" do a scan of its current location
SEND	n sp	Send "n" economic units to species "sp"
SHIPYARD		Increase shipyard capacity by one.
START	section	Start processing "section" of the order form
SUMMARY		Provide only a brief summary of combat results, instead of listing every single hit and miss
TARGET	n	Concentrate fire on target type "n" during combat
TEACH	tech [n] sp	Transfer knowledge of technology "tech" to species "sp" to maximum tech level "n"
TELESCOPE	base	Operate gravitic telescope on starbase "base"
TERRAFORM	[n] pl	Terraform planet "pl" using "n" TPs
TRANSFER	n ab s,d	Transfer "n" items of class "ab" from "s" to "d"
UNLOAD	ship	Transfer all CUs, IUs, and AUs from "ship" or
UNLOAD	base	starbase "base" to the planet it is at and install as many IUs and AUs as possible
UPGRADE	ship	Upgrade "ship" to age zero
UPGRADE	base	Upgrade starbase "base" to age zero
UPGRADE	ship,n	Upgrade "ship", spend "n"
UPGRADE	base,n	Upgrade starbase "base", spend "n"

Command	Arguments	Explanation
VISITED	x y z	Mark a star system as having been visited, even if you have not actually been there.
WITHDRAW	n1 n2 n3	Set conditions for withdrawing from combat
WORMHOLE	ship [,pl]	Have "ship" jump to opposite end of wormhole and orbit planet "pl" on arrival
WORMHOLE	base [,pl]	Have starbase "base" jump to opposite end of wormhole and orbit planet "pl" on arrival
ZZZ		Terminate a MESSAGE

where:

ab	class abbreviation
base	name of a starbase, including "BAS" abbreviation
d	name of a ship, starbase, or planet, including class abbreviation
loc	jump destination, either "x y z" or "PL name"
n	a whole number, 0 or more
[n]	an optional whole number, 1 or more
name	name string, including any embedded spaces. May not start with a digit!
p	planet number
pl	planet name, including abbreviation "PL"
s	name of a ship, starbase, or planet, including class abbreviation
section	COMBAT, PRE-DEPARTURE, JUMPS, PRODUCTION or POST-ARRIVAL
ship	name of a ship, including class abbreviation
sp	species name, including "SP" abbreviation
tech	technology abbreviation: MI, MA, ML, GV, LS, or BI
x y	galactic coordinates of a sector

Appendix D: SET-UP FORM FOR ENTERING A GAME

The following form must be filled out at the start of a game and sent to the gamemaster. Refer to Chapter 3 for detailed information on how to fill out the form.

Allocate points to Military, Gravitics, Life Support, and Biology tech levels. You have a total of 15 points to allocate.

```
Military:
Gravitics:
Life Support:
Biology:
```

REMINDER:

If a tech level is zero, you will not be able to raise it unless another species transfers the knowledge or technology to you.

Next, enter the names for your species, home planet, and government. You may use up to 31 characters each.

```
Species name (MUST contain 7 or more characters):
Home planet name:
Government name:
Government type:
```

IMPORTANT!

If your gamemaster is running a list server for use by the players, then your species name may not contain any of the special characters '$' (dollar sign), '!' (exclamation point), or '"' (double quote). In general, it is a good idea not to use any of these characters when naming your species. Also, make sure that the name of your species contains at least seven characters, including embedded spaces.

Fill out the above items and send them to the gamemaster before the game starts.

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